GOING BEYOND DIGITAL TRANSFORMATION

How Verizon Enables Enterprise Intelligence

By Bob Laliberte,

Principal Analyst, Enterprise Strategy Group

AUGUST 2023

Introduction

First used to describe the general digitization of business processes, the term "digital transformation" has been around for years. But new research from Tech Target's Enterprise Strategy Group (ESG) suggests that many companies are now strategically pursuing both "IT transformation" and "business transformation" initiatives with very specific objectives and outcomes in mind. From enhancing cybersecurity and improving the customer experience to driving operational efficiency, these business objectives are causing many companies to revisit their network strategy and design. A more dynamic and distributed approach to network design has emerged, with applications and technology being deployed across corporate locations indoors and out, in legacy data centers, and in public and private clouds. At the same time, connected devices—as a result of the proliferation of the internet of things (IoT) and handheld devices in particular—now play an outsized role in how and why companies invest in their network infrastructure. More and more companies are seeking to turn data into insights and insights into action.

> **"** Research shows that building an effective edge computing capability has already become a top priority for many companies, **and that 5G will have a critical or significant impact on edge computing."**

As organizations deploy massive numbers of IoT devices, IP cameras, autonomous vehicles and artificial-intelligence-driven applications, they will likely find it challenging to collect, analyze, and act on the huge amount of data these devices yield. What's becoming evident as organizations strive to be even more "data-driven" is the need for a network design that provides the high speed, low latency, and edge computing power needed for real and near-real time decision-making and action. 5G connectivity and mobile edge computing (MEC), then, will be key components of networks at truly "data-driven" organizations. In fact, ESG's research shows that building an effective edge computing capability has already become a top priority for many companies, and that 5G will have a critical or significant impact on edge computing. For many organizations, operationalizing these new technologies to achieve the desired business outcomes will require the help of an experienced and trusted third-party partner.
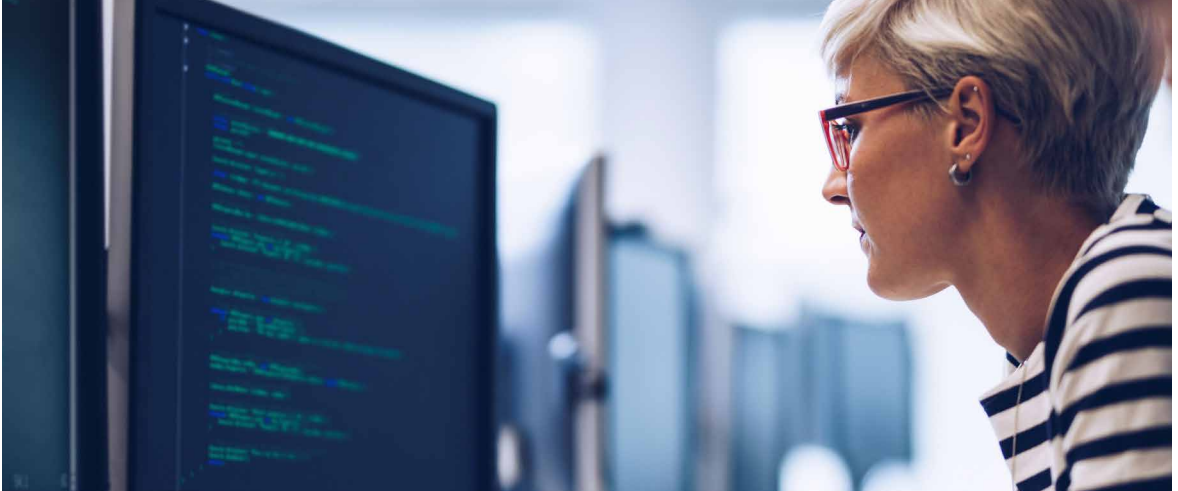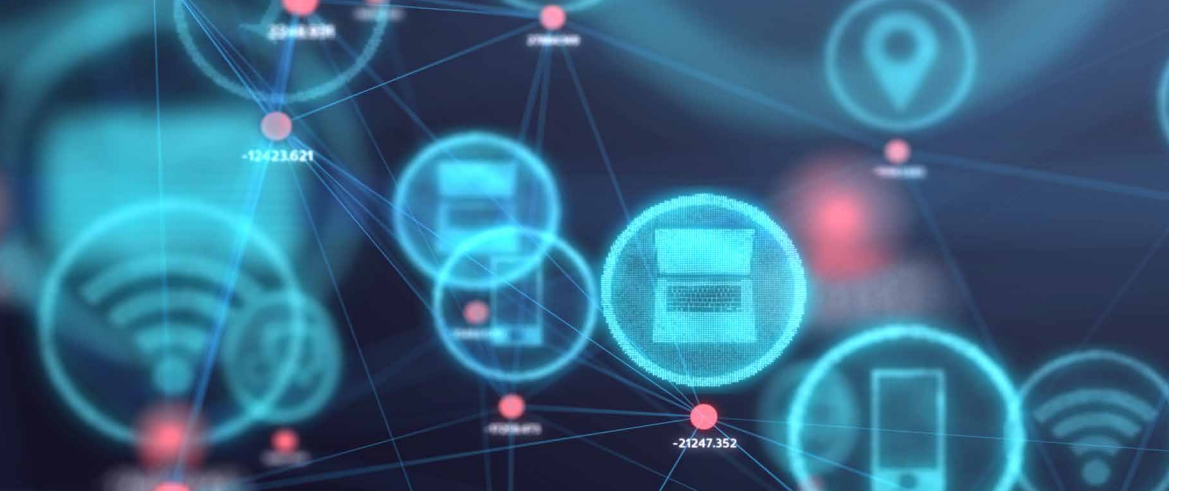
CONTENTS

CLICK TO FOLLOW

Why Enterprises Are Transforming

Why Enterprises Are Transforming

Rapidly changing business environments demand that organizations become more agile. To accomplish this, the vast majority of organizations and enterprises have undertaken a digital transformation initiative. In fact, research by TechTarget's Enterprise Strategy Group indicates that almost 9 out of 10 organizations (88%) are actively engaged in digital transformation initiatives to some degree.[1] Why are organizations investing the time and resource for this? Because their vision for the future is one where IT enables the organization to achieve a number of strategic goals, with the three most commonly cited being the ability to become more operationally efficient, to develop new data-centric products and services, and to provide better and more differentiated customer experiences.[2] It is important to note, however, that these goals can vary by industry, as shown in Figure 2.

