



Aberdeen *Group*

Achieving More Value from Enterprise Applications

An Aberdeen Benchmark Report

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About the Research Organizations

AberdeenGroup



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Executive Summary

Business process management is not optimized due to poor integration at the information technology (IT) level. 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.

If the Industry Average IT department ran at the software-maintenance cost-efficiency of the Best in Class IT shops in Aberdeen's maturity model, some \$143 billion in 2006 savings would be generated. We believe \$20 billion in IT savings is readily achievable.

The enterprise application silos were never designed to communicate freely with other applications that make up a typical business process in today's complex, global economy. IT departments are spending inordinate amounts of expensive labor in a continuing — and often losing — battle to re-plumb the IT infrastructure that interconnects enterprise applications in order to catch up with the perpetually changing business process requirements set by the line of business (LOB) units. Meanwhile, the LOB units' staff and management are missing opportunities to generate business value due to lack of IT agility; a lack of visibility into business processes causes inefficiencies and lower customer satisfaction. No wonder more than half the enterprises we surveyed are unhappy with the ROI on their enterprise application investment.

The good news is that the antiquated and brittle IT that routes business processes is being changed for the better. Enterprises are focusing on best-of-breed functionality, advanced business intelligence capabilities, and especially service-oriented architectures (SOA) as a technological means to, once and for all, eliminate the break-fix cycle that has plagued IT development and maintenance for more than a decade.

Key Business Value Findings

Moving information between business applications such as ERP and customer relationship management (CRM) often requires custom programming, which diverts time and attention from high business value projects, and delays value delivery. Half of the enterprises Aberdeen surveyed for this report complain they have no flexibility in integrating business processes, and that the associated costs lead to trade-offs that prevent other important investments. They lack the resources to keep up with the value-driven projects demanded by the LOBs.

Until recently, there were few desirable approaches and even fewer simple solutions. Service-Oriented Architecture (SOA) technologies such as web services, XML, and open middleware are now seen by at least two-thirds of survey respondents as the custom means of improving enterprise application integration going forward. There are two components to this integration:

- SOA-enabled versions of key third-party applications such as enterprise resource planning (ERP) from independent software vendors (ISVs) that make it easier to



modify internal application processes and get data into and out of these monoliths;

- A standards-based SOA toolset that uses open or proprietary software products to create an SOA “fabric” that is much more agile, flexible, and potentially resilient than today’s IT duct tape for integrating applications with changing process requirements.

Nevertheless, some of the integration pain is self-inflicted: Industry Average and Laggard organizations are likely to have poor IT process discipline, which is correctable. A measurable minority of enterprises may be poorly suited for the ISV application software they have installed.

Importantly, Best in Class practitioners are already saving more than 11% of their IT budgets through lower software maintenance costs and are channeling those savings back into LOB projects that have high business-value returns for the enterprise.

Implications & Analysis

We are at a technology inflection point that offers considerable long-term benefits to most organizations, can be implemented project-by-project without a forklift-like replacement of infrastructure, and enjoys wide adoption among independent software vendors (ISVs). Importantly, SOA includes numerous industry standards that are now built into software products, making the application-to-application plumbing less complex and risky.

By SOA-enabling their enterprise application products, ISVs make it easier for IT to get information in and out of the application. Future business processes are likely to be *composites* of multiple ISV and home-grown applications.

Some buyers feel they can upgrade to the SOA-enabled versions of their ERP applications and use them as their organizations’ SOA toolsets. We caution against such an approach as the ISV tools are designed for the unique technology and architecture of the ISV’s application. Look closely at the ability of the ERP-SOA to integrate with legacy platforms and applications. It’s likely that cross-application SOA development tools and middleware connected to ISV SOA technology will be the norm, not the exception, by 2010.

Today’s composite applications lack sufficient built-in business intelligence capabilities and don’t provide business process owners with a timely view into all operations. Real-time process performance management (RPPM) is a functional requirement of enterprise applications going forward.

Recommendations for Action

- ***Use the right application software.*** The root cause may be using the wrong software. Is integration complexity caused by a poor business process fit to the ISV application software installed? The payback in replacing the wrong ISV applications for your business may be shorter than you imagine due to much-reduced ongoing requirements for customizations and business-specific integration. This particularly applies to specialized vertical enterprises where general-



purpose ISV applications require more customization, more often than vertical-specific ISV applications need them.

