IDC Manufacturing Insights

T E C H N O L O G Y S P O T L I G H T

Moving Forward with Digital Transformation in the Manufacturing Industry

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This paper examines the changing requirements of manufacturers as they increasingly depend on digital transformation (DX) across their operations to serve the demands of their customers, improve productivity, and efficiently compete in a global market. Manufacturers depend on technology as a platform for innovation and growth across their business processes and products, including new revenue opportunities in services. This Technology Spotlight highlights four of IDC Manufacturing Insights' worldwide manufacturing predictions on key themes: the need for digital transformation, more integrated IT and operations, building on product performance data to deliver greater customer experiences, and a business approach to security. The document also looks at the role of Epicor as an enterprise application supplier and how its technology can support manufacturers' need for secure, integrated operations and digital transformation.

Continuing Change in the Manufacturing Industry

Technology continues to reshape the manufacturing industry to increase productivity, innovation, growth, and digital transformation. Manufacturers want to work smarter using digital technologies in their products and processes and throughout the value chain. The major factors impacting manufacturing today include the following:

- **The DX delta.** The best-performing manufacturers are able to successfully adopt new technologies for maximum business value. Industry leaders keep adapting and transforming how they operate, and manufacturers that want to remain competitive will make innovation as high a priority as, if not a higher priority than, productivity. Manufacturers of all sizes and types must leverage their technical resources in all aspects of their business, in their operations and in their products. Companies that don't take advantage of their existing IT assets and invest in new technologies for the future will be left behind.
- **Revolutionizing industrial processes.** Digital technologies are more and more embedded in the physical world: IoT, robotics, and 3D printing are on their way to becoming mainstream technologies that can transform productivity, quality, and efficiency in industrial applications and processes. IDC forecasts that by 2025, 80 billion IoT devices will be online, creating 180ZB of data. Worldwide spending in 2019 will reach $135 billion for robotics and more than $31 billion for cognitive systems. Digital technologies are allowing companies to move into new markets and provide new — not just modified — products, services, and processes, and the line between who is and who isn't a manufacturer will continue to blur. Scale will no longer be the deciding factor of who leads the market.

- **Data as digital capital.** Manufacturers are seeing growth in their data and in their access to data. However, IDC estimates that less than 10% of data is used effectively, partly because manufacturers often have limited access to data when they need it, such as capable-to-promise dates or product profitability. Data must be treated as a digital asset, or digital capital, to improve experience, provide insight, influence decisions, and set directions. Data and information are assets that can lead to new business opportunities and more profitable customer relationships. Leading manufacturers are already improving their ability to access data, in closer to real time, through more integrated operations and in creating new, secure access points to networks or industry clouds that hold asset performance data for benchmarking performance, predicting maintenance, and driving the initiation of existing services or the creation of new services. Data as digital capital is also why manufacturers need to address questions about secure access to product or equipment data and ensuring data privacy and security.

Our predictions consider the impact of these factors on manufacturers today and in the next few years.

Digital Business Transformation in Manufacturing

As much as we like to measure the health of the manufacturing industry based on productivity, the benchmarks of the future are innovation and digital transformation. DX — using technologies to create new ways of operating and growing businesses — is already under way. Even now, we see manufacturers that can successfully apply new technologies to their products, processes, and business models are leaders in the industry, and we predict much more change ahead. While the IDC Manufacturing Insights predictions focus on 2017–2020, the impact of many of them will be felt for years to come. This document focuses on the following predictions:

- **Digital business transformation.** By 2018, only 30% of manufacturers investing in digital transformation will be able to maximize the outcome; the rest are held back by outdated business models and technology.
- **Integrated operations.** By the end of 2020, 50% of manufacturers will derive business value from the integration of supply chain, plant operations, and product and service life-cycle management.
- **Aftermarket revenue via differentiated quality.** By 2020, manufacturers will capture 20% more aftermarket revenue by using product and service quality measures to enhance customer experiences.
- **Business security essentials.** By 2018, a proliferation of connected information, instrumentation, and decision cloud ecosystem networks will drive manufacturers to redesign their security architectures.

Digital Transformation Requirements

IDC research has shown that leadership is one of the biggest gaps between companies that are able to successfully convert their investments in digital transformation into business value (digital thrivers) and companies that are lagging behind (digital survivors). Leadership must create a vision of where their companies are headed in the next decade and how they will translate their technology investments into business opportunities.

