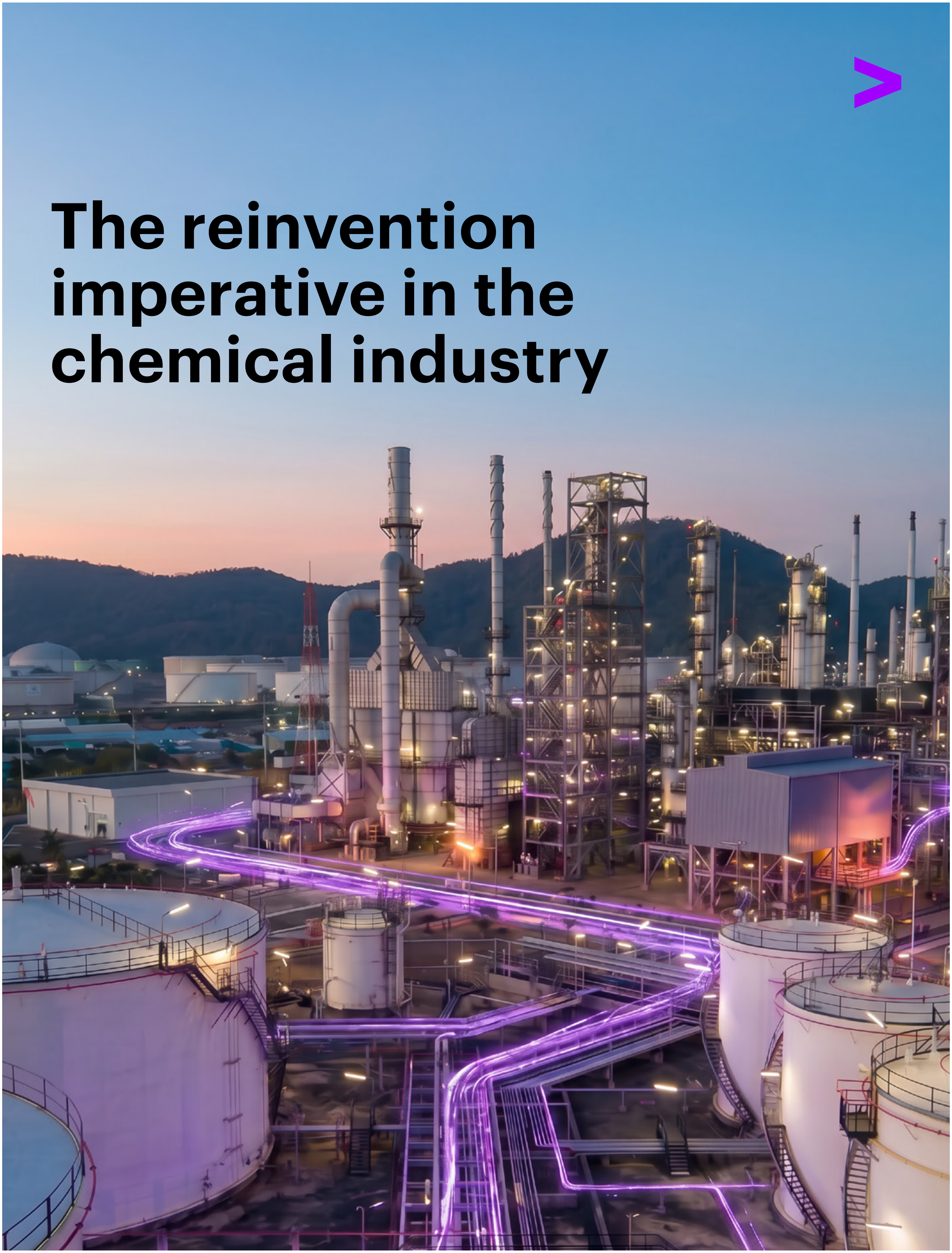
The reinvention imperative in the chemical industry



