Transform your manufacturing enterprise into an intelligent enterprise

Create a culture of continuous innovation throughout your ecosystem with IoT and Big Data

The manufacturing industry is undergoing revolutionary changes. Connected technologies, Big Data and analytics offer manufacturers the opportunity to realize new levels of efficiency, while the Industrial Internet of Things (IIoT) is beginning to convert traditional production facilities into smart factories with digitally orchestrated shop floors. At the same time, today’s customers expect increasing levels of personalization, driving manufacturers to change their focus from producing traditional low-margin products to creating highly personalized relationships with customers.

The current COVID-19 situation has accelerated the need for these changes, as well as the speed that they need to be implemented to adapt to the new normal. Companies will make significant investments in greater visibility and coordination across the supply chain to enable better collaboration with a wider base of suppliers, ultimately driving decoupled, highly efficient and more resilient supply chains. A ‘virtual shift’ team of specialists, connected remotely and constantly online in order to guide and support the reduced ‘physical shift’ of onsite personnel, will emerge. Enabled by real-time data, Artificial Intelligence (AI)-based insights and a range of communication and collaboration tools, the virtual shift will help digitize and scale much-needed expertise across the organization and enable the reduced onsite workforce to become more real, effective, and ultimately, more productive.

In the new normal, consumers will continue to look to manufacturers in terms of how they can connect and communicate with them. This crisis has taught us that connecting and personalizing communication, as well as quick reaction times, are essential to survive. Focus
on automation, digitization and data-driven decisions will become even more critical to thrive, in what will be the uncertainty of the new normal.

These new demands for greater personalization, innovative business models and integrated services call for new insights based on data from production operations, products, suppliers, and the customers themselves — via digital interaction, supply chains and sensors. As if that's not enough, increasing competition is driving manufacturers to improve the flexibility and cost-effectiveness of their IT systems to reclaim resources so that they can provide faster support and create new offerings and processes. To gain competitive advantage in this environment, manufacturers today need to focus their investments more on transformation than on business operations — and Mindtree can help.

At Mindtree, we have mined our deep experience with automotive and industrial manufacturing to reveal two streams of transformation that are helping companies improve operational efficiencies, accelerate innovation and drive customer loyalty: Growth Transformation and Operational Transformation.

To enable operational transformation, manufacturers must build connected business networks that enable faster responses to new market demands. By creating smart, connected factories and supply chains, manufacturers can automate processes and easily scale to meet production and aftermarket requirements. This transformation improves the connections with suppliers, distributors, customers and consumers through collaborative portals, API-led platforms, and robust customer relationship management (CRM) systems. These changes must be supplemented by transforming existing enterprise resource planning (ERP) systems to more modern ERP systems. These operational transformations subsequently enable funding for growth transformation initiatives.

To achieve growth transformation, organizations are focusing on expanding beyond pure-play manufacturing to a services-based model to ensure customer "stickiness" and long-term revenue streams, and to increase their customer base by focusing on creating outstanding customer experiences. They do this by creating smart products and services, connecting to customers by using new business and revenue models. Moving from a model where the manufacturer is at times twice-removed from the customer to a customer-connection model enables the workforce to collaborate and innovate faster through tighter feedback loops.

Companies that want to remain competitive need to pursue both of these crucial transformation streams. At Mindtree, we have identified three essential pillars that focus on these streams and will set the stage for your organization's conversion to a truly automated enterprise.

**Two transformation streams are driving efficiency, innovation and customer satisfaction**

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**The three pillars of manufacturing transformation**

The key to seamless and successful manufacturing transformation is a strong foundation designed for growth. Mindtree's three essential pillars of transformation provide that foundation for the manufacturing industry.

**Pillar One: Enable “Connected Customer experience”**

For many manufacturers, creating connected personalized experiences for end customers and channel partners is the new battlefield leading to greater loyalty, larger customer base and new revenue models. This is being enabled by product, marketing, sales and after-sales transformation initiatives.

By creating connected products and linking them to either your own services or to a services or replenishment partner, as a manufacturer, you enable a world of new possibilities. Product transformation allows you to leverage data-driven insights to drive personalized interactions with your customers and partners, further innovation, monetize your data for added revenue and develop innovative pricing models. The connected product becomes both the new product and the new marketplace e.g., the connected vehicle which not only uses driver's personal preferences to make driving more informed, safer and enjoyable but also creates a personalised marketplace for the driver.