Figure 1. Top Three IT Goals for Digital Transformation

54% Become more operationally efficient

47% Develop new data-centric products and services

45% Provide better and more differentiated customer experience
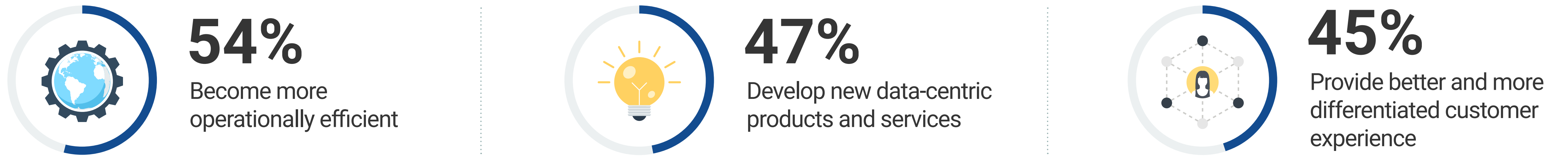
Figure 2. Top IT Goals for Digital Transformation by INDUSTRY

MANUFACTURING	HEALTHCARE	RETAIL/ WHOLESALE	FINANCIAL	TECHNOLOGY	COMMUNICATIONS AND MEDIA	CONSTRUCTION/ ENGINEERING	BUSINESS SEVICES
Become more operationally efficient	Provide better and more differentiated customer experience	Become more operationally efficient	Provide better and more differentiated customer experience	Develop new data-centric products and services	Become more operationally efficient	Become more operationally efficient	Develop new data-centric products and services

1. Source: Enterprise Strategy Group Research Report, *2023 Technology Spending Intentions Survey,* November 2022.
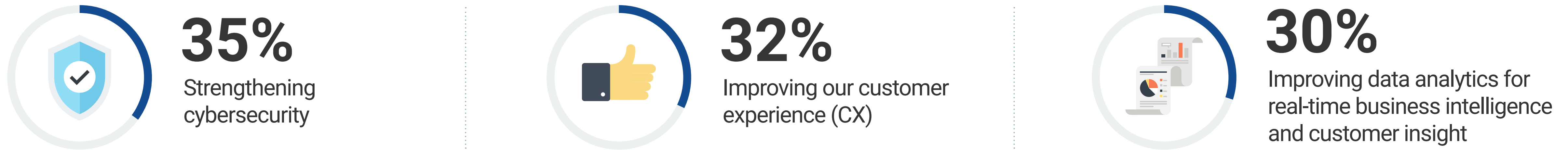2. Ibid.

Business Initiatives Driving Technology Spending

As organizations transform and modernize their IT environments, it is important to understand in what areas investments are being made. Figure 3 highlights the top business initiatives that are driving IT spending.[3] Given the distributed nature of modern IT environments, it shouldn't be a surprise that respondents' most common response was the ability to strengthen the organization's cybersecurity posture.[4] This helps to mitigate the risk from the increased attack surface that comes with a distributed environment with a multitude of connected and mobile devices. Organizations also reported that they want to improve the customer experience to ensure customer loyalty and repeat business. These two goals— security and customer experience—go hand in hand, as security is a critical element to customer loyalty and retention.
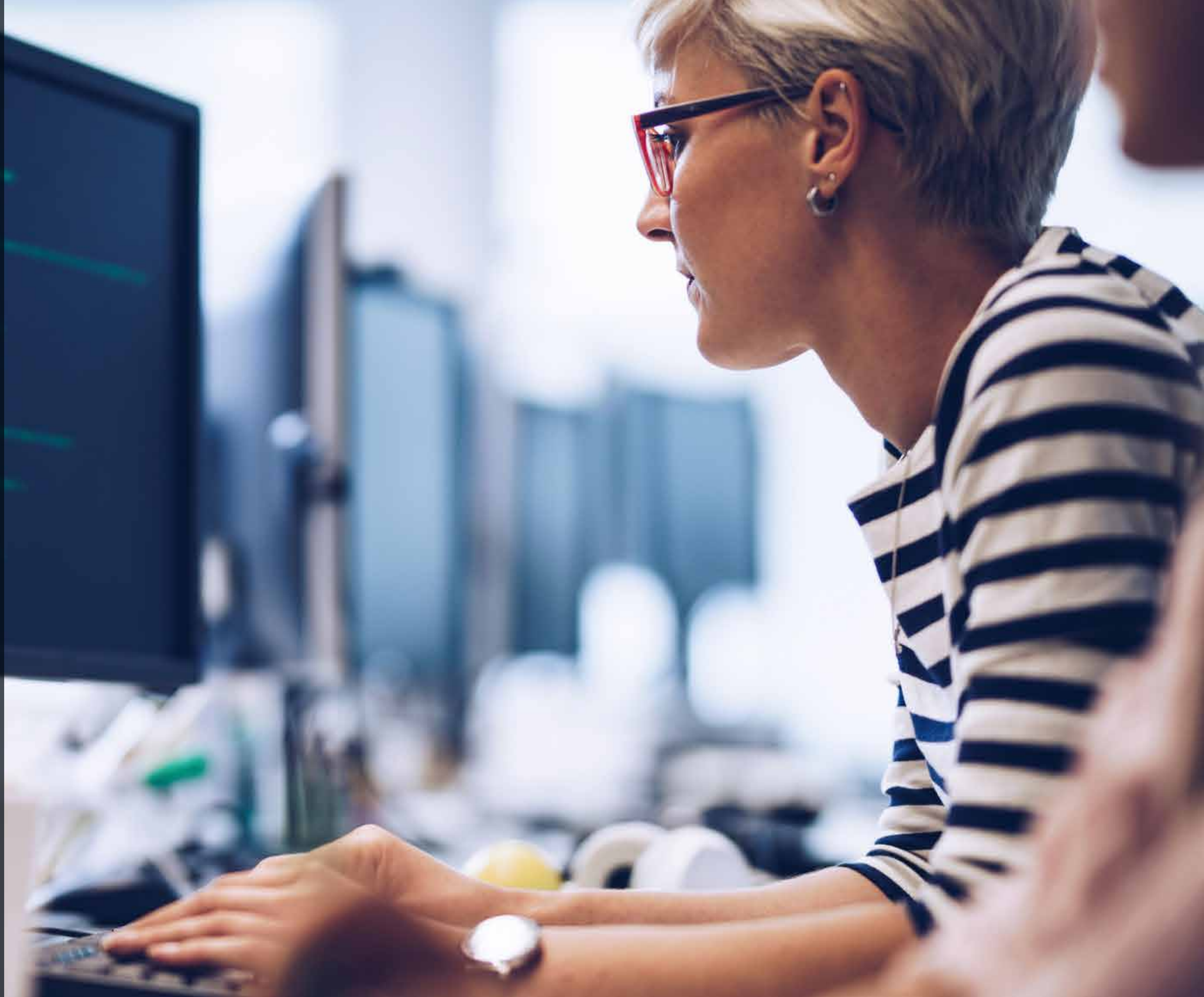
However, the third most commonly cited business objective is the one that goes beyond just optimizing in-place processes; nearly a third of companies say that improving data analytics for real-time business intelligence and customer insights is now a priority. More and more enterprises are discovering that by deploying sensors, IP cameras, and other IoT devices, they can collect data that can provide new insights into the business, its customers, and the opportunities to enact positive operational change. It is important to note that generating the data is only the first step in the process, though. The real value is obtained by analyzing that data in real or near-real time and extracting insights that inform how an organization can improve its efforts to delight customers, protect data, and improve the bottom line.