Authors

Dr. Bernd Elser

Senior Managing Director – Global Chemicals and Natural Resources Lead

LinkedIn

Serge Lhoste

Managing Director – Global Chemicals Strategy Lead

LinkedIn

Sachin Kumar Chaudhary

Global Lead – Chemicals and Natural Resources Thought Leadership & Research

LinkedIn

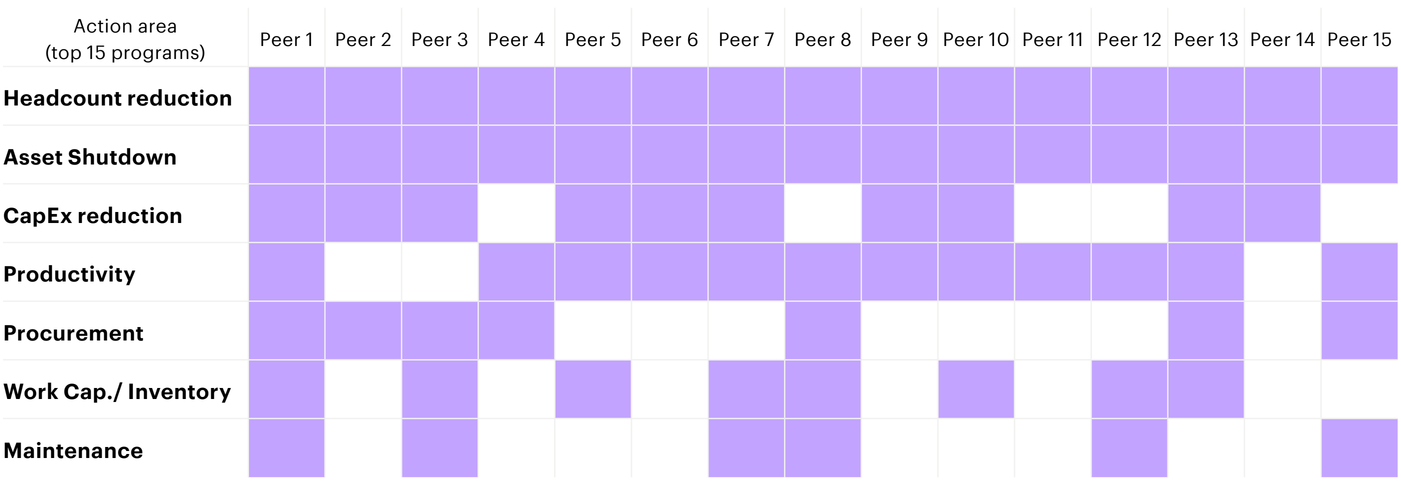
There is no longer the predictability that once allowed chemical companies to be managed through annual planning cycles, static cost centers and management approaches developed decades ago.

The speed, magnitude and frequency of change, crises and disruptions have increased materially in recent years. Geopolitical conflict, logistics disruptions, regulatory intervention, shifting tax regimes and extreme weather events are no longer episodic shocks; they are structural features of the operating environment. As a result, planning assumptions erode faster; volatility persists longer and the margin for delayed response has narrowed significantly.

At the same time, the chemical industry faces a set of industry-specific structural challenges that compound these external pressures. Demand growth in key end markets such as automotive and construction has stalled or slowed. Overbuilt value chains have created persistent supply and demand imbalances that extend well into the next decade. Demographic pressure is increasing, with a significant share of the workforce approaching retirement. And deeply embedded beliefs—about how work should be organized, decisions made and performance managed—continue to slow change and innovation.

The prevailing response has been to repeatedly pursue cost-reduction programs. Across the industry, companies have applied the same familiar measures: headcount reductions, asset rationalization, spending freezes and incremental efficiency initiatives. Often, these levers are the same ones that were first deployed 20 or 30 years ago and reused program after program (Figure 1).

Figure 1: Chemical companies resort to the usual cost reduction actions



Source: Company quarterly and annual earnings report/presentation, press releases related to cost-saving programs, current and past.

The outcomes from such efforts have become increasingly insufficient.

- **First**, price pressure has outpaced cost reduction, keeping profitability under sustained pressure and decline.
- **Second**, organizations show clear signs of fatigue, having been asked to execute similar programs repeatedly with diminishing returns.
- **Third**, when identical measures are applied across the industry, differentiation erodes and investor enthusiasm does not return.

