
Services Oriented Architecture

*The Extended Retail Industry Feels the Need
for Speed...And Education*



Benchmark Study 2006-2007

WRITTEN BY
BRIAN KILCOURSE
CEO

RetailSystemsAlert™
GROUP

a PROXIMUS COMPANY

SPONSORED BY

 **Birlasoft**

IBM



Table of Contents

INTRODUCTION	i
Study Hypothesis	i
SECTION I	1
Executive Overview: SOA – the “Next Big Thing”?.....	1
SECTION II.....	3
A. The Challenge: The Need For Speed.....	3
B. How Enterprises Respond	6
C. Opportunities Revealed	7
D. How Retail Winners Approach SOA.....	9
SECTION III.....	11
Summary: Steps To Success.....	11
Report Sponsors.....	12

Figures

Figure 1: IT Portfolios: A Mix of Legacy and Packaged Applications.....	4
Figure 2: IT Not Satisfied with its Own Responsiveness	5
Figure 3: IT Not Satisfied with Efforts to Integrate.....	5
Figure 4: Working to Articulate the Value of SOA	6
Figure 5: Challenges: Risks and Uncertainty.....	7
Figure 6: Cautious High Hopes – Factors that Weigh Positively	8
Figure 7: Retail Winners Are More Cautious About 2-Year Expectations	10

INTRODUCTION

The growing momentum surrounding adoption of Services Oriented Architectures (SOA) across all business segments is one of the most significant technology-driven initiatives since the emergence of the Internet.

Why is SOA so important? It promises a new paradigm for software development that will give IT what it has lacked: *efficiency and consistency*. To wit: companies frequently purchase or construct separate technology-enabled solutions for different channels or lines of business even if they require the same or similar functionality. With SOA, these functions can be re-used without modification, across the enterprise.

Today's businesses strive to streamline their operations and leverage technology-enabled processes, digitalized business rules, and data across all of their delivery channels. The ability to re-use these digital assets and eliminate duplication of logically similar but physically dissimilar assets is becoming a critical success factor for businesses today. Since the rate of change in business is ever-increasing, businesses are demanding that these assets be re-deployable as the business changes to meet competitive demands without the long delivery delays that frequently accompany any request to the internal IT Department or the incumbent solution provider. Advocates claim that SOA will make good on the long - unmet promise of information technology to respond quickly and effectively to changes in the business.

The ***Services Oriented Architecture Benchmark Study*** measures the extent to which companies in the Extended Retail Industry (ERI) are moving to adopt a Services Oriented Architecture approach. The study uncovers business challenges, opportunities, organizational inhibitors, and technology enablers as they relate to adopting an SOA approach. The study identifies the importance of SOA to ERI companies and the rationale for SOA adoption. We also provide a roadmap for successful SOA implementation.

STUDY HYPOTHESIS

The survey consisted of questions designed to test the hypothesis that retailers and their partners are looking at SOA to achieve the following goals:

1. Deploy functionality that supports all channels and lines of business, anywhere in the world
2. Integrate new functionality with legacy systems
3. Reduce total cost of ownership (TCO) of IT solutions
4. Meet increasing business demands for IT support
5. Organize IT functionality along streamlined business workflow processes

Our findings reveal that while adoption of SOA is still in its infancy, retail winners are investigating it closely. These winners recognize their inability to respond to business needs rapidly, and will begin SOA deployment as standards are finalized.

We are pleased to provide you with this survey information and welcome your comments.

Brian E. Kilcourse
President & CEO
Retail Systems Alert Group
bkilcourse@retailsystems.com

Michelle Pagliarulo
Research Manager
Retail Systems Alert Group
mpagliarulo@retailsystems.com

SECTION I

EXECUTIVE OVERVIEW: SOA – THE “NEXT BIG THING”?

Services Oriented Architecture (SOA) is a systems architectural concept where information technology assets are aligned to business processes as “loosely coupled” components, or “services.” The promise of SOA is that it can transform the information technology assets of a business, making it possible to do more with less, and do it faster.

But is this another wild promise to make enterprise Information Technology (IT) organizations more productive and less costly, destined to be another in a long line of costly disappointments? Certainly, after 4th Generation languages, CASE development methodologies¹, design-to-code² technologies, client-server³, 3-tiered architectures⁴, outsourcing, ERP⁵, and middleware⁶, ERI executives can be forgiven their skepticism to the notion that SOA finally fixes the difference between how fast business changes, and how fast IT can support change.

