Effectively Governing and Managing Integration, SOA and Web Services

VI Annual Enterprise Integration Summit

L. Frank Kenney

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Gartner has found that many SOA projects and deployments lack the necessary governance mechanisms to adequately control these projects and deployments. Thus, there is the misconception that their SOA is a failure when the reality is that they have not properly architected and implemented a governance strategy. As IT moves into the next wave of Internet-based technologies and business models, the nontraditional IT user will have more of an impact on which products and services are offered by the enterprise. These users will be responsible for many ad hoc "on the fly" projects using both Web 2.0 technologies and valuable, sometimes critical and confidential, corporate business services.

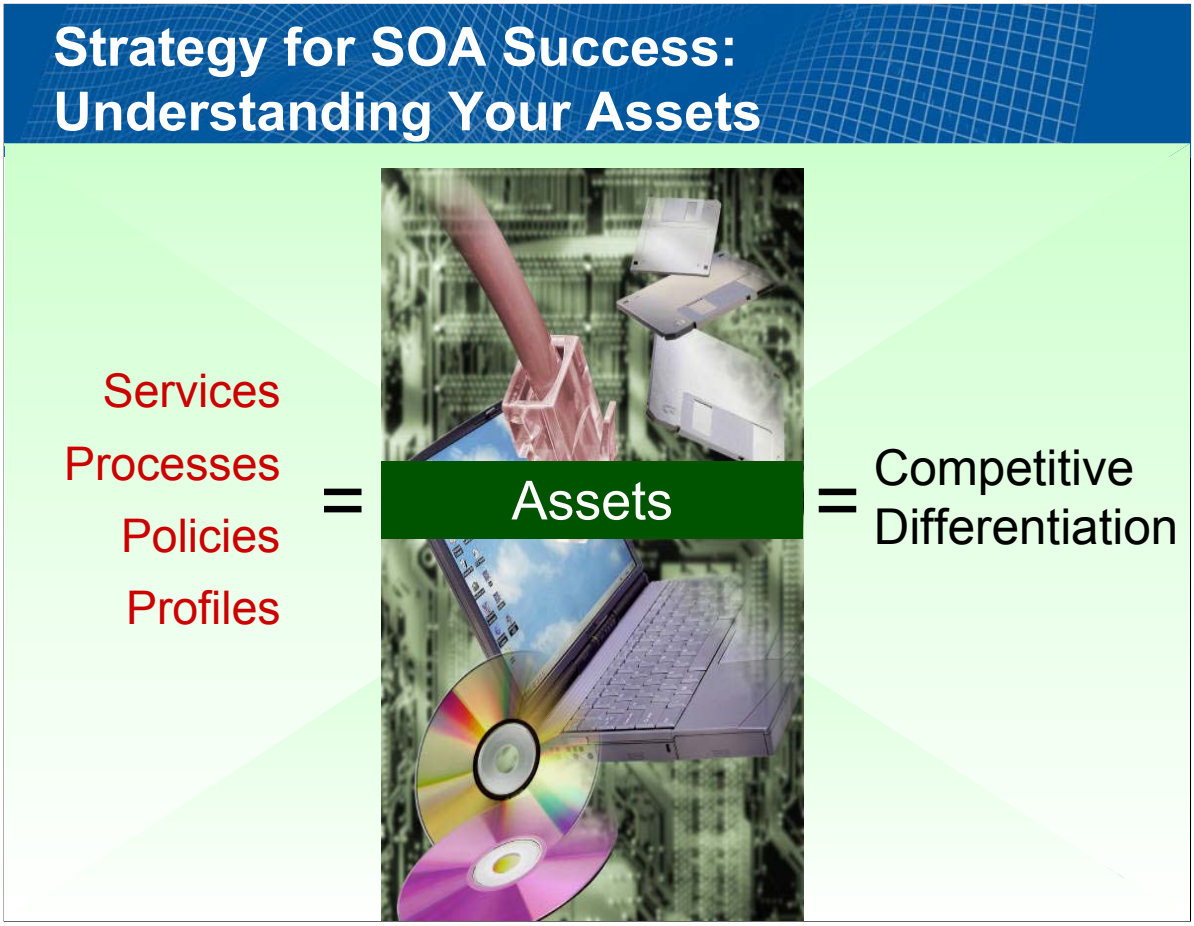
Key Issues

1. How do the innovations and changes in architecture (such as SOA, EDA and WOA) complicate the governance of IT infrastructure?
2. How do you successfully "sell" SOA and governance to your business executives and CXOs?
3. Which vendors and solutions can best address your requirements for governing your IT infrastructure?

Gartner

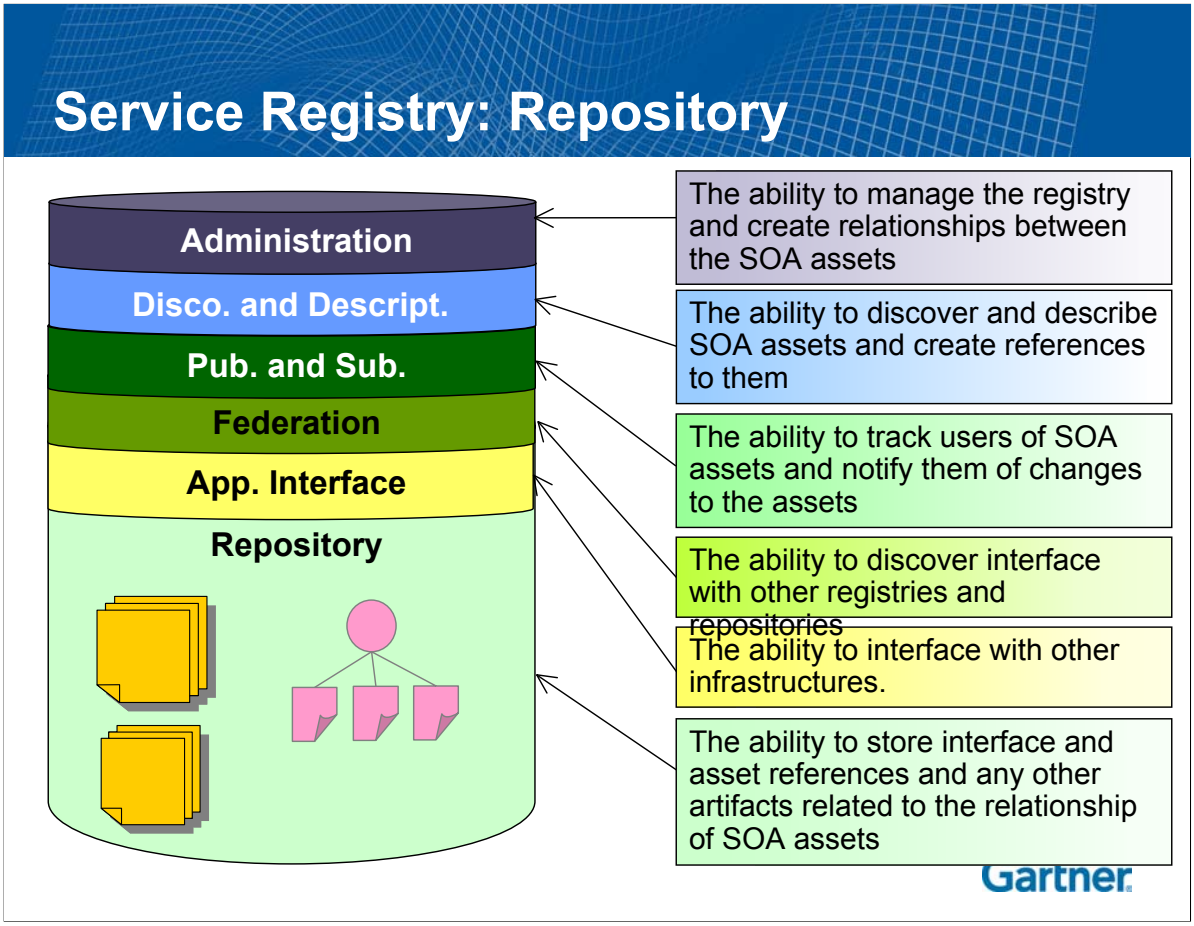
Key Issue: How do the innovations and changes in architecture (such as SOA, EDA and WOA) complicate the governance of IT infrastructure?

