# Cognizant®

Challenge Your Cloud To Do More!

Cloud is the bridge to becoming a modern business. It provides the foundation for your digital strategy to simplify your infrastructure, improve resilience, accelerate agility and reduce costs.

Let's be clear about our objectives here. More than ever, it's time to take bold moves to refine the way we build products and manage customer, partner and employee experiences. Cloud can act as an enterprise catalyst to empower the capabilities you need to deliver.

Manufacturers have focused their energy for the last century on perfecting the process of **mass production**

Industry

2.0

3.0
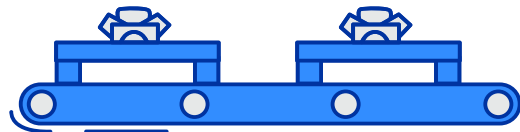
4.0

Beginning of 20th century

- Electrical power enables everything from assembly lines to power tools and lighting
- Manufacturing value chain forges command and control structure
- Worker specialization and the division of labor defined

Early 1970s

- Automation takes over many menial tasks, driving greater efficiency and consistency, and reducing costs
- IT systems substantially optimize each link in the manufacturing value chain to perform at its best
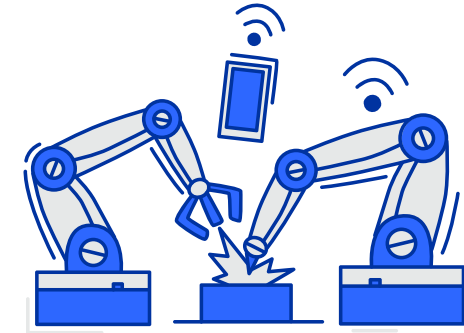
Today

- Links people and processes in an unprecedented way
- Breaks down the silos by establishing a common repository of information to provide much deeper insight
- Fosters shared and common goals that encourage collaboration over cooperation

Fundamental shifts clearly signal the need to do business in a very different manner to thrive. Digital transformation has become a dominant topic in C-suites and boardrooms

Your customers demand B2C-like interaction and engagement: they require involvement and a high degree of personalization and transparency, all for a great price

Uncertain macro-economic events and geopolitical environments around the world create risks in your supply chain that need to be managed

A highly competitive landscape means both market leaders and young upstarts are increasingly poised to gain advantage quickly and even become disruptive

A complex and connected supply chain means alternative access to resources and speed are critical

You need to diversify and enable new revenue sources and leverage new ecosystems to thrive and in some cases survive

Clearly, enhanced efficiency, visibility and agility across the manufacturing value chain are table stakes to compete successfully.

It's time to rapidly evolve from a relentless focus on efficiency and continuous improvement to market-driven operations.

For many, the pandemic has proven to be the proverbial "canary in the coal mine." It has provided a blunt litmus test that highlights the differences between the top tier of manufacturers, well on their journey to digital transformation, and the beginners—the leaders and the laggards

A recent McKinsey study, "The Great Acceleration," unambiguously highlights the impact the pandemic has had on manufacturers. Now we are seeing a **great acceleration of trends that existed** before the crisis.
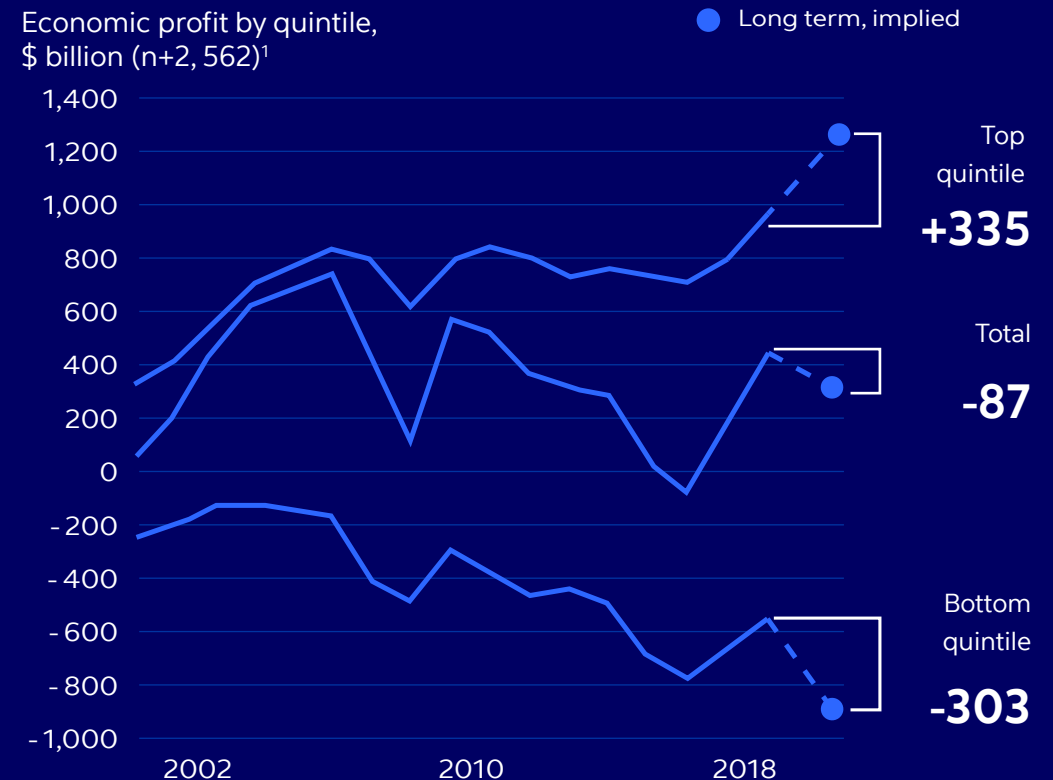
- Online delivery's volume increased by the same amount in eight weeks that it had over the entire previous decade

