



TURNING POSSIBILITY INTO PRODUCTIVITY.

**From self-driving cars to virtual assistants,
Industry X.0 is using AI to turn ordinary
products into industry game-changers.**

AI-EMBEDDED PRODUCTS

The keys to digital reinvention and top-line growth.

Artificial Intelligence (AI) combined with other powerful digital technologies creates products and services that evolve with their users in an intimate and continuous process of innovation and exchange. Yet although almost all industrial players recognize the power of AI, only a handful have established such Industry X.O products in the market at scale: the key to higher stock market valuations. What distinguishes the far-sighted few? They convince stakeholders of their belief in digital reinvention. They clearly envision the value it generates and its impact on the business. And they commit, from the top, to the success of their vision—executing a customer-centric future at pace and scale.

THE PROMISE OF DIGITAL REINVENTION

Digital disruption threatens to replace around half of the companies in the current S&P 500 over the next 10 years.¹ But digital also drives industrial reinvention. And in today's disrupted markets, that is the key to profitable growth.

Artificial Intelligence (AI) is the power behind digital reinvention. When combined with other advanced digital technologies, AI can transform not only core operations, but also worker and customer experiences, and ultimately business models as well. If industrial incumbents can leverage AI to create [Industry X.O](#) products and complementary services that continually enhance customer experiences and establish them in the market at scale, they can dramatically boost top-line growth, and thus their market capitalization.

Consider, for example, the almost fourfold increase in Amazon's market value since the online retailer launched its AI-powered "personal assistant," Alexa, back in 2014. By 2020 it's been estimated that Amazon could have 500 million active customers globally, and assuming a 40 percent adoption rate in the US and 25 percent internationally, it could sell 60 million Alexa devices, which would generate US\$5 billion in sales revenue, assuming a two-year replacement cycle and an average price of US\$85.²

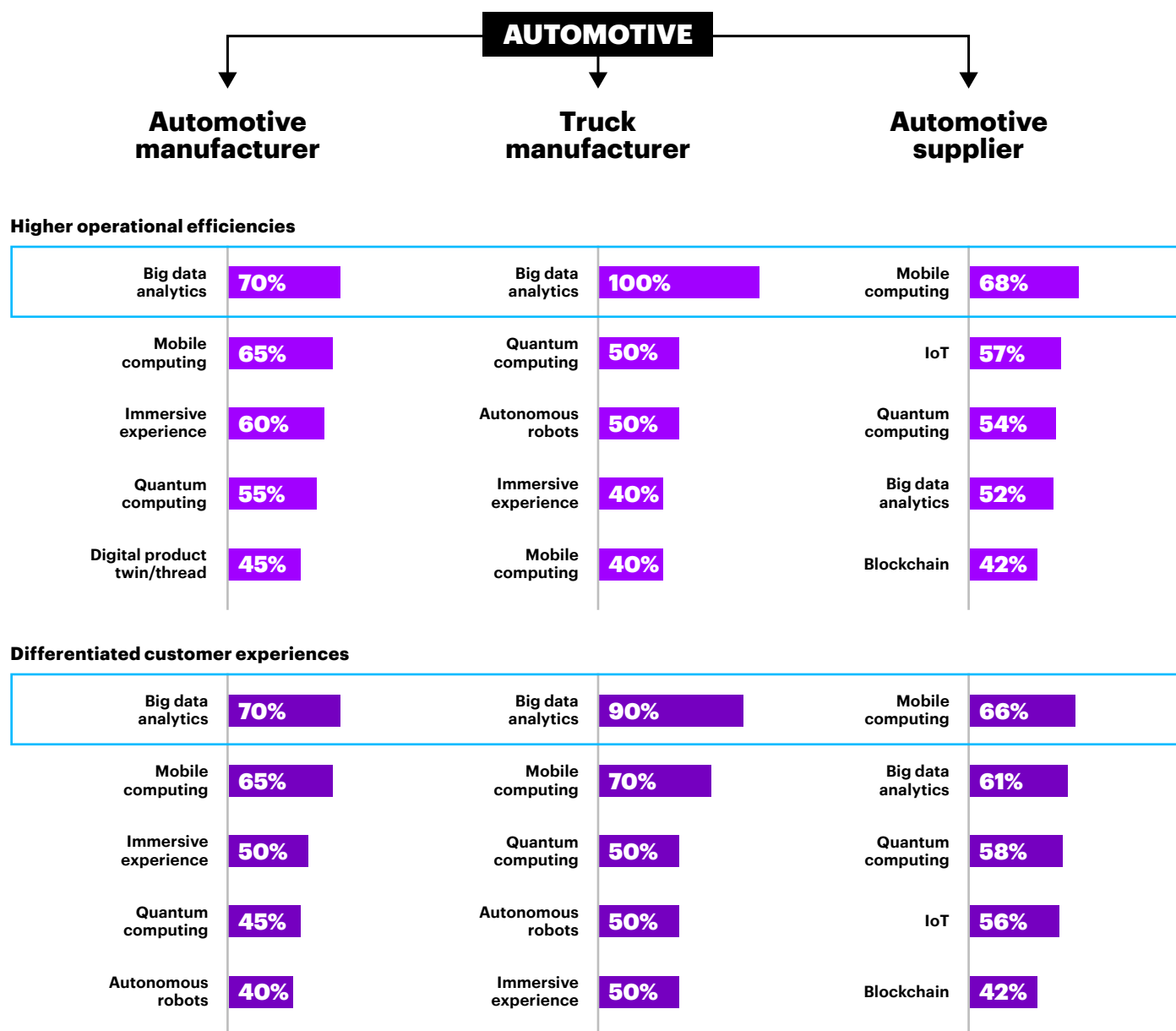
In fact, when integrated into cars and refrigerators, Alexa opens two new revenue streams for Amazon: the first as a platform

