

Bringing SOA Value Patterns to Life

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Bringing SOA Value Patterns to Life

EXECUTIVE OVERVIEW

Businesses of today are being forced to respond faster to competitive and customer challenges and are looking to IT to be a differentiator providing flexibility and speed as they address complex business forces. Forced to deliver more, faster, IT managers are looking at technology foundations that provide both agility and reduced cost, and Service-oriented architecture is touted as the silver bullet by industry analysts and the IT press. These days, it is difficult to attend an IT conference or pick up a magazine without hearing about the promise of SOA agility and reuse through standard Web service interfaces in a loosely coupled architecture.

Spectrum of common Questions about SOA Benefits

Even though companies of all sizes and in almost all industries have adopted SOA, many IT professionals are trying to put this latest buzz about SOA into perspective. Some are still skeptical and want to understand exactly why SOA is superior to traditional software development approaches. They are tired of buzzwords and want concrete examples of the power of SOA. Others are convinced and eager to start practicing SOA, but are unsure how and where to start. They are looking for practical advice about the kind of project to use as an SOA pilot—where to find the SOA “sweet spot” that will help them become successful. Other IT professionals find themselves tasked with their company’s first SOA project and are struggling with the new world of SOA. To deliver on the promise of SOA, they need to know how to avoid potential pitfalls and maximize the value of SOA. They also need metrics to measure the impact on the business they achieved by using SOA. It is the goal of this white paper to address these common questions.

This white paper fits into the broader context of Oracle’s effort to equip our customers with a “Road Map to SOA Success.” We provide guidance for maximizing SOA value and selecting SOA sweet spot projects. The Road Map to SOA Success offers a framework for assessing your organizations’ readiness for SOA and a best practice methodology for services design and SOA project execution.

In-depth Study reveals Value Patterns and Accelerators

After working directly with more than 100 early SOA adopters over the past 24 months, conducting more than 120 hours of in-depth interviews on the topic of SOA business value and spending a year publishing a book on SOA Best Practices jointly with ten customers and partners (www.packtpub.com/BPEL_SOA/book), we identified three SOA value patterns:

- SOA-based Integration
- Modern, Composite Application Development
- Modernizing Mainframe and Legacy Applications

Across the three core SOA value patterns, customers realized order of magnitude business impact — most achieved results in the range of 100–500% improvement. The most significant benefits of SOA were realized when changes were necessary to an application or integration. The reason is that SOA addressed fundamental challenges with traditional approaches.

Real-life case studies illustrate this SOA value potential and provide “lessons learned” success tactics. One customer changed the game of integration by reducing the response time for integration change requests from two months to five days, delivered without extra budget by nonexpert, internal IT staff. Another customer reduced time to market of a major IT project from two years to six months while improving business users’ satisfaction with the application through iterative validation and refinement. In fact, the most enlightened adopters of SOA leverage BPM best practices such as top-down process mapping, iterative/agile development, and layered-services architectures to fight the “business/IT alignment gap” and derive maximum value from SOA. SOA helped yet another customer to fight one of the burning issues of large IT organizations: how to reduce the enormous costs (often 70–80% of the IT budget) and resource needs (30 people to diagnose an issue in tightly coupled COBOL code) of maintaining legacy mainframe systems. After refactoring a COBOL application with SOA principles and technology, bug-fixing cycles were reduced from three to four months with 30 people to three to four weeks with five to eight people.

We further identified five environments that we found to be accelerators for SOA business value and hence “SOA Sweet Spots”:

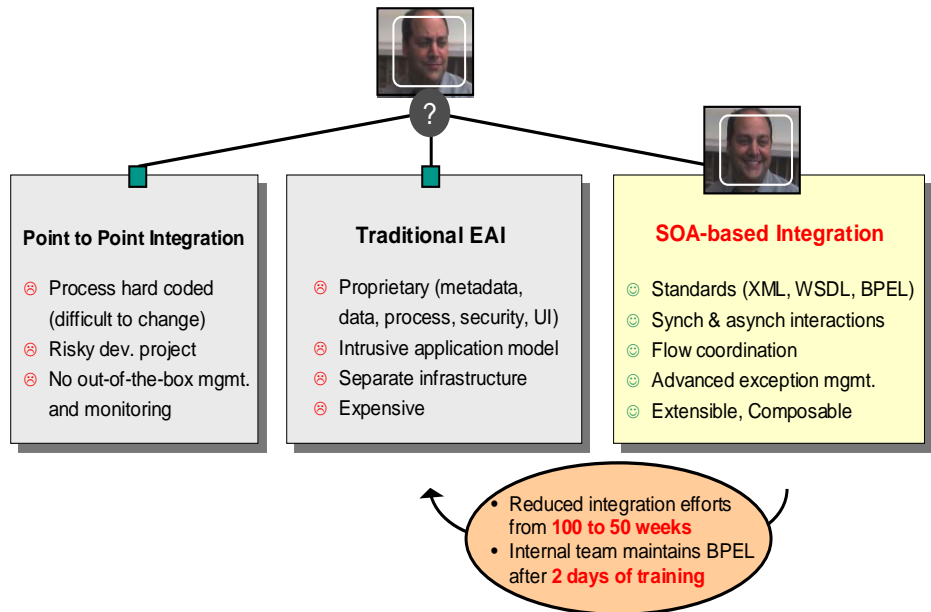
- Constant Industry Change
- Industry Consolidation
- Customizations from Common Base
- Multi-Channel Applications
- B2B Services Network

We will explain the rationale and also provide metrics to measure the indicator’s magnitude. Please note that these accelerators are not necessary requirements—SOA success is possible without them. However, each one significantly increases the chance for SOA success.

