



The Dawn of Digital Industries

State of Digital Manufacturing

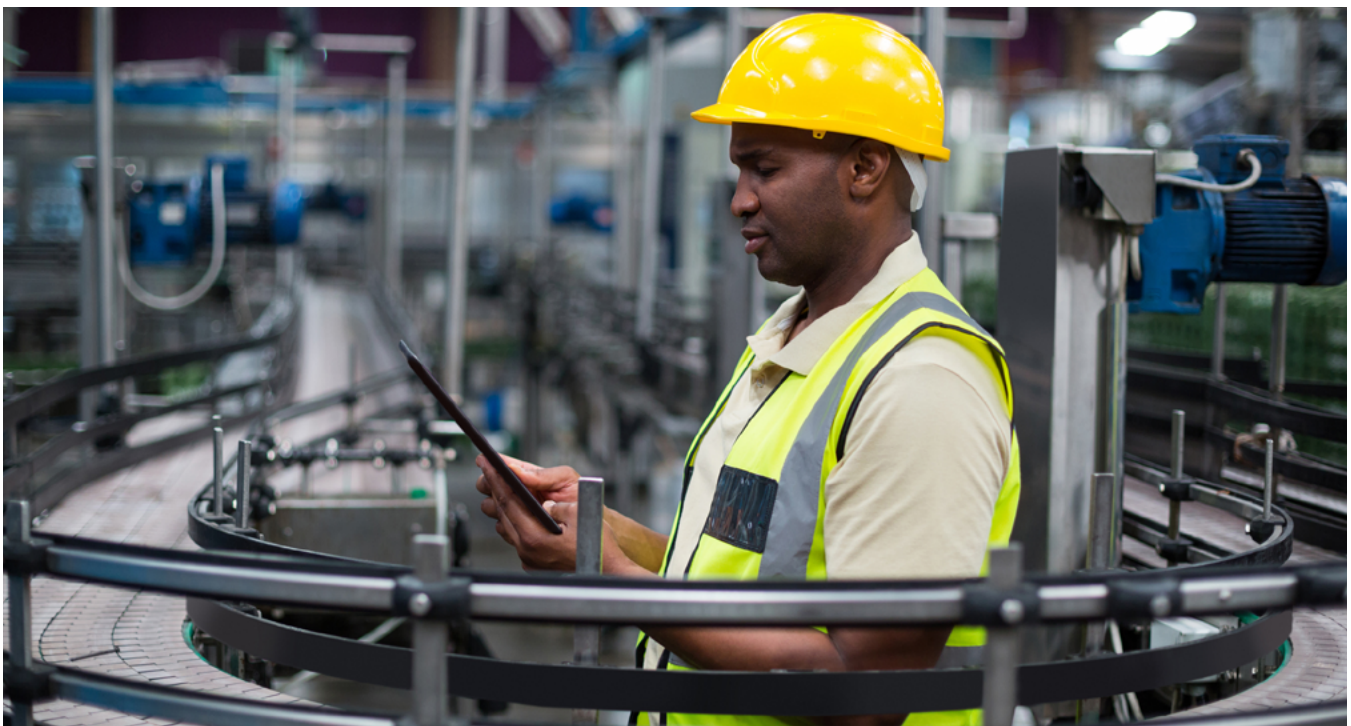
The Market/Industry Angle

Digital transformation in the industrial environment is no longer an item on the “nice to have” wish list of organizations—it is a business imperative. Industrial organizations are prioritizing digitalization to connect their vertical operations as well as their horizontal supply chains. Digitalization is transforming how manufacturers are creating and delivering products and services, regardless of the industry they serve. In the factories of the future, the most valued manufacturing organizations will be the ones that can homogenize digital capabilities with their industrial environment.

The industry is witnessing a shift to new solutions and business models, wherein manufacturers leverage embedded digital capabilities to make informed business decisions based on product and environment behavior. Just as cars are evolving into products that can self-diagnose potential issues and be repaired via software upgrades instead of by a traditional mechanic, industrial machines are also tracking their performance and delivering insights that are useful for manufacturers.

