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white paper

SOA IN ANY ECONOMIC CLIMATE



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May 2008

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Abstract

Change is a constant in the competitive environment. The agility and flexibility that Service-Oriented Architecture (SOA) enables can help businesses weather the ongoing change that has become part of the routine of competition. These advantages are especially critical when contending with changing economic cycles. In today's global economy, enterprises often contend with a mixed picture, serving different regions that are in varying phases of economic growth or slowdown. They must have the ability to flexibly adjust and calibrate go-to-market strategies, enhancing capacity or expanding products and services for regions in growth, while streamlining in areas whose economies are flattening or decelerating.

SOA can enable businesses to meet several key challenges when navigating a changing economy. The loosely-coupled nature of SOA promotes business agility, a capability that helps businesses adapt to changes in economic cycles. SOA also helps place a lid on integration costs because of its inclusion of a separate, standards-based integration layer. By liberating processes from closed, often poorly documented application silos, SOA can improve business process visibility. As organizations repurpose rather than replace existing software or business process assets, and compose rather than develop new processes or applications, SOA reduces lead time and cost of deploying new functionality. Finally, SOA plays an important role in supporting business-centric collaboration by empowering workgroups with the technology to overcome the business challenges that face them.

In changing economic conditions, IT organizations need to contain the scope and risk of any new project. Fortunately, SOA is conducive to iterative approaches that reduce risk. The flexibility of loosely-coupled Services enables them to evolve as business and IT teams mount the learning curve. Embarking on an iterative approach, organizations can realize quick wins from SOA, which is important in any economic climate.

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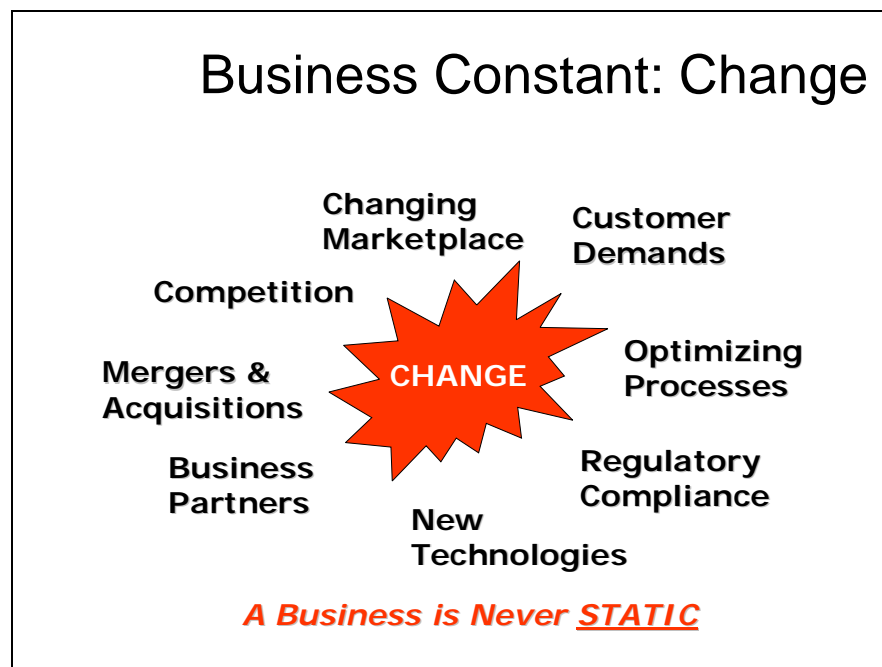
I. Change is a Constant

Globalization, mergers and acquisitions, changes in customer preferences, ever-evolving regulatory environments, and fluctuating economic cycles all underscore the fact that change is the norm in any competitive environment. Market changes are attributable to a variety of factors, from changing customer tastes and expectations to new technologies or streamlined business processes that can act as market “game changers”; reshaping of the competitive playing field through merger and acquisition; and the entry and exit of prospective rivals and partners. The agility and flexibility that Service-Oriented Architecture (SOA) enables can help businesses weather this ongoing change that has become part of the routine of competition. The decoupling of processes, data, and functionality that is core to SOA fosters the adaptability and agility that enterprises require for effective response to changing conditions, while providing opportunities for IT to improve the top line and reduce costs through eliminating redundancies and accelerating time to benefit.

