Aerospace and Defense Technology Vision 2021

Setting the course for a digital future

It’s an exceptional time to be in the aerospace and defense industry. There’s been a monumental shift in passenger expectations. Defense budgets remain robust. And space presents a burgeoning frontier.

The challenges of 2020 sent shockwaves through the industry. After being forced to pivot rapidly during the pandemic, aerospace and defense companies recognize that every business is a technology business. They’ve embarked on a new era of exponential transformation.

Now, as we begin building our post-pandemic reality, aerospace and defense companies are facing a land of opportunity. On the one hand, there’s widespread and accelerated digital transformation coupled with the digital building blocks to create almost anything. On the other, there are blank canvases in many parts of the industry waiting to be filled. Combined, it’s a once-in-a-generation opportunity for companies to actively shape their future almost from the ground up. But this challenge demands a new kind of leadership. Leading in the uncertain future will require aerospace and defense companies to become Experts at Change.

Just 18 months ago, many companies were content to do 'just enough' to keep pace with their competitors. Now, it's a different story. The Accenture Technology Vision 2021 [1] reveals that aerospace and defense firms are accelerating their digital transformation even more than companies in other industries.

97%

of aerospace and defense executives say their company is innovating with an urgency and call to action this year.

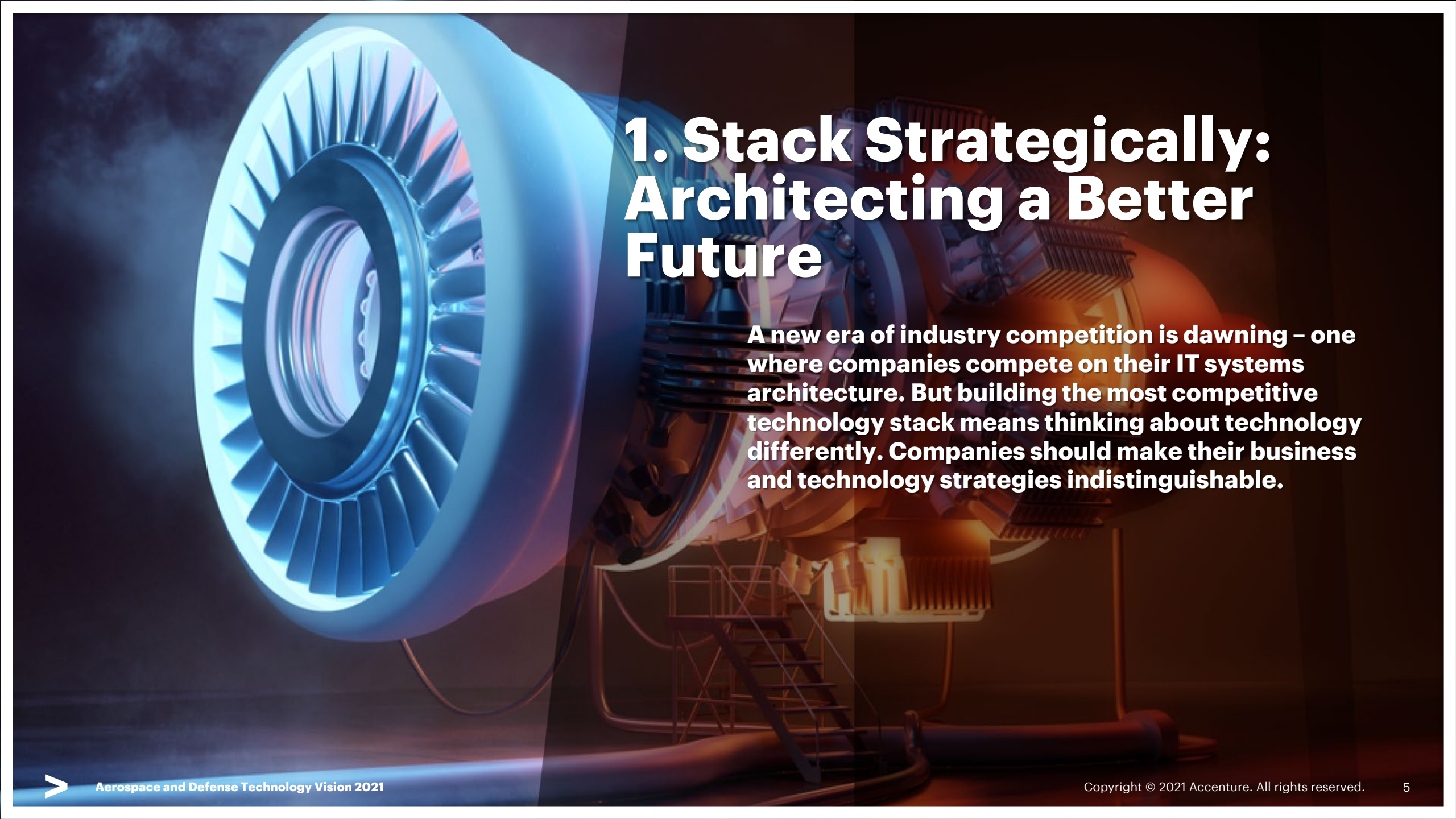
60%

report the pace of digital transformation in their company is accelerating .

It's no wonder that companies are investing in digital, given the stakes are so high. Aerospace and defense companies are no longer just competing for market share. Today, they're competing in new markets such as commercial space travel and urban air mobility, to build their vision of the future faster than the competition. Success will depend on their ability to accelerate and become skillful at change in all parts of their business, which in turn hinges on the technology decisions they make today. Though technology leadership is essential, this responsibility can't fall solely to the CIO or CTO. The entire C-suite and all parts of the organization should adopt a digital-first approach.

Five technology trends shaping the future

There's ample opportunity out there for aerospace and defense companies. Making the right decisions today will help companies thrive tomorrow. Our Technology Vision 2021 research unearthed five key technology trends that aerospace and defense companies must harness to drive their digital-first transformation.



1. Stack Strategically: Architecting a Better Future

