Technology Vision 2021

Leaders Wanted

Utilities Executive Summary

Voices of **Change**

From insights to action, the path to extraordinary value starts here.

accenture

The world is hungry for a new kind of leadership. Amid the challenges of 2020, two truths became evident. More companies than ever have embraced the axiom that every business is a technology business, and they've ignited a new era of exponential transformation as technology continuously reshapes industries and the human experience. Now, as we begin shaping our post-pandemic reality, utilities are embracing change to **forge a better future.**

Every utility leader is a technology leader.

Embracing a new mindset to shape a better future.

The energy industry has endured significant upheaval over the past decade. The pandemic brought further disruption. It forced utilities to invest in new technologies to support remote working and field worker safety. It also led countries to accelerate their decarbonization policies. As the energy transition accelerates, expect this disruption to intensify over the next 10 years.

As our Tech Vision 2021 makes clear, big changes today require bold leadership and the utility industry is no exception. The world's most complex machine—the electric grid—must become far more flexible and resilient if it is to deliver sustainable, affordable, reliable power.

Leadership Demands Technology Leadership

We always talked about how technology would come to change the world, and now that enterprises across industries have accelerated their digital transformations all at once—it has. The era of the fast follower is effectively over. Perpetual change is here to stay, and leaders must not only embrace it, but catalyze it.

New competitive forces will reshape the electricity value chain. Why? Because utilities are not alone in their pursuit of these new opportunities.

Oil majors' significant investments in renewables and storage will increase. In deregulated markets, telecommunications will increasingly bundle power with other services. New, cloud-native start-ups will threaten incumbents with Amazon-like customer-centric business models.

New leadership is needed to address the areas where utilities have struggled. Industry leaders will draw on the lessons learnt in extreme weather events and the pandemic to power a new era of transformation, and usher in a new kind of leadership.

# Utility leaders are Taking Charge of the Future

As the saying goes: The best way to predict the future is to invent it. Prioritizing technology is essential to ensuring the enterprise doesn't fall behind. However, true leadership will come from companies embracing radically different mindsets and models. The world has been beset by sweeping change and demands leadership that thinks boldly in response.

To meet the evolving demands of customers, employees, and business stakeholders, utilities are reinventing with technology at the core.

New approaches are required to deliver sustainable, affordable, reliable power. Customers will look to utility leaders to strike a balance between ensuring reliable and safe energy supplies, bring new products and services to market faster and manage the energy transition.

Requirements differ across the value chain and in different markets. A retailer in a deregulated market has different challenges to a transmission operator or a vertically integrated, regulated utility. But there is one constant: change is coming. Despite their differences all utilities and energy providers face a more complex, fast changing, and uncertain future. The industry will look to its leadership to navigate through this uncertainty, not just to survive, but to succeed.

Change is not for the faint-hearted, but it cannot be avoided. There is a risk that if utilities do not step forward, others will. A new leadership must deliver a new innovative, connected, and digital culture. It must shake off the old, risk-averse, asset-based, engineering culture it has developed over decades. Industry leaders will become Experts at Change, and engender a digital-first, innovative culture to effect this much needed transformation.
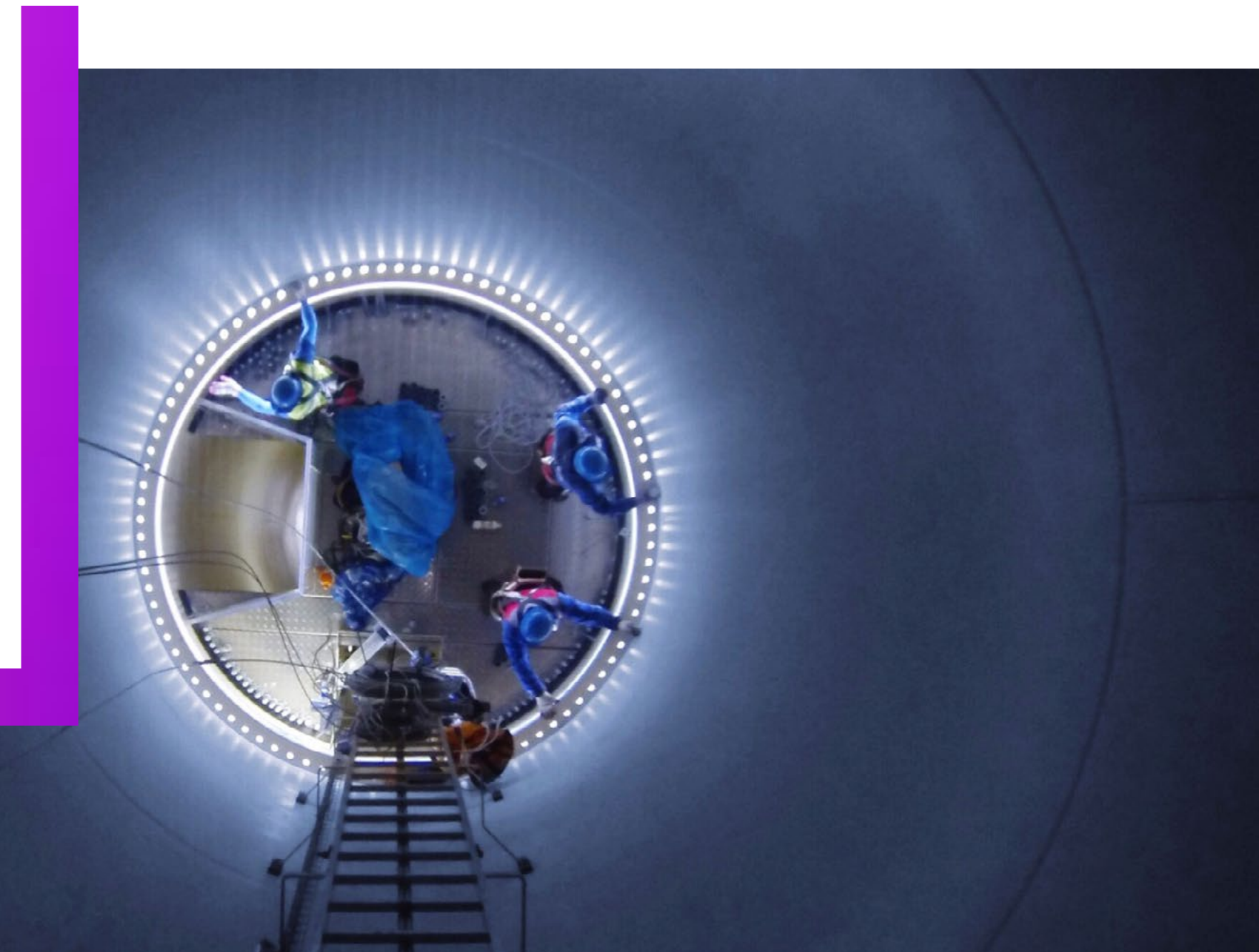
Broaden the Horizons of Leadership

