Best Practices in Extending ERP

A Buyer's Guide to ERP Versus Best of Breed Decisions

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— Underwritten, in Part, by —

Capgemini

NETSUITE
Executive Summary

Aberdeen’s 2006 *ERP in Manufacturing Benchmark Report* explored how ERP (Enterprise Resource Planning) strategies are evolving as enterprises strive to derive more and better business value from their implementations. That often means driving the use of ERP deeper into their organizations or broader across more of the enterprise. It means utilizing more functionality, extending the footprint beyond the core ERP functionality and making decisions between ERP vendors and pure play or “Best of Breed” solutions.

The trade-off between Best of Breed functionality and ease of integration is no longer as simple as it once was. Over the generations, Enterprise Resource Planning has continued to expand, blurring the boundaries of core ERP functionality. The number of modules and the extent of functionality offered in the ERP suite have steadily grown over the past two decades. At the same time, the consolidation within the software industry is having a broader effect than just on ERP itself. ERP companies have also been gobbling up pure play or Best of Breed vendors that offer extensions to core ERP functionality. This is having a profound effect on the enterprise application vendor landscape and also on how ERP versus “Best of Breed” decisions are fundamentally made. More and more companies are exploring the limits of these boundaries and weighing decisions that balance integration efforts and the ability to upgrade to new releases against extended features, functions and advanced technology.

Key Business Value Findings

The three most important factors to consider in ERP versus Best of Breed decisions are functionality, integration and the ability to upgrade to new releases.

While functionality is a key driver of the majority of software decisions (68%), on average companies use only about 43% of available ERP functionality, implying the right fit is just as important, if not more important, than the number of features and functions available. Yet while the original ERP selection process may have been a two dimensional decision, weighing features and functions of various ERP vendors against each other, a third, and possibly a fourth dimension is added to the evaluation in deciding to extend ERP.

The third dimension is the added complexity of integration, resulting in the following questions which need to be answered.

1. How tightly must the functions be integrated?
2. How much data must be shared or replicated?
3. How much duplication of functions exists between ERP and the extensions?
4. If data must be shared by two or more applications, which application “owns” the data?
5. Do the architectures of your ERP and any extensions being considered easily support integration and interoperability?

The fourth dimension is the potential impact on upgrades and migrations to new releases.
**Recommendations for Action**

When considering an extension to your ERP solution, business functionality is of primary importance, but beyond features and functions, evaluate the following capabilities:

- Technology architecture
- Partner status
- Ease of application upgrades
- Support approach
- Integration capabilities
- Financial viability of all software vendors involved
- Ownership of and maintenance of customized integration.
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Chapter One:
Issue at Hand

Key Takeaways

• With added modules and extensions, ERP vendors are steadily encroaching on what used to be the exclusive domain of pure play or Best of Breed vendors offering point solutions with more comprehensive functionality

• The majority of ERP extensions today are purchased from ERP vendors

• Customization, although viewed as a viable option by many, can be a barrier to ERP evolving with the business.

Aberdeen’s 2006 *ERP in Manufacturing Benchmark Report* explored how ERP (Enterprise Resource Planning) strategies are evolving as enterprises strive to derive more and better business value from their implementations. That often means driving the use of ERP deeper into their organizations or broader across more of the enterprise. It means utilizing more functionality, extending the footprint beyond the core ERP functionality and making decisions between ERP vendors and pure play or “Best of Breed” solutions.

The trade-off between Best of Breed functionality and ease of integration is no longer as simple as it once was. Over the generations, Enterprise Resource Planning has continued to expand, blurring the boundaries of core ERP functionality. At the same time, the consolidation within the software industry is having a broader effect than just on ERP itself. ERP companies have also been gobbling up pure play or Best of Breed vendors that offer extensions to core ERP functionality. This is having a profound effect on the enterprise application vendor landscape and also on how ERP versus “Best of Breed” decisions are fundamentally made. More and more companies are exploring the limits of these boundaries and weighing decisions that balance integration efforts against extended features, functions and advanced technology.

Defining Modules and Extensions

Aberdeen is careful to distinguish between a “module” of ERP and an “extension”. All the modules of ERP use a single data base model. Integration is built in and there is little or no redundancy of data elements, except where there is a specific need. A module is built with the same development tools, on the same architecture as core ERP. While a module can be implemented incrementally, its release cycle is in lock step with the remainder of the core ERP modules.

