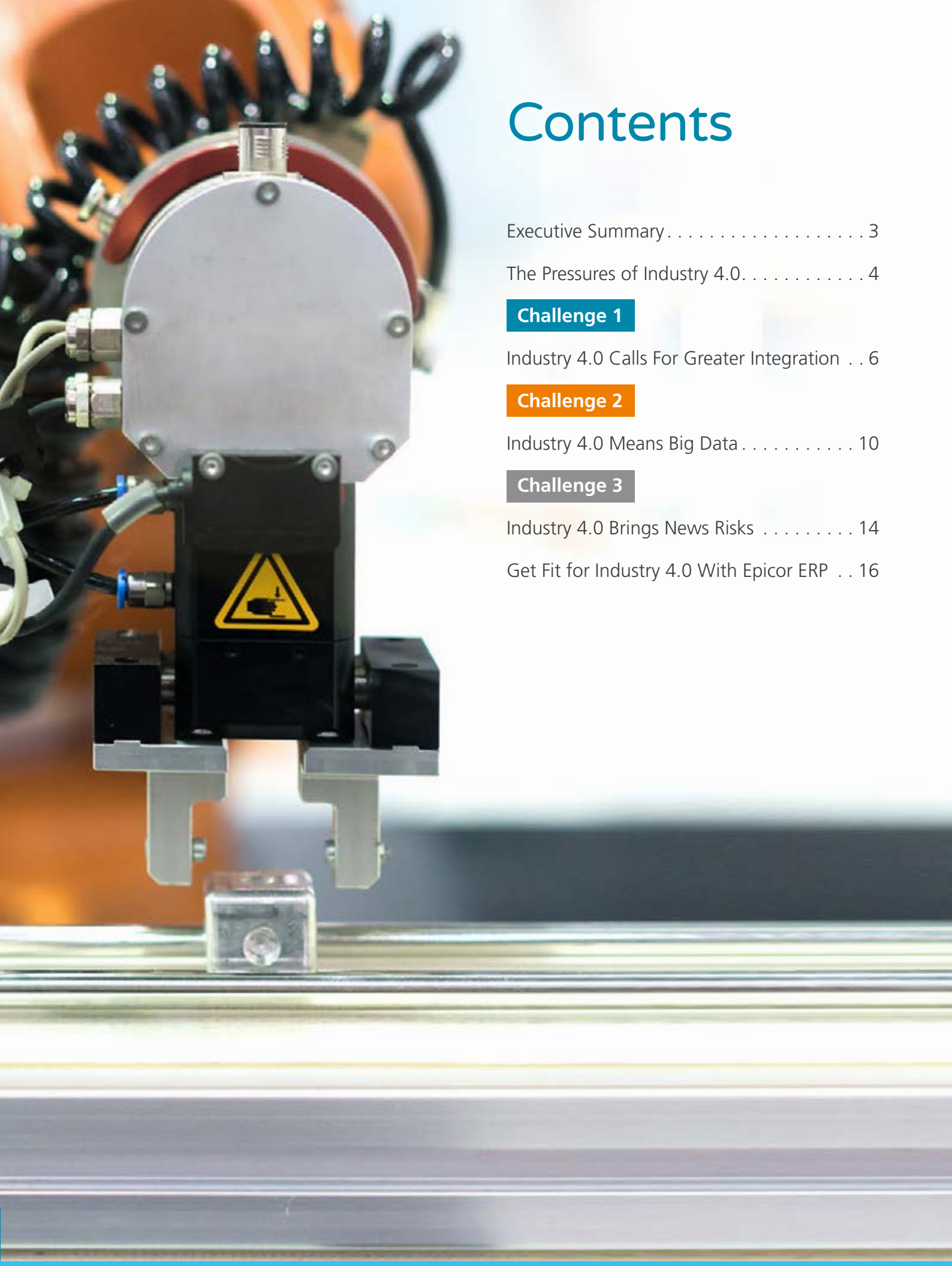
One Smart Way to Tackle Three Industry 4.0 Challenges

Why manufacturers need the right ERP solution to succeed with transformation and growth

EPICOR



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Executive Summary

For some, "Industry 4.0" and "digital transformation" are synonymous—alternative terms for the fundamental business changes facing manufacturers. For others, the former refers more narrowly to a set of manufacturing technologies at the heart of a wider digital transformation.