The “Services Oriented Architecture Benchmark Study – 2006” reveals that Extended Retail Industry (ERI) companies have both high hopes for this systems architectural approach, and uncertainty that it can deliver on its promise. The survey, conducted in April and May, 2006, garnered responses from 99 companies, including manufacturers, distributors, and retailers. **The top two reasons for looking at SOA is the need for increased flexibility, speed, and agility without having to re-engineer systems, and the need to accelerate IT value delivery to the business.**

However, most express concern that SOA is hard to explain or justify, and that there are many risks to proceeding too quickly. The biggest risk might be that many companies clearly aren’t ready to begin; over one-half of companies in the survey response group still have an application portfolio with point-to-point integration without middleware, and few companies have developed service contracts for their existing suite of business applications. Most companies express concern that there aren’t sufficient skills in-house to implement SOA.

¹ CASE: “Computer Aided Software Engineering.” A term commonly used for automated tools that assist with analysis and design phases of the software development cycle.

² DESIGN-TO-CODE: automated tools that generate computer code from design templates that have been generated by CASE tools.

³ CLIENT-SERVER: a computer system architecture which connects “clients” (usually a desktop computer from “servers” via a network. The term usually is used to describe “2-tiered” client-server environments, where the graphical user interface and business logic reside on the *client*, and the data resides on the *server*.

⁴ 3-TIERED ARCHITECTURES: a term used to differentiate from the common usage of “Client-Server” to indicate that the graphical user interface is on the client, whereas the business logic and the database reside on the server. Often used synonymously with “thin client”. An example of “3-tiered architecture” is a Web portal.

⁵ ERP: Enterprise Resource Planning Systems are highly integrated packages that address most of a business’s operational processes, including manufacturing, logistics, distribution, inventory, shipping, invoicing, and [accounting](#) for a company. ERP systems are common in Manufacturing businesses, and to a lesser extent also found in Retail.

⁶ MIDDLEWARE: Middleware is a software layer that acts as an intermediary between different applications, the benefit being that integration between any two applications can be indirect (or “asynchronous”) rather than “point-to-point” (or “synchronous”).

These risks aside, **companies expressed dissatisfaction with their IT departments' inability to respond to changing business requirements, and integrate disparate applications.** Not surprisingly they look to SOA as the "Next Big Thing." Two-year expectations are moderate, but many respondents feel that in the long term (three to five years), SOA shows great promise.

SOA represents a huge "educational opportunity" for IT solutions providers and Systems Integrators. IT executives need help in explaining the concept to their business peers and building the business case for moving forward.

SECTION II

A. THE CHALLENGE: THE NEED FOR SPEED

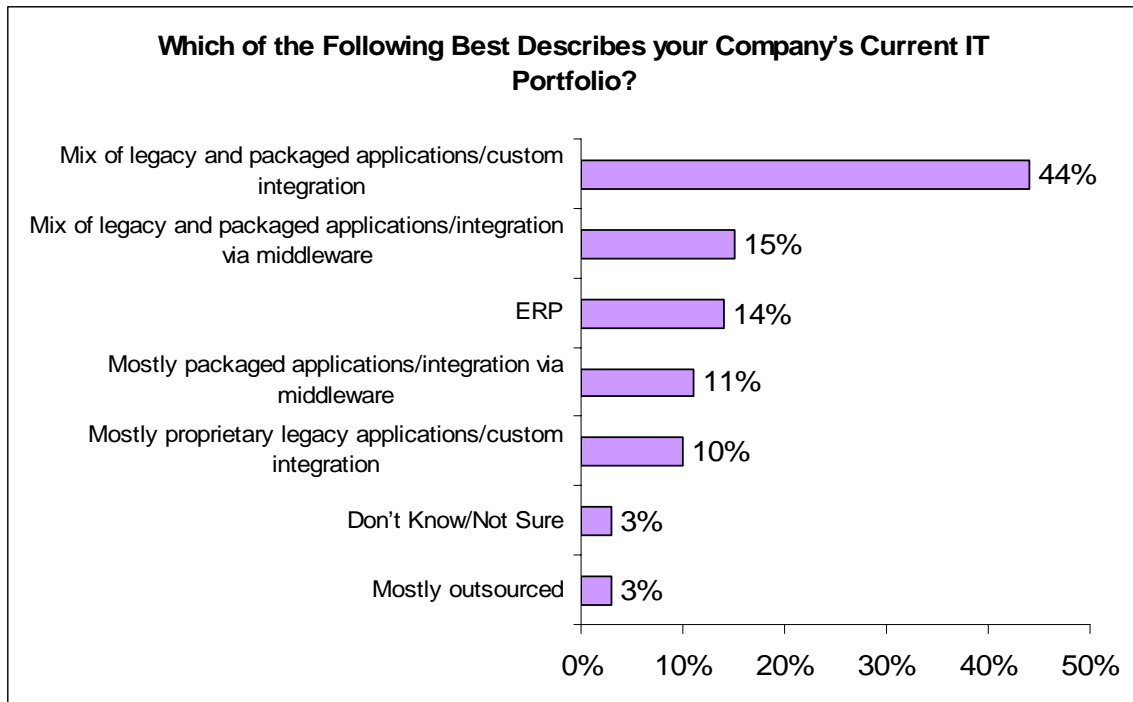
More than almost any other industry, the retail ecosystem is a “here and now” environment. The need for speed is evident because product iterations proliferate as the Extended Retail Industry attempts to satisfy fickle consumer demand. Customers shop 24/7 across every possible selling channel and expect product, inventory and pricing information to be accurate regardless of any external circumstance. Shareholders watch monthly and quarterly results, constantly expecting retailers to find ways to improve often anemic bottom lines. Whether suppliers are shipping multiple times per day or once a month, retailers expect a better return on their inventory investments.