It is increasingly clear that the management responses that supported the last generation of growth will not carry the next one. A fundamentally different approach is required. That game changer is reinvention.

AI-based reinvention is a game changer

Reinvention is more than change. It is a practical operating shift that allows companies to reconnect with powerful innovations that have shaped their past success, using a fundamentally different set of capabilities.

If there is one industry that understands reinvention, it is the chemical industry. Over decades, it has adapted technologies, processes and business models to serve changing customer needs. What is different today is the size of the option space. Advances in digital and artificial intelligence make available solutions, tools and combinations that simply did not exist before.

AI is the critical enabling technology of this next reinvention wave.

Big Tech is investing $400 billion a year in AI and AI-related infrastructure and the race is on. There is an exponential learning curve with AI: the organizations that move first tend to stay ahead as value capture accelerates along the curve.[1]

Within the chemical industry, AI adoption has begun—but unevenly, at different speeds and at a materially lower intensity than in many customer and adjacent industries. In practice, this creates a growing capability gap at precisely the moment when speed, precision and foresight matter most.

The highest-value AI use cases are not generic. They are specific to each company's asset base, data footprint, operating model and customer set. Capturing them requires deliberate choices: where to focus, which capabilities to build, which tools to deploy and how fast to move.

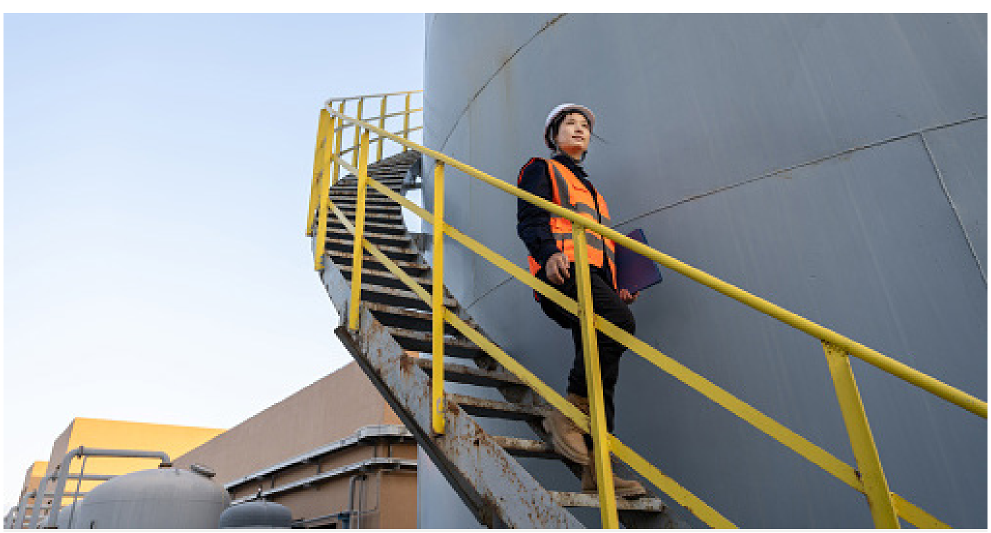
The reinvented chemical company

When AI-enabled reinvention is applied at scale, the impact is not incremental. A reinvented chemical company can operate at levels of precision, speed and insight that are out of reach today.

A reinvented company will be able to:

- Develop innovations by tapping into decades of accumulated R&D data not yet explored by the human mind.
- Replicate its best production days reliably every day, by optimizing plant performance through integrating and analyzing operational data across systems such as OSI PI and IP.21.
- Identify customer demand and value-creation opportunities earlier and more precisely than customers themselves.

These examples illustrate why reinvention is about reigniting growth and innovation, as well as achieving cost efficiency.



What does a reinvented company look like?

A reinvented chemical company demonstrates clear and observable differences:

A new speed

Value chains are refocused on innovating, producing and selling, while non-core complexity is reduced and processes are simplified or partnered.