Whichever camp you're in, it doesn't change the fundamental nature and scale of the revolution taking place, nor the challenges facing manufacturers as they try to identify and take the right steps to survive, thrive, and grow.

Continue reading to learn about the three significant challenges created by the approaches and technologies of Industry 4.0:

- Widespread integration
- Big data
- New sources of risk

We'll show you how investment in the right enterprise resource planning (ERP) solution can help you address all three. Specifically, we'll look at key characteristics that make an ERP investment the best choice for manufacturers.

The Pressures of Industry 4.0

Not long ago, Industry 4.0 and digital transformation were the domain of first movers only. Today they are high on the agenda for every manufacturing business.

Almost three-quarters of the respondents to a PwC survey on Industry 4.0 were expecting to be at a high level of digitization and integration in 2020, compared with only a third reporting such a high level in 2015.[1]

This investment is being driven by the expectation of results. At the top end, around a third of the respondents expected Industry 4.0 implementations to result in both cost savings and revenue gains of more than 20 percent within five years.[1]

With ambitious competitors well on their way to building their factories of the future and seeing the results, how do you avoid being left behind? One way is to learn from the first movers.

Join the Grow Getters

Research by MORAR Consulting on behalf of Epicor reveals key characteristics that distinguish high-growth from low-growth companies[2]. Unsurprisingly, high-growth companies share many of their characteristics with Industry 4.0 first movers. They are optimistic and ambitious for the future, willing to embrace change, customer-focused, and committed to investing in Industry 4.0 technologies and business solutions that support digital transformation.[1,2]

At Epicor, we call these high-growth companies—and the leaders who drive them onwards and upwards—Grow Getters. When we speak to Grow Getters among the small-to-midsize manufacturing companies that we serve, we find that they understand the scale of the journey they're on and recognize that transformation takes time, but they never lose forward momentum. They take it step by step—each step a smart, incremental move that takes them in the right direction.

[1] "Industry 4.0: Building the digital enterprise," PwC, 2016.
[2] "Discover 10 Characteristics of a Grow Getter," Epicor, 2017

Make ERP one of your first steps

Not all of these steps are about investing in or using the right technologies. Success hinges just as much on having the right culture—which is greatly influenced by the company's leadership—and the right skills, which depends on attracting, retaining, and training the right people. Lacking the right culture and skills can hinder Industry 4.0 success.

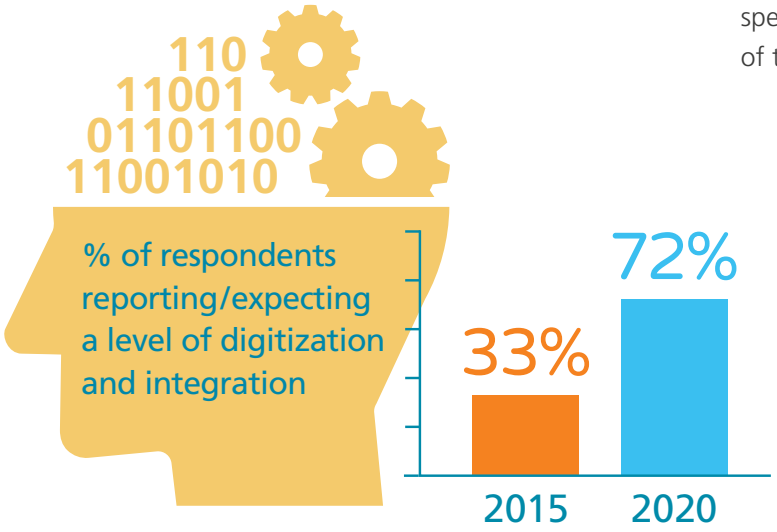
While it's vital to take steps to establish the right culture and expertise, to be a Grow Getter you also need to move ahead with your first—or next—steps to invest in the right Industry 4.0 technologies for your factory of the future. A major focus will typically be applications that use Internet of Things (IoT) technologies, and these bring technology challenges of their own.

Three of the most common are:

- A continually expanding need for vertical and horizontal integration
- Effective management and use of the massive volumes of data generated by Industry 4.0 applications
- More complex risk management in a more connected business

Many Grow Getters address these challenges by investing in key supporting business technology—specifically, the right kind of ERP software—as one of the first steps on their transformation journey.