The simplest definition of an extension to ERP is an enterprise application that extends the functionality, but is separate. However, the degree of separation or integration varies widely (Table 1).
# Table 1: Levels of Integration

<table>
<thead>
<tr>
<th>Option</th>
<th>Definition</th>
<th>Advantages</th>
<th>Drawbacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module of ERP</td>
<td>Single data base; no redundancy of data elements; built with the same development tools and infrastructure as core ERP.</td>
<td>• No integration required&lt;br&gt;• Typically the lowest cost&lt;br&gt;• Can be implemented incrementally to ERP&lt;br&gt;• Release is synchronized with ERP release</td>
<td>• Potentially limited functionality;&lt;br&gt;• All modules must move forward together</td>
</tr>
<tr>
<td>Seamlessly integrated extension</td>
<td>ERP and extension generally developed and sold by a single vendor. Common architecture and user interface; shared data model; any replication or redundancy of data is transparent to the user.</td>
<td>• Integration is commercially available, transparent to the user and requires no customization.&lt;br&gt;• Releases are synchronized&lt;br&gt;• Common data model</td>
<td>• Synchronized releases may complicate the ERP release cycle&lt;br&gt;• All modules generally must move forward together</td>
</tr>
<tr>
<td>Tightly integrated extension</td>
<td>Multiple applications may have been developed by multiple vendors. Application may have been acquired by or simply packaged and resold by the ERP vendor; architectures are common or compatible. May be sold and supported by a single vendor.</td>
<td>• Integration is commercially available but may not be transparent to the user&lt;br&gt;• Integration is real-time, or near real-time and on-demand&lt;br&gt;• Releases are coordinated&lt;br&gt;• Unified data model</td>
<td>• Coordinated releases may be delivered sometime after ERP release is generally available and will complicate the release cycles of each vendor&lt;br&gt;• Where integration is not commercially available, customization can be a barrier to upgrades and updates</td>
</tr>
<tr>
<td>Option</td>
<td>Definition</td>
<td>Advantages</td>
<td>Drawbacks</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Extension is loosely integrated or not integrated but sold and supported by a single vendor | Application has been acquired by the ERP vendor or ERP vendor has a reseller agreement with a partner; architectures are common or compatible.                                                                 | • Compatible architecture  
• Vendors are at least “friendly” if not working closely together on product road maps and integration  
• Integration is typically on-demand (can also be a drawback) | • Integration may or may not be commercially available but will not be transparent to the user  
• Where integration is not commercially available, customization can be a barrier to upgrades and updates. Integration is typically on-demand  
• Releases are not synchronized  
• Independent data models may need to be mapped or bridged via interfaces |
| Extension is loosely integrated or not integrated, sold and supported by multiple vendors | ERP and a partner have a cooperative marketing arrangement; each sells and supports its own product. Architectures need not be common but must be compatible; extension is sold and supported by an ERP vendor’s partner. | • Compatible architecture  
• Vendors are at least “friendly” if not working closely together on product road maps and integration  
• Integration is typically on-demand (can also be a drawback) | • Integration may or may not be commercially available but will not be transparent to the user  
• Where integration is not commercially available, customization can be a barrier to upgrades and updates. Integration is typically on-demand  
• Releases are not synchronized  
• Independent data models may need to be mapped or bridged via interfaces  
• Risk of relationship between multiple vendors weakening |
Where is the Boundary of ERP?

The number of modules and the extent of functionality offered in the ERP suite have steadily grown over the past two decades. Aberdeen’s *ERP in Manufacturing Benchmark* sought to determine the adoption rates of modules offered by ERP solution providers. Table 2 depicts the percentage of respondents using each of the modules listed. Many of these modules, such as field service, supplier collaboration, human capital management, forecasting and demand planning and more could also alternatively be purchased as extensions to ERP. While the most basic of these modules, those shown **bolded** in the table, have quite respectable adoption rates, more specialized or advanced modules are much lower and present significant opportunity for broader and deeper implementations.

**Table 2: ERP Module Adoption rates**

<table>
<thead>
<tr>
<th>Technology Solution Area</th>
<th>% Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Ledger</td>
<td>93%</td>
</tr>
<tr>
<td>Accounts Payable</td>
<td>93%</td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>92%</td>
</tr>
<tr>
<td>Fixed Assets</td>
<td>43%</td>
</tr>
<tr>
<td>MRP (Material Requirements Planning)</td>
<td>79%</td>
</tr>
<tr>
<td>DRP (Distribution Requirements Planning)</td>
<td>23%</td>
</tr>
</tbody>
</table>

Source: **AberdeenGroup**, November 2006
Of course, not every ERP vendor offers every one of these modules. In the case where a module is not offered, the decision might be simplified, by eliminating one of the options. But ERP vendors are steadily encroaching on what used to be the exclusive domain of pure play or Best of Breed vendors offering point solutions with more comprehensive functionality.

**Beyond the Boundary - Extensions**

ERP modules are by no means the only opportunity to extend the functionality provided by ERP implementations. Aberdeen determined the current and planned adoption rates of several of these extensions and discovered that significant activity has been planned (Figure 1). Recognize also that some of the modules listed in the previous section, could also be purchased and implemented as extensions.

Supply Chain Management applications including SCM (Supply Chain Management), WMS (Warehouse Management) and SCE (general Supply Chain Execution) are adopted most frequently, followed by Business Intelligence (BI)/Corporate Performance Management (CPM), supported by Advanced Analytics, both of which also showed a signifi-
cant amount of planned activity. Customer Relationship Management (CRM) seems also to be on the radar screen of 28% of our respondents.