New software tools, like price management, demand optimization and supply chain visibility enter the scene daily to help the Extended Retail Industry become more responsive. Yet the quality of any given retailer’s technology portfolio appears to improve at a glacial pace. Despite decades of promised improvements, technology change just takes too long.

Not surprisingly, the relationship between Information Technology and Line of Business executives in this industry has always been a love-hate experience. On the one hand, automation has enabled today’s retailers to achieve economies of scale and geographic reaches unimagined by their predecessors. On the other hand, IT has been challenged to keep up with demands from within and outside their organizations. And in general, retailers are not a patient group.

The retail IT portfolio is most typically a mix of custom and packaged solutions (Figure 1). While 15% of our survey respondents have successfully integrated these solutions with middleware (standard solutions that can simplify putting this mix of applications together), 44% re-invent the integration wheel every time a new application arrives on the scene.

Figure 1:
IT Portfolios: A Mix of Legacy and Packaged Applications



This means that for most retailers and their trading partners, the dream of a single packaged solution that solves all their needs remains just that – a dream. Application integration remains a fact of life, but line of business executives have little patience with or understanding of this ethereal thing called “integration.” From their perspective, integration drives no business value and consumes a disproportionate share of IT time and attention.

IT executives understand their predicament. Over half (54%) of Systems Development resources are devoted to application maintenance according to our survey respondents. And over 60% were either dissatisfied with or not sure of their enterprise’s ability to respond to new and unplanned IT requirements (Figure 2). Very few survey respondents disagree with the statements that “integration” is “too slow,” “too complex,” and “too expensive” (Figure 3).