The fast pace of change[1]



IoT today and tomorrow

"Internet of Things" is a term used for the growing worldwide network of ordinary physical objects that now contain embedded technology such as sensors, actuators, and connectivity designed to:

- Sense their internal states or aspects of the external environment
- Transmit the data collected
- Receive and act on data from other connected devices

This direct integration of the physical and digital enables manufacturers to streamline, simplify, and improve their operations and customer service. Often this is through automation of actions that used to be manual, with IoT devices initiating specific processes when predetermined conditions appear.

In the smart factory of the future, we expect IoT to routinely come together with robotics, machine learning, and other applications of artificial intelligence (AI) to further transform manufacturing efficiency, quality, and customer responsiveness.

Challenge 1

Industry 4.0 Calls For Greater Integration

End-to-end integration of value chains is a central concept of Industry 4.0. Once a manufacturer wants to build a smart factory with equipment and systems that "talk" to one another and respond "intelligently," it's natural to want such smart capabilities to span across the entire business. This means previously siloed functions must be connected.

For example, you may want to integrate purchasing, planning, production, fulfilment, invoicing, and dispatch into one connected process. Ultimately, many manufacturers will want to integrate supplier, customer, and partner processes and systems as well.

Integration and ERP

This business integration is complex and costly if, at the IT level, it involves a multitude of different systems. This is why ERP software is a popular solution. By its very nature, a good ERP system is designed to manage multiple business functions, processes, and data flows in one place and in real time—providing a single source of truth.

With ERP, therefore, integration is about sharing and using data that is held in one place, rather than the much harder job of transferring data from one system to another, with all the attendant complications of more complex data management and security.

Not all ERP solutions are created equally, however. As a manufacturer, what should you look for in an ERP solution fit for Industry 4.0?

> The more [processes] that we're able to integrate into Epicor [ERP], the more that we're able to use the software itself to do what we need to do.
>
> —Jack Barnes
> Philadelphia Mixing Solutions

> Epicor offers all the tools required in a make-to-order and make-to-stock manufacturing environment out-of-the-box.
>
> —Roberto Morris | Fife Fabrications

1. Sector-specific solution

Many ERP solutions are strong on generic functions such as financial or HR management, but much weaker when it comes to supporting the processes and workflows specific to manufacturers.

While generic ERP configurations and workflows may be customizable, you'll save a lot of time and effort with a manufacturing-specific system such as Epicor ERP, which straight out of the box supports, for example, advanced planning and scheduling across machinery, materials, and labor, and analytics relating to equipment utilization and material waste.

However, it's still important for the system to be easily personalized. Even a solution designed with manufacturing in mind won't have every feature just the way you want it.

An ERP provider specializing in manufacturing may also take note of the customizations made by their customers, and prioritize these for inclusion in their updates and upgrades. As long as you take advantage of their upgrade path, you will continue to benefit from their manufacturing focus as new Industry 4.0 trends develop. Providers of more generic ERP solutions are unlikely to offer as many manufacturing-specific advances.

Finally, a specialist in manufacturing may have other manufacturing-specific solutions—such as a manufacturing execution system (MES) or an after-market field service automation solution—that will be easier to integrate with their core ERP system because they come from the same provider.

2. Integration-ready architecture and interfaces

While the right ERP solution will handle a lot, it will still need to be integrated with other systems—such as your IoT implementations—to achieve the depth and breadth of integration and automation called for by Industry 4.0.

To simplify this integration—both internally and with suppliers, partners, or customers—you want the architecture and interfaces of your ERP solution to be streamlined, flexible, and based on standard open protocols.

It also helps if the solution, like Epicor ERP, is designed specifically to take advantage of cloud computing frameworks, because a cloud-based platform can be ideal for integrating different business entities and locations, and extending integration to suppliers and customers.

3. The human element

As much as integration in Industry 4.0 is driven by automation, it isn't always about robotics, IoT or AI. We're not nearly at the point of operating people-free manufacturing businesses, even though factory floors are becoming more and more mechanized. For the foreseeable future, most of the functions you'll be integrating will still rely on human interactions. Indeed, some of the skills gap exists because manufacturers need people who are comfortable working through digital interfaces.