Figure 1: Adoption Rates of ERP Extensions

<table>
<thead>
<tr>
<th>ERP Extension</th>
<th>Plan to Implement</th>
<th>Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Intelligence/CPM</td>
<td></td>
<td>25%</td>
</tr>
<tr>
<td>Quality Assurance</td>
<td></td>
<td>19%</td>
</tr>
<tr>
<td>SRM</td>
<td></td>
<td>11%</td>
</tr>
<tr>
<td>Supply Chain Execution</td>
<td></td>
<td>22%</td>
</tr>
<tr>
<td>Transportation Management</td>
<td></td>
<td>17%</td>
</tr>
<tr>
<td>Warehouse Management</td>
<td></td>
<td>35%</td>
</tr>
<tr>
<td>Supply Chain Planning</td>
<td></td>
<td>28%</td>
</tr>
<tr>
<td>EDM/PLM/PDM</td>
<td></td>
<td>14%</td>
</tr>
<tr>
<td>Advanced Analytics/Decision Support</td>
<td></td>
<td>26%</td>
</tr>
<tr>
<td>CRM</td>
<td></td>
<td>28%</td>
</tr>
</tbody>
</table>

Source: AberdeenGroup, August 2006

Figure 2: Who did you buy your extension from?

<table>
<thead>
<tr>
<th>Category</th>
<th>Plan to implement</th>
<th>Implementer</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCM</td>
<td>65%</td>
<td>14%</td>
</tr>
<tr>
<td>WMS</td>
<td>82%</td>
<td>18%</td>
</tr>
<tr>
<td>TMS</td>
<td>64%</td>
<td>36%</td>
</tr>
<tr>
<td>SCE</td>
<td>88%</td>
<td>12%</td>
</tr>
<tr>
<td>CRM</td>
<td>63%</td>
<td>37%</td>
</tr>
<tr>
<td>SRM</td>
<td>90%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Source: AberdeenGroup, August 2006
Those participants indicating they had implemented an extension were asked if they had purchased it from their ERP vendor or another solution provider (Figure 2). Supply Chain Management extensions were predominantly purchased from ERP vendors, with the exception of TMS (Transportation Management) which was purchased from pure play or Best of Breed vendors about a third of the time (36%). Participants were about twice as likely to purchase CRM (Customer Relationship Management) and 9 times more likely to purchase SRM (Supplier Relationship Management) from their ERP vendors as from point solution vendors.

BI/CPM and Advanced Analytics solutions were also predominantly purchased from ERP vendors, along with EDM (Electronic Data Management), PLM (Product Lifecycle Management) and PDM (Product Data Management), although these engineering oriented solutions were not heavily adopted. Quality Assurance solutions were more likely than other extensions to be purchased from specialty vendors, but still almost two thirds (64%) purchased a module or extension from their ERP vendor.

These findings indicate the pendulum is swinging strongly in favor of companies expecting more functionality from their ERP vendors.

Those participants indicating they planned to implement these extensions were asked to assess how likely they were to purchase them from their ERP solution providers. Figure 3 indicates few of those planning to implement these extensions are unwilling to consider the purchase from their ERP vendor.

Figure 3: How likely are you to purchase extensions from your ERP vendor?

Source: Aberdeen Group, August 2006
The Option to Customize… or Not

Pure home-grown or custom developed solutions are rare. Less than 1% of survey respondents indicated a home grown or custom developed solution was implemented to the exclusion of any packaged ERP. However, 12% did indicate some form of home grown or custom developed ERP was installed, usually coexisting with packaged solutions. In addition, 48% of all participants align software capabilities to business processes to some extent. Newer technologies allow more configuration and tailor-ability without actually customizing code; however 57% of companies not running the current release of their ERP indicate the prohibitive cost of upgrading customizations as a key reason. Also 43% of our participants are responding to ERP implementation challenges by eliminating customizations. While these are substantial percentages of our basis of participation, this still leaves a good portion that is actively creating or maintaining customizations.

For Rugs Direct, a small home furnishing company, customization is a way of life. “We customize many parts of our ERP platform. We run basic applications like GL, AR and AP plain vanilla. Our distribution application is designed to run along-side of ERP. We use ERP as a base but our wrapper provides us with a unified view into all supply chain and distribution functions,” according to Greg Culler, the company’s Chief Information Officer. This small company looks first to its ERP provider, but in cases where modules or extensions are not a perfect fit, they actually develop the functionality themselves.

This approach is successful for Rugs Direct for two reasons. Customizations are developed outside the framework of ERP, allowing the company to keep up to date with the latest releases from its ERP vendor. Secondly, Greg Culler’s five person IT (Information Technology) staff is much larger than that of most small companies. With only 40 employees company-wide, the IT staff represents more than 10% of the firm.

Goss International, on the other hand, is a company that avoids customization. The company is a global leader in web offset printing solutions, with a complete product range of newspaper and commercial press systems, as well as mailroom and post press equipment to worldwide markets. For Goss International, it is all about standardizing processes and applications. Having grown through acquisition, at one point the company had accumulated a collection of ERPs, but two years ago the company made the decision to consolidate and chose a single strategic platform. Not only has it chosen a single ERP, but it also maintains a single instance of the software and a single data base, forcing standardization across all divisions using the software.