Tactical Guideline: Consider exposing processes, maps and policies to registries using service descriptors. Doing so ensures that they can be discovered and enforced by policy enforcement technologies.



Historically, companies have defined assets as being hardware (such as servers and routers) and applications (for example, business applications purchased off the shelf or custom developed). However, as technologies start to commoditize and applications become increasingly modularized and distributed, more companies are focusing on assets once considered intangible, such as processes, translation maps and policies. Gartner defines policy, in the context of SOA, as a set of guidelines, rules, regulations or requirements to be enforced on services. Examples are security policies, such as access and authentication; management policies, such as performance, monitoring and availability; development policies, such as development-language requirements; routing policies, such as content-based routing; transformation policies, based on document types or partner profiles; and correct use policies, such as sequencing resources. For example, a large credit bureau, which shares the same applications and, in some cases, the same processes with its competitors, has created some competitive differentiation by advertising its security policies and service levels to its customers. This vendor believes that if its customers believe their personal information is better secured, then this will create the perception of value — triggering more use of the vendor's services.

Strategic Planning Assumption: By 2008 95% of registry products will have their own embedded proprietary repositories (0.7 probability).



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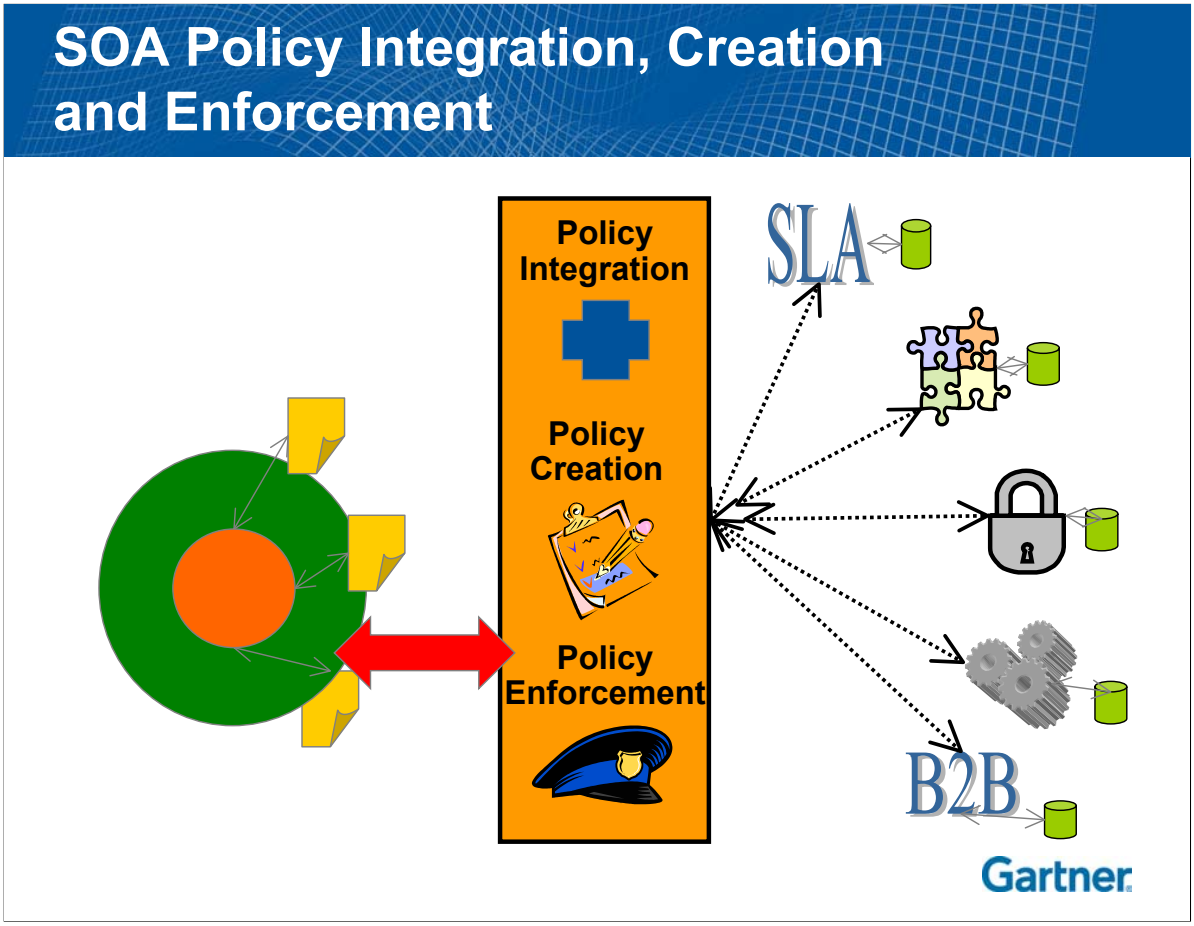
Registries, similar to repositories, help manage metadata, and most registries adhere to various standards, such as UDDI and ebXML Registry, to ensure interoperability with other registries and software infrastructure. This interoperability also assists with federation which is essential for some aspects of SOA governance. Recently, however, the scope of registries has evolved to create and document the relationships (configurations and dependencies) between various metadata and artifacts. Additionally, some registries are used by policy management technologies to: 1) Store references to policies created elsewhere in the infrastructure, such as directories, access management solutions and performance management suites. 2) Retrieve those policies, using the aforementioned references, to dynamically enforce policies. 3) Store references to metrics, or the metrics themselves about the running deployment.