> We are embracing communication with Epicor Social Enterprise, and I have been surprised how many people are using the tool.
>
> —Anthony Gercar | Enpress LLC

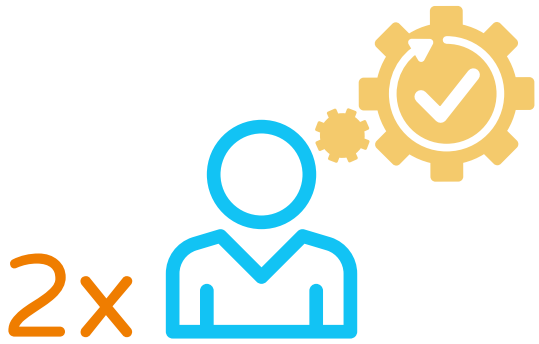
> Implementing Epicor ERP has helped improve our data accuracy and the flow of information across different departments.
>
> —Eko Putranto | PT Tunas Ridean, Tbk

It's therefore important to think about how easily your ERP solution supports the human side of integration. For example:

- Can it push IoT-generated alerts to the right employees—or to suppliers—to act on them?
- Can system users subscribe to real-time notifications about production orders, customers, inventory, invoicing, or whatever else is relevant to their job? Can they access this information wherever they are, on whatever device is convenient—at home, on the factory floor, or in a customer meeting?
- Can the system facilitate collaboration, for example helping people to reach out to in-house experts or crowdsource ideas if there is an issue or customer need without an obvious solution?

Good mobile and social capabilities in an ERP solution will help your people integrate more effectively into your factory of the future. They'll be able to work smarter and more productively, making your business more efficient and responsive as a result. In fact, Aberdeen Group has found that those with social ERP are almost three times more profitable than those without.[3]

Businesses with social ERP improve more and do better than those without[3]



2x

the improvement in time-to-decision and cycle time of key business processes

Almost 3x

the improvement in profitability

[3] "The next generation of business management: social ERP," Nick Castellina, Aberdeen Group, April 2015

Challenge 2

Industry 4.0 Means Big Data

With data exchange at the heart of Industry 4.0 applications, manufacturers understand that analytics tools are critical to the success of digital transformation—but they are still a long way from reaching the level of sophistication needed.

PwC found that only 18 percent of industrial executives rated their companies' data analytics capabilities as advanced, despite the importance of data-driven decision-making for them. Looking ahead just five years, 83 percent of them recognized that their use of data for decision-making would be of high importance to their companies.

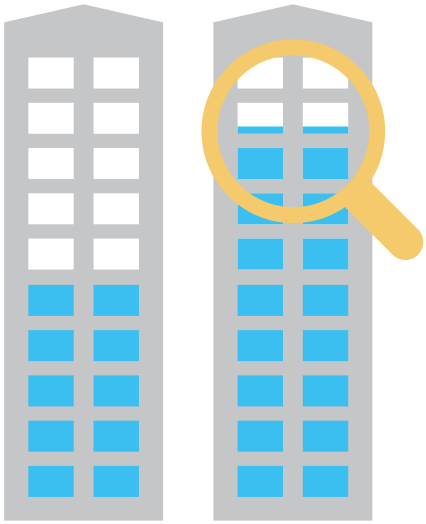
These executives also recognize that the transformative power of data analytics is applicable across the business—including optimization of asset use, logistics, product and process quality, better cooperation with partners, development of new products and services, better operational and business planning, and improvement of customer intelligence and relationships.

> With the rich reporting capabilities of Epicor ERP, our quality engineers can now analyze vast amounts of data on just about any parameter. …We have…significantly reduced material wastage and improved manufacturing processes and quality.
>
> —Saymaad Mansoor | SIDDCO Group

Growing significance of analytics for industrial companies[4]

High importance today

50%



High importance in five years

83%

Responses given in 2016 survey

Analytics and ERP

When you're a small-to-midsize manufacturer, analytics can be one of the biggest stumbling blocks, as it takes specialized skills to turn data into insight that you can act on. More than half of the PwC respondents cited a lack of skills and competencies in their workforce as a key challenge to making full use of analytics. This is why most of the data being gathered in manufacturing is not being translated into actionable intelligence.

