Telecom 2030

Dial in for a decade of opportunity

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can help

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revenue potential through business and delivery
transformation driven by hybrid cloud and AI-first
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optimize network operations, enable differentiated
experiences across customers, employees, the edge, and
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Foreword

As 2030 fast approaches, the telecommunications industry is in the midst of a transformative shift to power an increasingly interconnected world. What once seemed possible only in the realm of science fiction has become a reality—from smart cities to autonomous vehicles, augmented healthcare to artificial intelligence—with connectivity at the heart of it all. As technology advances, the need for seamless, high-speed, and reliable networks has never been more critical.

Equally important is ensuring that no one is left behind. GSMA research shows that countries with higher levels of mobile connectivity have achieved greater progress toward meeting the United Nations Sustainable Development Goals. While 57% of the world is now using mobile internet, there is much work to be done to close the digital divide. Leaving no one behind is both a moral and a business imperative, with 3.4 billion new customers waiting to come online.

Widespread 5G deployments will be essential to providing the faster speeds, lower latencies, enhanced capabilities, and network capacity required by modern applications. Momentum is growing, with operators deploying in new geographies such as Sub-Saharan Africa, Latin America, and Eurasia. In fact, GSMA Intelligence estimates that by 2030 the share of 5G connections from emerging markets, including China, will reach almost 50%, and globally 5G connections will more than triple to 5.1 billion by Q1 of that year.

Are communication service providers (CSPs) ready to seize this unique moment in time?

While the potential to innovate is vast, uncertainty looms as well. Geopolitical conflicts, a tricky global economy, increasingly sophisticated cyberthreats, and climate change all create risks that must be accounted for in planning for the next decade. Leading the way forward in this fast-moving and unpredictable landscape requires a strategic evolution by the telecommunications industry. Leaders will need to make thoughtful, but bold, choices as they prepare for the challenges and opportunities that lie ahead.

To support this, Telecom 2030 explores how the industry can position itself at the forefront of the connectivity revolution. With insights from leaders across the industry, analysis of the ecosystem, and action guides, the report provides the tools to help plan for a better, more connected, and resilient world for 2030 and beyond.

Mats Granryd
Director-General, GSMA

Stephen Rose
General Manager, Global Industries, IBM
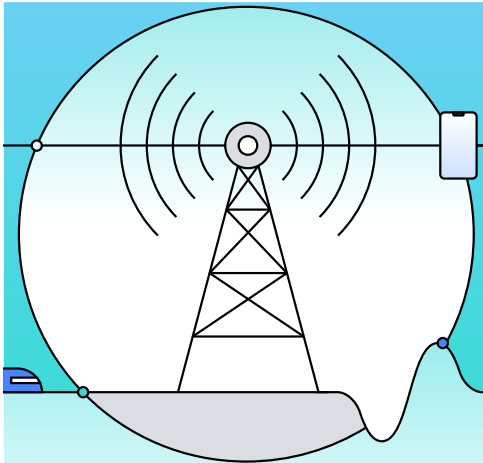
Key takeaways

"I think the world is going to change as much over the next six years as it has over the past 20 years."

David Burns
Enterprise Group Executive, Telstra

■ Dramatic societal changes are expected over the next six years.

The telecom industry must prepare for the central role it will play in the hyperconnected world of 2030.

■ Many telecom executives plan to adapt current capabilities to meet future demands.

While promising, this less assertive approach could expose communications service providers (CSPs) to competitive risks.

■ Roughly one-quarter of CSPs are pursuing technology modernization as a primary path to growth.

They can be better positioned for heightened agility and innovation—but should not underestimate the complexities of being on the forefront of advanced technology adoption.

Taking charge of fate

Telecommunications executives anticipate seismic shifts in the world by 2030, yet many communications service providers (CSPs) may not reflect the demands of the new realities in their strategic planning. Eye-opening research from the IBM Institute for Business Value (IBM IBV) suggests many CSPs expect to focus on adapting capabilities for future needs rather than proactively pursuing growth. This approach could leave them vulnerable to competitive risks and blind to innovation opportunities.

To explore what the telecommunications landscape might look like in 2030, we conducted an extensive survey of more than 1,800 telecom executives in 23 countries. This quantitative research was then supplemented by in-depth individual interviews with global CSP leaders for a front-row view (see "Study approach and methodology," page 30).

How do industry leaders see the world in six years (see Perspective, "The world in 2030")? Among the survey findings:

– AI evolves to predicting and controlling the personal and work lives of most of the population.

– Climate change impacts and cyberthreats escalate to requiring near-constant responses from enterprises.

– Consumer needs take new forms, with personal autonomous flying vehicles and brain interface devices starting to scale.[1]

With such dynamic advances on the horizon, one might expect CSPs to be embracing equally dynamic strategies. But our analysis reveals a mixed picture (see Figure 1). Slightly more than half of respondents indicate today's priorities for their companies will be broadly suitable for 2030. A small percentage of respondents suggest they could be crisis-focused, as contending with external disruptions becomes the new business as usual, while another small group indicates they could be effectively repositioning to become back-end service providers. The remaining

26% of respondents represent organizations that plan to leverage emerging technologies to energize growth and expand influence with consumers and enterprise customers.

This report will unfold in two sections. In part one, we will delve into the strategic approaches that the survey data indicates CSPs are pursuing, including the likely implications for the future. Then in part two, we will explore four crucial steps that CSPs can take now to prime their organizations for 2030, including a specific action guide for each step.

The race to 2030

Four potential
strategic approaches

Maintaining	Expanding	Reorienting	Contending
53%	**26%**	**13%**	**8%**
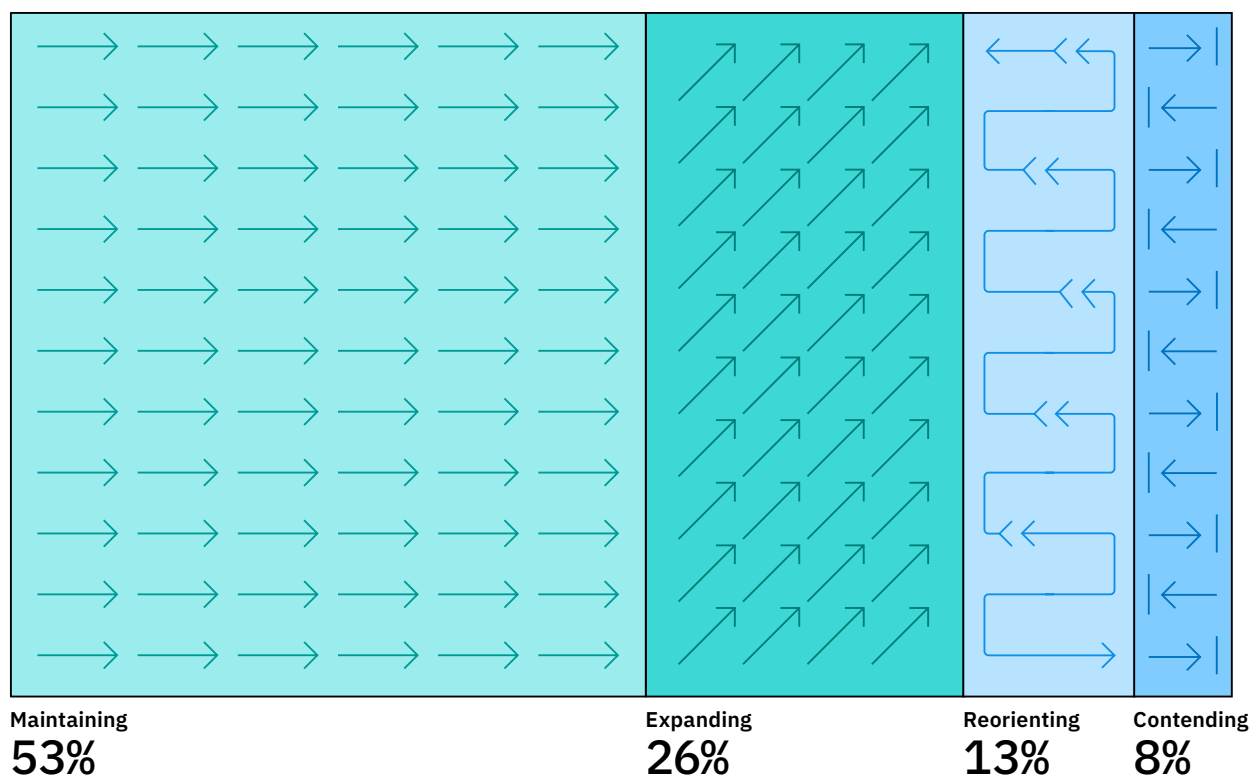
Maintaining: adapting today's capabilities to meet the changing needs of a highly connected world