Some vendors have also built mechanisms for facilitating the governance of the development life cycle: including testing, policy enforcement (policies around reuse, WSDL validation, and granularity) and versioning. Because of their ability to monitor and manage multiple life cycles, registries should not be thought of exclusively for the development or execution environments. Repositories and registries are rapidly converging; just about every major registry product has a repository, and many repository vendors have started to add registry functionality to their products.

Tactical Guideline: Consider policy enforcement technologies that enable you to integrate an established policy, regardless of where that policy was created and is stored.



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Policy management solutions provide the technology to create, discover, reference and sometimes enforce policy. Enforcement is not absolute; however, a policy management solution geared toward performance management can create and discover (dependent on their relationships with third-party vendors) policies around security or process. The capability to enforce these policies may be absent or severely limited. More often, however, these policy management solutions have the ability to dynamically autodiscover and register new and unknown assets and the capability to map and document actual dependencies. Again, because this deployment life cycle intersects the development life cycle, policy management is present at both design and runtime.

Early adopters of policy management technologies tend to focus on two types of policies: service level and access control. Service level policies define, among other things, how services are expected to perform. Access policies define who or what can access a service or set of services. Although policy management technologies can create these policies from scratch or from predefined templates, normally they are defined and stored in enterprise management tools, enterprise access management tools and directories.

Strategic Imperative: Because SOA may contain process and policy assets from multiple sources, and these assets may have an impact on each other, it is necessary to implement testing within the SOA infrastructure and creation tool.

SOA Testing, Validation and Q&A

"Not limited to Design or Runtime"

- Use real-time data for testing and validation of SOA assets.
- Use modeling tools for testing and validation of configuration changes to SOA assets.
- Test performance and security of SOA assets.
- Provide developers and users with validation information during development and use cycles.

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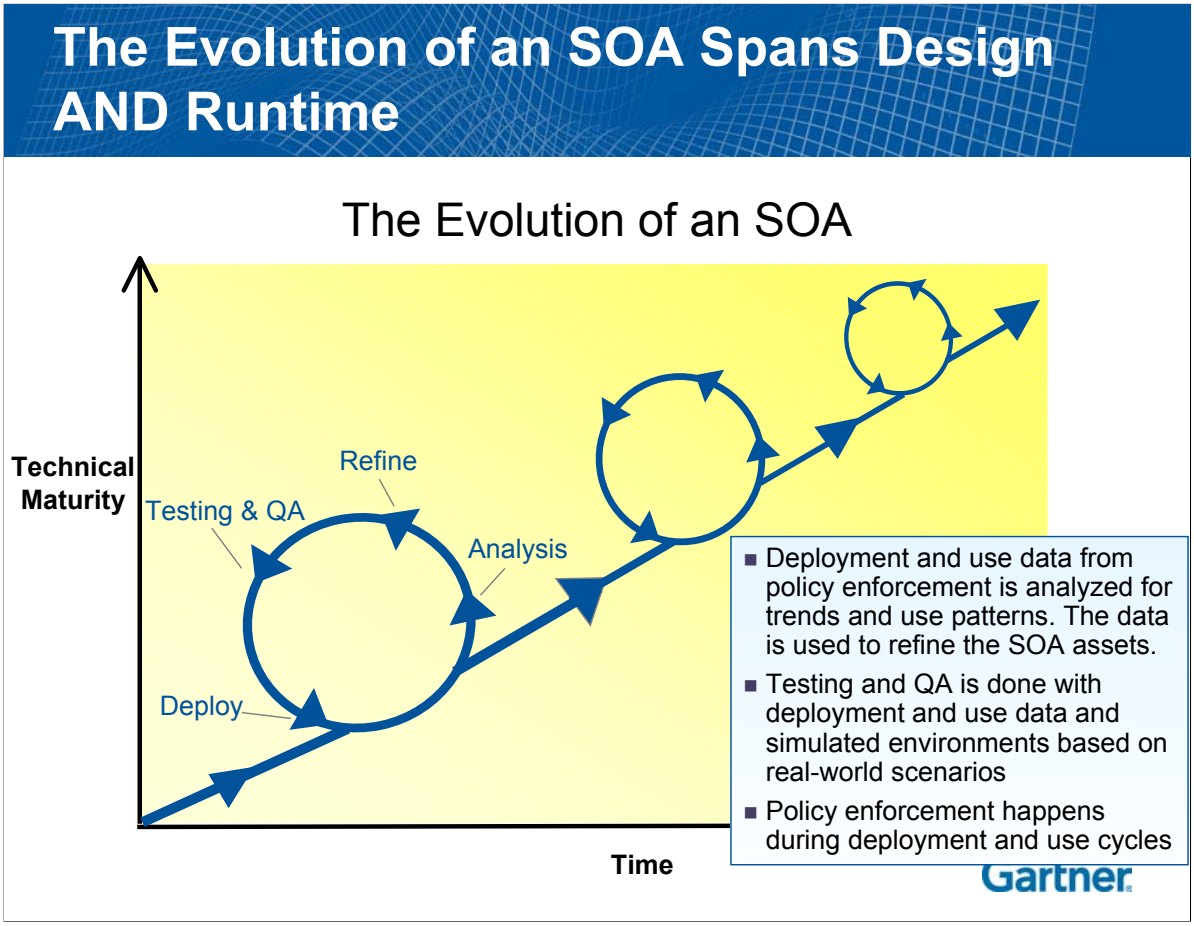
Testing has long been considered solely part of the service development cycle, but SOA is challenging that assumption. Within any SOA, testing and validation is an important step within the overall governance process. It's critical to test and validate various policies (for example, security and performance policies) and processes, although this may happen within the larger context of the SOA asset (for example, within an identity management solution or a BPM suite). The testing and validation of a set of policies and processes are critical because they can often conflict with one another. Because of the loose coupling nature of SOA, the dynamic validation of configurations or dependencies during deployment cycles will become a necessity. Testing and validation methodologies and solutions are increasingly dependent on policy management and enforcement tools, because those tools deliver valuable SOA use and scenario data. This data can be used to create test environments based on real-world scenarios. In this manner, assets can be thoroughly tested for fault, availability, performance, scalability and security.

