

# **COMMUNICATIONS INDUSTRY TECHNOLOGY VISION 2018**

**Intelligent Enterprise Unleashed**

  
**accenture**

## Introduction

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**Technology is now firmly embedded throughout our everyday activities, but its reach is larger than that: businesses are using their products and services to reshape, reimagine, and transform how our society works, communicates, and even governs.**

According to the global Accenture Technology Vision 2018 Survey, 86 percent of Communications industry business and IT executives surveyed agree that, through technology, companies are weaving themselves seamlessly into the fabric of how people live today.

For the first time in a technological transformation, the change is a two-way street. People aren't just using companies' products and services, but are feeding information and access back to them.

Savvy communications service provider (CSP) organizations are realizing that this level of connection—and this degree of trust—will require a new type of relationship, based not only on a company's products, but its goals and values. In short: people are “reading the labels” of enterprise—and companies must define those labels for themselves, or have the labels determined for them.

Telefónica publicly shares the following core values: to be trusted, bold and open. These values are delivered through a set of comprehensive business principles founded on integrity, commitment and transparency and directed towards everyone at the company, independent of where they perform their activities or their specific role or function. This includes suppliers and business partners, with the expectation that the core values are complied with throughout the entire value chain. CEO José Álvarez-Pallete recently recommitted to this vision, stating, “Telefónica will always guarantee the privacy of its customers, and it will do so with security and transparency. And all of this is based on our responsible and sustainable business principles, on our company values—open, bold, trusted.”<sup>1</sup>

## 2018 TECHNOLOGY VISION

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# THE OPPORTUNITY

These rapid advancements in technology offer huge potential to create increasingly innovative products and services. With the help of AI, learning systems are delivering personalized and adaptive training courses to millions of people; virtual reality systems are helping employees gain firsthand experience with challenging or potentially dangerous situations without real-world risk; and governments are using blockchain to enable fast, secure data-sharing between their agencies, while giving their citizens insights into who is accessing what data and maintaining security.

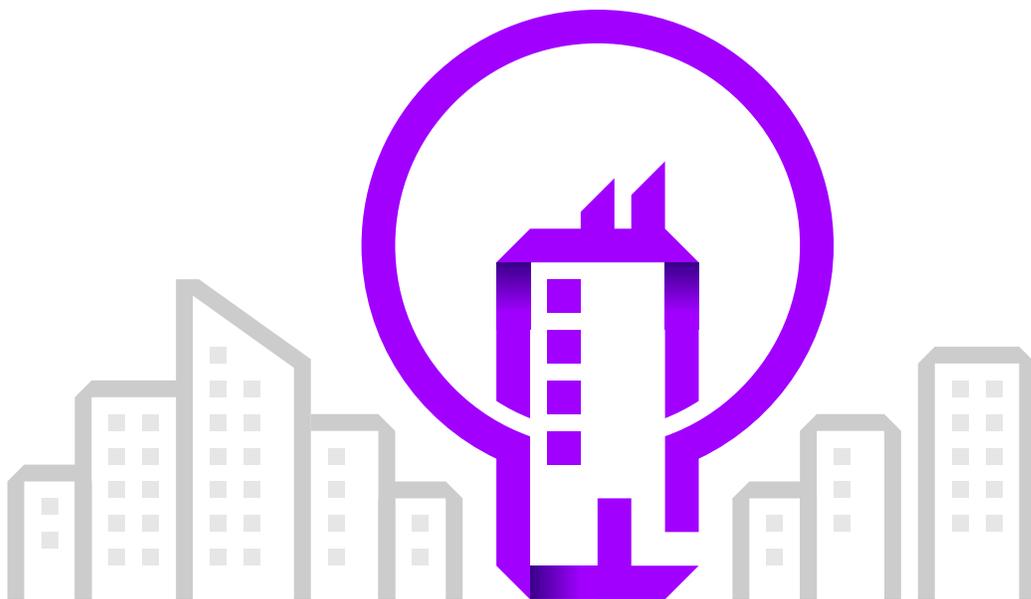
In doing so, they are also driving unprecedented changes in the way people work and live. By embedding themselves throughout society, companies are blurring the lines between business and personal—and blazing a new trail for their own future growth.<sup>2,3,4</sup>