Technology makes the boldest ambitions achievable, but people are the north star that provide vision and direction. As they pioneer the new normal, enterprises are poised to have an outsized impact on the world around them—and financial success will only be one measure of leadership.

This new mindset will dramatically change utilities' approach to technology adoption. The utilities industry has never experienced the level of disruption or the pace of change it currently faces. Some find these new challenges daunting. But Experts at Change are emerging, showing the industry the art of the possible.

Leading utilities recognize the need to do things differently. They are innovating to compete in the energy transition. They are creating new business models to meet customers' changing needs.

Why is this imperative? Because most of the value in the energy transition will be created in new, competitive markets, in collaboration with customers, regulators, and a broad ecosystem of suppliers. Utilities will not be alone offering products in services behind the meter, in renewable generation, or electric vehicle charging. The energy transition will not wait for utilities to catch up. Will you watch the world change around you? Or excel at change?

But make no mistake, transforming the enterprise into a technology leader cannot be contained to the oversight of the CIO or CTO alone. To be successful, a digital-first approach must be fostered by the entire C-suite and manifested across all areas of the organization.

Driving change begins with **architecting the future** and recognizing that business and technology strategies are increasingly indistinguishable. Architecture has never mattered more as the technology choices businesses make today will determine what the business can or cannot do long into the future.

Competition is becoming a battle of technology stacks—and one size fits none. As leaders thread technology through all aspects of the business, the valuable troves of data generated are being used to build massive networks of intelligent digital twins. The **Mirrored World** these next-generation twins create is fueling change by unlocking the currently trapped value of data and allowing enterprises to simulate, predict, and automate by seamlessly bridging the divide between digital and physical.

Enterprises must also ensure their people are empowered to become drivers of change—an outcome achievable through **technology democratization**, which is making powerful technology capabilities accessible without the need for specialized skills. Enterprises can ignite grassroots innovation by equipping every employee with the tools and skills to build technology solutions at the point of need.

The enterprise can change from anywhere and everywhere as it equips the workforce to **bring your own environment.** The single biggest workforce shift in living memory is positioning businesses to explore the benefits of a virtualized workforce and expand the boundaries of the enterprise.

Finally, the challenges and opportunities ahead are vast and businesses will not be able to tackle them alone. **Multiparty systems** will help businesses lead by changing the way they partner. From supply chains to digital ecosystems, the pandemic showed just how brittle globespanning relationships can be. By rebuilding these partnerships with technology at the center, enterprises are finding ways to adapt together.

A new future is on the horizon—one that's different from what the world expected. As this future takes shape, there will be no room for enterprises that cling to the past. Will you watch the world change around you? Or be the one leading it? People are ready for something new and it's time for enterprises to join them. Let there be change.
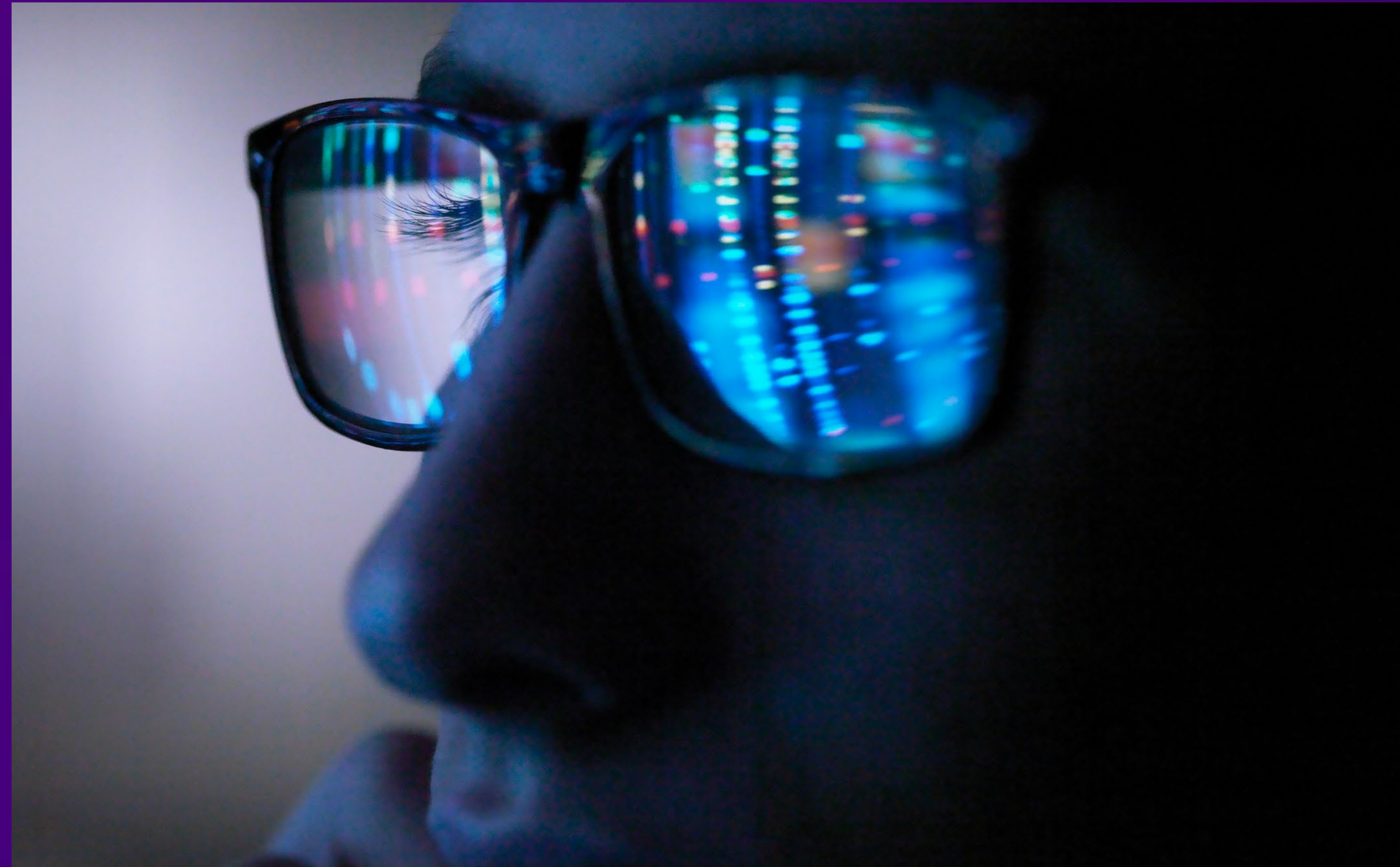
LET THERE BE CHANGE