Organizations, therefore, must have highly secure and highly performant network connectivity to collect the data and the edge computing to process and store that data at the network's edge. If not, the added latency to transmit the data for computation at some distant data center would eliminate the opportunity for extracting near-real time insights.

Figure 3. Top Three Business Initiatives Driving IT Spending
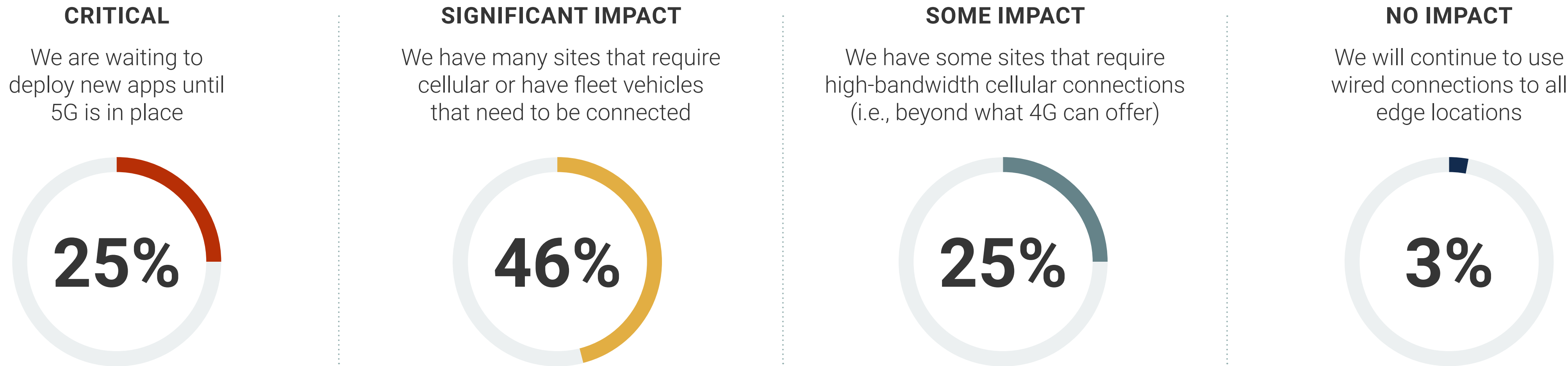
35%
Strengthening cybersecurity

32%
Improving our customer experience (CX)

30%
Improving data analytics for real-time business intelligence and customer insight

3. Ibid.
4. Ibid.

Network Strategy and Design as a Business Enabler

Network Strategy and Design as a Business Enabler

Organizations need to have highly flexible, low-latency, and ultra-reliable connectivity for an increasing number of data-generating devices to actually generate actionable insights. For example, when we asked respondents how they expected 5G to impact edge computing environments, almost three-quarters (71%) replied that it would be critical or have a significant impact.[5] Organizations need to ensure that investments in the IoT devices that generate data—and the edge computing infrastructure needed to analyze the data—are supported by the underlying network. This means ensuring that reliable, secure, and scalable wireless connectivity becomes part of a larger hybrid network that complements and builds on top of previous infrastructure investments.

Figure 4. Criticality of a 5G Network to Edge Computing

CRITICAL	**SIGNIFICANT IMPACT**	**SOME IMPACT**	**NO IMPACT**
We are waiting to deploy new apps until 5G is in place	We have many sites that require cellular or have fleet vehicles that need to be connected	We have some sites that require high-bandwidth cellular connections (i.e., beyond what 4G can offer)	We will continue to use wired connections to all edge locations
25%	**46%**	**25%**	**3%**

Given that a significant portion of the data generated may be in a remote or edge location, organizations need to ensure they have the appropriate network at the edge location and for WAN connectivity to ensure corporate locations have access to the information. Organizations are increasingly considering 5G as a primary connection for their edge locations, especially in areas where landline connections are not available or lack the available performance requirements.

5. Enterprise Strategy Group Complete Survey Results, *Distributed Cloud Series: Digital Ecosystems,* August 2022.
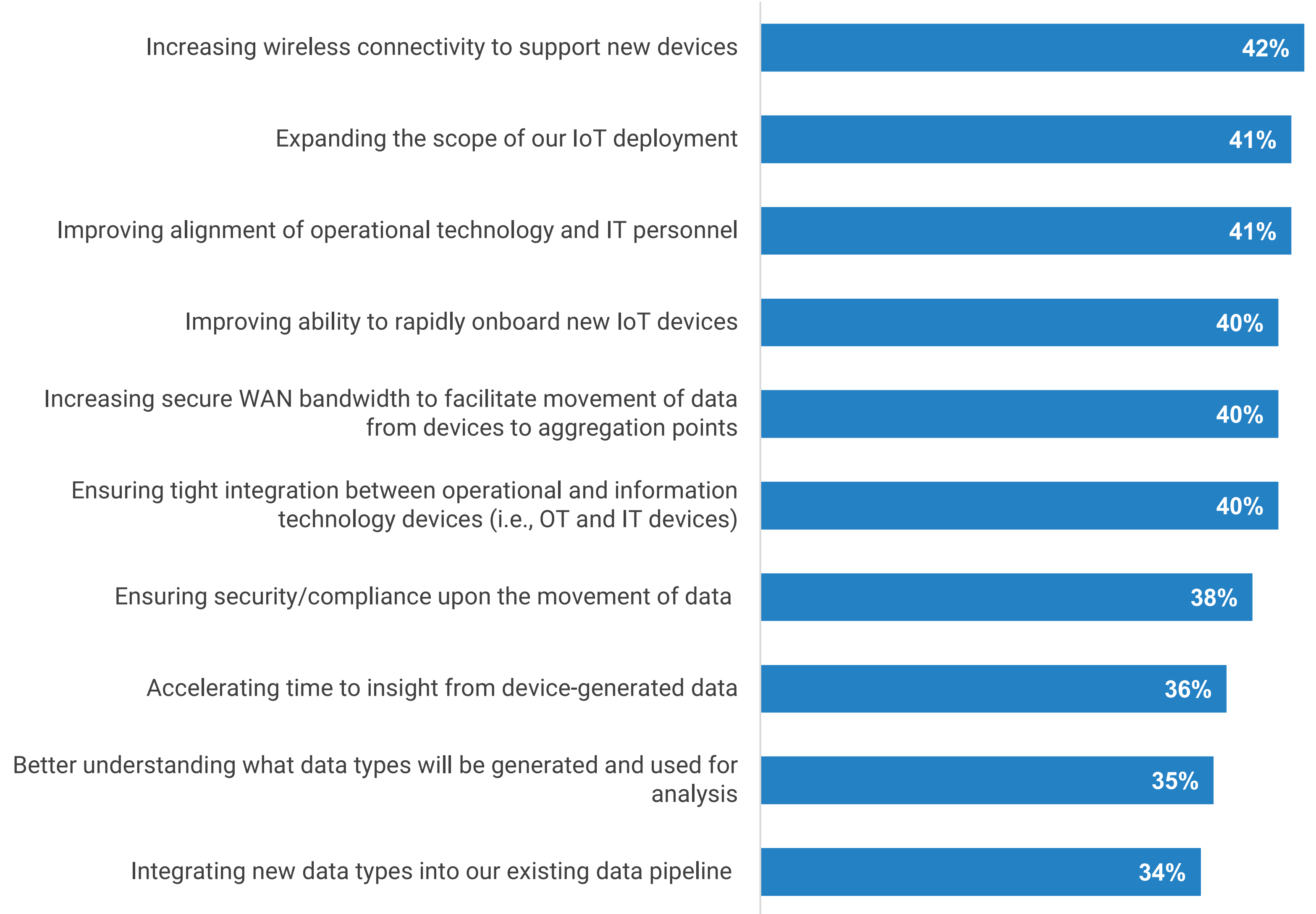
Importance of the Network to IoT

