FIELD SERVICE TO ERP INTEGRATION: TAP A PROVEN FRAMEWORK

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By **Jason Krohn**
Business Consultant, IFS North America

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For equipment manufacturers whose products have long life cycles and involve field service—such as with industrial and capital equipment; heating, ventilation, and air conditioning (HVAC); and even certain consumer-based products—enterprise-class software to support service processes can be just as important as the software used to design and produce the products. While investment in product lifecycle management solutions maybe commonplace, investment in field service management (FSM) solutions often remains neglected, even in today's competitive marketplaces.

With the right field service management solution capabilities in place however, product companies can improve their customer satisfaction, efficiently schedule service, improve "first time fix" rates, and have the information they need to manage service costs. In fact, according to analyst firm ARC Advisory Group, the market for FSM and enterprise asset management (EAM) software grew by 7 percent in 2014 as companies pursued better services and maintenance practices (ARC Advisory Group, EAM and FSM Global Market Research Study, April 2015). This therefore indicates that competitive differentiation comes not just from the quality of the products, but from the combination of product quality and efficient service delivery. The integrated, combination, of both collectively outweighs the investment in individual solutions.

FSM functionality spans service scheduling, spare parts management, contract and warranty management, and provides business intelligence to analyze costs and overall service delivery performance. Typically, much of the master data needed for FSM processes sits in another system such as an ERP (Enterprise Resources Planning) or other bespoke legacy business system. Companies know that to gain the field service improvements they are after, some level of integration between FSM and ERP is a must. What's less known is how to go about integrating FSM with ERP.

LOGICAL TOUCH POINTS

Before delving into discussions of middleware or standard interfaces, it's helpful to take stock of the common touch points between FSM and ERP systems.

ERP systems are the main business management systems used by a company, typically spanning financials, order management, procurement, inventory

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control, production management, and human resources (often referred to as Human Capital Management or HCM). As such, they are the "system of record" for most companies and contain the master data in multiple areas including customers, customer locations, order history, customer entitlement, and HR data.

If we stop to think about the function of an FSM solution, some of the common touch points become apparent. For example, an ERP solution would typically hold customer order history as well as data on the sites for that customer. The FSM solution would hold information on service history for each customer, and of course, at which sites those services were performed. But the FSM solution also typically holds more detailed information related to service activities or assets being serviced. Some examples might include:

- The FSM software would not only know what machine or model (e.g., the asset) was sold to a customer—which would also be in the ERP history— but it also has detailed information on the service and maintenance history for every asset.

- The ERP system would likely know the location of each customer site, and perhaps also know which assets were delivered to each site, but it might not know where within the customer site the product is located. FSM, on the other hand, would know the precise location of the asset, and might hold other information about control systems or other equipment which are connected to that asset.

- While an ERP system usually holds basic information on employees, such as knowing if an employee is a field service technician, their skills, and their certifications, a FSM system would also have a history of the jobs that technician has worked on, and often more detailed information on the skills and qualifications the technician possesses.

To some extent, it's a business decision as to the level of detail that needs to pass back and forth between FSM and ERP systems—often this is a bidirectional exchange of data. There is no question however that some information has to pass between the two domains. At minimum, whenever products are sold to a customer that will require field service, the "as sold" data about that equipment needs to pass to the FSM side, as does information about the customer site where the asset will be installed. The FSM will hold details regarding the level of customer entitlement (e.g., what service level is associated with each asset in terms of response and fix times, parts and labor coverage, warranty terms, etc.) All of this requires an integration strategy and an understanding of available methods.

INTEGRATION METHODS

The integration approaches have ranged from custom integration projects where the user company hires an Systems Integrator (SI) to link two systems in a one-off manner, to licensing and using middleware to simplify the creation and maintenance of standard interfaces between two or more systems. In the latter scenario, the integration is becoming a standard product that is maintained by the software vendor rather than being a one-off and bespoke piece of software development.

There are drawbacks to both of these approaches in linking an FSM system to an ERP system. If an SI does this as a customization, it can lead to a costly project that becomes difficult to change without additional integration services. If the FSM provider forces the use of a particular middleware solution, it may lead to duplication of middleware approaches since the user organization might already have a different middleware strategy in place.

There is a third integration approach with IFS Field Service Management —and that is using the system's Integration Framework. The framework is a neutral, built-in set of administrative functions for the FSM solution that is used to integrate it with ERP systems or other applications based on exchange of extensible markup language (XML) data. The framework does not dictate the use of a separate middleware solution, though it can pass data to one. The IFS Field Service Management framework has been has been used successfully by both end-user IT organizations and Systems Integrators.

The Integration Framework for FSM can be thought of as a "passive" integration utility in that it is used to configure a neutral exchange of XML messages with other systems. The framework also offers logging and audit trail visualizations that support testing, monitoring and exception handling of the data exchange between IFS Field Service Management and ERP systems.