Figure 2:
IT Not Satisfied with its Own Responsiveness

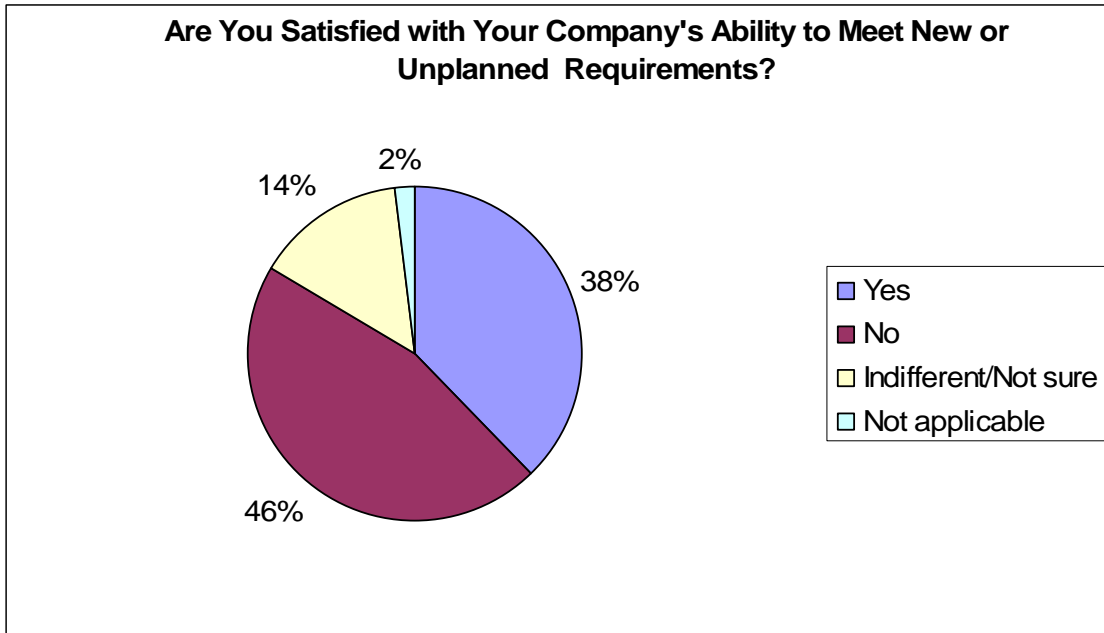
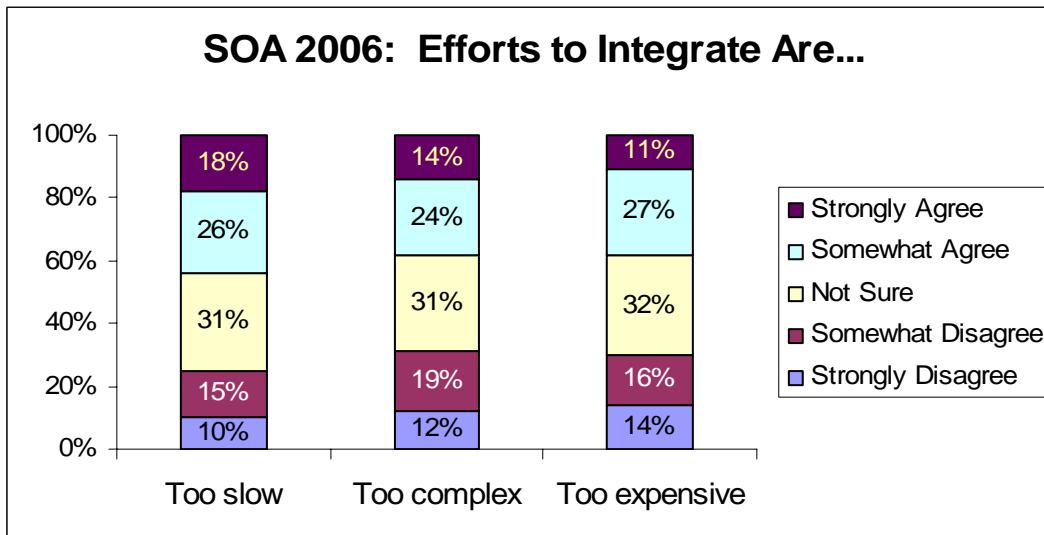


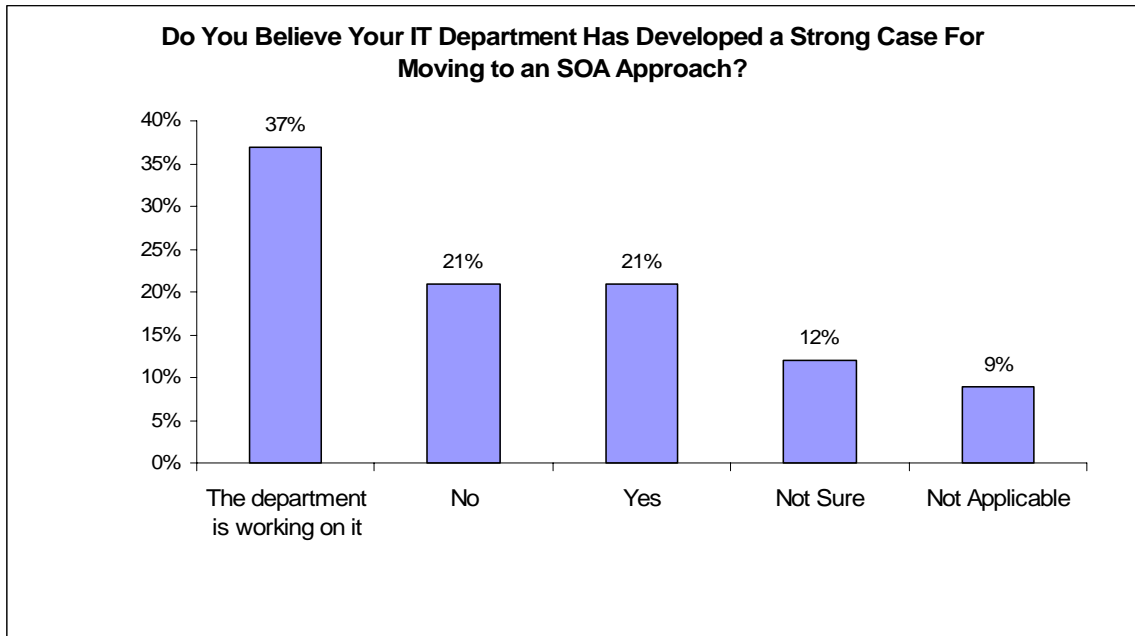
Figure 3:
IT Not Satisfied with Efforts to Integrate