Our five technology trends for 2021

Stack Strategically

Architecting a Better Future

A new era of industry competition is dawning—one where companies compete on their architecture.

Mirrored World

The Power of Massive, Intelligent, Digital Twins

Growing investments in data, AI, and digital twin technologies are giving rise to a new generation of business and intelligence: the mirrored world.

I, Technologist

The Democratization of Technology

Natural language processing, low-code platforms, robotic process automation, and more are democratizing technology, putting powerful capabilities into the hands of people all across the business.

Anywhere, Everywhere

Bring Your Own Environment

It's time for enterprises to transform remote work from an accommodation, to an advantage.

From Me to We

A Multiparty System's Path Through Chaos

The global disruption of COVID-19 ignited a scramble for enterprises to reimagine their partnerships—and multiparty systems gained newfound attention.

Stack Strategically

Architecting a Better Future

The new utility leaders are not just business leaders. They are also technology leaders. A utility's ability to generate value will increasingly be based on the limitations and opportunities of its tech architecture. Consequently, business and technology strategies will soon be indistinguishable.

The technology choices a utility makes today will govern the business models it can deploy in the future. The abundance of technology available—AI models, cloud, edge computing, and hardware and computational design—make these choices difficult to make. Excelling at change means becoming skillful at technology selection, and its integration into an increasingly complex technology infrastructure. Utilities must become skillful at this profusion of choice by strategically stacking technology to take advantage of—and not be limited by—the abundance of new options.

Big Takeaways

Utilities will spearhead the shift to sustainable services and increasingly engage with society as part of that shift. The energy transition creates many challenges for the safe and reliable delivery of services. Addressing these challenges requires a greater emphasis on customer outcomes, and future architectures will be designed to support this move, across the utility value chain.

New, cloud-native business models are emerging, to respond to a rapidly changing world. A modular approach to system architecture enables the rapid development of new services, not possible with older infrastructure. Cloud is already being used by leading utilities to develop innovative new products. More will follow.

The challenge for many utilities is how to develop a detailed roadmap for their cloud-based future. A flexible, holistic cloud strategy enables utilities to create a long-term roadmap for enablement. By painting a picture of future infrastructure, utilities can develop a strategy to shift from legacy to modular architecture.

Mirrored World

The Power of Massive, Intelligent, Digital Twins

As utility leaders thread technology through all aspects of the business, the valuable troves of data generated are being used to build massive networks of intelligent digital twins. The mirrored world these next-generation twins create is fueling change by unlocking the currently trapped value of data and allowing utilities to simulate, predict, and automate by seamlessly bridging the divide between digital and physical.

In the Mirrored World, utilities use massive, intelligent, digital twins to represent the entire energy system, extending digital twin use cases far beyond utility asset management. It creates a network of multiple existing twins to create a living model of entire processes, all energy users, the supply chain, and much more.

Big Takeaways

The Mirrored World promises visibility of the entire energy value chain. Leading utilities will collaborate with stakeholders from across the energy ecosystem to create an overarching model of the energy system. New insights will be derived by adding AI and machine learning.

The many layers of a digital twin create opportunities to gain insights that have not previously been possible. The Mirrored World enables highly sophisticated simulations of real-world systems. In the Mirrored World, enterprises have the freedom to explore new ideas and ask limitless "what-if" questions in a risk-free, digital environment.

Each new connected device brings the Mirrored World future closer. The value of digital twins grows exponentially when combined with other digital twins. Ambition is the only restriction on how large the digital twin can grow.

I, Technologist

The Democratization of Technology

Technology democratization places powerful capabilities with people in utility operations, maintenance, the contact center, and back-office functions. Easily deployed and requiring little or no specialised skills, technologies including RPA, natural language processing, point-and-click analytics, BI tools, and low-code or no-code platforms are all being deployed to put the innovative power of technology into the hands of all employees.

This decentralized approach adds a grassroots layer to innovation, where staff are free to innovate on their own, in their own timeframes, without the need for specialized IT resources. Technology democratization puts new technologies like machine vision, drones, and virtual or augmented reality in the hands of employees and gives them a blank canvas on which to run their own, small-scale innovation projects

Big Takeaways

Technology democratization is the fuel igniting enterprise-wide innovation and a vital capability for your workforce and partner ecosystem. It empowers this collective talent to innovate together on the new business models that will deliver the energy transition.