Tactical Guideline: SOA project owners should be discouraged from organizing around the traditional concepts of feature implementation, design time and runtime. Similarly, they should refrain from buying governing technologies that are "limited" to design time or runtime distinctions, and instead purchase governing technologies that enable them to govern an SOA's multiple life cycles.



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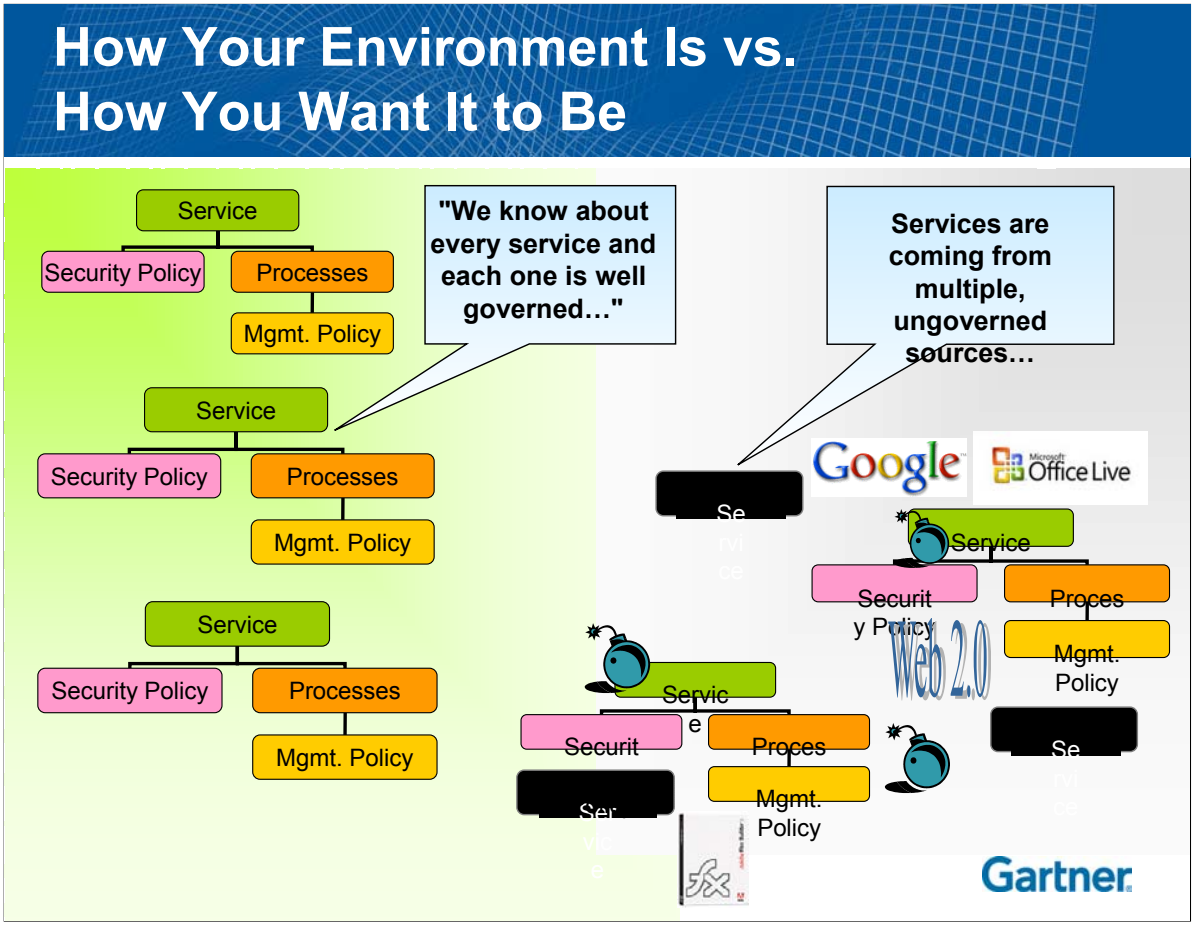
Any attempt at segmenting the class of products that enables SOA governance must begin with a re-evaluation of the notion that companies need to separately implement design-time and runtime environments. Instead, these products govern the various life cycles of the various assets in an SOA. For instance, during a service development cycle, the orchestrations and service testing rely on various policies that are dynamically enforced. In addition, developers must be supplied with systems intelligence that specifically relate to service performance, timing, dependency and configuration. In addition, many of the policies that are enforced on a service in production will affect the development and maintenance of systems that depend on that service. This means that service monitoring and enforcement of the rules governing service use must represent an overlap into the designer's perspective from the deployment perspective throughout the life cycle of the service. Factor in the various life cycles of events, policies and processes, and it becomes apparent that restricting technologies to only runtime or design-time support doesn't address users' real-world requirements.

Key Issue: How do you successfully "sell" SOA and governance to your business executives and CXOs?

Strategic Planning Assumption: By 2010, 30% of all SOA governance initiatives will be triggered by ad hoc enterprise Web 2.0 deployments (0.8 probability).