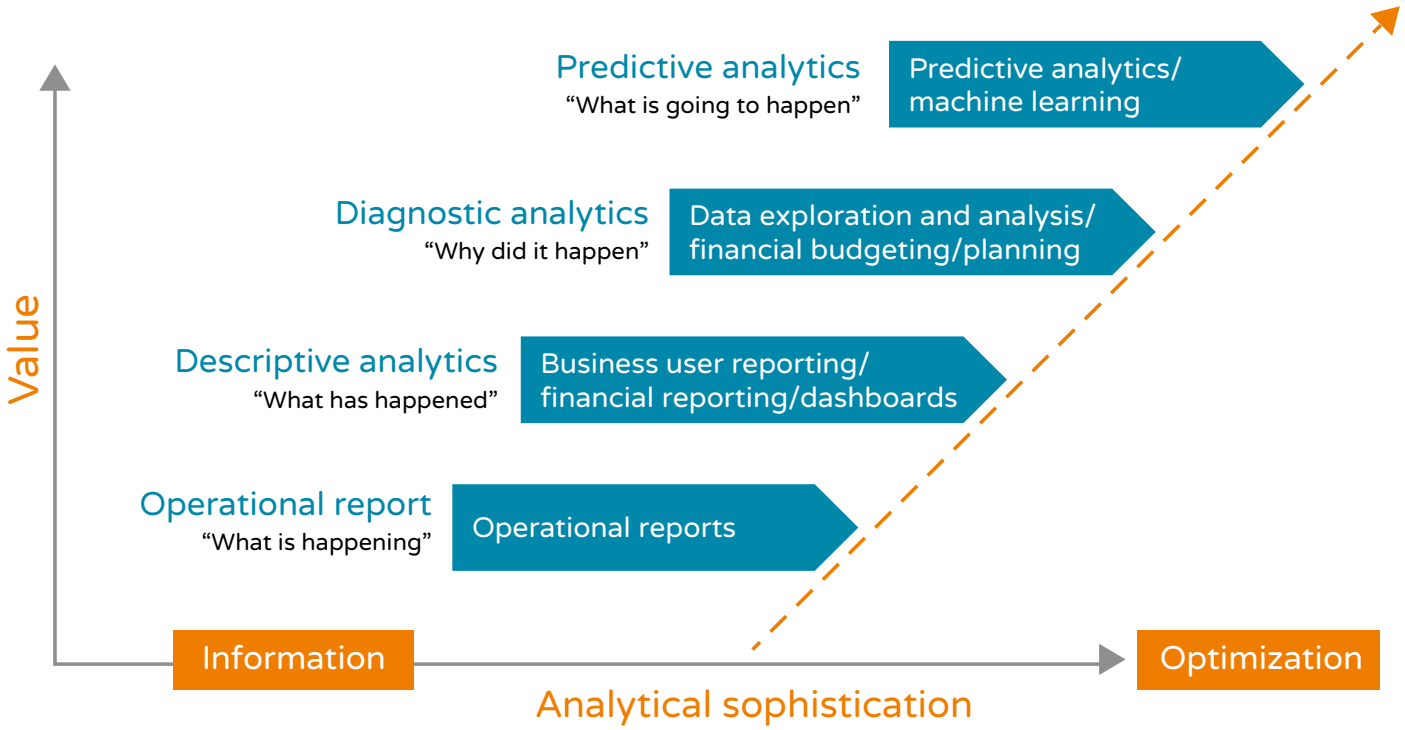
If you want to enjoy the many benefits of analytics, it pays to have an ERP system that, besides its many other functions, can help you up the analytics ladder:

- You want those in your company without specific analytics skills to be able to quickly understand what is happening, so they can do their jobs more effectively
- You want managers and decision-makers to be able to dig more deeply into what has happened, to understand why it has happened
- Ultimately, you want analytics that will help you predict what will happen and even recommend smart actions to take when it does

As a manufacturer, look for the following three analytics capabilities in your ERP solution, all of which are supported in Epicor ERP.

> Epicor ERP is not only a platform for information sharing, it is a complete operational database for analysis.
>
> Gilbert Sin | Techcomp

[4] "Industry 4.0: Building the digital enterprise," PwC, 2016



1. Ready-to-go analytics

Ideally your ERP system won't ask you to do all the hard work to pull actionable insight from data. Look for easy-to-use, pre-built analytics functionality that is already mapped to your most likely common needs, such as materials handling, financials, sales, or production. This is particularly important when it comes to analytics that help you answer those all-important "why" questions.

If the ERP solution is designed specifically for manufacturing and this extends to its embedded analytics, you'll be able to get going quickly with analytics that deliver real insight. Make sure you have the flexibility to customize and build your own views, queries, reports, and dashboards as you gain confidence and discover new needs.