- ***Consider upgrades to SOA-enabled versions of outside applications.*** Virtually all third-party applications (such as ERP) offer or plan to offer SOA technology. IT planners should consider upgrading to the SOA-enabled versions of these third-party applications since the SOA technology offers an economical and forward-looking means of getting information into and out of the ERP application.
- ***Look outside as well.*** The SOA technology in these third-party applications may not be well suited to connect to other third-party applications, so consider looking elsewhere for a robust, enterprise-quality SOA toolset.
- ***Avoid ending up with an “accidental architecture”.*** Most enterprises are implementing a service-oriented architecture on a project-by-project basis. That strategy places considerable weight on the need to carefully select the SOA infrastructure and development tools. The key considerations are cross-platform, cross-process and cross-application capability.
- ***Create an architecture, an architect role and competency center, and prioritize a list of process-level integration points as projects.*** Give the top priority to projects that can return the highest and most immediate business value. Budget for additional SOA-based training through a competency center to disperse competency throughout the development organization.
- ***Since LOB users are demanding increased visibility into business processes, plan to build greater RPPM into new integration and remediation projects.*** Also, consider compliance and governance issues early in the technology lifecycle so your industry’s regulatory issues can be addressed systematically at the service and infrastructure levels.
- ***Measure, measure, measure!*** Change is a process, which is not gauged in a single, completed project. Best in Class IT organizations measure ROI at the beginning and end of every project. They use a Japanese kanban approach by looking for continuous improvements in business processes on a systematic basis. This process discipline leads to numerous key performance metric (KPM) advantages, especially in the reduction in software maintenance costs as a percentage of the IT budget, where Best in Class IT organizations have an 11% IT budget advantage over Industry Average organizations.



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Chapter One: Issue at Hand

Key Takeaways

- Business processes today are supported by a composite of multiple enterprise applications.
- Existing application integration technology is too complex, resource-consuming, and slow to implement in order to keep up with business process changes.
- SOA technology from both application ISVs and development/middleware companies is the preferred technology base for solving the application integration problem.

The problem of enterprise application integration has been growing for years. Virtually no organization is running itself with a single, third-party software application such as ERP. Different third-party applications are running all or critical parts of the key business processes such as order fulfillment or customer relationship management (CRM). Sometimes, they were purchased to run an organization that had been acquired or merged. In other cases, they were selected as best-of-breed solutions to specific process problems. For example, our September 2005 benchmark report, *SOA in the Supply Chain*, reported that only 18% of companies managed their supply chains with commercial software with few or no modifications.

Enterprises are stuck with multiple third-party software applications that were not designed to communicate business process information freely and flexibly. It's not the responsibility of any one application software company to deliver all the unique, custom process tweaks that make up every single organization's workflow.

As a result, the IT department is forced to create custom programs to execute transactions and move data between these application silos to meet the changing requirements of the line of business. Complicating the IT job of application integration is the need to prolong the investment life of legacy mainframe applications and to extend business processes to reach out over the Internet to B2B customers, suppliers, and business partners.

Meanwhile, pressures on the LOB from competitive, global, or regulatory sources create a strong demand for changes and improvements in business processes. Today, many of these changes involve marrying data and functionalities from multiple enterprise applications. Publicly traded companies in the U.S. have been forced to do top-down reviews of processes to comply with the Sarbanes-Oxley Act and SEC regulatory changes. European firms are dealing with evolving customer data privacy regulations, while the U.S. health-care sector is dealing with patient data privacy regulations in the Health Insurance Portability and Accountability Act (HIPAA). Finally, consider the new e-business opportuni-

Competitive Framework Key

The Aberdeen Competitive Framework defines enterprises as falling into one of the three following levels of practices and performance:

Laggards (30%) —practices that are significantly behind the average of the industry

Industry norm (50%) — practices that represent the average or norm

Best in class (20%) — practices that are the best currently being employed and significantly superior to the industry norm



ties created over the past decade by the Internet with the creation of a whole new layer of outward-facing web service software to add an external B2C user interface to what has largely been an internal process focus by ISV enterprise applications.

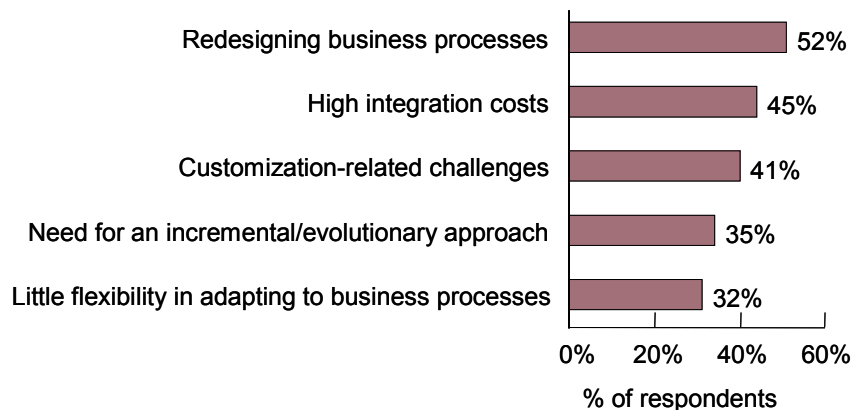
Application Integration is a Formidable Challenge to Agility

The research for this report, based on surveys of more than 400 IT and LOB executives, indicates that the top challenge enterprises face is in redesigning business processes along with the IT in order to implement the process changes (Figure 1). As a corollary, a significant number of enterprises indicate that the costs of integrating enterprise applications are too high and that customizing technology creates challenges of its own, leading to delays. These challenges conflict with the top enterprise business goals, which are:

- Achieving better, more timely visibility into business operations;
- Reducing operating costs;
- Growing revenue; and
- Improving customer service.