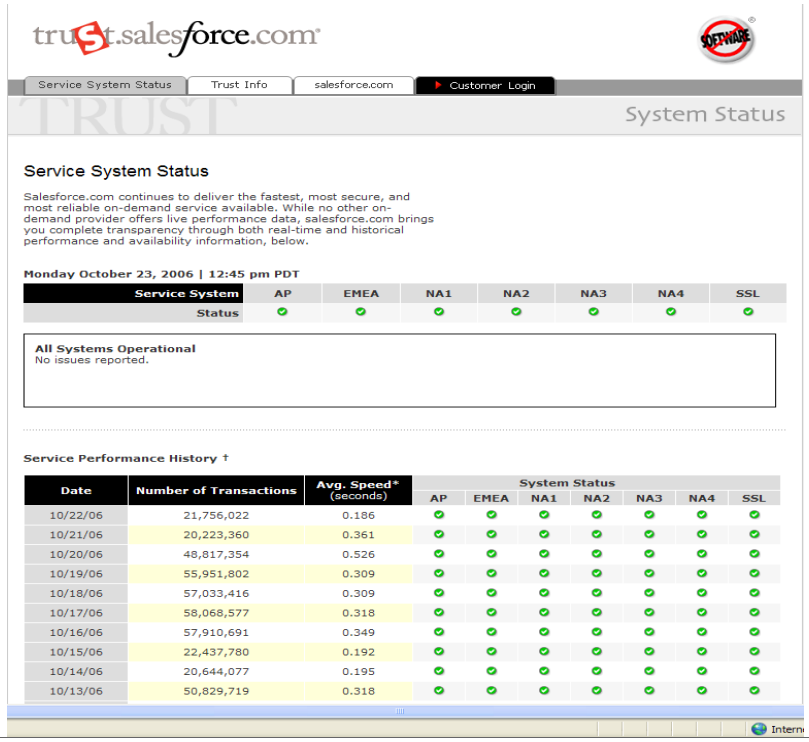


A scenario that Gartner has encountered that is increasing in its frequency and complexity is the use of traditionally perceived design tools by the causal business user. The combination of these tools are increasingly being given away for little or no cost from vendors such as Tibco (General Interface is now open sourced and supports Open Ajax), Adobe Flex and Flash (which has always enjoyed free, fully function trials), and Microsoft's Atlas and Visual Studio Web Designer, which is free in alpha and beta stages. Because these resources and others are free, the community of users using them is quite large and, in many cases, provides community support templates and best practices. These products provide a reasonable conduit for non-IT developers to design and deploy rich applications.

This functionality has existed for sometime in WYSISWG editors and PHP-driven CMSs, but even those products required some sophistication when it came to database deployment and administration, personalization, standardization and user experience. Products today offering design/ development environments give the user drag and drop and PnP functionality, and support new and established standards and specifications, including AJAX, REST and POX. This means that the consumers of the services developed using these products will have a rich experience and can even invoke the services programmatically from other series, such as those in a composite application.

Strategic Imperative: Implement integrated process teams consisting of the ICC and members from many parts of IT (and partners) to ensure the delivery of high-quality Web services.

Trust.Salesforce.com: SOA Governance Becomes Competitive Differentiation



In response to numerous outages in early 2006 and customer feedback about missed expectations, Salesforce.com provides a comprehensive dashboard into its SOA.

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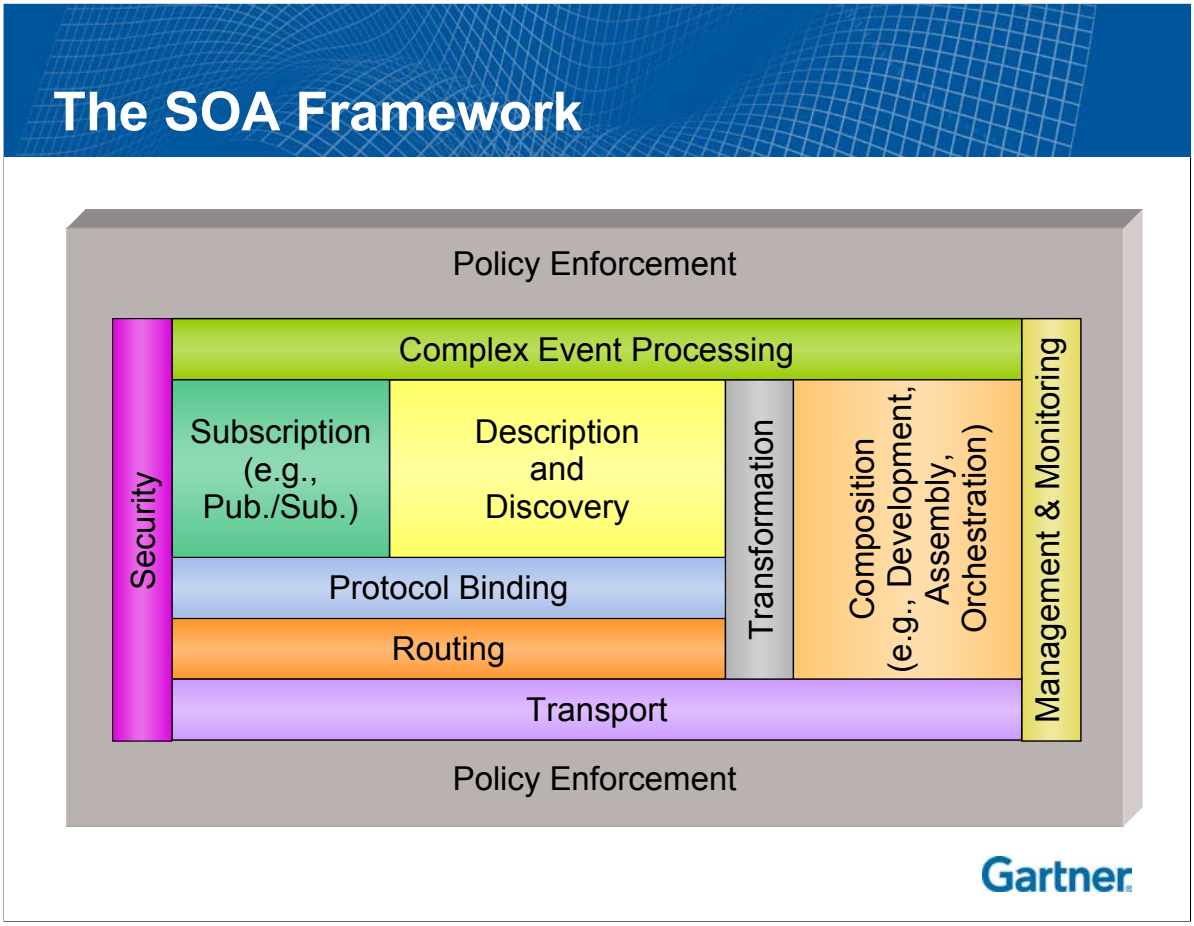
One of the most important principles of SOAs is aligning IT with the business. CIOs, CTOs and IT professionals who want to pitch SOA to the rest of the organization should strive to get some of the loudest and most persistent voices of business on their side. Instead of just talking to IT architects and developers about the ways to exploit an SOA environment, typically using reuse and rapid development as primary motivators, CIOs, CTOs and IT professionals should talk with business executives associated with sales and marketing liaisons to identify ways that SOAs can serve high-value customers. Buy-in from sales and marketing will improve a CIO's or CTO's chances of getting an SOA implemented and enable them to focus on projects that address specific business pain, and measure the business value delivered back to the organization. CIOs and CTOs also need to be prepared to put the proposed SOA-for-sales project before an integration competency center, or technology steering committee that will then work with architects, developers, systems administrators and more to go over the more technical questions, such as: If we offer this type of application to our customers via our salespeople, what kind of performance should we expect? What are the best programs with which to develop these services— .NET or Java? Which vendors can supply us with the best technologies to build an SOA? What type of security do we have to ensure that the information we are sending, such as the aforementioned social security number, is secure? Who will own and maintain the services? And, what will be the operating platform?