Expanding: embracing emerging technologies to fuel new forms of growth

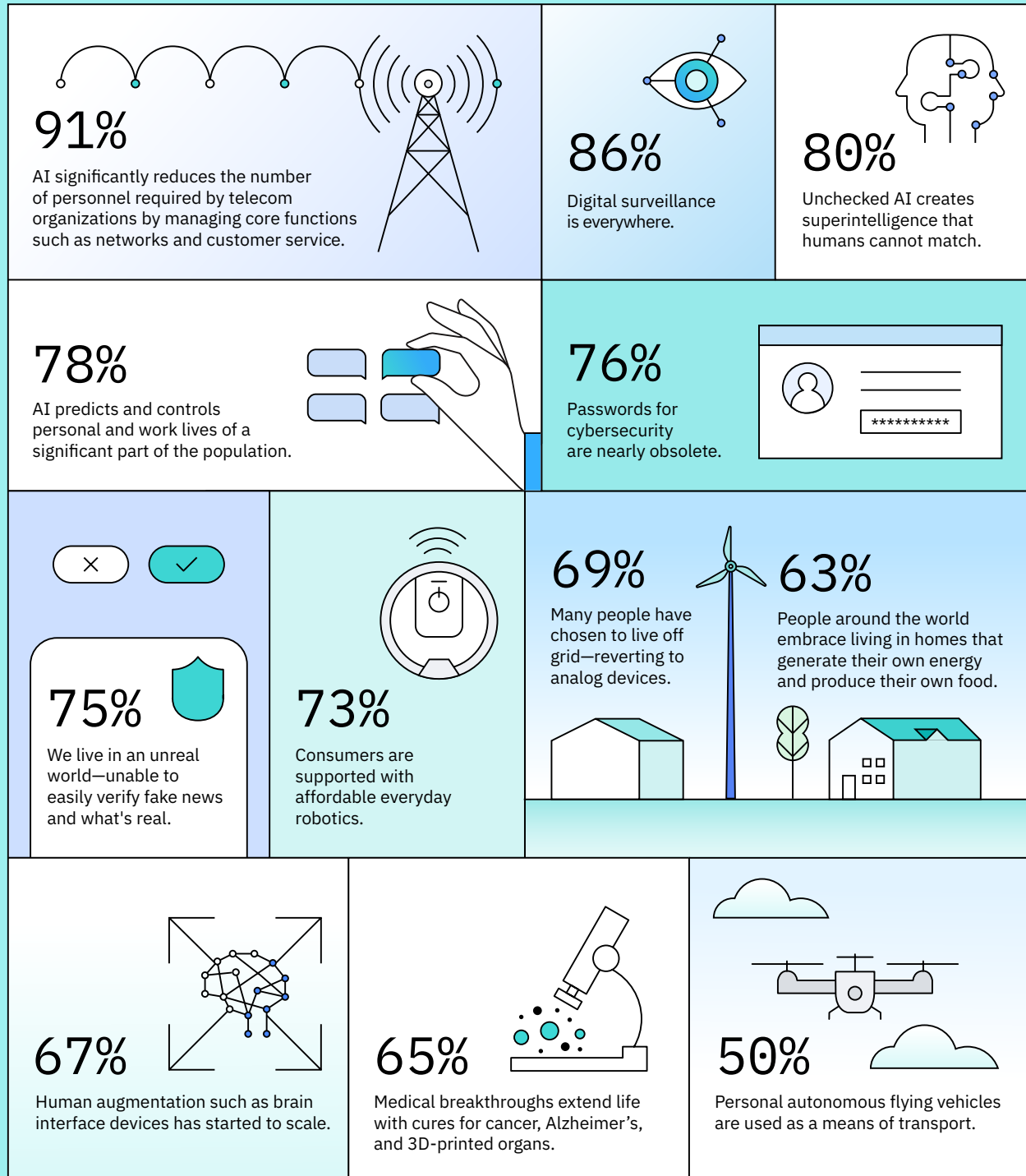**Reorienting:** strategically becoming back-end service providers through wholesale services

Contending: preparing for a world in which reacting to external crises becomes business as usual

*Source: IBM Institute for Business Value analysis of respondents'
answers to a set of questions on the world and their priorities
today and in 2030*

Perspective

The world in 2030, as viewed by CSP executives

Leaders will need to address these anticipated opportunities and threats as they plan for the future.

91%
AI significantly reduces the number of personnel required by telecom organizations by managing core functions such as networks and customer service.

86%
Digital surveillance is everywhere.

80%
Unchecked AI creates superintelligence that humans cannot match.

78%
AI predicts and controls personal and work lives of a significant part of the population.

76%
Passwords for cybersecurity are nearly obsolete.

75%
We live in an unreal world—unable to easily verify fake news and what's real.

73%
Consumers are supported with affordable everyday robotics.

69%
Many people have chosen to live off grid—reverting to analog devices.

63%
People around the world embrace living in homes that generate their own energy and produce their own food.

67%
Human augmentation such as brain interface devices has started to scale.

65%
Medical breakthroughs extend life with cures for cancer, Alzheimer's, and 3D-printed organs.

50%
Personal autonomous flying vehicles are used as a means of transport.

Percentages reflect responses of agree or strongly agree to each statement.

Part one:
Four strategic
views of the future

Telecom leaders recognize that technology developments are accelerating at an exceptional rate. "I think the world is going to change as much over the next six years as it has over the past 20 years," predicts Telstra Enterprise Group Executive David Burns.

Succeeding in such a fast-paced world, rife with uncertainty—and rich in potential—requires thoughtful choices. We've analyzed the responses of the telecom executives we surveyed to identify four distinct strategic approaches that CSPs may take. Note these strategies were revealed by our data analysis and are not necessarily the way CSPs or their leaders describe themselves. In practice, most CSPs could incorporate elements of more than one strategy into their plans and should therefore evaluate all four approaches to see where they align today—and to take charge of where they want to be in 2030.

Succeeding in a fast-paced world, rife with uncertainty—and rich in potential—requires CSPs to make thoughtful choices.
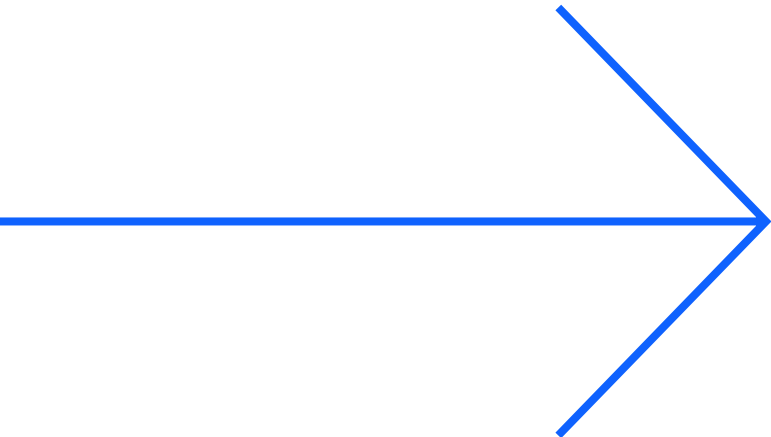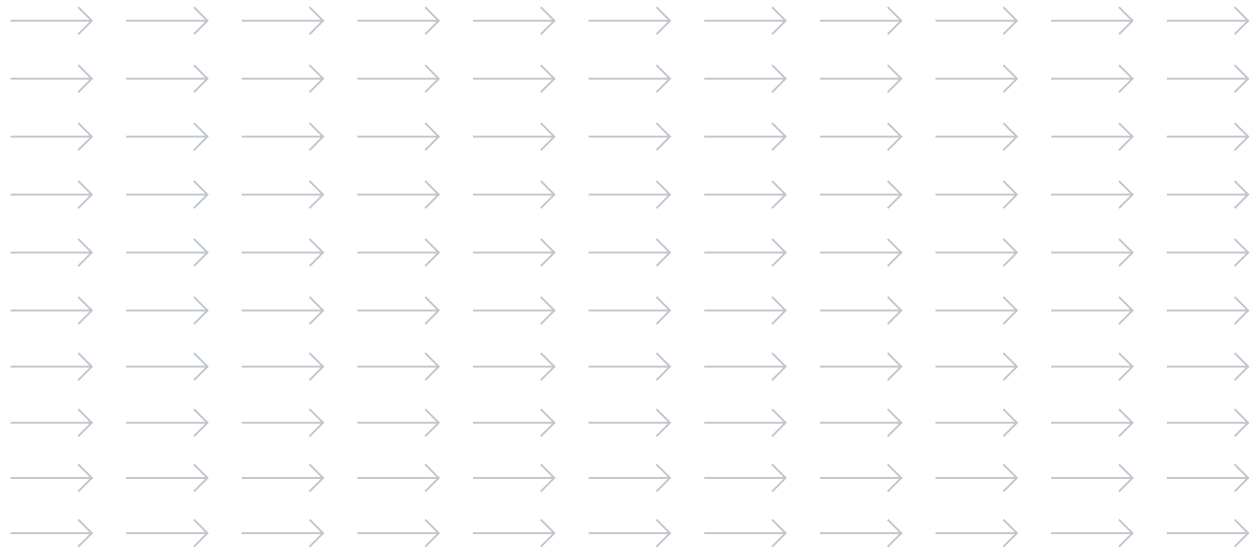
Strategy A:
Maintaining to optimize investments