## 2018 TECHNOLOGY VISION

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# UNLEASH THE INTELLIGENT ENTERPRISE

This year's Accenture Technology Vision highlights five emerging trends shaping the way that technology is increasing the impact of business across society. In each chapter, you will see how expectations are growing, as customers, employees, business partners, governments, and more, seek formalized partnerships with businesses. In this particular overview, we explore specific examples of how this is affecting the Communications industry.





Trend 1  
**CITIZEN AI**  
**Raising AI to Benefit  
Business and Society**

AI adoption across communications infrastructures, components, systems and services, must foster technical cooperation and focus on digital inclusion.



Trend 2  
**EXTENDED  
REALITY**  
**The End of Distance**

Communications companies are the critical connectors of real, augmented and virtual experiences. Through 5G networks and extended reality (XR), CSPs are building, connecting and enabling the expectations of the future.



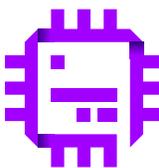
Trend 3  
**DATA  
VERACITY**  
**The Importance of Trust**

Trust in data is now critical for decision making at individual and corporate levels. CSPs must invest in their heritage as data custodians to fuel growth through the quality and accessibility of their data.



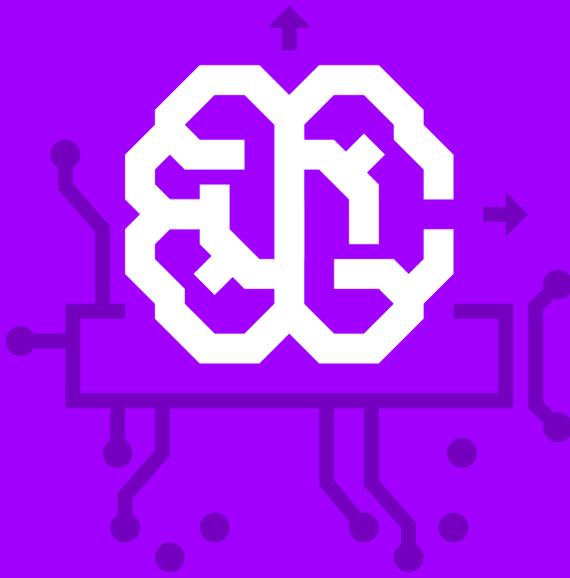
Trend 4  
**FRICTIONLESS  
BUSINESS**  
**Built to Partner at Scale**

Platforms, microservices, APIs and blockchain technology will help CSPs to expand their ecosystems. The ability to partner at speed and at scale will drive innovation and cross industry business value beyond connectivity.



Trend 5  
**INTERNET  
OF THINKING**  
**Creating Intelligent  
Distributed Systems**

CSPs are making big bets on intelligent environments by designing, connecting and delivering services to operationalize IoT.



# CITIZEN AI

**Raising AI to Benefit  
Business and Society**

## With artificial intelligence (AI) growing in its reach throughout society, any Communications business looking to capitalize on AI's potential must also acknowledge its impact.

Much more than just a technological tool, AI has grown to the point where it often has as much influence as the people putting it to use, both within and outside the company. For businesses, this means that deploying AI is no longer just about training it to perform a given task.

By recognizing the impact AI now has in society, and raising it accordingly, companies can create a collaborative and powerful new member of the workforce. However, collaboration will be most successful if businesses ensure there are ways of understanding an AI system's outputs, whether by customers and employees, or other artificially intelligent systems.