Strategic Planning Assumption: By 2008, 70% of companies deploying Web services will do so using products that address the core functions of an SOA framework (0.8 probability).



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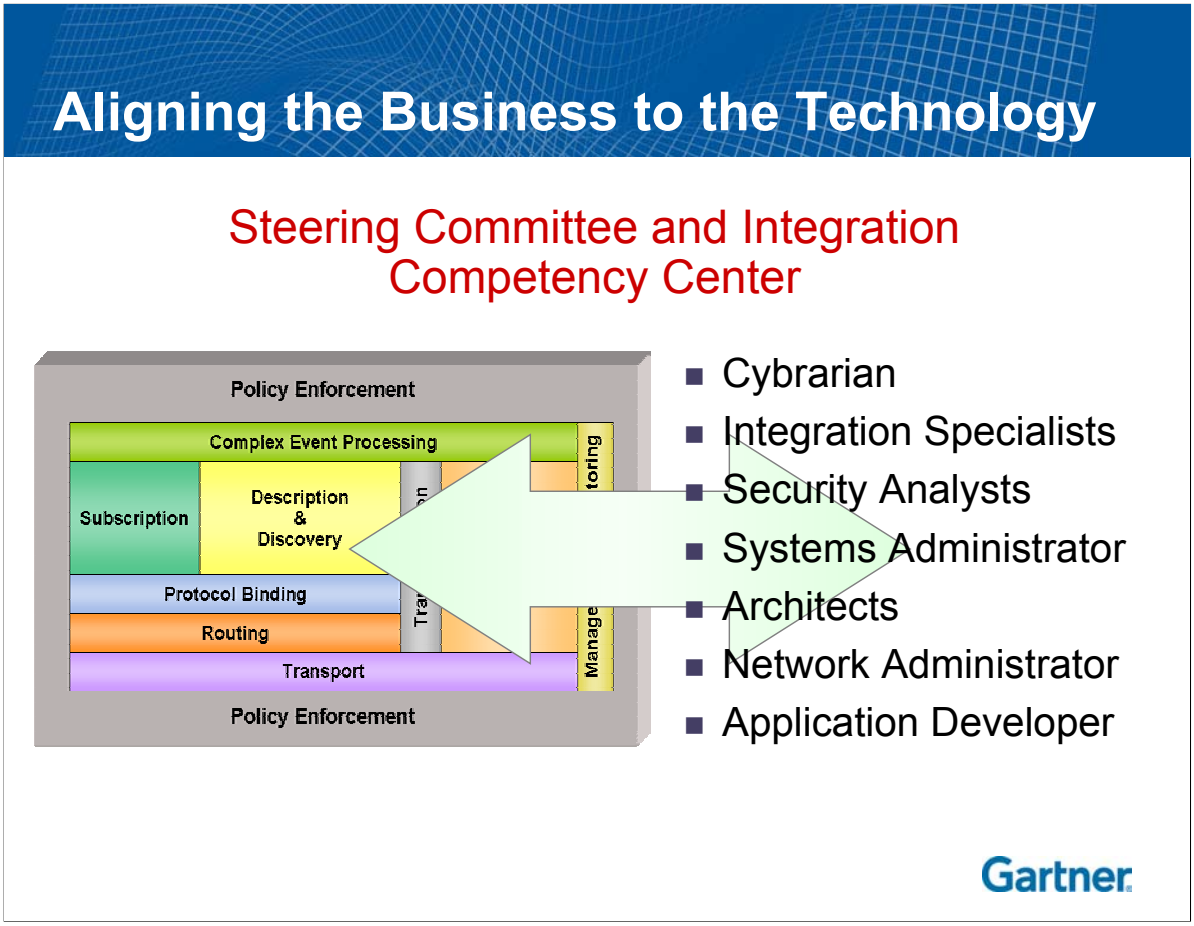
As more companies embrace SOA designs and principles, the need will grow to implement an infrastructure that enables the effective interaction of services. The Web services framework can and should be used as the starting point to design an SOA infrastructure. Although the concept of an SOA infrastructure is technically different from a Web services infrastructure (which implicitly demands the use of interoperable standards, specifications and protocols, while SOA infrastructures don't), the domains of functionality that must be addressed (security, integration, discovery, development, orchestration and management) remain the same. Thus, the Web services framework should be considered when implementing an SOA infrastructure.

Action Item: Every organization that deploys Web services needs to consider an SOA framework, even if that organization doesn't implement one or more of the aforementioned functions (for example, an organization with only a few nonstrategic Web services may elect not to centralize and integrate the development environment).

Strategic Imperative: ICCs should use the SOA framework and other mechanisms for non-Web services aspects of integration to help organize units within the IT organization to assign roles and maintain governance.



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The individual functional domains of the SOA framework can also be mapped to multiple IT organizational units. The security domain is organizationally addressed by security analyst, the integration by integration specialists and the discovery functionality addressed by a "cybrarian." Additionally, the development and orchestration functionalities are addressed by application and process developers, respectively, and the management by system administrators. What binds these organizational units together is a company's steering committee and its integration competency center (ICC), which, in conjunction, act as the administrator, providing governance for all the domains.

Strategic Imperative: Companies should address the domains that are most important to their business and leverage established infrastructure, particularly integration middleware, security and management.