These advantages are especially critical when contending with changing economic cycles. In today’s global economy, enterprises often contend with a mixed picture, serving different regions that are in varying phases of economic growth or slowdown. They must have the ability to flexibly adjust and calibrate go-to-market strategies, enhancing capacity or expanding products and services for regions in growth, while streamlining in areas whose economies are flattening or decelerating. Regardless of economic cycle, enterprises must continue innovating to preserve market differentiation and unique value, while remaining a step ahead of their rivals. Furthermore, changes in regulatory burdens do not cease when the economy changes. The changes that continually impact the business are illustrated in the graphic below.

Regardless of economic cycle, enterprises must continue innovating to preserve market differentiation and unique value, while remaining a step ahead of their rivals.

Change is a Constant for the Business



Source: ZapThink

SOA can enable businesses to meet several key challenges when navigating a changing economy, by providing the following business benefits:

- **Business Agility** -- With changing economic cycles placing a premium on an organization's ability to adapt, the loosely-coupled nature of SOA enhances the ability to manage and adapt core processes. The visibility that SOA makes possible provides a clear window on business performance; the flexibility that SOA enables allows organizations to modify or compose new processes to respond to changes in the marketplace attributable either to economic growth or slowdown.
- **Controlling Integration Costs** – The cost of integration has traditionally proven a major hurdle for IT organizations in supporting the business. By leveraging open standards and abstracting the integration layer from the application tier, SOA reduces the need for developing integration code. It also reduces reliance on highly specialized skills covering specific platforms, languages, or middleware.
- **Business Process Visibility** – SOA can improve business process visibility by liberating processes from closed, often poorly documented application silos. Similarly, by enforcing governance practices throughout the Service lifecycle, SOA enables organizations to consistently enforce Service policies, while documenting enforcement for compliance with Service contracts and regulatory requirements.
- **Increased Reuse** – SOA reduces lead time and cost of deploying new functionality. It enables organizations to repurpose rather than replace existing software or business process assets, and compose rather than develop new processes or applications. As organizations increase software and process reuse, they can realize faster ROI through accelerated time-to-benefit.
- **Business Empowerment** – SOA plays an important role in supporting business-centric collaboration by empowering workgroups with the technology to overcome the business challenges that face them. Effective collaboration is essential in empowering the enterprise and its people to more effectively differentiate the business and its offerings.

II. Alignment of IT and Business with SOA

SOA is all about exposing information and processes as self-contained Services that can communicate and interoperate with each other in a standard way, enabling the business to build flexible compositions of Services that implement business processes. Services can represent tangible business tasks, making them meaningful to the business. Examples include validating a customer's credit, triggering inventory replenishment for a specific SKU, or calculating profitability. Ultimately, SOA enables IT to more effectively align with the business, because it changes the way IT delivers solutions. The self-contained nature of Services and loosely-coupled connectivity empowers IT to rapidly compose solutions by reusing existing Services, resulting in faster-time-to-benefit compared to traditional ways of developing, modifying, and integrating conventional, monolithic software applications. For instance, an organization could reuse a properly designed profitability analysis by applying it to a specific product family, region, customer segment, or business partner.

Furthermore, because SOA changes the very notion of how organizations architect and deploy data and functionality, the business, rather than the platform, drives the functionality and processes that Services enable. In place of

SOA enables IT to more effectively align with the business, because it changes the way IT delivers the solutions: the self-contained nature of Services and the standard connectivity empowers IT to rapidly compose solutions by reusing existing Services.

tight coupling, SOA abstracts data and functionality that, in conventional IT silos, specific applications or databases own. Instead, SOA loosely couples data and functionality as Services in a manner that abstracts them from the physical platform, application, or database. That abstraction enables IT to direct its attention to solving the business problem, eliminating much of the concern over how to integrate data or functionality.

