

A man wearing a white hard hat and safety glasses is holding a large metal gear. He is wearing a black leather jacket and is looking at the gear with a slight smile. The background is a blurred industrial setting with blue and white elements.

Cognizant<sup>®</sup>

# Retooling manufacturing for **Agility and Resilience**

Leveraging data is the new currency of automation, optimization and profound transformation.

**Imagine the future of  
your organization**

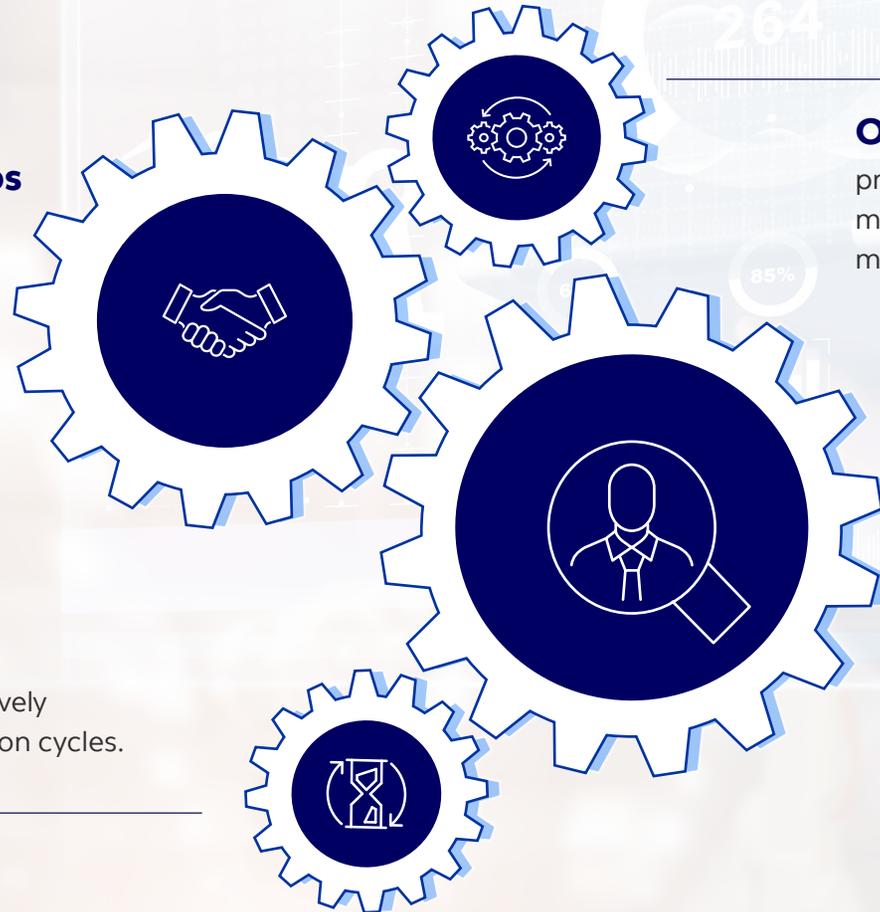


# What do you want it to be? How will it operate?

Based on the survey we commissioned, the responses from over 200 global manufacturing leaders were virtually unanimous—to leverage data in real time from every link of their value chain to:

## Create deeper relationships

with their customers and strategic partners to enhance and create new products and services.



## Optimize

product portfolios, pricing and marketing channels to improve margins and generate new business.

## Anticipate

rapid supply chain shifts and proactively respond in both growth and disruption cycles.

## Develop new sources

of critical materials that can meet their demand requirements when their primary sources are not available.

# Primary forces driving the need for change



## Uncertain macro-economic and geopolitical environment

Events around the world create risks that need to be managed. Enhanced efficiency, visibility and agility across the value chain are a must to compete.



## A changing customer

With an increasing need to be not just customer-centric but also more customer-adaptive and innovative.



## A highly competitive landscape

In which Industry 4.0 leaders are poised to gain advantage quickly and even become disruptive.



## A complex and connected supply chain

Where data quality can speed up making critical business decisions. Like the need to diversify and tap into new revenue sources, leveraging new ecosystems and connected data to survive and later thrive.