In short, prior approaches and technology used to solve the ongoing application integration problems are too expensive, too slow to implement, and too complicated to flexibly modify when the next change comes along.

Figure 1: Top Enterprise Application Integration Challenges



Source: [AberdeenGroup](#), April 2006

While Industry Average organizations today are focused on streamlining order fulfillment processes and enabling easier connections with suppliers, Laggard organizations are caught up in compliance, inventory management, process standardization, revenue growth, and regulatory compliance challenges. Best in Class organizations reported no specific challenges in enterprise application integration.

Some of the pain is self-inflicted: Industry Average and Laggard organizations are much more likely to be behind in installing the current releases of enterprise applications and in documenting the integrations they have made, which makes new changes more difficult.



Moreover, Industry Average and Laggard organizations have a poor record of using ROI metrics either before or after project completion.

Integration using SOA technology is strongly preferred by organizations at all stages of PACE maturity (See PACE Key). 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, such as CRM and ERP;
- 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.

PACE Key — For a more detailed description, see Appendix A

Aberdeen applies a methodology to benchmark research that evaluates the business pressures, actions, capabilities, and enablers (PACE) that indicate corporate behavior in specific business processes. These terms are defined as follows:

Pressures — external forces that impact an organization's market position, competitiveness, or business operations

Actions — the strategic approaches that an organization takes in response to industry pressures

Capabilities — the business process competencies required to execute corporate strategy

Enablers — the key functionality of technology solutions required to support the organization's enabling business practices



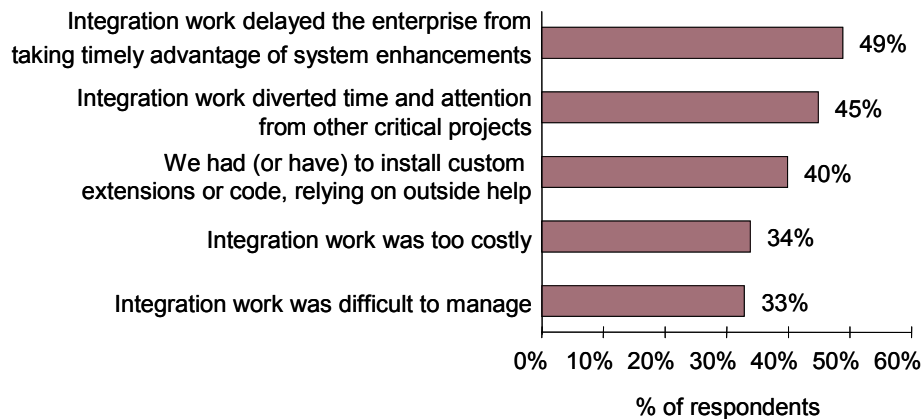
Chapter Two: Key Business Value Findings

Key Takeaways

- SOA-enabled enterprise applications are only a partial solution to integration issues.
- Consider how to both align the business process to the ISV application’s capabilities and align the ISV software to the business process requirements.
- Think strategically and act tactically; build an SOA infrastructure for the long-term.

The imperfections of the enterprise applications in place today are a major stumbling block to delivering efficient business processes that are tuned to the enterprise’s needs (Figure 2). The reasons are fairly straightforward: Each ISV’s applications use a different architecture and technology base. These applications must be extended across processes to connect them effectively. Over the past decade, a typical organization has employed a variety of products to extend ISV applications to the web, to other partners and suppliers outside the enterprise, and to connect applications in order to yield a composite view of the process.

Figure 2: Challenges Faced in Integrating Enterprise Applications



Source: AberdeenGroup, April 2006

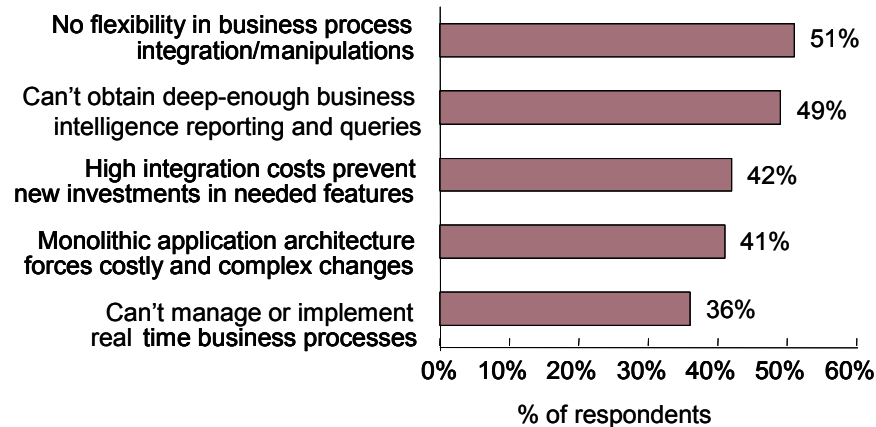
All of this technology is daunting to the typical enterprise’s IT organization. The most common example of this is the delay penalty incurred when the IT department has to install and pay for a new version of an application, but cannot generate value from it until the necessary integration software additions are made to connect the new version to all the enterprise’s processes that depend on the applications. This customization cycle can last for months.