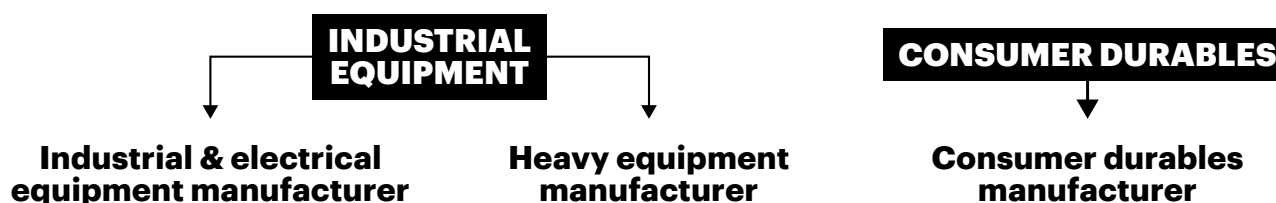
integrated in various consumer and industrial products, and the second through the orders that customers book with Amazon's retail business, leveraging Alexa as a channel. Indeed, other industrial companies can use Alexa to create value for themselves.

Accenture research confirms that similarly positioned B2B players would also drive significant value from digital reinvention: Market capitalization can be as much as 25 percent higher for industrial equipment companies and can deliver an additional 12 percent for those in life sciences.³

What's more, industrial companies recognize AI's potential. When we recently surveyed 500 manufacturers across six industrial sectors in six countries (see *Research Methodology*, page 6), we found no shortage of AI enthusiasm. Almost all (98 percent) have begun integrating AI into their products in one way or another. And they clearly understand that by combining AI with other digital technologies—especially mobile computing and big data analytics—they can drive both higher operational efficiencies and more differentiated customer experiences (see Figure 1).

Figure 1: Our survey identifies two vital technologies—mobile computing and big data analytics—industrial companies are keen to combine with AI.



**Higher operational efficiencies**

Mobile computing	65%	Mobile computing	71%	Big data analytics	61%
IoT	64%	Quantum computing	61%	Mobile computing	57%
Big data analytics	62%	Blockchain	55%	Autonomous robots	48%
Quantum computing	60%	Big data analytics	53%	Quantum computing	44%
Blockchain	54%	IoT	44%	Digital product twin/thread	40%

Differentiated customer experiences

Mobile computing	64%	Mobile computing	64%	Mobile computing	69%
IoT	62%	Quantum computing	57%	Big data analytics	67%
Big data analytics	60%	Big data analytics	53%	Autonomous robots	48%
Quantum computing	56%	IoT	48%	Quantum computing	47%
Blockchain	53%	Blockchain	48%	Blockchain	44%

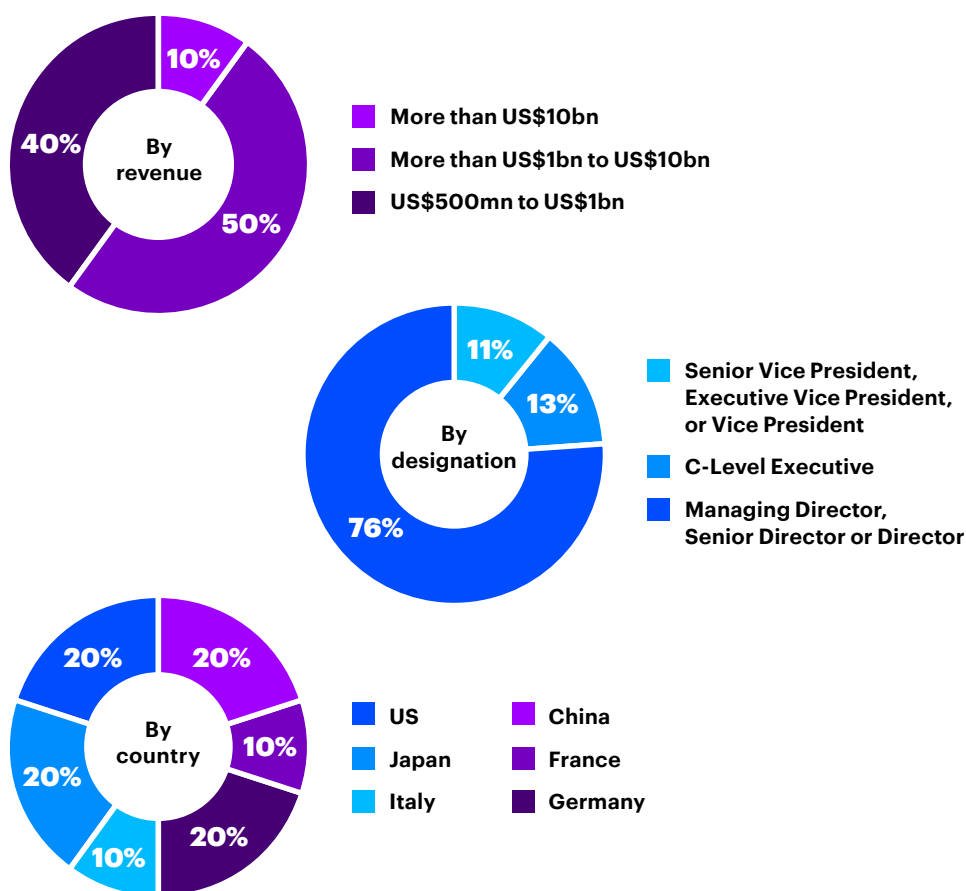
Source: Accenture Research Industry X.O Products, 2018