SOA VALUE PATTERNS

SOA-Based Integration

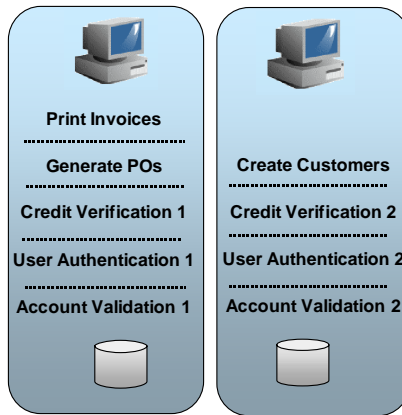
When talking about enterprise application integration (EAI) with IT organizations, we often heard a significant amount of dissatisfaction with traditional, proprietary, integration-broker technologies as well as point-to-point integrations. Many companies had trouble maintaining their integrations and grossly underestimated the time, money, and consulting help that would be required. They needed a better way of integrating applications—a way that will allow their internal, nonexpert, IT resources to maintain and evolve existing integrations rapidly and cost-effectively. Our findings show that, with standards-based integration, you now have the tools to create easy-to-maintain integrations. Integration projects implemented as SOA orchestrations using BPEL surprised IT managers with very rapid change cycles. Moreover, IT resources—who had no prior J2EE development experience—were comfortable maintaining the BPEL processes after getting up to speed in less than two weeks.



Modern, Composite Application Development

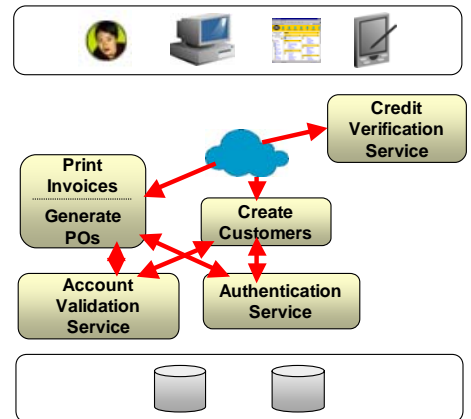
Custom-written applications are important to many companies, because they help implement competitive differentiation. However, many custom-written applications become legacy applications the day they are created, and evolving monolithic, tightly coupled application code that was written with integration as an afterthought is often nothing short of a nightmare. Traditional development approaches have created a “business/IT alignment gap.” SOA offers a better way of designing integrateable, reusable application assets, orchestrated from existing services rather than rebuilt from scratch that will close this gap.

**The Past:
Monolithic Applications**



- Hard to adapt to changing requirements
- Duplication = wasted resources
- Small fixes require large investments

**Now:
Modern, Composite Applications
(Service-Oriented)**

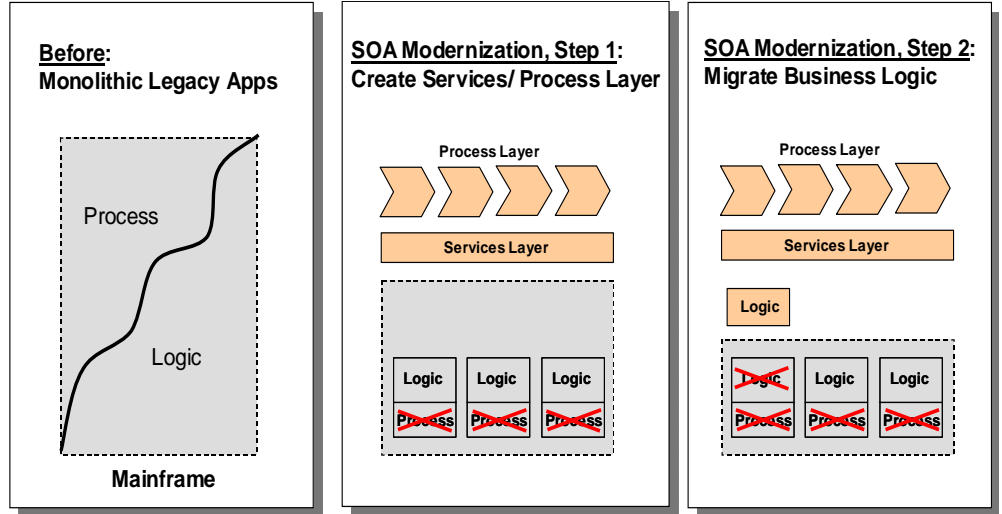


- Compose applications from modular services
- Maximize reuse & interoperability
- Easy discovery and dynamic binding

We found that customers who apply business process management (BPM) best practices maximize the value of SOA. SOA technology coupled with an iterative development approach delivers high-quality business results in record development time. Unfortunately, we did experience a number of “bottom-up” SOA projects, which are rarely considered successful, because they do not drive enterprise wide adoption. As services are not offered at the right level of granularity for business analysts, this limits the potential for reuse. “Top-down” process mapping proved a successful remedy.