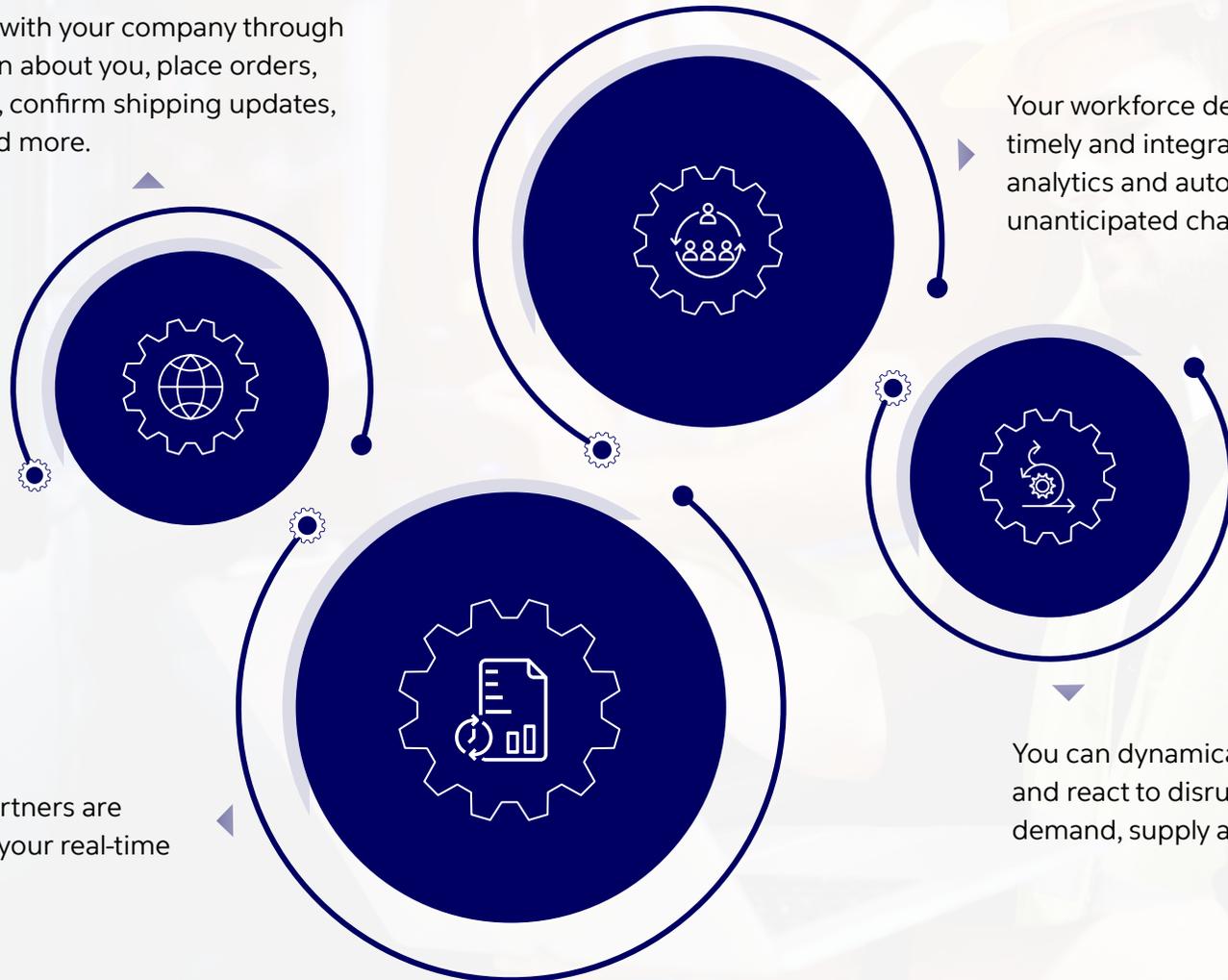
## The people dimension

Technology and innovation need to play more profound roles. Neither the talent to deliver these capabilities nor the culture to enhance and sustain them is sufficient to move forward quickly.



# Modern software, fed on rich, 360-degree data, is rapidly becoming today's engine of business, regardless of what a manufacturer produces

Customers engage with your company through your website to learn about you, place orders, view account status, confirm shipping updates, request services and more.



Your workforce depends on more timely and integrated information, analytics and automation to respond to unanticipated changes.

