

How the Cloud Makes the Future Factory Possible Today

# Master the Challenges of Modern Manufacturing with Intelligent Cloud ERP

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- Legacy ERP can no longer keep pace with technological advances.
- Manufacturers need to switch from a transactional approach to a predictive one.
- Cloud ERP allows manufacturers to focus more on innovation and generating revenue.

# About the Authors

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# Executive Summary

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Today, no industry is immune to the effects of digital disruption. However, the impact in manufacturing is more profound than in almost any other area of business. From automation and machine-level connectivity to the Industrial Internet of Things, digital technology has long played an integral part in the success and development of manufacturing companies. Now, new competition and rising customer expectations have once again increased the urgency for manufacturers to modernize their IT landscape.

In light of the new wave of innovation sweeping the sector, legacy ERP systems are being pushed to their limits. The result is that manufacturers are struggling to keep pace. They are forced to spend more time reacting to the consequences of issues rather than their root cause. They invest resources in customizing core business systems that could be better spent on real innovation. And they pour efforts into forming a complete view of their processes when this should be a given in today's world.

Advanced cloud ERP can quickly alleviate many of these concerns by allowing manufacturers to focus on strategic initiatives rather than routine tasks. It also gives manufacturing companies of all sizes faster access to the latest capabilities – from demand-driven inventory management to artificial intelligence. Overall, cloud computing gives manufacturers the freedom to stop putting out fires and start moving forward.

This white paper summarizes five of the biggest ERP-related challenges that manufacturers face today and explores the ways in which cloud computing can solve them.

# 1. Introduction

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## **Disruption Demands a Response...**

With disruptive technology trends such as smart data and the Industrial Internet of Things, manufacturing is transforming at a faster rate than most sectors. In this fiercely competitive industry, there is an urgent need to adapt to rising customer expectations, such as individualized products and smart services. While the latest manufacturing technologies bring greater opportunities to do this, many manufacturers are unsure of how to achieve their aims. Moreover, outdated IT infrastructure is holding companies back by limiting their potential to innovate. At the center of all this: ERP.

An intelligent ERP system is pivotal to the success of a modern manufacturer. Yet many companies are still using the same legacy systems that they installed a decade or longer ago. This reluctance to transform stems partly from the heavy time and money investment typically associated with conventional implementation projects. At the same time, technology obsolescence is a common fear for manufacturers – and it is often enough to deter them from investing in new technology.

## **...But Hesitation Holds Manufacturers Back**

However, it is exactly this reluctance to modernize that is creating challenges for manufacturers. Competitors who embrace technology will quickly gain the edge over companies that do not. Instead of spending valuable and limited resources on routine IT tasks or dealing with the impact of operational issues, more progressive companies have time to focus on strategic projects that add value to their business. So outdated ERP not only causes daily challenges, but it also leads to missed opportunities.

What manufacturers need is a future-proof ERP system that requires minimal setup and maintenance. They need a system that can quickly adapt to changing demands. And most of all, they need a system that gives them insights into the efficiency of their processes and supports them in decision making.



Even in the more established industries, digital disruption is starting to take hold. Companies are now looking at different ways of bringing their products to market.

# Five Challenges of Modern Manufacturing

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Manufacturers that are still working with transactional, legacy ERP are facing multiple barriers to progress. The next pages examine five of the key challenges facing manufacturers:



## Challenge #1: Rising Demand for Personalized Products

In B2C commerce, the increasing demand for individualized or one-of-a-kind products has been discussed at length. But this trend is becoming increasingly common in the B2B environment, too. Fulfilling customer demands should be the number one priority for any manufacturer. However, the transition from mass production to mass personalization puts strain on almost every department in a company. From supply chain management to procurement and accounting, meeting new customer demands requires seamless processes, automation, and above all, a sophisticated ERP system that can cope with the data.

