DIGITAL TRANSFORMATION IN MANUFACTURING AND INDUSTRY 4.0

Why organizations are looking closely at infrastructure to support digitization

From the earliest days of information technology, manufacturing firms have benefited from systems and applications that delivered greater efficiency and improved productivity. And this trend is about to kick into high gear as the digital manufacturing environment moves from concept to reality.

The benefits of digital transformation are compelling, and the ability of manufacturers to deploy these solutions will separate digital predators from digital prey. IDC predicts that by 2018, 60% of large manufacturers will bring in new revenue from information-based products; and by 2019, 75% of large manufacturers will update their operations with internet of things (IoT) and analytics-based situational awareness.

KEY TRENDS IN 2017 AND BEYOND

Many elements are driving digital transformation in the manufacturing industry. Five are of primary importance:

- **Industry 4.0** — This initiative focuses on automation and data exchange that integrates many or all parts of manufacturing. It includes physical, cyber, IoT, cloud, and cognitive computing. The goal is to have a “smart” factory. This type of plant is modular, with systems that monitor and integrate all aspects of the factory using a digital backbone.

- **The IoT** — The ability to make every “thing” and process an input point for digital information changes the game. Manufacturers will have detailed real-time data at every point of the manufacturing process, through the distribution chain and while in use by the end customer. This new data contains valuable and insightful analytics.

- **Machine learning and intelligence** — Machines that can act more intelligently will allow manufacturing plants to optimize operations by changing activities based on key inputs, eventually without human intervention. The result will be better decision making on both sides of the supply chain. Intelligence at the product level enables proactive support or maintenance to limit any downtime or update products. The impact on IT infrastructure will be substantial. The information being utilized increases logarithmically and requires real-time communications.

- **Data and analytics** — The combination of the IoT and the increasing digitization of information will result in an explosion of data. Manufacturers will have comprehensive information on all aspects of their businesses, and customers will benefit from deep data about the products they own. The “time to innovate” or modify products will be dramatically shortened and customer service greatly enhanced. In preparation for this, organizations are now deploying IT infrastructure that can meet these demands.

- **Digital supply chain** — Traditionally, the supply chain consisted of many individual processes and disparate activities that relied on manual or simple digital recordkeeping. A digital supply chain uses a common digital framework that has no silos or roadblocks; discrete elements are linked with a common digital backbone. This creates a single, transparent set of data that benefits all of the participants. Like many other aspects of Industry 4.0, a strong digital infrastructure is the starting point for this capability.

THE ROLE OF THE CIO AND IT TO ENABLE INDUSTRY 4.0

One of the mistakes that some manufacturers will make as they strive to become a digital enterprise is viewing each project as a tactical, isolated opportunity. The danger here is that a disjointed and segmented technology infrastructure will emerge, which makes it impossible to link critical initiatives without major changes and large
new investments. Therefore, it’s important that the CIO and his/her team build a strategic digital infrastructure platform that can support all of the initiatives enabling Industry 4.0. The platform will provide the integration and coordination required for success.

However, the IT team will likely rely on key partners that bring specific expertise, skills, and technology. Managed service providers (MSPs) will be important partners, offering leading-edge solutions and the skills to deploy, administer, and manage them. Often, these will be cloud service/technology suppliers that can help the manufacturer move forward more quickly.

**HOW TECHNOLOGY SUPPORTS THE BUSINESS — WHAT IS DRIVING TECHNOLOGY INVESTMENTS IN MANUFACTURING COMPANIES**

The recent 2017 IDG State of the CIO survey identifies the focus of the CIO’s perspective on what business imperatives are driving technology investments (see Figure 1). In the manufacturing sector, the most common response is increasing operational efficiency, with transforming the business a close second. This is not surprising given the five meta-trends listed above.

**THE DIGITAL NETWORK PROVIDES THE “NERVOUS SYSTEM” FOR INDUSTRY 4.0**

Industry 4.0 depends on the real-time integration of vast amounts of data. This information must be shared with supply partners and with those who distribute and sell the finished goods. This will put substantial strain on the wide-area network (WAN) currently in place. Many existing networks are long in the tooth, designed when digital manufacturing was science fiction. Today it is science fact, and enhancing the WAN is critical to the overall success of Industry 4.0.

The network infrastructure that can deliver on the promise of Industry 4.0 must have centralized control/policy management, far greater agility and efficiency, and the ability to prioritize applications and workloads to ensure appropriate service levels. With so many moving pieces, the next-generation WAN must be able to deliver on the need to manage data flows in a granular fashion.

**TEKNION DEPLOYS A SEAMLESS GLOBAL APPLICATION PLATFORM WITH MASERGY**

Teknion is a leading international designer, manufacturer, and marketer of office systems and related office furniture products. The company had two primary issues with its legacy network that needed to be resolved.

The first requirement was to implement global strategic networking, connecting Teknion’s global operations and customers. As John Commachio, SVP and CIO of Teknion, noted, “We had great difficulty connecting our sites worldwide. We had various suppliers in disparate countries. It became very difficult for us to trace where our issues were and who was causing the issue.” This wasted staff time and was very unproductive. When Masergy came to the table, it managed the entire network with a strategic perspective. Commachio added, “We could never have done that ourselves.”

The second focal point was to improve business agility. Time to market is key in this industry. Working with Masergy allowed Teknion to reduce its time to market and meet the demands of its Global 2000 customers. “We’re servicing our customers and running our business,” said Commachio, “and now the network doesn’t impede that.”

Perhaps the most valued aspect of this relationship is the true partnership between Teknion and Masergy. “Masergy is a partner, not a vendor. Whenever we have a challenge they step up to that challenge. They will work to bring up a site faster, or get us bandwidth faster,” Commachio explained. Masergy has helped drive Teknion’s success with direct and innovative solutions around the world.

**SUMMARY**

The Industry 4.0 initiative is transforming the manufacturing industry to a digital model. The goal of a fully integrated, digital organization that designs, builds, delivers, and tracks the use of manufactured products is the top priority for these firms. The starting point for the path to Industry 4.0 will be the deployment of a next-generation digital infrastructure that can support individual projects that are the milestones of this journey.