Research Methodology

We surveyed C-suite and director-level executives from 500 industrial companies with revenues of US\$500 million+ across six industrial sectors (Automotive Manufacturer, Truck Manufacturer, Automotive Supplier, Industrial and Electrical Equipment, Heavy Equipment, Consumer Durables) and six countries (China, France, Germany, Italy, Japan and the US). (See Figure 2.)

In addition, we analyzed more than 30 external case studies and the viewpoints of industry participants via desktop research; interviewed more than a dozen external and in-house experts; and employed social listening analytics to monitor online conversations among industrial customers, specifically US farmers, around AI-driven agricultural equipment.

Figure 2: We surveyed 500 industrial companies across the six countries to understand their perspective on embedding AI in their products.



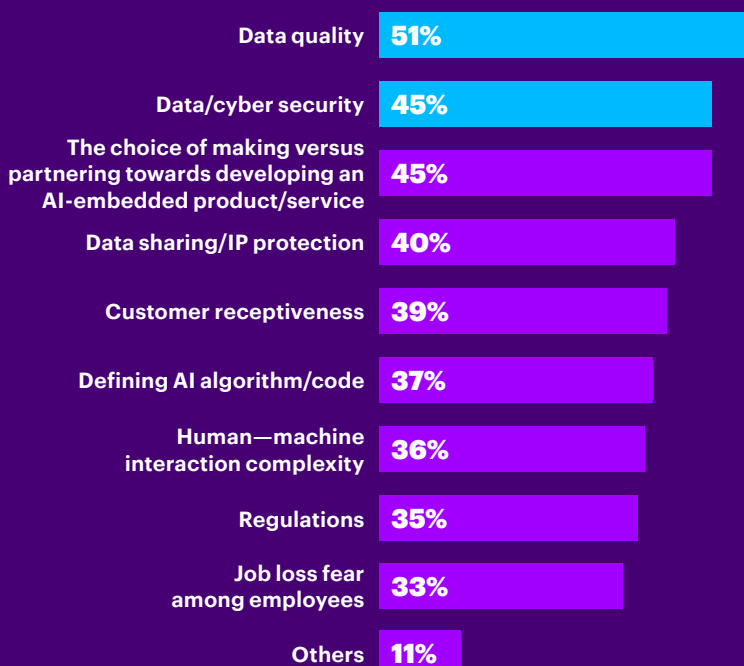
BELIEF IS NOT THE ISSUE

Yet many industrial players still struggle to realize their AI dreams—and small wonder.

Although most know they need to change, only 24 percent recognize that digital reinvention drives top- as well as bottom-line growth. More than 75 percent take an unstructured, scattergun approach to the task, throwing resources from all parts of the organization at it. Most, moreover, are leveraging only their immediate ecosystem, rather than an expanded network of start-ups, suppliers, customers and academic institutions that can complement and strengthen their existing capabilities. As a result, data quality and cyber security loom large among their challenges (see Figure 3).

Figure 3: Data quality and data/cyber security are the top two challenges restraining companies to digitally reinvent value.

In the course of developing and selling AI-and digital-technology-embedded products and solutions, what different challenges are you facing or do you anticipate facing for your company?



Source: Accenture Research Industry X.O Products, 2018

A FOUR-STAGE JOURNEY TO SUCCESS

While different industry sectors and geographies take rather different approaches to the challenge of AI-driven industrial reinvention (see *How Industries and Geographies Differ*, page 12), our investigations—a combination of case study research and survey analysis—confirm that *all* successful companies stay the course of a sequential, four-stage journey:



Believe

Digital reinvention starts with conviction. Companies need to really believe in the power of AI to shape the future of their products and businesses, and to bring key stakeholders with them. The good news is that nearly seven in 10 display such conviction.