A new era of industry competition is dawning – one where companies compete on their IT systems architecture. But building the most competitive technology stack means thinking about technology differently. Companies should make their business and technology strategies indistinguishable.

To become, or remain, industry leaders, aerospace and defense companies must build competitive technology stacks.

The most dynamic, sustainable, and competitive architectures will be those that let companies tap into the full spectrum of technology capabilities. The sweet spot? Building unique solutions for current markets while maintaining a focus on reusability, repurposing, and the enterprise's evolving goals.

Aerospace and defense companies are already investing in digitization efforts, including paperless maintenance and virtual inspections, digital records management, predictive analytics platforms and Augmented and Virtual Reality solutions. For example, AAR is piloting the use of Augmented Reality, enabling hands-free workflow and communication between technicians. [2]

81%

agree that their companies' business and technology strategies are becoming inseparable—even indistinguishable.

77%

state that their technology architecture is becoming critical to the overall success of their organization.

91%

agree that their ability to generate business value will increasingly be based on the limitations and opportunities of their technology architecture.

Figure 1: Alignment between organization business and technology strategy

Please indicate the statement that best reflects the alignment of your organization's technology and business strategy

2. Mirrored World: The Power of Massive, Intelligent, Digital Twins

Leaders are building intelligent digital twins to create living models of factories, supply chains, product lifecycles, and more. Bringing together data and intelligence to represent the physical world in a digital space will unlock new opportunities to operate, collaborate, and innovate.

As more aerospace and defense companies build and connect intelligent twins, they're essentially creating a mirrored world. This opens new vistas of opportunities and ways to do business.

Intelligent twins enable powerful simulation capabilities that empower companies to reimagine the innovation process. They're essentially, a risk-free playground to explore new product ideas, strategize for many possible futures, and explore limitless "what-if" scenarios.

Boeing's T-7A pilot training aircraft development program is an example of the power of new digital tools. The program has successfully deployed a digital thread-based engineering approach to cut the assembly effort by 80%. Leveraging digital design practices, engineers were able to significantly improve first time quality while reducing software development and verification time.

93%

believe their company requires a mission control, or central intelligence hub, to gain insights into complexities and model their organization's processes, people and assets.