Modernizing Mainframe and Legacy Applications

The third value pattern is mentioned less frequently in the context of SOA. This pattern targets mainframe applications, the most tightly coupled, monolithic applications we know of, and the cause of a fundamental IT dilemma. It is not uncommon for companies to spend 70–80% of their IT budget on maintaining their mainframe applications.



Change cycles are extensive and enhancements are risky, because change impact is hard to predict. Yet it seems impossible for most companies to free themselves from this weight that drains its IT resources and dollars. Replacing a mainframe costs tens of millions of dollars and take more than five years—often longer than most CIO tenures. Until SOA, many companies were simply stuck. We will explain a service-enablement strategy to migrate away from the mainframe one service at a time. This approach helps reduce maintenance cycles from months to weeks, and reduce by 70% the number of IT staff involved in finding and fixing bugs. Furthermore, this application modernization technique can be extended to legacy client server applications, and advanced SOA tools such as BAM and a rules engine can modernize and dramatically optimize an existing application through closed loop strategies to achieve significant business impact.

BRINGING SOA VALUE PATTERNS TO LIFE

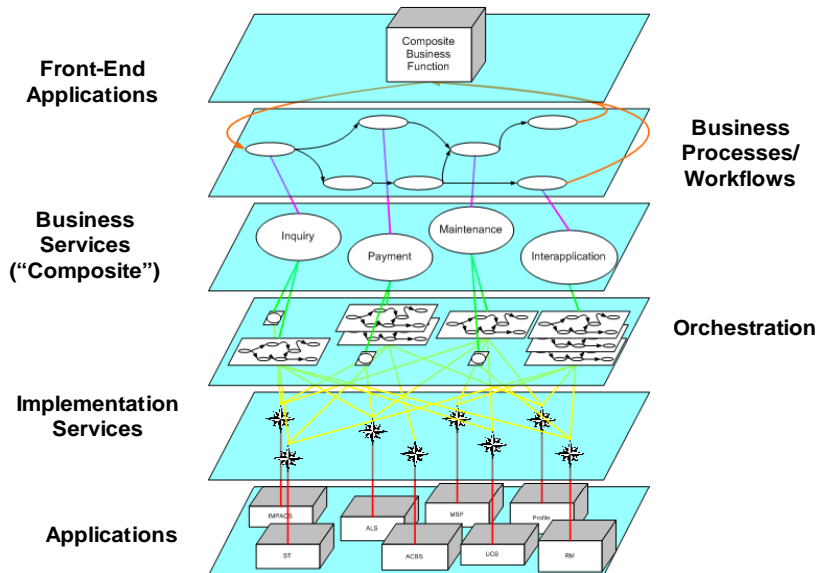
Case Study: From EAI to SOA By Accident

"After looking at various integration solutions, the Oracle BPEL product was the obvious choice for our integration of PeopleSoft HRSA and SalesForce.com. The Oracle BPEL product provided a flexibility not previously available, allowing us to rapidly adapt and streamline our business processes."

David Katz, project manager
Christian Moore, technology project manager
Heald College

In 2005, Heald College, a nonprofit career college, embarked on what was planned as a traditional EAI project. The goal was to enable data exchange between its hosted Salesforce.com contact management system and its PeopleSoft Student Administration application. Intrigued by a standards-based EAI solution, System Integrator E2E Consulting, who had been hired by Heald to perform the integration, decided to use BPEL. SOA wasn't a discussion topic, because all that needed to be achieved was simple data integration. But an unexpected midproject requirement change threatened to delay the project for approximately two months, according to preliminary estimates. When E2E Consulting, using BPEL, delivered in five days, the project caught the CIO's attention. The data integration project turned into a full-fledged composite application, implemented in six weeks. In addition to the initial Salesforce.com integration, E2E Consulting also integrated online leads from Heald College's Web site as well as partner-provided online leads.

Such project acceleration is not a fluke. SOA projects across a wide range of cases including outsourced logistics integration, real-time shop floor system integration, and Java/.NET bridges confirm that integration cycle times are at minimum cut in half, and sometimes reduced from weeks to days.



