

Why Integrate Your Manufacturing Operations? Connectivity is Currency in Today's Digital Business

by Brad Mikes, Managing Partner IPE

Not everyone realizes shop floor control (SFC) can run either as 1) a stand-alone software application or 2) a solution integrated with other systems. Both approaches return significant value. This article discusses the second scenario and how integration unlocks some great opportunities for your business.

When manufacturers think about SFC and production management technology, they tend to look for return on investment (ROI) from benefits such as:

- » Increased plant productivity
- » Greater factory efficiency
- » Enhanced workforce performance
- » Increased automation and accuracy of incentive payroll processing
- » Better, clearer visibility to order status, work in process, off-standard events and other key performance indicators (KPI).

Many of these benefits are achievable with a stand-alone SFC implementation. So, why consider systems integration? The reason is that SFC benefits multiply when this technology is integrated with other solutions and processes, such as enterprise resource planning (ERP), product lifecycle management (PLM), material requirements/resources planning (MRP), business intelligence (BI), engineering, human resources and payroll.

Being connected is essential in today's world. In our always-on retail economy, businesses require constant visibility and control of product information. They need to know what's available to deliver and what's in the pipeline to promise. Everyone is vying for consumer wallet share. Connectivity is currency.

In this fast-paced, competitive business environment, your factory must not be an island unto itself. Your management team and customers alike will value solutions that:

- » Remove barriers and eliminate blind spots in the supply chain
- » Provide better visibility to important production activities
- » Make it faster and easier to do business with your factory
- » Build trust by providing quick, accurate answers and visibility to important information
- » Replace manual touchpoints
- » Reduce time-consuming phone calls, emails and data searches
- » Enhance responsiveness and flexibility
- » Supply payroll documentation to support compliance programs
- » Improve supply chain transparency
- » Enable agility to adapt to changing market dynamics.

Integration is the key to reaping all these advantages. Integration is important regardless of whether your factory works with internal stakeholders at corporate/division headquarters, retailers, fashion brands, wholesale manufacturers or directly with consumers.

"Being able to collaborate is now a basic matter of survival (mandatory but not sufficient to compete)," according to *Manufacturing Automation* magazine's article "[PLM, ERP and MES: The holy trinity of manufacturing.](#)" "The level of integration and how lean the organization can be, constitutes one of the new paradigms to enable competitive advantage."



About the Author

Brad Mikes has spent the last 25 years solving manufacturing challenges through improved business processes and information technology. He focuses this expertise on sewn products, consumer goods, technical textiles, and other discrete manufacturers.

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Shop Floor Integration with ERP, MRP and BI



When SFC integrates with ERP, MRP or BI, there are many benefits for two-way data flow. ERP purchase order or production/work order data can flow directly into SFC, enabling manufacturers to digitize and automate bundle generation and order batching for efficient runs. Once an order is running through the factory, the production management solution then feeds manufacturing status back upstream to ERP. This exchange gives ERP and SFC users alike clear visibility to orders and order progression through the factory. That way, key stakeholders stay informed without needing to repeatedly check in for updates or reports. Everyone is on the same page regarding order fulfillment. They can validate whether orders are on track to be completed in full and on time.

Many businesses value how SFC-ERP integration plugs the “shop floor hole” in ERP by handling production order control and piecework payroll information and reporting. In addition, there are data holes SFC information fills within BI. For example, by analyzing feeds of plant-level production data, BI might expose manufacturing issues and opportunities not readily apparent to leadership from other sources.

Bidirectional information flow between systems opens powerful possibilities for comparing production plans to actual performance. “The vast majority of companies we work with don’t review

closed work orders in a formal, ongoing basis. ... What a missed opportunity!” says Jack Shannon, president, Visual South, in his blog post “[Work Order Management Process from Creating to Closing](#).” “Think about it: The management team’s job is to improve production. Work orders define what production produces. Comparing how much labor and material was used on a work order, compared to what the standard was, highlights issues for the team. It creates a road map of what needs to be addressed. Just as importantly, it shows what *doesn’t* need to be addressed.”

Some businesses use MRP for supply planning, including management of material and trim inventory, bills of materials (BOM) and bills of labor (BOL). As with any software solution, such systems are only as good as the data loaded into them. If MRP integrates with SFC, manufacturers can rest assured their MRP is feeding on highly accurate, detailed data for BOM and BOL requirements.