Technology democratization enables utilities to make the most of their existing talent, and make the industry more attractive to new recruits. What better way to appeal to new talent than give them cutting-edge technology to help perform their jobs and successfully negotiate the energy transition? Drones to check infrastructure. VR headsets for training. On-device analytics to identify faults on an asset. Augmented reality to present that data.

To achieve results, technology democratization needs an innovative mindset. Employees think like technologists, understanding how to optimize processes or fix problems on their own. They must feel free to experiment with technology, to explore the art of the possible, and to learn from their mistakes. Innovation is as much about culture as it is about any one technology.

Anywhere, Everywhere

Bring Your Own Environment

The pandemic ignited the biggest workforce shift in living memory by sending people home. Industries doubled down on technology solutions and cloud transformations to keep them productive. To make work possible from anywhere, they deployed "bring your own environment" (BYOE) strategies to address the security ramifications of remote work. Utilities have an opportunity to apply the best practices of BYOE, and lessons learnt from their own shift to remote call centers, in customer operations, and to optimize flexibility within the industry's unique governance frameworks for critical infrastructure. New technologies— particularly 5G, edge computing, and self-serve analytics—can help utilities to create a new environment that enables a very different way of working in the field.

Big Takeaways

Creating a personalized environment for employees enables a customer focus anywhere within utility operations – one that can be delivered everywhere. Regardless of regulatory constraints, a utility can achieve the same outcomes by creating more personalized environments for utility employees: work anywhere, seamlessly and flexibly, while security risks remain closely managed.

In lockdown, utilities transferred call centers to their employees' houses. Virtual work has become the norm. BYOE in retail recognizes the need to support more flexible working, and puts in place the technology infrastructure to support this permanent shift.

Empowering field workers with new technology gives them the ability improve enterprise efficiency, distributed supply chain management, and optimize work scheduling.

From Me to We

A Multiparty System's Path Through Chaos

The energy transition creates many new opportunities to generate additional value. Traditional business models will give way to a more varied and complex energy value chain, which is no longer linear, but diffused and decentralized. What changes fundamentally is that utilities no longer own all of this infrastructure. As the energy transition progresses, utilities will own a diminishing proportion of infrastructure.

Instead, future energy infrastructure will be a multiparty system: a data infrastructure shared between stakeholders that drives efficiency and builds new business and revenue models. They include blockchain, distributed ledger, distributed database, tokenization and a variety of other technologies and capabilities. The strategic imperative is to ensure that the utility business model changes to maximize returns within the new environment.

Big Takeaways

The energy transition redefines the roles stakeholders play in an increasingly complex energy system. But this complexity cannot be managed by a single utility or by its existing infrastructure. Success in energy transition will be measured by the successful creation of collaborative, multi-stakeholder ecosystems.
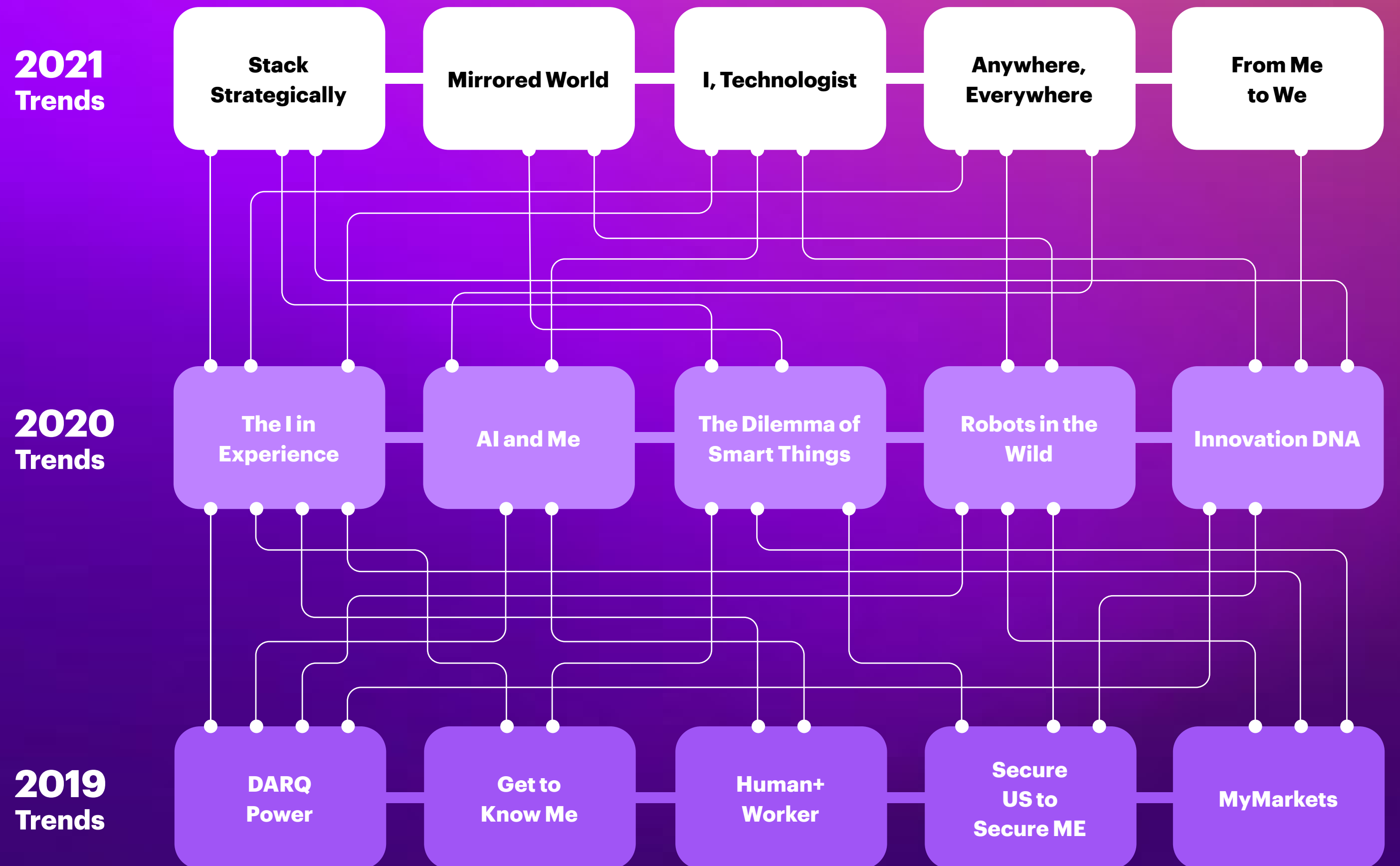
Multiparty systems can help manage a more dynamic market environment, which requires significant data sharing. The technology foundation of multiparty systems helps manage trust, improves visibility across the value chain, and facilitates many new business models.