The most common IT complaints about enterprise applications are a lack of flexibility in business process integration, an inability to obtain enough business intelligence and que-



ries, and high integration costs that soak up budget funds that could otherwise be used to drive innovation (Figure 3).

Figure 3: Application Integration Stumbling Blocks



Source: AberdeenGroup, April 2006

How Can We Take Enterprise Applications to the Next Level?

Today's reality is that there are no viable alternatives to enterprise applications from ISVs. The investments in homemade and purchased applications — plus all those difficult modifications to get to where we are in enterprise application integration — are measured in the hundreds of billions of dollars. Every organization has an application legacy that must be moved forward with changing business requirements.

In many cases, ISVs have introduced SOA-enabled versions of their application products. Upgrading to these versions is the first step toward obtaining more value.

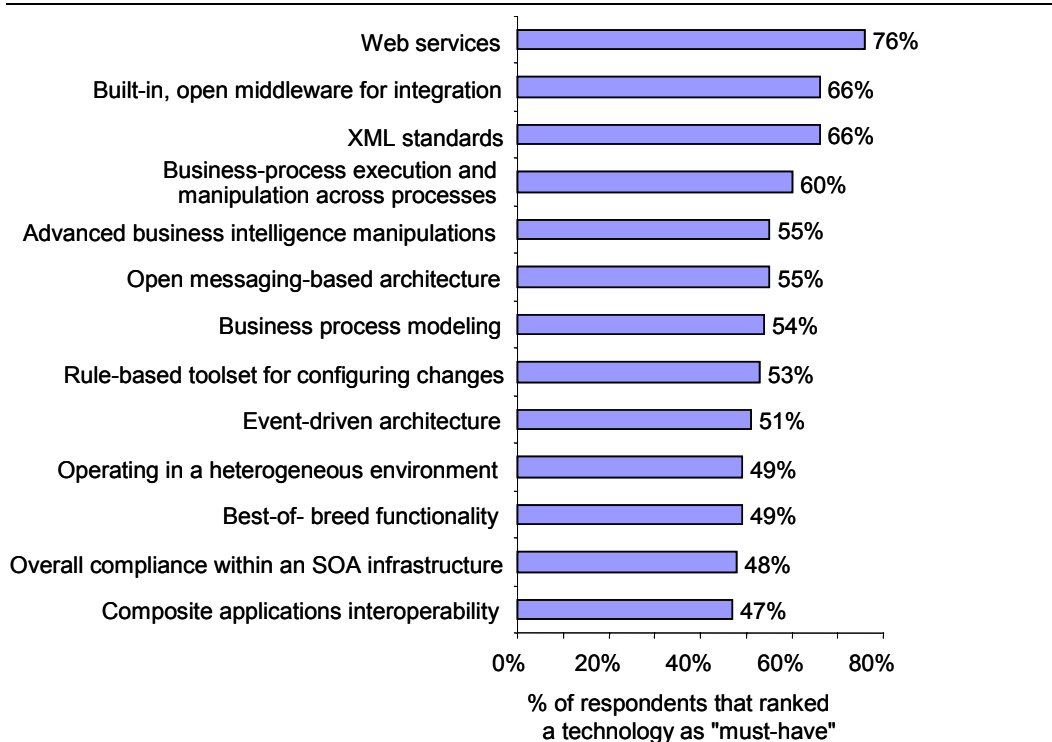
All the SOA-enabled ISV applications we have reviewed come with SOA software tools and interfaces of some kind, or they're on the horizon for delivery. Such applications typically provide a more extensive, flexible, and broader entrée to getting information into and out of the application. For this reason, using the SOA technology in ISV applications is the next step toward a more workable infrastructure.

For many mid-size and large enterprises, the ISV application-focused SOA technology will be insufficient. The ISVs do not guarantee that the particular SOA technology they use inside their applications is suited for all of the client, web, e-commerce, B2B, and application integration across legacy applications that forward-looking organizations are planning.

The goal of most organizations in our survey is an SOA infrastructure capable of connecting all of an enterprise's key applications, based on a question that asked about respondents' "must have" technologies (Figure 4).



Figure 4: SOA Leads List of “Must Have” Integration Technologies



Source: AberdeenGroup, April 2006

There are two other improvements that are demanded in next-generation enterprise applications: *advanced business intelligence* and *support for business process events*. The crux of the problem is the need for better, real-time views into business processes. LOB owners cannot wait hours, days, or weeks to see what today’s bottlenecks are. They want more business process-focused business intelligence and analytics — no matter how many application silos are touched.