Supply chain partners are better linked to your real-time requirements.

You can dynamically model, recognize and react to disruptions in your demand, supply and/or value chains.

# Data mastery can help achieve a comprehensive set of business outcomes



## Leveraging data:

The more data gathered early on, and the timely delivery of it to where it matters when it matters, the more insight that data will drive into the value chain as it's converted to actionable information.



## Performance:

Achieve a wide range of strategic, operational and performance outcomes—from improving costs increasing profitability reducing waste, automating to prevent errors and delays, and working more in real time.



## Agility and responsiveness:

The scalability and agility we expect from IT services need to extend into manufacturing OT, using new technologies and tools to predict and meet seasonal demand, fluctuations in production, and the possibility to downscale or upscale quickly. With the right information, adjustments that are fairly predictable can be made more accurately. Adjustments that are unpredictable can be better handled with increased visibility and flexibility.



## Better working conditions:

Improve working conditions based on real-time temperature, humidity and other influences. Provide enhanced protection in case of workplace incidents, quickly detect gasses and focus dangerous substances, focus on ergonomics and clean factory initiatives.



## Continuity—knowledge retention:

It's estimated that 30% to 40% of the manufacturing and service workforce are retiring over the next five years with knowledge that isn't easily shared in a scalable way. Institutionalize the tribal knowledge of the aging workforce by applying AR/VR technologies to capture undocumented processes, training the next generation of workers and reduce on-site presence of specialists.



## Talent acquisition:

Leveraging all these areas positions the enterprise in a completely new way that attracts digitally savvy employees.

# Data is the new oil, but not without refining...

The foundation driving these changes—data, including:

- All sources of existing data, much of it captive in standalone systems
- Data from newly connected assets

Unifying data from these various sources can drive much deeper insight:

- Sparking efficiencies at multiple organization levels
- Transforming existing processes
- Creating end-to-end information streams across the value chain to realize new services

The keys to making the technologies of Industry 4.0 work are cloud computing, big data, AI, data analysis, storage, IoT and RPA to integrate and refine data.

The convergence of IT and OT is critical for this reason. The essence of IT and OT convergence revolves around data (and the systems that contain data), processes and people—your teams.

Think beyond collecting thick data and strive for data quality.



# The current challenges manufacturers must overcome



Defining the business case that drives strategy



Reimagining the organization and true interconnection of departments and processes to maximize business outcomes—IT/OT integration



Building a clear implementation roadmap, which is more challenging due to complex supply chains



Reconciling and simplifying multiple ERP, MES and SCADA systems, cloud approaches and technology choices, and the cumbersome legacy systems and infrastructure that slow digital innovation



Talent management—training, retaining and cultivating employees while creating the right environment to attract new talent in the latest digital technologies, tool and trends



# Spoiler alert—the study also highlights a real disparity between leaders’ beliefs and their actions

Nearly all respondents (**94%**) acknowledge that data-driven software engineering is important or critical to their company’s future.

## The value they expect includes:

Cost savings of **25%** or more (89% of respondents)

Revenue increases of **3%** or more (96% of respondents)

At least **45%** faster time to market (72% of respondents)

At least a **6%** boost to customer satisfaction (96% of respondents)

