The State of ERP Software / BPMS Integration

Tom Bellinson

I recently wrote an article for BPTrends entitled "The ERP Software Promise" in which I outlined my thoughts on how BPMS could ultimately become part of the underlying architecture of an ERP system. In order to execute such a strategy, a software developer would need to start from scratch. Anyone who has ever tried to build an ERP system will tell you that this is an expensive and time-consuming proposition. Nonetheless, the importance of BPMS is not lost on the major ERP software vendors of today.

Given that a rewrite is not in the cards for most of the existing players, a different approach is in order. As it turns out, there are several different components that are emerging. In this paper, I will review each of these components and discuss the benefits and drawbacks of each. I will also provide a partial list of ERP software vendors along with the components they have implemented. There are hundreds of ERP systems available. I have used the Internet search engines to find some of them; for those who have done a poor job of search engine optimization, I apologize for their exclusion.

What Is BPMS?

This question has been debated and discussed extensively on BPTrends. We can agree that it is different things to different people. For the purposes of this writing, I'd like to restrict our understanding to those aspects of BPM that we could reasonably expect to see included in an ERP system. These elements include

1. Tools to document and evaluate processes
2. Tools to automate parts of a process that can be automated
3. Tools to measure the performance of processes already in place

The BPMS software industry has developed a language to describe their capabilities and make them sound new and different. Again, there is plenty of overlap with the terminology utilized by the ERP software industry. So, for our purposes, we will use the following terminology:

1. **Workflow** – tools that document and evaluate processes
2. **Customization** – tools that allow for the modification of actual application functionality
3. **Business Intelligence (BI)** – tools to report and evaluate process performance

Each of these components has varying degrees of implementation within the ERP software list. Almost every ERP system on the market has some sort of report writing tool. I have chosen not to include products that have only report writing tools. In order to make my list, a product needs to have at least two of the components above.

The component least likely to appear on the list of capabilities is workflow. This is not unexpected as this component has been the domain of BPMS software and is relatively new to ERP software developers. The reasons for this will become apparent as we talk about what goes into each of these components.

Workflow

There are many great workflow tools, such as iGrafx and Provision Workbench. Some of these tools add software design layers such as universal modeling language (UML), but that's where they end. Why would an ERP software developer include such functionality into their system? The answer is: they wouldn't. Not unless it was somehow integrated into their functionality.

This means the system must have provided an architecture which will lend itself to being modified or configured via a workflow interface. Most legacy ERP systems were not built with the

architecture or tools required to make this happen. Those that have their own proprietary development tools, do.

The type of integration that workflow functionality will have falls into two categories:

1. **Communications** – This is usually part of the BI subsystem and supports role and/or user based approvals and notifications.
2. **Functionality** – This is part of the customization component, which usually allows for modification of screens and menus (modification of business rules is possible, but rare).

Most products on the list have only type #1 workflow integration. SAP's NetWeaver product may be the only product that has the capabilities to provide more, but there is a cost, which we will discuss in the next subsection.

Customization

Every ERP system available today boasts some degree of configurability. Anyone who does process mapping has figured out that trading partner facing processes need to have a much higher degree of flexibility to accommodate the inevitable process variations that they will throw at you. This is most particularly true of shipping and receiving processes. The degree to which any process can be tailored via configuration parameters can vary quite widely. Further, other customization tools vary widely in what they will allow – from simple screen and menu modifications to extensive data model and business rule modifications.

The great range of flexibility in configuring the system to conform to a specific process variation makes it extremely difficult to do a comparative analysis of process adaptation capabilities. It is certainly out of scope for this writing. However, there are two important distinctions that are worth exploring in a bit more depth:

1. The skill-set required to make modifications
2. The degree to which customizations will allow trading partner system integration

The range of skill-set required can be seen in the extreme configurability of Epicor's ERP and SAP's B1 on the "user configurability" end of the spectrum; to SAP's and Oracle's enterprise offerings, which have their own underlying development environment (complete with proprietary programming languages), on the other end. The latter have created an entire cottage industry for professional developers that know how to write program code in R/4, and PL1 (SAP and Oracle, respectively).

So, is it better to have more limited flexibility that end-users can adopt themselves, or is it better to have maximum flexibility with development tools that require special expertise? The correct answer is: it's better to have both ease of use and extensive flexibility. Unfortunately, it will need to wait for the next generation of ERP software solutions. Make no mistake, the ERP development community knows this and it is just a matter of time before they make it happen.

The bridge to this future is Service Oriented Architecture (SOA). SOA uses extended markup language (XML) as its underlying technology. The beauty of XML is that it is self defining. That means that as long as two systems that exchange data understand a standard data definition, they can share data using their own unique data structure without needing to do custom development. So, SOA can easily be used to integrate from one system to the next whether it is between modules in a single system or disparate trading partner systems. Properly implemented, SOA can dramatically reduce or possibly eliminate the need for custom programming.