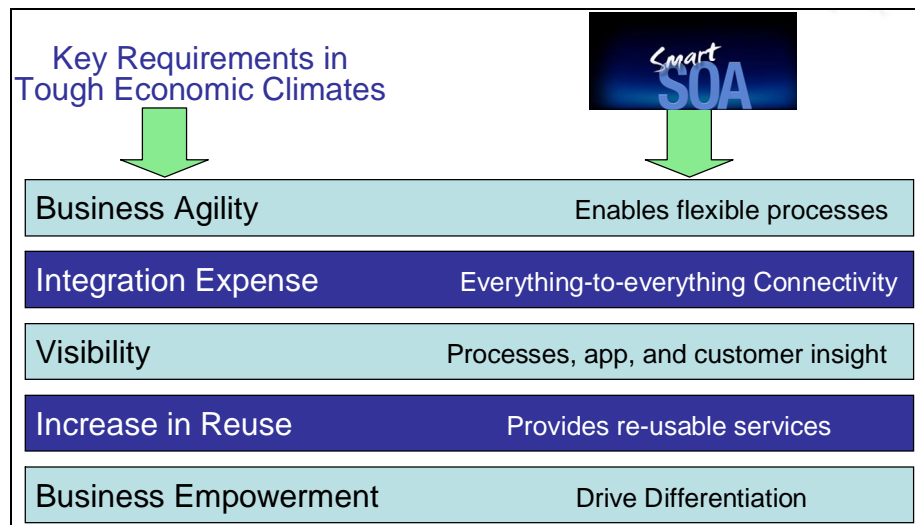
This loose coupling also has several key architectural implications that can ultimately aid business agility and accelerate time to benefit. For instance, with loose coupling, the underlying data, software application, and platform can change without changing the Service. Secondly, the designer of a Service should not have to know anything about the consumer of that Service. Instead, policies govern consumption at run time. In turn, you can change those policies as competitive requirements dictate. Finally, you can design Services and specify policies so that you can dynamically orchestrate them into a composite that bridges individual applications and Services. Each of these characteristics of loose coupling can play key roles in improving enterprise agility because of their ability to support change.

III. How SOA Meets the Challenges of Changing Economic Times

It is natural that IT groups should ask themselves how changing economic cycles should impact both short-term projects and longer-term strategic direction. The questions are especially pertinent to SOA because it represents a sea change in course in the way that organizations develop functionality and deliver information. However, because SOA can help IT address longstanding issues concerning its ability to align with the business and deliver rapid time-to-benefit, while reducing the cost of developing and delivering new capabilities, changes in economic cycles should not impact overall questions of whether SOA investments can be justified. The figure below provides an illustration of how SOA addresses business issues in any economic climate.

Changes in economic cycles should not impact overall questions of whether SOA investments can be justified.

Key Benefits of SOA in any Economic Climate



Source: IBM

Business Agility

Changing economic cycles place a premium on agility. Regardless of whether the economy is accelerating or slowing, globalization continues to transform the marketplace. Globalization not only expands opportunities to serve new regions, it also transforms supply chains, introducing new prospective partners and rivals who are entering the market with lower cost structures and frequently with state of the art processes and capabilities. Similarly, economic cycles do not necessarily apply the brakes to product or service innovation, regulatory changes, or structural changes to markets that ongoing mergers and acquisitions introduce. Furthermore, customer preferences don't stand still either when the economy grows or contracts.

Consequently, enterprises must always brace themselves for change. Agility empowers businesses to adapt to such change in the market environment, including those that are attributable to changing economies. It enables businesses to modify their processes, streamlining during lean times, while routing new processes to partners to keep pace with surging demand in growth periods. For example, by Service-enabling an order management system, a business can consume order processing Services from pre-qualified business partners during periods where demand outstrips its processing capacity, while outsourcing the entire order fulfillment process during retrenchment periods. In both scenarios, the core back-end order processing system wasn't changed; instead, policies governing Service consumption enabled the business to adapt to changing economic conditions.

Agile enterprises innovate far more rapidly to preserve competitive edge through realizing new process efficiencies, or delivering to market innovations in customer engagement or product design. SOA enables enterprises to respond more effectively to the variability of economic cycles with an architecture that promotes the ability to combine and recombine Services into new composite applications, providing a faster, more cost-effective alternative to new development.

Using the previous example, an enterprise in boom times can leverage increased demand through a cross-selling strategy where multiple Services are composed to add the new options. Conversely, in lean times, they can modify the composite Service with a different option: in place of cross-selling a more expensive product, they can enable customers to choose different order discount options. When implemented through policy-driven governance, dynamically orchestrated Services can automate the changing of customer options based on documented criteria; this capability is especially valuable for global enterprises seeking to optimize their strategy when serving multiple regions that are in varying economic cycles.

Controlling Integration Costs

Controlling costs remains important in any economic cycle, protecting margins during down cycles and while managing the costs of growth during boom times.