We can already see examples of manufacturing executives that are laying out a road map for their companies to evolve in the next decade. The largest manufacturers are in the headlines with news of the steps they are taking to execute their vision, including Under Armour's investments in technology-enabled products; investments and acquisitions in additive manufacturing by GE and Siemens; and

partnerships between Toyota and Uber as well as GM and Lyft. But we also see these examples just as often in small and medium-sized manufacturers. Applied Composites Engineering emphasizes that technology is a driving force in its ability to become a recognized expert in advanced composites. All of these moves required executive leadership to recognize how their businesses must change and not just incrementally. Big Ass Solutions, a manufacturer of cooling and lighting systems, invested in technology that would allow the company to scale and continually reevaluate its products and processes along the way.

Some of the critical roles that IT organizations can play in supporting their leadership are as follows:

- Using IT assets to provide real-time or near-real-time visibility into operations so that executives can understand what is working and what isn't
- Identifying and testing scenarios that manufacturers them toward new business models
- Providing a level of flexibility in IT systems to support rapid business change and new innovation

Integrated Operations

Manufacturers large and small recognize that today's business demands require new processes and new organizational coordination. However, manufacturers' IT portfolios are full of business applications that serve one line of business or one set of business processes. They manage silos of information pertaining to and focusing on their dedicated processes. These silos are limiting the ability of organizations to maximize investments in 3rd Platform technologies and digital transformation. But we see this changing. Today, companies are actively figuring out how to provide information effectively across their organization and, at the same time, changing how they use enterprise applications.

To this end, using information in a coherent way will be central. Standardize, integrate, and connect are the keywords here. Companies will leverage their existing enterprise applications to create a "digital core" that delivers all business applications (PLM, SCM, manufacturing, CRM, service, etc.). The outcomes will be more streamlined product and product-related releases, responsive and integrated supply chain and manufacturing processes, timely digitally enabled services, and stronger relationships with customers.

We think this change is happening fairly quickly as manufacturers today are already investing in new, adaptable IT applications and integration to create a digital thread from product development to factory planning, manufacturing, supply chain execution, and service delivery. In a way, it's about "next" practices, not "best" practices.

Aftermarket Revenue Opportunities and Enterprise Quality

The topic of quality is pervasive across manufacturing value chains, and it repeatedly tops the list of manufacturers' concerns in IDC surveys. Yet every year, high-profile manufacturing brands face significant damage to their brands from product quality lapses. As manufacturers become increasingly customer centric, quality is not just the responsibility of design and engineering; it's also about service. In fact, service often offers the greatest opportunities to increase and improve customer interactions across manufacturing value chains.

As a result, manufacturers are more closely tracking service metrics that capture service performance and gauge customer satisfaction. With connected products, manufacturers will gain access to actual product performance data that will allow them to respond to quality issues more quickly and effectively. Companies such as Dell, Caterpillar, Emerson, and GE are using connected products and analytics applications to improve product and service quality. Customer satisfaction rates and quality measures are improving, which has a positive impact on customer loyalty, renewal rates, and new

business opportunities. Manufacturers that are successfully growing their aftermarket revenue and improving quality are taking the following steps:

- Creating a single source of truth for product and service quality data and making it easier to analyze the data for business insights
- Identifying ways to increase visibility of product performance and service activity in the field
- Increasing mobile access to CRM, contract management, and sales order management applications

Business Security Essentials

New business conditions and complexity in manufacturing operations and supply chains necessitate a new and better approach to security that unites business risk with technology security requirements and execution. Cybersecurity threats continue to grow in number and become more sophisticated. New services, connected products, IoT-enabled assets in the plant and the supply chain, more partner collaboration through the cloud, and more integration with customers all create security vulnerabilities, but the business risk makes it essential for manufacturers to move ahead quickly.

This situation is posing many more security challenges for manufacturers and not just related to network vulnerability and plant floor malware. Manufacturers will invest more in next-generation security technologies and will have a primary role in redefining next-generation security architectures to protect their business IP and operations. Manufacturers should start by taking advantage of the built-in capabilities in their applications and review their overall security approach to make sure it considers new business requirements.

Considering Epicor Enterprise Applications

Epicor, founded in 1972, provides industry-specific enterprise applications for small and medium-sized companies in the manufacturing, retail, distribution, and services industries. The top 4 industries Epicor serves in manufacturing are industrial machinery, electronics and high tech, fabricated metals, and rubber and plastics. With offerings in 30 languages, Epicor has over 20,000 customers in 150 countries.

