

December 2015

ESSENTIALS OF ENTERPRISE RESOURCE PLANNING (ERP)

A Control Design Essentials Guide, by the editors of Control Design

About the Control Design Essentials Series

The mission of the *Control Design Essentials* series is to provide industrial machinery designers with an up-to-date, top-level understanding of a range of key machine automation topics. Our intent is to present essential engineering concepts in a practical, non-commercial fashion, together with a review of the latest technology and marketplace drivers—all in a form factor well suited for onscreen consumption. Check in at ControlDesign.com/Essentials for other installments in the series.

—The Control Design Editorial Team

EPICOR®

This *Control Design Essentials* guide
made possible by EPICOR.

See [page 8](#) for more information
on EPICOR.

INTRO

Leading manufacturers understand that, when selecting an ERP system, the software's roots must be in manufacturing. Instead of starting with an ERP database in the cloud, manufacturers are looking for solutions that start with a costing and manufacturing system and move it to an ERP cloud platform. These leaders require use of intelligent architectures supported by technology in manufacturing projects, many of them custom. These types of enterprise resource planning (ERP) systems serve as the infrastructure and transactional engine to keep plant floors and beyond working smoothly.

Responsiveness, choice of technology, use of mobility, simplicity and collaboration are all desirable features when selecting ERP from a vendor, and they are also the benefits of a well-integrated ERP system under one umbrella.

The ERP system should be designed to make product for customers but not struggle to get data to and from the system or wonder how to customize it. Whether it's pre-sales, engineering, manufacturing, purchasing, finance, HR or a customer-facing website, the software tools should support the use case, and there are many. To be responsive, efficient methods to do the specific work that needs to be done are necessary.

In an industrial machinery use case, the ERP software should provide the ability to handle make-to-order, engineer-to-order and stock-to-order production. It must have flexibility. Choice of where and how the system is deployed and used, in the cloud and via mobile devices, is part of that flexibility. Social collaboration tools, both internal and external, should be integrated with this flexibility providing the company better communication.



RESPONSIVENESS

Responsiveness doesn't just focus on a company's core competencies; it's about the customers and making them happy. When the market changes or the customer's needs change, the company must react and give feedback in real time.

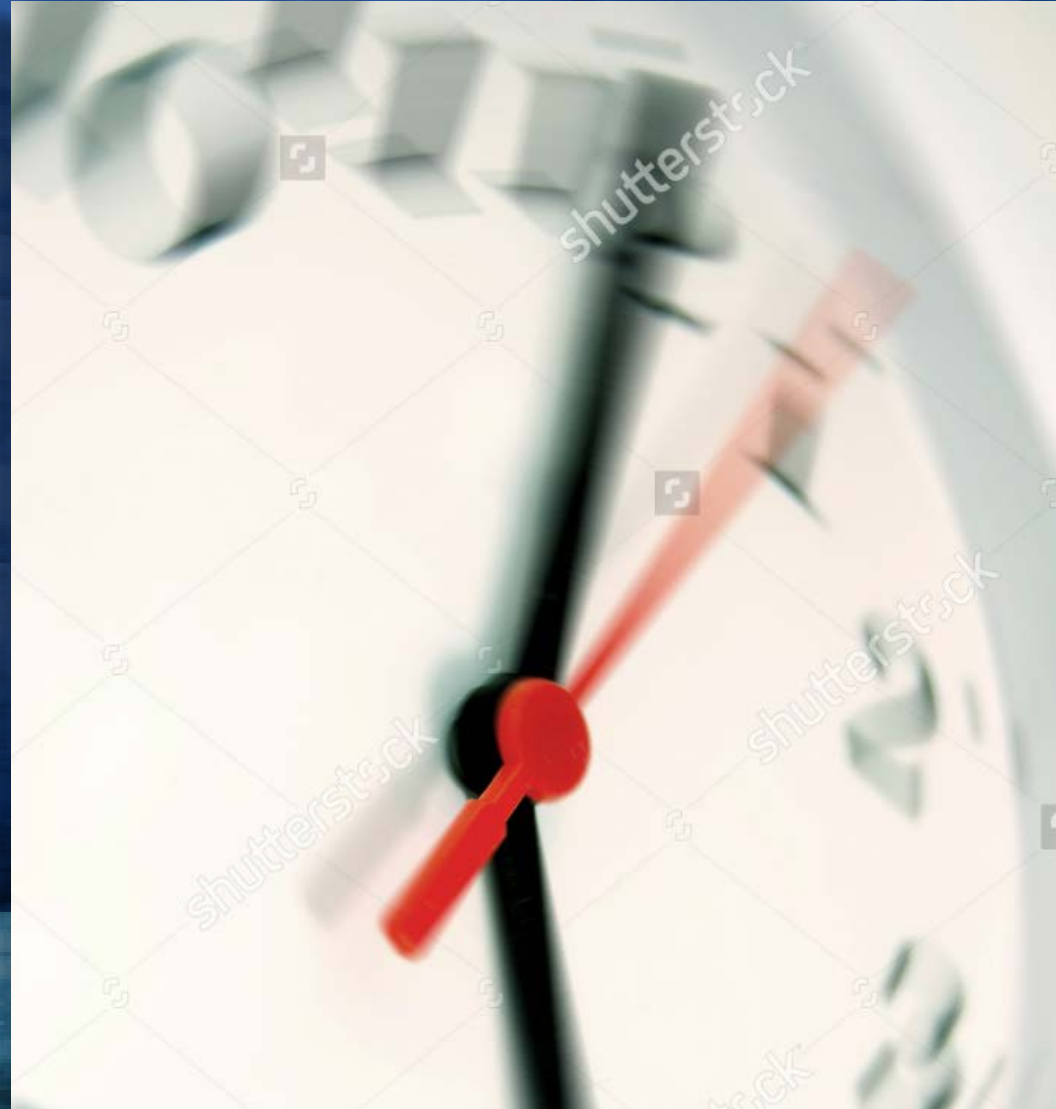
Quoting a project outside of an ERP system hurts responsiveness and doubles the work, among other things. When the order is received, the project needs to be set up and the data entered from the information created during the quote process. By integrating all processes—from RFQ entry to cash-receipt entry—in a single system, reaction time is reduced.