This brings us to the latest hope for better responsiveness for both the internal IT organization and its application solution providers. **Services Oriented Architecture, or SOA, holds promise to give the Extended Retail Industry what it has been demanding: speed of implementation and simplicity of integration.**

Yankee Group reports that the retail sector will show the fastest adoption rate of SOA in the next 12 months. Yankee predicts that "2006 will be the year of initial SOA project completion on a broad basis—not a hit or miss trend, but through a rising tide of broad and deep adoption of SOA across the market." Our survey respondents agree. Figure 4 reveals that while only 21% have made a compelling business case for a move to SOA, another 37% are "working on it" actively.

*Figure 4:
Working to Articulate the Value of SOA*



Certainly software and middleware vendors are eager to help, as most of them are touting their investment in SOA.

Our research has revealed that retail winners, who we define as those retailers who outperform their peers in year over year comparable store sales, have taken a very active interest in SOA. The remainder of this report will show how the industry in general and the best in class in particular respond to the challenge and opportunity associated with SOA.

B. HOW ENTERPRISES RESPOND

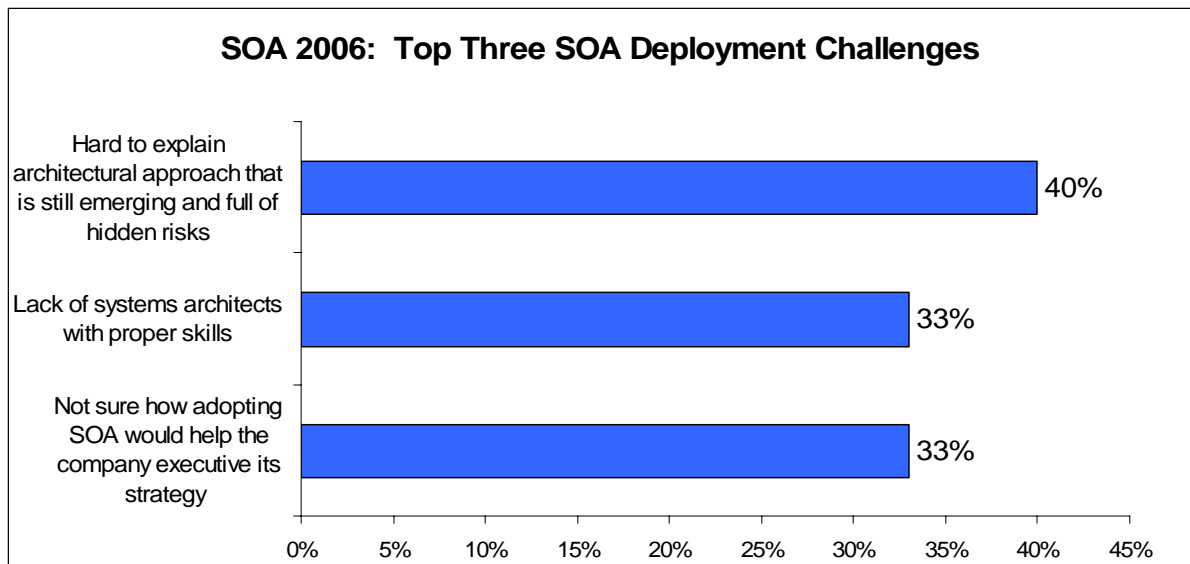
Services Oriented Architecture (SOA) is a systems architectural design concept that has its roots in object oriented design (OO)⁷. Both OO and SOA concepts share the idea that large logic problems can be broken down into its component parts, each part addressing a very specific concern.

⁷ OBJECT ORIENTED DESIGN: a computer programming design concept where functions (traditionally grouped together into *programs* that are executed in a certain predefined order) are now identified as individual units of logic (*objects*) that can be invoked on demand and can communicate with each other.