When asked about their organizations' top IoT priorities, respondents' most commonly cited response was increasing wireless connectivity to support new connected devices. This is critical, given that the next most commonly cited response was to expand the scope of the IoT deployment.[6] The right network can make a big difference as the IoT environment scales up.

While legacy Wi-Fi networks are widely deployed to communicate with connected devices, the typical Wi-Fi access points can only support around 250 devices. Compare that to a Private 4G network that supports up to about 2,000 devices and 5G networks that can support up to one million devices per square km. Organizations need to think about not only current needs, but also future needs when deciding on the appropriate wireless technology to enable their environment. Other factors that need to be considered include the coverage area, especially if it is very large or in an outdoor environment, and the ability of the network to provide reliable, low-latency connections in those areas. If an organization wants to leverage IoT devices, IP cameras, and sensors at scale, making a strategic decision to embrace 5G may be its best choice for both current needs and future investment protection.

Organizations also highlighted a desire to accelerate the time to insight from device-generated data, thus placing more priority on high-performance, low-latency networks to support IoT devices.

Figure 5. Top IoT Priorities

Priority	Percentage
Increasing wireless connectivity to support new devices	42%
Expanding the scope of our IoT deployment	41%
Improving alignment of operational technology and IT personnel	41%
Improving ability to rapidly onboard new IoT devices	40%
Increasing secure WAN bandwidth to facilitate movement of data from devices to aggregation points	40%
Ensuring tight integration between operational and information technology devices (i.e., OT and IT devices)	40%
Ensuring security/compliance upon the movement of data	38%
Accelerating time to insight from device-generated data	36%
Better understanding what data types will be generated and used for analysis	35%
Integrating new data types into our existing data pipeline	34%

6. Source: Enterprise Strategy Group Research Report, *2023 Technology Spending Intentions Survey*, November 2022.

**Turning
Data into
Actionable
Insights**

Turning Data into Actionable Insights

Enterprise Strategy Group research highlights how edge computing initiatives have become a top ten priority for almost every organization (94%) surveyed[7] and that IoT deployments are on the rise,[8] reflecting the growing recognition of the need for data-driven business intelligence capabilities.
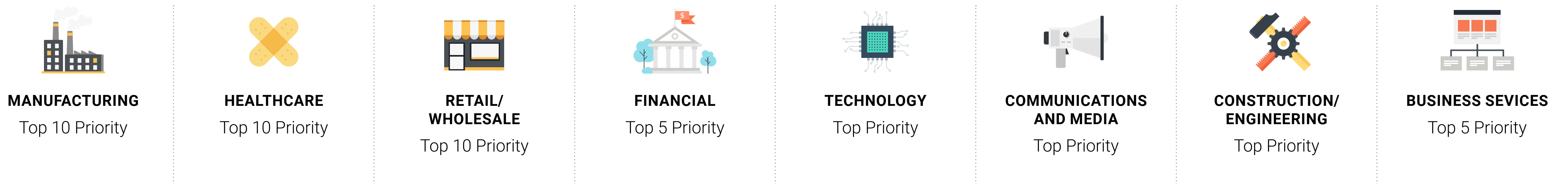
Certain verticals deviated from the mean in terms of investment prioritization of their edge computing strategy. For example, 44% of retail/wholesale, 40% of construction/ engineering companies, and 29% of technology companies cited it as their top overall priority.

Business services (58%) and financial services (57%) organizations reported that investing in their edge computing strategy was one of their top 5 IT priorities, while healthcare (39%) and manufacturing (39%) were more likely to cite edge computing as a top ten priority than their peers.

Figure 6. Edge Computing Priority

20%	**OUR TOP OVERALL** IT priority	**44%**	*ONE OF OUR TOP 5* IT priorities	**30%**	**ONE OF OUR TOP 10** IT priorities	**5%**	**NOT A TOP 10** IT priority

Figure 7. Edge Computing INVESTMENT PRIORITY

MANUFACTURING Top 10 Priority	**HEALTHCARE** Top 10 Priority	**RETAIL/ WHOLESALE** Top 10 Priority	**FINANCIAL** Top 5 Priority	**TECHNOLOGY** Top Priority	**COMMUNICATIONS AND MEDIA** Top Priority	**CONSTRUCTION/ ENGINEERING** Top Priority	**BUSINESS SEVICES** Top 5 Priority

7. Ibid.
8. Source: Enterprise Strategy Group Research Report, *2023 Technology Spending Intentions Survey,* November 2022.