**Communications industry executives realize that building and using AI presents unique challenges. 82 percent of those surveyed state that it is very important for employees and customers to understand the general principles their organizations use to make AI-based decisions.**

Regardless of the exact role an AI ends up playing in society, it represents its company in every action that it takes. What happens if a self-optimizing network deploys the wrong policy and delivers the wrong solution to a perceived network issue, based on AI? That in turn prolongs network issues, which results in customer dissatisfaction, low net promoter score (NPS) and eventually loss of customers through dissatisfaction and churn.

At AT&T, AI is driving the “software-defined” approach to its operations and service delivery strategy. The company uses AI to process all online chat interactions, including Atticus, the entertainment chatbot that operates through the Facebook Messenger program. Predictive analysis is another major AI company initiative. It is used to analyze video data captured by drones for the tech support and maintenance of cell towers and through self-healing and self-learning networks. This potentially reduces the need for engineers to be deployed, increases the level of accuracy when it comes to identifying problems and speeds up the resolution of issues that could cause customer dissatisfaction and churn.<sup>5</sup>

As AI becomes more firmly and widely integrated into society, it will have direct influence and impact on everything from financial decisions, to health, to criminal justice, and beyond. Communications organizations that hesitate to consider their AIs as something that must be “raised” to maturity will be left struggling to catch up with new regulations and public demands—or worse, have strict regulatory controls placed upon the use of AI for failure of the group to take responsibility.



# EXTENDED REALITY

**The End of Distance**

## Virtual reality (VR) and augmented reality (AR) deliver immersive experiences that extend reality. Extended reality (XR) is the first technology to let people experience omnipresent abilities, relocating them in both time and place—bringing about the end of distance.

Forays into XR are solving a tactical pain point that the Communications industry's customers and businesses share: distance.

Korea Telecom allowed fans to experience the 2018 PyeongChang Olympic Games with virtual and mixed reality, connecting them to the action in real time. The company showcased how 5G allows for 360-degree live VR experiences of events like bobsled and the Olympic torch relay. Attendees and Winter Olympics enthusiasts around the world could track, experience and share the games, personalizing their experiences to the sports and events they cared about.<sup>6</sup>

**Results from our Technology Vision 2018 survey show that 84 percent of Communications industry executives believe that removing distance barriers is a driver in their adoption of extended reality solutions.**

The fundamental changes to enterprise and society are clear: the importance of place is disappearing. XR is removing the hurdle of distance, increasing access to people, information, and experiences.

Consider XR-based training: companies can bring trainers “on-site” from anywhere, or have students virtually “travel” to an instructor; training scenarios can be set up anywhere, then run, re-run, and adjusted to give a firsthand experience of different situations. This eliminates the distance not just between student and teacher, but also concept and practice.

Deutsche Telekom has developed a VR game, Sea Hero Quest, to aid dementia research. The video game delivers an immersive and intuitive diagnostic assessment of navigation problems in people who may potentially develop dementia, designed to help researchers understand the mental process of 3D navigation. Sea Hero Quest VR presents scientists with the opportunity to gain greater insight faster. Two minutes spent playing collects the equivalent of five hours of lab research.<sup>7</sup>

Extended reality is also closing the distance to new business insights for Communications industry organizations. Emerging XR tools express data in 3D environments, closer to the way that humans actually see and imagine scenarios. This clears the way for new types of visualizations—and new discoveries. Extended reality is changing the viewer's relationship to information: how people parse, communicate, and extract value from data.

Today, extended reality is still evolving, and challenges around processing lag and content creation remain barriers to its full maturity. The opportunity for CSPs lies squarely in 5G advanced connectivity and the provision of edge services to the pioneers of VR.

**Together they can deliver immersive experiences, which is why only 32 percent of Communications industry executives agree that it is very important for their organizations to be a pioneer in XR solutions. Many plan to partner with existing players.**

Making well-planned forays into immersive experiences now will help build the capabilities needed to transform communications ecosystems tomorrow. Extended reality is pushing companies to create new solutions that bypass many of the distance-based challenges they face today—a clear advantage for leading companies that embrace it. As XR becomes pervasive, immersive experiences will eliminate the most important distance of all: the distance between where businesses are today and where they want to be in the future.