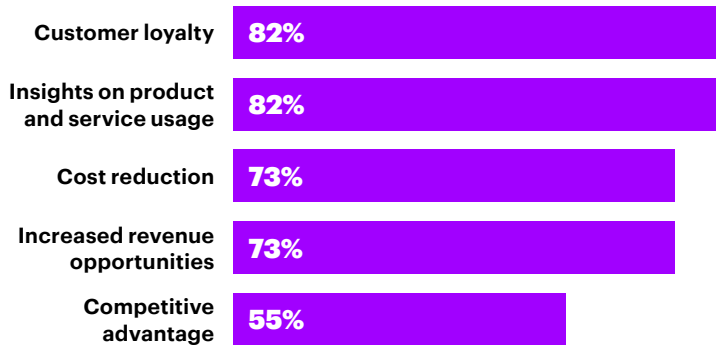


Envision

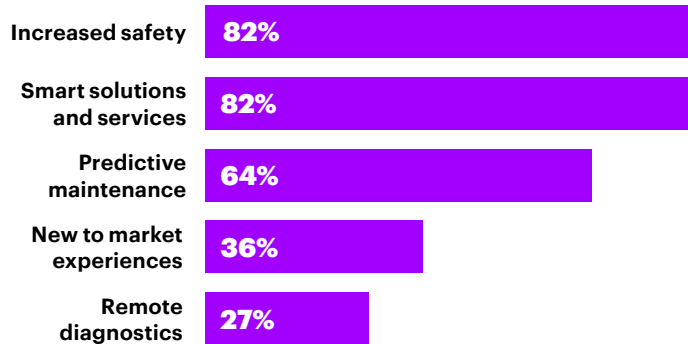
When it comes to transforming conviction into a commercially viable vision, however, only 16 percent of survey respondents qualify. In many cases, it's the CEO who puts the data-driven stake in the ground, authorizing top teams to start developing the investment and ecosystem strategies to acquire, process and secure the data needed to drive maximum value from AI. These industrial visionaries can also see the big picture: 82 percent rank enhanced customer loyalty and deeper insights from product and service usage as key value drivers for themselves; and the same proportion say that both greater safety and smarter solutions and services will be critical outcomes for their customers (see Figure 4).

Figure 4: Visionaries focus on customer relevance and customer value creation.

What are the key value drivers for your organization to embed AI and other digital technologies into products and services?



From the lens of your customers, which of the following do you see as a potential outcome for embedding AI and other digital technologies into industrial products and services?



Source: Accenture Research Industry X.O Products, 2018

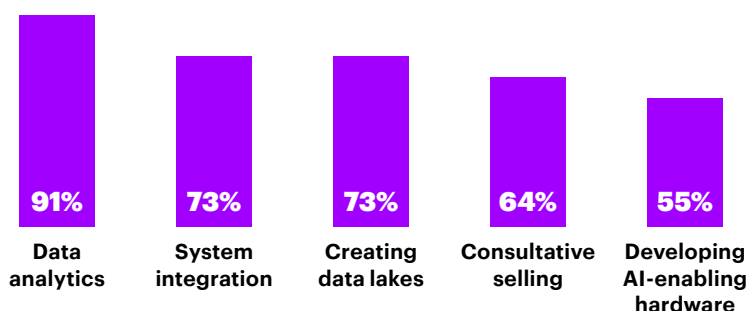


Commit

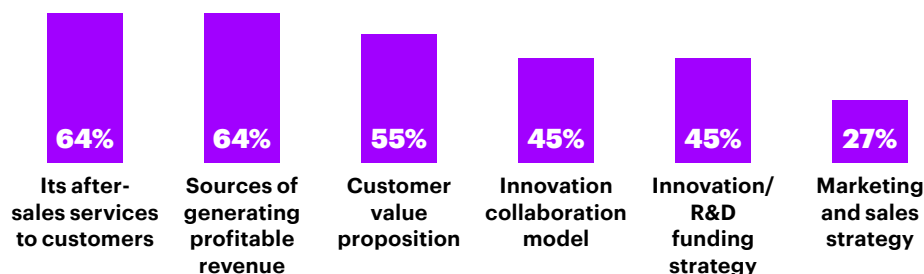
Armed with a robust vision and data-driven strategy, the next step is to commit appropriate management and financial resources to two critical areas: gaining the skills needed to ensure frictionless integration of new IT with legacy infrastructures; and shifting elements of the business model to embed AI. Just 5 percent of executives surveyed reach this stage, but they are very clear about the reasons for their success. Most cite strategic and tactical partnerships as key to amplifying the data skills they consider most important; while 64 percent say they have changed or will change critical elements of their business model to deliver customer relevance across the product lifecycle (see Figure 5).

Figure 5: Successful companies focus on building the right skills to build data-driven business models capable of delivering customer-relevant results across the product lifecycle.

Which skills are imperative for equipping your workforce and channel partners to leverage the true potential of AI and other digital technologies?



Which important elements of the business model is your company changing or will it change as a result of embedding AI and other digital technologies in products and services?