In the parable about the tortoise and the hare, consistency and steadiness ultimately won the race. The majority of the CSPs surveyed appear to be taking a similar approach in their race to 2030. Their implicit assumption seems to be that staying the course with current priorities—such as providing traditional services in developing countries and enterprise markets—will secure their path to the finish line.

But an emerging factor should be considered: race conditions are changing. Market forces are shifting, driven by pressure from alternative connectivity solutions, such as satellite, and the blurring lines among CSPs, media, and technology vendors. New players in connectivity and from other industries are emerging, yet, perhaps surprisingly, these competitors are cited by less than 10% of respondents aligned with this strategy. A lack of attention to these new dynamics leaves CSPs exposed to multiple risks, including shrinking market share, erosion of customer loyalty, and missed growth opportunities (the latter already a potential issue according to recent IBM IBV research).[2]

"Infrastructure will continue to be critical, but you're going to need to move up the stack to be of greater value to B2B customers."

David Burns
Enterprise Group Executive, Telstra
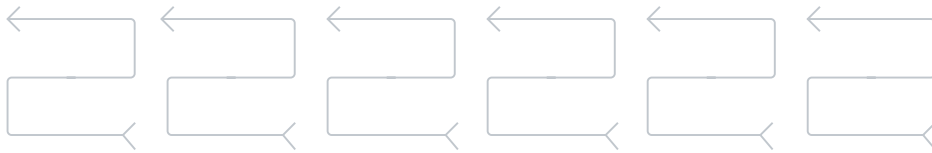
Strategy B:
Expanding for uniqueness

For roughly one-quarter of CSPs, their response to the changes ahead reflects a desire to embrace emerging technologies in pursuit of opportunities and productivity. Innovation (65%) and technology modernization (64%) go hand in hand as their priorities for 2030. As they strive for growth in new geographic markets and with both consumers and enterprise customers, this group values a variety of business partners in the decade ahead, including cloud providers (70%), strategy or consulting providers (65%), network equipment providers (57%), and niche solution providers (50%)— a point echoed by telecom leaders in other IBM IBV research.[3]

Nokia Chief Strategy and Technology Officer (CSTO) Nishant Batra explains some of the implications of this enterprising approach. "Telecom operators have to evolve themselves to prove they can be part of that value exchange," he says. "They will have to make massive changes in terms of capabilities, competence, and leadership mindset. They have to invest in software as well as assets and capabilities around the software."

Batra notes that for the "plumbers of the world," the future is twofold. First is their role as traffic carriers where the level of complexity is surging. He expects network traffic to be 10 times or more higher, latencies to be 10 times or less lower, while millions of devices and new vectors like locations, localization, and positioning will come into play. "And what excites us is that this complexity allows us to know and evolve technology," he says.

On the other hand, "we don't want to be relegated to numbers. We want to create some value for ourselves as well, so that becomes the question in 2030," Batra continues. "Some of that value comes from simply evolving the business model of selling subscriptions to also selling APIs. We see how we can create enough levers for the industry to monetize exposure of our products by allowing APIs to be consumed, and we're enabling that on the back end with concepts like network slicing."

Strategy C:
Reorienting for a wholesale model

Whether overtly or otherwise, 13% of CSPs may be on course to redefine themselves by 2030, according to our survey analysis. This group, more than the others, anticipates greater competition in 2030, including a quarter (26%) foreseeing pressure from new organizations enabled by APIs and eSIMs. Additionally, with the trend toward consolidations, mergers, and acquisitions among companies in the telecom, media, and technology industries, some CSPs will likely be absorbed.[4] Others may become targets for takeovers if they fail to anticipate or respond appropriately to technological advancements, competitive pressures, and regulatory changes. As new or expanded consumer businesses offer a range of services—from connectivity to content—some CSPs may become back-end providers of network infrastructure and services.

For CSPs previously focused on consumer services, this outlook would be a significant business model shift as they become providers of wholesale services to other companies such as mobile virtual network operators (MVNOs), technology providers, and content providers. The change is already in motion for some CSPs, which, over the last few years, have divested their cell tower infrastructure or fiber optic networks to create standalone telecommunications infrastructure companies that provide wholesale services. These neutral hosts also anticipate helping CSPs to monetize their 5G networks faster to support use cases such as smart cities and emergency response.[5]

Juniper Networks CTO Raj Yavatkar foresees opportunities for CSPs in this different role. "They can act as managed service providers for large enterprises," he explains. "But they have to go beyond connectivity ... they have to uplevel it (connectivity) to complete vertical integrated solutions."
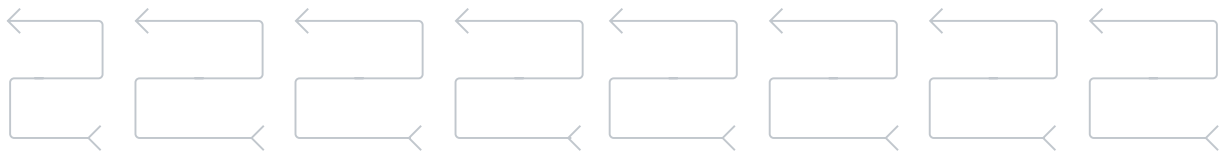
"They (wholesalers) can act as managed service providers for large enterprises, but they have to go beyond connectivity ... they have to uplevel it (connectivity) to complete vertical integrated solutions."

Raj Yavatkar
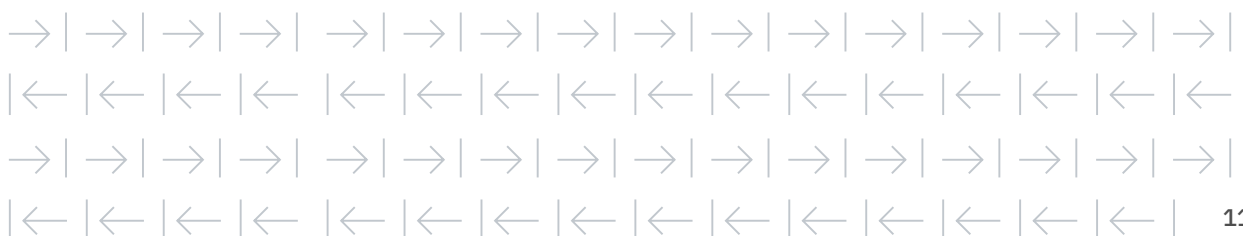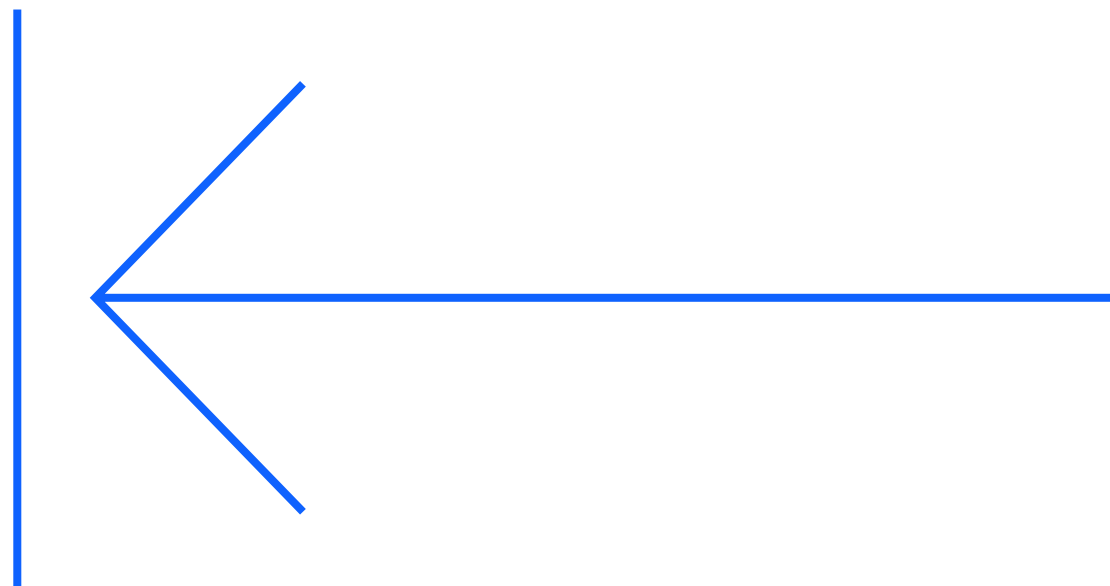CTO, Juniper Networks

Strategy D:
Contending with turbulent events

The waves of disruption in recent years have been unprecedented, from the pandemic to geopolitical conflicts to natural disasters—and the pattern isn't expected to wane. For example, recently surveyed global government leaders expect shock events to be more frequent and more severe.[6] Given this, it is not surprising that 8% of our respondents foresee themselves focused on contending with external events. Some already are.