# DATA VERACITY

## The Importance of Trust

**85 percent of Communications industry executives responding to our Technology Vision survey report that their organizations are increasingly using data to drive critical and automated decision-making, at unprecedented scale. Today, the global economy runs on live information: IDC forecasted global revenues of nearly \$151 billion for big data and analytics practices in 2017, up 12 percent from the year before.<sup>8</sup> And companies around the world are betting big on advances in data-hungry technologies.**

In 2017 alone, AI investments were projected to reach \$12.5 billion, while Internet of Things investments were expected to top \$800 billion.<sup>9,10</sup>

While business is more data-driven than ever, inaccurate and manipulated information threatens to compromise the insights that companies rely on to plan, operate, and grow. Left unchecked, the potential harm from bad data becomes an enterprise-level existential threat.

**According to our survey, 77 percent of Communications industry executives agree that organizations are basing their most critical systems and strategies on data, yet many have not invested in the capabilities to verify the truth within it.**

Communications industry companies are well positioned to address this vulnerability: 91 percent of our survey respondents were “confident” or “very confident” in the integrity of the sources of data that their organization collects and uses. By focusing on this, a core strength, and building in provenance, context, and integrity, the trusted data becomes the lifeblood for Communications organizations. Information on the five billion existing mobile network subscribers, as well as their activity on telecommunications networks, is fuel for business. Eventually that will lead to growth through data enabled partnerships and increased proximity to the customer.

Every CSP must build a “data intelligence” practice, drawing from existing data science and cybersecurity capabilities. This requires ramping up existing efforts: embedding and enforcing data integrity and security throughout the organization, while adapting existing investments in cybersecurity and data science to address data veracity issues.

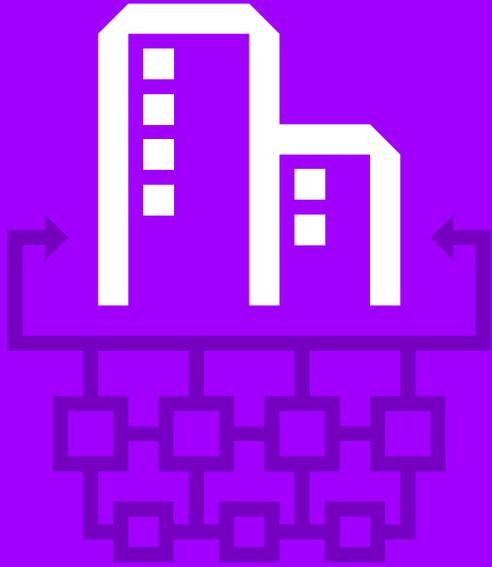
Companies must build the capability to track behavior as data is recorded, used, and maintained. With this knowledge, businesses can provide cybersecurity and risk management systems with a baseline of normal behavior.

Lookout, a mobile security start-up, collects data from millions of mobile devices to continuously train its mobile security algorithms to detect and predict potential security risks and vulnerabilities.<sup>11</sup> By creating a massive database of all mobile codes in the world, the company can deploy predictive algorithms at a scale that allows it to learn of new risks in real time and deflect attacks before they take place.<sup>12</sup>

The presence of bad data in a system isn't always the result of malicious intent, but may be a sign that a process isn't working the way it was intended. Using a data intelligence practice to uncover these processes will allow companies to reduce noise in data, so that real threats stand out.

Data is the lifeblood for digital companies, fueling complex business decisions that drive sustained growth. Ensuring the veracity of this data, then, becomes a cornerstone of strong leadership. Failure to do so can have grave consequences—especially as companies invest heavily in autonomous data-driven systems.