You also want to feel confident that the ERP provider is committed to continual advancement of its analytics functions. Find out what they support today in the way of predictive analytics. Ask about their vision and roadmap. You should feel confident that they will grow with you as you take each step towards your vision of the future.

2. Visual discovery

People can typically spot points of interest more quickly when data is presented visually rather than in tables. Best-in-class manufacturers are twice as likely as others to have implemented visual discovery methods to simplify decision-making.[5]

Data visualization helps your staff spot anomalies in real-time production data, so they can identify and take the steps that make the business more efficient and responsive. It's a classic example of a small change that leads to big results.

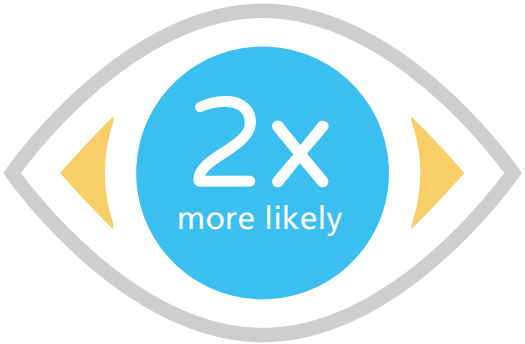
[5] "What Does Digitalization in Manufacturing Mean Now?," Greg Cline, Aberdeen Group, January 2017

3. Available anywhere in real time

We've already discussed how mobile ERP capabilities help your people to work smarter. Clearly the insight provided by analytics is most useful if it's available at the point of need—whether on the factory floor, in the warehouse, at a customer site, or in the boardroom.

Up-to-the-second accuracy won't always be necessary, but confidence in the data is. This calls for ERP reporting and analytics that balance data crunching with system performance in intelligent ways, offering different levels of "real time" for different needs.

Best-in-class manufacturers are



than all others to have implemented visual discovery methods to simplify decision-making[5]

> Epicor allows us to visually manage that data…[It] dictates most of the business process; this is very much the backbone of our business process.
>
> —Keith Diekmann | Dalsin Industries

Challenge 3

Industry 4.0 Brings New Risks

The factory of the future can only function if all the connected parties can trust in the security and proper governance of all shared data and communications. You also need to be confident that the sheer scale of connectedness and data exchange created by Industry 4.0 technologies can be reliably handled without risk of poor system performance or—even worse—downtime from system crashes.

Risk management and ERP

No ERP system is going to eliminate all potential risks, but it helps if your chosen ERP solution—the backbone of your business—is itself secure, reliable, and scalable. It should also give you the visibility to simplify governance and compliance. To minimize risk and maximize reliability, look for the following characteristics in an ERP solution.

> With Epicor ERP we can effectively forecast for future growth, and we know that the system has the capability to grow with us.
>
> —Keith Elliott | Allspeeds

1. Standardized, cloud-ready architecture

If your preferred ERP solution has an architecture designed to simplify integration, it should also improve reliability, scalability, and security—especially if it is a cloud-ready solution. A cloud-ready ERP system such as Epicor ERP will scale more easily, perform more reliably and quickly, be less susceptible to downtime, and be more easily secured.

Even if you don't want to take advantage of ERP delivered through a software-as-a-service (SaaS) model, look for a solution that offers a flexible cloud-based architecture in an onsite hosted option. That way you get most of the benefits of a cloud model—but in your preferred hosting environment. Ideally, you also want the flexibility to move to a SaaS version in the future that will be better for your business.

2. SaaS deployment model

Many small-to-midsize manufacturers choose SaaS ERP because they can't devote nearly as many resources to infrastructure, application, and data security—or to IT maintenance and support—as a specialized IT service provider can.

As well as offering a more reliable and secure service, a SaaS ERP solution can give you automatic access to updates and upgrades that keep you compliant with regulatory changes. This means you can stay on top of new financial controls, tax laws, reporting requirements, and international trade requirements. Businesses often point to SaaS models as a way of keeping pace with technology-driven change to remain competitive with the best, forgetting that there are significant risk management advantages too.