In combination with edge computing, organizations are also prioritizing deploying devices to collect valuable information. Enterprise Strategy Group research indicates that 42% of organizations reported having IoT initiatives underway, with another 40% developing IoT initiatives that will launch in 12 to 24 months. Business services (66%), financial services (48%), retail/wholesale (47%), healthcare (39%), and technology (39%) organizations all report having IoT initiatives underway, while construction/engineering (51%), communications and media (44%), and manufacturing (41%) organizations will be launching initiatives over the next 12- 24 months.[9]
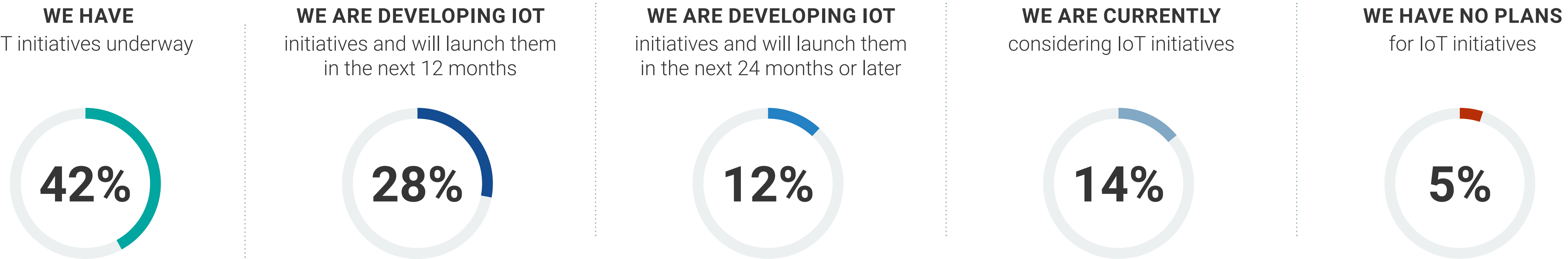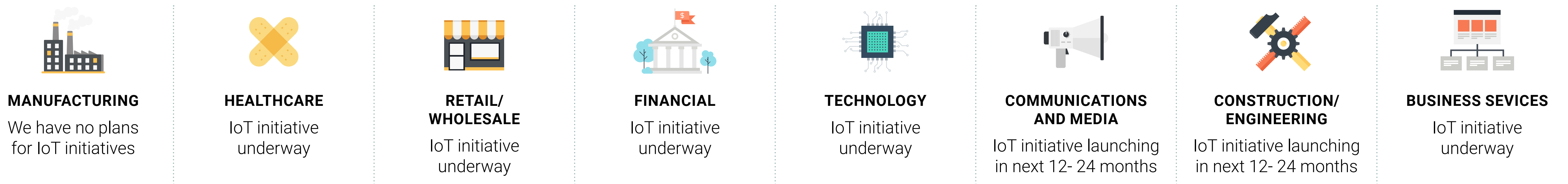
Figure 8. IoT initiatives

WE HAVE IoT initiatives underway	**WE ARE DEVELOPING IOT** initiatives and will launch them in the next 12 months	**WE ARE DEVELOPING IOT** initiatives and will launch them in the next 24 months or later	**WE ARE CURRENTLY** considering IoT initiatives	**WE HAVE NO PLANS** for IoT initiatives
42%	**28%**	**12%**	**14%**	**5%**

Figure 9. IoT Initiatives, by Industry

| **MANUFACTURING** We have no plans for IoT initiatives	**HEALTHCARE** IoT initiative underway	**RETAIL/ WHOLESALE** IoT initiative underway	**FINANCIAL** IoT initiative underway	**TECHNOLOGY** IoT initiative underway	**COMMUNICATIONS AND MEDIA** IoT initiative launching in next 12- 24 months	**CONSTRUCTION/ ENGINEERING** IoT initiative launching in next 12- 24 months	**BUSINESS SEVICES** IoT initiative underway

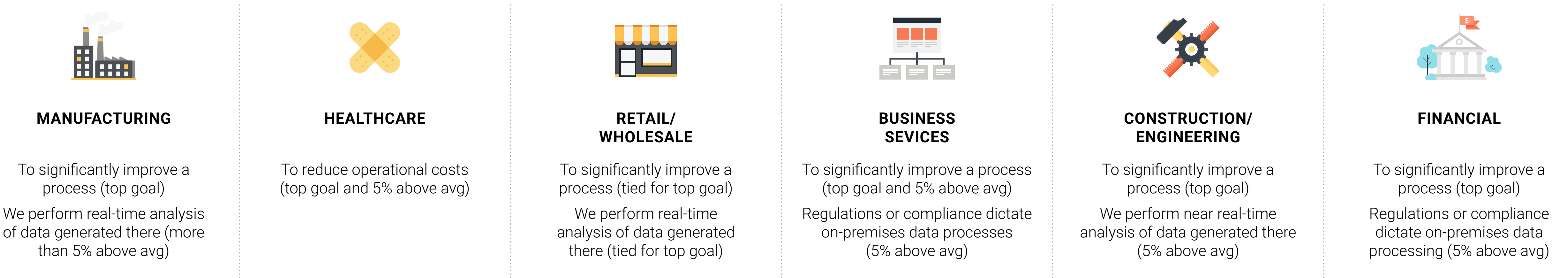## Why Are Organizations Looking to Gain Insights?

We have stated that organizations want to leverage data collected to unearth actionable insights, but what are those insights? We asked organizations what their top reasons for deploying applications at the edge were and found that the most common response, cited by almost two-thirds of respondents (65%), was to significantly improve a process. This finding can have a number of different implications across verticals. Organizations also reported that they were deploying applications at edge locations to perform real-time analysis of data generated there (54%), indicating the need to collect and perform computation as quickly as possible. For over half of respondents, the ability to reduce the amount of data sent over the network (51%) was important and could also have long term implications on storage fees as well. In addition, organizations cited the ability to reduce operational costs (49%) and the need to comply with regulations or compliance that dictate on-premises data processing (48%) for reasons why they deploy at the edge.[10]