# FRICITIONLESS BUSINESS

**Built to Partner at Scale**

## Companies compete through strategic partnerships, and when these partnerships are technology-based, they can expand partner networks faster and into more ecosystems than ever before. But legacy business systems weren't built to support this kind of expansion, and soon, outdated systems will be major hindrances to growth.

To build a strong foundation for technology-based partnerships, CSPs must consider adopting microservices architectures and using blockchain and smart contracts. Those that invest in these changes today will redefine how businesses transact in the future.

**Worryingly, our survey shows only 33 percent of Communications industry executives report working with double or more partners than they were two years ago.**

It's critical for CSP business leaders to recognize that their organization's own technology will serve as the foundation for these strategic relationships—but could also be holding them back.

To spur a new wave of technology-based partnerships, companies must start inside their own walls. Microservices is not a single piece of technology, but rather an approach to architecture. It delivers internal benefits like application scalability and reliability, but it is also vital for building technology partnerships. A microservices architecture will push organizations to

clearly define the services they offer, allow them to discover new sources of revenue, and turn each service into a potential enabler of technology-based partnerships.

APIs are the pathways by which businesses make microservices and data available to partners, but developing APIs to only expose part of an application is fraught with difficulty, from the complexity of choosing which services to expose to potential security risks.

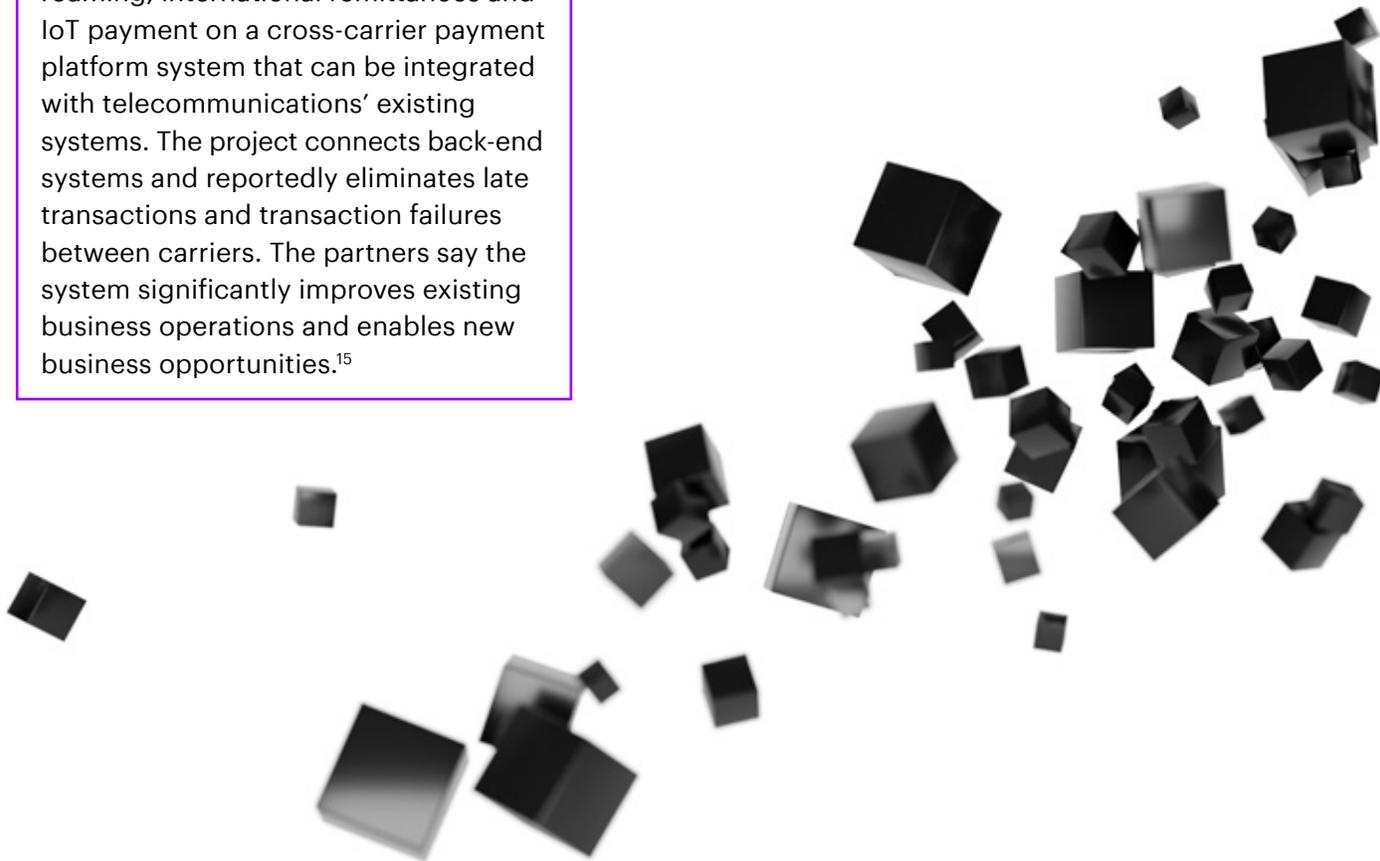
Scandinavian provider Telia has taken a great step forward for innovation with Premium Zone, a service that provides third-party application developers with an open API through which they can access information about broadband customers.<sup>13</sup> This service allows developers to define and create bespoke smart connected home services that are specific to the needs of users, such as a Spotify playlist that pulls from everyone in the home's most listened-to songs.<sup>14</sup> Although simple, this represents a pivot towards a new mindset and the beginning of a new capability that could help CSPs to better understand consumer intent.