- Telemedicine experienced a tenfold growth in subscribers in just 15 days

During a recent quarterly earnings call, Microsoft CEO Satya Nadella said, "We've seen two years' worth of digital transformation in two months."

Manufacturers with resilient, future-ready business models positioned to ride these trends have pulled further away from their industry peers, while those with legacy business models have, for the most part, fallen further behind.

Exhibit 1

The gap in corporate profits between the top performers and everyone else has widened dramatically.

Economic profit by quintile, $ billion (n+2, 562)[1]

Long term, implied

Top quintile **+335**

Total **-87**

Bottom quintile **-303**

[1] Largest companies by revenue in 2018 with data for 2003-2018 available

Source: Corporate Performance Analytics by McKinsey

When The Rules Of The Game Change, The Game And The Players Change

Traditional manufacturing and supply chain planning processes consume over 60%+ of annual IT budgets upfront to maintain existing legacy infrastructures. The remaining fraction is available for upgrades, new capabilities and people.

Many manufacturers treat digital transformation as another IT project **detached from the immediate business strategy,** competing for remaining IT budget. In turn, organizations are at various stages on digital transformation journeys that are expected to take three to five years.

The numbers tell the true story. While nearly all manufacturers (94%) acknowledge that being data-driven is important or critical to their future, only 80% have begun to adopt a data-driven culture. Only 8% have crossed over into production.

This post-pandemic period presents a rare, game-changing opportunity. Traditional targets and budgets that make bold moves hard to promote in ordinary times have been put aside by the pandemic. Moving decisively today could just propel you from triaging for survival to accelerating your organization's strategic plan for growth.

Put cloud at the CENTER of your digital strategy: Take full advantage of scale, elasticity and automation to get you there faster

With the right strategy, **focused squarely on business outcomes,** cloud can help you start small, get more from your data and deliver agility, resilience and access to data at enterprise scale.

You can Start small

- Take small steps without the need to commit large upfront investments in IT

- Match with cloud-native front-end low-code applications like Qlik and Tableau to empower frontline employees to collaborate across the towers of your value chain

- Create an environment that upskills your current workforce, leverages the tribal knowledge of your organization and attracts the new talent you need to drive changes in processes

Realize substantial value from the data you have

- Quickly liberate the information your organization needs to respond more rapidly to changes in your environment

- Create a common repository of data that can ingest and virtualize all data—at rest, in motion, historical, transactional and external—and normalize it through AI, creating a catalog of information

- Provide a single source of truth that is secure, yet democratized and easily available to the right people
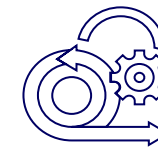
Improve agility and resilience now

- Don't depend on a sweeping 3-5 year IT core modernization program to start applying tools like machine learning, robotic process automation (RPA) and AI

- Do accelerate your journey; it will provide quick wins and can virtually self-fund through operational improvements, simplification, and the ability to apply automation and AI

Cloud Can Simplify Your IT Infrastructure

Legacy IT technology and antiquated data management are major obstacles to realizing the agility needed for digital transformation. Today, manufacturers have hundreds of applications running their business scattered across multiple physical data centers in different parts of the world.

Fragmented IT presents challenges, including higher operational costs, expensive hardware and software refreshes, compliance and regulatory issues, and availability and reliability risks. Many of these systems and applications are not connected to each other. Some factories and/or product lines have been acquired with different tools and applications. The data manufacturers need is locked away in silos.