68%

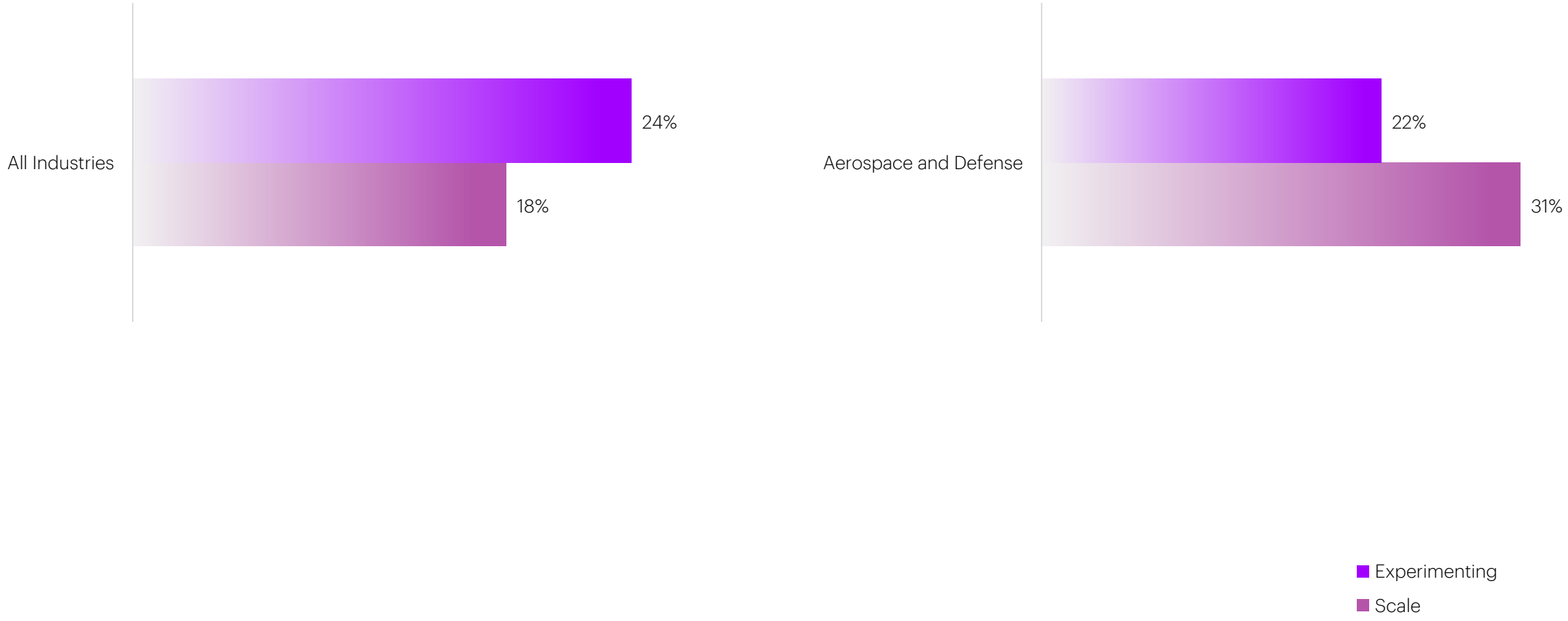
expect their investments in intelligent digital twins to increase over the next three years.

85%

agree digital twins are becoming essential to their organization's ability to collaborate in strategic ecosystem partnerships.

Figure 2: Status of Digital Twin implementation

What technology is your organization experimenting with or scaling up this year? *Select all that apply Digital Twins*



3. I, Technologist: The Democratization of Technology

People across business functions now have powerful technology at their fingertips. Today, every employee can be an innovator, optimizing their work, fixing pain points, and keeping pace with evolving business needs.

Democratized technology lets people solve problems and make improvements on their own – without needing to request major IT projects.

For instance, employees can create custom finance dashboards, build apps to approve and automatically fulfill purchase orders, and much more. This adds a grassroots layer to companies' innovation strategies. That's precisely what BAE Systems is doing with its "Academy for Skills & Knowledge" [4] that uses the latest technology to replicate the equipment used in the company's manufacturing facilities and engineering labs to train employees. The company aims to put 3000 employees through professional development every year.