Source: Accenture Research Industry X.O Products, 2018

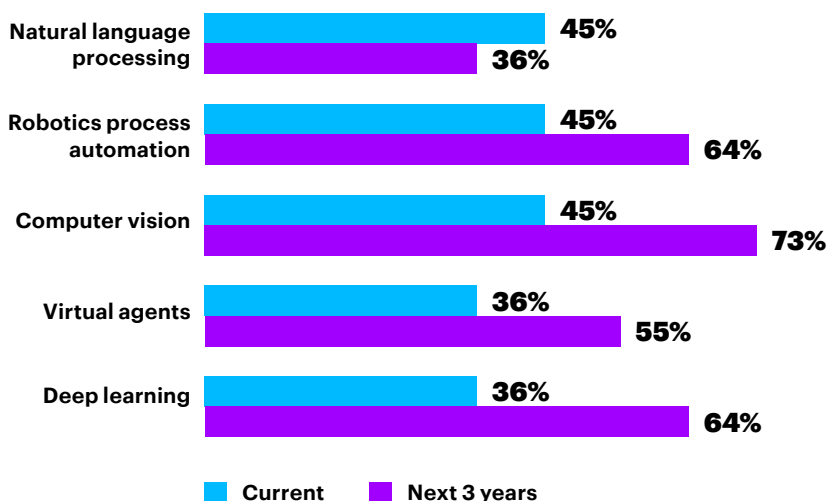
4

Execute

Only 2 percent of survey respondents achieve the scale they need to drive market value from their digitally reinvented products. They do so by working with ecosystem partners to identify, in granular detail, the AI components they want to combine with other digital technologies, now and in the future, as part of their customer value proposition (see Figure 6).

Figure 6: Successful companies identify and combine relevant AI technologies with other digital technologies towards delivering business value.

What are the key Artificial Intelligence technologies your company is using in industrial products and services?



Source: Accenture Research Industry X.O Products, 2018

They also take a systematic approach to achieving scale. They build agile prototyping and production models that actualize efficiencies and experiences. They innovate new experiences with start-ups and customers. They adjust their operating models to accommodate such initiatives as on-the-job training programs and collaborative, co-innovation platforms at speed. And they transform their business models from a product focus to one defined by services that link to the product and make it both more responsive and more responsible.

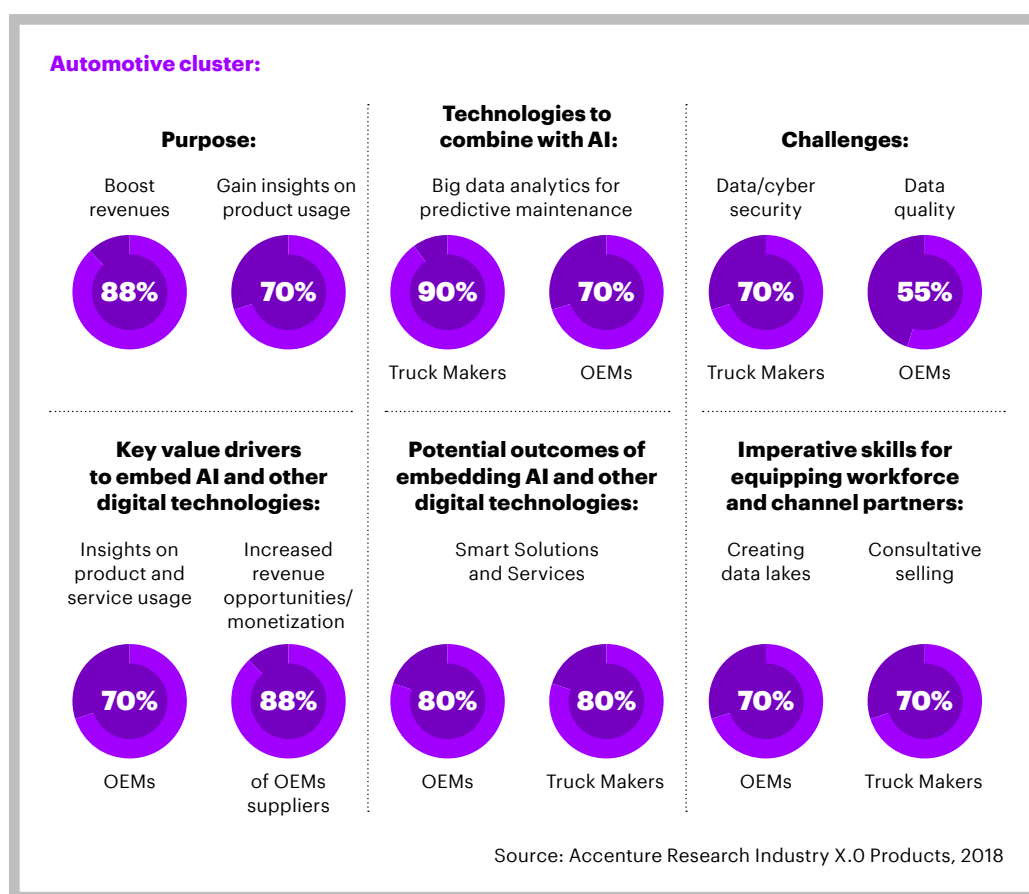
How Industries and Geographies Differ

The Industries

Our research focuses on three core industrial clusters: vehicle and truck manufacturers, plus automotive suppliers (Automotive), Industrial, Electrical and Heavy Equipment Manufacturers (IEM) and Consumer Durables (CD). They all recognize the imperative of digital reinvention. But thanks to such structural differences as the composition of their product portfolios and how close they are to the end user, each cluster takes a somewhat different approach to the digital reinvention journey. CD companies, for example, have the highest level of belief (83 percent), while only 67 percent of IEM players are as convinced and just 63 percent of Automotive. Even so, the believers in Automotive are further ahead than either of the other two on both commitment (9 percent vs. 7 percent for CD and 3 percent for IEM) and execution (5 percent vs. 1 percent for the other two, respectively).