This global company turns first to its ERP solution provider and maintains few extensions to core ERP and few customizations. “We consider customizing, but try not to. We will configure the application but avoid modifying source code. 150 objects were af-

“We customize many parts of our ERP platform. We run basic applications like GL, AR and AP plain vanilla. Our distribution application, which is highly customized, is designed to run along-side of ERP. We use ERP as a base but our wrapper provides us with a unified view into all supply chain and distribution functions.”

-Greg Culler, CIO, Rugs Direct
“We consider customizing, but try not to. We will configure the application but avoid modifying source code. 150 objects were affected in our last service pack upgrade but only 3 required any tweaking.”

Bill Rogers, Vice President and Chief Information Officer, Goss International
Chapter Two: Extending ERP: Weighing the Factors

Companies considering the extension of ERP, either through purchase of an ERP module or an extension, need to balance the need for functionality with the impact external functions will have on integration requirements and the ability to upgrade to new releases.

Fit and Functionality

While functionality is a key driver of the majority of software decisions (68%), as indicated in Chapter One, on average companies use only about 43% of available ERP functionality, implying the right fit is just as important, if not more important, than the number of features and functions available. The need for industry-specific functionality will vary from industry to industry. A smaller percentage (21%) of the ERP in Manufacturing benchmark participants indicated industry-specific functionality was a key driver of the decision-making process.

Functionality is generally under scrutiny when ERP modules are being compared against possible extensions. Yet while the original ERP selection process may have been a two dimensional decision, weighing features and functions of various ERP vendors against each other, a third, and possibly a fourth dimension is added to the evaluation in deciding to extend ERP.

Integration

The third dimension is the added complexity of integration, resulting in the following questions which need to be answered.

1. How tightly must the functions be integrated?
2. How much data must be shared or replicated?
3. How much duplication of functions exists between ERP and the extensions?

“We evaluated ERP systems focused on the steel industry. CRM modules were very similar from one system to the next; however, Maintenance Management was different. Our selected ERP vendor doesn’t offer it.”

Eric Hiler, General Manager, Stripco, Inc.

*Key Takeaways*

- The three most important factors to consider in ERP versus Best of Breed decisions are functionality, integration and the ability to upgrade to new releases.
- Size and scale matters in extending ERP; small companies favor single vendor solutions.
- Larger companies consider more options and approaches.
4. If data must be shared by two or more applications, which application “owns” the data?

5. Do the architectures of your ERP and any extensions being considered easily support integration and interoperability?

Accessible Technologies, Inc (ATI) is one company that faced these integration decisions. The firm designs, manufactures and markets Pro-Charger® brand supercharger systems for automotive, marine, truck and commercial applications. “The challenge for us is managing two distribution channels, many product options, and an extremely high part-number to sales ratio, while ensuring the best possible experience for each customer,” said Ken Jones, ATI’s CEO.

Originally ATI was using what they considered a “small” ERP system, which included accounting functions, another program to manage sales and marketing, and a third solution for shipping. Although originally bought as a “bundled” solution, they lacked the interoperability needed to manage the business effectively.

ATI had some special requirements, although not entirely unique, in needing to manage a dual service environment to support both dealers and individual direct customers. “Having to maintain and reconcile three databases was slowing production, especially in periods of strong growth and during peak season,” added Mr. Jones. “Customer service was also hindered by the lack of system integration and an inflexible order configuration process... Areas that previously seemed like black holes where data reporting was concerned are now easy to monitor and control. We’ve also greatly improved our gross margin and even with sales up as much as 30%..., product availability has improved as much as 50%.”

Ken Jones, CEO, Accessible Technologies, Inc.

“Having to maintain and reconcile three databases was slowing production, especially in periods of strong growth and during peak season. Customer service was also hindered by the lack of system integration and an inflexible order configuration process... Areas that previously seemed like black holes where data reporting was concerned are now easy to monitor and control. We’ve also greatly improved our gross margin and even with sales up as much as 30%..., product availability has improved as much as 50%.”

Chapter Three will discuss the role technology plays in these decisions, as well as that of new delivery models such as Software as a Service (SaaS).
Impact on Upgrades

The fourth dimension that is added when weighing the module versus extension approach is the potential impact on upgrades and migrations to new releases. Of those companies not on the current release of their ERP solution, 58% cite one of the reasons for delaying upgrading is “the upgrade process is too long and hard but eventually we ‘catch up.’” In addition 46% indicate that “customizations make upgrading cost prohibitive.” Furthermore, integration issues was the most cited reason for ERP replacement strategies. The added dimension of an extension to ERP acts as a further barrier to upgrade and this obstacle is intensified in a multi-vendor situation.

What Drives Software Decisions in General?

The *ERP in Manufacturing Benchmark* determined Functionality and Total Cost of Ownership (TCO) were clearly the top two selection criteria in ERP software decisions (Figure 4). While vendors have always emphasized lower TCO in selling to small and medium size businesses, Aberdeen found larger companies (those with revenues over $1 billion) were even more sensitive to this criterion. The choice between modules and extensions is heavily influenced by both the search for functionality and lower TCO. In fact many decisions come down to the trade-off between the two since both initial and ongoing integration efforts directly impact costs.