In Ukraine, operator Kyivstar has been struggling to stay connected, noting that 35% of its sites in the Chernihiv and Kyiv regions were destroyed by combat forces in 2022.[7] In Gaza, virtually all communications—including mobile phones and the internet—have been completely cut off at times.[8]
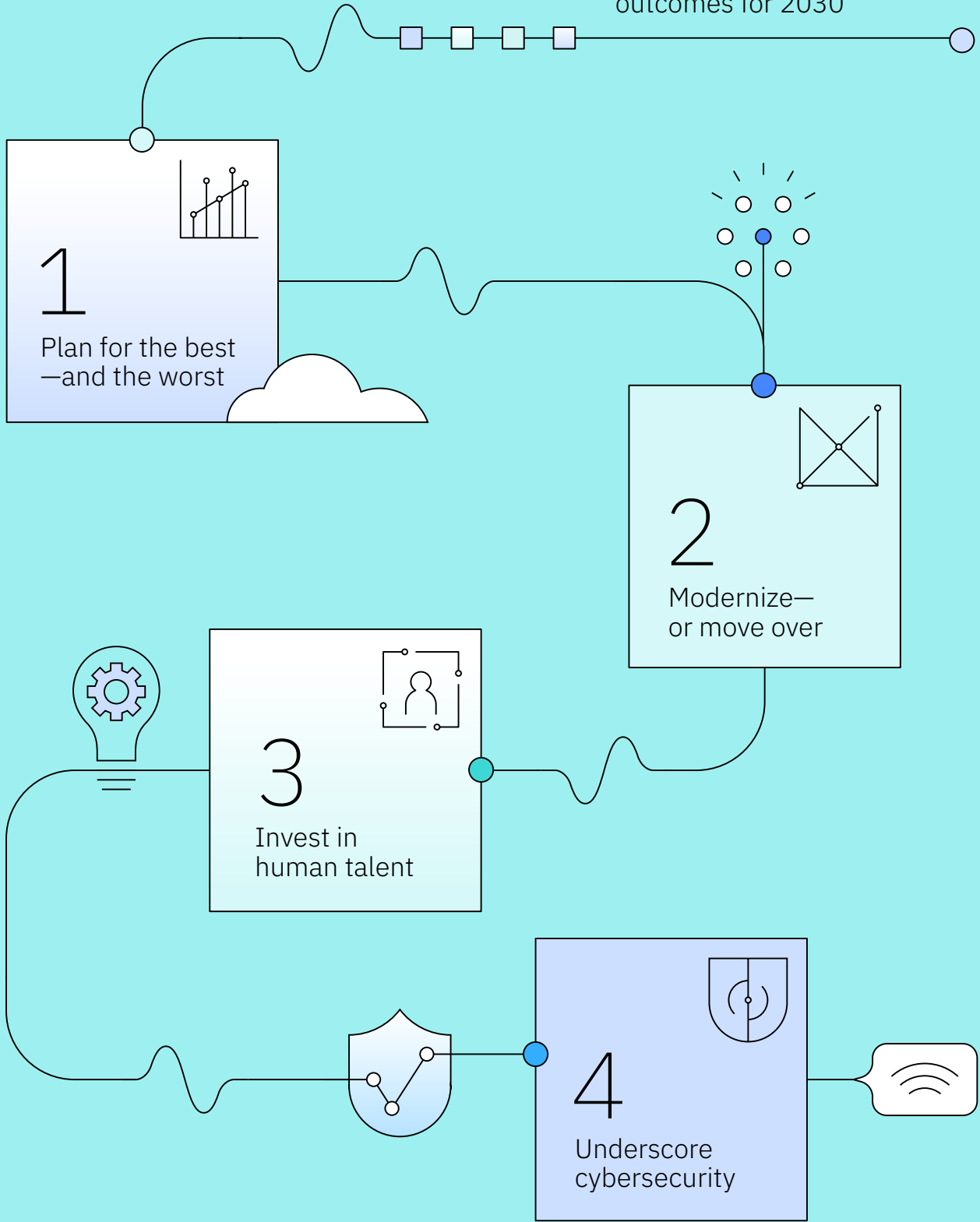
On a very different front, some CSPs have been battling extreme weather events. In 2022, Bell Canada spent roughly $30 million and 25,000 hours of overtime responding to the damage caused when a post-tropical storm hit the country's Atlantic coast. Elsewhere in Canada, when wildfire flames engulfed Alberta's forests in May 2023, operator TELUS had to ship portable towers for cellphone service to Edmonton; the next month, a fire forced closure of the major east-west route on Vancouver Island, so TELUS rerouted one of the portable towers to provide connectivity to a remote area being used as a detour route.[9]

Such heightened threats to networks require all CSPs to anticipate disruption—but without letting a focus on reacting supplant business planning. It's possible that crisis events become so commonplace, responding becomes business as usual.

Four

critical steps to orchestrate
outcomes for 2030

1
Plan for the best
—and the worst

2
Modernize—
or move over

3
Invest in
human talent

4
Underscore
cybersecurity

Part two:
Four critical steps to orchestrate outcomes for 2030

Based on our research findings and interviews, we identified four steps essential to any of the strategic approaches taken by CSPs.

For each step, we've created an action guide to highlight specific moves that can help ready an organization for 2030. A proactive approach to planning, tech modernization, talent investment, and cybersecurity—underpinned by a growth mindset—can help CSPs stay on pace for a decade of opportunity.

A proactive approach to planning, tech modernization, talent investment, and cybersecurity can help CSPs stay on pace for a decade of opportunity.

"Heightened threats should not get in the way of business. But they do require CSPs to assume and proactively plan for the worst."