How is this possible? What is the secret for such significant project acceleration? Oracle BPEL Process Manager provides an easy-to-use graphical development tool, but this in itself wouldn't explain an order of magnitude improvement. The fundamental benefit is in systematic reuse. At the core of systematic reuse is the semantics of the BPEL language, which turns each BPEL process into another composite Web service. This drives a layered architecture, as illustrated in above figure. A typical layered architecture includes two distinct layers of BPEL

SOA-Based Integration

Value Potential

- Five days to completely modify an EAI project architected with SOA/BPEL (past experience: two months)
- Java/.NET bridge in a day instead of three weeks
- Integration development cycle time cut by 50% compared to proprietary integration broker
- Integration development in less than four weeks compared to estimated three to four months using PLSQL-based point-to-point integration
- Nonexpert internal IT resource up to speed in eight days, ready to maintain 22 core BPEL processes

Value Sweet Spots

- Application integration that might also include composite application elements such as Web site integrations (multichannel integration)
- B2B services network
- Integrations that will evolve (change requests, enhancements) with industry change

Success Tactics

- Layered architecture: Business services orchestrated by micro-flows and reused by business processes
- Exposing implementation services bottom-up is not enough
- Sound foundation of XML, XSLT, and XPath skills

processes. The first layer is a lower-level layer of “micro-flow” orchestrations that turn application interfaces (implementation services) into meaningful business services that business analysts understand and therefore more readily adopt. High-level business processes are built on top of these business services.

This layered architecture, naturally enabled by BPEL, makes it possible to react to change requests quickly. Because the micro-flow layer isn't affected by most requirement changes, many modifications are limited to the business services layer. This level of reuse reduces the number of cycles spent on changes.

Unfortunately, some SOA projects simply focus on exposing application interfaces as Web services. They build the implementation services layer, but stop there. It has been our experience that such bottom-up projects are rarely considered successful, because they do not drive enterprise-wide adoption. These services are not offered at the right level of granularity for business analysts, so their potential for reuse is limited.

In this context, it is important to address the current hype around the Enterprise Service Bus (ESB). The ESB is clearly an important part of an SOA infrastructure, because it provides a standards-based messaging layer with capabilities for services virtualization. IT managers responsible for the data center will appreciate the benefits of an ESB at runtime. However, do not be fooled into believing that buying an ESB and simply exposing interfaces bottom-up as Web services is a shortcut to SOA. You should also consider BPEL for services orchestration as a key element of your SOA strategy and try to identify the right business services through top-down process design.

Earlier, we mentioned that many companies had negative experiences with maintaining point-to-point integrations and proprietary integration broker solutions. CIOs expected their internal IT staff to be able to maintain integrations, and most often they were unable to. How will standards-based integration using BPEL change this poor track record? As Heald College and other SOA customers learned, the foundation for standards-based integration is knowledge of the XML standard, which has become pervasive in the IT industry. XSLT and XPath are customary ways to manipulate XML. And BPEL, which relies heavily on XSLT and XPath to manipulate XML throughout the process, is a logical extension. In fact, when in a time crunch, many customers prefer spending time on professional XML, XSLT, and XPath training, because BPEL can be learned through self-study given a sound understanding of the basics of XML. In Heald College's case, a three-day BPEL training class and five days of knowledge transfer by the system integrator enabled an internal two-person IT team without any prior J2EE development experience to take on the task of maintaining the BPEL-based integration of 22 core processes. These 22 core processes were implemented exclusively with standard XML, XSLT, XPath, and BPEL—without a single line of Java. Readers familiar with traditional integration brokers will know that Java is frequently used to implement advanced data transformations. However, the downside is a lack of maintainability by nonexpert IT resources.

"To increase profitability, we need to differentiate ourselves through enhanced services and a better offering. However, we can no longer depend on cost reduction as we've squeezed out whatever was possible over the past years. Further streamlining business processes and increasing business efficiency is key to improve our margins. Oracle BPEL Process Manager and the leasing automation solution Accelior has implemented enable us to do just that.

Jean-Simon Cornelis, Managing Director at ING Computer Lease and IT & Organization Director at ING Lease Belgium

"With the help of Oracle Fusion Middleware, Accelior delivers integration technologies that enable companies to rapidly adopt and deploy SOAs, which facilitate the development of enterprise applications as modular business services that can be easily integrated and reused, creating a truly flexible, adaptable IT infrastructure. We have successfully implemented an SOA-based lease automation project at ING Lease Belgium leveraging Oracle BPEL Process Manager. Oracle is our strategic SOA platform going forward.

Geoffroy DeLamalle, Accelior architect of ING Lease Belgium SOA Project

Case Study: From Two Years to Six Months

ING Lease Belgium, a subsidiary of ING Group, one of the world's largest financial services companies, faced a tough challenge. Through acquisition, it inherited three different back-end systems with known process bottlenecks. A new, unified back-end system was planned but not expected to be completed for at least three more years. At the same time, waiting in a highly competitive environment was not an option.