TRADITIONAL DATA ARCHITECTURE

Complex, Costly & Constrained
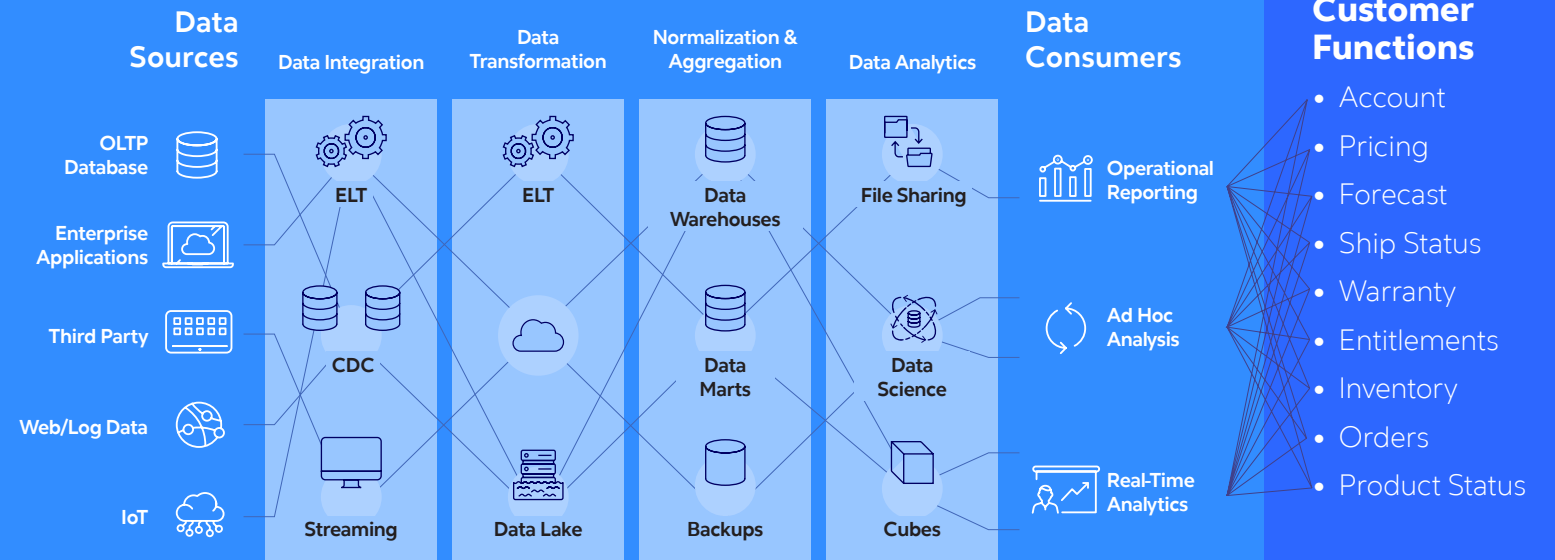
Companies could physically consolidate their data centers, but that is an expensive and time-consuming exercise. Another option is **standardization**.

- **Lack of infrastructure standardization** increases the cost of maintenance and management and lowers efficiency
- **Lack of platform standardization** increases the cost of application development, maintenance, testing and operations

Both can also significantly hamper your ability to quickly recover from errors and outages.

Whether a manufacturer is consolidating or standardizing, the cloud provides a number of unique opportunities that are not available elsewhere:

1. With its capacity, the cloud can accommodate instant scalability and elasticity. You may still need one or more physical data centers for your legacy workloads that cannot move to the cloud.

2. The cloud provides global capability with multiple regions and worldwide data center locations.

3. Initial investments of time, people and money are significantly lower compared to building, buying or leasing data centers. Cloud provides the opportunity to reduce operational expenditure and further rationalize capital expenditure with pay-as-you go models.

4. Cloud providers now bundle higher-level services that are well-integrated with software, tools and partner ecosystems that combined offer a complete, standardized platform to build applications.
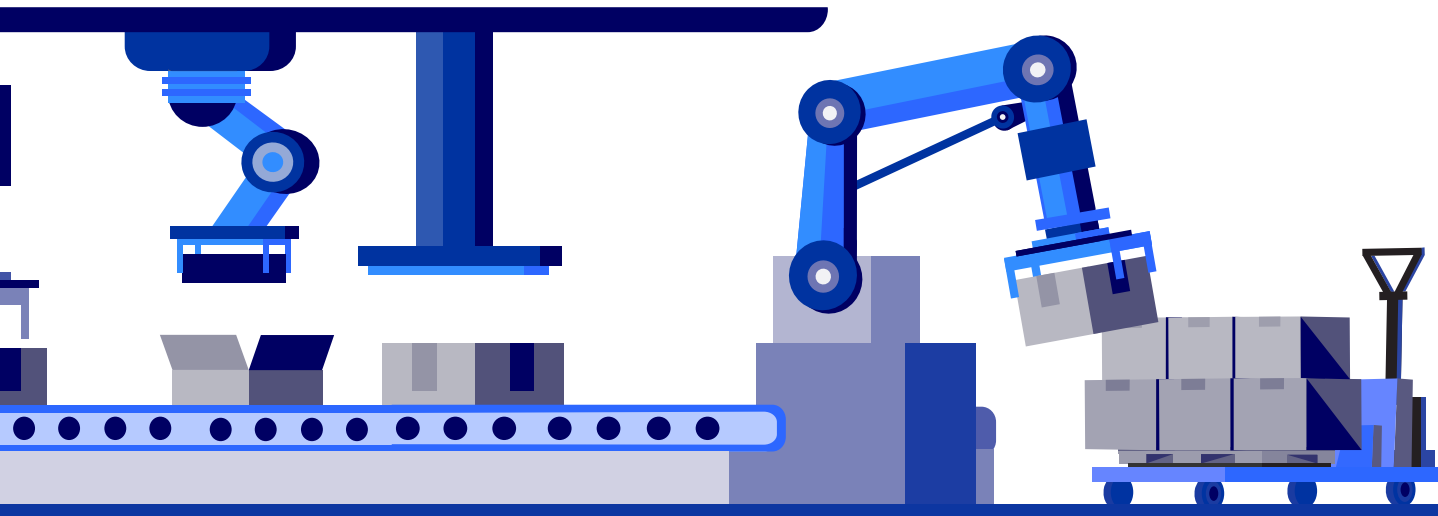
Cloud Migration For A Large Energy Company In The UK