85%

believe technology democratization is becoming critical in their ability to ignite innovation across their organization.

87%

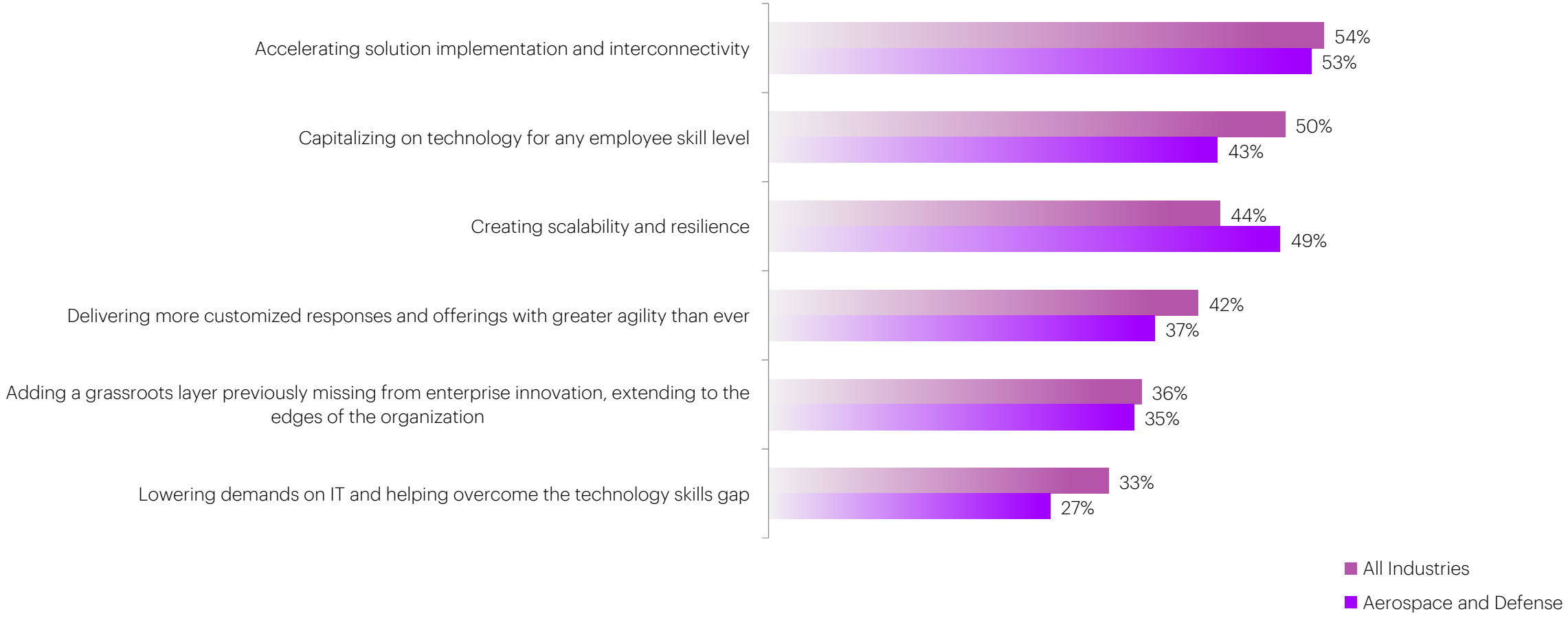
of executives agree their organization must train their people to think like technologists—to use and customize technology solutions at the individual level, but without highly technical skills.

91%

agree that for tools of technology democratization, organizations need to ensure that training strategies include a focus on security and data governance.

Figure 3: Benefits from technology democratization

What benefits does your organization derive from tools of technology democratization? *Select all that apply.*



4. Anywhere, Everywhere: Bring Your Own Environment

2020 saw the biggest workforce transformation in living memory. Aerospace and defense companies made drastic moves to keep business going and protect employees during COVID-19. They sent swaths of their people to work from home and doubled down on technology solutions to keep them productive.