Mindtree offers several solutions to help manufacturers accelerate product transformation and build new revenue opportunities. From connecting assets throughout your production ecosystem to device engineering that includes IoT
and sensor integration, we deliver a powerful foundation for developing new product features and capabilities. We provide data usage analytics through our Decision Moments data analytics platform, which includes a modeling sandbox that allows you to perform rapid exploratory data analysis before you invest at scale. The solution also enables predictive analytics capabilities for more informed, strategic and operational decisions that help you rapidly gain the full value of your company’s digital transformation. We also have our own Bluetooth stack which is embedded in several connected vehicle platforms.

Meeting hyper-personalization expectations requires not only a consolidated view of customer data and insights, but an evolution from a business-to-business (B2B) model to a more consumer-centric business-to-business-to-customer (B2B2C) model.

Mindtree helps manufacturers transform the customer experience and meet demands for greater personalization. We develop B2B e-commerce capabilities that drive new levels of efficiency and added profits for manufacturers, as well as mobility and sensor-enabled apps for IoT, interface devices and remote controls. We also provide solutions that leverage augmented reality/virtual reality (AR/VR) service enablement, demand sensing and predictive analytics to guide improvements in creating more personal, connected experiences for customers.

**Product transformation in action: Developing an IoT-enabled hearing aid**

One of the world’s largest hearing aid manufacturers needed to build an IoT-enabled hearing aid app to keep pace with market changes and customer expectations. The app would allow audiologists to remotely set up the device and would use environmental analytics to suggest mode changes. The company turned to Mindtree to develop and build this mobile app that integrated with the hearing aids and used machine data analytics to achieve the desired results. The Mindtree solution transformed product outcomes by improving usability both for the audiologist as well as the user of the device allowing interaction with other smart devices. Mindtree provided a proof of concept and pilot-driven approach to support continuous product improvement.

**Personalized, connected experiences in action: Building a billion-dollar e-commerce channel**

When a global industrial equipment distributor needed to support business growth while transforming its old business model, Mindtree provided a solution. The distributor’s printed catalog offered more than 1 million SKUs and was based on data in a disparate and aging IT infrastructure. To create a more personalized and connected experience for the company’s customers, Mindtree built and supported a $1 billion e-commerce channel and moved the entire print catalog online. To support upsell and cross-sell opportunities, the solution enabled representatives at call centers to understand the nature of a call before they engaged customers. To improve operational efficiency as well as create incremental revenue, we are looking to transform the vending machine on the shop floor into a live, on-site electronic salesperson to take equipment and parts orders using a machine-mounted, IoT-enabled camera. As a result of these improvements, the company drives 50 percent of transactions and more than $1 billion in revenue through the new business model, with a significant increase in daily orders year over year.

**Pillar Two: Create “Connected & Intelligent Enterprise”**

As markets & business environments continue to evolve, there is immediate and critical need for manufacturing organizations to re-imagine & modernize their core operations, systems and business processes with the end goal to create a connected & intelligent enterprise

To optimize operations and accelerate product & service delivery, manufacturers must modernize their aging infrastructures, standardize core systems, and consolidate backend systems. Companies also need to satisfy a number of regulations and they must prove compliance or risk stiff penalties.

Mindtree offers a complete selection of managed services to help manufacturers optimize operations and speed time to market for new products and services. We also provide cloud transformation, ERP modernization, and tool life cycle management services to modernize and consolidate existing systems. And with Mindtree’s training and diagnostics based on AR/VR and mixed reality (MR), your team will be well-prepared to meet compliance requirements and maximize the value of your investment.
Mindtree also offers next gen technologies to automate and enhance business processes using RPA, artificial intelligence (AI), machine learning (ML) and block chain solutions across the manufacturing value chain & functional landscape. We have our own automation and integrated services platform called CAPE to enable this transformation. We have also built more than 400 BOTs to automate our internal business processes that we will bring to bear for our clients. We also bring in 40+ proven tools and frameworks to enable faster modernization assessment and automated migration.