The energy transition creates many different value pools. But individual companies cannot be everywhere and do all things. However, a utility can be a leader of leaders in an energy ecosystem, defining the incentives for how energy is produced, transported, and consumed. Utilities are still drivers of their own destiny, but if they do not seize these opportunities, others will. Your moment is now. Take your place in this ecosystem, or risk being left out.

Completing the picture

Accenture's Technology Vision report comprises a three-year set of technology trends, currently including trends from 2020 and 2019.

It's important to recognize that each year's trends are part of a bigger picture. Tracking how they evolve over time offers a glimpse into how they may continue to grow in the future.

2021 Trends

| Stack Strategically | Mirrored World | I, Technologist | Anywhere, Everywhere | From Me to We |

2020 Trends

| The I in Experience | AI and Me | The Dilemma of Smart Things | Robots in the Wild | Innovation DNA |

2019 Trends

| DARQ Power | Get to Know Me | Human+ Worker | Secure US to Secure ME | MyMarkets |

2020 Trends

The I in Experience

Helping people choose their own adventure

Redesign digital experiences with new models that amplify personal agency. Turn passive audiences into active participants by transforming one-way experiences into true collaborations.

AI and Me

Reimagine the business through human and AI collaboration

Take a new approach that uses artificial intelligence to bring out the full power of people. Move beyond deploying AI for automation alone and push into the new frontier of co-creation between people and machines.

The Dilemma of Smart Things

Overcome the "beta burden"

Address the new reality of product ownership in the era of "forever beta." Transform pain points into an opportunity to create an unprecedented level of business–customer partnership.

Robots in the Wild

Growing the enterprise's reach— and responsibility

Build new models of interaction and impact as robotics move beyond the walls of the enterprise. Companies in every industry will unlock new opportunities by introducing robots to the next frontier: the open world.

Innovation DNA

Create an engine for continuous innovation

Tap into the unprecedented scale of disruptive technology available today. Build the capabilities and ecosystem partnerships necessary to assemble the organization's unique innovation DNA.

2019 Trends

DARQ Power

Understanding the DNA of DARQ

New technologies are catalysts for change, offering businesses extraordinary new capabilities. Distributed ledger technology, artificial intelligence, extended reality, and quantum computing will be the next set of new technologies to spark a step change, letting businesses reimagine entire industries.

Get to Know Me

Unlock unique customers and unique opportunities

Technology-driven interactions are creating an expanding technology identity for every consumer. This living foundation of knowledge will be key to not only understanding the next generation of consumers, but also to delivering rich, individualized, experience based relationships in the post-digital age.

Human+ Worker

Change the workplace or hinder the workforce

Workforces are becoming human+: Each individual is empowered by their skill sets and knowledge plus a new, constantly growing set of capabilities made possible through technology. Now, companies must adapt the technology strategies that successfully created this next-generation workforce to support a new way of working in the post-digital age.

Secure US to Secure ME

Enterprises are not victims, they're vectors

While ecosystem-driven business depends on interconnectedness, those connections increase companies' exposures to risks. Leading businesses are recognizing that just as they already collaborate with entire ecosystems to deliver best-in-class products, services and experiences, it's time security joins that effort as well.

MyMarkets

Meet consumers' needs at the speed of now

Technology is creating a world of intensely customized and on-demand experiences, and companies must reinvent their organizations to find and capture those opportunities as they come. That means viewing each opportunity as if it's an individual market— a momentary market.

About the Technology Vision

For more than 20 years, Accenture has developed the Technology Vision report as a systematic review across the enterprise landscape to identify emerging technology trends that will have the greatest impact on companies, government agencies and other organizations in the coming years. These trends have significant impact across industries and are actionable for businesses today.

Accenture Labs and Accenture Research collaborate on the annual research process, which includes:

• Input from the Technology Vision External Advisory Board, a group of more than two dozen experienced individuals from the public and private sectors, academia, venture capital and entrepreneurial companies. In addition, the Technology Vision team conducts interviews with technology luminaries and industry experts, as well as nearly 100 Accenture business leaders from across the organization.

• A global survey of business and IT executives to understand their perspectives on the adoption and impact of technologies in their organizations. Survey responses help to identify the technology strategies and priority investments of companies from across industries and geographies.