As we embrace this new future of work, aerospace and defense enterprises face two key realities

Just as most companies didn't have much say in bring your own device (BYOD), people wanted the devices that worked best for them, bring your own environment (BYOE), that includes security ramifications and cultural shift, is here to stay. After a year experiencing the flexibility of working from home, many employees will want to continue working from home at least part of the time.

One example? Leonardo [5] is offering virtual and cyber-secure smart-working methodology and tools to its customers to ensure continuous operations and so their workforce can meet growing workload and business needs.

89%

their organization's employees just faced the largest and fastest human behavioral change in history.

92%

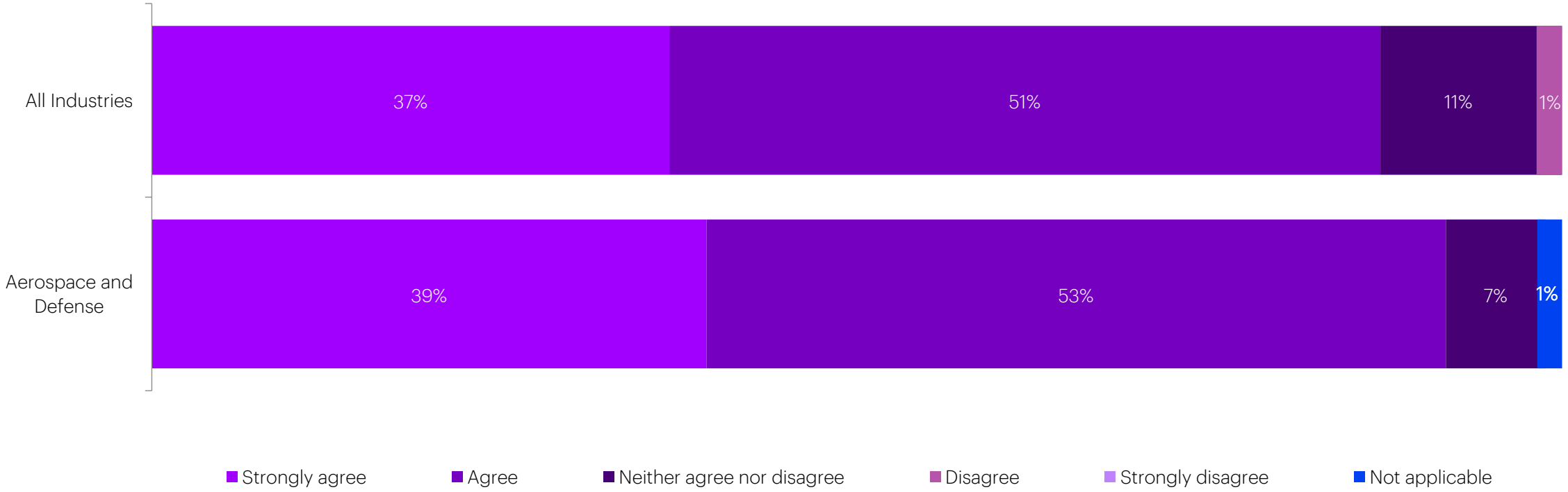
believe the remote workforce opens up the market for difficult-to-find talent and expands the competition for talent among organizations.

79%

agree that leading organizations in their industry will start shifting from a bring your own device (BYOD) to a bring your own environment (BYOE) workforce approach.

Figure 4: The remote workforce intensifies the competition for talent

Please indicate your level of agreement or disagreement with each of the following statements.
The remote workforce opens up the market for difficult to find talent and expands the competition for talent among organizations.



5. From Me to We: A Multiparty System's Path Through Chaos

As aerospace and defense companies strengthen and broaden their partnerships, it's time for a new model. Many will look to multiparty systems (e.g. blockchain and other distributed ledger technologies) to underpin these relationships.

The pandemic left many aerospace and defense companies cut off from their partners and scrambling for answers. Now, they're looking to build a resilient, adaptable, and trustworthy foundation for their existing and future partnerships

There's opportunity here: disruption has upended previous expectations for ecosystems and ambitious companies are creating new standards for the industry.

Coordinated, strategic ecosystem partnerships will equip aerospace and defense companies to address today's disruptions and be better prepared to weather new ones, but they'll also enable ways to create new interactions or discover new ways to approach a market.