Business Opportunity

We helped a British multinational energy and services company improve customer service and drive innovation through a business services-led cloud migration program.

Our Solution

- Mapping business services to the application and infrastructure layer, and planning the migration of those services to a hybrid cloud

- System provisioning through self-service and automated deployment

- Self-service portals for common service issues

- Leverage faster DevOps processes and the Hadoop big data analytics platform

Client Outcome

- **80%** of business **apps modernized**

- Near **100% conformance** with platform and application security controls

- **70% faster** product/business service launches

- **35% reduction** in IT operational costs

Cloud Can Improve Your Resilience

Manufacturers want their applications and systems to be highly available, fault tolerant and redundant while always having the required capacity and performance. But reality is often different due to the way systems and applications are designed and deployed.

Avoiding middle of the night conference calls:

Too often, an outage impacts a business-critical application. The application was likely developed 10 years ago and doesn't have the fault tolerance or redundancy common in modern architectures.

You can modify the architecture on the premises and add fault tolerance and high-availability features to it. But that would require additional infrastructure components and a substantial effort to set up, test and manage them.

Being ready for disaster:

Manufacturers rarely have comprehensive disaster-recovery strategies that are regularly tested and kept up to date. Because of the constraints on data center availability, infrastructure capacity and current architectural challenges, manufacturers can do very little about fixing it.

Fostering employee resilience:

COVID-19 continues to highlight the need for manufacturers to equip their workforces with the flexibility to work from anywhere. The cloud provides the tools and infrastructure to connect employees to the information and services they need transparently, wherever they are.

The cloud provides unique value propositions to implement solutions quickly in cost-effective ways:

- Cloud providers focus on capabilities and tools for designing and deploying applications to be fault tolerant and highly available

- The cloud's multiple availability zones and regions deliver the necessary foundation for high-availability and disaster-recovery capabilities

- Many of these additional capabilities that cloud offers are integral to the overall ecosystem, often with no or little additional cost, and they are fully managed by the cloud providers, which makes the switch to a more robust architecture easy, fast and inexpensive

Cloud Can
Enable A Culture
Of Agile Innovation
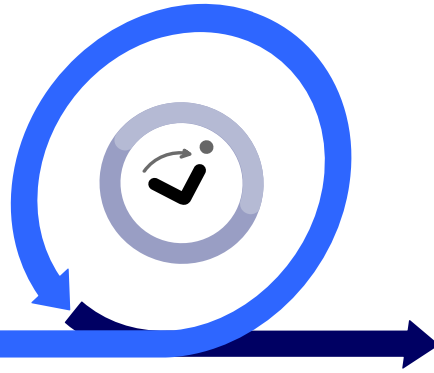
Most enterprises strive for a "culture of innovation"—one that encourages new ideas, gets projects off the ground faster and enables shorter release cycles. Changes in market and customer dynamics require adopting Agile development and DevOps to meet abbreviated time-to-market requirements with quality products and services.

In traditional manufacturing IT environments, the cost of experimentation and failure is high. Aging platforms and infrastructure can slow down a culture of innovation.

The cloud encourages taking chances and trying new business models:

- Lead time to provision environments can be reduced from weeks to minutes
- Advanced tools both simplify and accelerate modernization to cloud-native applications, reducing development release times and increasing the delivery of new capabilities
- Resources previously engaged with IT infrastructure support can be redeployed to drive new products and services

Cloud providers offer many out-of-the-box tool, testing and interface options to enable Agile development. Combined, this substantially reduces the cost of experimentation and failure and in turn encourages trying bold new directions.

Application Modernization For A Fortune 500 Healthcare Company

Business Opportunity

We are helping a Fortune 500 healthcare company create an independent service platform for its developers.