Figure 10. Top 5 Reasons for Deploying Applications at the Edge

Reason	Percentage
To significantly improve a process	65%
We perform real-time analysis of data generated there	54%
To reduce the amount of data sent over the network	51%
To reduce operational costs	49%
Regulations or compliance dictate on-premises data processing	48%
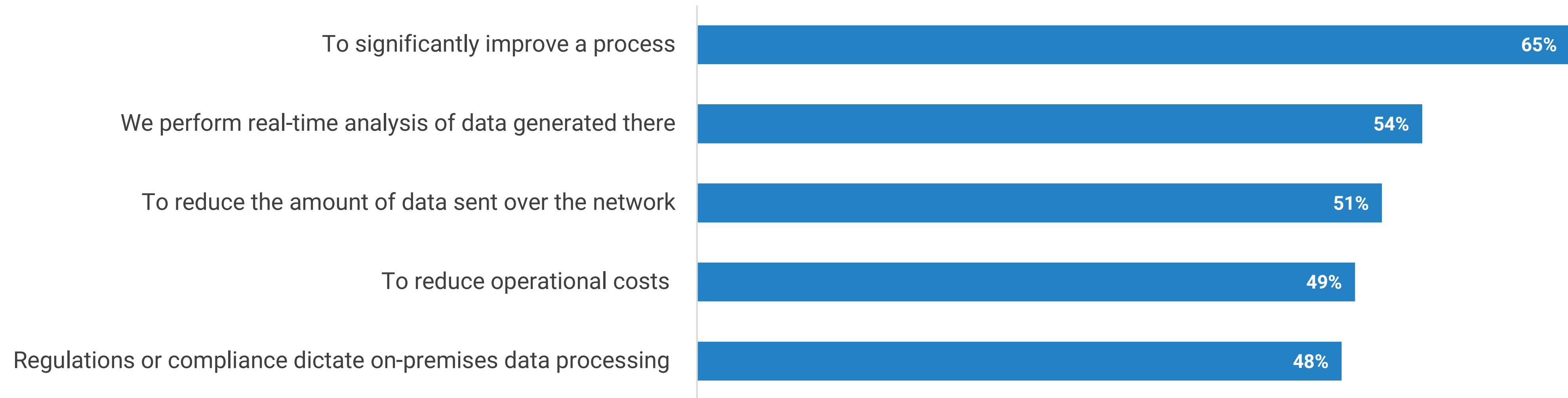
When looking at specific industry reasons for deploying applications at edge locations, several industries reported benefits above the average for the overall group. For example, over seven out of ten respondents from both business services (77%) and manufacturing (71%) organizations reported significantly improving a process as a top use case. Manufacturing organizations (61%) were also more likely to cite that they perform real-time analysis of data generated at the edge, while construction companies (58%) more often cited the ability to perform near real-time analysis than other industries. Healthcare companies (61%) were more likely to report reducing operational costs, while financial services (64%) organizations were the most likely verticals to check the box for regulations or compliance driving on-premises analysis of the data.[11]
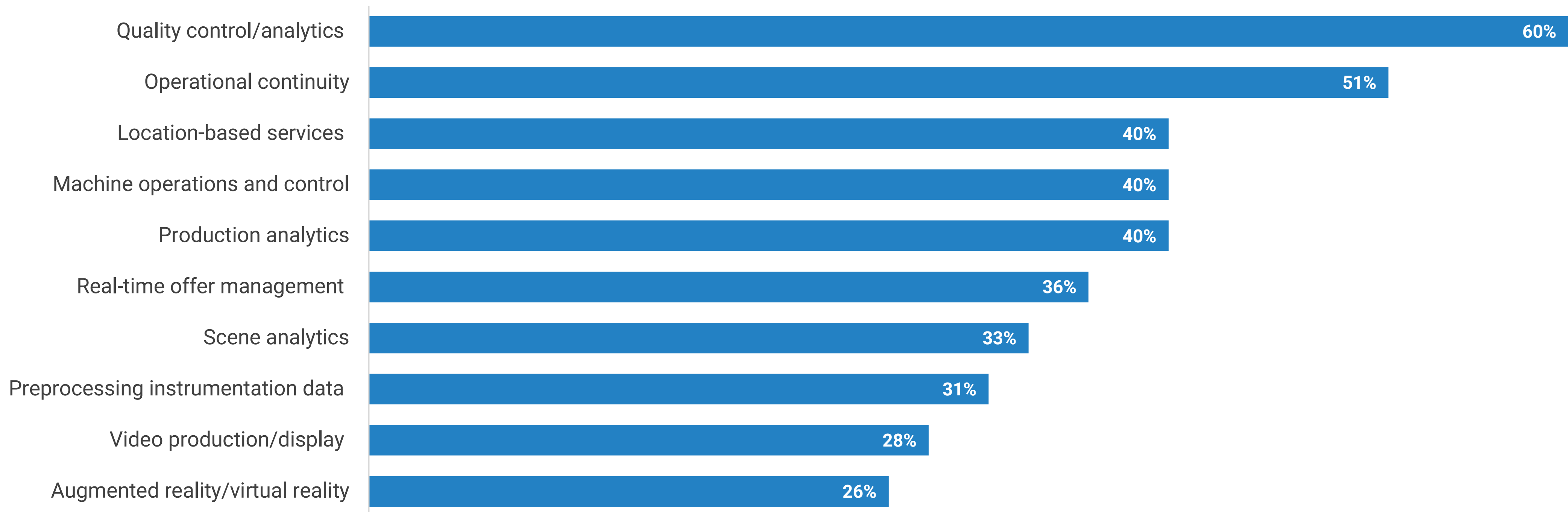
Figure 11. Vertical Specific Reasons for Deploying Applications at Edge Location (Top Goal and Responses 5% or more above avg)

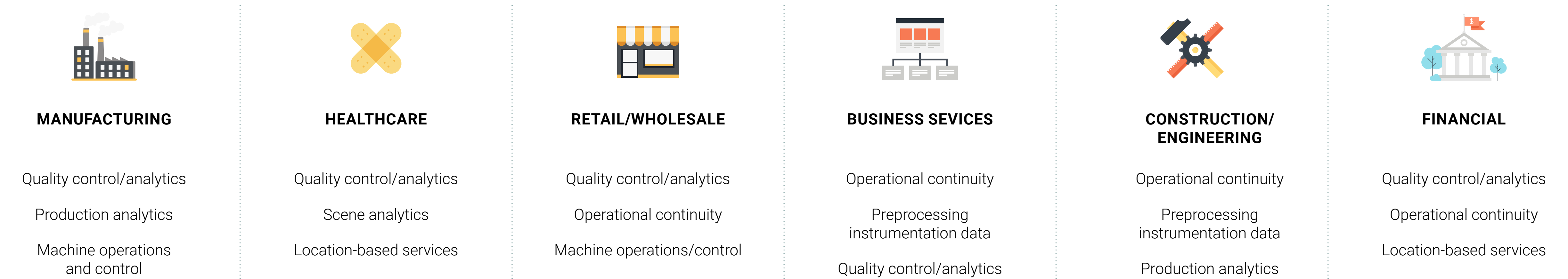| MANUFACTURING	HEALTHCARE	RETAIL/ WHOLESALE	BUSINESS SEVICES	CONSTRUCTION/ ENGINEERING	FINANCIAL
To significantly improve a process (top goal)	To reduce operational costs (top goal and 5% above avg)	To significantly improve a process (tied for top goal)	To significantly improve a process (top goal and 5% above avg)	To significantly improve a process (top goal)	To significantly improve a process (top goal)
We perform real-time analysis of data generated there (more than 5% above avg)		We perform real-time analysis of data generated there (tied for top goal)	Regulations or compliance dictate on-premises data processes (5% above avg)	We perform near real-time analysis of data generated there (5% above avg)	Regulations or compliance dictate on-premises data processing (5% above avg)

11. Ibid.

Top Use Cases

Now that we have identified why organizations want to analyze data at the edge, let's look at the top use cases. The research outlined in Figure 10 highlights the top use cases behind an organization's edge computing strategy.[12] The most commonly cited response (quality control and analytics) aligns well with the response from Figure 9 "to significantly improve a process." Operational continuity also ranked highly, as organizations seek to ensure positive customer experiences and uninterrupted business activity. In addition, organizations wanted to take advantage of location tracking services. This could serve a number of purposes, from ensuring worker safety and understanding customer traffic, to having the ability to quickly locate essential/lifesaving technology. As businesses look to deploy fully automated "lights out" warehouses, machine operations and control become increasingly important. Organizations also reported that the ability to perform production analytics was important, as well. Other use cases cited as beneficial included the ability to have real-time offer management, scene analytics (for use with video surveillance to better understand human behavior, shopping habits, etc., versus security), and preprocessing instrumentation data.