With the variety of jobs and the number of jobs in a manufacturing facility, the ability to access all related job information in a single view, track costs and then compare quoted versus actual cost provides responsive planning and quoting. This integration also saves money.

Once these many, diverse jobs move into the workflow, scheduling tools to assign the work and eliminate bottlenecks before they hit the manufacturing floor need to be a part of the ERP system. Adjusting production in an intuitive way is also a must considering how many resources and how much “tribal knowledge” is often thrown at scheduling. Understanding the bottleneck, addressing it and publishing the solution in real time makes for a responsive production process, and it should be part of an ERP system.

The technology is available, allowing manufacturing facilities to select an ERP system that not only provides tools to keep the internal workflow on track, but to manage demand effectively by connecting to suppliers and customers. No need for a mountain of inventory, phone calls and redundant email replies. The system can connect facilities across the globe to coordinate RFQs, quotes, jobs, inventory, purchases and suppliers.

Look for a well-integrated system to manage both internal and external users. Managing this collaboration helps to solve problems and answer questions delivering responsiveness and efficiency. With the data available in real time to the appropriate users, the phone calls and emails are greatly reduced but the workflow improves.



CHOICE

Most industrial manufacturing facilities want to choose how the ERP system is installed and deployed. It can be done on premises, hybrid or in the cloud. They are also looking for choices in how the software is used; this includes mobility, IoT and pricing.

Some manufacturers need the ERP system on premise to modify, interact and control the software. Others don't want to deal with the technology, hardware, security or capital cost and want to keep the ERP system in the cloud as a service. On premise and in the cloud are two ends of the scale with ERP systems, and the hybrid system sits in the middle with some of both. Having a choice and having deployment options are important. The ability to tie in existing applications, such as custom-built ones, is also an important part of this choice, especially if transitioning to the cloud.

The ERP software and technology need to change quickly, just as change happens in the business environment. Using the cloud is an enabler of this quick change. Innovation within the cloud drives the change—updates and upgrades are not missed. A quick look at any software vendor's model shows that, whether you like it or not, software is moving to the cloud. The software you purchase in the future will be in the cloud, so your ERP software should be moving that way.

How a company approaches the cloud depends on the company. With careful planning, it can be done all at once; but some might prefer a phased approach to a successful installation. There are many options, and it's important to be able to choose the path to a cloud-based core ERP product and any of the supporting modules selected, such as CRM and resources.

Get to the cloud, if possible. If not, due to the location of the data or regulatory requirements, for example, the choice needs to be available to work in both environments.



MOBILITY

Mobility is firmly attached to business, and it is no longer the leading edge. However, mobility is required to leverage business information, collaboration and near-real-time decisions to get more work done, save money and make happy customers.

Mobility isn't the device; it's the ability to work when on the move providing more efficient use of downtime. Since mobility means being on the move, the work or tasks must be the appropriate size—this might include connecting, approving or finishing a transaction quickly. It just takes 30 seconds to use or make information and then push it down the road to productivity.

