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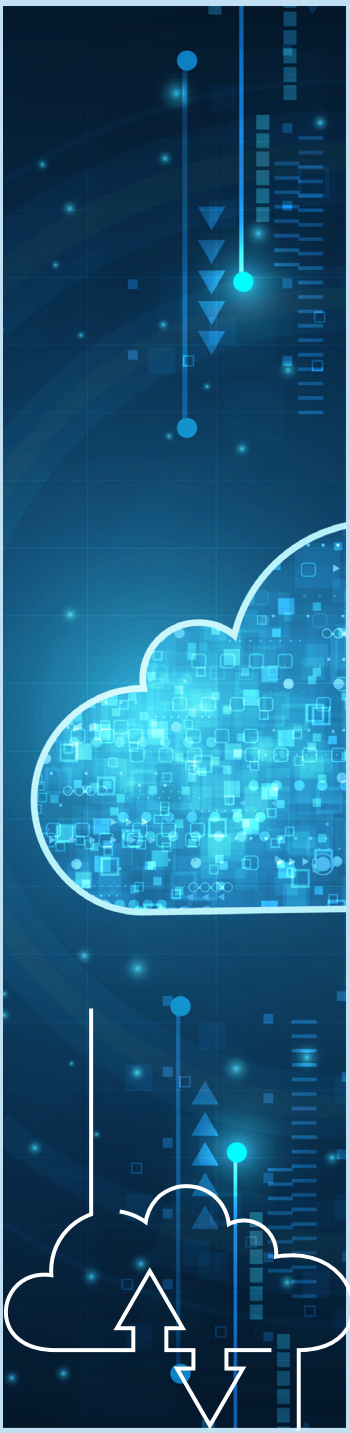

MADE IN THE CLOUD: MANUFACTURING'S NEXT DIGITAL ACCELERATION

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Made in the cloud: manufacturing's next digital acceleration

A century passed between the steam-powered first industrial revolution and the second revolution, driven by railroad, steel and electrification.

Now, less than a decade into the digital-driven fourth industrial revolution, manufacturers can seize a second cycle of cloud-driven digital improvements. Where computers powered the 20th century's third industrial revolution, the interconnection of physical and digital, hardware and software, manufacturer and user drives the current fourth industrial revolution.

To thrive beyond this period of disruption, manufacturing enterprises require always-on, available-anywhere systems. Modern manufacturers must cultivate adaptable and scalable infrastructure to expand operations, enable remote access and control, and capitalize on business opportunities. Cloud systems offer robust, flexible infrastructure, and the prospect of faster, more efficient business performance.

The cloud transforms the enterprise by redefining operational excellence

Basic lift-and-shift cloud adoption provided enterprises with an avenue to save money by leasing compute power and memory rather than investing in data centers and server upgrades. On the other hand, enterprise-wide cloud systems bring together data, applications, processes, stakeholders, and dispersed partners, enabling manufacturers to pursue robust use cases across the value chain. The cloud facilitates data-based decisions, faster actions, and novel digital capabilities.

For instance, manufacturing plants can shift legacy data networks to a cloud-based Software-defined Network (SDN). It significantly reduces network downtime, which in turn ensures uninterrupted production and cost efficiency. Since SDN facilitates visibility across the extended shop floor, it is a digital catalyst to enhance Toyota's just-in-time production methodology. Automated provisioning of bandwidth and programmability of networks allow manufacturers to align capacity with product demand. Further, production and procurement plans can be dynamically configured to address demand based on resource availability and inventory.

Cloud programs can add value to many business functions. Integration of data from disparate sources and the ability to analyze it in real time deliver tangible business outcomes. Employee engagement and experience are enriched through personalized talent management, while visibility into individual components of the supply chain and distribution channels facilitates adaptive sourcing. At the same time, they help foster relationships with suppliers and contractors. Accurate demand forecasts and predictive revenue engines lead to superior demand fulfillment. Most important, intuitive, self-service interfaces drive adoption of cloud applications, be it for marketing campaigns, employee reskilling or customer service.

The cloud drives innovation by enhancing digital experiences

A seamless cloud network architecture serves as the foundation for resilient enterprises, empowering them to respond to market dynamics and drive innovation at scale. Cloud-driven interoperability enables manufacturers to use predictive analytics and ML models for smarter production and sustainable manufacturing.

Pivoting to the cloud-first model unlocks new business opportunities and revenue streams amid dispersion and disintermediation. Cloud platforms aggregate data from global production sites representing machinery, products, spare parts, customers, suppliers, and employees. Shifting data to the cloud and making use of cloud-native technologies makes the manufacturing enterprise smarter with actionable intelligence.