Ibrahim Gedeon
CTO, Canadian-based TELUS

Step 1:
Plan for the best—and the worst

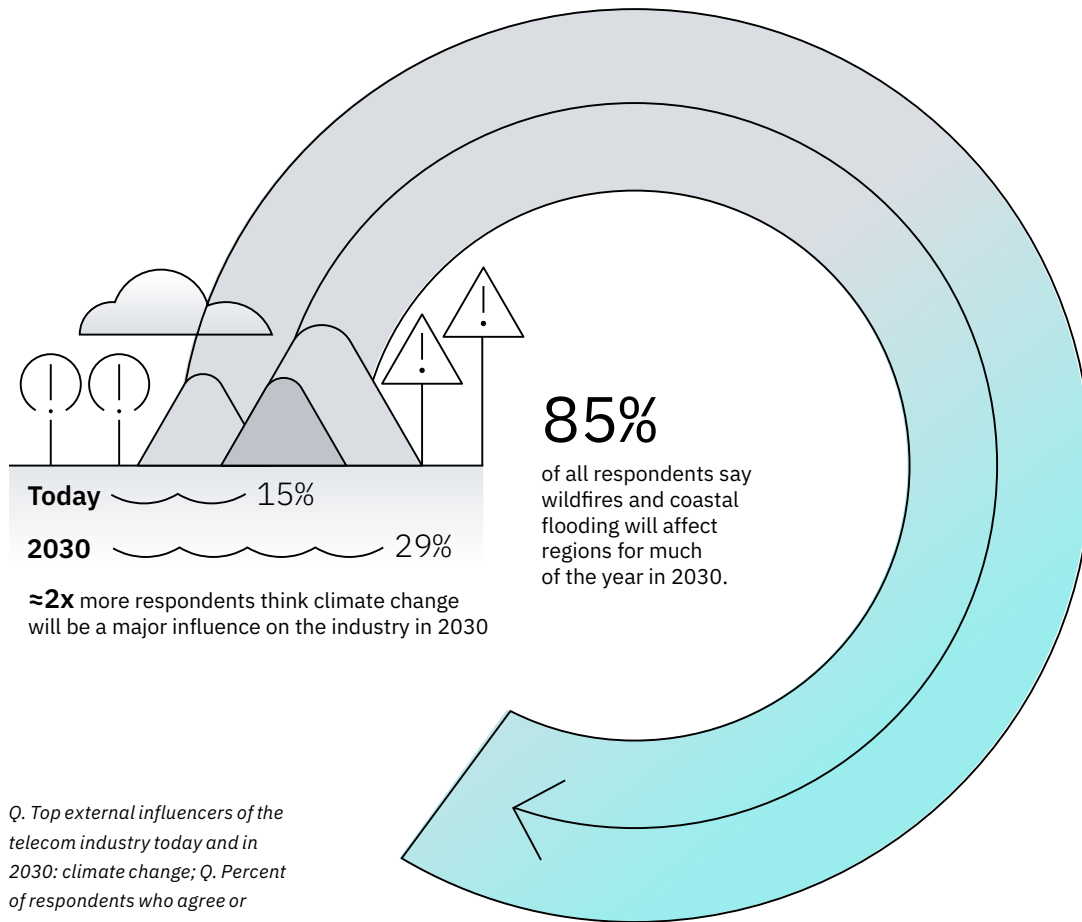**Move from predictions to probabilities.**

To get ahead of the unexpected, Juniper's Yavatkar regularly solicits suggestions from a diverse group of stakeholders—sales, marketing, engineering, architecture, partners, and customers. He then evaluates the efficacy of each idea, narrowing the list to three or four that are taken forward through a 12- to 18-month incubation period. "When a disruption happens in the industry, we are often the last to find out as the incumbents," Yavatkar says. "This has been my way to create a funnel of ideas and a systematic way to marshal that. And while we have been able to incubate ideas very quickly, we've also been able to react very quickly to some of the disruptions that came."

Yavatkar is representative of a group of respondents in our study analysis who are distinguished by their use of multiple planning tools. These techniques yield a more diverse and well-rounded understanding of their environment, challenges, and opportunities. They help move CSPs beyond predictions to a probabilistic approach that gives them the dexterity to try different paths and choose the best fit. The methods used most by surveyed organizations include PESTLE analysis (65%), Porter's Five Forces (58%), scenario planning (58%), and balanced scorecard (58%).[10]

Given the increasing impacts of global warming, disaster readiness becomes a critical component of planning. Respondents are united in their concern about climate change; those expecting it to influence the industry nearly doubles from today to 2030 (see Figure 2). In fact, 85% of all respondents say wildfires and coastal flooding will affect regions for much of the time in 2030.

Telecom executives' concern about climate change impacts almost doubles going forward.

85%

of all respondents say wildfires and coastal flooding will affect regions for much of the year in 2030.

Today ～～ 15%

2030 ～～～ 29%

≈2x more respondents think climate change will be a major influence on the industry in 2030

Q. Top external influencers of the telecom industry today and in 2030: climate change; Q. Percent of respondents who agree or strongly agree with the statement.

CTO Ibrahim Gedeon of Canadian-based TELUS, whose organization has been battling weather-fueled turmoil, says these "heightened threats should not get in the way of business. But they do require CSPs to assume and proactively plan for the worst."

"There's a fine balance between classic redundancy in the network and building in independence to suit this new world where we need to limit the impact of disasters," says Gedeon, who points to network aggregation as an example. "Disaggregation of the network helps limit the impact of disasters for those who would otherwise be cut off from the population."

He emphasizes the importance of building relationships to coordinate disaster response.

"In times of national emergencies, we need not only new technology solutions, but new business models and collaborations—even with competitors—to support the citizens," explains Gedeon. At TELUS, he says that translates into "regular training, drills, and tabletop exercises within the company as well as participation in broader exercises that simulate responses across all responding organizations— critical to ensuring timely and correct actions."

While troubled by the effects of global warming, the industry appears to struggle with how to lower its own contributions to climate change (see Perspective, "Sustainability barriers to overcome"). Several challenges stand in the way of CSPs' efforts to operationalize sustainability.
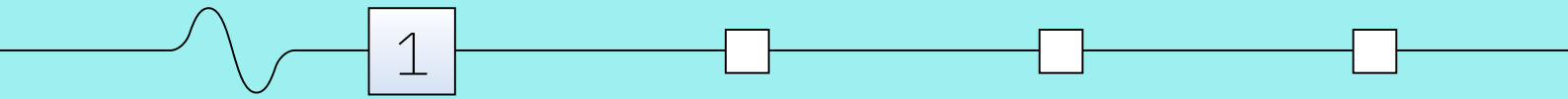
Perspective

Sustainability barriers to overcome

An important aspect of planning for the future is how to run networks sustainably, says Nokia CSTO Nishant Batra. He notes the expectation that 6G technology can reduce power consumption in half (compared to previous generations) while handling substantially more traffic.

Yet in our study, 81% of executives expect the telecom industry will lag behind other industries in achieving sustainability goals in 2030. In a separate 2023 IBM IBV survey, telecom execs said multiple aspects of their organizations need significant transformation to support sustainability objectives, including IT systems and partner governance. Data problems in particular loom as a barrier to progress—from poor internal and external data availability, to insufficient data stewardship and governance, to inadequate data security. Also, nearly half of respondents said significant or profound change is needed around organizational culture to achieve their sustainability objectives.[11]

Instead of seeing sustainability as standalone initiatives, organizations need to integrate it throughout operations. Modernizing the technology infrastructure and strengthening data management, both internally and across their ecosystem, can help CSPs move toward operationalizing sustainability.
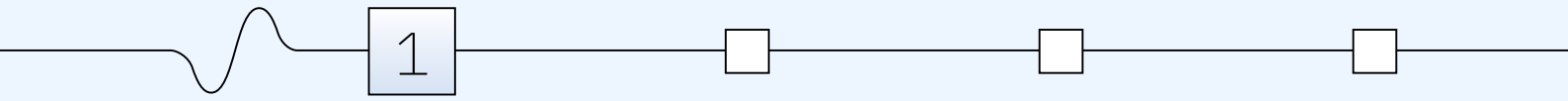
Action guide

Anticipate the future with greater rigor

■ Review your current planning methods. Are you using several different approaches, and do they provide a comprehensive view of internal and external forces impacting the business? Do you use a cross-functional strategy team to gain perspectives from all areas of the business?

■ Incorporate AI into planning by researching and selecting appropriate AI-based tools that can help with accomplishing specific goals, such as improving response times, optimizing resources, enhancing predictive capabilities, or simulating network response.

■ Define clear, accurate measures of efficiency and effectiveness for sustainable operations.

Step 2:
Modernize—or move over

Modernize technology to innovate relentlessly, operate efficiently, and respond effectively to disruption.

Spurred by rapid technological progress in 5G, IoT, AI, and edge computing, the digital terrain for the telecom industry is transforming at breakneck speed. Failure to embrace advanced technologies puts organizations at risk of losing revenue to rivals that do.
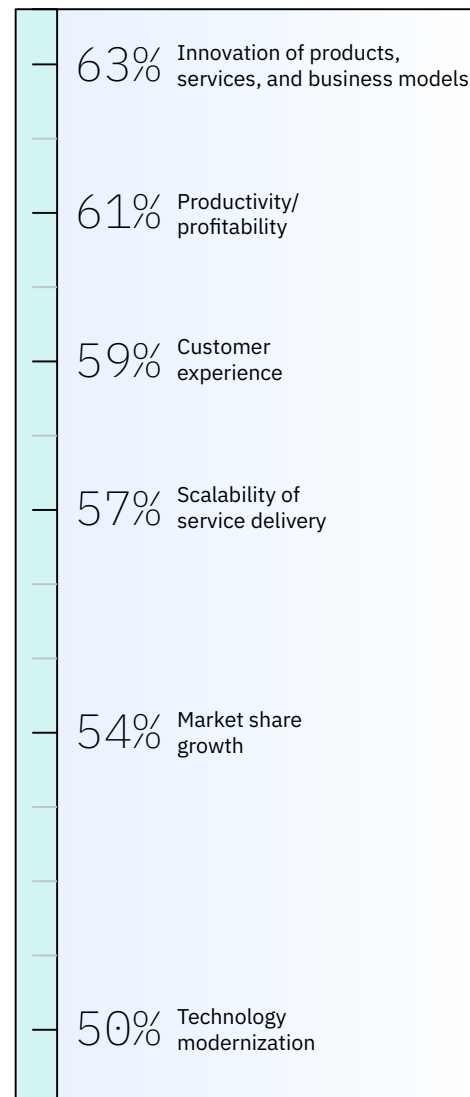
For most of our respondents, technology modernization starts with cloud computing. Nearly three in four are committed to cloud as a top technology for 2030. "Cloud will just become a way of doing things," says Airtel CTO Randeep Sekhon. "But it will become more of a background play rather than a foreground play in my mind."