SOA goes beyond Object Orientation; the concept is refined so that components are reusable and discoverable across a network, and “loosely coupled” (meaning that they don’t need specific other software components to function). The interaction between components are defined via “service contracts” that describe how each component is interfaced with and used, and what constraints exist (what the software can or cannot do). Components thus described are “services” that can be linked together dynamically at run-time, with few dependencies on how or even where any of the services are actually implemented. **The promise of SOA is that it can transform the information technology assets of a business, making it possible to do more with less, and do it faster.**

SOA is a difficult concept to explain to potential business sponsors, who just want systems to work effectively and be able to change at the same speed the business changes. But IT leaders know or at least suspect that a move to SOA is not a trivial pursuit, and can take years of effort to accomplish. After the retrenchment following the Internet “bubble burst,” CIO’s have little tolerance for new “fix-all” schemes. Indeed, most IT decision makers feel the biggest challenge facing a successful move to SOA is that it is hard to explain, still maturing, and therefore full of risks (Figure 5).

*Figure 5:
Challenges: Risks and Uncertainty*

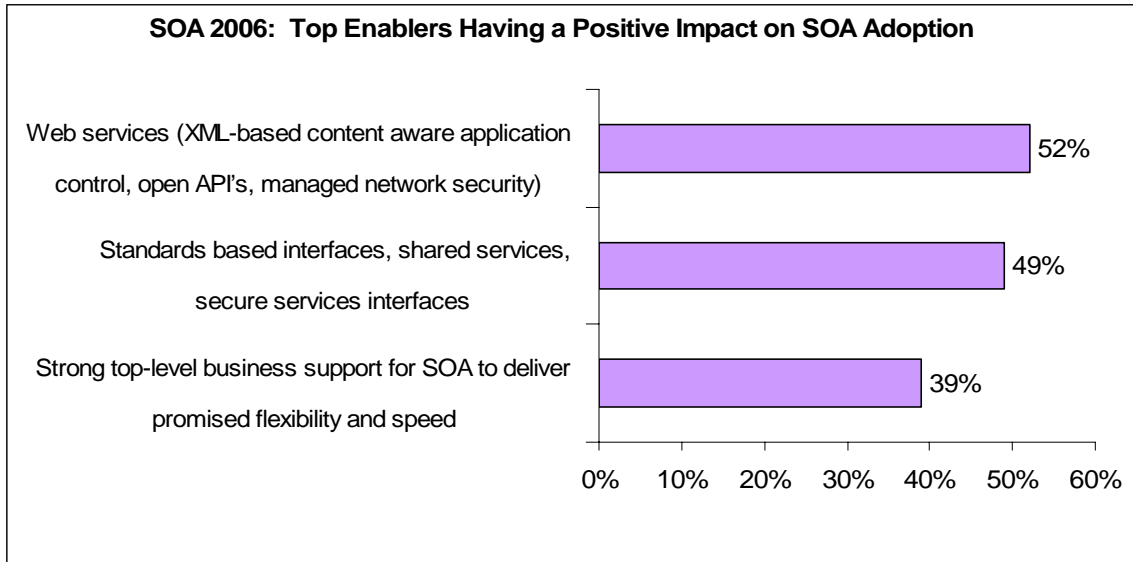


C. OPPORTUNITIES REVEALED

Despite perceived risks and uncertainty, ERI decision makers have cautiously high hopes for SOA, even if at this point they are not quite sure of the effort it entails. Presenting legacy applications as Web Services has made it easier for IT’ers to explain SOA benefits to skeptical business partners, although in fact the two concepts are quite different. Top level business support for SOA is critical, and our survey respondents placed it not far behind

technical enablers like web services and standards-based and secure interfaces as a key driver for adoption (Figure 6).

*Figure 6:
Cautious High Hopes – Factors that Weigh Positively*



Although SOA is a positive force for the future, IT executives need to avoid the hidden dangers of over-simplifying and over-promising. Since survey respondents have expressed such strong dissatisfaction with the pace of change and the ability to integrate business applications, strong support for a difficult-to-explain technical concept such as SOA could suggest wishful thinking. It is up to IT leaders to rationalize the discussion with a business case and roadmap for SOA in order to both win the sponsorship of line of business (LOB) executives, and set realistic expectations.

SOA presents a great opportunity for systems integrators, solutions companies, and service providers to provide education and thought leadership to their customers. With the high number of ERI companies who have not yet implemented middleware to integrate their application portfolios, and the accompanying dissatisfaction with current efforts to respond to business change or to integrate systems, IT leaders need help to define the opportunity that SOA represents to their peers. Only 30% of survey respondents indicate that they have created service-oriented “service contracts” for some IT applications and 45% report that they have no service contracts at all for applications. Clearly the first opportunity is an educational one.