Reusing What You Have

- Enterprise Service Bus
- SOA Governance Suites (Registries, Policy Enforcement/Creation, Q&A)
- Application Platform Suites
- B2B Gateways
- IT Management Suites
- Service-Oriented Business Applications
- Web Services Standards

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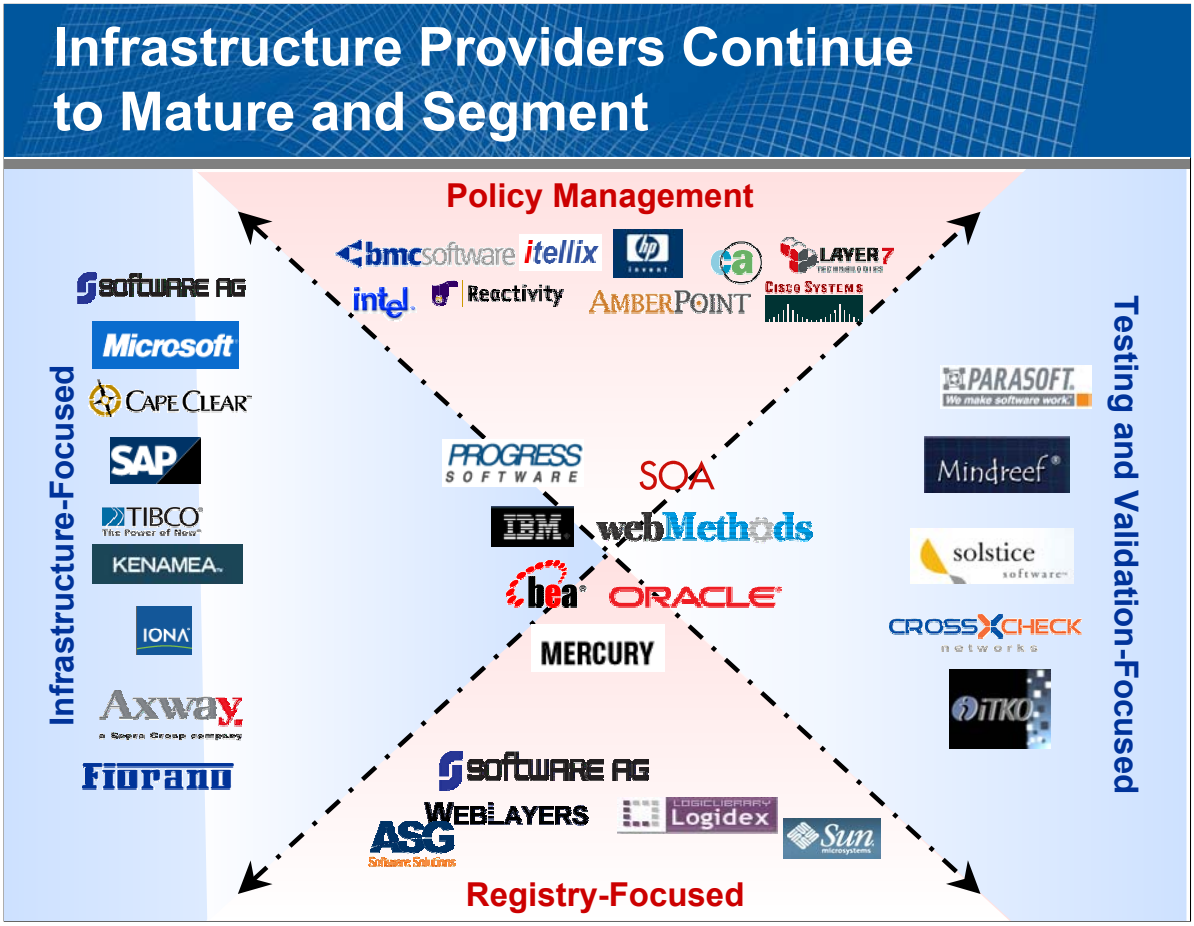
A promising new approach to achieving SOA governance, called the SOA framework, is maturing, but most companies won't be capable of finding adequate functionality to address the SOA framework in a single solution or technology. Companies will, instead, have to buy or build to their SOA framework by browsing seven different product and technology categories, each of which provides one or more key aspects, or domains, of an effective service infrastructure. Understand that one technology isn't necessarily better than the other, because different technologies will benefit companies in different ways. A company that has deployed an enterprise system management suite from a vendor that also offers functionality for managing Web services may find a Web services management offering more attractive than that from another vendor's enterprise service bus. This doesn't demean the value of an ESB; it merely represents the company's desire for a deeply integrated management solution. Today's software from "management" companies such as BMC, IBM, HP and CA features more than just management functionality. Security, integration and business process management are included as well.

Key Issue: Which vendors and solutions can best address your requirements for governing your IT infrastructure?

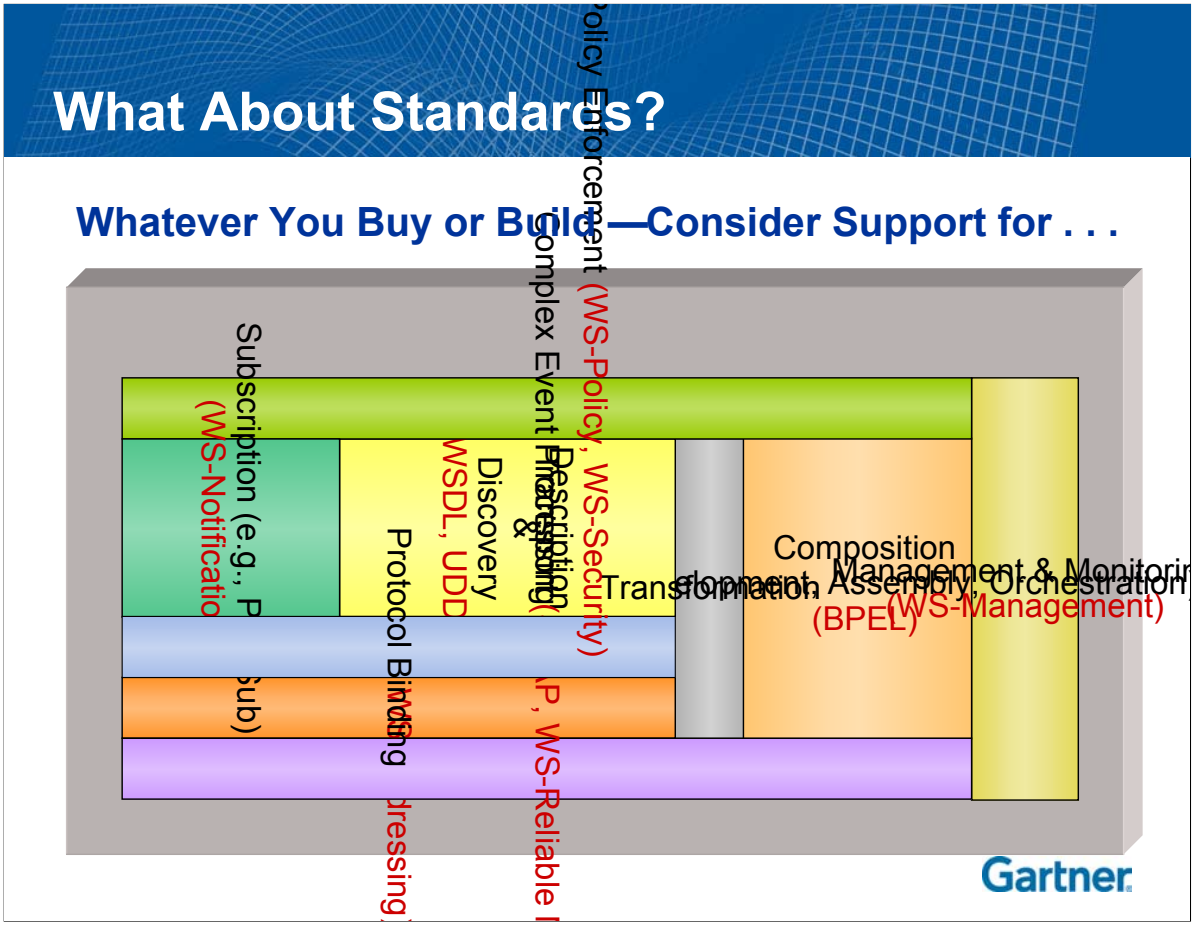
Strategic Planning Assumption: By 2009 75% of vendors offering an infrastructure for SOA will have technology that addresses at least two of the three recommended technical governance mechanisms (0.8 probability).