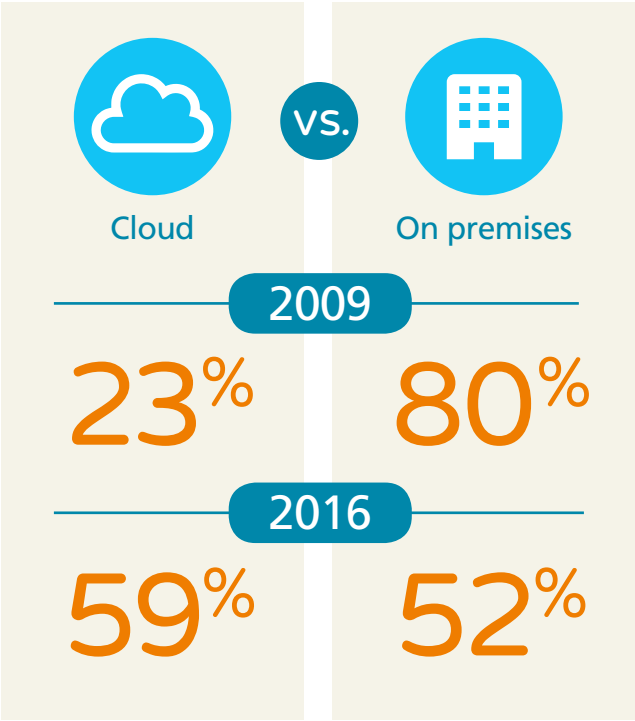
If you choose the SaaS model for greater business assurance, make sure the provider offers you a satisfactory level of control over how and when updates and upgrades happen.

3. Analytics, analytics, analytics

ERP systems connect functions across your business and deliver broader visibility, but you'll get more from your solution if, like Epicor ERP, it has good analytics functionality. You want tools specific to manufacturing that are customizable, easy to understand, and available anywhere on any device.

Beyond everyday uses for analytics, your ERP system should simplify measurement, tracking, and auditing of your whole business. The right solution will help with governance, risk management, and compliance.

Interest in cloud-based vs. traditional ERP[6]



Some respondents indicated interest in both deployment models.

> For compliance purposes, we needed to ensure that on the back end, we had 100% traceability of every single component and material…This would only be possible if we had a robust, unified ERP solution.
>
> —Zakee Siddiqi | SIDDCO Group

[6] "What Does Digitalization in Manufacturing Mean Now?," Greg Cline, Aberdeen Group, January 2017

Get Fit for Industry 4.0 With Epicor ERP

If you want your manufacturing business to take advantage of Industry 4.0 technologies, talking to Epicor is a smart first step. We've helped manufacturers ease business complexity, overcome business challenges, realize their operational and strategic goals, and profitably grow for more than 45 years.

Manufacturing specialists

Our manufacturing services and applications include Epicor ERP 10 and Epicor Mattec MES, among other specialized software.

Manufacturing is in our DNA almost as much as it's in yours, so when we roll out new capabilities, they are designed with you in mind and based on feedback from manufacturers around the world that use our software.

As a result, manufacturers whose businesses have moved to Epicor ERP 10 have found that they need much less personalization to get the software in tune with their preferred ways of working. When we look at new advances—such as how we can start helping you to use predictive analytics—we start with key manufacturing forecasting needs, such as inventory planning and optimization.

All boxes ticked

In these pages, we've featured the words of some of the manufacturing Grow Getters who are using Epicor ERP 10 to begin their Industry 4.0 journey. The standardized, open nature of the Epicor ERP 10 cloud-ready technology platform along with its variety of social, mobile, and analytics capabilities give them everything they need to move forward with confidence.

Manufacturing industries served by Epicor include:

- Aerospace and defense
- Automotive
- Discrete manufacturing
- Electronics and high-tech
- Fabricated metals
- Furniture and fixtures
- Industrial machinery
- Medical devices
- Rubber and plastics