Within six months, a five-member team from Oracle partner Accelior successfully automated ING Lease Belgium's core Quote-to-Order business process, orchestrating existing capabilities from different back-end systems. The CIO was amazed: "Within my tenure at ING Lease Belgium, I have never seen a major IT project finish in under two years." The success was rooted as much in the project's agile development methodology as it was in the SOA tools used. To arrive at a well-designed business services layer, Accelior conducted a rigorous series of more than 50 one-on-one interviews to map out the business processes. The system integrator's experience had been that one-on-one interviews are more useful than a committee-style group process-modeling exercise because employees in a variety of roles contribute very different process insights—frontline workers provide day-to-day operational expertise, whereas the CIO has a much more global outlook. It is the role of the process-modeling expert to put these different perspectives into context—focusing on usability when interviewing the frontline worker, and gathering input for future system evolution when working with the CIO. Too much time is often spent on educating everyone about the big picture in a group meeting. However, keeping SOA governance and the evolution of the business services layer in mind, a more participatory style and ongoing committee meetings will be beneficial in the future.

Most importantly, Accelior delivered eight iteratively refined prototypes in the course of conducting the interviews. The engagement was won after impressing the CIO with an initial prototype after just a few conversations. Then, after each set of five to ten interviews, the incrementally refined prototype was presented to interviewees for validation. Given that SOA is uniquely suited to accelerate change cycles as described in value pattern 1, incremental development (also called agile development) is a natural fit for SOA, because it engineers change cycles into the core development project. For more information, see the following article in *Application Development Trends*: www.adtmag.com/print.aspx?id=18334

To change perspective, let's consider another SOA customer, a high-profile start-up that was in a race to market with a competitor. It didn't choose an incremental development approach to follow the latest software engineering trends. It didn't have a choice but to develop incrementally. There was no time to wait for frozen requirements, as the company needed to be in operation within a few months. Iterating on partially defined prototypes, a logistics outsourcer was successfully integrated into supply chain operations. Standards-based integration with BPEL greatly accelerated this forced incremental development process.

Modern, Composite Application Development

Value Potential

- Core process automation in six months compared to a typical two-year-long IT project
- Avoid a rip and replace project estimated at \$100M over four years with less than \$1M in SOA development
- High satisfaction level of business users because the IT application is aligned with business needs
- Time-to-market and cost benefits from the ability to include third parties (outsourcing).

Value Sweet Spots

- Multiple back-end systems (industry consolidation) and anticipated back-end system refactoring
- Alternative to big-bang rip and replace projects
- BPM projects
- Competitive pressure to act without frozen requirements
- Many process steps (process complexity) and process variants (customization of common base)

Success Tactics

- Iterative/ agile development methodology
- Top-down process mapping through a large number of one-on-one interviews
- Ongoing business services layer governance and evolution through committee meetings
- Combine BPM techniques with SOA technology

Have you experienced firsthand the “business/IT alignment gap” resulting from traditional development approaches? First, business analysts explore and document requirements on their own for months. Once those requirements are frozen, IT develops the application. Many months later, the application is completed, and everyone is surprised that the original requirements have shifted, were misinterpreted, or simply incorrectly analyzed. Let’s be honest: it’s very hard (even impossible) to get everything right in one iteration. But after 12–18 months, time is running short and unfortunately, the application has been designed with little flexibility for change. Hence, it becomes a liability, not an asset, from Day 1. Soon, a new application will be built from scratch to replace its predecessor in another “big bang” IT project...

The marriage of SOA and BPM development techniques, as practiced on the highlighted project at ING Lease Belgium, creates an opportunity to end this mess. One of our customers said it the best: “I believe that software engineers are ahead of business analysts in practicing agile development and reuse. However, as long as business analysts will not get incorporated in the process, any engineering effort will have little overall impact. With SOA and BPEL to orchestrate and build processes with re-salable business services, we now have, for the first time, a way to effectively make business analysts part of agile development. That’s huge progress!” Based on SOA project success, we learned from our customer base that the marriage of BPM principles with SOA technologies is a sweet spot for business value. Wherever we have seen bottom-up service enablement coupled with top-down process engineering, SOA projects delivered the highest return.

Just as BPM and SOA are converging, the lines between the disciplines of integration and building composite applications are also being blurred. There is a significant similarity between value pattern 1, which focuses on standards-based integration, and value pattern 2, which describes how to build modern, composite applications. This is not surprising given the vision of SOA to construct integratable applications. In the SOA world, application architects will begin by building business services layers that future applications can reuse (just as Accelior did for the ING Lease Belgium project). Integration architects will not be limited to data integration between packaged applications; they will create composite applications that provide value by connecting Web channels (just as Heald College did), embedding human workflows, and so on. If SOA is done right, integration will no longer be an afterthought when developing applications.