Gartner is seeing the larger vendors, which have been slower to market their technologies that address the SOA framework, finally make an impression in this space and on these markets. The results are acquisitions, partnerships and segmentation. Some vendors are addressing internal SOA and SOA security. Although still extremely important, the bulk of vendors entering this market do so attempting to market and sell to companies that are focused only on internal deployments or "overly" focused on security. We still see the need for technologies that can control B2B-centric service interactions. Incidentally, B2B gateways are first to offer solutions in this space. This is because of their portal functionality and superior trading partner management functionality.

Action Item: Consider B2B gateway vendors with suitable portlets (compliant with the Web Services for Remote Portlets standard) or portals as a way to achieve tactical B2B-centric SOA.

Strategic Planning Assumptions: More than 90% of new projects in Global 2000 companies will employ SOAP and WSDL in 2010 (0.8 probability). By year-end 2010, 65% of new projects in Global 2000 companies will use WS-Security (0.8 probability). By year-end 2010, 45% of new projects in Global 2000 companies will use a reliable messaging standard in conjunction with Web services (0.7 probability). By year-end 2010, 65% of new projects in Global 2000 companies will use WS-Addressing (0.6 probability).



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The continuing emergence and adoption of Web services standards will enable companies to custom-build or "piece together" solutions that are highly customizable and that can address multiple domains. For example, a company building a Web services infrastructure for internal integration can use established standards, such as SOAP, WSDL and WS-Security, to provide some functionality. Because standards around messaging and management are not sufficient by themselves for viable B2B interactions, most companies will have to deploy other technologies to achieve secure, effective Web services interactions. Established Web services standards address a few select domains of the Web services framework. Some standards, such as WS-Security, do an effective job of allowing users to address the security domain, while others, such as SOAP and Universal Description, Discovery and Integration (UDDI), are limited to the integration and registry domains, respectively.

Action Item: Take advantage of mature standards, complementing them with nonstandard technologies. Keep in mind, however, that some projects may need more than just standards; for example, B2B scenarios may need additional security mechanisms such as Secure Sockets Layer (SSL) or Secure Shell (SSH) to complement the WS-Security standard.

Strategic Planning Assumption: By 2009, more than 85% of today's Web services middleware will be acquired by larger infrastructure vendors or cease operations completely (0.9 probability).

Notable Activity in These Markets

- Progress Buys Actional
- Oracle Buys Oblix/Confluent
- BEA Buys Flashline
- AmberPoint Still Working "Out of the Box"
- Systinet Still Loves Everyone
- Mercury Acquires Systinet and They Still Love Everyone
- HP Acquires Mercury (We Don't Know Where The Love Is Yet)

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Key Issue: Which vendors and solutions can best address your requirements for governing your IT infrastructure?

As with many emerging markets, it remains difficult to do any real functional comparison of the products: There simply aren't enough reference accounts and customers to get an accurate analysis of the agility of the products. Based on vendor surveys, our own analysis, numerous calls with potential clients and venture capitalists/investment bankers, we are estimating no more than combined revenue of $40 million to $50 million in the Web services middleware market. This is significant, because there are more than 15 vendors with various products in this space. Although the vendors in this space continue to market their products as competitive to those of their peers, potential end users have informed us that they are considering deploying multiple products to exploit various functionalities. For instance, AmberPoint, Systinet and Reactivity are being deployed to perform Web services management, registry and security duties. This is critical because, at the same time, many of the vendors in this space are forming partnerships with larger infrastructure vendors in the enterprise systems management (for example, Tivoli and NetIQ) and the integration middleware spaces (for example, Microsoft and BEA).

Action Item: Companies considering purchasing and deploying any products in this space should expect extreme market consolidation as the venture capitalists look to recover their investments and drive acquisitions and mergers. Many of these may be done divergent to current vendor marketing and strategy, potentially having a negative or negating impact on your infrastructure and deployments.

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Notable Activity in These Markets (continued)

- SOA Software Acquires Blue Titian
- Microsoft Vista and the Complete SOA Framework
- IBM Rationalizes Its Products and Buys Webify
- SoftwareAG "Gives" More Than a Registry to the Community
- Reactivity Shifts Message From Security to Infrastructure
- webMethods Buys Infravio and Here Comes SOA-Centric B2B
- Tibco Goes JBI and SCA

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Recommendations

- ✓ **On Monday morning**, take stock in your SOA and application portfolio. Then ask how many services are really running in your environment.
  - Any successful SOA deployment will need effective SOA governance mechanisms. How will you address:
    - Visibility?
    - "Audit-ability"?
    - Quality Assurance?
    - Manageability?
    - Security
  - Consider maturing, viable technologies and methodologies to help you answer these questions.
- ✓ Unfortunately, your current IT governance often will not be enough
- ✓ Understanding who makes decisions now in your company could be far from simple.
- ✓ Start small in scope and with technology. Most technology today will allow you to add on and build up.

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