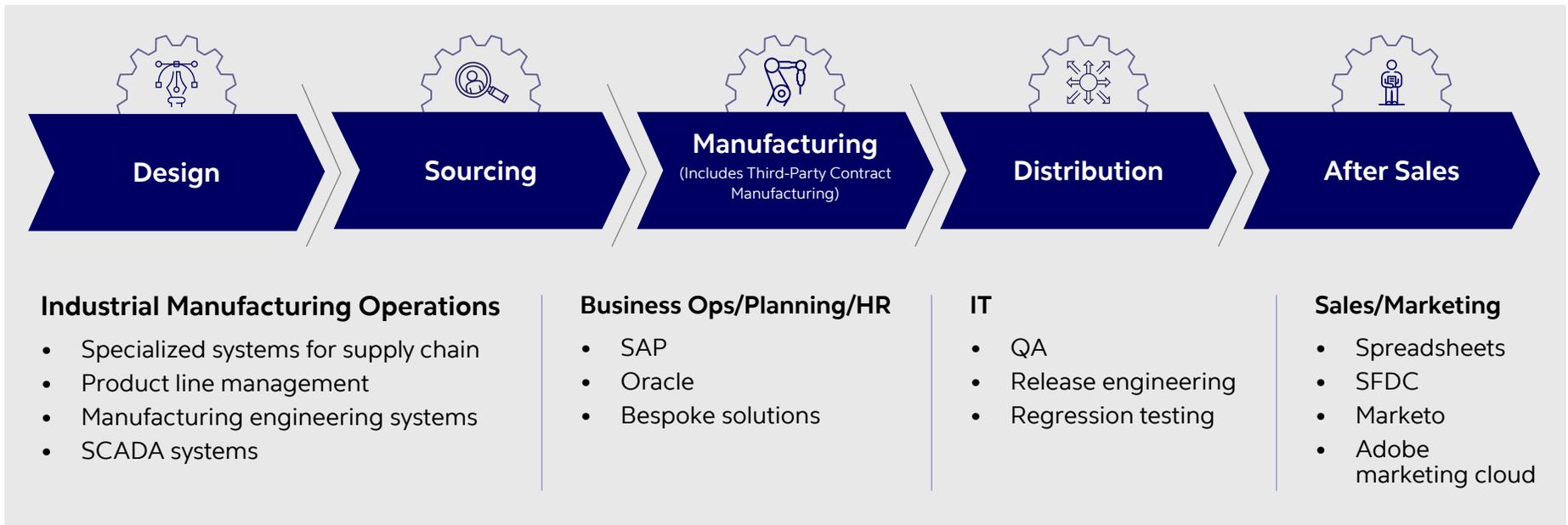
Yet progress has been slow. While **80%** of respondents have begun adopting a data-driven engineering strategy, only **8%** have crossed over to production.



**So where do we stand?  
The current state of  
the manufacturing  
landscape**



The growth of traditional manufacturers has evolved ad hoc within the different towers that constitute the manufacturing value chain. As a consequence, businesses use separate systems, processes and structures built into and for the value chain towers:



### Lack of responsiveness

Manufacturers continue to be hardwired to traditional functions or towers that comprise the value chain. Without shared data and processes to connect the towers, organizations impede their ability to share data and collaborate to adjust production schedules to market forces, both positive and negative.

### Resource scarcity

Minerals, metals and essential raw material scarcity, or problems in the geography they originate from and/or travel through, can cause unplanned production outages. Lack of an early-warning system causes revenue loss.

### Technology non-adoption

The most impactful 4.0 technologies—analytics, AI, IoT, digital twins and robotics—are key enablers to thrive in the smart manufacturing era. By resisting or slow-rolling change, traditional manufacturers lose the benefits of being a data-driven manufacturer.

### Inefficient processes

Manufacturers are still stuck in spreadsheet analysis, gut-based decision-making and reactive maintenance.

# The industry needs to pick up the pace

Unlike other industries, most manufacturers are in the early stages of digital transformation, particularly in core areas. Manufacturing leaders—the top 20% of all manufacturers—are doing far better and are well ahead in managing data and AI, leveraging automation and deploying software.

Area of Digital Transformation Percent (%) Maturing or Advanced	All Industries	All Manufacturing	Manufacturing Leaders	Leaders' Edge
Digital strategy and roadmap	46	36	63	27
Automation	35	31	58	27
Workforce transformation	30	25	38	13
Innovation culture	28	25	53	28
IoT and connected products	27	24	35	11
Data management and analytics	35	23	50	27
Aligning ops with customer demands	24	20	38	18
Software deployment	28	19	53	34
Modernize core IT	26	19	33	14
Artificial intelligence	19	15	45	30
Improved consumer/employee experience	17	13	30	17

Source: ESI ThoughtLab Cognizant 'The path to digital leadership: Industrial Manufacturing, 2020'

# Manufacturing leaders – the top 20% are seriously reaping the rewards

Manufacturing leaders are realizing a multiplier effect across a wide range of strategic, operational and performance outcomes—from improving decision-making and risk management to building new business models.