Identifying the customer's actual needs can present a challenge in itself. While some consumers might have a detailed idea of the product they desire, others might want to explore the options using a configurator, for example. And when it comes to B2B relationships, the customer might come to their supplier with a problem, leaving it to the supplier to design a product that will solve it. This requires enormous levels of flexibility from the manufacturer – and an advanced ERP system is needed to support these processes.



To achieve mass customization and offer an exceptional customer experience, manufacturers need an ERP system that can handle variant configuration and provide real-time visibility.

## Challenge #2: Multitude of Separate IT Systems

As mentioned above, some manufacturers have been using the same ERP system for a decade or longer. But the speed of business has increased drastically in recent years, and during this time, technology, market demand, and competitors will have changed significantly. To adapt to these developments, the majority of manufacturers have customized their systems to meet specific needs. They might also have implemented additional reporting, planning, or MES solutions from different providers.

While this approach sufficed in the past, legacy ERP is being pushed to its limits with the current pace of technological change. Heavily customized ERP systems become cumbersome – and maintaining and updating them quickly consumes IT resources. Having multiple systems also slows down the flow of information and creates multiple versions of the truth. Without reliable information at hand, it is practically impossible for management teams to improve shop floor processes. And that brings us to the next challenge.

## Challenge #3: Lack of Visibility into Shop Floor Processes



Equipment failure is the cause of 42 percent<sup>1</sup> of unplanned downtime.

It is critical for managers to have timely insights into shop floor activities. In practice, this means data from machines on the production line has to be clearly visualized in the ERP system. This is what is known as shop floor to top floor integration. However, legacy ERP systems are purely transactional and simply record events that have happened. This gives the top floor little insight into the root cause of issues, and more time has to be spent on dealing with the impact.

For example, without visibility into machine condition and performance, faults can lead to downtime. This disrupts planning, delays delivery, and ultimately results in higher costs and a loss of customer satisfaction. A lack of transparency also hinders a manufacturer's ability to optimize processes or get to the root of quality or lead time issues. As a result, the manufacturer spends more time putting out fires than improving shop floor processes.

## Challenge #4: Detachment between Planning and Execution

Supply chain management and materials resource planning (MRP) can make or break a company's efforts to deliver on time. To avoid bottlenecks, manufacturers need to have a full overview of inventory and buffer stock levels, supply and demand, and any last-minute changes that might affect the end-to-end planning and scheduling process. The manufacturer often has little influence over external factors, such as delays from suppliers or changes to a customer's order. For this reason, flexibility is especially important.

However, outdated ERP systems often lead to a detachment between planning and reality, which presents a stumbling block in production planning. Furthermore, third-party planning solutions commonly require heavy investment and result in a high total cost of ownership.

<sup>1</sup> IndustryWeek and Emerson, How Manufacturers Achieve Top Quartile Performance, March 2017

# Challenge #5: Need to Innovate and Adapt the Business Model

Due to the high level of competition in manufacturing, innovation is critical to survival. Manufacturers need to explore ways to reinvigorate their business models and differentiate themselves. However, all of the previous challenges consume time that could be better spent on strategic initiatives.



Innovation  
is critical to  
survival.

A key goal for manufacturers is to generate more revenue from services<sup>2</sup>. This leads to greater customer satisfaction and higher profit margins. Although there are many new opportunities to do this, including smart products and service-based delivery, legacy ERP is too rigid to support innovation. As forward-looking competitors begin to implement new ways of delivering products and leverage alternative payment models, transactional manufacturers will get left behind.

## Cloud ERP for Manufacturing

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All five of these challenges can be addressed effectively by the right ERP solution. In essence, to overcome the obstacles, manufacturers need to move from a transactional approach to a predictive approach. Rather than spending time on purely operational routine tasks, companies need the freedom to focus on strategic and innovative projects. With conventional ERP systems no longer able to keep up with technological advances, an increasing number of manufacturers are turning to cloud ERP. This offers a quicker and simpler path to state-of-the-art business software.