Agility empowers businesses to adapt to changes in the market environment, including those that are attributable to changing economies.

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In place of developing multiple, point-to-point custom integrations, SOA applies a standards-based integration layer that abstracts the mapping and transformations necessary for joining two or more systems.

With runtime governance, SOA provides the real-time, role-based visibility that enables organizations to act faster, based on KPIs for improving performance.

By reducing the cost of integration, SOA enables the IT organization to support the business on leaner budgets. SOA controls the cost of integration in several ways. First, by abstracting integration into a separate tier, SOA eliminates the added maintenance costs that, with traditional software integration approaches, would have been incurred from modifying the core back end applications. It reduces the need for specialized skills; for instance, once legacy systems are Service-enabled, there is less need for legacy skillsets, as new Services can be developed using Service endpoints, rather than connecting to legacy APIs. Furthermore, by exposing application data and functionality as reusable Services, SOA provides a less costly alternative to new application development. Through use of standards, IT organizations can substantially reduce costs attributable to traditional custom integration.

Reduced integration costs are especially crucial when consummating acquisitions, a critical process for enterprises that are taking advantage of downturns to consolidate market share. In place of developing multiple, point-to-point custom integrations, SOA applies a standards-based integration layer that abstracts the mapping and transformations necessary for joining two or more systems. For instance, businesses can consolidate critical functionality, such as accounts payable and receivable or general ledger reporting, by exposing Services from the acquired entity's accounting system. Developers can avoid the necessity of learning the acquired entity's financial applications, and, aside from developing Service wrappers and consumers, the source systems remain untouched. Consequently, the business gains a consolidated financial statement much more quickly as compared to traditional systems integration approaches. Integrations are less expensive to develop, and less costly to maintain. Furthermore, because of the loosely-coupled nature of SOA, the integrations can evolve as the structure of the business evolves, further reducing costs and accelerating time-to-benefit.

Business Process Visibility

Process transparency is essential for businesses striving to become more agile and more adaptive to changing economic conditions. SOA and Business Process Management (BPM) play complementary roles in opening a clear window on business processes across the full lifecycle, from definition, design, simulation, and test through deployment, runtime, and retirement. With visibility maintained across the business process lifecycle, organizations can readily track performance, and using policy-driven runtime governance, gain the ability to automate midcourse adjustments. Together, SOA and BPM support the capability to design business processes for change.

Initially, BPM supports the capability for enterprises to externalize business processes from underlying application and data silos, creating metadata and policies that define the process and the rules that apply to them. SOA in turn provides a fully governed deployment and runtime environment where processes are transformed into executable Services, with a governance foundation that ensures that Services remain in compliance with service contracts, organizational policies, and where appropriate, regulatory concerns. With runtime governance, SOA provides the real-time, role-based visibility that enables organizations to act faster, based on Key Performance Indicators (KPIs) for improving performance. When implemented using policy-driven runtime governance, organizations can close the loop with automated change processes.

For instance, a logistics service provider offering supply chain management services for retailers may serve several different classes of customers, each of which demands different levels of service and different rules regarding inventory reporting and supply such as:

- **Reporting** – Some clients demand updates at the end of every 8-hour shift, while others are content with daily updates.
- **Tracking** – Requirements may vary, with some retail clients demanding lot number tracking while others track at pallet level.
- **Supply** – Each retailer may have differing requirements regarding the number of days of inventory or buffer to stock. Significantly, during lean economic cycles, they may require fewer days of inventory.

Because the logistics provider has exposed its supply chain tracking processes as Services within the BPM environment, the high levels of visibility to its retail clients becomes a competitive differentiator. Similarly, the flexibility that SOA delivers enables retail clients to adjust their supply chain strategies based on short-term factors such as demand for specific products, or longer term factors such as stage of economic cycle. In turn, the logistics service provider benefits from process visibility by continually measuring its performance against Service contracts.

In this scenario, retail clients view KPIs on dashboards within their own supply chain management applications. When implemented using closed-loop, policy driven approaches, scheduling of deliveries automatically adjusts based on inventory levels. Furthermore, the flexibility of the logistics providers' SOA-based inventory and transportation management systems empowers retail clients to change supply chain management service levels if the contract permits. Consequently, during boom times, retail clients might increase reporting requirements, and if demand spikes unexpectedly, can change policies to increase the number of days of buffer.