AI adoption is critical as well (see Perspective, "How AI is changing the telecom game—now"). "Generative AI is already showing very high potential," says Airtel's Sekhon. "In six years, it will definitely be a mainstay like machine learning is today. It will be a tool that we use every day in our personal lives, and more mature tools will be used in the enterprise."

But our survey respondents' commitment to technology modernization varies. For example, executives aligned with the "Maintaining" strategy don't rank technology modernization in their top five priorities today or in 2030. They do prioritize innovation alongside productivity, scalability, and growth goals (see Figure 3), but perhaps need to consider more closely the role advanced technologies can play in unlocking success for their leading agenda items.

FIGURE 3

Those CSPs aligned with the "Maintaining" approach appear to be missing the connection between technology modernization and innovation.

63% Innovation of products, services, and business models

61% Productivity/ profitability

59% Customer experience

57% Scalability of service delivery

54% Market share growth

50% Technology modernization

Q. Which of the following represent your organization's highest priorities in 2030?

How AI is changing the telecom game—now

"The pace at which AI has changed over the last 12 to 14 months is scary. We don't know where we're going to go. But I am optimistic. We are going to see more efficiency, and we are starting to see this already in areas like marketing. By 2030, AI will be the norm. We aren't going to think about it."

Raj Yavatkar
CTO, Juniper Networks

Although AI maturity will continue to accelerate over the next six years, surveyed telecom executives remain reticent: only around half said AI/ generative AI was a top five technology for 2030. DISH Executive Vice President and CTO Eben Albertyn speculates that the current distrust issues in generative AI—such as hallucinations—may be restraining eagerness. "We're going to be in for a tough time the next five years with AI, but our ability to understand all of this is going to get a lot better," Albertyn says. "I don't think the importance of AI will go down, because once we've caught up with being able to administer, govern, and adjudicate what happens in these models, we'll be able to use them more successfully. And I think that will happen long before 2030."

The telecom industry is well suited for AI because it runs on standards and protocols, says Albertyn. "Standards and protocols have rules, and rules help models to train," he explains. "There's a huge amount of traffic flowing on the communications networks and a huge amount of use cases can sit within that, which means the ability to have AI trained to understand telecommunications is perfectly married."

Today, generative AI can already help network operations technicians as well as field and site technicians by auto-generating trouble tickets and documenting actions and resolutions. As telecom-specific foundation models are developed over the next two to three years, generative AI use cases can become exponentially more powerful. Examples include network performance optimization (signal strength and quality, spectrum usage, load balancing, and more), traffic analysis and classification (5G CORE and transport optimization and dynamic application assignment to 5G slices), and network data pattern analysis (root cause analysis and fault isolation).

Telstra's Burns is enthusiastic about the potential of generative AI. "I'm excited about data-based AI moving into this open source, open world of large language models," he says. "It's going to completely change how people interact, the way we develop solutions, the way we develop propositions. I know it's going to be dramatically different."

"Generative AI is already showing very high potential. In six years, it will definitely be a mainstay like machine learning is today."

Randeep Sekhon
CTO, Airtel

Looking more specifically at those technologies that will continue to mature over the next few years, differences again emerge. For instance, leaders aligned with the "Maintaining" scenario show less interest in edge (48%), 6G (48%), and quantum computing (27%) than those aligned with the "Expanding" scenario, who prioritize 6G (73%) and edge (58%) and whose intrigue with quantum computing increases nearly eight times from today (6%) to 2030 (47%; see Figure 4).

FIGURE 4

"Expanding" strategy respondents are more enthusiastic about some emerging technologies in 2030 than "Maintaining" strategy respondents.

Expanding approach

1 | **73%** 6G
2 | **58%** Edge
3 | **52%** Automation
4 | **50%** AI/generative AI
5 | **47%** Quantum
6 | **44%** IoT devices

Maintaining approach

1 | **64%** IoT devices
2 | **61%** AI/generative AI
3 | **48%** Edge
4 | **48%** 6G
5 | **36%** Automation
6 | **27%** Quantum

Q. What are the top 5 technologies you see as critical to your organization's success in 2030?

As these technologies develop, they can fuel new solutions for revenue generation. Take edge computing, which helps enable more robust solutions and builds resilience in the case of network disruption. "The edge will play a very important role because if we are looking at AI use cases for consumers—whether for work or for entertainment—they will all need to be rendered near the consumer to meet their demands for speed," notes Airtel's Sekhon.

Combined with classical computing, quantum computing offers the ability to solve problems once considered out of reach. Telecom use cases include securing communications, optimizing network performance, and refining the antenna tilt to improve radio link frequency.[12]

What about 6G? The technology is still in the early stages of standards development, advises one expert, and is not likely to be ready for deployment by 2030. When 6G does roll out, it will be much more than just a faster 5G—it is expected to power innovative enterprise use cases such as autonomous vehicles.[13] CSPs need to begin anticipating its potential. "It is driving the trend for the network to become an integrated platform that supports the convergence of connectivity, intelligence, and compute," the expert explains.

"The edge will play a very important role because if we are looking at AI use cases for consumers—whether for work or for entertainment—they will all need to be rendered near the consumer to meet their demands for speed."

Randeep Sekhon
CTO, Airtel

Action guide

Live at the forefront of technology trends

■ Establish a dedicated, cross-functional team responsible for identifying, overseeing, and executing technology modernization initiatives.

■ Assess the organization's technology infrastructure, software, and tools to identify areas that require modernization or improvement.

■ Set clear, measurable, time-defined goals for technology modernization initiatives that align with the organization's overall business goals.

■ Allocate financial resources, personnel, and time to technology modernization projects. Involve your financial operations team so you can temper the business case for emerging technologies around knowns and unknowns and help prevent disillusionment from overhyped expectations.

Step 3:
Invest in human talent

Equip the workforce with a new set of skills—from technology to people management.

With the rapid adoption of advanced technologies, tech-savvy talent becomes critical. Overall, respondents recognize a shift will be needed from telecom-specific capabilities today to other technology capabilities. But respondents who align with the "Expanding" approach are also prioritizing "soft skills" such as critical thinking (see Figure 5).
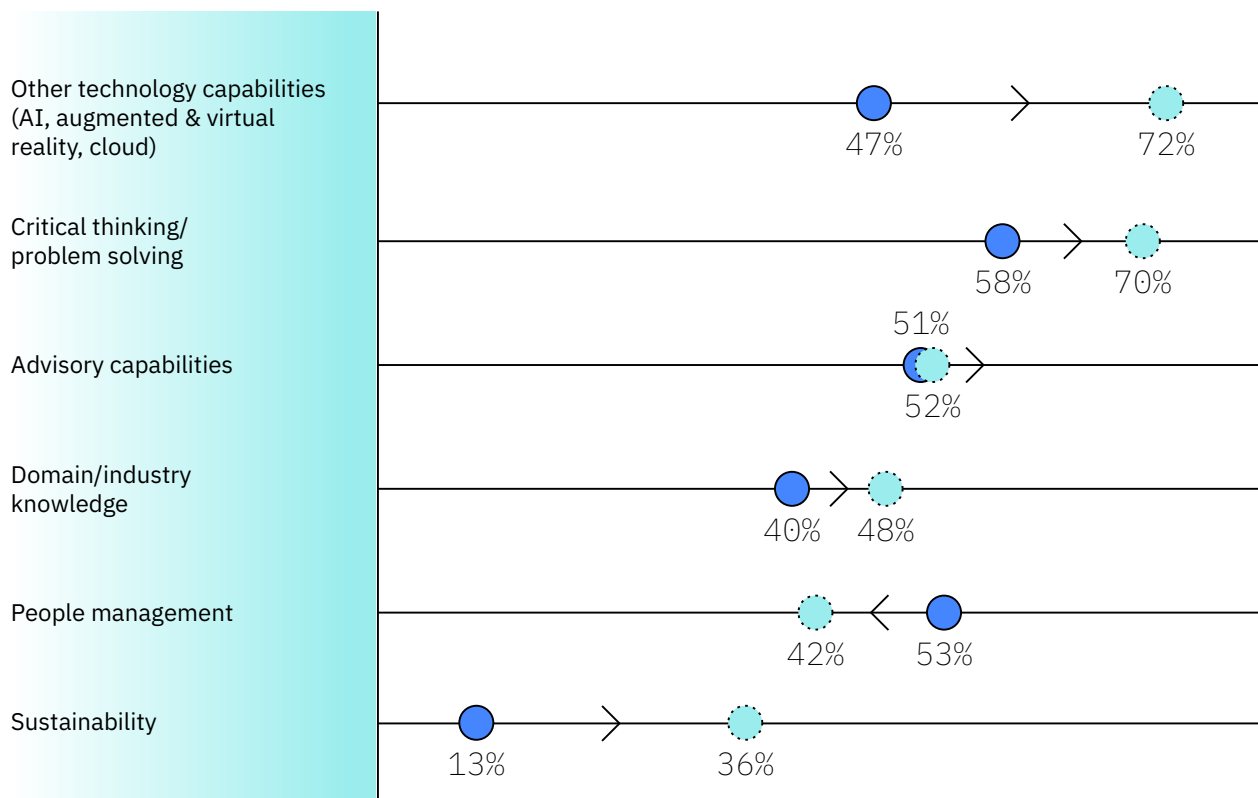
Telstra's Burns observes, "We are categorically going to go from being product salespeople to value, data, and analytics insights people. The ability to understand industries and companies—horizontal issues like workforce safety, workforce management, or remote monitoring and diagnostics—is a far different world than selling fiber connectivity that will link from point A to point B. People will need to be much more consultative in how they position themselves in front of customers."