Business process event notification is a powerful tool that puts the computer in the loop and takes more people out of it. Computer-based rules keep the process flowing until an out-of-parameter metric or rule is triggered with an appropriate exception compliance notification up the organization’s chain of command.



Chapter Three: Implications & Analysis

Key Takeaways

Best in Class IT organizations:

- Have the right ISV software for functionality, at the current release, with a strong process for managing customizations by ROI.
- Have overcome the significant problems of integration.
- Have in-house competency to perform LOB integration requests and keep the infrastructure up to date.
- Have the IT process maturity that leads to lower integration and maintenance costs and frees up considerable capital for LOB innovation.

As shown in Table 1, survey respondents fell into one of three segments – Laggard, Industry Average, or Best in Class based on Aberdeen’s Competitive Framework model for IT organizations, which weights the cost of application maintenance as a percentage of IT budget and the percent of IT budget spent on delivering innovations to the LOB. The three segments are analyzed further based on their characteristics in four key categories:

- (1) **Process** (application maturity and experience, success with application integration, discipline in measuring business value);
- (2) **Organization** (corporate focus/philosophy, level of collaboration among stakeholders, IT organization’s focus and the level of centralization);
- (3) **Technical Maturity** (competency in performing application integration, ability to complete integration in-house); and
- (4) **Technology** (application modernity, functional adequacy, discipline in maintenance).

Table 1: Enterprise Application Integration Competitive Framework

	Laggards	Industry Average	Best in Class
Process	Recent adopter of modern applications. Little experience in integration. ROI seldom measured.	Considerable experience with too many applications. Process not successful. ROI planned before project.	Considerable experience and integration process is successful. ROI measured before and after implementation.
Organization	Business focus on inventory management, revenue growth, and process standardization. Highly centralized.	Focus is on order fulfillment, CRM, real-time visibility.	No single factor dominates. IT is decentralized and especially LOB-focused.



	Laggards	Industry Average	Best in Class
Technical Maturity	Low competency leads to high costs, delays, delivery inconsistency. Needs outside help.	Moderate competency, but integration is still a pain point. May need outside help.	No significant challenges in application integration. Work done internally.
Technology	Applications antiquated and inadequate. Customizations are poorly documented.	Behind at least one release. Adequate functionality. More integration needed.	Well-documented and managed. May need more integration, but may be doing everything required.

Source: [AberdeenGroup](#), April 2006

Process and Organization

- In the process category, BIC firms that have low maintenance costs as a percentage of IT budget also show high innovation rates and considerable discipline in IT process management. They generally have relatively few problems with application integration. Laggards typically have poor controls over IT change management and rely on outside services. They also are likely to have obsolescent versions of application software or the application software’s functionality is a poor match for the enterprise’s LOB processes.
- Organizationally, the BIC IT shop has no single pain point. It is disciplined and focused on continually responding to LOB changes and optimizations. Laggards focus on unsophisticated business metrics such as revenue growth. They tend to be highly centralized, but least able to cope with change; they seldom measure business value before or after implementing a project.

BIC firms have fewer problems with application integration as a result of superior control over IT software maintenance costs resulting from application integration and LOB changes.

Technical Maturity and Technology Usage

Best in Class and Industry Average organizations have numerous ISV applications which they have worked with for years. However, BIC has superior IT processes and talent, enabling them to show no significant challenge in managing the application integration process or the technologies involved. Industry Average organizations have a propensity to be a version or more behind the ISV’s latest release. Since SOA and other new technologies are most likely in the latest releases, average and laggard organizations will be unable to leverage the flexibility of SOA technology – a widening gap between SOA-enabled haves and have-nots is a point of technology differentiation.

Laggards are most likely to have self-described inadequate application functionality while being least likely to cope with change-driven application integration without outside assistance. Yet these same organizations have the highest percentage of the IT budget dedicated to software maintenance. Since laggards have difficulty absorbing new



technology, a fling at SOA without shoring up the application functionality and technical maturity issues is problematic on its face.

Integrating Applications with SOA Technology

Table 2 is a view of the challenges and opportunities opened up through the use of SOA technology, the clearest course of future action indicated by research participants.

Table 2: Challenges and Value of SOA to the Enterprise

Challenges	The SOA Response to Challenges	SOA Incremental Value
1. Ability to re-use data and functionality without duplicating databases or applications	Single source of data or functionality that can be accessed in real-time as required	Reuse eliminates need for redundant data sources and greatly accelerates development time of new applications
2. Eliminate need to create unique interfaces for individual applications to integrate with data sources	Standard communications protocol and interface between applications and data sources	Greatly reduces the time and cost incurred by current integration methods
3. Increase effectiveness of electronic communications with trading partners	Access real-time, appropriate product, forecast, production information from partners' applications	Include real-time trading partner information in planning, execution, and decision-making processes
4. Process and application flexibility to comply with trading partners' requests	Applications broken down into discrete business services that can be used to support multiple processes	Configure process workflow to quickly accommodate unique trading partner requests using functionality and data from multiple applications
5. Data accuracy and ease of replication	Master data management tools and processes that ensure data integrity	Eliminates costly rework and errors created by old, inaccurate data
6. Quickly integrate mergers and acquisitions into enterprise processes and systems	Integrate with legacy systems using standard interfaces; share required functionality using business services	Quickly aggregate information required for management reporting and consistent operation
7. Reduce process performance failures	Workflow management directs both automated and human activities	Implement tailored business processes to meet specific requirements; monitor business activity to identify process breakdown and root causes
8. Increase information velocity	Information made available in real-time by data sources	Manage business processes with most current information for making decisions