As the foundational enabler for digitalization, the Internet of Things (IoT) cannot be underestimated in terms of importance to this industry. It has helped drive renewed focus on manufacturing globally, resulting in national policy programs such as Platform Industrie 4.0, Industrial Internet Consortium (IIC), and Made in China 2025. It has also led to the development of the Industrial Internet of Things (IIoT).

The adoption of IIoT-based services and strategies will continue to increase at an accelerating pace for the next few years as organizations realize they need to adopt these solutions to remain competitive. Digitalization is expanding across business functions within organizations, as well as horizontally among organizations along the manufacturing value chain, from suppliers and partners, to distributors and customers. Much of the initial focus for manufacturers today, however, is in the collecting, aggregating, analyzing and utilizing of data generated by machines to provide significant additional value to the enterprise. This change comes from realizing the value that can be derived from the machine data. Proper utilization of this data is critical, as data without application is of little value.



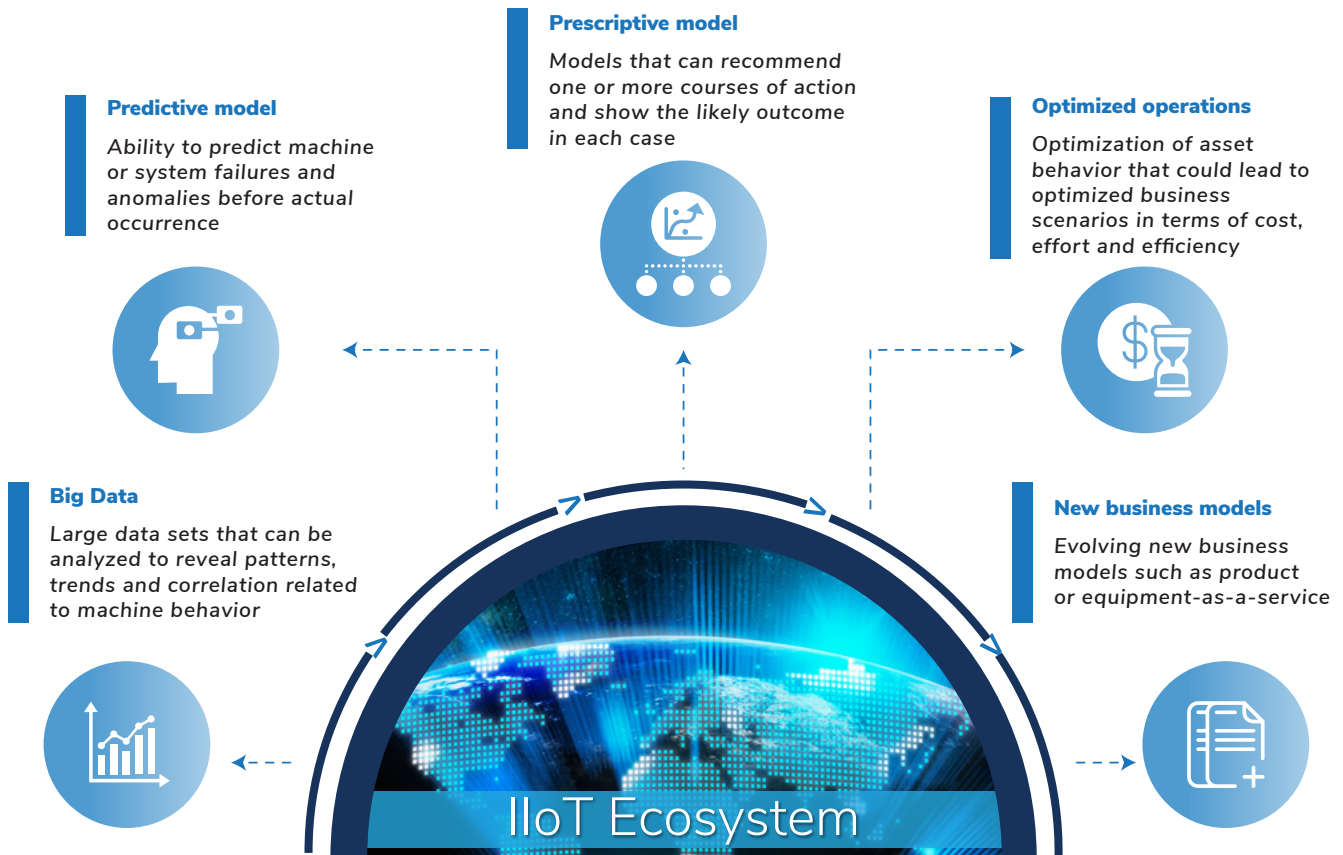
LEADING DIGITALIZATION IN MANUFACTURING

The drive to digitalization is intended to optimize factory operations and automate maintenance, in order to raise the quality standards of products and processes. Smart machines are constantly sending out relevant data, such as performance data and energy usage, to help manufacturers manage production, reduce bottlenecks, schedule maintenance, and create better products. These machines come embedded with intelligence to help solve complex problems without human intervention. Cognitive intelligence, additive manufacturing, and robotics are at the technological forefront of the new “digital enterprise,” and should be a boon for the industrial environment.

Industries leading the way in digitalization include manufacturers that supply the food and beverage industry, automotive manufacturing, and aerospace manufacturing. For example, an original equipment manufacturer (OEM) that makes machine parts for bottling plants has been using an IoT platform, Siemens MindSphere, to increase the level of intelligence and connectivity built into its machines. Having “smarter” machines that can be managed and tuned remotely allows OEMs to sell additional value-added solutions like service contracts with cost and time-saving benefits, such as predictive maintenance, along with the equipment sale. These and other verticals are also exploring opportunities in new business models such as subscription-based pricing, licensing, profit sharing, and outcome-based pricing.