As a shortlist of themes emerges from the research process, the Technology Vision team works to validate and refine the set of trends. The themes are weighed for their relevance to real-world business challenges. The Technology Vision team seeks ideas that transcend the wellknown drivers of technological change, concentrating instead on the themes that will soon start to appear on the C-level agendas of most enterprises.
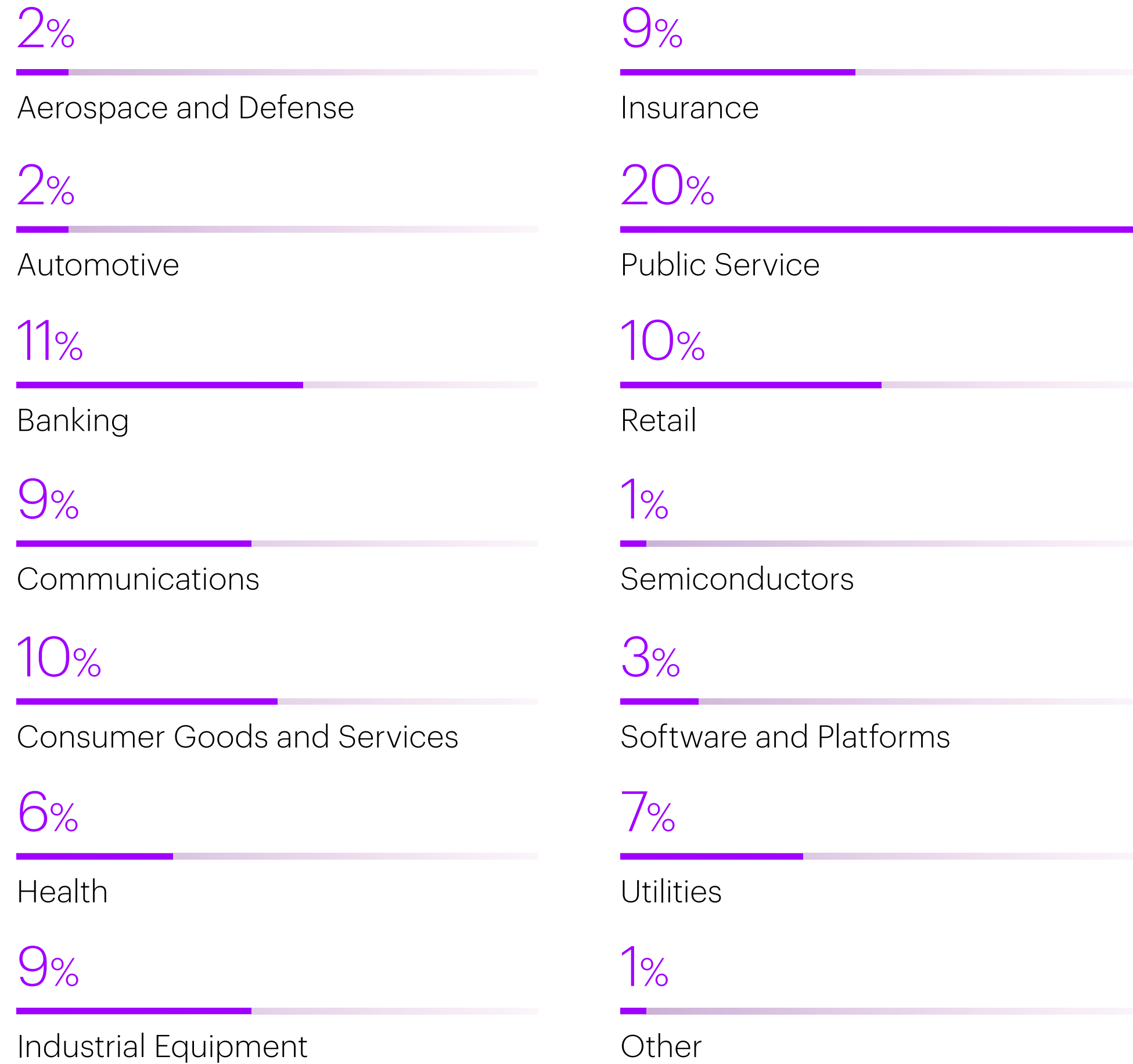
Survey demographics