Modernized the Core: Migrated and consolidated monolithic mainframe landscape to drive standardization and maintainability

A multinational manufacturing company who is world’s second largest manufacturer of heavy-duty trucks had a large mainframe landscape that powered the core processes of the organization. It was becoming difficulty to maintain, scale the landscape and align to fast changing business needs, as the architecture of the existing system was complex and difficult to maintain at resulting in high cost. Mindtree as a strategic partner optimized and modernized core enterprise applications across purchasing, material handling, assembly, inspection, warranty and dealer management processes etc. We also centralized the Dealer System to standardize the Dealer process across Markets and consolidated 30+ Core Purchase Systems into 4 application. This resulted in 50 million SEK(Swedish Kronor) savings & 60% reduction in support effort and 20% improvement in time to market.

Optimized operations in action: Streamlining predictive quality analysis

A leading chip maker that generates huge quantities of manufacturing test data needed to reduce the time required to analyze chip test data to help predict operational failures. Mindtree used data from IoT-enabled sensors and predictive analytics to identify issues and improve the manufacturing process. The Mindtree solution also used SAP Vora and Dynamic Tiering, 2,000 cores of Lenovo processing and 1 petabyte (PB) of EMC storage to take trillions of rows of data and visualize it on screen in less than 15 seconds. The solution allowed engineers to reclaim time to work on other tasks and identified manufacturing trends in seconds instead of days, enabling faster, better-informed decisions.

Modernized and automated operations: Build a real time data enabled platform to ensure brand safety

A global leader in technology and services that provide and protect clean water, safe food, abundant energy and healthy environments faced challenges with perishable goods. The company needed to predict when refrigerated goods would spoil, replenish perishable goods at major store chains on time — and increase food safety to protect brands while keeping costs low. Mindtree created a collaborative environment that leveraged multiple technologies to provide real-time, proactive food protection that used sensors and alerts to predict and notify service teams when refrigerated items were about to expire. The solution enabled the company’s customers to validate environmental health and conditions at their locations daily and automatically generate specific health and safety reports.

Pillar Three: Create “Lean & Nimble Organizations”

As markets and business environments continue to evolve faster than ever before, there is a dire need to create a lean and agile organization that drives efficiencies and faster innovation. Many manufacturing organizations are beginning to think of transformation to product-oriented way of operating which is a significant departure from the traditional plan-build-run way of structuring teams within each business function. The core tenets of this transformation are product based team structure and

Mindtree use case: Transforming agribusiness with IoT and analytics

One of the largest agribusiness operators in the world relies on tractors to spray fertilizers and other enhancers that promote healthy vegetable and fruit growth. However, the company needed to reduce the time tractors spent being refilled with the spray materials (currently more than 50 percent of the time) to improve the company’s efficiency and optimize its effort.

Mindtree designed an edge infrastructure solution that included devices placed on tractors. The devices integrate with sensors that identify sprayer locations and amount of material remaining in the vats. The sensors notify mobile refill stations when to refill spray material. Now, instead of having to drive all the way back to a central refilling station, the spray trucks are automatically met in the field with refilling services when they run low. The solution will transform the company’s trucks using IoT, sensors and analytics, create a connected experience for its suppliers, truck and refilling station operators, empower the workforce with IoT tools, optimize operations, and save the company more than 40 percent in operational costs associated with spraying.
an organization culture driven by Agile and DevOps processes and continuous improvement. This entails significant organizational change management initiatives and investment by working with partners like Mindtree who have taken customers through this journey over several years.

Not only is Mindtree a transformative partner in this area but we also have our own IPs to enable the same. Mindtree has a managed services framework called “ATLAS” to standardize, optimize and enable this transformation. We have a platform called “CAPE” for Lifecycle and DevOps Automation Platform enabling continuous deployment. We also have a knowledge management and learning platform called “Yorbit”. It is no surprise therefore that Mindtree is considered a leader in Agile, CloudOps and DevOps by several analysts and advisors.