Our Solution

Leveraged server-less and loosely coupled architectures to:

- Enable seamless and rapid on-boarding of applications to Amazon Web Services (AWS) cloud
- Provide a developer platform to independently migrate to the cloud

Client Outcome

- Enabled rapid migration of **100+ critical applications** to AWS
- Reduced app on-boarding time from **3 days to 30 minutes**
- Drove **60% cost savings** on licenses

Integrate Mergers, Acquisitions And Divestitures Faster And Cheaper

As manufacturers move to strengthen their position during times of market upheaval, mergers, acquisitions and divestitures become more common. These events are complex and subject to strict deadlines and budgetary constraints.

Each party usually has multiple data centers, multiple technology stacks, and different standards for hardware, operating systems, platforms, and tools. Traditional IT integrations involve data center consolidation, data and application migration, and the retirement of redundant applications and infrastructure—a time and people-intensive expensive process.

Companies need to separate the infrastructure, data centers, applications and services for the new entity or rebuild from scratch.

Cloud helps simplify these activities and speeds the transition:

- The **pay-as-you-go** nature of cloud is ideal for short-term capacity requirements. It is useful for parallel runs, which are essential during mergers/acquisitions and for the redundant applications due to mergers that are slated for retirement/consolidation. Instead of building additional physical data center capacity for a few months, provision it on the cloud. Doing so won't require any upfront investment, and you stop paying as soon as you retire the additional capacity.
- The cloud is ideal as the **primary "landing zone"** because there is no lead time for building capacity and no upfront investment, in new data centers and hardware.

At a Glance

After acquiring several companies, a North American specialty manufacturer of tube technology for gas and oil needed a roadmap to consolidate systems, save money and iron out suboptimal processes.

Our Solution

Consolidate four ERP systems using an upgraded SAP-based cloud architecture that:

- Decreased IT costs with a two-tier ERP solution and decommissioning of multiple custom applications
- Increased productivity and flexibility of staff by using automation to replace manual ad hoc processes
- Improved reporting and analysis via a common corporate data warehouse
- Delivered valuable data insights by bringing business units together
- Enabled advance planning and simulation capabilities

Client Outcome

- Recommended automation to free staff to concentrate on strategic activities
- Advised on how to improve reporting, analysis and simulation
- Identified 65% savings on IT running costs

Expand Into New Geographic Markets

Traditionally, manufacturers have been constrained by IT when they want to expand into new geographies. There is the cost and time to build data centers, set up network and security, purchase hardware, and hire local resources to support and manage the data centers. The planning and lead time required is long and unpredictable, and working with new vendors and partners adds to the complexity.

Cloud service providers bypass many of these hurdles while providing the necessary tools to chart into new geographies:

- They already have significant presence in key geographies around the world, with data centers built and ready to minimize companies start-up and management of operations
- There is no need to deal with multiple data center and telco partners—all of this is managed by your service provider
- Manufacturers can leverage blueprints and best practices from an existing geography and replicate and deploy them quickly in new geographies

The need to alter development and operations operating models is likewise minimal. Developers in the core IT organization can use familiar platforms and ecosystems, and operations can use familiar infrastructure components to manage the day-to-day business.

The Challenge

A Fortune 1000 industrial manufacturer wanted to streamline and consolidate data capture from production equipment and assembly lines to improve insight into manufacturing processes and optimize them, but it had various data-gathering protocols across its many facilities.

Our Approach

Our client recognized an opportunity to create value by moving from simple efficiency improvements to an Industry 4.0 IoT platform that promotes connectivity and digital visualization.

Objectives included improved accuracy in order fulfillment, lower production error rates, reduced energy costs, and improved safety and compliance.

The Solution

- Designed an integrated cloud platform for gathering and analyzing information from disparate factories to more efficiently allocate resources
- Inventoried production equipment to gauge readiness to collect data for analytics on efficiency and up-time, yield and productivity measures for workers, assets and entire facilities
- Deployed an "operational nerve center" using IoT at four plants in 12 weeks, then rolled out the solutions globally without disrupting the business, creating a network of plants that can respond quickly to changing needs using digital twins

- Embedded OEE measures in manufacturing processes, providing managers detail on asset availability and run-time, configuration and customization, scheduling, through-put and quality output, down-time and maintenance needs
- Real-time notifications and web-based user interfaces enable remote experts to collaborate with shop-floor personnel—empowering the company's next generation of smart workers

The Results

- Industry 4.0 reference architecture with tools and templates for OEE, software and best practices
- Industrial IoT platform scaled to connect more than 100 facilities and thousands of machines and production lines

- Dashboards that monitor asset performance, yielding insights for decision-making
- Better asset use, which promotes efficiency and lowers energy use
- Forecasting $100+ million in cost savings and profitability gains over a five-year period

Where to start for quick wins? Liberate and democratize your data

There is no shortage of data in the typical manufacturing environment today. The issue is what do with it all. And the more automation in your operation, the greater the amount of data you generate—and store. Most manufacturers complain they are drowning in data, not sure what to do with it all and paying a lot to keep it.