### **A Digital Core in the Cloud**

A prime example of advanced cloud ERP is SAP S/4HANA Cloud. The cloud version of SAP's flagship ERP suite is available through private and public cloud deployment models. While these differ slightly in terms of technical capabilities, the concept is the same: SAP S/4HANA Cloud forms the "digital core" of a company, consolidating numerous separate sources of information into a single source of truth. For manufacturers, this means less time spent on manually gathering data and reduced reliance on traditional data warehouses and spreadsheets. As information is available in real time, businesses have instant insight-to-action capabilities to support better decision making.

### **Removing Barriers to Progress**

With cloud ERP, it is no longer necessary for a manufacturer to build and maintain their own large-scale server infrastructure. This removes barriers to entry and alleviates fears of technology obsolescence. Through cloud computing, even SMEs can obtain the processing power and database capacity required to implement

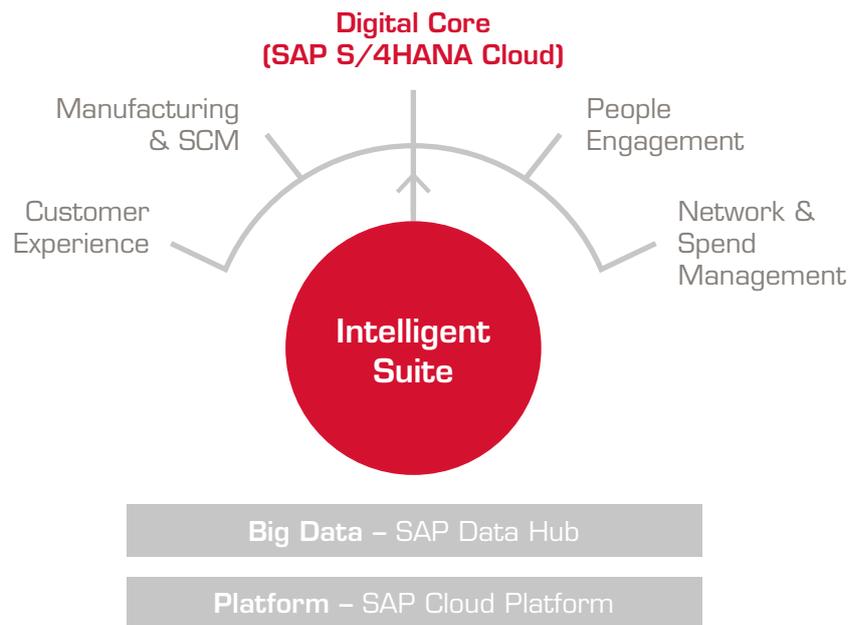
<sup>2</sup> SAP Point of View, Intelligent Industrial Machinery and Components Companies Are Powering the Fourth Industrial Revolution, June 2018

mass customization. Data is stored in highly secure data centers maintained by the provider. In addition, the implementation project itself is quicker and simpler than conventional on-premise implementation. There is considerably less IT effort and investment required to keep up with innovation.

### Integrating Solutions into Cloud ERP

Another advantage of cloud ERP is that it simplifies the integration of other solutions across an organization. Companies can extend the core ERP system with whichever capabilities they require, leveraging all intelligent enterprise capabilities such as AI across the entire SAP landscape. By bridging the gap between planning and execution, for instance, it is possible to make more detailed and accurate schedules. Live MRP is also possible, bringing more up-to-date supply and demand information. This reduces the risk of stock-outs as manufacturers can respond faster to changes in demand. Cloud ERP, such as SAP S/4HANA Cloud, also enables demand-driven inventory management and provides a prioritized view of material flow issues to prevent delivery delays.