Source: [AberdeenGroup](#), September 2005

Challenges and Solutions Differ by Company Size

Companies are overcoming challenges with approaches that differ by company size as measured by revenue (Table 3). Small companies are typically tied to the capabilities of their ISV software: they lack extensive customization resources. Mid-size companies



have the highest likelihood of “junking” older integration middleware software for SOA because they lack the resources and skills of large companies to cope with challenges driven by legacy middleware complexity. Large companies are most likely to replace existing enterprise applications with SOA versions, but less likely to remove API-driven legacy middleware than mid-size counterparts.

Table 3: Ways of Overcoming Deployment Challenges by Size

How did your company overcome these challenges?	Small (<\$50M)	Mid (\$50M to \$999M)	Large (>\$1B)
Deploying newer, more modern applications	65%	61%	50%
Aligning business processes to software capabilities	78%	47%	50%
Aligning software capabilities to business processes	65%	47%	40%
Replacing legacy applications with applications enabled by a service-oriented architecture (SOA)	22%	33%	55%
Moved from API-driven integration to standards-based, messaging-driven integration	17%	44%	35%

Source: *AberdeenGroup*, April 2006

Small Companies with less than US\$50 Million in Revenue

Small companies in this study are 65% more likely than larger companies to align their business processes with the functionality provided in their ISV applications. They are half as likely as larger companies to have customization challenges because they are not as process- and organizationally complex. But smaller companies have more difficulty in redesigning business processes, relying on best-of-breed functionality from ISV applications, and noting higher integration costs when they stray outside the application software’s functionality. These higher costs are more likely to displace innovation investments. Small companies show the poorest IT governance practices; project ROI is seldom tracked. Finally, small companies are least likely to be completely satisfied with the ISV application functionality.

Medium Companies with \$50M to \$1B in Revenue

Medium-size companies have few distinguishing traits. Like smaller companies, they are somewhat dependent on the enterprise application functionality, but less so than smaller companies and more than large companies. Like smaller companies, the mid-size firms demand built-in open middleware and advanced business intelligence capabilities in ISV-provided applications. Medium-size companies are most likely to replace older middleware software used in integration for SOA. Overall, medium companies are moderately challenged by enterprise integration.



Large Companies with Revenue Exceeding \$1B

Large companies are less institutionally challenged by business process redesign and integration issues than smaller companies, but the agility comes at a high absolute cost. With many distributed processes across a disparate IT infrastructure silos, large companies are particularly challenged to provide a complete information picture to knowledge workers and with inconsistent data standards. Large companies are most likely to adopt web services as a means to integrate applications and most likely to force WS-* standards on SOA projects. IT governance is better — but not uniformly laudable — than at small enterprises.

Business Value Findings by Industry Group

The stand-out pressure across all industries is the need to get better visibility into business processes in real-time, which will be the subject of a summer 2006 Aberdeen Group study (Table 4).

Table 4: Top Three Business Drivers by Industry Group

Business Driver	Discrete	Process	Consumer	Services	Public Sector
Better real-time visibility into business operations	65%	67%	65%	80%	75%
Reducing operating costs	58%	58%	41%	40%	50%
Revenue growth	23%	33%	59%	44%	n/a-
Mandates to improve customer service	26%	17%	35%	44%	38%
Streamlining of order fulfillment processes	26%	42%	6%	24%	13%

Source: AberdeenGroup, April 2006

- **Discrete and Process Manufacturing** sectors are most focused on reducing operating costs, a challenge of globalization. Application customization is a problem, which is being solved by deploying more modern application versions and by aligning business processes with the application's capabilities.
- **Consumer Goods** companies are driven by revenue growth. This sector has no distinguishing characteristics about responding to integration issues.
- **Services** sector is especially challenged to redesign business processes, and has the highest pain level for better visibility into business processes in real-time. This sector is also aligning business processes with application functionality, and most likely to move from an API-driven middleware architecture to a message-based SOA architecture.
- **Public** sector is most likely to have inflexible business processes that demand customization of ISV applications or in-house code requiring integration. This sector also suffers from lengthy and incomplete integration projects.