FIGURE 5

"Expanding" approach respondents foresee skill requirements extending beyond technology to meet the demands of innovation and new business models.

● Today   ○ 2030

Most important skills

Other technology capabilities (AI, augmented & virtual reality, cloud) — 47% → 72%

Critical thinking/problem solving — 58% → 70%

Advisory capabilities — 51% / 52%

Domain/industry knowledge — 40% → 48%

People management — 42% ← 53%

Sustainability — 13% → 36%

Q. What are the most important skills for your organization in 2030?
Responses of executives aligning with the "Expanding" strategic approach.

"We are categorically going to go from being product salespeople to value, data, and analytics insights people."

David Burns
Enterprise Group Executive, Telstra

Attracting top talent may be tough for CSPs. Competition for digitally skilled workers is tight. Early career programs such as internships and apprenticeships can help fill the pipeline, while reskilling and upskilling programs for current employees will continue to be key.[14]

Business partners can also help fill the gaps in technology expertise and remove blinders when problem-solving. Some respondents are looking to startups, which offer CSPs access to leading thinkers and cutting-edge solutions with minimal investment.

"If you're stuck with tunnel vision around something, startups—which tend to have a very fresh perspective—can help you find the opportunity you can pursue," explains DISH's Albertyn. "You might be staring yourself blind against the risk or threat, but the threat in and of itself always creates an opportunity. If you can't see it, you may need help to see it, and that could most frequently come from partnerships."

The AI revolution will also continue to impact the workforce. In recent IBM IBV research, telecom executives estimated that 40% of their workforce will need to reskill due to AI and automation implementation over just the next three years.[15] As our respondents look ahead to 2030, 91% say that AI will significantly reduce the number of personnel required by their organizations to manage core functions, such as networks and customer service.

CSPs will need to embrace the age of the augmented workforce, which includes restructuring their operating models to optimize human-machine partnerships. As an example, generative AI can transform the contact center experience for both employees and consumers with powerful self-service functionality and streamlined call analysis—even turning customer care into a revenue generator.[16]

Action guide

Tackle the talent drought and bridge the skill chasm

- Assess the current skills and knowledge of your workforce to identify gaps in understanding or proficiency related to emerging technologies such as AI, quantum computing, or others.

- Identify and organize internal or external training programs and workshops focused on emerging technologies. Consider online platforms and look to industry associations for learning opportunities and innovation challenges.

- Partner with local education establishments to create internship/ apprenticeship programs that fill the pipeline for future employees.

- Assess the market and identify potential partners that align with your strategic goals, technology needs, and target markets. Consider technology providers, network equipment vendors, cloud service providers, content providers, and startups.

Step 4:
Underscore cybersecurity

Prioritize regulatory compliance and security as a differentiator.

With an abundance of user data and a key role in security authentication, telecom companies present an increasingly lucrative target for cybercriminals. In fact, in just the first two months of 2023, more than 74 million private records tied to customers of multiple CSPs were leaked to the dark web, according to Cyble Research and Intelligence Labs—mostly through third-party vendor networks.[17]

"In a more highly connected world, the avenues to a security incident increase," notes Airtel's Sekhon.

Yet in our survey, only about half of executives cite cybersecurity and data privacy as a top priority for 2030 (see Figure 6). This is despite the fact that 82% of respondents predict a world where distrust in information is pervasive—driven by fake news and data—making it difficult for organizations and individuals to know what is real. Troubling disinformation campaigns often rely on misused personal data to manipulate individuals, making data protection and privacy even more of an imperative for CSPs.

"I do believe that the regulatory environment is a big differentiating advantage for telcos."

Raj Yavatkar
CTO, Juniper Networks

FIGURE 6

Despite worries about the impact of fake data on the world, only half of executives cite cybersecurity/data privacy as a top priority in 2030.

Q. Extent you agree with what cybersecurity will be like in 2030; percentage represents responses of agree or strongly agree with the statement: Distrust has become pervasive with governments and individuals challenged to understand what is real due to fake news and data.

Q. Organization's highest priorities today and in 2030: Cybersecurity and data privacy.

82%
Executives predict information distrust will be pervasive, driven by fake news and data.

Today 42%
2030 52%

Cybersecurity and data privacy barely increases as a priority for all respondents
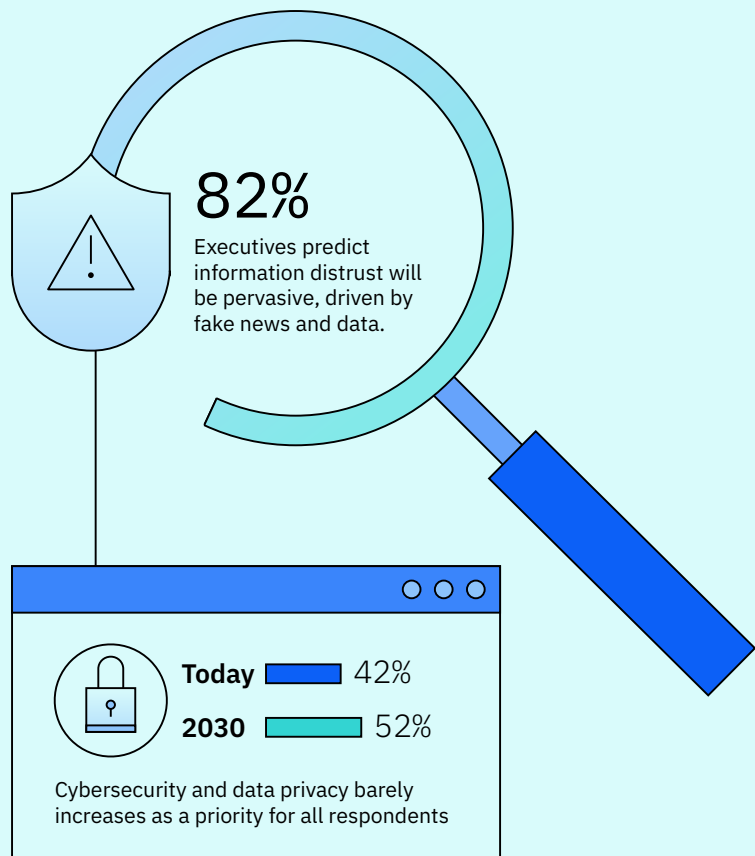
Surveyed executives are counting on quantum computing as essential to their cybersecurity solutions in 2030. Nearly three in four (74%) anticipate quantum-safe algorithms and cryptography will reinforce the security of their networks and organizations.