In another example, a leading aircraft manufacturing company is using digitalization to weave together its extremely complex supply chain. Aircraft manufacturing typically follows a cell-based manufacturing approach in which all components of the aircraft are required to flow into the point of aircraft assembly. While some components are developed in-house, most are sourced from multiple vendors located across the world. Therefore, without a proper tracking mechanism, the business of aircraft manufacturing gets extremely complicated and tough to manage. Cloud-based smart tools allow all stakeholders in this complex value chain to collaborate faster and with greater accuracy. Additionally, this transparent approach to information sharing helps manufacturers bring down the cost and effort required to fix any errors. Aircraft manufacturers, such as Boeing, have already shifted toward digitalization, reducing time-to-market by more than half.

While adoption of digitalization is spreading, complex solutions take time to implement, and the manufacturing industry is far from saturated with the uptake of these solutions. Use cases are still relatively few, and standardization in the market is lagging, hence, implementing digitalization in the true sense can be a slow process for many manufacturers. The path toward industrial digitalization is an evolutionary process, and the speed of this evolution is at different levels for different organizations and different industrial sectors. It is not going to hit the industry all at once. However, industrial organizations need to take necessary steps toward building factories of the future to ensure sustainable competitiveness.



THE NEXT STEPS FOR THE MANUFACTURING INDUSTRY

In order to survive and thrive in light of these new digital dynamics, manufacturers need to embrace several factors about digitalization: it is an evolution that may take some months or even a few years to fully implement; it is critical to have in order to survive and thrive in the coming years; and the implementation of digitalization can leverage both existing models as well as customization for a specific manufacturer. Regarding this last point, having a strong and effective open platform means the manufacturer does not have to go through this process in isolation, but rather can use a solution provider with existing manufacturing experience as well as a partner network to help create the right fit.

Making a move toward digitalization will allow manufacturers to not just increase productivity and improve efficiencies, but also set a base for future business models, thus preparing manufacturers to gain an edge over the competition. Irrespective of where industrial firms are in their digital journey, digitalization is no longer an option, but rather an inevitable necessity that will determine market sustainability in the future.

NEXT STEPS 

Schedule a meeting with our global team to experience our thought leadership and to integrate your ideas, opportunities and challenges into the discussion.



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