Real-time data helps understand asset usage, product performance, customer sentiment, and the environmental and social cost of operations. AI-driven analytics and ML models capitalize on enterprise data as well as technologies such as computer vision, telematics and location tracking to share business insights. It accelerates product design and development, improves inventory management, and ensures workplace safety.

Smart analytics and AI tools improve efficiency and quality, maximize capacity utilization, minimize waste, and support recycling. Besides, a cloud-powered transformation empowers manufacturers to grow profitably via omnichannel marketing, product servitization, and personalized services such as over the-air software updates.

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The cloud makes the ecosystem more resilient by reshaping value chains

Well-orchestrated, cloud-based operations offer several operational and business benefits. Access to real-time data, scalable computing resources, and reliable connectivity accelerate the deployment of Industry 4.0 solutions. Advanced automation, Artificial Intelligence (AI) and Machine Learning (ML) transform factory floors and create an autonomous supply chain.

Industrial equipment and field gear outfitted with sensors relay a variety of data to log files and metrics schema via the cloud – from the vibration of a turbine to a technician's body temperature. Industrial Internet of Things (IIoT) and cyber-physical systems with cloud connectivity integrate production sites, business processes and logistics, and stream real-time data to better manage production workflows, raw material replenishment, maintenance schedules, and product delivery.

Sophisticated cloud systems make existing data and systems more interoperable, and the enterprise more agile and intelligent. They enable robots to work alongside humans for assembling, packing and material handling, thereby boosting productivity and accelerating turnaround time. Notably, they support a risk-averse approach to implement modular automation systems.

An agile ecosystem is especially useful in industrial manufacturing, where the product lifecycle continues to shrink. Digital twinning and simulation-based software provide the ability to develop product prototypes and test innumerable scenarios to realize outcomes, be it redesigning the workplace based on ergonomics, optimizing the cost of an electric motor, or delivering a personalized shopping experience for buying an electric car. Simulation tools reveal vulnerable points across value chains and account for the cascading effect of contingencies and disruptions. Significantly, digital solutions help manufacturers assess the opportunity cost of alternative methods to address challenges in production, supply chain operations, and sales and distribution.

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Next to the power of cloud

There are many nexts awaiting manufacturers across focus areas: energize the core, smart manufacturing, connected products, servitization, and B2B2B transformation. The cloud is the pathway to realizing outcomes in each focus area and is increasingly being seen as the new digital shop floor.

Cloud-based integration of cross-domain gateways, addition of new system components, and service deployment are relatively easy. However, manufacturers are challenged by how and where to start. We now have proven cloud assessment tools that evaluate the preparedness of existing digital systems for a cloud ecosystem. Robust migration strategies and purpose-fit transformation programs enable a smooth transition to SDN architecture and cloud platforms.

Manufacturers that undertake the cloud journey to future-proof their IT infrastructure can leverage Infosys Cobalt, a comprehensive suite of cloud services to de-risk migration. Infosys Cobalt offers a rich mix of solutions, platforms, cloud assets, and accelerators to navigate the complexities of a multi-cloud environment and achieve business goals.

The hybrid cloud Infosys Cobalt suite combines cloud expertise with services to address user experience, compliance, data governance, and security requirements.

Whatever next it is that manufacturers seek to realize, Infosys Cobalt is envisioned to accelerate the future. From the next normal to the next experience to the next ecosystem, placing cloud at the heart of the transformation engine can deliver the promise of the fourth industrial revolution: hyperproductive, hyperconnected and hyperintelligent manufacturing.

Author

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Chad holds a senior editorial position with Infosys Knowledge Institute. Prior to Infosys, Chad had a stint of 20-plus years as a journalist, mostly covering business and finance. He most recently served as Southwest Editor for Mergermarket, a global subscription newswire focused on mergers and acquisitions. He has reported from Dallas for the past 15 years with Mergermarket and the Dallas Business Journal, covering big mergers, scooping bank failures and profiling business tycoons. Chad has previously reported in Florida, North Carolina and in East Texas on range of critical areas in technology and financial services. Chad holds a masters degree in journalism from Columbia University, New York.

Infosys Cobalt is a set of services, solutions and platforms for enterprises to accelerate their cloud journey. It offers over 14,000 cloud assets, over 200 industry cloud solution blueprints and a thriving community of cloud business and technology practitioners to drive increased business value. With Infosys Cobalt, regulatory and security compliance, along with technical and financial governance comes baked into every solution delivered.

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