These partnerships will start to blur industry boundaries, or even begin to define new industries entirely. An early adopter was Thales who is using a blockchain-based solution [6] that provides a single, shared view of the supply chain – and an immutable audit trail – in order to partner effectively with suppliers, manufacturers, and operators.

18%

report their organizations are experimenting with multiparty systems this year.

87%

state that multiparty systems will enable their ecosystems to forge a more resilient and adaptable foundation to create new value with their organization's partners.

91%

agree that to be agile and resilient, their organizations need to fast forward their digital transformation with cloud at its core.

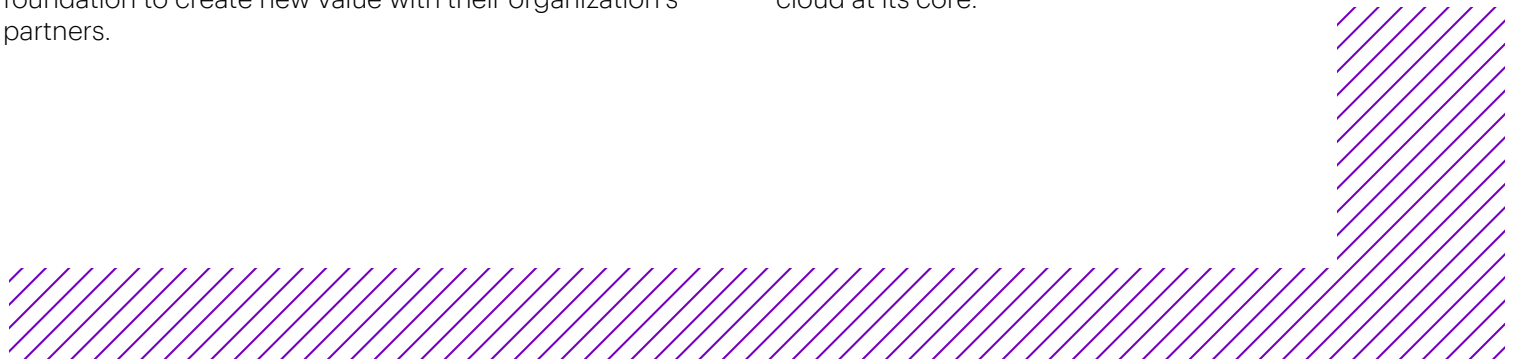
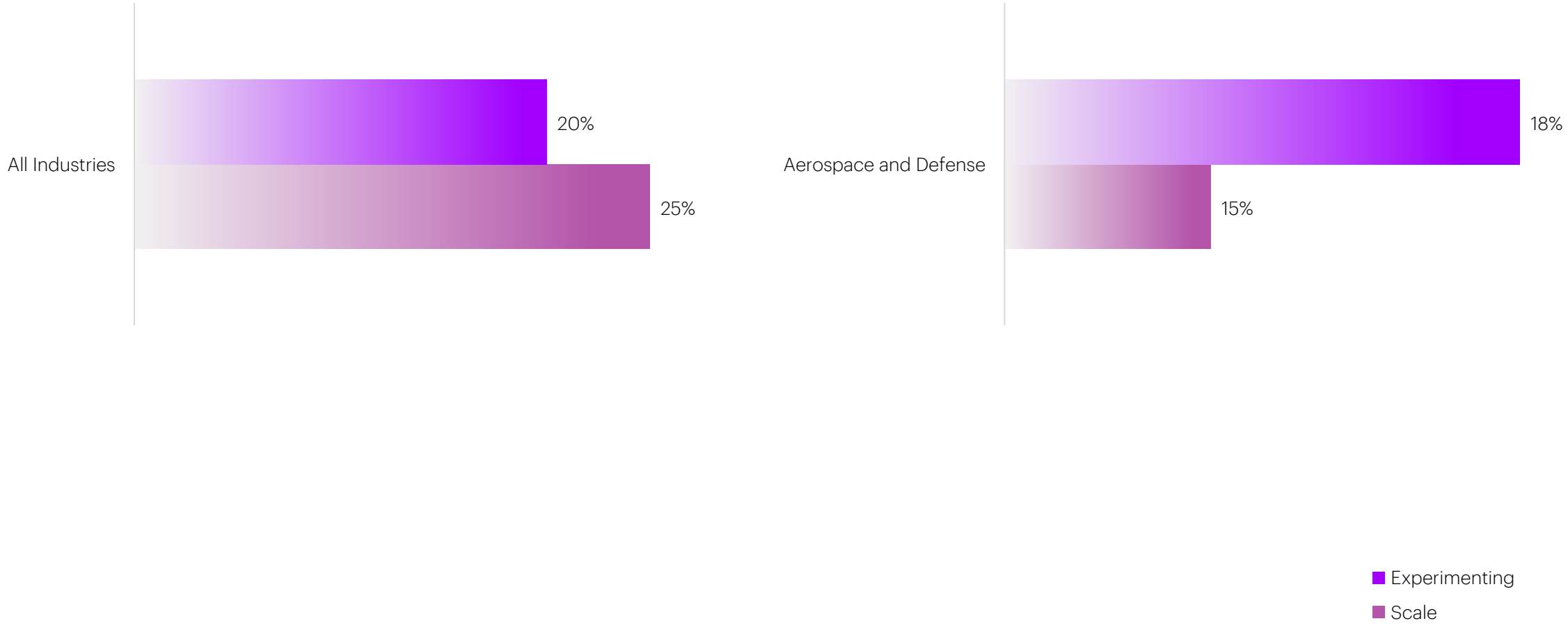