Industry expectations of the impact of digital reinvention on business and operating models also differ. Changing sources of profitable revenue is a priority for 65 percent of Automotive, for example, while the component elements of IEM are split: a product-lifecycle sales and marketing strategy is the priority for most (57 percent) Heavy Equipment respondents, and 42 percent of those in Industrial and Electrical Equipment are changing or will change their innovation architecture.

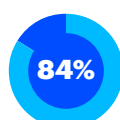
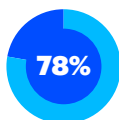
Various other specific differences between the sector clusters emerge as well:



Industrial, Electrical and Heavy Equipment Manufacturers cluster (IEM):**Purpose:**

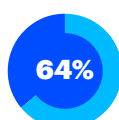
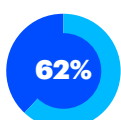
Cut costs

Drive revenue

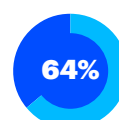
**Technologies to combine with AI:**

Industrial Internet of Things (IIoT) platforms

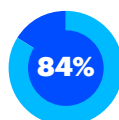
Mobile computing

**Challenges:**

The complex nature of the sector and the missing layer between customer-facing and innovation/product development entities inhibit companies' ability to envision value clearly and make partnering harder

**Key value drivers to embed AI and other digital technologies:**

Increased revenue opportunities/monetization

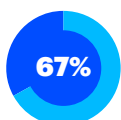


Electrical Equipment Manufacturers

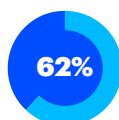
Potential outcomes of embedding AI and other digital technologies:

Smart Solutions and Services

Increased Safety



Electrical Equipment Manufacturers

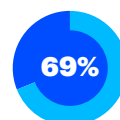


Heavy Equipment Manufacturers

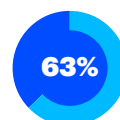
Imperative skills for equipping workforce and channel partners:

Data analytics/science

Developing AI-enabling hardware



Heavy Equipment Manufacturers



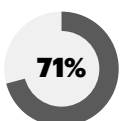
Electrical Equipment Manufacturers

Source: Accenture Research Industry X.O Products, 2018

Consumer Durables (CD) cluster:**Purpose:**

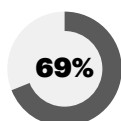
Boost revenues

Gain customer loyalty

**Technologies to combine with AI:**

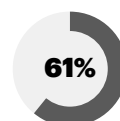
Mobile computing

Big data analytics

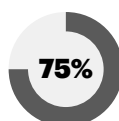
**Challenges:**

Data quality

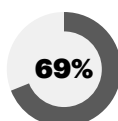
Customer receptiveness

**Key value drivers to embed AI and other digital technologies:**

Increased revenue opportunities/monetization

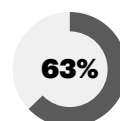
**Potential outcomes of embedding AI and other digital technologies:**