Benefit % Citing Benefits Today	All Manufacturing	Beginners	Leaders	Leader's Edge
Improved planning and decision-making	31	16	48	32
More effective risk management	29	11	50	39
More effective innovation	29	16	40	24
Improved employee productivity and engagement	25	11	40	29
Wider range of business models and channels	25	19	48	29
Increased customer retention/engagement	23	9	43	34
Accelerated time to market	21	9	33	24
Improved profitability	19	7	38	31
Global expansion and ability to scale business	19	4	35	31
Increased revenue	18	9	35	26
Decreased costs/greater efficiency	17	4	35	31
Greater shareholder value	12	7	15	8

Source: ESI ThoughtLab Cognizant 'The path to digital leadership: Industrial Manufacturing, 2020'

# Where to begin? Start by modernizing your data

When you get a report in your company, do you believe it? Are you thrilled by how easy it was to get? Does it help to make better decisions? Does it improve customer experiences?

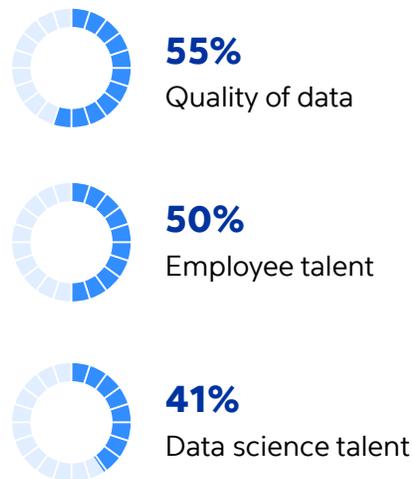
Most executives answer “no” to many or all of these questions. The problems underlying these issues are often related to data.

Traditional companies already have the insights they need for success—hidden in massive amounts of data acquired over years of serving customers as well as coming from new digital streams. Nearly every company is drowning in data. It’s expensive, strewn across the organization, and impossible to access or use effectively.

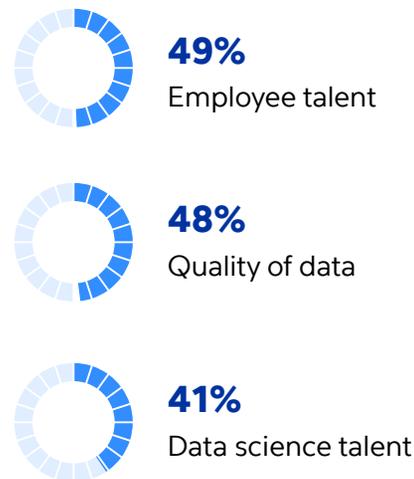
What’s needed is a clear, structured way to transform how your organization sources, interprets and consumes your ever-growing volumes and varieties of data. By doing so, it creates a clear competitive advantage over digital upstarts.

## Firms face challenges at every step in the data modernization process.

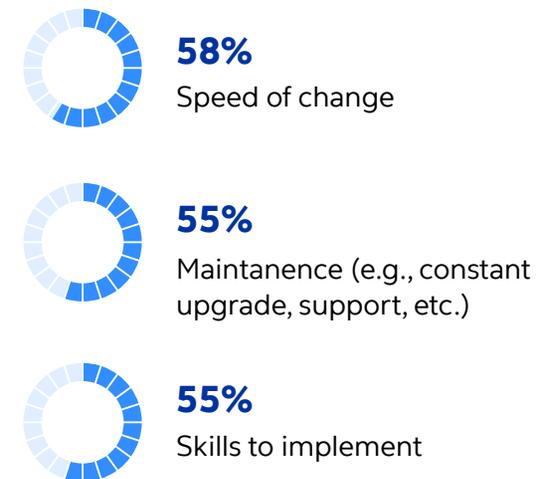
### Analytics Platform Implementation Challenges



### Scaling AI Challenges\*



### Open-Source Challenges\*\*



Base: 291 big data and analytics decision-makers who have implemented an analytics platform.

\*Base: 263 big data and analytics decision-makers who have implemented AI/deep learning tools.

\*\*Base: 279 big data and analytics decision-makers who would consider building a platform with open source.

Source: A commissioned study conducted by Forrester Consulting on behalf of Cognizant, April 2019.

# Becoming a data-driven business isn't an event—it's a journey

**What is the state of your operation today?**

**Where do you want to go?**

**What are the missing links and hidden obstructions to get there?**



This should result in a strategic plan with quantifiable business outcomes and a clear roadmap that covers priorities, people, processes, skills, technologies and security.