Figure 5: Aerospace and defense companies are falling behind in their adoption of multiparty systems

What technology is your organization experimenting with or scaling up this year? *Select all that apply Blockchain/Distributed Ledgers (Multiparty Systems)*



The "SO WHAT?" for Aerospace and Defense

It's clear that aerospace and defense companies face major challenges and uncharted territory as they navigate beyond the pandemic. CEOs have spent the last year prioritizing their people, customers, and suppliers, addressing supply chain disruption, stabilizing cashflow, and adapting to evolving demand. Now, they should focus on identifying new growth pathways and investments.

As aerospace and defense executives look to pilot their organizations successfully through this uncertain future, they should embrace a three-point approach to tackle disruptions, embrace a future powered by digital technologies and reap rewards.

Companies that successfully adapt to the changing landscape and embrace digital will reap huge rewards. These include increased revenue, better ROI, greater shareholder returns, higher future value, greater resiliency, and a more elastic workforce. In contrast, companies that fail to act will be left behind.

Digitize across the value chain

To increase efficiency and address new portfolio imperatives, aerospace and defense companies should embrace a "be digital and go digital" approach. By introducing automation across the value chain, companies can build a responsive and resilient enterprise that's ready for future "black swan" events.

For example, when Textron [7] shifted to Microsoft hybrid cloud storage, it cut annual storage costs and gained rapid and cost-effective storage scalability to help manage peaks in demand. Textron also gained a cost-effective disaster recovery solution that shortens data access time from 72 hours to minutes.

Collaborate to innovate

To drive innovation and be future-ready, aerospace and defense companies must collaborate across the industry and technology ecosystem, working together with peers, partners, suppliers, and vendors to sustain and grow business value.

For example, Leonardo started the Leonardo Empowering Advanced Partnerships (LEAP2020) [8] to strengthen supplier partnerships and create mutual value. It's helping suppliers grow their businesses and boost quality using a new industrial supply chain approach.

Embrace new business models

Aerospace and defense companies must address changing demands, such as the shift to narrow-body and electric aircraft, and the slow rebound in travel. What's more, they can integrate digital technologies into their products to evolve the customer value proposition and explore as-a-service business models.

Boeing is investing in the digital backbone for its supply chain, including constructing a digital thread to share data and align with customers and suppliers more effectively. They also rolled out a military Airplane Health Monitoring digital tool for the KC-46.

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About the Technology Vision research

Accenture Research conducted a global survey of 6,241 business and IT executives to capture insights into the adoption 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, with the majority having annual revenues greater than US$5 billion. The survey included 99 business and IT executives across 7 countries from the Aerospace and Defense Industry.