Figure 12. Top Use Cases of Deploying Applications to the Edge

Use Case	Percentage
Quality control/analytics	60%
Operational continuity	51%
Location-based services	40%
Machine operations and control	40%
Production analytics	40%
Real-time offer management	36%
Scene analytics	33%
Preprocessing instrumentation data	31%
Video production/display	28%
Augmented reality/virtual reality	26%

12. Ibid.

Depending on the vertical, the top use cases can vary and are shown below.

Figure 13. Industry Top Use Cases

MANUFACTURING	HEALTHCARE	RETAIL/WHOLESALE	BUSINESS SEVICES	CONSTRUCTION/ ENGINEERING	FINANCIAL
Quality control/analytics	Quality control/analytics	Quality control/analytics	Operational continuity	Operational continuity	Quality control/analytics
Production analytics	Scene analytics	Operational continuity	Preprocessing instrumentation data	Preprocessing instrumentation data	Operational continuity
Machine operations and control	Location-based services	Machine operations/control	Quality control/analytics	Production analytics	Location-based services

> " Regardless of the use case, it is critical to have a secure network to connect devices, locations, and remote compute environments to process the data collected. **This is the key benefit that a private 5G network can bring to these verticals."**
>
> *- Bob Laliberte, Enterprise Strategy Group Principal Analyst*

Implementing Your Vision for IT and Business Transformation

Implementing Your Vision for IT and Business Transformation

Overall, organizations see a future where IoT devices and 5G edge compute environments can work together to yield significant business benefits. It is important to remember that the right network strategy and design are foundational to the success of IT and business transformation.
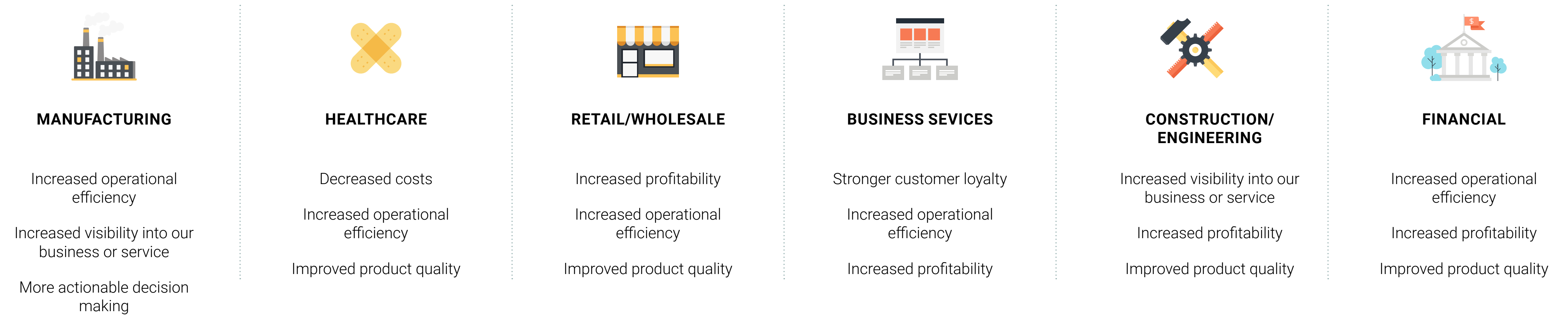
Organizations that have already seen the benefits of their IT and business transformation efforts report that those benefits most often include increased operational efficiency, increased profitability, and improved product quality. Rounding out the top five, organizations reported having increased visibility into their business or service and having more actionable decision making as benefits.[13]

Figure 14. Top Use Cases of Deploying Applications to the Edge

Increased operational efficiency	55%
Increased profitability	46%
Improved product quality	46%
Increased visibility into our business or service	41%
More actionable decision making	38%
Increased sales/revenues	38%
Stronger customer loyalty	32%
Decreased costs	32%
We're more responsive to changing market requirements	31%
Decreased risk	27%

13. Enterprise Strategy Group Complete Survey Results, *Distributed Cloud Series: Digital Ecosystems,* August 2022.

When looking at the benefits for specific industries, several reported benefits above the average for all groups. For example, almost two-thirds (62%) of both financial and manufacturing companies reported increased operational efficiency as a top benefit, while retail/wholesale organizations cited the ability to increase profitability as a top benefit (64%). Technology companies (61%) and financial services organizations (60%) were also more likely to cite increased profitability as a benefit. Technology (66%) companies reported improved product quality as a top benefit. In addition, construction/engineering companies (55%) reported gaining increased visibility into their business or service. The chart below highlights the top three benefits by industry.

Figure 15. Industry Top 3 Benefits

MANUFACTURING	HEALTHCARE	RETAIL/WHOLESALE	BUSINESS SEVICES	CONSTRUCTION/ ENGINEERING	FINANCIAL
Increased operational efficiency	Decreased costs	Increased profitability	Stronger customer loyalty	Increased visibility into our business or service	Increased operational efficiency
Increased visibility into our business or service	Increased operational efficiency	Increased operational efficiency	Increased operational efficiency	Increased profitability	Increased profitability
More actionable decision making	Improved product quality	Improved product quality	Increased profitability	Improved product quality	Improved product quality

Role of the Telecommunication Providers

Given the importance of collecting data from IoT and other connected devices using wireless technologies like 5G and that, increasingly, these devices are being deployed at remote edge environments, it makes sense that telecommunications providers would play a significant role in helping organizations create both the proper strategy and network to enable these environments. Enterprise Strategy Group research confirms this, with almost two-thirds of respondents stating that they want to take advantage of telecommunications providers for either their connectivity and distributed environments to host edge computing or to leverage their skills and expertise to deploy and manage 4G or 5G networks in their environments.[14]

Figure 16. Top Two Roles of the Telecommunication Providers

Yes, we want to take advantage of their connectivity and distributed locations to host our edge computing environment — **62%**