In the most recent release of Epicor ERP, manufacturers gain access to functionality that helps them incorporate new technologies such as mobile, social, IoT, and 3D printing. For example:

- **Mobile.** The Epicor Expanded Mobile Framework supports responsive design through a modern user experience and connects users from varying roles within an organization to ERP data from anywhere on any device, providing users with the most updated information at their fingertips.
- **Social.** The Epicor Social Framework supports enhanced collaboration, information exchange, and continuous improvement among users, with both internal users and external customers and suppliers across the extended enterprise.
- **Analytics.** Epicor Data Analytics (EDA) is a cloud-based data analysis offering with a user experience designed for business users to quickly spot an opportunity or identify the root cause of a problem in different aspects of their business. To derive benefits immediately, Epicor also offers predefined ERP data content packs for business users to get started right away. Users can easily add more data sources beyond Epicor applications as the need arises.

Epicor is also investing in its field service capabilities, exploring how IoT can support greater automation and visibility in maintenance, repair, and operations processes. This will translate into increased customer satisfaction and increased service revenue.

The latest release of Epicor ERP will offer Enterprise Content Management (ECM) capabilities through DocStar, which Epicor acquired in January 2017. Businesses have a choice of an on-premises or cloud deployment for ECM to improve efficiency and productivity with streamlined document and paper-based processes such as Accounts Payable and HR Automation, in addition to document archiving from ERP.

With Epicor ERP, manufacturers now have access to new capabilities including Epicor Commerce Connect (ECC), Advanced Printing, and managed cloud hosting leveraging the Microsoft stack and Microsoft Azure. Epicor uses Azure to deliver a preconfigured virtual environment that simplifies implementation and enables more customers to use the cloud. Today, Epicor ERP has hundreds of multitenant cloud clients with thousands of users, and while Epicor supports many customers that are transitioning to "cloud first," Epicor also provides options for its customers to transition to cloud when they are ready. In addition to a traditional on-premises deployment, customers could opt for any of the following cloud deployment models:

- Hosted cloud with a traditional license
- Single-tenant cloud subscription (A unique environment is offered for each company at a premium.)
- Multitenant cloud subscription (Multiple subscribers share a common infrastructure, with all the benefits of a shared environment, such as lower costs and guaranteed uptime.)
- Dedicated tenant cloud (A higher isolation environment offers a combination of the benefits of single-tenant and multitenant deployments. Tenants share infrastructure, but they have their own database, increased customization options, and more control over when they adopt major releases. This delivers increased flexibility compared with traditional multitenant cloud offerings but with lower costs compared with single-tenant environments.)

Challenges

Companies have many options for ERP applications, and although companies are increasingly willing to replace one ERP vendor with another, the choice is not an easy one. Epicor must continue to demonstrate how its applications support manufacturers' specific business requirements and how the implementation and ongoing maintenance will not place an excessive burden on the manufacturer's IT organization.

Although our research indicates that the majority of manufacturers are shifting to the cloud for their applications, the road map is different for every manufacturer. Epicor will need to guide customers as they select from on-premises, private, and public cloud options based on cost, efficiency, agility, and organizational readiness. It will be necessary for Epicor to show how it can help manufacturers move forward with cloud at their own pace. Furthermore, expanding cloud revenue will require Epicor to transition its own business model from a sales, revenue, and support model.

Manufacturers also should consider the fact that new IT investments and IT projects come with challenges, many of which can be addressed with advanced planning. Some of the specific issues we see most frequently are as follows:

- **Change management.** The need for well-defined people and process changes, a change management program, and executive support
- **Data management.** Poor or unreliable data quality or data governance processes, the lack of a common data model, and delays caused by complex integration across many data sources
- **Incremental versus transformative.** A tendency to favor incremental improvements over transformation that is necessary for long-term success

Conclusion

It's critical that manufacturers take steps toward digital transformation now. To be successful, Epicor must continue to invest in its portfolio to support manufacturers' need for secure, integrated operations and digital transformation. We offer the following guidance to manufacturers as they move forward:

- Evaluate your relative maturity in the adoption of new technologies and, more importantly, your ability to translate those technologies into business value and digital transformation. IT and line of business will need to work together in the selection and implementation of new technologies.
- Review your foundation to make sure it's ready for increasing levels of digitally enabled products and processes. Today, your foundation includes components such as core applications, datacenters, network connectivity, cloud, and mobile devices.
- Create a single source of the truth for your business. Data within your enterprise and from connected products, supply chains, and assets will be the starting point for new initiatives.
- Cultivate your access to IT talent, whether that's within your own company or through partners. They should be able to help you adapt to new technologies quickly and effectively and maximize the outcomes from your investments.
- Select a partner that understands your industry and your business requirements and is willing to help you maximize the value you receive from your investment over time.