Each stage builds upon the next one and adds more value—you move from data to information to knowledge to wisdom and action.



Market leaders carefully balance adopting new technology and processes while recognizing the deep cultural changes required to anticipate new customer needs and quickly adapting to unforeseen risks.



There is a big gap between the leaders that have a long-term strategy and the rest.

- It's clear that ad hoc and siloed initiatives, by far the majority of initiatives, won't cut it unless they're part of a strategic journey.
- Often they're not, leading to fewer results than expected or failure.



ROBOTICS  
CONTROL  
PANEL

ON OFF ERR

Restart on fault

Control

Control



Model  
AK-86

38/100  
264

60%

85%

94%

# Prepare to be nimble in uncertain times—and never stop

The good news is there are clear steps to take to harness data—from inside and outside the company—to meet the business needs of the modern enterprise.



Focus on quick wins by modernizing data and legacy applications.

- By moving to the cloud, you can retire on-premise infrastructure, freeing funds for innovation
- Making software products easier to adapt to changing consumer expectations provides a competitive edge



As the plan progresses, find the right pace to reshape the organization.

- Not so fast that it disrupts operations, not so slow that the business succumbs to more nimble, cloud-native competitors
- Start with discrete projects and products that have measurable business impact rather than back-office or “safe” projects
- Build on these successes to introduce new thinking and processes across the organization



Above all, cultivate the mindset that innovation and transformation aren't one-time events but continuous processes.

- Unpredictable events happen all of the time
- Transformation efforts need to be ongoing so the business gets ever better at anticipating change and always innovating to stay one step ahead

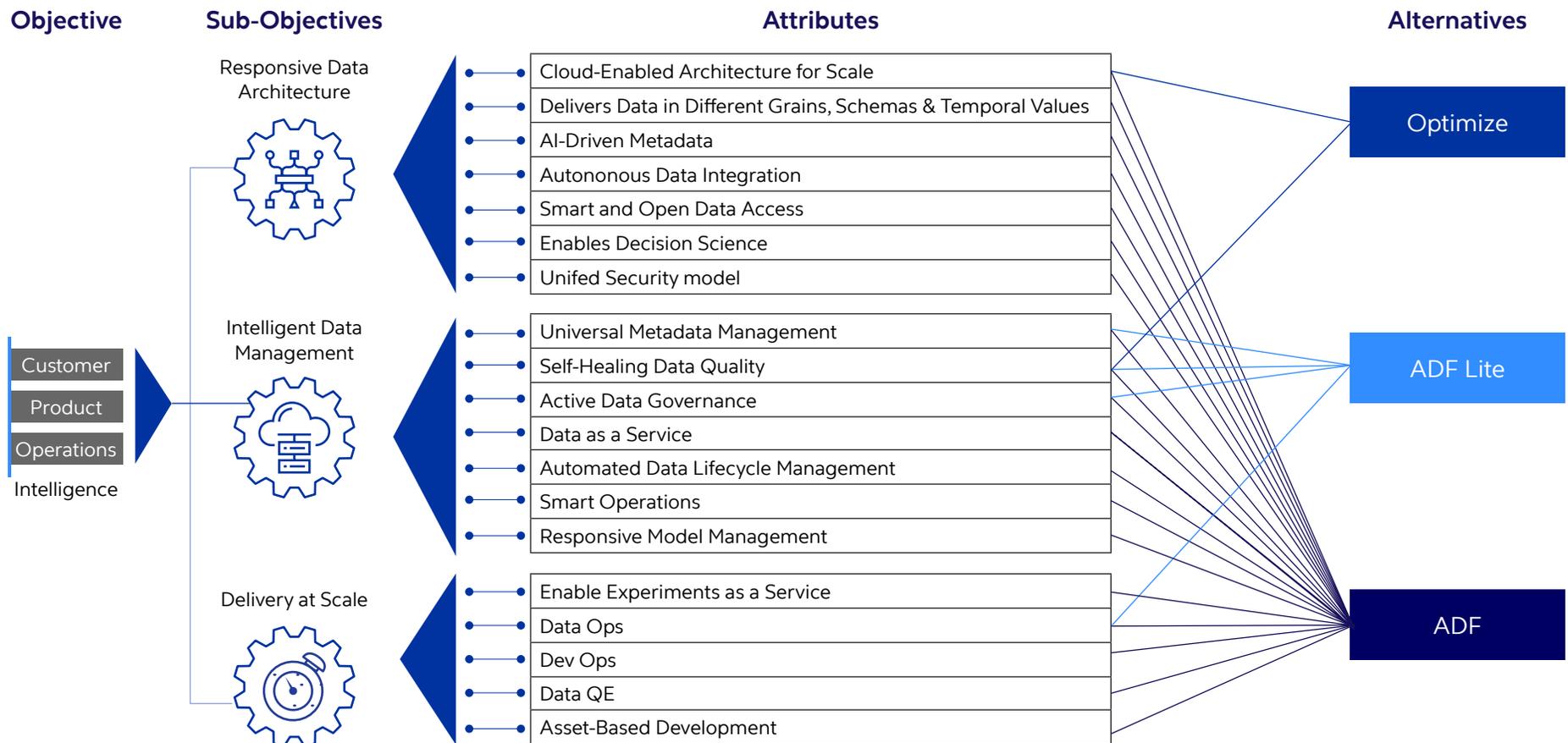
# Cognizant's data modernization offering