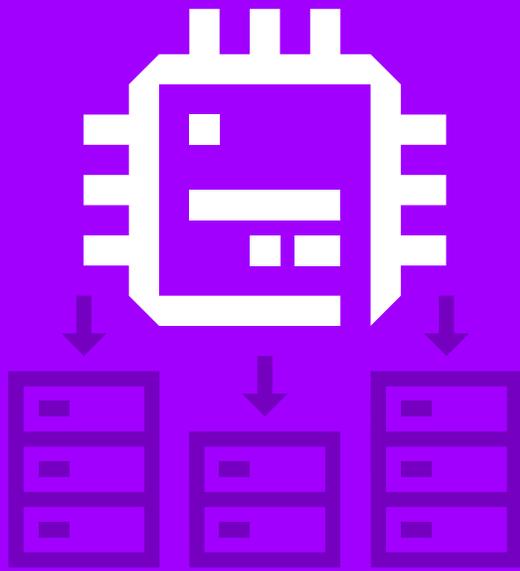
If microservices is the key to scaling and integrating partnerships, blockchain will be critical to managing and operating them. Communications industry companies will be challenged to maintain a higher volume of partnerships than ever before, and even rapidly pivot between partners, without sacrificing the integrity or security of their products and services. Blockchain will address this complexity by acting as a surrogate for trusted relationships.

In 2017, SoftBank, Sprint and TBCASoft agreed to jointly develop blockchain technology for the telecommunications industry and began a technical trial that connected TBCASoft's blockchain platform to carriers' systems. The initiative demonstrated cross-carrier pre-paid credit top-ups, mobile wallet roaming, international remittances and IoT payment on a cross-carrier payment platform system that can be integrated with telecommunications' existing systems. The project connects back-end systems and reportedly eliminates late transactions and transaction failures between carriers. The partners say the system significantly improves existing business operations and enables new business opportunities.<sup>15</sup>

**While many blockchain initiatives are still in early stages, 65 percent of Communications industry organizations responding to our survey are planning active research into how they can leverage blockchain, or piloting a blockchain initiative over the next year.**

Companies should begin to re-evaluate how they architect their applications and services, moving toward microservices to set the foundation and quickly build the relationships needed for growth. For many, blockchain will become the future of how businesses transact, and leaders must begin investing in the relevant skills and tools today. Tomorrow's leading CSPs will be those that enable partnerships through technology today.