**Product based delivery across digital marketing and ecommerce domains: Faster time to market for enhancing digital marketing customer engagement**

For a multinational company which creates paints & performance coatings and produces specialty chemicals, Mindtree built a target operating model aligned to digital initiatives based on

DevOps for digital marketing sites, apps, backend data processing engine & some other legacy systems. Over the past 3 years, we have deployed several feature teams, including those for upcoming tracks on industrial paints. We also have a number of feature teams active in between for long-running feature developments such as the e-commerce domain. This has resulted in cost saving of more than 40% and also efforts savings due to automation in deployments, day-to-day tasks as well as improved reliability: due to failovers and backups implemented more efficiently

**Transforming to a product based operating model: Higher accuracy, agility and speed of delivery of products & services**

One of the pioneers in the navigation and mapping products space needed to enable faster release of products, maps, navigation software and eCommerce services to maintain market leadership. To achieve this vision, Mindtree helped them in their journey of transforming towards a product based operating model by reconfiguring towards key business domains like Maps, Devices, Traffic systems, eCommerce and Corporate systems. We also aggressively adopted Agile & DevOps practices as part of the product based operating model encompassing both Owning up engineering and operations responsibilities. This operating model was aligned to all major customers (OEMs) and involved large number of distributed scrum teams with 200+ team members of 200+ minds. This transformation has helped our client achieve as much as 50% improvement in time to market in addition to significantly higher accuracy.

**Why Mindtree for manufacturing transformation**

New business models, customer expectations and connected technologies create new frontiers for manufacturers. To take advantage of emerging opportunities, companies need a partner with experience in growth and operational transformation to build smart, connected factories. Mindtree has the combined IT and OT strengths to transform your organization across the manufacturing value chain from warehouse operations and logistics distribution to B2B consumer-to-product execution and services. We’ve helped manufacturing organizations across the world transform their operations to gain market share, and we can do the same for you.

Mindtree’s three pillars of transformation provide the foundation for seamlessly transforming your organization into an automated enterprise. And our industry-leading strengths in industrial IoT, analytics and the cloud allow us to tailor solutions that promote a culture of continuous innovation. As a result, we’ve built a global team of manufacturing experts that have been recognized for their accomplishments.
Industry recognition
Mindtree’s industry-leading strengths in industrial IoT, analytics and the cloud have been recognized by several global organizations:

- Mindtree Recognized as an Innovator in Avasant’s Intelligent Automation RadarView™ 2018 report
- ISG Provider Lens™ 2018
  - “Rising Star” in Managed Public Cloud Services and Public Cloud Transformation
  - “Leader” in Next-Gen Application Development & Maintenance (ADM) Services
  - “Leader in SAP Cloud Platform services and a “Rising Star” in SAP S/4HANA and SAP BW/4HANA.
- Awarded the Adobe 2018 Business Experience Award for Omni-channel Experience Management
- Zinnov 2018 Leader of “Overall IoT Services,” along with IoT Engineering, System Integration and Deployment, Connected Vehicles, Predictive Maintenance, Customer 360, Sensors and Devices Competency, Platform and Application Competency, and Communications Competency.

Conclusion
Our deep partnerships with platform vendors such as SAP, Microsoft, Salesforce, Amazon and Google and our own IPs and platforms make Mindtree an ideal digital-anchor partner to power your digital transformation. Our metal-to-cloud capability enables IoT-led transformation and our IPs, platforms and solution partners cater to manufacturing industry needs.

Now is the time for manufacturing transformation. Mindtree can help you reimagine your manufacturing enterprise through artificial intelligence, machine learning and deep learning to keep pace with industry changes — and stay ahead of competitors.

Visit Mindtree at www.mindtree.com to learn how we can help you transform your factories and become an intelligent enterprise.

About Mindtree
Mindtree [NSE: MINDTREE] is a global technology consulting and services company, helping enterprises marry scale with agility to achieve competitive advantage. “Born digital,” in 1999 and now a Larsen & Toubro Group Company, Mindtree applies its deep domain knowledge to 300+ enterprise client engagements to break down silos, make sense of digital complexity and bring new initiatives to market faster. We enable IT to move at the speed of business, leveraging emerging technologies and the efficiencies of Continuous Delivery to spur business innovation. Operating in 18 countries and over 40 offices across the world, we’re consistently regarded as one of the best places to work, embodied every day by our winning culture made up of over 21,000 entrepreneurial, collaborative and dedicated “Mindtree Minds.”