Epicor solutions help manufacturers build the factory of the future

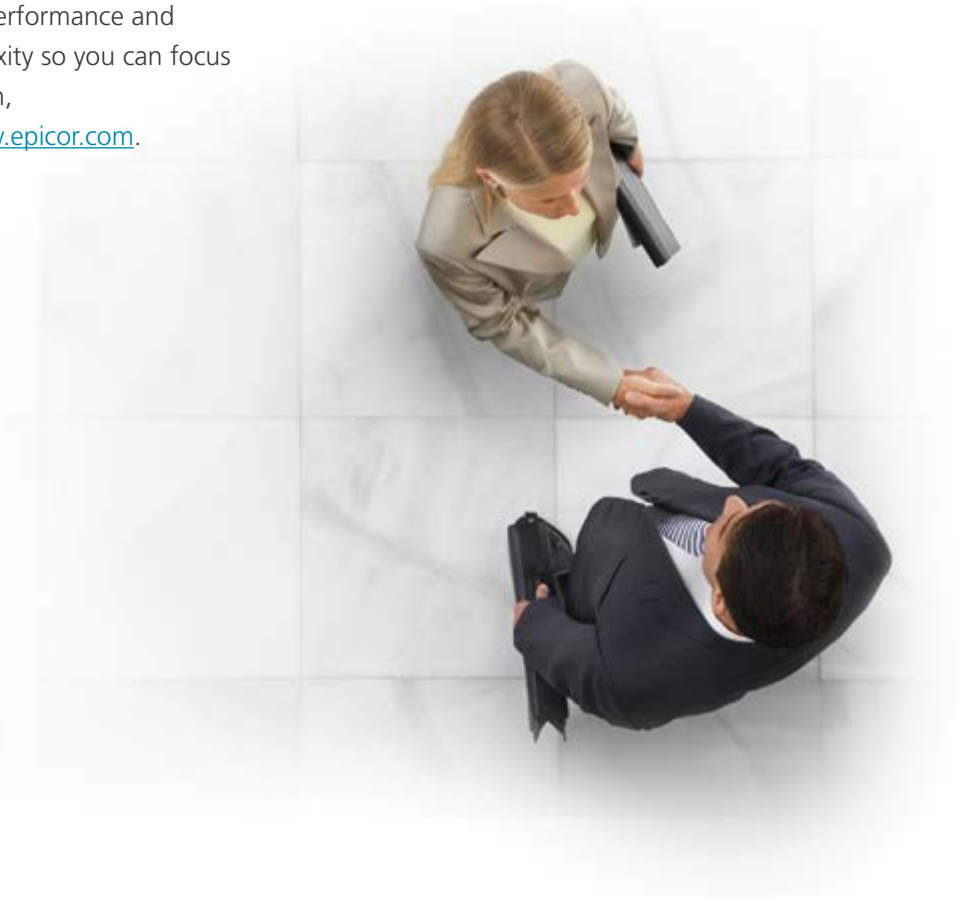
Ready for integration	1. Sector-specific solution	✔ 45+ years specializing in manufacturing software, including ERP and MES ✔ Out-of-the-box manufacturing process support, including sales, CRM, production, and supply chain management
	2. Architecture	✔ Simplified and standardized on Microsoft stack ✔ Open APIs ✔ Cloud-ready solution
	3. The human element	✔ Responsive, touch-friendly mobile capabilities ✔ Intuitive user interface ✔ Flexible, powerful social tools
	4. Ready-to-go analytics*	✔ Epicor Data Analytics with starter BI content packs, fully customizable ✔ Epicor XL Connect for those who want to take Microsoft Excel to new heights ✔ Epicor Smart Inventory Planning and Optimization Platform for predictive analytics
Ready for big data	5. Visual discovery	✔ Epicor Data Discovery for a variety of visualizations, drill down into detail
	6. Real-time and available anywhere	✔ Epicor mobile tools make data accessible on any device ✔ Epicor Data Analytics is updated daily, can use multiple data sources including MES ✔ Epicor Data Discovery gives up-to-the-second visualizations
	7. Architecture	✔ Cloud-ready design is scalable and reliable ✔ Simplified, standardized platform is easier to secure
Ready for risk management	8. SaaS option	✔ Specialized expertise in IT security and performance ✔ Predictable update cycles for better compliance and control
	9. Analytics	✔ Easier visibility for governance, risk management, and compliance purposes

*Available as optional additions to core Epicor ERP functionality

> Epicor continues to help support our growth—giving us the platform to track, measure, and monitor every aspect of our business—from production to invoicing, shop floor to top floor.
>
> —Andrew Chamberlain | Access Laser Company

About Epicor

Epicor Software Corporation drives business growth. We provide flexible, industry-specific software designed to fit the precise needs of our manufacturing, distribution, retail, and service industry customers. More than 45 years of experience with our customers' unique business processes and operational requirements are built into every solution—in the cloud or on premises. With this deep understanding of your industry, Epicor solutions dramatically improve performance and profitability while easing complexity so you can focus on growth. For more information, connect with Epicor or visit www.epicor.com.



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