Modernizing Mainframe and Legacy Applications

Value Potential

- Reduction of bug-fixing cycles from three to four months with 30 people to three to four weeks with five to eight people
- Avoidance of a \$30–100 million, five-to-ten year rip-and-replace project
- \$1 million savings in systems sustenance costs within first year of deployment
- 195% improvement of turnover while maintaining profit ratio

Value Sweet Spots

- Monolithic, tightly coupled COBOL mainframe applications
- Applications with long issue diagnostics and regression testing cycles
- Applications that are the top “sinks” for the IT maintenance budget
- Business processes that can be optimized significantly through “closed loop feedback”

Success Tactics

- Retire mainframe process layer and rebuild in BPEL on top of a Web services layer that exposes mainframe business logic
- Use Web services gateway technology (Oracle Web Services Manager) for supervising and monitoring the services layer
- Use the SOA/BPM technology toolbox: BPEL, rules engine, BAM

Case Study: Mainframe Modernization—One Service at a Time

One of our customers, a Fortune 100 company, is an early adopter of enterprise wide SOA. One of its biggest IT challenges was the enormous resource drain from maintaining a 35-year-old mainframe legacy system. Before SOA, the following scenario was common to day-to-day IT operations: A bug is identified due to unexpected side effects of a recent minor application enhancement. To identify the root cause of this bug, 30 engineers, each an expert of different aspects of the COBOL application, had to meet to discuss the issue. Due to the tight code dependencies, it was not possible to narrow down the affected application areas—everyone’s expert eye was required. The three-hour meeting is followed by three full weeks of issue diagnostics and four test cycles. The first three fixes break other functionality.

What might seem like a nightmare scenario is reality in most large IT organizations with mainframe applications. These systems are the true opposite of SOA systems: monolithic, very tightly coupled, and static in nature. Hence, evolutionary changes are a tremendous challenge. The result is a race to keep up, and 70–80% of IT budgets are being sucked up by low-value maintenance activities. Because budgets are stagnant, IT progress and innovation are stalled.

In SOA, our Fortune 100 company customer found a way out. One of the reasons the mainframe application had lasted 35 years was simply that a “rip and replace” effort would have been cost- and time-prohibitive. The company’s initial estimate was that a rip and replace project, simply preserving the functionality status quo, would take a five to ten years and cost \$30–100 million. Given an average CIO tenure of 2.5 years, it is not surprising that this wasn’t a viable option. Instead, the company decided to leverage SOA techniques to retire the mainframe application one service at a time. The first step of this refactoring approach was to retire the process code of the mainframe application and rebuild the process layer in BPEL on top of a services layer that exposes the mainframe business logic. The company found that this initial step was extremely beneficial, because it greatly accelerated issue-resolution cycles. Issues could be localized early in the maintenance cycle to specific services, which reduced regression-testing cycles later. Diagnostics was improved because issues could be traced and monitored through a Web services gateway infrastructure that manages the services layer. In fact, this Fortune 100 company successfully leveraged Oracle Web Services Manager for this purpose as well as for virtualizing services, metering service usage, and auditing service-level agreements (SLAs). Moreover, the standard SOA design leveraging XML and Web services also allowed for introducing—in less than a week—a hardware appliance that helps accelerate XML manipulation and improve the system’s speed.

Many companies are content with step 1, because it lets them successfully reuse their business logic assets in the mainframe platform while greatly enhancing agility with the modernized services and process layer. One such organization is an Oracle public sector customer and a winner of the 2004 CIO award. This organization manages 20,000 projects annually across a \$6 billion asset base. Instead of a rip and replace ERP project estimated at \$100 million total cost over four years, it

preserved its mainframe system's business logic (financials, HR, and procurement) and focused on creating the services layer of exposed mainframe interfaces. It then enhanced the overall system with specialized packaged applications (contract management, asset management) as well as a custom-developed project management application, all of which integrate through the main services layer. This project was executed in ten months, achieving \$1 million savings in systems sustenance costs within the first year of deployment.

Our Fortune 100 company, on the other hand, didn't stop at step 1. As a second step, it moved on to refactoring logical groups of COBOL business logic into J2EE. Because these changes took place behind the stable services layer, they were isolated from the main process flow, which allowed for a smooth, incremental migration. This approach can be used to retire the COBOL business logic one service at a time.

Application modernization is not limited to COBOL code on mainframes and can well go beyond a simple technology refresh. A modernization project can dramatically improve existing application functionality and effectiveness. U.K. company Cattles is a provider of high-risk loans. Previously, it used an Oracle Forms application for its loan-approval processes. Oracle partner Griffiths Waite modernized the Oracle Forms application by applying SOA principles and technologies. First, it wrapped existing PLSQL-stored procedures as Web services and rebuilt the process layer in BPEL. That's analogous to step 1 of our mainframe modernization approach. However, adding both a rules engine and business activity monitoring (BAM) to the SOA infrastructure significantly boosted the application's potential for optimization.

