

An Epicor® White Paper

Improve Scheduling, Production, and Quality Using Cloud ERP



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Introduction

The software as a service (SaaS) model of application delivery, more commonly known as “cloud deployment,” in which software features are accessed through a Web browser, is an excellent way for manufacturing companies to get the benefits of enterprise resource planning (ERP) systems without the need to build additional IT infrastructure. ERP functionality delivered “from the cloud” avoids the complexity and costs that often accompany on-premises ERP implementations, and typically provides a much more favorable total cost of ownership (TCO), compared to legacy on-premises deployment. Companies subscribe to the software features that they need and can add new ones as business requirements change, without buying additional servers or storage to support new functionality. The ERP features are the same as for an on premises ERP system, except that it is hosted and maintained on the cloud provider’s infrastructure.

Epicor Software Corporation is a leading developer of ERP software and systems based in Austin, Texas, with more than 40 years of experience in building ERP systems for thousands of customers around the world. Christine Hansen, a product marketing manager at Epicor with experience in the manufacturing business sector, presents some of the best practices used by discrete manufacturers. She also explains the benefits of the Epicor Cloud ERP solution.

Best Practices for Discrete Manufacturers

Epicor ERP systems are designed to manage many types of manufacturing methods; but for this discussion, we will concentrate on discrete manufacturing, which is typically used for low-volume, job-based production. By way of contrast, inventory-based manufacturing is typically used for high-volume production. Table 1 summarizes the process steps for both types of manufacturing.

Inventory-based manufacturing

Hansen notes that most of the process steps for inventory-based manufacturing (e.g., quoting, producing, and shipping), producing, and shipping, require simply checking inventory, whether for raw materials, components, or finished goods. She outlines the manufacturing process steps as follows:

- ▶ Quoting a customer on a particular manufacturing job involves checking to see if materials are available in inventory or whether they need to be ordered, which may affect both pricing and delivery times.
- ▶ An order will require a similar check of inventory, and may need materials to be purchased for inventory. Once the materials are received, they must be entered into inventory before production can proceed.
- ▶ Once production begins, material is issued from inventory to be used in manufacturing; as production proceeds, finished goods are placed back into inventory.
- ▶ When production is complete, finished goods are taken from inventory to be shipped to the customer.

Table 1: Comparison of Inventory-Based and Discrete Manufacturing

Process Step	Inventory-Based Manufacturing	Discrete Manufacturing
Quoting or Ordering	Maintain items in inventory	"Parts-on-the-fly"
Purchasing for Production	Receive items to inventory	Purchase direct to inventory
Production	Issue inventory to production	Receive directly to production
	Receive production output to inventory	Accurate work-in-progress (WIP)
Shipping	Ship from inventory	Ship directly from WIP

Source: Epicor Software Corporation

“Most of our customers will use a mix of the two approaches. Epicor offers both methods, which allows our customers the flexibility to base the method on their current production needs.”

Christine Hansen,
product marketing manager
Epicor Software
Corporation

Discrete manufacturing

According to Hansen, Epicor ERP is particularly suited to discrete manufacturing because of the reductions in work enabled by features of the software, including:

- ▶ Parts-on-the-fly: a feature of the Epicor system allows a company to estimate, accept an order, produce, and ship products without the need to consult inventory
- ▶ If material needs to be purchased for an order, it can be bought directly into inventory; the system makes the appropriate inventory transactions automatically. In addition, items on the purchase order are tagged with an associated job number, eliminating the need for suppliers to tag materials
- ▶ Material purchased from suppliers can be received into production because the system has already tagged the material with the correct job number; production is also notified of its receipt, saving additional time and eliminating potential confusion
- ▶ Finished goods can be shipped directly from work-in-progress (WIP), rather than from inventory

Managing production processes

Many companies struggle with the need to strike a balance between how product costs are determined and how products are scheduled. Certain data is recorded regarding how a product is manufacturing based on costs, such as:

- ▶ Labor costs associated with manufacturing the product
- ▶ Material costs to build the product
- ▶ Overhead or burden costs allocated with the product
- ▶ Subcontracting or outsourcing costs for components or sub-assemblies that are eventually incorporated in the finished product

Against these product costs are those associated with scheduling production, which include:

- ▶ Production setup time, labor, and machine idle time
- ▶ The amount of time required to manufacturing the product
- ▶ Outsourcing or subcontracting lead times, if any
- ▶ Lead times for materials required for production so that they arrive just in time for production