Field service is a great example where mobility is needed. It starts before service begins by having the historical data about the machine, which parts were used, the machine's build history and drawings. Regardless of a service tech's location, access to the data is available. The availability to scan an RFID tag or barcode or enter a serial number and access the information on the mobile device should be a requirement.

Mobility also allows pictures or even video to help the technician to understand the problem or to relay the problem to off-site engineers helping to service the equipment. This also continues with signatures, contracts and work authorization. Doing it electronically, through mobility, eliminates paperwork and saves time. The actual work data is input and available for decision making before the work even begins.

Not only can this mobility save time, perhaps 10% to 15%, it adds capacity, enabling more work to be completed with better customer service and a better customer experience.

Mobility is more than just a connection. It's an interface used to interact and communicate with machines, processes and workflows. It will be a part of a facility's ERP system and will be embedded in the business model.



SIMPLICITY

“As simple as it needs to be, but not simpler.” Albert Einstein said something similar to that, and it is true for many things, especially ERP. Look carefully for innovative ERP systems that improve productivity with simpler, efficient designs, intuitive usability and quick access to the needed information.

Consumers are expecting great designs in their apps and the technology that uses it. An application such as Uber is an example. It's a social-media-enabled taxi service that knows where you are and where the next 15 drivers are. And it gets you connected. It also handles the money and makes getting a ride simple, bypassing a traditional taxi service.

With the proliferation of these simple and effective apps outside of work, it is only a matter of time before it shows up inside the manufacturing plant on the shop floor, in the office and throughout the enterprise.

Applications used on your smartphone don't typically come with training or manuals. They are simple to use and understand. Because of this, the days of looking up how to complete a process or attending multi-day training classes for a large ERP software application are numbered. Modern software now makes it a simple experience.

Modern software includes design thinking, use cases, roles and the expected outcome. It is important to look for ERP software that shows this simplification process. If you don't know where to start or are getting confused with the steps, the ERP software has not been simplified.

Quick access to information should be a focus area. Additionally, the information should show up based on whether it's in accounts receivable or on the manufacturing floor. The past due information and machine failure information should show up automatically depending on your role in the company.

With the proper role-based information displayed, the data should be displayed graphically. And when a pie chart is shown, the ability to drill down into that data should be available. It's natural to want to drill down into the data. These usability features with clean design and a noncluttered screen improves productivity of the user. ERP software should be losing the clicks and the digging through information and replace that with quick access and sharing ability. With the proper ERP software, the usability and simplicity of consumer apps are making it to the plant floor and the next generation will demand it.



COLLABORATION

Collaboration in real time and at the right time plays an important role in business. Serving customers, building better relationships and creating and improving products are all realized with an ERP system that promotes collaboration inside and outside the company.

For sales, marketing, finance, engineering and product development, whether internal processes, supplier relationships or even with customers, collaboration is essential to work through changes, get the products out the door and reduce costs.

Reading, updating and deleting records or transactions for accounting, HR or manufacturing orders in ERP systems limits its capabilities and functionality, and it's a bit old-fashioned. It's being replaced with new social collaboration tools that are changing how we interact with the ERP system. The new social collaboration process enables liking, sharing, publishing and close interaction both inside and outside the plant or a work process. The old way didn't allow that.

Commenting on a report and sharing or editing a forecast, at the same time others are editing it, is an example of how collaboration can be used in ERP that embraces today's and tomorrow's technology. The way people and systems interact is changing in a sensing and responding fashion. The user will engage with the system and others internally, as well as with suppliers and customers.

This collaboration is happening now in schools where students can access the same homework document and all edit it at the same time quickly, completing the collaborative assignment. Look for modern ERP software that will function in a similar way when building products, solving problems and inputting orders. The data must be real-time data.

A serial process flow where each step must be completed before the next one is started will fade from the modern ERP future. The real-time data along with the appropriate data, depending on the role of the user, will enable collaboration within the process flow.





MADE POSSIBLE BY **EPICOR**[®]

ABOUT THE SPONSOR

This *Control Design Essentials* guide was made possible by Epicor ERP. Epicor ERP is built to bring out the best in your business. It's the first collaborative ERP solution that interconnects entire organizations, while linking them ever more closely to the world beyond. Epicor ERP ensures that everyone is able to interact with greater effectiveness and participate in the business conversations that will ultimately drive profitability and growth. With more than 40 years of delivering innovative, award-winning solutions and more than 20,000 customers in over 150 countries, Epicor ERP lets you focus on running your business, not the software it runs on.

It delivers more accurate, more transparent—more powerful—information, in real time. Learn more about [Epicor ERP](#) approach to ERP for industrial machinery.