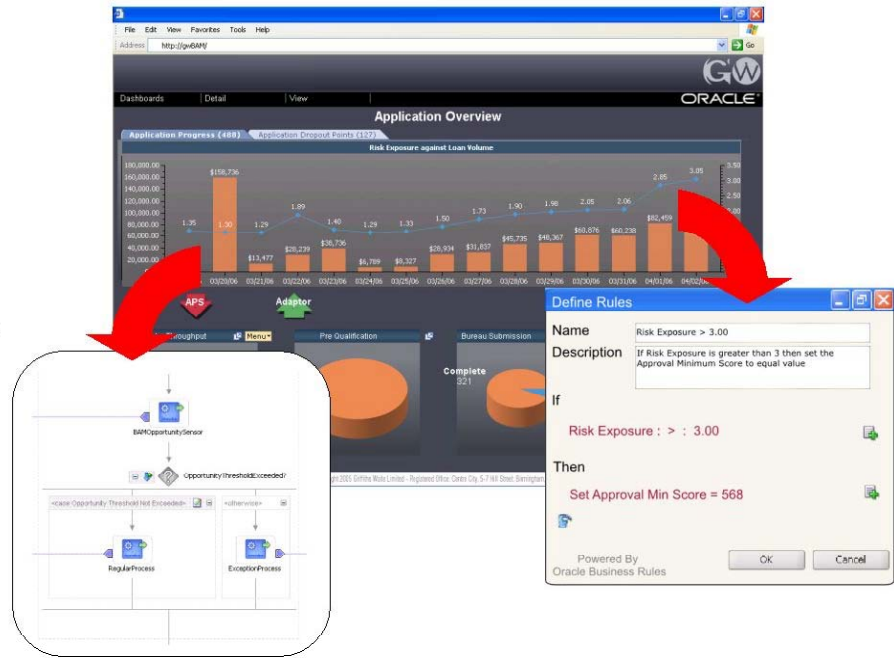
The rules engine introduces another architectural layer that drives business agility. Separating policies into a business rules engine is a best practice for added agility, given that changes of policies, which formalize business judgment, are much more common than more-intrusive process-definition changes. The result is a process and policy implementation that can be kept current with new requirements without having to rewrite software.

To help operational management proactively monitor business processes in real time, identify bottlenecks, and uncover opportunities for process improvements, Griffiths Waite, leveraging Oracle BAM technology, added management dashboards to the system. These dashboards display key performance indicators (KPIs) based on an infrastructure of BAM sensors, naturally embedded into BPEL processes. BAM dashboards are an excellent way to visualize the business value of SOA to CIOs or line of business (LOB) executives. While this audience will not have the technological expertise to fully grasp the architectural design details, BAM will allow them to visually connect technology to business value because BAM helps illustrate the new level of visibility into and control of the business. Our recommendation is to consider BAM a key tool to gain executive buy-in and drive adoption.

"Oracle SOA Suite is by far the most comprehensive and integrated SOA offering in the marketplace. At Cattles, we needed a solution that could not only orchestrate a high-risk loan-approval process, but also provide the ability to monitor key business metrics.

Together, Oracle BPEL and Oracle BAM helped us create a robust platform where we could easily monitor processes and provide a feedback loop for process optimization. This platform is successfully supporting an initial implementation of more than 2,000 users and processing more than 25,000 applications per day."

Mark Simpson, chief architect
Griffiths Waite



Griffiths Waite went even further and built an adaptive system that enabled continuous process improvement for substantial business performance optimization. To achieve the ultimate goal of driving higher levels of efficiency and optimizing business performance, BAM thresholds were instrumented to monitor and automatically initiate corrective actions by modifying rules and process definitions (see above figure). The loop between BAM, BPEL, and rules was closed, so the system could sense exceptions and respond and adjust rules and process definitions if necessary, which ultimately aligns business decision-making with execution. This sophisticated control system design helped Cattles improve turnover by 195% while maintaining its profit ratio. A detailed description of this project is published in *Business Integration Journal* and available online at www.bijonline.com/pdfissue/BIJ.May-June06.pdf

We mentioned earlier how important BPM techniques such as agile development are to make the most of SOA, and it is important to fully realize the benefits of SOA tools. We hope that the use of Oracle Web Services Manager to provide better tracing capabilities during issue diagnostics and testing, the ability to include a hardware appliance for performance, BAM as a business value visualization tool for executive management, and a powerful closed feedback loop between BAM, BPEL, and a rules engine have inspired you to plan your SOA infrastructure road map. Lack of a comprehensive SOA infrastructure can easily become an inhibitor to delivering on the promise of SOA.

SOA VALUE ACCELERATORS

Constant Industry Change

Given that SOA thrives on change, it comes as no surprise that you should look for environments where frequent, often unplanned change can be anticipated.

Examples include the Telco industry, where competition forces shorter and shorter new product introduction cycles, and the Healthcare industry, where new legislation demands compliance with process revisions. Similar scenarios exist in other industries, often specific to a project in a stable vertical sector. A good metric to look for is the lead-time in which management expects you to be ready to implement process changes in your system. Based on our experience, an investment in SOA makes a lot of sense if the IT response time is less than six months. If the IT response time is less than three months, consider adding a rules engine to your SOA architecture to further isolate less intrusive policy changes.