Figure 1: How Cloud ERP Forms the Core of an Intelligent Manufacturer



### Optimizing Shop Floor Processes

With an intelligent ERP solution like SAP S/4HANA Cloud, everyone in a manufacturing organization has access to the same real-time information. This opens up numerous capabilities. For example, SAP S/4HANA Cloud visualizes information from the shop floor, including machinery efficiency, condition, and performance, quality issues, and bottlenecks. In the past, these issues were difficult to identify, and manufacturers would spend their time dealing with the consequences, rather than the root cause itself. Now, with one set of analytical content for all roles from operator to senior management, companies can improve machine efficiency, prevent breakdowns, and plan maintenance more efficiently than ever before.

# Unlocking the Potential of Innovation

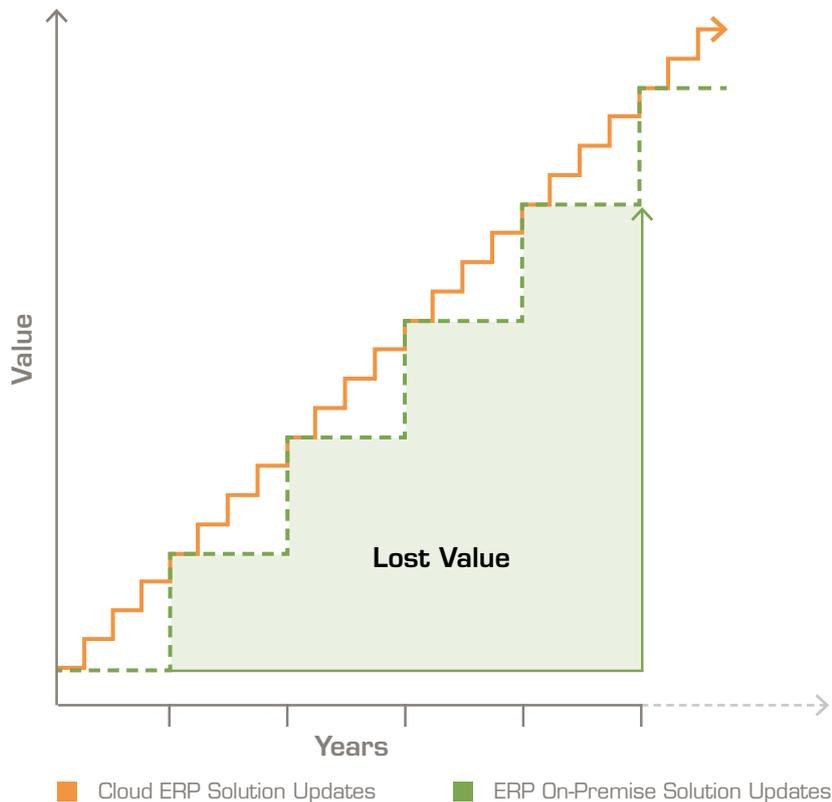
## Accelerating Innovation Cycles

Cloud solutions also remove the need to manually carry out updates and maintenance. Automatic updates ensure that the latest functions and capabilities are always available. Because there is no customization, companies save the time and effort previously required for on-premise upgrades. This means the manufacturer can react to changing demands with much more agility and adopt new technologies. For example, SAP S/4HANA Cloud receives automatic quarterly updates (see Figure 2). The on-premise version, on the other hand, only receives updates once per year – and then the customer is responsible for carrying out the upgrade and testing themselves. Cloud customers are therefore always the first to receive new functions as they are rolled out.



Innovation cycles are four times faster with cloud ERP.

Figure 2: Automatic Quarterly Updates Accelerate Innovation



## Artificial Intelligence and Digital Assistance

Today's advanced ERP systems support users in ways that were previously unimaginable. With built-in artificial intelligence (AI) and machine learning, modern ERP systems include intelligent digital assistants that guide the user and suggest a recommended course of action based on previous experience. For example, in production planning, a digital assistant can support the planner to propose the correct course of action to resolve the planning issue. The technology is also useful in customer service, giving service representatives detailed recommendations on how to resolve the customer's query. In this way, AI capabilities in ERP help companies save time and money and improve customer satisfaction.