D. HOW RETAIL WINNERS APPROACH SOA

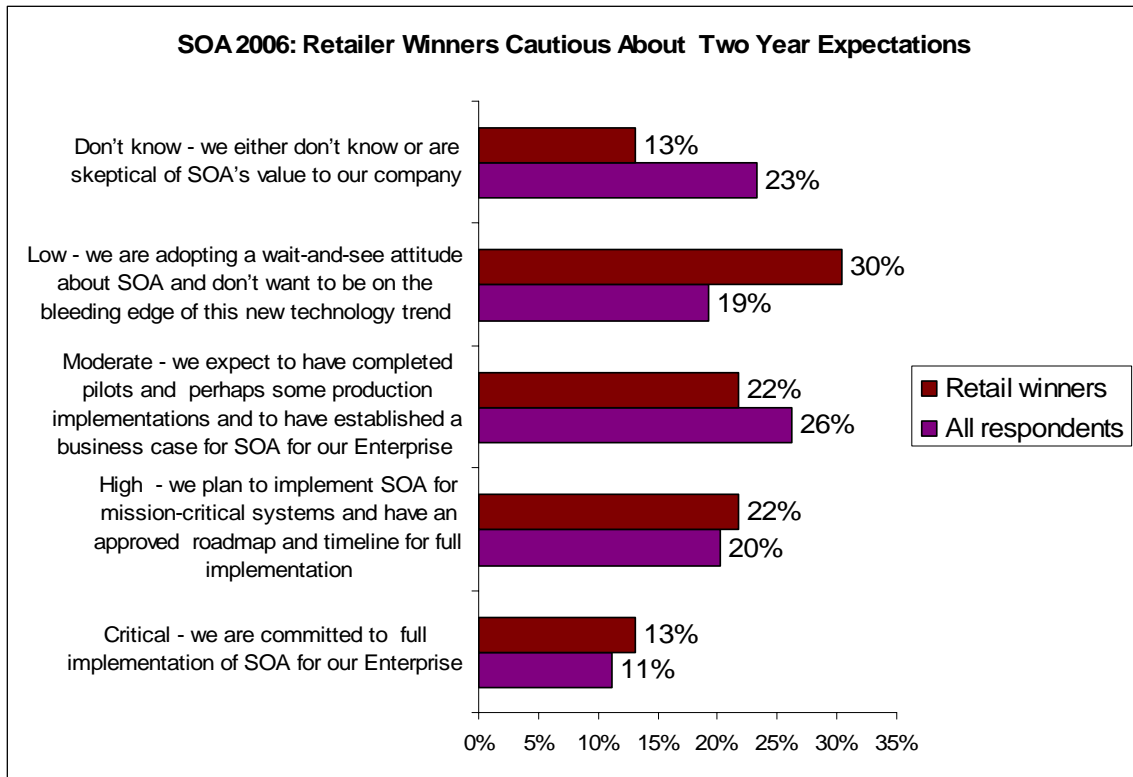
Retail winners are generally more cautious about the near term benefits of adopting SOA. This is not due to lack of willingness to embrace new ideas. In fact, **unlike the total response group, winners have gone much farther in adopting middleware to integrate their mix of custom and package systems** (59%, compared to all respondents' 15%). This indicates that these companies place higher value on systems integration and are willing to embrace new techniques to improve the process. Retail winners are more aware of SOA concepts (82.6% compared to 71% of all respondents). Furthermore, more winners are evaluating or planning SOA implementations than the total response group (52% to 43%), but fewer winners have pilot projects in place today.

Retail winners perhaps demonstrate a “once burned twice shy” attitude about big new concepts that make bold promises. The largest group of these retailers expressed “low” expectations for SOA in the next two years (meaning, they expect to have completed pilots and perhaps some production implementations and to have established a business case for SOA for the Enterprise”), compared to the all survey respondents, where the largest group has “moderate” expectations (Figure 7).

However, for the three-to-five year horizon, retailer winners are much more positive about SOA, with the largest group of respondents having “high” expectations, meaning, they “should have completed full implementation.” Comparatively, the largest general response group indicated “moderate” long term expectations, meaning, they “should have implemented SOA for mission-critical systems and have an approved roadmap and timeline for full implementation.”