Increased safety

**Imperative skills for equipping workforce and channel partners:**

Creating data lakes

System integration



Source: Accenture Research Industry X.O Products, 2018

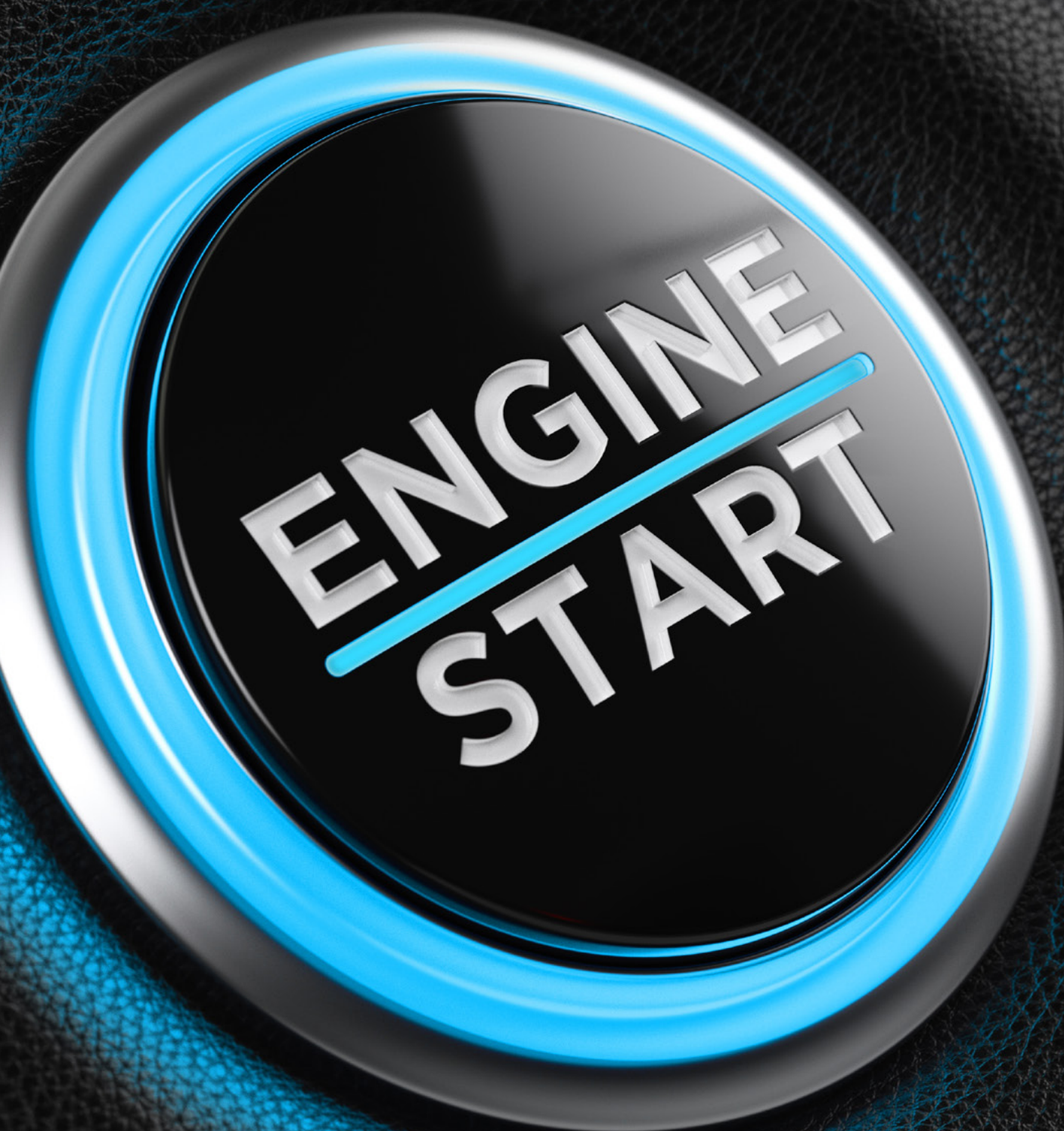
The Geographies

BELIEVE	China	Germany	France	Italy	Japan	United States
	91%	51%	66%	60%	65%	96%
	Respondents who agree with the statement “Artificial Intelligence is increasingly penetrating Industrial Products and Services”					
	94%	50%	58%	52%	63%	92%
ENVISION	Respondents who agree with the statement “Industrial Products and Services are getting transformed into a much smarter/intelligent form”					
	China	Germany	France	Italy	Japan	United States
	100%	98%	94%	98%	99%	97%
	Respondents with aspirations to drive substantive revenues (more than 10%) with AI-embedded products					
COMMIT	84%	52%	68%	56%	67%	94%
	Respondents who consider AI-embedded products/services important for the future success of their organization					
	China	Germany	France	Italy	Japan	United States
	64%	37%	32%	36%	49%	30%
EXECUTE	Respondents willing to make “extensive” investments in embedding AI in their products and/or services in the next three years					
	Data analytics/ Science (77%)	Consultative selling (63%)	Creating data lakes (66%)	Developing AI-enabling hardware (68%)	System integration (62%)	Data analytics/ Science (66%)
	Top skill cited by respondents as an imperative for equipping the workforce and channel partners to leverage the true potential of AI					
	China	Germany	France	Italy	Japan	United States
EXECUTE	Ecosystem partners (52%)	Model of resource allocation (43%)	Digital operating architecture (54%)	Digital operating architecture (50%)	Digital operating architecture (49%)	Digital operating architecture (44%)
	The most important element of the operating model respondents will modify because of embedding AI in products and services					
	Big data analytics (63%)	Mobile computing (75%)	Mobile computing (74%)	Quantum computing (74%)	Mobile computing (80%)	Big data analytics (68%)
	Top technology cited by respondents to combine with AI					

Source: Accenture Research Industry X.O Products, 2018

COMPLETING THE JOURNEY

The stories of those in the lead clearly confirm the critical importance of turning vision into commitment, as well as the power of a collaborative and combinatorial approach.



LOOK WHO'S LEADING FAURECIA:

Co-creating an Industry X.0 product

Faurecia is the world's sixth largest automotive parts maker, and a global leader in its field.

Its "intelligent cockpit" is an in-car cabin that enhances safety, wellbeing and connectivity through seamlessly integrated electronics, smart surfaces and Human Machine Interface (HMI) for an adaptive and predictive on-board experience in all driving scenarios.