However, DISH's Albertyn cautions: "The axiom that I work from when it comes to any form of security is that any human-made system, whether physical, electronic, or otherwise, can be broken by another person," he says. "That then extends that any computer-generated system can be undone by a computer." Developing a quantum-safe roadmap for the telecom industry cannot wait.[18]

Nokia's Batra says that in addition to quantum-secure networks, his company is also considering how to move toward homomorphic encryption, where data remains encrypted and can be shared while remaining unreadable by those doing computations on the data.[19] "For us, the whole evolution to next levels of encryption is massive," Batra says. "When we are connecting the whole world, it is imperative that we make sure they feel the connection is secure."

Governments agree. Telecommunications is a highly regulated industry, but CSPs can leverage this to their benefit, says Juniper's Yavatkar. "I do believe that the regulatory environment is a big differentiating advantage for telcos," he says. "First, the data sovereignty concept means that data has to be protected within geography boundaries. Second, when it comes to personally identifiable information, as well as location and data usage information, telcos are allowed to use all that information under regulation, and it's normally not used. Those two aspects are big differentiators because you can now build value-added services."

As CSPs adopt emerging technologies and adapt their business models to engage new industries, regulations may well become more complex. Still, demonstrating regulatory expertise and robust security to new customer bases can give CSPs an edge.

"The axiom that I work from when it comes to any form of security is that any human-made system, whether physical, electronic, or otherwise, can be broken by another person. That then extends that any computer-generated system can be undone by a computer."

Eben Albertyn
Executive Vice President and CTO, DISH

Action guide

Supercharge data security

■ Establish a checklist for vetting vendors thoroughly against strong security standards before entering into partnerships. Include security policies, procedures, certifications.

■ Assign a dedicated team or individual to monitor and stay informed of regulatory changes for data protection and privacy and to use compliance management software to automate and streamline regulatory compliance processes.

■ Work with your HR department to ensure security responsibilities and training requirements are integrated into job descriptions at all levels of the organization.

■ Identify written resources as well as training opportunities to educate your security workforce on quantum-safe cryptography. Begin evaluating your existing infrastructure to understand current cryptographic capabilities so you can be proactive in considering post-quantum-safe cryptography solutions.

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Study approach and methodology

The IBM Institute for Business Value, in cooperation with Oxford Economics, surveyed 1,850 telecommunications industry executives from 23 countries. Roles included CEOs, CIOs, Chief Strategy Officers, CTOs or Chief Networks Officers, Heads of enterprise business divisions, and Heads of consumer divisions. The IBM IBV mapped survey questions to four potential strategic approaches for 2030: Maintaining, Expanding, Reorienting, Contending. Overall scores to responses were standardized, where each respondent was given a score from 1% to 100% for each approach. The highest score become their final alignment to an approach. IBM generative AI tools were used in the survey analysis and in research for this report.

Interviews

In November and December 2023, we selected executives from leading companies in the telecom industry to interview one-on-one to validate and explore the survey results in more depth. Their expertise is reflected in the report along with select quotes throughout the paper.

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The CEO's guide to generative AI: Cybersecurity

The CEO's guide to generative AI: Cybersecurity. IBM Institute for Business Value. October 2023. https://ibm.co/ceo-generative-ai-cybersecurity

Notes and sources

1   Isidore, Chris. "A flying car prototype just got an airworthiness certificate from the FAA." ABC7News. July 4, 2023. https://abc7news.com/flying-car-alef-automotive-model-a-federal-aviation-administration/13458438/; Almagor, Aviad. "Brain-computer interfaces and the future of user engagement." *Fast Company*. November 7, 2022. https://www.fastcompany.com/90802262/brain-computer-interfaces-and-the-future-of-user-engagement

2   Rose, Stephen, Rahul Kumar, and Priya Kurien. *Telecoms' blind spot: Hidden opportunities to drive revenue growth.* IBM Institute for Business Value in partnership with GSMA Intelligence. September 2023. https://ibm.co/telecoms-revenue-opportunities

3   Ibid.

4   "Global M&A Trends in Technology, Media and Telecommunications: 2023 Mid-Year Update." PwC. Accessed December 7, 2023. https://www.pwc.com/gx/en/services/deals/trends/telecommunications-media-technology.html

5   "Neutral hosts: A route to greater 5G profitability for CSPs?" Nokia. Accessed January 5, 2023. https://www.nokia.com/thought-leadership/articles/neutral-hosts-path-to-5G-profitability

6   Mihm, J. Christopher, Rob Handfield, and Tony Scott. "Preparing governments for future shocks: A roadmap to resilience." IBM Institute for Business Value in collaboration with the National Academy of Public Administration and the IBM Center for The Business of Government. October 2023. https://ibm.co/government-future-shocks-resilience

7   Wooden, Andrew. "Telecoms at war: How Ukraine is fighting to stay connected." September 15, 2022. *Telecoms.com*. https://www.telecoms.com/5g-6g/telecoms-at-war-how-ukraine-is-fighting-to-stay-connected

8   Simon, Scot and Greg Myre. "Communications have been cut off in Gaza, making rescue efforts even more difficult." October 28, 2023. NPR. https://www.npr.org/2023/10/28/1209246893/communications-in-gaza-cut-off

9   Posadzki, Alexandra. "Telecoms are a lifeline when disaster strikes, but climate change is putting infrastructure at risk." June 29, 2023. *The Globe and Mail*. https://www.theglobeandmail.com/business/article-telecom-networks-climate-change-weather/

10 Wiles, Jackie. "What Functional Leaders Should Know About Scenario Planning." Gartner. July 8, 2022. https://www.gartner.com/smarterwithgartner/what-functional-leaders-should-know-about-scenario-planning; "Balanced Scorecard Basic." Balanced Scorecard Institute. Accessed December 5, 2023. https://balancedscorecard.org/bsc-basics-overview/; "What is PESTLE analysis?" PESTLE Analysis SWOT and Business Analysis Tools. Accessed December 5, 2023. https://pestleanalysis.com/what-is-pestle-analysis/; "Porter's

5 Forces Explained and How to Use the Model." Investopedia. October 30, 2023. https://www.investopedia.com/terms/p/porter.asp

11 Short, Stacy, Darriel Dawne, Anthony Marshall, and Steve Peterson. *ERP in the eco-conscious organization: The nexus between environmental and financial achievements*. IBM Institute for Business Value in partnership with SAP. April 2023. https://ibm.co/erp-sustainability. Unpublished data.

12 "Telecommunications and Quantum Computing: The Future of Data Processing." Utilities One. August 7, 2023. https://utilitiesone.com/telecommunications-and-quantum-computing-the-future-of-data-processing; Zander, Tatiana, Ahsan Javed Awan, Jose Outes, Adriano Mendo. "How a real 5G Quantum AI use case could disrupt antenna tilting." Ericsson. September 20, 2023. https://www.ericsson.com/en/blog/2023/9/how-a-real-5g-quantum-ai-use-case-could-disrupt-antenna-tilting

13 Marr, Bernard. "6G Is Coming: What Will Be the Business Impact?" *Forbes*. March 17, 2023. https://www.forbes.com/sites/bernardmarr/2023/03/17/6g-is-coming-what-will-be-the-business-impact/?sh=7089223f2f10

14 Sadeghi, Ahva. "Solving the Telecoms Labor Shortage: How Workforce Development Fills the Gap for Skilled Workers." Accessed December 18, 2023. *The Fast Mode*. https://www.thefastmode.com/expert-opinion/32141-solving-the-telecoms-labor-shortage-how-workforce-development-fills-the-gap-for-skilled-workers

15 Goldstein, Jill, William Lobig, Catherine Fillare, and Christopher Nowak. *Augmented work for an automated, AI-driven world: Boost performance with human-machine partnerships*. IBM Institute for Business Value. August 2023. https://ibm.co/augmented-workforce. Unpublished data.

16 Mascarenhas, Vanessa, Stephen Rose, Rahul Kumar, Gianluca Palumbo, and Priya Kurien. *Elevating telecom customer service: Generative AI answers the call*. IBM Institute for Business Value in association with GSMA Intelligence. July 2023. https://ibm.co/telecoms-customer-service

17 Zurier, Steve. "Wave of telco attacks tied to bad third-party vendor security hygiene." *SC Media*. February 10, 2023. https://www.scmagazine.com/news/wave-of-telco-attacks-tied-to-bad-third-party-vendor-security-hygiene

18 Harishankar, Ray, Dr. Sridhar Muppidi, Michael Osborne, Dr. Walid Rjaibi, and Dr. Joachim Schaefer. S*ecurity in the quantum computing era: The risk is real, the need is now*. IBM Institute for Business Value. December 2022. https://ibm.co/quantum-safe-encryption

19 "What is homomorphic encryption?" IBM website. Accessed December 19, 2023. https://www.ibm.com/topics/homomorphic-encryption