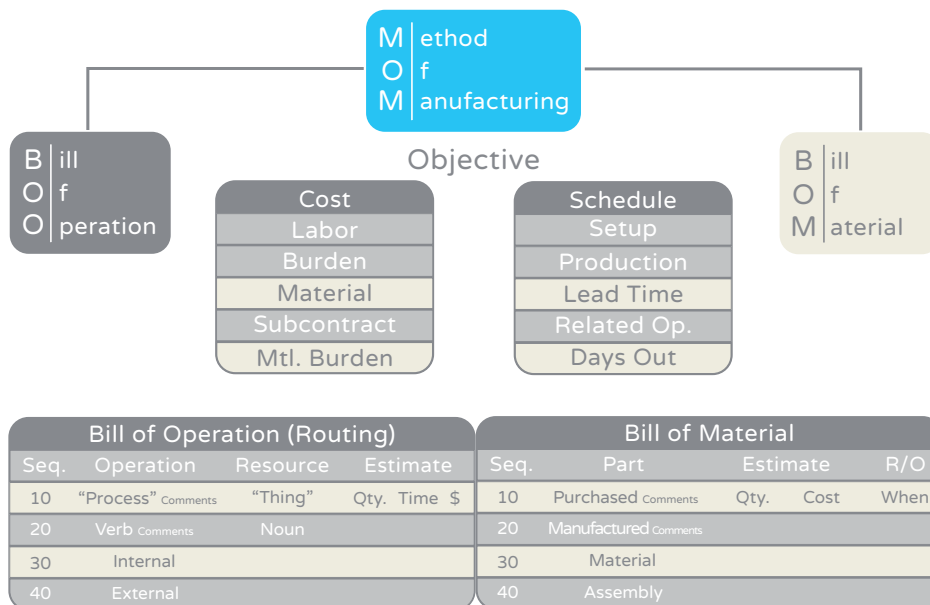
The combination of these two manufacturing elements is called the method of manufacturing (MOM). In essence, the MOM is a manufacturing roadmap that includes the Bill of Materials (BOM) and the Bill of Operations (BOO).

Figure 1, found on the next page, depicts the balance between these manufacturing elements, as well as the factors that comprise costing and scheduling.

“I can pull a master method from engineering to make my initial quotation, and then make any operational or step changes within the quote. This saves me the time to build a method of manufacturing from scratch every time.”

Christine Hansen,
product marketing manager
Epicor Software Corporation

Figure 1: Method of Manufacturing

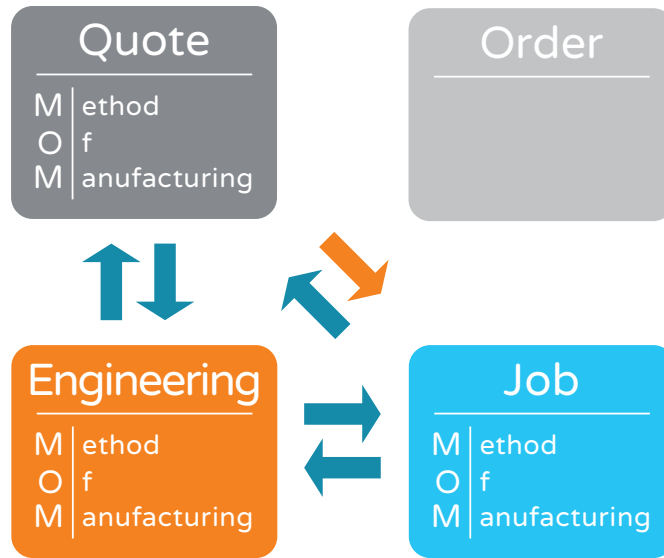


Source: Epicor Software Corporation

Using the method of manufacturing

One common use for the method of manufacturing is to make it easier to prepare a quotation for a product to be manufacturing. The master method of manufacturing contains all the details associated with manufacturing a product, so it can be used as a template for similar products. The Epicor standard practice is to have the system store the method of manufacturing in several repositories: with the quotation, with the job, and within the master engineering repository.

Figure 2: Using the Method of Manufacturing



Another use for the method of manufacturing is to provide a production history for a product, highlighting the differences between how the manufacturing of a product was planned and how it was actually produced.

Because the method of manufacturing also stores the complete history of revisions for a product, it is possible to see changes as they occur within the entire lifecycle of a manufacturing product. The history of changes for production provides valuable insight into how engineering can improve a product's manufacturability and gives production ways to increase the overall efficiency of operations.

Top Practices for a Top-Performing Production Floor

Hansen lists three areas where best practices help top-performing manufacturers concentrate their efforts:

- ▶ Production planning and scheduling
- ▶ Production management
- ▶ Quality

Let's take a closer look at these areas.

Production planning and scheduling

One of the first steps in the production day is to plan what products need to be produced to satisfy existing orders, and to schedule production for them. Top-performing manufacturers concentrate on four practices to maximize production:

- ▶ **Define existing capacity for production.** A realistic assessment of production capacity includes factors such as the availability of machine time, the flexibility of the various types of machines for different tasks, and the availability of skilled labor within the organization.
- ▶ **Improve accuracy of production scheduling.** The master method of manufacturing provides a way for companies to continuously refine both manufacturing processes and the time allocated to them. For example, the load time (the amount of time it takes for production) could be stored for each job operation, and recalled to improve scheduling accuracy for future quotations as well as for production.
- ▶ **Use technology to enhance production control.** An accurate schedule should be available not only to those in production planning, but also to people on the shop floor who may be actively managing or producing product. An ERP system has these capabilities and is flexible enough to accommodate changes.
- ▶ **Communicate the schedule to all stakeholders in the organization.** The availability of schedules online means that anyone connected to the manufacturing process has accurate, up-to-date information to make good production decisions.