Business Survey

Accenture Research conducted a global survey of 6,241 business and IT executives to capture insights into the adoption and use of emerging technologies. The survey, fielded from December 2020 through January 2021, helped identify the key issues and priorities for technology adoption and investment. Respondents were C-level executives and directors at companies across 31 countries and 14 industries.
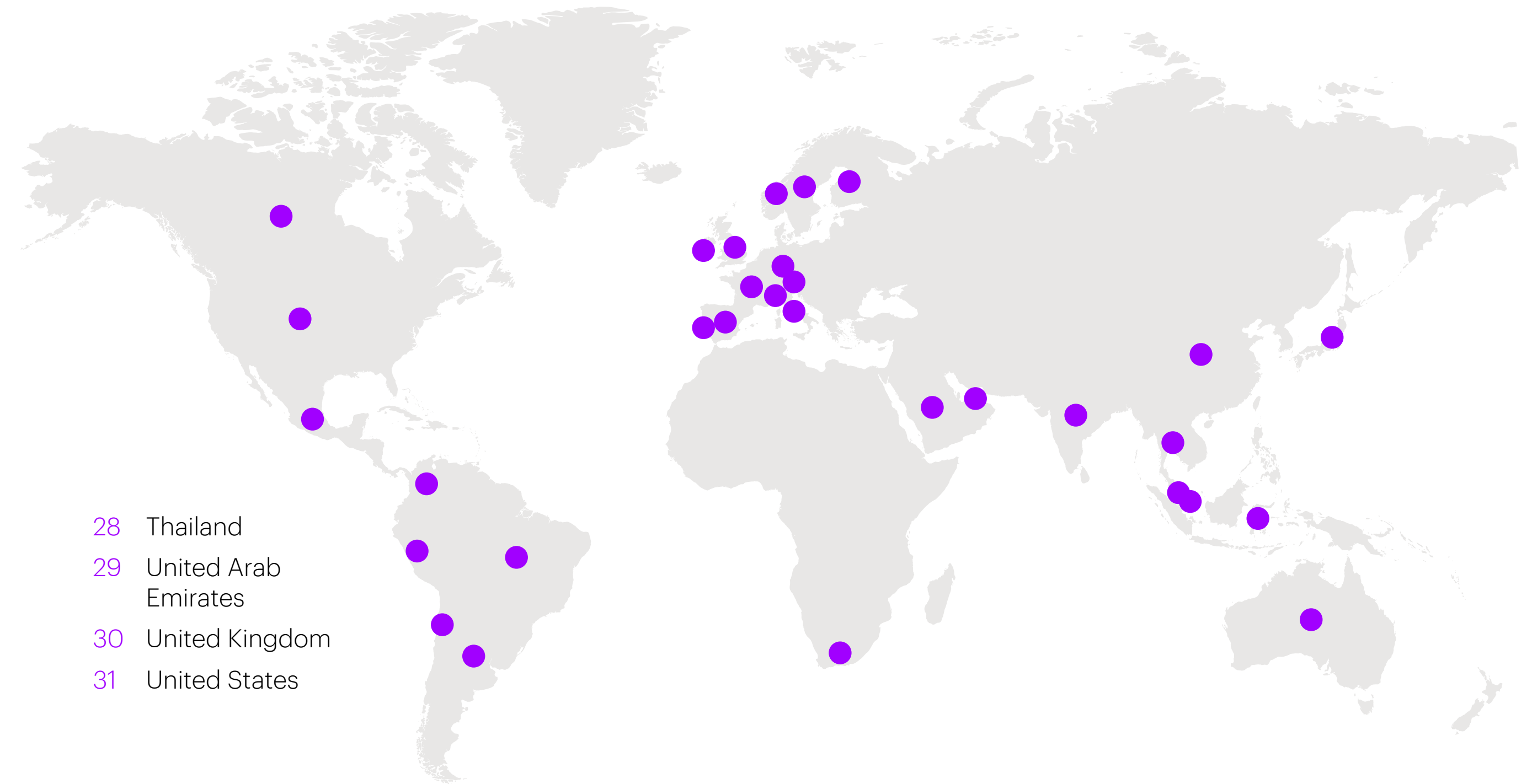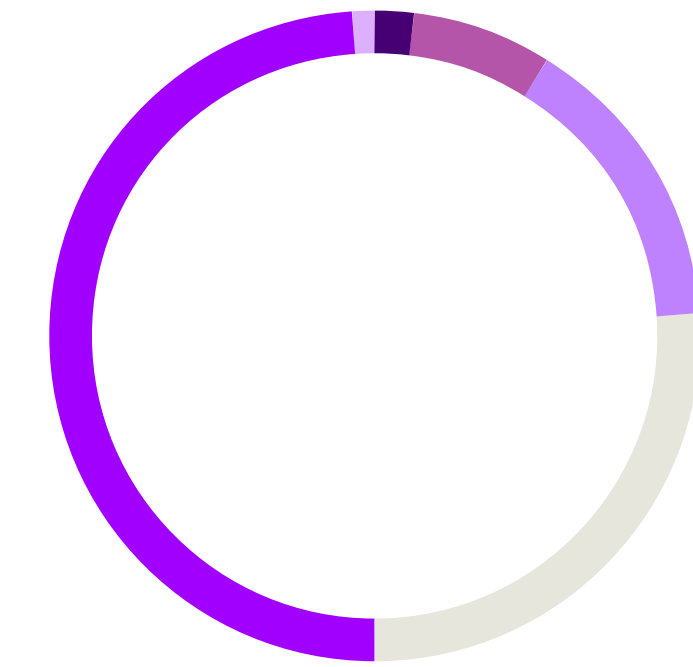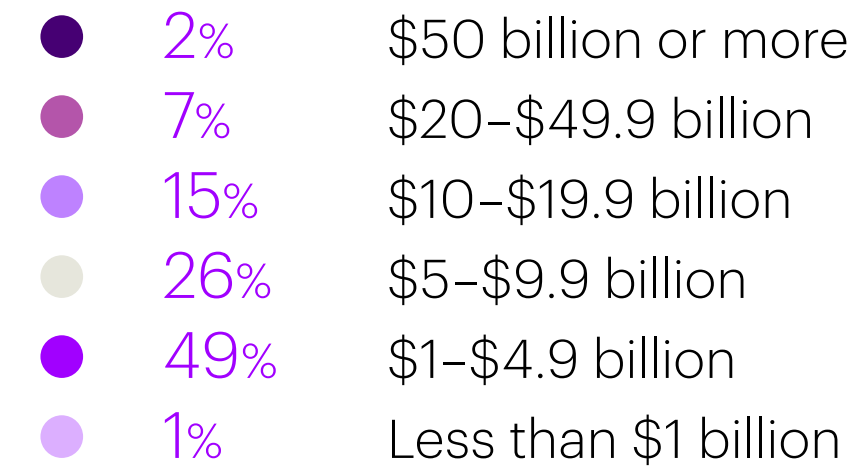
31 Countires

1	Argentina	10	France	19	Norway	28	Thailand
2	Australia	11	Germany	20	Peru	29	United Arab Emirates
3	Austria	12	India	21	Portugal		
4	Brazil	13	Indonesia	22	Saudi Arabia	30	United Kingdom
5	Canada	14	Ireland	23	Singapore	31	United States
6	Chile	15	Italy	24	South Africa		
7	China	16	Japan	25	Spain		
8	Colombia	17	Malaysia	26	Sweden		
9	Finland	18	Mexico	27	Switzerland		

14 Industries

2%
Aerospace and Defense

2%
Automotive

11%
Banking

9%
Communications

10%
Consumer Goods and Services

6%
Health

9%
Industrial Equipment

9%
Insurance

20%
Public Service

10%
Retail

1%
Semiconductors

3%
Software and Platforms

7%
Utilities

1%
Other

Revenues

- 2% $50 billion or more
- 7% $20–$49.9 billion
- 15% $10–$19.9 billion
- 26% $5–$9.9 billion
- 49% $1–$4.9 billion
- 1%   Less than $1 billion