Yes, we want to use them for private LTE/5G — **61%**

14. Enterprise Strategy Group Complete Survey Results, *Distributed Cloud Series: Digital Ecosystems,* August 2022.
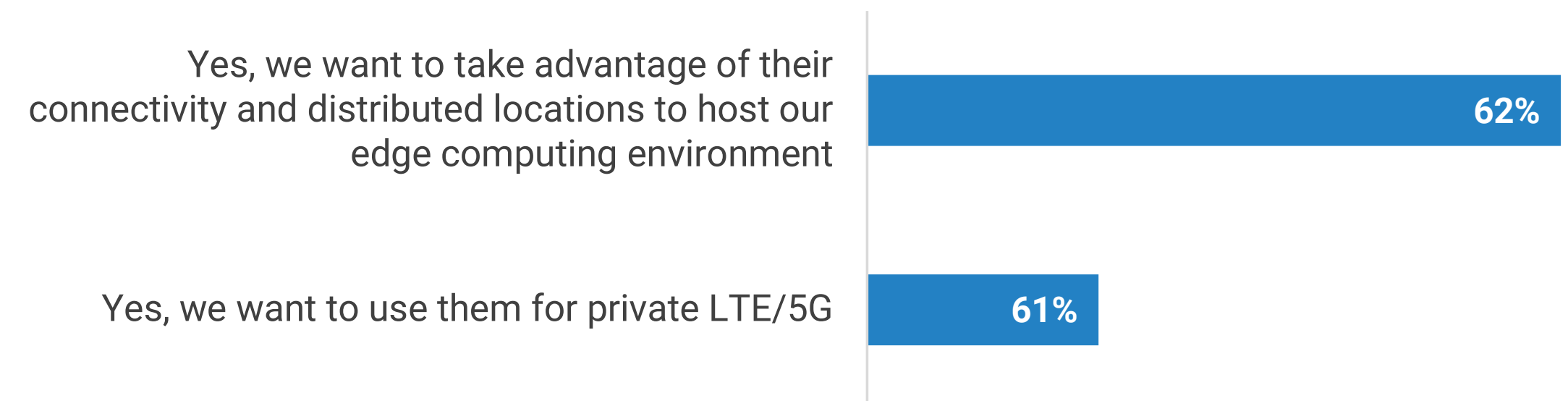
When it comes to the specifics of how these telecommunication providers can help organizations overcome the challenges related to edge computing analytics and gain the ability to deliver valuable intelligence to the business, several areas stood out in the survey responses. At the top of the list, organizations reported that they are looking for help providing secure access to edge locations and wireless connectivity to remote sites. Organizations were also looking to drive operational efficiency by having a service provider connect all edge computing environments globally. Other areas for which organizations were looking to telecommunications providers include the ability to deliver SD-WAN solutions specifically to drive lower cost bandwidth and to be able to get access to multi-access edge computing (MEC) resources to run analytics or other applications in close proximity to those corporate locations.[15]

Figure 17. Top 5 Roles of the Telecommunication Providers

Providing secure access service edge (SASE) services for edge locations	49%
Providing wireless connectivity to remote sites	49%
Providing the ability to connect to all edge computing locations globally	46%
Delivering SD-WAN to deliver more bandwidth at a lower cost	43%
Providing access to multi-access edge computing (MEC) to run applications in close proximity to our sites	43%
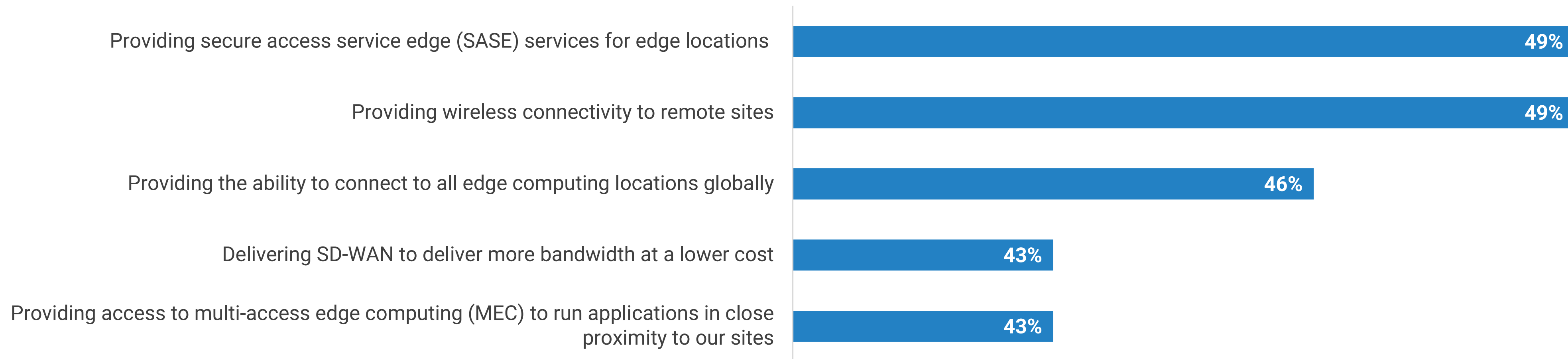
Verizon Can Accelerate Your Transformation

Verizon Business has the proven expertise and experience to deliver more than just digital transformation to your business. Combined with the appropriate network strategy, Verizon can enable your organization to realize true enterprise intelligence. This is achieved by accelerating the time it takes to turn raw data generated from IoT devices and sensors into meaningful and actionable information your business can benefit from. Verizon Business experts will work with your team to create an effective network strategy and execute against it to ensure your organization has a solid network foundation to accommodate existing and future needs. This would include the ability to leverage private cellular technologies such as 4G/5G to deliver real-time insights. Organizations that embrace enterprise intelligence will achieve benefits like increased operational efficiency, greater product quality, and improved profits along with differentiated customer experiences and greater business agility.

15. Ibid.

Conclusion

IT transformation (embracing edge computing and deploying connected devices to optimize operations) is only the first step in true business transformation. True business transformation demands a strategic, end-to-end approach that turns data into insights that solve real-world business problems. When a company deploys powerful and pervasive network connectivity and strategically integrates technologies like IoT devices and edge computing, everything it does can become faster and smarter, supporting both the achievement of existing business objectives and the creation of new ones.

While turning data into action requires technology, it also requires business leaders who have a vision for a more agile and competitive future. Transforming your IT infrastructure and the very nature of your business is no small task and requires the involvement and support of a wide range of stakeholders, from business line managers and line employees to customers and leaders in the C-suite. And it often requires a trusted partner with deep vertical expertise and experience in enabling successful IT and business transformation.

verizon✓

Verizon Communications Inc. (NYSE, Nasdaq: VZ) was formed on June 30, 2000 and is one of the world's leading providers of technology and communications services. Headquartered in New York City and with a presence around the world, Verizon generated revenues of $136.8 billion in 2022. The company offers voice, data and video services and solutions on its award-winning networks and platforms, delivering on customers' demand for mobility, reliable network connectivity, security and control. Verizon was the first company in the world to launch commercial 5G for mobility, fixed wireless and mobile edge computing.

Learn how Verizon helps power enterprise and medium businesses with a broad portfolio of secure technology solutions that are built to power scale and growth.

LEARN MORE

Enterprise Strategy Group is an integrated technology analysis, research, and strategy firm providing market intelligence, actionable insight, and go-to-market content services to the global technology community.