Cognizant's AI Data Modernization is the fastest way to achieve an AI-driven data foundation with a proven method and platform to source, structure and analyze the data that matters and deliver enterprise-wide intelligence.

Our reference model is a foundation for creating a cloud-first, AI-driven data ecosystem that enables your organization to generate maximum business value from unique data assets. Our platform can be deployed in one month with full value realized in six months.

- Our engagements help drive down the cost of managing your data infrastructure by up to **60%**, deliver **30%–60%** faster time to market and reduce data storage costs by up to **40%**.
- Unlike other providers, our deep experience, tools and platforms enable us to help companies migrate to a modern data platform typically in 40% less time than doing it themselves.

## Adaptive Data Foundation Enables Intelligence



# Why Cognizant for data modernization?

Our cloud-based data modernization approach provides a highly accessible, useful and compliant platform that delivers cost savings and powers the analytics to enhance personalization and optimize forecasting.



Cognizant is eminently capable of helping clients transform all ideas and experiments into ROI

**- HFS top 10 Microsoft all services 2019**

**FORRESTER®**

Cognizant named a Leader in the **2019 Forrester all consultancies wave**

**25**

years of experience providing data, applications and processes for F200 companies

Global data engineering solution centers for co-innovation and rapid engineering capabilities

Platform and tools that accelerate transformation by embedding machine learning in the data chain  
Manage petabytes of data through the data foundry and big decisions platform

Unique enterprise methodology and data modernization roadmap

Deep expertise across all industries, on a global scale



# The dawn of a smart manufacturer in the post-**COVID-19** era

The COVID-19 pandemic has catalyzed every company's need, across virtually every industry, to become data-driven and software-centric. How well the company can deliver quality data and software products that address real needs—and master virtual teams that can work from anywhere—will have a direct effect on revenue, costs and customer satisfaction.

Innovating in a post-pandemic world will pose new challenges—from unpredictable shifts in customer behavior and the supply chain to development and operations teams that work from home by necessity or choice. Adapting quickly to new risks and opportunities requires a modern infrastructure and application architecture, new processes and a culture that rewards experimentation.

Traditional manufacturers must develop greater resilience and be able to quickly respond to a greater level of uncertainty and disruption. Manufacturing firms that seize opportunities to accelerate their transformation now will unlock a new future.

## Are you ready for the next normal?







## Let's connect

The journey to become a customer-centric manufacturer begins with a robust digital maturity assessment. Write to [Modern Business](#) for a personalized consultation with our experts to know where you are in the digital maturity model.

### About Cognizant

Cognizant (Nasdaq-100: CTSI) is one of the world's leading professional services companies, transforming clients' business, operating and technology models for the digital era. Our unique industry-based, consultative approach helps clients envision, build, and run more innovative and efficient businesses. Headquartered in the U.S., Cognizant is ranked 185 on the Fortune 500 and is consistently listed among the most admired companies in the world. Learn how Cognizant helps clients lead with digital at [www.cognizant.com](http://www.cognizant.com) or follow us [@Cognizant](#).

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