Aberdeen’s analysis indicates the question of functionality is more about the right fit than the number of features and functions. Although most ERP decisions are driven primarily by functionality, on average survey participants use only 10.5 out of a generic set of 24 ERP modules, representing an un-weighted average of 43.8% (refer back to Table 1 in Chapter One for a full list of these modules). When we further weight this average usage by respondents’ self-assessment of the level of available functionality used within these modules, we found participants use on average 27% of ERP functionality, leaving plenty of room for growth.

![Figure 4: ERP Software Selection Criteria](image-url)

Source: *Aberdeen Group*, August 2006
Chapter One found companies expecting more and more functionality from their ERP vendors. This is even more prevalent in small companies. Aberdeen defines small companies as those with revenues under $50 million. Only 11% of small companies had purchased CRM from a pure play vendor as compared to 55% of mid-size companies and 36% of large enterprises (Figure 5.) This distinction by company size was also prevalent in implementations of EDM/PDM/PLM, BI/CPM and Quality Assurance.

**Figure 5: Company size contributes to decision of purchasing extensions from ERP or pure play vendors**

<table>
<thead>
<tr>
<th></th>
<th>ERP vendor</th>
<th>Pure play vendor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Small</strong></td>
<td>89%</td>
<td>11%</td>
</tr>
<tr>
<td><strong>Mid-size</strong></td>
<td>55%</td>
<td>45%</td>
</tr>
<tr>
<td><strong>Large</strong></td>
<td>64%</td>
<td>36%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>ERP vendor</th>
<th>Pure play vendor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Small</strong></td>
<td>81%</td>
<td>19%</td>
</tr>
<tr>
<td><strong>Mid-size</strong></td>
<td>61%</td>
<td>39%</td>
</tr>
<tr>
<td><strong>Large</strong></td>
<td>69%</td>
<td>31%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>ERP vendor</th>
<th>Pure play vendor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Small</strong></td>
<td>76%</td>
<td>24%</td>
</tr>
<tr>
<td><strong>Mid-size</strong></td>
<td>58%</td>
<td>42%</td>
</tr>
<tr>
<td><strong>Large</strong></td>
<td>68%</td>
<td>32%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>ERP vendor</th>
<th>Pure play vendor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Small</strong></td>
<td>21%</td>
<td>79%</td>
</tr>
<tr>
<td><strong>Mid-size</strong></td>
<td>39%</td>
<td>61%</td>
</tr>
<tr>
<td><strong>Large</strong></td>
<td>47%</td>
<td>53%</td>
</tr>
</tbody>
</table>

Source: Aberdeen Group, August 2006

**Small Companies Favor Single Vendor Solution**

Concordia Publishing House is a Christian publisher that develops, produces, markets and distributes products and services to over 6,000 denominational churches and 2,000 schools as well as operates bookstores and publishes magazines. “We are a small non-profit organization. In replacing our old mainframe we looked to minimize the number of vendors, so we searched for one that could satisfy the majority of our needs,” said Stephen Harris, Executive Director of IT.

The company took a “big bang” approach to cutting over from its legacy system, then implemented an electronic store front six months later. In their effort to work with a single vendor, they purchased the store front from their ERP vendor, and also contracted with them to customize their financial system for circulation management. Mr. Harris

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adds, “When you consider how many full time employees I could hire with the maintenance dollars I spend with my ERP vendor, the choice is clear.”

In the case of Sturgis Molded Products (SMP), another enterprise with revenues under $50 million a year, the company also sought a single-source solution to replace its old ERP system. “We were getting to the point where our previous system could not support company growth,” said Carol MacDonald, IS Manager at SMP. SMP considered multiple ERP vendors and ultimately selected what they view as a “single-source” solution with modules that covered almost every sector of its business, from tooling to production to customer support and product delivery. In addition to core ERP functionality SMP added modules for Warehouse Management, EDI (Electronic Data Interchange) and Real Time Production Monitoring.

“With a single-source solution, our ERP requires data to be entered into the system only once. This has allowed SMP to eliminate excess data entry and improve the speed and accuracy of internal reporting. With efficiency gains, SMP has cut its month-end close time by more than 75%. Installing the system has made the company’s organizational structure more efficient and better poised for long-term growth.”

Mark Weishaar, President, Sturgis Molded Products

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Large Companies – Similar Decisions, Different Results?

The decision to stay with a single vendor is not only a small company decision. Goss International’s annual revenue exceeds $1 billion, yet it maintains few extensions to ERP and requires any selected applications to be certified by its ERP vendor. Any extension Goss International purchases must be interfaced, supported and certified by its ERP vendor. The only exception to this rule is a Warehouse Management System which was in
place prior to the implementation of their current ERP. Bill Rogers, CIO, allows this might be one extension they would consider replacing as they move forward.

However, Aberdeen also observed instances where this strategy was implemented to a fault. In one large company, which will remain unnamed, a single vendor strategy was formulated by IT without the input of line of business (LOB) contributors. While ordinarily a single vendor strategy will reduce the need for customization (for integration), in this case, it backfired because IT attempted to use the ERP solution to satisfy a need it was never meant to address. Because IT was more willing (and able) to customize ERP itself rather than to integrate it with a best of breed solution, the net result is a solution that is so customized that it prevents the company from moving forward with new releases. And after two and a half years of raging debate between IT and LOB, it still does not meet the company’s needs.