This example illustrates the benefits of increased customer and market insight, which improves competitive edge under any economic cycle. In a strong economy, visibility enables both sides to identify growth trends before the competition, and leverages business events to drive more effective marketing. The logistics provider can apply complex event processing analyses to better understand which levels of service are currently in demand, and based on economic cycles, anticipate where it should enhance or streamline its supply chain services.

The logistics service provider can in turn provide similar analytic services to retail clients so they can best optimize their supply chain management policies. Conversely, in a weakening economy, having a clear window on business processes throughout the lifecycle allows both sides to rapidly identify failing or non-responsive processes that are causing bottlenecks or increasing costs. Viewing KPIs, they can intercept failing processes, and with policy-driven governance, automate the process change/remediation cycle.

Increased Reuse

As with any major business investment, quantifying the benefits and tracking performance is necessary for justifying SOA projects. The flexibility of SOA delivers clear benefits in any economic cycle; in slowing economies, the criteria can emphasize preserving margins, while in rising economies, the criteria can focus on growth. When implemented with policy-driven governance, organizations can quickly prioritize development or modification of Services or SOA infrastructure based on objective criteria.

By providing infrastructure designed for adaptability and reuse, SOA can deliver faster results in several ways. First, it reduces development costs for new or modified Services. Additionally, SOA enables organizations to reuse existing

By providing infrastructure designed for adaptability and reuse, SOA can deliver faster results, while reducing development costs.

assets from systems like CICS, IMS, DB2, SAP, along with other packaged or internally-developed applications. Reduced integration costs ultimately feed substantial savings to the project ROI.

By making Services and processes more visible, SOA can help organizations pinpoint duplication, or identify opportunities for Service reuse or sharing. During boom times organizations can adapt or repurpose Services to support expansion plans, such as establishing new divisions or departments, or for leveraging new business partners to address growing market opportunities. Conversely, during downturns, line organizations can save costs by sharing Services.

KPIs for tracking ROI of SOA projects can include:

- **Time to value** – How quickly was value (benefit) realized, compared to planned goals, historical performance?
- **Efficient responses to regulatory change** – What was the time/cost to effect change to business/reporting processes?
- **Lead time for consummating acquisitions** – How quickly were processes integrated from recent acquisitions compared to plan?
- **Increased margins and savings** – What was the actual bottom line, and how did results compare to plan?

Business Empowerment

One of the least understood benefits of SOA is business empowerment, a concept that picks up where the well-known idea of user empowerment leaves off. Instead of simply providing people more powerful tools, SOA empowers teams within the line of business to remove process bottlenecks and other hurdles that otherwise limit their effectiveness. In many organizations, business empowerment is becoming the central driver for SOA, second only to business agility.

Central to the appeal of business empowerment is that it provides teams within the line of business the ability to reshape processes, not just individual tasks. SOA plays an important role as the architectural approach for marshalling IT assets and resources to support business-centric process collaboration and improvement efforts. For instance, SOA can supply the loosely coupled Services that teams within the line of business can “mash up,” while IT enforces governance to ensure that local business teams do not violate enterprise policies or consume prohibited resources. Examples include consuming unapproved external data feeds or compromising the privacy of customer records.

Empowering businesses makes sense, regardless of the state of the economy. It can help business units weather the boom, or tap local collaboration and wisdom to find better ways of saving money during economic downturns.

As a result, empowered businesses can more effectively differentiate themselves because it enables those who know the business best—its people—to devote their time and energies to solving problems and creating new value that capitalizes on what the business does best. For instance, empowered teams that respond to customer complaints by reworking how call center representatives handle incoming calls help their companies differentiate themselves through superior customer service. Similarly, a mortgage underwriting team that streamlines its approval processes in the face of shifting regulations can help the organization differentiate itself as the most responsive loan provider in the business.

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Empowerment also helps the business become more efficient. For instance, an eCommerce logistics team for a large online retailer that rethinks the process for rerouting orders to secondary suppliers when there is an issue with a primary supplier can satisfy orders more efficiently when demand spikes. Additionally, a state law enforcement officer support group that improves the way that dispatchers interact with police officers on the beat can help the police force accomplish its mission more efficiently.