ISA 95 Manufacturing Architecture

Pyramid levels:
- **05** — Strategic Planning · Selling and Costs Control
- **04** — Shop Floor Control · Productions and Planning
- **03** — Process Optimization · Management
- **02** — Individual Control · PLC, DCS
- **01** — Data Acquisition · Manual Control

Architecture diagram:

CAD	PLM	MPM	ERP	SCM
• 3D	• eBOM	• mBOM • Process plans	• Schedule	• Sourcing • Transportation
• Drawings	• Changes	• Work instructions	• Work orders	• Warehouse

(Suppliers) (Logistics)

MES	QUALITY	EAM
• Schedule • Work orders	• Compliance • Traceability	• Maintenance instructions

HMI	HISTORIAN
• Operator screen	• Historical time series data

Industrial Connectivity

PLC	PLC	PLC	Sensors	PLC	CMM	RFID

Components — **Assembly** — **Inspection** — **Inventory**

The challenges with handling data—quality, consistency, timeliness—rise disproportionately with the number of disconnected data silos in your organization. As a consequence, over 80% of shop floors still leverage paper, Excel or homegrown solutions to work with existing manufacturing processes.

At the same time, manufacturers are bringing their factories back to life with unprecedented requirements for employee safety while facing an uncertain market in the midst of supply chain disruptions. Being able to leverage the data you have to provide greater insight and agility moving forward is more important than ever.

Traditionally, manufacturers have consolidated and integrated selected data into data warehouses or data lakes. Much of this is "lift and shift"—There is no change to the structure and accessibility of the data, making its use questionable. Storing data here is reminiscent of the final scene in the Indiana Jones movie, 'Raiders of the Lost Ark'—another crate of data moving into a vast facility filled to the rafters with pallets.

Build Your Data Platform In The Cloud

A cloud-based data platform creates a virtualized data layer to liberate data from core systems that are scattered across the enterprise, separating the data from core transactional systems like SCADA, MES, ERP and CRM.

Data virtualization delivers greater accessibility and agility while reducing costs:

- Does not force data from multiple sources to comply with a single data model and transformation plan
- Leaves the data in place
- Creates a logical view of available data through catalogs and repositories
- Enables federated user queries without the need for users to know how and where to access the data

Cloud data platforms are built through APIs — no apostrophe and data pipelines:

- Open, standard APIs simplify efforts to establish data connections, request data, review documentation about its structure and then, with permission, automatically populate an application with data from another application
- Data pipelines can build data security, preparation, transformation, versioning, deduplication and other required activities into the interchange of data through APIs
- APIs, along with data pipelines, create simpler connections for data to flow easily between applications, and use of them does not require knowledge about the data sources needed for traditional ETL processes, including changes in the data sources and structures that might require ETL process rewrites

Cloud data platforms:

- Can relieve organizations of having to dedicate budget and resources to storing and processing data on-premise
- Use software automation with cloud to help reduce expenses generated by intensive manual work by developers and administrators and enable them to focus on more value-adding activities
- Create a digital front end that is more adaptable and can evolve with new customer, supplier and employee needs
- Provide data as a service to an omnichannel smart business layer, and create the speed to deliver new digital services every few weeks instead of every 12 to 18 months

The Cloud-Based Data Platform's Ability To Liberate Data And Decouple From Legacy IT Offers Three Major Benefits:

1. **Puts data in the hands of the business**—enabling business and technology teams to combine internal and external data to gain advantage, and then continue with incremental builds and delivery.

   a. Facilitates rapid use of blended data; all components work together using APIs—whether they are core transaction systems, data products or smart business engines

   b. Lowers costs and raises agility by reusing existing core services and embracing an open-source philosophy

   c. Improves quality and productivity by leveraging what has already been tested, perfected and made operational, enabling engineers and scientists to focus on the data elements, smart business services and the journeys that matter the most in new use cases

2. **Liberating data accelerates time to value.**

   a. Allows business users from the shop floor to the C-suite can easily access the data to deliver new strategic insight

   b. Enables the business to innovate multiple initiatives in parallel, conduct sprints, test value and deliver new digital services on a regular basis

   c. Leverages this shorter time to value to keep business transformation and corporate strategy aligned

3. **No need for an IT core overhaul to start using your data faster.** This approach removes a huge barrier to accelerating digital transformation. With a modular approach, manufacturers can enable IT modernization and deliver new capabilities in parallel and at a much faster pace.