“Any interface we deploy must be interfaced and supported and certified by our ERP provider. The only exception we have made is a legacy Warehouse Management System which was installed before we implemented our current ERP system. As we move forward we may consider replacement of the WMS.”

Bill Rogers, Vice President and CIO, Goss International
Chapter Three:
Implications & Analysis: A Self-Assessment

Key Takeaways

- SOA Technology can play a critical role in easing integration woes, but getting to the latest SOA-enabled release of ERP can be a challenge
- New delivery models – Software as a Service – provide low risk options

In order to identify and prioritize opportunities for extending ERP, companies should begin by conducting an internal assessment of organizational as well as ERP capabilities. Aberdeen advises companies to holistically assess ERP implementations across 4 areas: Process, Organization, Knowledge and Technology.

Table 3: Extending ERP: Self-Assessment Framework

<table>
<thead>
<tr>
<th>Area</th>
<th>Actions</th>
<th>Sample Assessment Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process</td>
<td>Assess ownership of data and processes</td>
<td>• How often does your company define and capture ROI? Does this happen at each decision to upgrade, enhance or replace functionality?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Do you align software capabilities to business processes?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Do you align software capabilities to business processes?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Do you have defined procedures and a programmatic approach to software evaluations and implementations?</td>
</tr>
<tr>
<td>Organization</td>
<td>Assess ownership of projects and decisions between IT and Line of Business</td>
<td>• Are ERP strategies defined centrally or locally?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Are ERP strategies executed centrally or locally?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Does IT or Line of Business own the ERP implementation or do they own it jointly?</td>
</tr>
</tbody>
</table>
Looking at the process, organization, knowledge and technology categories, it becomes clear that a company’s maturity has a direct impact on the success of ERP implementations, as well as their extension.

**The Role Technology Plays**

In May 2006 Aberdeen released a benchmark report on *Achieving More Value from Enterprise Applications* which explored the impact of poor IT (Information Technology) integration on business process management. According to this study, “In many enterprises, business processes consist of silos of enterprise application software connected by the slap-dash integration software equivalent of duct tape, chewing gum, and string. No organization runs on a single enterprise application, so, by definition, the integration of enterprise applications is a necessary reality. But often, this reality is the cause of enormous lost business value-generating opportunity as well as rancor between the IT department and business units.”

Over the past decade, a variety of technologies and approaches have been employed to connect disparate business applications. The full spectrum ranges from spreadsheet uploads and downloads to EDI document exchange to real-time bi-directional, XML based Web services. Integration can use an EAI (Enterprise Application Integration) approach...
to a point to point interface or more advanced hub and spoke approach using a common object model. The most common IT complaints are a lack of flexibility in business process integration, an inability to obtain business intelligence and queries, and high integration costs (Figure 6).

**Figure 6: Application Integration Stumbling Blocks**

<table>
<thead>
<tr>
<th>Issue</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>No flexibility in business process integration/manipulations</td>
<td>51%</td>
</tr>
<tr>
<td>Can’t obtain deep-enough business intelligence reporting and queries</td>
<td>49%</td>
</tr>
<tr>
<td>High integration costs prevent new investments in needed features</td>
<td>42%</td>
</tr>
<tr>
<td>Monolithic application architecture forces costly and complex changes</td>
<td>41%</td>
</tr>
<tr>
<td>Can’t manage or implement real time business processes</td>
<td>36%</td>
</tr>
</tbody>
</table>

Source: AberdeenGroup, April 2006

**Service Oriented Architecture**

Integration using Service Oriented Architecture (SOA) technology is strongly preferred by organizations at all stages of ERP maturity. In 2006, buyers have reached a point of education about SOA technology at which they are ready to move beyond planning and pilots and toward a multi-pronged approach to renovate their organizations’ enterprise application integration infrastructure – albeit on a project-by-project basis. The approach many companies are taking includes the following steps:

- Upgrading to the SOA versions of their key enterprise applications, particularly ERP applications;
- Building a middleware and development toolset that supports standards and is interoperable with the SOA-enabled application’s tools;
- Incorporating business process modeling, business intelligence, rules, and management technology;
- Implementing inward-facing SOA integration, creating composites of multiple applications, and
- Building outward-facing web services delivered to browser-based applets. Customer-centric web services are one class of outward-facing SOA applications; supplier B2B applications are another.

The priority for many is to adopt SOA-enabled versions of their ERP application and this may mean upgrading to the latest version. Yet this migration to the latest release can be delayed by the same problem it is meant to address. The enterprise might be unable to install and migrate to the new release it has paid for because it is unable to complete the
necessary integration of existing software additions. Resolving this can last for months and perhaps years.

**Middleware Decisions**

The introduction of SOA and potentially other integration approaches can lead to the necessity of making a decision on underlying middleware technology. This decision can be entirely transparent to the end user if the middleware is embedded within the SOA-enabled version of ERP or bundled with integration collaboratively supplied by partners.