Greater differentiation

Innovation cycles accelerate, enabling more customized solutions and deeper customer relevance.

A higher degree of simplification

Fewer processes, lower manual effort and materially reduced organizational complexity.

A new performance frontier

60–80% EBIT uplift, driven by materially lower costs combined with faster growth enabled by new capabilities.

This performance frontier emerges not from isolated pilots, but from end-to-end reinvention (Figure 2).

Figure 2: A reinvented chemical company will be different

Speed

- Focused on core value chain (innovating–producing–selling)
- Less and simpler processes (150 versus 250+ Level 4 processes)

Differentiation

- More solutions tailored to specific customer needs
- New solutions based on 20+ years of R&D data not yet explored by human minds

Simplification

- Change in 75% of organizational roles, by augmenting, automating or abandoning tasks
- Running the business with 40% less people, step-up in labor productivity

Performance

- Faster growth with more innovations and optimized pricing
- 60-80% EBIT uplift

Source: Accenture Research.

A reinvented chemical company's value chain shifts away from a mix of core and non-core activities toward a sharper focus on the chemical industry’s core strengths—innovating, producing, selling. Asset and people intensive non-core activities that absorb capital and management attention are reduced or operated with partners, freeing capacity to double down on innovation, production excellence and customer impact.

Reinvention also shifts the business model—from selling standard molecules to solving customer problems through tailored, higher-value solutions. The chemical industry has always excelled at problem-solving. Reinvention unlocks additional value at every step, especially when functional silos are broken and rewired around customer outcomes.

How work and organizations change

In a reinvented chemical company, work itself is fundamentally different.

In innovation, the shift is from small lab teams with one Ph.D. and two to three technicians supported by limited analytics to AI systems that explore and test new option spaces 24/7.

In production, operations move from being primarily experience driven to continuously optimized through AI-supported recommendations based on decades of operational OSI PI and IP.21 data.

In selling, intuition-led human approaches are augmented with AI-generated insights into customer value chains, enabling more targeted, fact-based engagement.

These shifts reshape the workforce. Humans and AI increasingly work together, with AI augmenting—not replacing—critical human judgment.

We modeled chemical companies across the full operating scope, including 250 Level-4 processes, more than 90 core organizational roles, 150 financial and non-financial performance indicators and 100 AI agents.

Our research suggests:

A reduction of more than 40% in Level-4 processes through automation, augmentation and elimination.[2]

A significant reallocation of workforce capacity—on the order of 40%—toward higher-value activities.[3]

A meaningful step change in productivity, addressing a gap that has remained largely unchanged over the past 15 years.[4]

Relief from demographic pressure, as AI helps offset the impact of the anticipated 25–30% of employees retiring over the coming decade.[5]

As work is reinvented, organizational structures follow. Layers are reduced, decision-making accelerates and new centralized capabilities emerge to scale digital and AI excellence.

The role of the CEO

Reinvention cannot be delegated. It requires explicit CEO ownership.

This includes:

- Setting a clear ambition that goes beyond incremental improvement—targets that reflect structural change rather than 5–10% optimization.
- Leading the breakup of functional silos and establishing true end-to-end accountability.
- Steering the transition to new delivery models where humans and AI collaborate at scale, with humans remaining in the lead where judgment and accountability matter.
- Actively managing employee resistance to change as a predictable outcome of reinvention.