### **Industrial Internet of Things**

One of the central foundations of manufacturing innovation is the Industrial Internet of Things (IIoT). The IIoT is achieved by connecting machines, equipment, and industrial robots to the ERP system. And by integrating sensors into products, manufacturers can track progress in production and monitor finished products in operation. This data provides extremely useful insights that can be used to optimize products or commercialize them in completely new ways.

### **New Service-Based Delivery Models**

The IIoT and new levels of connectivity have enabled the outcome-based economy, where companies compete on their ability to deliver what the customer wants, rather than just selling products. This has huge implications for manufacturing. It offers manufacturers a new way of charging for their products and services, generating new revenue streams while simultaneously sharpening their focus on customer centricity. By adapting business models around this concept, customers only pay for what they really use, and manufacturers can monetize asset data and offer additional aftersales services.

**By the end of 2018, to  
accelerate digital transformation,**

**20%**<sup>3</sup>

**of manufacturers will have explored  
proof-of-concept initiatives for industrial  
equipment as a service.**

<sup>3</sup> IDC FutureScape, December 2017

# Conclusion

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During the time since many manufacturers implemented their ERP systems, technology and business have progressed significantly. Customizing this system or adding other solutions to it to cover functional gaps will eventually lead to a cumbersome IT environment that can no longer keep pace. Indeed, outdated technology will not only lead to a higher total cost of ownership, but will also severely impact a business's ability to adopt new capabilities and adapt to the changing market. Transactional ERP is no longer enough to keep a manufacturer competitive; and those who still rely on it will spend all their efforts just trying to keep afloat, rather than leading the industry.

Cloud computing has already proven its worth in a wide range of industries, from professional services to utilities. The technology can solve many of the biggest challenges in manufacturing, too. From implementation to innovation, cloud ERP simplifies and accelerates key tasks, improves decision making, and quickly adapts to new developments. Not only does this solve many of the operational woes facing modern manufacturers, but it also gives them a scalable technological basis that prepares them for the future. Manufacturers can therefore make the jump from transactional to predictive, develop a unique market advantage, and ensure they remain competitive.



With cloud ERP, innovations like the Industrial Internet of Things and machine learning are no longer distant future visions: They are immediately achievable.

# Why itelligence

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Deploying a cloud ERP solution is an effective way to free up the time and resources to focus on core business and innovation. However, the transition to cloud technology is an initiative in itself, and there are important considerations to make when pursuing this strategy. When building a business case, companies should decide which of their processes should be moved to the cloud, which need to stay on-premise, and how the transformation will affect the business as a whole.

Thanks to our 20 years of experience in the manufacturing industry and 10 years of experience in cloud ERP, itelligence is the ideal partner to support your journey to the cloud. This is backed up by our numerous SAP Cloud Partner awards in various countries. Furthermore, as an SAP Platinum Partner, we are at the forefront of understanding, implementing, and influencing SAP solutions. Whether you want to focus on machine connectivity and predictive maintenance or you are ready to transform your business model and deliver products in entirely new ways, our experts are there for you.

## **For More Information:**

Are you searching for answers or would like to receive more information on cloud technology and manufacturing? Do you wish for more detailed advice from our experts?

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With over 25 years' experience, itelligence knows SAP software inside out. We work closely with our clients to identify their specific needs and fulfil them. Numerous SAP awards, certifications, and our SAP Platinum Partner status are testament to our success. From consulting to implementation and managed services, we have over 7,300 employees with the expertise to take your business further.

As part of the NTT Data Group, we can draw upon a global network of over 12,000 SAP specialists. And our presence in 25 countries around the world ensures we are always close to your business. What's more, our strong ties to SAP mean we stay up to speed with the latest innovations and can help you get more from them. No matter what industry you are in – we are the IT partner for your digital transformation. Think ahead. Go beyond. Visit [www.itelligencegroup.com](http://www.itelligencegroup.com) for more information.