Cloud Data Platform Diagram
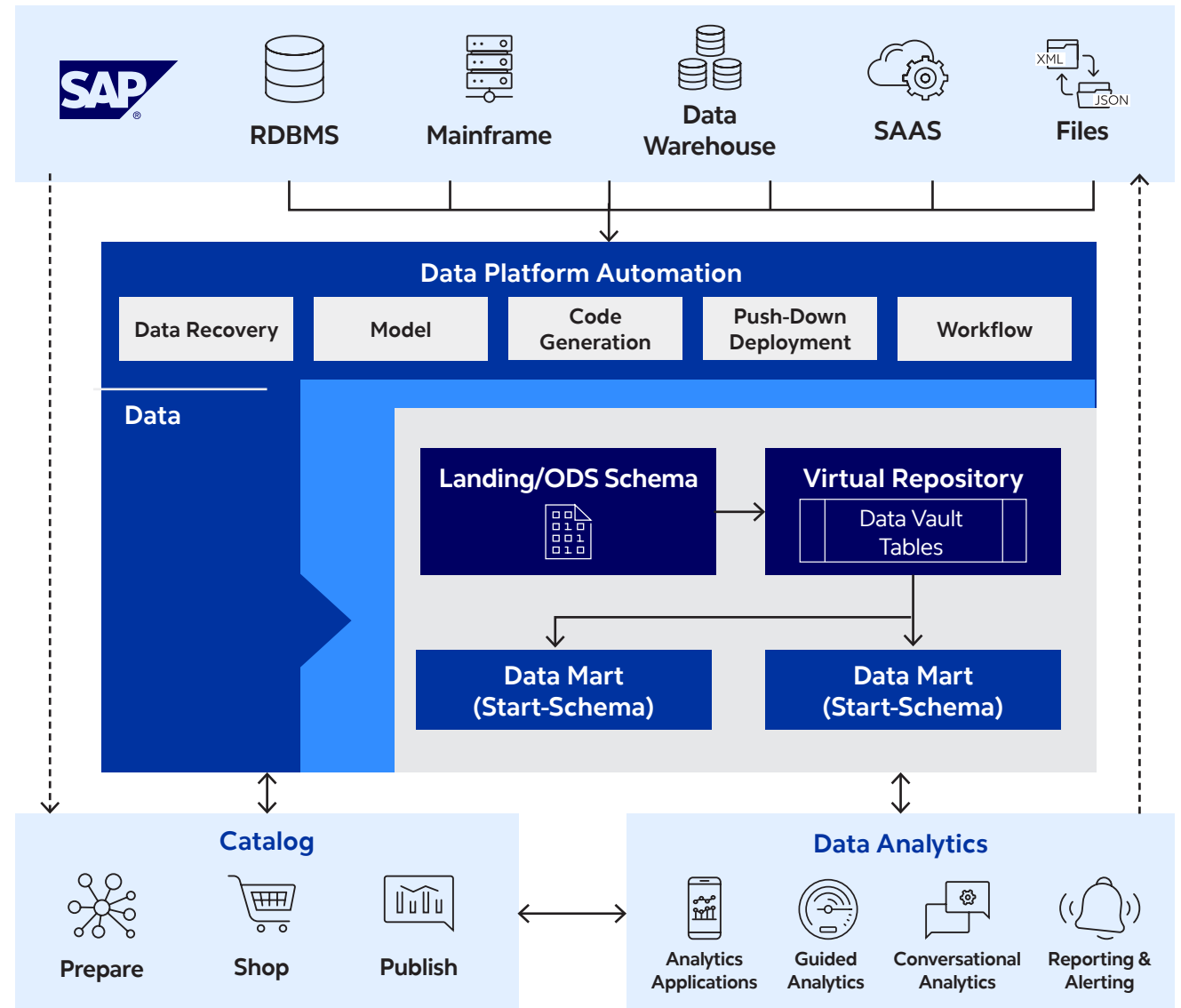
We Are Ready To Help
Our Differentiators

Reusable Assets
- Reference architecture
- Solution **blueprints**
- **Standardized** migration templates

Factory-Model
- Structured **SOP-driven** model that minimizes risk of migration
- **Reduced cost** of apps (20%–40%)

DevOps With Security
- **Integrated DevOps** pipeline with layered **cloud security** model
- Faster roll out of features (20%–30%)

Recognition
- Gartner's MQ for public cloud infrastructure MSPs
- Among 5 major cloud services brokerage players globally
- Forrester's Vendor Landscape as a leading supplier of hybrid cloud management solutions

* % are based on Cognizant metrics

Skillset
A future-ready deployable talent pool with a total of **600+ certified cloud professionals**

Integrated Value Proposition
- Leveraging **synergies** across app and infra
- **Unified pricing model** across app and infra

Automation
- Expedites migration, reduces **cost of defects**
- Repeatable processes delivered with **consistent quality**

Our Unique Value Proposition

Rapid cloud shift and modernization

"How do I ensure that my business-critical systems are robust and resilient enough to meet sudden surges in usage and demand?"