PLM Integration with Production Management

PLM often is perceived as a technology primarily for designers and product developers, but there are many valuable ways to leverage PLM in manufacturing operations. Construction details, operation instructions and quality requirements can flow from PLM to SFC. For example, if construction diagrams transfer automatically from PLM into SFC, those diagrams will be at the fingertips of sewing operators on their SFC workstation tablets when they need to check on pocket or trim placement.

Information also can flow from SFC back to PLM. For instance, say the factory identifies a problem with the way a

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garment is constructed or, on the flip side, finds a better way to make the garment than the method prescribed in the PLM tech pack. SFC data can help highlight both scenarios with the way it catches quality problems and calls out productivity that is below or above standards. With such issues illuminated through SFC data/reports and fed back into PLM, both manufacturing and product development teams can address issues for future seasons and collections.

Some brands and retailers use PLM as their central repository for product information, but they might not have a reliable source for BOM and BOL data. They might rely on manually entering estimates from spreadsheets or quotes. If they integrate their PLM with their production partners' SFC, then they can better leverage their PLM's planning and costing capabilities. PLM-SFC integration also provides a means to validate supplier use of specified materials and adherence to the agreed-upon manufacturing plan for cutting, sewing, finishing.

If PLM is a company's system of record for tracking workflow, then SFC can feed data back to PLM for that purpose. This provides visibility for customers or headquarters of when an order has been cut, what percentage has been sewn and other manufacturing milestones.

PLM-SFC integration also is helpful for corporate social responsibility (CSR) initiatives. SFC-generated reports and data can be used to document fair pay practices and consistent, transparent incentive pay programs. SFC data is useful for audits and to populate compliance checklists and vendor scorecards, which often are managed within a PLM platform.

SFC and Standard Data/Engineering System Integration



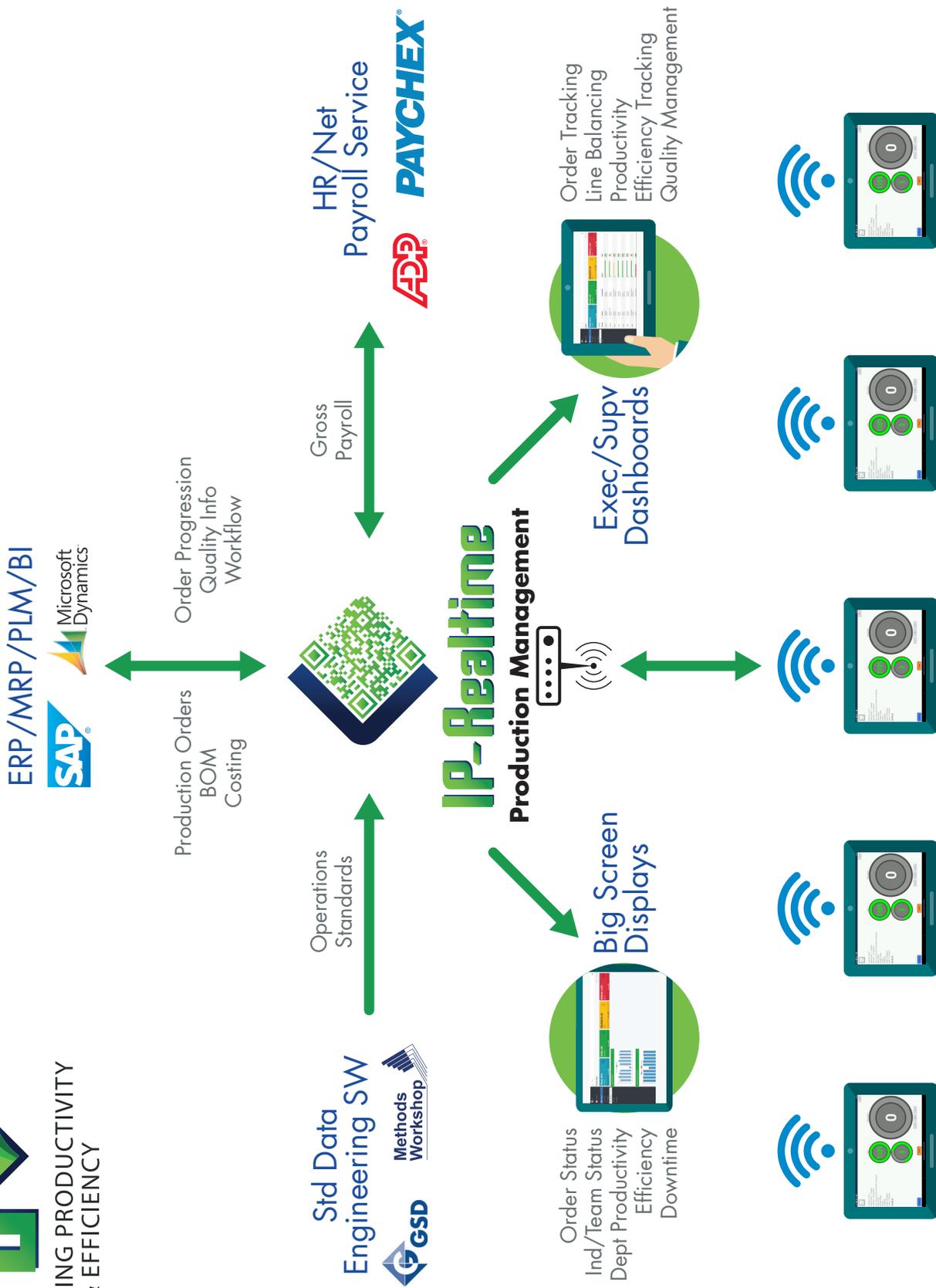
Manufacturers can import engineering standards directly into SFC from engineering software and standard data solutions. Then piece-rate engineering standards can be automatically applied to the list of operations to be performed for a production order.