Taken in total, retail winner responses indicate that they have more realistic understanding, and therefore have lower near term expectations, than ERI companies in general. That doesn't mean that they are pessimistic about the promise of SOA to deliver better solutions faster and more cost effectively. In fact, for the long term, these retailers are even more positive than ERI companies in general.

Figure 7:
Retail Winners Are More Cautious About 2-Year Expectations



SECTION III

SUMMARY: STEPS TO SUCCESS

For companies to move beyond the nightmare of point-to-point⁸ integration, they must develop a roadmap to SOA implementation. First and foremost, that means getting an education about what SOA is and isn't. Seek out strategic solutions technology partners and learn from them about the value and promise, challenges and risk inherent in this architectural approach. Set realistic expectations with business peers, and seek the help from most trusted partners in your efforts to develop both a business case and a roadmap for going forward.

An SOA roadmap typically consists of several phases:

- **Perform a technical proof-of-concept**, to understand how the technology can be used to package functionality in a manner that promotes discoverability and re-usability. It is important that the governance framework begin to be formulated at this early stage, so that the organization can learn what attributes of each service (rules of use, security, performance) must be managed;
- **Reach agreement with business stakeholders as to what processes would benefit from early adoption** of SOA-architected technology solutions. These early adoption efforts provide the test case for SOA cost/benefits ;
- **Assess and prioritize current business processes** and projects to identify those that can deliver the building blocks of an SOA architected enterprise;
- **Align business strategies and the SOA architectural vision**;
- **Articulate an SOA roadmap**, delineating a prioritized shared services strategy and phased delivery of the architecture, as well as the governance framework, standardized tools, and cost/benefits analyses.

SOA is a long-term commitment. Retail winners believe it's a five-year journey, even though many of those companies have already taken the step of implementing integration middleware. **Companies who haven't at least implemented middleware should get started soon.** Participating applications are wrapped in services interfaces as part of implementing integration middleware. This has the double benefit of modernizing their integration points and web-enabling their interfaces, and also making it easier to demonstrate the value of SOA to non-technicians.

Invest now to start bringing technology teams up to date. Lack of systems architects with the necessary skills in SOA was highlighted by survey respondents as a key challenge.

Start to develop service contracts for business applications as a first step to the more rigorous SOA discipline of defining "services" in technical contracts that detail programmatic interfaces, communication requirements, constraints, usage policies, properties and preferences now.

⁸ See footnote #6, MIDDLEWARE.

REPORT SPONSORS

.....

ABOUT SPONSOR

Birlasoft provides software application development and support services across the globe in both onshore and offshore models. Its clients include large Fortune-listed companies in: Retail, Manufacturing, Banking, Finance & Insurance, Mortgage, Independent software vendors & Healthcare etc.

Its robust processes embrace Digitized Project Management Methodologies, embedded within proven practices of Six Sigma, SEI CMMI Level 5 on Continuous Representation and a secure services framework with BS7799.

Birlasoft, headquartered in New Jersey, USA has 3200+ employees based across US, UK, India, Singapore and Australia. It is part of the Global \$ 1.2 Billion CK Birla Group which traces its roots back for over 150 years and has diversified interests ranging from Automobiles, Cement, Paper, Software etc. to Hospitals, Schools and Colleges as part of their philanthropic work.

www.birlasoft.com



.....

ABOUT SPONSOR

IBM, the world's largest information technology and business services company with 90 years of leadership in helping businesses innovate, is the leader in providing the Retail Industry with a full range of e-business solutions. From inventing the barcode to innovate point-of-sale solutions to exciting technologies like service-oriented architecture (SOA), IBM and key IBM Business Partners offer a wide range of services, solutions and technologies that help enable retailers, large and small, to leverage technology to drive innovation in their businesses. For more information about IBM and SOA, visit <http://www.ibm.com/soa>.



.....

ABOUT RETAIL SYSTEMS ALERT GROUP

Retail Systems Alert Group is the leading provider of objective, high-quality information resources for the Extended Retail Industry (ERI). We have followed the advancements of technology and business process innovation in this industry for almost two decades, and we deliver our insights and analysis through high-value conferences and tradeshows, publications, research, training, and Web-based services.

For more information, visit www.retailsystems.com

Retail Systems Alert Group services the Extended Retail Industry (ERI). This term, coined by Retail Systems Alert Group, describes a broader consumer-focused ecosystem encompassing retail, manufacturing, transportation, distribution, logistics, warehousing, solution providers, and other supporting organizations. (Retail Systems Alert Group is a tradename of Retail Systems B2B LLC, a Proximus Company).