Roles

52%
Business Executives

48%
IT Executives

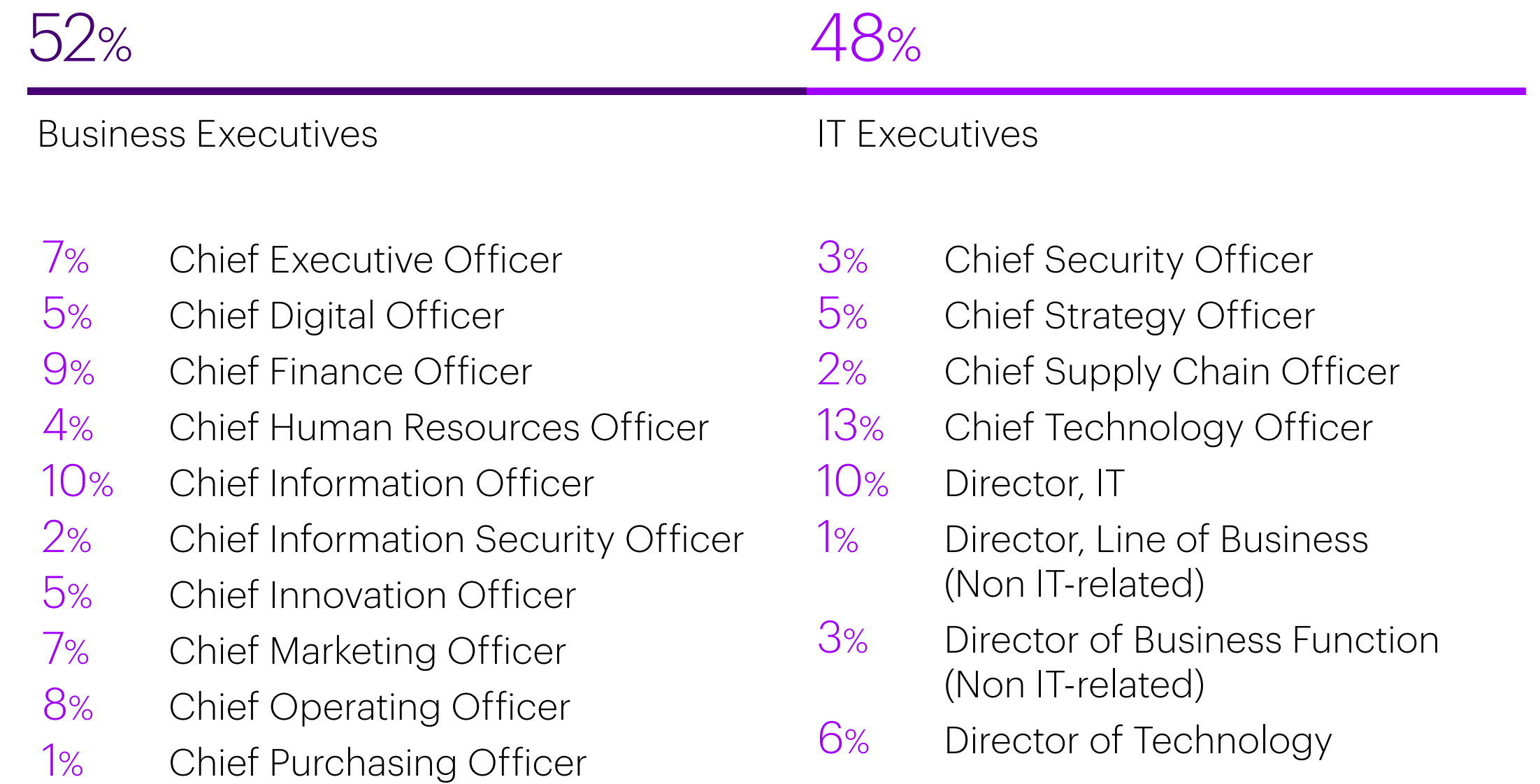|	
7% Chief Executive Officer	3% Chief Security Officer
5% Chief Digital Officer	5% Chief Strategy Officer
9% Chief Finance Officer	2% Chief Supply Chain Officer
4% Chief Human Resources Officer	13% Chief Technology Officer
10% Chief Information Officer	10% Director, IT
2% Chief Information Security Officer	1% Director, Line of Business (Non IT-related)
5% Chief Innovation Officer	3% Director of Business Function (Non IT-related)
7% Chief Marketing Officer	6% Director of Technology
8% Chief Operating Officer	
1% Chief Purchasing Officer	

About Accenture

Accenture is a global professional services company with leading capabilities in digital, cloud and security. Combining unmatched experience and specialized skills across more than 40 industries, we offer Strategy and Consulting, Interactive, Technology and Operations services—all powered by the world's largest network of Advanced Technology and Intelligent Operations centers. Our 514,000 people deliver on the promise of technology and human ingenuity every day, serving clients in more than 120 countries. We embrace the power of change to create value and shared success for our clients, people, shareholders, partners and communities. **Visit us at www.accenture.com**

About Accenture Labs

Accenture Labs incubates and prototypes new concepts through applied R&D projects that are expected to have a significant impact on business and society. Our dedicated team of technologists and researchers work with leaders across the company and external partners to imagine and invent the future.

Accenture Labs is located in seven key research hubs around the world: San Francisco, CA; Washington, D.C.; Dublin, Ireland; Sophia Antipolis, France; Herzliya, Israel; Bangalore, India; Shenzhen, China and Nano Labs across the globe. The Labs collaborates extensively with Accenture's network of nearly 400 innovation centers, studios and centers of excellence to deliver cutting-edge research, insights, and solutions to clients where they operate and live. For more information, please visit **www.accenture.com/labs**

About Accenture Research

Accenture Research shapes trends and creates data-driven insights about the most pressing issues global organizations face. Combining the power of innovative research techniques with a deep understanding of our clients' industries, our team of 300 researchers and analysts spans 20 countries and publishes hundreds of reports, articles and points of view every year. Our thought-provoking research—supported by proprietary data and partnerships with leading organizations, such as MIT and Harvard—guides our innovations and allows us to transform theories and fresh ideas into real-world solutions for our clients. For more information, **visit www.accenture.com/research**