Business Intelligence (BI)

As I mentioned earlier, almost every ERP system available has some sort of reporting tool. To distinguish reporting tools from BI, we need to establish some criteria. The idea of BI is not to provide data, but, rather, to provide "intelligence." Typically, this means managing by exception, and focusing on Key Performance Indicators (KPIs). KPIs are usually more sophisticated data

summaries that provide a true indication of the performance of a process. BI tools provide these services with specific capabilities:

1. **Event Driven Alerts** – These outputs are triggered when specific data elements cross predetermined thresholds. In order to accomplish this, the system must continually monitor the data in real-time to automatically identify threshold conditions. When an event is triggered, the communication is active, meaning the subscribing users will receive notification from the system in the form of an email, text message, or system message.
2. **Dashboards** – Similar to alerts, dashboards take advantage of real-time data analysis to distill KPIs into actionable data. Dashboards are typically used for "manage by exception" activities, but they are equally suitable for early warnings. For example, a senior manager may have a dashboard for late shipments, but the shipping manager may have one called "shipments due within 24 hours." Often, dashboard data is presented in graphical formats (pie charts, bar charts, etc.)

This is not to say that BI solutions are not capable of producing traditional reports. Reports tend to be dumps of data that are sorted through to find patterns. The tools discussed above sift through data for relevant information to answer specific questions.

The State of ERP BPMS Functionality

There are hundreds of software solutions that call themselves ERP software. ERP software, when it was first created, was the integration of financial management and manufacturing resource planning software. Since then, enterprise software has been developed for specific vertical industries, many of which do not perform manufacturing. ERP systems have come to encompass any enterprise software that is designed to manage all aspects of business operations. Using this definition, there are hundreds of systems that would qualify. For the purposes of this study, the original definition of an ERP system is used. The following table illustrates the capabilities of a partial list of ERP systems:

Company Name	*Web Address*	*Product Name*	*Workflow*	*Custom-ization*	*BI*
Encompix	www.encompix.com	Encompix	X		X
Epicor	www.epicor.com	Epicor Enterprise Series		X	X
Eshbel Technologies	www.eshbel.com	Prority	X		X
Exact	www.exactamerica.com	Exact Macola	X	X	X
Global Shop	www.globalshopsolutions.com	Global Shop	X	X	X
Glovia	www.glovia.com	Glovia		X	X
Infor	www.infor.com	ERP XA		X	X
Infor	www.lillysoftware.com	Epicor ERP Visual	X		X
Infor	www.infor.com	SX Enterprise		X	X
Made2Manage	www.made2manage.com	Made2Manage		X	X
Microsoft	www.navision.com	Dynamics NAV	X	X	
NDS Systems	www.ndsapps.com	New Dimension Software		X	X
NetSuite	www.netsuite.com	NetSuite		X	X
Oracle	www.oracle.com	EnterpriseOne		X	X
Oracle	www.oracle.com	e-businessSuite		X	X
Oracle	www.oracle.com	Peoplesoft Enterprise		X	X
Plex Systems	www.plex.com	Plex Online	X	X	X
Ramco Systems	www.ramco.com	VirtualWorks	X	X	X
Sage Software	www.sagemas.com	MAS 500	X	X	X
Sage Software	www.sagenorthamerica.com	ERP X3	X	X	X
SAP	www.sap.com	BusinessSuite	X	X	X
SoftBrands	www.fourthshift.com	Evolution	X		X
Syspro Group	www.sysprousa.com	Syspro	X	X	X

Note that many more systems than this were reviewed. As mentioned above, only those systems that demonstrated two or three BPMS capabilities were included. There may have been others that have more capabilities than they were credited for, but due to lack of detailed information on their websites, a determination could not be made.

The Future of ERP/BPMS Integration

There is no technological reason why an ERP system that is fully integrated with a workflow engine cannot be built. To be sure, there are challenges in allowing maximum flexibility without sacrificing administrative user ability to reconfigure the system (without programming). Legacy architectures will not be sufficient. However, given the speed with which new development tools allow applications to be assembled and the knowledge base that already exists, the next generation of BPMS enabled ERP systems should start showing up in two to three years. If one subscribes to the belief that a single system is better than multiple integrated systems, the world may be a better place for BPM practitioners.

Author

Tom Bellinson consults with risk businesses in Michigan through a State funded program administered by the University of Michigan. In that capacity, he consults with companies to identify opportunities for cost containment and market expansion.

Prior to working for the University of Michigan, Mr. Bellinson served as Vice President of an ERP software company. He can be contacted at tjbelli@umich.edu.