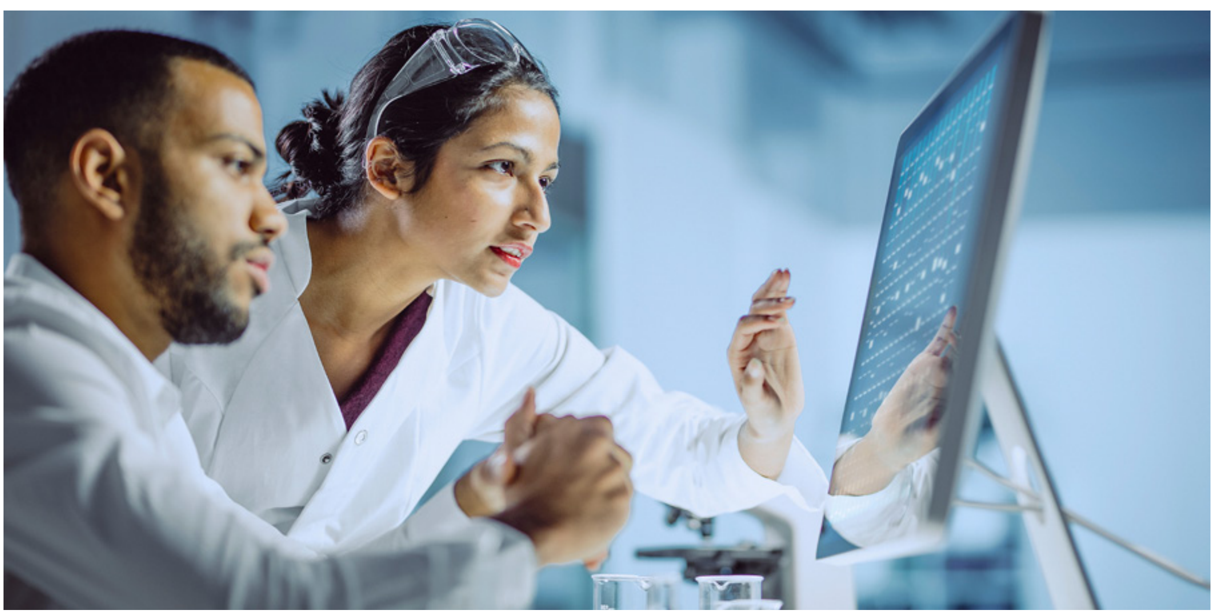
The opportunity to unlock value from reinvention is significant. But what matters more is what reinvention restores: confidence that the chemical industry can once again operate at the frontier of innovation, and that the legacy leaders leave behind is one of transformation rather than gradual retreat.

Conclusion

The value pockets are clear—faster innovation, shorter cycle times, structurally lower backoffice costs and renewed growth. Many chemical companies already have pilots and proof points that validate this potential.

The real race now is not to experiment, but to scale.

Even in the current macro-economic context there is demand and demand growth. Companies that combine foresight with speed will be best positioned to capture it. AI-based reinvention is no longer optional; it is the defining growth challenge of this decade for the chemical industry.



Acknowledgements

Accenture Research Team
Shriya Kohli
Karin Walczyk
Jaswin Ratti
Gaurav Sharma
David Kimble

References

1 Company reports, Capital IQ (CY considered for CAPEX inputs). Up to Q2 2025, the figures reflect actual results for all companies except Nvidia and Broadcom. For these two, Q2 2025 is based on the quarterly consensus estimates from S&P.

2 Accenture Research data modelling on a typical $10B chemical company.

3 Ibid.

4 Accenture, "Cracking the labor productivity conundrum in the chemical industry."

5 Ibid.

Accenture Research

Accenture is a leading solutions and services company that helps the world's leading enterprises reinvent by building their digital core and unleashing the power of AI to create value at speed across the enterprise, bringing together the talent of our approximately 786,000 people, our proprietary assets and platforms, and deep ecosystem relationships. Our strategy is to be the reinvention partner of choice for our clients and to be the most client-focused, AI-enabled, great place to work in the world. Through our Reinvention Services we bring together our capabilities across strategy, consulting, technology, operations, Song and Industry X with our deep industry expertise to create and deliver solutions and services for our clients. Our purpose is to deliver on the promise of technology and human ingenuity, and we measure our success by the 360° value we create for all our stakeholders.

Visit us at accenture.com

Accenture Research

Accenture Research creates thought leadership about the most pressing business issues organizations face. Combining innovative research techniques, such as data-science-led analysis, with a deep understanding of industry and technology, our team of 300+ researchers in 20 countries publish hundreds of reports, articles and points of view every year. Our thought-provoking research developed with world leading organizations helps our clients embrace change, create value and deliver on the power of technology and human ingenuity.

Visit us at accenture.com/research