At each stage of its four-stage journey the company displays the conviction needed to succeed:

- **Believe:** Faurecia strongly believes that the next generation of cars will be connected and intuitive, consistently reflecting the driver's preferences and adapting architecture and functionality. "The cockpit intelligent platform, powered by AI, is the centerpiece of our future life on-board products and services strategy. We are fully committed to this transformational journey."
- **Envision:** Faurecia aims to become the leader in the integration of the technology "bricks" that populate the intelligent cockpit. It plans to accelerate the transformation of its operations and develop new business models and user experiences for the cockpit.
- **Commit:** Faurecia's CEO is the chief advocate of the intelligent cockpit and his entire top team participates in the initiative. Renewed investment in in-house R&D is deepening and expanding technology expertise, and the company is actively scouting for external skills at key locations, including Silicon Valley and Bangalore.
- **Execute:** Faurecia is pursuing collaborations and partnerships to identify and combine technologies appropriate to developing the intelligent cockpit. Faurecia Ventures, a vehicle with initial resources of €50 million, is investing in start-ups to complement Faurecia's innovation strategy.



Faurecia aims to become the leader in the integration of the technology "bricks" that populate the intelligent cockpit.

LOOK WHO'S LEADING SCHNEIDER ELECTRIC:

Innovating Industry X.0 services

Schneider Electric is leading the digital transformation of energy management and automation.

Its Digital Services Factory gathers data from millions of connected assets across the company's infrastructure and customer sites to speed the development of new customer solutions and services, while AI technologies, via its IIoT-enabled, open EcoStruxure™ architecture, turn that mass of data into actionable insights.

The company's collaborative approach is evident at each stage of its four-stage journey:

- **Believe:** Schneider clearly sees value in combining the power of digital technologies. Connecting products and making them smarter is the top priority. And its second core belief is closing the loop on data—turning data into business-centric insights and action.
- **Envision:** Schneider aims to cut the time from product ideation to market by 80 percent by delivering digital innovation at every level and reinventing the customer experience with new digital services.
- **Commit:** Digitization is at the core of Schneider's DNA. Announced in 2017, a Chief Digital Officer advances the company's digital strategy, innovation, and accelerates Schneider's digital transformation.
- **Execute:** Schneider has partnered with others to deliver its new digital services, and combines multiple digital technologies (including cloud, analytics and AI) to scale up the value to customers. In 2017, Schneider commercialized more than 40 digital services offers with more than 20 in development for 2018.



**Connecting
products and
making them
smarter is the
top priority.**



All of this leads us to propose a set of specific and concrete actions for industrial companies to take at each stage of their digital reinvention journey.

No industrial company is yet a perfect practitioner of digitally reinvented products and services. But a few are well advanced on the journey. They know that proactive, self-learning and collaborative products and services are the future of the industry, and that AI, leveraged in a way that Accenture refers to as [Applied Intelligence](#) - intelligent technology and human ingenuity, combined with analytics and industry expertise, applied at the core of business - at scale, is the key to creating that future.

By moving forward with conviction, leading players are developing new business opportunities and accelerating the implementation of new business models that can exponentially enhance customer value and thus their own. The time to join them on the journey to digital reinvention is now.

The C-Suite Agenda for the Next 100 Days

BELIEVE	<p>Articulate your belief in digital reinvention of the product and share it with stakeholders</p>	<ol style="list-style-type: none"> 1. Utilize internal and external newsletters or public platforms to share your thinking. 2. Leverage meetings with suppliers, R&D partners, and the larger ecosystem. 3. Communicate your belief with simple and authentic passion.
ENVISION	<p>Define the digitally (re)-invented product you want to build</p>	<ol style="list-style-type: none"> 1. Identify a product to digitally reinvent or define one to be invented from scratch. 2. Test whether your customers can feel the value you want to deliver. 3. Put a “usable” data and insight development strategy in place that aligns with your value monetization strategy. 4. Develop a strategy to monetize the value being packed and delivered.
	<p>Identify the value to be built and owned, and identify the impact on both top and bottom lines</p>	<ol style="list-style-type: none"> 1. Identify parts of the value you must own in terms of design or/and development or/and delivery. 2. Build a robust business case that clearly articulates the impact of the digitally reinvented product on both your incremental revenues and your customers. 3. Develop a strategy to sustainably manage investments and hedge investment risk in the product reinvention journey. 4. Design a technology and ecosystem strategy to identify players you must partner with to bridge gaps in data processing and data security.
COMMIT	<p>Commit senior management to securing strategic and tactical partnerships that create value and mitigate risk</p>	<ol style="list-style-type: none"> 1. Build a time-bound “design, engineer, develop, and deliver” path towards digital reinvention of the product. 2. Be transparent with your proposed partners about investment you are keen to make in the digitally reinvented value you want to own. 3. Identify specific roles for top management that cement strategic and tactical partnerships and build the in-house skills you need. 4. Get top and middle management to debate and develop a business and operating model that will profitably execute investments.
EXECUTE	<p>Execute innovation—and ecosystem-driven business models</p>	<ol style="list-style-type: none"> 1. Develop a robust formula that will drive profitable revenues across the lifecycle of the digitally reinvented product. 2. Adopt a “fail-fast” approach to the journey. 3. Start innovating with your ecosystem, if necessary acquiring players that can bridge technology and skills gaps. 4. Develop engaging, on-the-job skilling modules that empower your workforce to develop and service the digitally reinvented product across its lifecycle.

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- 3 Analysis based on Accenture Industry X.O Research 2017