Getting There, One Step at a Time

Admittedly, it is natural for IT organizations to look twice at decisions to embark upon major architectural shifts when budgets grow tighter because of the economy. The solution is not to embark on a big-bang project, but to approach SOA iteratively. Well-suited for iterative adoption, SOA's loosely-coupled, component-based approach facilitates change and reduces obsolescence by isolating the impacts of change. By taking an iterative approach, organizations can apply what they learn, modifying individual Services without impacting other Services, or placing the overall architecture at risk. Consequently, iterative SOA initiatives can offer several key benefits that apply in any economy, but have special importance during downturns when funding or resources may be limited. By proceeding step by step, project scope and budgets are more modest. In turn, project teams can address well-defined business problems with specific goals that can yield quick victories.

IV. The ZapThink Take

SOA is not simply a luxury that enterprises can only afford during the good times. The flexibility that SOA provides enables businesses to brace themselves for any economic cycle, positioning them for success, not just survival. SOA delivers key advantages that apply to any stage of the economic cycle.

A chief SOA benefit is business agility. Because SOA is a loosely coupled architecture, it can position businesses to adapt to changing market conditions more readily than traditional, rigid applications silos that embed hard-coded processes. Instead, SOA empowers enterprises to reuse, repurpose, or recombine Services without disrupting back-end systems. The result is a more flexible, rapid approach to mobilizing for new customer demands and adapting to changing economic conditions, compared to developing new applications, modifying existing ones, or conducting traditional custom integration. Enterprises thus realize faster time-to-benefit and faster ROI compared to traditional software development or integration.

The loosely-coupled nature of SOA promotes the agility necessary for enterprises to fine tune their strategy for the economic climate, and how the climate impacts the demands of their customers. It can enable them to build a core competency for rapidly digesting acquisitions, consolidating market share during downturns. SOA also provides more flexible alternatives to slashing processes across the board during downturns; instead, they can selectively streamline or redeploy processes during a downturn, while being prepared to reverse course when customer demand recovers. Such flexibility is critical for global enterprises that typically serve multiple markets that may be in varying stages of boom or slowdown. The enhanced visibility that Service orientation supports enables organizations to more effectively align Services with business objectives, and to track performance for ensuring that Service contracts are met.

SOA addresses key business challenges that are present, regardless of the state of the economy. They include regulatory compliance, preserving market

SOA empowers enterprises to reuse Services without disrupting back end systems. The result is a more flexible, rapid approach to mobilizing for new customer demands, and for adapting to changing economic conditions.

differentiation, customer value, and customer satisfaction. Governance of SOA is pivotal in ensuring that Services remain in compliance with applicable regulations, and with Service contracts that determine customer satisfaction levels.

Other challenges, such as maintaining the value that is delivered to customers and preserving differentiation may be perennial concerns, but economic cycles also influence them. For instance, customers may demand value during down cycles and enhanced features or functionality during growth times. The flexibility and agility that SOA enables helps businesses best adjust how they serve their customers at different stages of the economic cycle. Businesses that add features during boom times go back to basics during down periods; SOA can help businesses alter the processes driving customer interactions without having to reinvent them.

Given the state of IT budgets, cost savings are always important through good times and bad. The cost savings realized through SOA carry a valuable side-benefit: SOA projects can become self-supporting. By reinvesting savings derived from SOA projects into further agility and innovation efforts, the benefits can materialize without increasing IT budgets long term.

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ZapThink provides IT practitioners strategic insight and practical guidance for addressing critical agility and change management issues leveraging the latest EA and SOA best practices. ZapThink helps these customers put EA and SOA into practice in a rational, well-paced, and best practices-driven manner and helps to validate or recover architecture initiatives that may be heading down an unknown or incorrect path. ZapThink assists with solution vendor, technology, and consultant selection based on in-depth, objective evaluation of the capabilities, strengths, and applicability of the solutions to meet customer needs as they relate to EA initiatives and as they map against emerging best practices. ZapThink enhances its customer's skills by providing education, credentialing, and training to EAs to develop their skills as architects.

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ZapThink was founded in October 2000 and is headquartered in Baltimore, Maryland. Its customers include Global 1000 firms and government organizations, as well as many emerging businesses. Its Managing Partners have worked at such firms as IDC, Saga Software, Mercator Software, marchFIRST, and ChannelWave, and have sat on the working group committees for standards bodies such as RosettaNet, UDDI, and ebXML.

Call, email, or visit the ZapThink Web site to learn more about how ZapThink can help you to better understand how SOA will impact your business or organization.

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