# THE INTERNET OF THINKING

**Creating Intelligent  
Distributed Systems**

## **Robotics, immersive reality, artificial intelligence and connected devices are bringing a new level of technological sophistication to the physical world. The next generation of technology demands an overhaul of existing infrastructures, with a balance of cloud and edge compute, and a renewed focus on hardware to deliver intelligence everywhere.**

Current infrastructures are designed around a few basic assumptions: enough bandwidth to support any remote application, an abundance of compute in a remote cloud, and nearly infinite storage. But the demand for immediate response times in physical-world applications defies this approach. Current predictions suggest that by 2020, smart sensors and other Internet of Things devices will generate at least 507.5 zettabytes of data. Trying to do all the computational heavy lifting offsite ultimately will become a limiting factor.<sup>16</sup> The resulting need for real-time systems puts hardware in focus: special-purpose and customizable hardware is making devices at the edge of networks more powerful and energy efficient than ever before.

Blockchain, 5G, low latency connectivity and edge computing capabilities offer CSPs an opportunity to position themselves competitively within environments defined by robotics, AI and XR. Designing, orchestrating,

connecting and delivering services to operationalize IoT will be coveted roles in the race for relevance.

The next generation of intelligent solutions are moving into physical environments, and key company strategies ride on pushing intelligence into the physical world:

- improving traffic flows in smart cities; telemedicine that continuously analyzes a patient's condition; and
- disaster analysis that prevents oil field catastrophes before they start.<sup>17,18,19</sup>

Now, companies need to extend their infrastructures to reach into the dynamic physical environments they want to serve.

This extended infrastructure calls for a renewed focus on hardware, at a time when many telcos have grown accustomed to software-driven solutions as their go-to strategies.

**Companies are taking note: our Technology Vision 2018 survey indicates that 68 percent of Communications industry executives believe it will be critical over the next two years to leverage customer hardware and hardware accelerators to meet the computing demands of intelligent environments.**

DTAC, a Telenor company, has developed “precision farming” to manage climate change, plant disease and soil moisture. The IoT based solution, developed by DTAC in conjunction with Thai government agencies for technology and agriculture, will monitor, analyze and predict the factors affecting cultivation. DTAC provides the wireless internet connectivity and cloud computing. The result is a more precise farming system that should help increase crop yields, control quality of agricultural products and reduce production costs. This partnership encourages young farmers in Thailand to adopt efficient use of technology and provides them with access to information they would otherwise not have access to.<sup>20</sup>

To drive AI, robotics, and other revolutionary technologies to their full potential, CSPs must make a significant effort across key areas of business processes and strategy, from service design, to infrastructure transformation, to hardware considerations. The well-earned result will be truly intelligent environments that meet people where they are.

Leveraging the rapid advancements in technology to create increasingly innovative products and services, businesses are driving unprecedented changes in the way people work and live. By embedding themselves throughout society, companies are blurring the lines between business and personal—and blazing a new trail for their own future growth. Technology is now firmly embedded throughout our everyday activities, but its reach is larger than that: it’s reshaping pieces of our society.

Businesses must act today to incorporate hardware-focused skills into their workforce—an added challenge for those whose cloud-first mentality may have de-emphasized this need. Building or leveraging custom and specialized hardware is a shift from the “one-size-fits-all-tasks” approach that proved popular in enterprises during the last decade.

**83%**  
**of Communications industry executives in our survey agree that edge infrastructure will speed the maturity of many technologies.**



## Conclusion

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**This year's Accenture Technology Vision trends highlight the rapid advancements in technologies that, in turn, are improving the ways people work and live. The Communications industry has exciting opportunities as a result and we look forward to discussing the findings further.**



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