A compelling case for cloud deployed Epicor ERP is the ease with which cloud deployment makes key workflows available across the enterprise—and the global supply chain. Because nothing more than an Internet connected PC, tablet, or smart phone is required, cloud deployment is the most effective way to bring accessibility and integration to most organizations.

“Maybe the schedule we laid out is perfect, but how often does it stay that way?” asks Hansen. “An ERP system can help to increase our overall manufacturing flexibility and efficiency. And with cloud deployment, everyone across the organization—from procurement to sales to field services staff—are kept in the loop of any changes to critical delivery dates and schedules.”

Production management

Another area of focus for top manufacturers is the production management process. Hansen identifies four tasks in the process:

- ▶ Execute the production plan according to the schedule established earlier. The process should be the same whether it calls for a single day or a week's worth of production.
- ▶ Manage changes in production in a proactive way to minimize the impact of changes on the overall schedule.
- ▶ Increase the visibility of the entire production process so that the production schedule, materials management, current production operations, and quality are available to the organization.
- ▶ Close the finished job. Many manufacturers miss this opportunity to implement continuous process improvement. The ability to compare expected costs and labor against actual results is critical to driving the organization toward more efficient manufacturing processes.

All these tasks are made easier by using a cloud deployed ERP system, especially one that provides an end-to-end of the manufacturing process. "The ability to update and refine your manufacturing methods will make them that much smarter for the next job," says Hansen. "Smarter, more efficient methods mean increased profitability."

Quality

A final area where top-performing manufacturers excel is in maintaining quality throughout the production process. They do this by instilling quality principles throughout the organization:

- ▶ Tracking quality incidents in a systematic way on a regular basis, beginning with the production floor
- ▶ Identifying the root cause of a quality problem so that quality issues can be avoided in the future
- ▶ Making quality in the production cycle an organizational objective

"How powerful would it be if your customer service could communicate an analysis of production quality for an order?" asks Hansen. "Not only building a quality product, but being able to quickly respond with evidence develops confidence in your manufacturing capability and process."

Cloud Deployed Epicor ERP

“Cloud deployed Epicor ERP is the ideal solution for companies looking to technology to help them punch above their weight,” says Hansen. “It’s an end-to-end solution delivered online from the cloud.” Epicor Express includes the functionality to manage the tasks of manufacturing (Figure 3):

- ▶ Production management
- ▶ Product management
- ▶ Material management
- ▶ Financial management
- ▶ Customer relationship management
- ▶ eCommerce

These features are delivered in an on-demand, subscription basis with full documentation and “always on” support.

Cloud deployed Epicor ERP users can also benefit from the business intelligence features built into the system. Role-based dashboards, for example, deliver information about production processes and business functions appropriate to the user’s role in the production process. Production workers can view current machine or process data in high detail, while business or production managers can get a condensed view of all the business and production tasks in the company. These features communicate manufacturing performance throughout the organization and enable companies to continuously improve business processes and production methods.

Figure 3: Epicor ERP



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Source: Epicor Software Corporation

“These technologies make it easier for an organization of any size to manage scheduling, production, and quality on their production floor.”

Christine Hansen,
product marketing manager
Epicor Software
Corporation

Epicor ERP Epicor ERP was designed to enable small manufacturers to focus on their core business rather than on managing an IT infrastructure. It lowers the traditional barriers to on premises ERP systems with a minimal upfront cost and an affordable ongoing investment.

It allows companies to dedicate their IT resources to support their strategic objectives, rather than having those employees focused on low value system administrative functions.

Some companies have expressed concerns about the security of applications and data stored in the cloud. However, Epicor ERP runs in a Tier III certified data center, with network intrusion prevention and application security. To ensure business continuity, Epicor has built redundancy into their servers, storage and databases, with data stored in multiple physical data centers.

For more information on the specific details of Epicor Cloud deployed ERP, please refer to the Epicor “Cloud Deployment Technical Q&A” document available from any Epicor Solution consultant.

Companies using discrete manufacturing can certainly benefit from these best practices combined with cloud technology. “Cloud deployed Epicor ERP takes full advantage of the resources available in the cloud,” Hansen concludes.

About Epicor

Epicor Software Corporation drives business growth. We provide flexible, industry-specific software that is designed around the needs of our manufacturing, distribution, retail, and service industry customers. More than 40 years of experience with our customers’ unique business processes and operational requirements is built into every solution—in the cloud, hosted, or on premises. With a deep understanding of your industry, Epicor solutions spur growth while managing complexity. The result is powerful solutions that free your resources so you can grow your business. For more information, [connect with Epicor](#) or visit www.epicor.com.



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