The framework supports three basic means of exchanging the XML data: HyperText Transfer Protocol (HTTP) Post, flat files, or via a database table. All three of the methods can be effective, although user organizations should be aware that the HTTP Post method lacks data persistence.

FRAMEWORK ADVANTAGES

There are distinct advantages to having an Integration Framework that comes with the FSM solution. For one thing, the user organization does not have to license and learn a separate middleware solution.

Secondly, the Integration Framework supports multiple methods of data transfer, using commonly known and accepted technologies. Flat files, for example, have been used by business systems for decades, while HTTP Post is a widely used, standard request/response protocol that's highly useful for prototyping. While there are three delivery mechanisms, the format of what is

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exchanged is XML messages that describe particular tables and fields in the FSM solution.

Thirdly, the framework establishes a passive, neutral layer for data exchange. Once the sending system puts the data at a neutral point, the other system is notified that the data is there, and can pick up and process it at a speed it can handle. This is in contrast to an integration strategy which forces direct communication and real-time data exchange, which can lead to problems if one system can't keep pace. If one system falls behind under direct communication, it can "time out" on the data handling, leading to incomplete data exchange which contributes to poor service delivery out in the field by delaying the transmission of service events. The framework guards against this problem by creating a neutral "buffer zone" to keep one system from swamping the other with more data than it can process.

Lastly, the framework gives users a visualization of the data exchange between the systems, including audit trail views, exception views, and the ability to drill-down into the details of specific transactions or data flows between FSM and ERP. Not only does the framework allow for specific XML messages to be defined on the inbound and outside sides, it provides the visual user interface to monitor and help test the integration.

PUTTING IT ALL TOGETHER

In essence, the framework is used to configure, on the inbound side, what the "sending" ERP system will deliver to the FSM, and on the outbound side, what the FSM system will send to back to the ERP. This allows for flexibility in the level of detail that needs to be exchanged, tapping XML to describe the data.

For example, on the inbound side, it may be that the FSM system doesn't need component pricing for the machinery which was delivered to the customer, but does need to know serial numbers and component information. On the outbound side back to ERP, the FSM system might only need to pass back certain summary data about a service call, such as when it was completed, and which parts were installed. Other data generated in FSM, such as a field technician's notes or adjustments to the spares inventory that is remaining on the technician's truck can stay in FSM. The framework's ability to configure and test specific data flows supports this need for flexibility.

During development of the integration between FSM and ERP, the ability of the framework to define both ends of the data pathway—the source system and the target system—also allows for thorough and efficient integration testing.

While the framework can use three delivery mechanisms, the preferred method is via the database method. This establishes a middle table for data

exchange between ERP and FSM. Think if it as a transaction holding area that allows for data persistence—which is really just way of saying that each system has a buffer zone it can pull from at its own pace. This ensures what is known in IT circles as data persistence.

The HTTP Post delivery mechanism is highly useful in testing and developing the integration between FSM and ERP, or a middleware layer into ERP. HTTP Post and XML allow for rapid prototyping in that either the sending or receiving system can take in an XML message via HTTP Post, and prove out that the integration works within its system independent of what is being tested within the other system. The availability to use HTTP with the SAME XML message essentially "decouples" the integration, giving each system XML data it can practice with and test thoroughly within the boundaries of its system, while other data paths are configured and made ready on either side.

INTEGRATION TAKEAWAYS

Having smooth, quick, reliable exchange of data between FSM and ERP is important to attaining the full range of expected business benefits. This bidirectional flow of information is needed to analyze costs, drive up customer satisfaction levels, and make sure repairs and maintenance services are done without repeat visits or by rushing procurement orders. The Integration Framework is all about ensuring effective integration.

To sum up, the framework achieves three key integration objectives:

1   It allows for the neutral exchange of data in XML format, with no heavy programming needed to configure the data pathways.

2   The integration transactions and events are visible to IT users to allow for monitoring and exception handling.

3   The framework's support of XML and HTTP Post allow for rapid prototyping and testing.

With the Integration Framework, users of the IFS FSM solution can be confident that they have a proven set of capabilities that does not require middleware, that uses standard formatting and delivery options, and that offers visual aids for configuring, testing, and monitoring the integration.

Some business decisions usually need to be made as to how much detail needs to flow between ERP and FSM, but with the Integration Framework for FSM, companies can be confident that they have the integration flexibility, control, and monitoring they need to accomplish their integration goals.

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ABOUT IFS

IFS is a globally recognized leader in developing and delivering enterprise software for enterprise resource planning (ERP), enterprise asset management (EAM) and enterprise service management (ESM). IFS brings customers in targeted sectors closer to their business, helps them be more agile and enables them to profit from change. IFS is a public company (XSTO: IFS) that was founded in 1983 and currently has over 2,700 employees. IFS supports more than 2,400 customers worldwide from local offices and through a growing ecosystem of partners.

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DENMARK, NORWAY, SWEDEN

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