With this integration between SFC and engineering software, manufacturers can quickly calculate productivity goals and incentive pay rates. In turn, they can clearly communicate expectations to production workers and set up their lines for efficient runs. Also, with this type of systems integration, engineering methods, instructions and diagrams can be shared seamlessly with SFC.

SFC and HR Solutions and Net Payroll Services

Last but not least, it's important to mention integration between production management technology and human resources (HR) software and net payroll services. SFC automatically and accurately calculates incentive pay for the different pay models an associate might work under during a pay period. For example, SFC captures factory floor data by machine operator and calculates straight incentive pay and applies the right pay rate for off-standard activities such as

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sample production, down time, attending meetings, etc. With integration to payroll services such as ADP and Paychex, all of this incentive pay is automatically rolled up to the net payroll systems, where the proper taxes and deductions are applied.

Likewise, integrated SFC and HR solutions can share data regarding absenteeism, training curves, holiday and vacation time, and other HR responsibilities for managing the workforce.

The factory floor is where concepts become reality. Each plant has myriad people, machines, materials and processes to produce the finished product, all of which can be managed by SFC. Through SFC integration with ERP, PLM, MRP, BI, engineering, human resources and other solutions used by trading partners, manufacturing operations are more integrally connected to the end-to-end supply chain.

What Is Integration?

Integration is how computer systems “talk” with one another and are connected. There are two primary forms of integration. Here are key differences as explained in an [article by retail systems integration specialist nChannel](#):

- » **Flat file integration:** With this integration type, software users share information between systems by transferring data in files. The file format often used is comma-separated values (CSV). Data records are in rows separated with commas. These “flat,” or “flattened,” files can be emailed or uploaded to a server. Sometimes the transfer is automated.
- » **Application programming interface (API):** With an API, computer coding enables two software programs to communicate with each other automatically. API provides the benefit of instantaneous syncing whereas flat-file integration usually involves some delay, even when there is an automatic transfer between servers. Today, many software providers offer built-in API to connect with software programs commonly used by their customers.

Beyond production software talking with other software programs, there also is the need for SFC to communicate with hardware, such as workstation tablets, mobile phones and big-screen displays. Factory management needs freedom and flexibility to reconfigure that hardware without disrupting software uptime. To do so, production management software must have wireless connectivity capability. Modern SFC solutions such as [IP-Realtime](#) are wireless-enabled.

Wireless connectivity is not the same thing as software integration. But ultimately, it is critical for connecting and empowering end users with valuable information, and that is what integration is all about. For example, with access to SFC at wireless workstation tablets, machine operators see their productivity in real-time. With a wireless feed from the software to big-screen monitors in the factory, teams see progress toward meeting shift goals. Likewise, supervisors, managers and executives can visualize KPI dashboard data configured specifically to help them manage their responsibilities.

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Would you like to know more about how to integrate your manufacturing operations with other systems and processes in the supply chain? IPE can help. Visit IPE online at www.incentivepayroll.com, call 864-498-1310 or e-mail info@IncentivePayroll.com.