Industry Consolidation

We saw many successful SOA projects unify multiple back-end systems inherited from acquisitions. Therefore, we believe that a company that is actively acquiring other entities is a good candidate for SOA, and the number of acquisitions is a key metric to consider. An SOA services layer can be very useful to decouple a unified process from multiple back-end systems and provide the illusion of a single process across multiple siloed business units. This services layer can also serve as a stopgap until a completely new back-end system is re-architected, rendering the front-end business processes future proof. Please note, however, that this indicator does not apply to companies that will operate acquisitions as completely separate entities or that have strategies to immediately retire the IT systems of all acquired companies.

Customizations from Common Base

During our analysis of successful SOA projects, we frequently saw a shared-services platform delivering variants of repeatable processes. This is a typical scenario in the field of business process outsourcing (BPO). Many process outsourcers, including providers of outsourced customer loyalty systems (such as airlines reward systems), EDI WANs, and outsourcers of administrative processes in the public sector adopt SOA successfully. Historically, outsourcers duplicated customized systems for various clients, which made it very difficult to maintain and evolve those systems. With growing competitive margin pressure, though, project-based systems become liabilities, and a common-services platform based on SOA principles is considered a good alternative. The idea is to maximize the reuse of core services across multiple client projects. Metrics to consider are the total number of customers on the platform, the degree of flexibility demanded by customers, and the process complexity, as measured by the number of process steps. The larger the number of customers, higher the percentage of customizations

compared to the base platform, and the larger the number of process steps, the higher the potential return from an investment in SOA will be.

Multi-channel Applications

With the rise of the internet, many companies are offering their services through multiple channels such as company agents, online services, and links to partners. Each channel offers slightly different capabilities and processes, but they are all based on the same core services. Therefore, an SOA services platform is suited to power multiple channels. In certain cases, such as ING Lease Belgium, SOA opens new partner channels. In other examples, such as Heald College, SOA optimizes the way multiple channels are integrated. A multichannel environment enables reuse at a rate as least as high as the number of channels powered. The greater the number of channels that can reuse common service capabilities, the higher the impact of SOA will be.

B2B Services Network

The grand vision of SOA is a networked world in which companies provide virtual service offerings that integrate many electronic partner service offerings. For example, a travel aggregator could seamlessly package airline, hotel, and rental car services. Details are explained in the article “SOA in Action Case Study—LibGo Travel” published in *Web Services Journal* and available online at <http://webservices.sys-con.com/read/136219.htm>

Similarly, financial services companies could incorporate credit check services, and event-planning companies could include room-scheduling systems. With SOA, linking partner services will be easy and provide a great deal of flexibility to services aggregators. Smaller, specific service providers benefit over larger, strategic partners, which previously were hard to “unhook” because of significant switching costs. B2B partner services have become rallying points for starting SOA initiatives. If your process incorporates a significant number of external B2B partner services, our experience shows that your investment in SOA has the potential for measurable business benefit.

NEXT STEPS

If you plan and execute your company's first SOA project, you should focus on adoption and building positive momentum for SOA. Your management will make up its mind based on how clearly it understands the business impact and how quickly your peers are jumping on the bandwagon. Therefore, you need strategies for visualizing business value and for accelerating adoption of your services layer. Most customers found that agility trumps reuse for SOA adoption. Our recommendation is to resist taking the easy way of simply exposing existing application interfaces as Web services. You also need to make the additional step of building micro-flows that orchestrate your business services layer in order to get business analysts to adopt your services. Pick a process that makes a difference to your business (such as customer on-boarding), and make top-down business process modeling part of the project. There is no better way to excite your executives than by incorporating BAM early. BAM is not a luxury—it's your chance to help executives understand the business value of your project.

Moreover, plan your SOA technology road map. Technology does matter—Oracle Web Services Manager facilitates monitoring during issue diagnostics and testing cycles, BAM helps you visualize the value of SOA, BPEL helps you build a layered SOA architecture, and a rules engine increases the speed of changing and evolving decision points. Also, once you have 50 or more services, a UDDI-compliant services registry is good housekeeping tool. Oracle offers a comprehensive suite of SOA tools, which you can explore at oracle.com/technologies/soa/soa-suite.html

If you are interested in hearing more about SOA adopters, detailed architectures, and advanced BPEL techniques, we recommend the book *Best Practices—The BPEL Cookbook*. You can find it online at

oracle.com/technology/pub/articles/bpel_cookbook/index.html

You can also order it at www.packtpub.com/BPEL_SOA/book

We wish you great success with your journey toward enterprise SOA, and we hope you are as excited about the potential of SOA as we are. One of our customers, who has been practicing SOA for several years, put it this way when talking to the company's line of business managers: "You want to be able to rapidly change IT systems when you figure out more effective and/or efficient processes or respond to the competition. You want to spend your IT budget and focus your IT team's attention on implementing innovative, new functionality rather than on maintaining the old. You want to easily incorporate partners and outsourcers into your business model. Well, if that's what you want, the entire IT community will agree that today, we don't know any better way to help you than to leverage SOA."

ORACLE FUSION MIDDLEWARE

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