Chapter Four: Recommendations for Action

Key Takeaways

- If an ISV application has adequate functionality for your organization, plan to upgrade to the SOA-enabled version.
- SOA is neither a panacea nor a free lunch. Look at organizational discipline improvements and SOA competency training before leaping.
- Measure twice and cut once: getting to an enterprise-wide SOA infrastructure will take several years of planned but incremental growth and deployments..

Application integration is a never-ending process — it is unlikely that a thriving business will reach a point of business-process stasis. Unfortunately, too many organizations have not invested in the training and management discipline to make this ongoing application integration process a well-oiled machine.

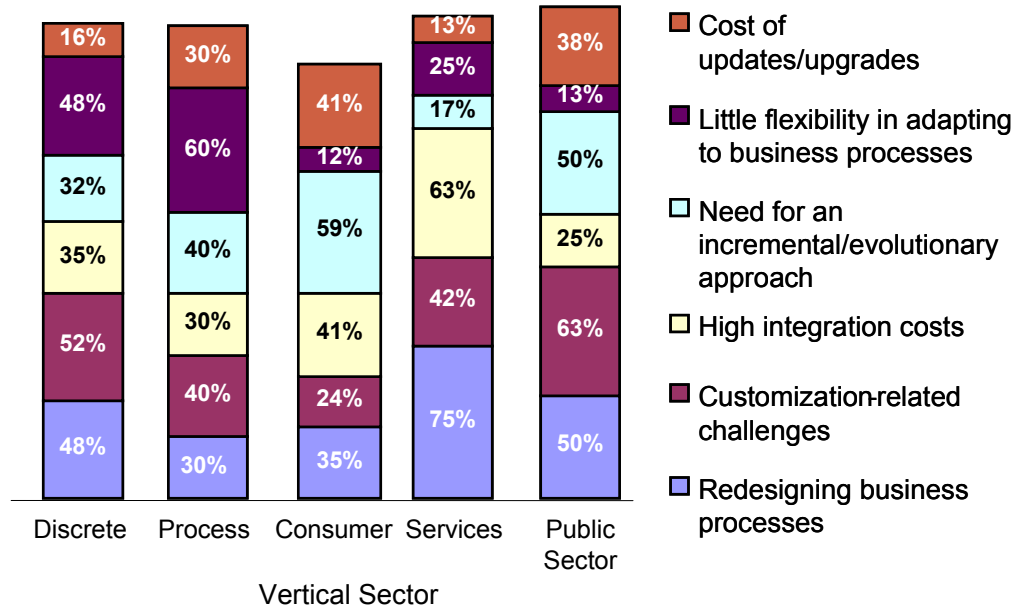
It is clear from this study that the next generation of business applications will have deep business intelligence views into complex LOB processes, and many organizations will move towards a machine-in-loop model of business process management where humans deal with the exceptions to the rules. Both will result in better management due to transparency and immediacy. Notably, survey respondents believe SOA technology is the critical technology “glue” that will make application integration less complex, more repeatable, faster, and more flexible.

The business challenges organizations face vary by vertical industry sector (Figure 6):

- The **public sector** is most challenged in customization and related costs. This explains the worldwide interest in e-government.
- **Services** are plagued by high integration costs.
- **Discrete and process manufacturers** are more concerned by flexibility in redesigning business processes, and customization to fit changing business processes. Process is particularly plagued with three-fifths lacking flexibility in adapting software to business processes, while half of discrete manufacturers have the same problems.
- **Consumer products** companies complain most about the challenges of radical changes: they want a more measured, evolutionary approach.

Figure 5: Top Challenges by Vertical Sector

Percent of companies in each sector that reported the challenge among their top three challenges



Source: AberdeenGroup, April 2006

Laggard Steps to Success

1. Evaluate the ISV application set for functional completeness.

Do not charge off with new technology if the ISV application horse is not up to the task. There are numerous modern applications for use in-house or through an application service provider (ASP). On a five-year basis, it is likely less expensive to change application horses for a modern technology base with the right functionality than pay outside service providers to patch up an inadequate application. Consider buying the best-fit vertical-market-specific ISV application, and outsourcing to an ASP.

2. Install the ISV's SOA-enabled application versions. Train on this baseline.

Start with a solid technology base, which includes the ISV application versions that incorporate SOA technology. One approach: Get the ISV's upgrade, install it, and use it as a baseline for training and learning about SOA.

3. Conduct an SOA readiness assessment.

Many service companies now provide comprehensive SOA readiness assessments. Such an assessment becomes the planning roadmap for technology acquisition, application integration priorities for individual projects, and organizational readiness to stage a new integration technology rollout.



Industry Average Steps to Success

1. *Perform gap analysis on ISV SOA application versions.*

While every current version may be SOA-enabled, it is unlikely they will all mesh and merge seamlessly into a full-blown enterprise SOA infrastructure. First, determine how well individual applications integrate with the functionality of their SOA peers. Then, consider how these applications will integrate into a full-blown SOA infrastructure that includes an enterprise service bus (ESB), business process management (BPM), a metadata repository, and a cross-platform development environment including middleware.