⬇

Accelerate migration from weeks to days

⬇

Adopting **our proven methodology & tools**

"How do I enable my employees to work from anywhere and ensure that my customers get the same level of service?"

⬇

Deploy a cloud contact center in days

⬇

With Cognizant's **best-in-class solution**

Re-imagining manufacturing with cloud

"How do I ensure that my business-critical systems are robust and resilient enough to meet sudden surges in usage and demand?"

⬇

Accelerate assessment from days to hours

⬇

Tapping into our **proprietary assessment tools**

"How do I manage my costs and protect capital in the face of an uncertain business environment?"
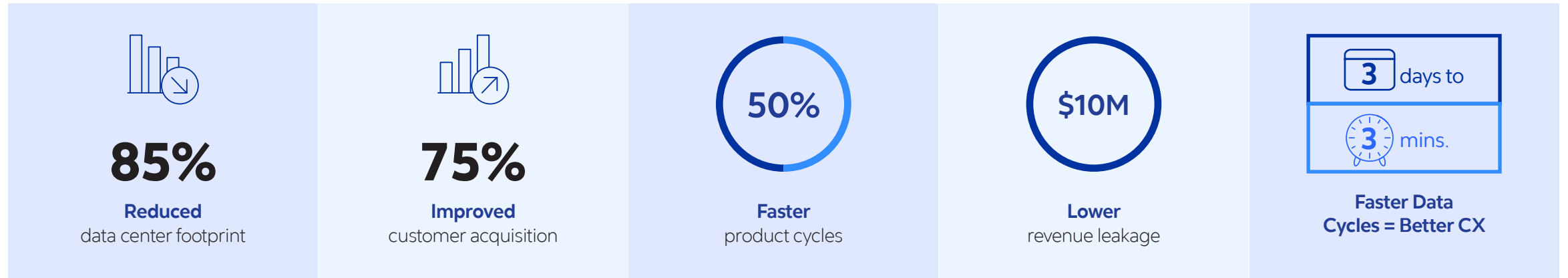
⬇

Reduce tooling cost by up to 100%

⬇

Leveraging our **cloud-native capabilities**

Delivering Tangible Business Outcomes To Customers

85%
Reduced
data center footprint

75%
Improved
customer acquisition

50%
Faster
product cycles

$10M
Lower
revenue leakage

3 days to
3 mins.
**Faster Data
Cycles = Better CX**

With our cloud services at scale

Approx.
~$1B+
Public cloud services rev.

600+
Cloud-led transformation projects

10%-15%
of workforce trained & certified on major public cloud platforms

25K+
business-critical applications migrated to cloud

50+
innovative blueprints, IPs & acceleraotrs

This Is The Time To Make Bold Moves

If nothing else, the pandemic has underscored that manufacturers are capable of executing quick business pivots through sheer will and muscular execution.

Every manufacturer is different, from the way they work to the pace and scope of there digital transformation. But all manufacturing IT environments are complex, with different yet interrelated platforms, applications, data and security. Now more than ever, manufacturers must choose wisely to achieve financial benefits that can be scaled quickly across the organization.

The prolonged uncertainty and requisite pace of change on a number of fronts are creating a set of transformational imperatives:

- **Build resilience:** Ensure business continuity across all operations and execute strategic plans with a highly engaged workforce
- **Enable agility:** Have the capacity to pivot business models across customers, products, operations and the supply base
- **Scale transformation at speed:** Enable rapid commercialization and monetization of innovative offerings tailored to fast-changing customer needs

The effective deployment of cloud provides the foundation of your digital strategy to simplify your infrastructure, improve resilience, accelerate agility and reduce costs.

We partner with manufacturers to address immediate business challenges while keeping an eye on the long-term goals of business transformation and sustainability. Cognizant tailors a bespoke cloud strategy that not only addresses your challenges today—in as little as 30 days—but also sets you up for resilience and flexibility in the future.

Let's start the conversation. Contact us at **MODERN BUSINESS**

About Cognizant Manufacturing

Cognizant's Manufacturing and Logistics Practice operates as a trusted global partner to automotive, industrial and process manufacturers, as well as transportation and logistics companies, helping them accelerate business performance and drive growth through the power of digital. By leveraging our domain expertise and knowledge of manufacturing, transportation and logistics business processes, we're able to deliver next-gen digital solutions "in context" across the R&D, sourcing, production and the aftermarket support value chain. In doing so, we enable organizations to take a holistic approach to their business, delivering systematic and structured transformation that defines the modern business and delivers the promise of Industry 4.0. Our business unit has been recognized as one of the top 10 providers of manufacturing services by HfS Research for innovation, execution and voice of the client. Learn more at **www.cognizant.com/us/en/industries/manufacturing-technology-solutions.**

About Cognizant

Cognizant (Nasdaq-100: CTSH) 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** or follow us **@Cognizant.**

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