A leading supplier of electricity, gas and heat to private and business customers in the Netherlands company sought to integrate business processes across a heterogeneous system landscape. As a result, the company launched a project and made IT investments to achieve tighter integration of front- and back-office operations, in particular in the support of HR (Human Resource) functions. The launch of the project coincided with its ERP and desktop solution providers’ joint announcement of an integrated development project. Outputs from the evaluation helped define the scope of the project to support time registration and budget monitoring. This would allow users integrated access and management of ERP function via typically unstructured desktop applications.

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“It has been a challenge to present information and business processes smoothly in the organization. The seamless integration between our desktop and ERP environments, delivered jointly by our two partners, significantly lowers this barrier.”

Director, Information Management Headquarters, Leading Supplier of Utilities in the Netherlands

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**The Role of New Delivery Models**

In addition, Software as a Service (SaaS) is also gaining traction and providing companies new options in how they license, pay for and implement extensions to ERP. From March through July of 2006 Aberdeen surveyed 631 companies to evaluate the current state of SaaS across multiple enterprise applications. ERP has not been a domain to establish a strong foothold in on-demand or hosted applications, but several categories of ERP extensions have. Enterprise applications such as Supply Chain Management and CRM (Customer Relationship Management) jumped on the bandwagon first. Table 4 summarizes Aberdeen’s findings on SaaS’s ability to deliver faster implementation times and quicker return on investment (ROI), and shows how these differ by enterprise application area.
Table 4: SaaS Enterprise Application Value Summary

<table>
<thead>
<tr>
<th>Application Area</th>
<th>Typical Implementation &amp; ROI Times for SaaS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Relationship</td>
<td>• Implementation in less than 2 months&lt;br&gt;•</td>
</tr>
<tr>
<td>Management</td>
<td>ROI in less than 6 months</td>
</tr>
<tr>
<td>Supply Chain Management</td>
<td>• Implementation in less than 3 months&lt;br&gt;•</td>
</tr>
<tr>
<td></td>
<td>ROI in less than 1 year</td>
</tr>
<tr>
<td>Sourcing &amp; Procurement</td>
<td>• Implementation in less than 2 months&lt;br&gt;•</td>
</tr>
<tr>
<td></td>
<td>ROI in less than 1 year</td>
</tr>
<tr>
<td>Financial Management</td>
<td>• Implementation in less than 3 months&lt;br&gt;•</td>
</tr>
<tr>
<td></td>
<td>ROI in less than 6 months</td>
</tr>
<tr>
<td>Product Lifecycle Management</td>
<td>• Implementation in less than 6 months&lt;br&gt;•</td>
</tr>
<tr>
<td></td>
<td>ROI in less than 1 year</td>
</tr>
</tbody>
</table>

Source: Aberdeen Group, August 2006

According to Aberdeen’s August 2006 Software as a Service Buyer’s Guide, another compelling advantage of SaaS is that its Web-based delivery model, supported in many cases by a service-oriented architecture, enables more laser-focused deployments. Rather than an enterprise having to roll out an entire application, SaaS can enable a slice of functionality to be deployed to ease a specific business pain or support a unique business process for selective product categories, customers, or channels.

Many of the CIOs who are most enthusiastic about the SaaS model preach that their IT strategy is one of focusing internal IT staff on areas that will drive unique competitive benefits for the company and that cannot be procured from external specialists. For other application areas, they feel they will put their companies at a better advantage by becoming great at managing external SaaS providers instead. Some leading CIOs that Aberdeen talked to report they are proactively going to their business units and suggesting areas that should be automated using SaaS.

According to Eric Hiler, General Manager of Stripco, Inc., “We would seriously consider implementing a Maintenance Management module using Software as a Service. In this instance we would sacrifice full integration for the low risk option.”

Eric Hiler, General Manager of Stripco, Inc.
Chapter Four:
Beyond Functionality: Evaluation Framework

Key Takeaways

- Aberdeen recommends companies evaluate prospective ERP extensions with respect to functional requirements as well integration capabilities, on-going support and upgradeability
- Where multiple vendors are involved, also consider partner status, ownership of intellectual property of custom integrations and financial viability

When considering an extension to your ERP solution, evaluate the following capabilities above and beyond your organization’s business functionality requirements. While many of these points have been analyzed in previous chapters, use the following as a checklist in solution selection.

- **Technology architecture.** Examine whether the architecture of the proposed extension is compatible with your ERP architecture. Determine the level of interoperability that can be achieved without diving deep into source code and customizations.

- **Partner status.** If considering an extension from a vendor other than your ERP solution provider, understand the nature and the terms of the alliance. Cooperative marketing arrangements are very easy to form (and just as easy to walk away from) and may simply result in referrals that wind up as completely separate sales cycles. On the other end of the partnership spectrum, the ERP vendor may embed the solution in its suite and re-brand it as its own. And of course, there are numerous options in between. Not all partnerships are made in heaven and they don’t always last forever. Consider the impact a change in partnership status might have on your on-going production environment.