2. *Build your SOA infrastructure project by project.*

Prioritize LOB requirements for application integration based on ROI or other metrics. Map the technology requirements of the project to the overall infrastructure plan, and buy accordingly.

3. *Work on the organizational and technology maturity issues.*

Integration competency is a hallmark of Best in Class organizations, as is organizational discipline. Measure and drive down integration costs and timeframes while improving skill sets.

4. *Catch up on the integration backlog.*

A hallmark of Best in Class organizations is the lack of significant application integration issues. That means the IT organization is scaled and competent at keeping the backlog manageable and completion rates timely for the LOB. The implication is that a new SOA technology toolset must be completely mastered.

Best in Class Next Steps

1. *Build it and they will come.*

Best in Class organizations are already mature in IT organization, technology selection and technology integration areas. Their opportunity is to build out an SOA infrastructure that integrates the enterprise's applications while providing an outward facing posture to customers, partners, and suppliers.

2. *The next stage is real-time BPM with machine-in-the-loop.*

Several Aberdeen studies point to the need for deeper visibility into active business processes with RPPM. First, look to BPM software with knowledge management, analytics, and rules-based exception handling. Next, use exception-based application integration reporting to work with LOB process owners and drive out human bottlenecks to efficient process flow. Use rules-based technology to make decisions and ensure compliance, removing unnecessary human intervention.

3. *Plan for the heterogeneous SOA integration environment.*

SOA is no one trick pony. Its architecture in many larger organizations will be heterogeneous, with the need to plan for complex, phased implementation across operating system platforms, applications, geographies, and lines of business. Succeeding at that will require enterprise-level planning and governance.



Author Profile

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Peter S. Kastner conducts research in the integration of information technology across and among enterprises and their customers and employees. He focuses on the near-term business value-generation tradeoffs faced by technology and business managers who must deliver repeated, short-term value gains while refreshing the enterprise infrastructure to take advantage of evolving technology, standards, practices, and regulations. His practice covers technology integration, including application development; software architectures and middleware; core architecture, processing and networking; edge devices, data and business intelligence and integration; security integration; managed services and integration of third-party services; and enterprise business process and technology management.



Appendix A: Research Methodology

Between January and March 2006, **AberdeenGroup** examined the application integration competency, experiences, and intentions of enterprises in discrete manufacturing, process manufacturing, consumer product, service, and government industries. Responding IT and line-of-business (LOB) technology executives completed an online survey that included questions designed to determine the following:

- The degree to which application integration issues impact corporate and IT strategies, operations, and financial results;
- The structure and effectiveness of existing application integration management procedures;
- Current and planned use of technology to improve application integration and the ROI of ISV application investments;
- How enterprises are extracting more value from their enterprise applications (especially ERPs and legacy customized applications); and
- Whether application integration will enable flexible business process integration, manipulation, and orchestration based on more flexible workflows.

Aberdeen supplemented this online survey effort with telephone interviews with select survey respondents, gathering additional information on enterprise applications management strategies, experiences, and results.

The study aimed to identify emerging best practices for application integration and provide a framework by which readers could assess their own enterprise application integration capabilities.

Responding enterprises covered the following:

- **Job title/function:** The research sample included respondents with the following job titles:

Title	Percent of Respondents
Senior Management (CEO, CFO, COO)	11%
CIO/IT Leader	15%
(Senior) Vice President	6%
Director	19%
Manager	25%
Staff	6%
Internal Consultant	11%
Other	6%



- Industry:** The research sample included respondents from 27 industrial categories. Discrete manufacturing represents 35% of the sample, including 17% from high tech hardware and software. Process manufacturing represents 12% of the survey population and consumer 14%. Services represent 30%, including 8% in financial services and banking. Government and education in the public sector represent 9% of the survey population.
- Geography:**

	Percent of Respondents
North America (Includes USA, Canada, Mexico)	55%
Europe	23%
Asia/Pacific	8%
Middle East, Africa	7%
South/Central America and Caribbean	6%

- Company size:**

	Percent of Respondents
Less than \$50 million in annual revenue	31%
\$50M to \$249M	20%
\$250M to 499M	17%
\$500M to \$999M	10%
\$1 billion to \$5 billion	17%
More than \$5 billion	4%

Solution providers recognized as sponsors of this report were solicited after the fact and had no substantive influence on the direction of the *Achieving More Value from Enterprise Applications* benchmark report. Their sponsorship has made it possible for **AberdeenGroup** to make these findings available to readers at no charge.



Appendix B: Related Aberdeen Research & Tools

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

- [*The Service-Oriented Architecture \(SOA\) in IT Benchmark Report*](#) (December 2005)
- [*The Service-Oriented Architecture in the Supply Chain Benchmark Report*](#) (September 2005)
- [*The 2005 CIO Agenda — CIO Disruptors*](#) (July 2005)
- [*SOA Success Starts with IT Success*](#) (November 2005)
- [*The ESB in the Land of SOA*](#) (November 2005)

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



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