- **Ease of application upgrades.** Determine the need for and the vendors’ ability to coordinate release cycles. The coordination between the two vendors, or even between product lines within a single vendor, may have significant impact on your continued support and your ability to take full advantage of product innovation delivered as part of maintenance. This is important whether purchasing an extension from your ERP vendor’s partner or an independent software vendor (ISV). However this is also significant if your ERP solution provider is the sole vendor, particularly if purchasing an extension your ERP vendor has acquired. Consider the following questions:

  - Are releases coordinated or synchronized?
  - Is there a delay between General Availability of your ERP vendor’s release and a release of a compatible extension’s release? Where one vendor or development group has a faster enhancement cycle this could potentially limit you from keeping up to date on the latest product innova-
tions. The resultant impact will directly correlate with the level of complexity associated with the integration required.

**Support approach.** In a multi-vendor scenario, determine who supports what. As ERP vendors partner with ISVs to fill a functional gap in its product offering, a common arrangement will be for the ERP vendor to provide a first line of support, backed up by the author of the software extension. Make sure you have the ability to contract directly with the partner in the event the relationship between the two software vendors deteriorates or is dissolved.

**Integration capabilities.** This element is most critical where there is no commercially available interface between the extension and your ERP. Unless you are staffed and willing to create and maintain the interface yourself, make sure that the vendor(s) has proven integration capabilities. Vendors’ systems that feature service-oriented architectures with exposed Web services will ease the integration process to your ERP applications. They also will support integration with your enterprise portal environments (or your customer-facing or supplier-facing portals). Make sure to query about integration approaches and efforts when conducting reference checks; you may discover that a simpler, flat file exchange approach will be sufficient. In general, integration capabilities are one of the weak spots of making a decision in favor of a point solution not provided by your ERP vendor.

**Financial viability.** Perform financial due diligence on potential providers, particularly small partners to your ERP provider, and put together escrow agreements, whereby the application source code can be released to your company should certain performance or corporate events (such as M&A, bankruptcy filing or dissolution of a partnership) occur. With such an agreement, companies have the ability to bring the code in-house to continue operations and assess whether to switch to another provider or self-maintain the application and/or interface.

**Ownership of and Maintenance of Customized Integration.** Where integration is not commercially available, it is generally delivered as a customization. In contracting with an ISV (independent software vendor) for this customization, first make sure you clearly understand who owns the Intellectual Property (IP) of the customization. It is not unusual for the software vendor to legally claim ownership of the IP but offer a perpetual license for use. This protects the end user by preventing a contractor/ independent service provider from re-using the code at another ERP end-user company. Ask specifically if the ISV will provide maintenance on the customized code and determine the price up front.
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Appendix A: Research Methodology

From July through September 2006, Aberdeen Group examined ERP strategies, usage and implementation of over 1,200 enterprises in aerospace and defense (A&D), automotive, high-tech, industrial products, Consumer Products, Food and Beverage and other industries.

Responding manufacturing, supply chain, finance, sales and marketing and IT executives completed an online survey that included questions designed to determine the following:

- ROI expectations
- How do companies of various sizes (small, mid-size, large) approach the evaluation and implementation of ERP?
- How important is industry specific functionality?
- What constitutes “success?”
- How is the consolidating market impacting the ERP versus Best of Breed decision?
- What is the tipping point for replacement or upgrade?

Aberdeen supplemented this online survey effort with telephone interviews with select survey respondents, gathering additional information. The full results of this study were published in the “Benchmarking ERP in Manufacturing” report. Further interviews were conducted for this report on making decisions in extending ERP.

The study aimed to identify emerging best practices for ERP and provide a framework by which readers could assess their own implementations.

Responding enterprises included the following:

- **Job title/function:** The research sample included respondents from the following functional areas: manufacturing (11%); business process management (8%), logistics/supply chain (6%), IT (50%), sales & marketing (5%), finance (12%) and others. Job titles included managers (28%), directors (11%), C-level & VP (19%), CIO/IT Leaders (22%)

- **Industry:** The research sample included respondents predominantly from manufacturing industries: Industrial machinery manufacturers (26%), metals and metal products (12%), automotive (19%), High Tech (8%), CPG/Food & Beverage (16%) and aerospace and defense (9%) manufacturers, medical devices (11%). Other sectors responding included construction/engineering, and retail and distribution, chemicals and pharmaceuticals.

- **Geography:** Study respondents were from North America (65%), Asia Pacific (14%), Europe (17%) South America (1%) and the Middle East and Africa (2%).

- **Company size:** About 9% of respondents were from large enterprises (annual revenues above US$1 billion); 51% were from mid-sized enterprises (annual
revenues between $50 million and $1 billion); and 40% of respondents were from small businesses (annual revenues of $50 million or less).
Appendix B: Related Aberdeen Research & Tools

Related Aberdeen research that forms a companion or reference to this report include:

- The ERP in Manufacturing Benchmark Report (August 2006)
- The Proliferation of Enterprise Applications (October 2006)
- Software as a Service Buyer’s Guide (August 2006)
- The Total Cost of ERP Ownership (October 2006)
- Mid-Size Manufacturer Face Tough ERP Decisions (October 2006)
- Small Manufacturers Not Taking ERP to the Limit (September 2006)
- The Lean Benchmark Report (March 2006)

Information on these and any other Aberdeen publications can be found at www.Aberdeen.com.
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