



The CentraSite Community:

Fast-tracking SOA Governance using best-of-breed solutions

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A modular and integrated approach delivering real-world answers to SOA complexities.

EXECUTIVE SUMMARY

This white paper is part of a collection of documents about SOA Governance provided by Software AG. It highlights the complexity in creating an SOA, the reasons for this and some of the best practices to help you begin governing your SOA. The major focus of this particular white paper is on the technology tools that can help support your SOA Governance initiative. In keeping with many analyst perspectives, it recognizes that no one single vendor can provide leading-class solutions in every SOA Governance-related area, such as Enterprise Architecture, SOA Testing and SOA Management.

What should be at the heart of your governance tools is a central registry/repository that can store details of all services, their lifecycle stage and all interdependencies to assess the full impact of this upon other related services can be known.

The registry/repository needs to be open, open in the sense that it can integrate with complementary areas of SOA to provide end-to-end lifecycle governance, from initial modeling of business processes, to building in quality at every stage of a service through to understanding how a service is performing once deployed.


This white paper illustrates how real-world answers to SOA complexities can be achieved with integrated best-of-breed solutions using CentraSite, the market leading registry/repository. Details of real-world integrations are provided, this includes the numerous benefits achievable when using an open standards-based approach.

Unlike most white papers, this will be updated periodically with additional integration examples as well as introductions and discussions of other areas related to SOA Governance.



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SOA AND SOA GOVERNANCE: GOING BEYOND THE HYPE

Despite millions of web references for Service-oriented Architecture (SOA), over a decade in existence and the fact that more than two-thirds of enterprises today are “using or planning to use it,” there isn’t one commonly accepted definition for SOA. SOA Governance is a related term that shares a similar lack of a singular definition. In spite of the confusion one thing is clear: SOA and SOA Governance are rather complex topics.

Our purpose here centers on bringing clarity to SOA, SOA Governance and some related subjects, as well as to show how a modular and integrated approach can help manage SOA complexities and fast-track business agility.

To cut through some of the technical jargon surrounding SOA and SOA Governance, we begin our discussion using a business-level abstraction of both: in the larger sense an SOA is about realizing business agility and SOA Governance facilitates this by enabling the acceleration of business change in a controlled manner.

Interestingly enough SOA, in contrast to previous IT technology paradigms, has the attention of both “ends” of the enterprise – business and IT. However despite this interest and time in existence, only about one-third of the SOA adopters to-date have actually realized ROI from their SOA efforts, according to a recent survey¹.

So if the promise of SOA is business agility, but the present reality (for many) is a small pilot project, just a handful of services in production or a mythical ROI – one wonders – what makes this paradigm shift any different than the ones that came before it?

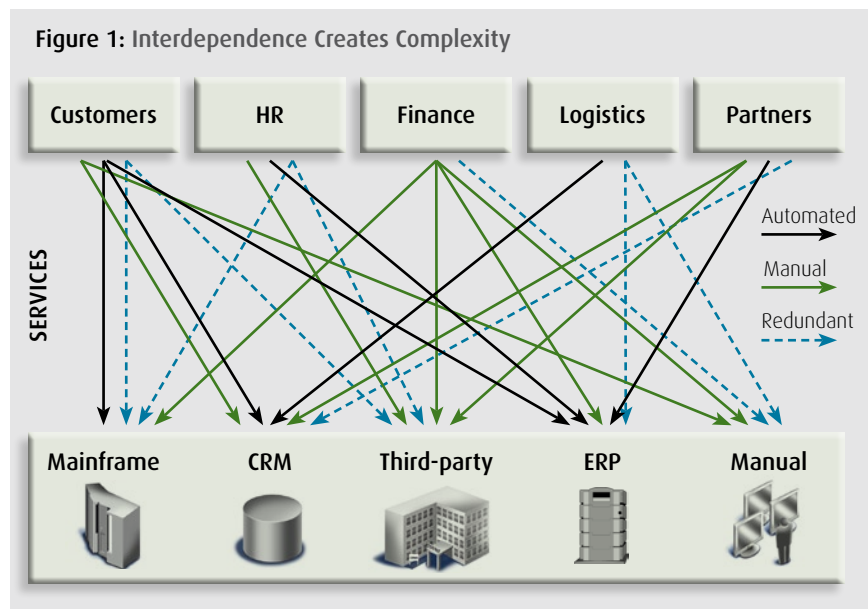
The reality is that there is no “one-size-fits-all” Enterprise SOA solution; implementing SOA is not so easy. While SOA raises expectations and possibilities, it also increases interdependencies and organizational complexities (Figure 1). For example,

now we want to promote not just reuse, but *reuse enterprise-wide*; yet obtaining enterprise-wide agreement can be a challenge.

New expectations of visibility and interoperability are running up against familiar territory: complex infrastructures, a business playing field that is under constant change and enterprise divisions that may not want to collaborate. Plus the challenges of delivering information are still far different than the challenges of using it to drive business competitiveness.

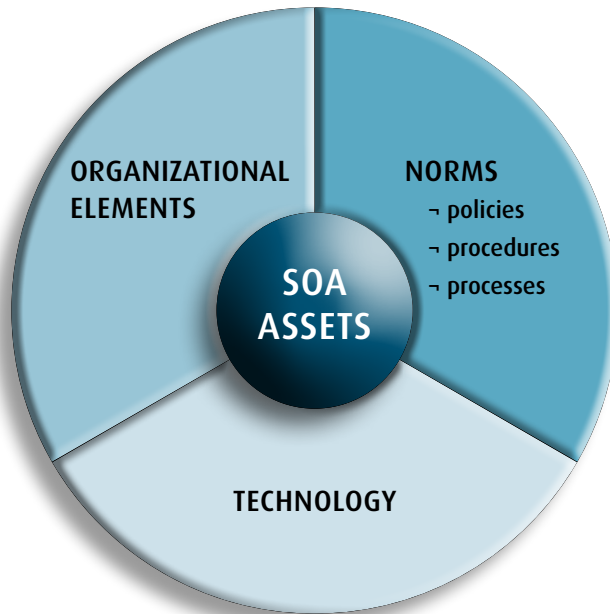
Service-oriented architecture (SOA) aims to deliver business agility by using services (small ad-hoc modules) that can be quickly built, assembled and employed to meet dynamic business needs. An SOA is supported by an IT infrastructure, development methods, organizational processes and integration capabilities all geared towards loosely coupled services. An SOA is kind of a giant LEGO set; the blocks are different sizes, shapes and colors; they are combined in a predictable and uniform way; yet they are completely flexible, so you can quickly create many different things again and again. Just as LEGO can create buildings, cars, people and even art, an SOA can reuse and adapt existing technologies to meet organizational demands.

SOA Governance is the art of ensuring that the enterprise is creating the right LEGO blocks, combining them in the right ways and doing it consistently across the enterprise to effectively realize the business objectives. Early application of SOA Governance lays the foundation for success of the SOA initiative.



¹ “Best Practices for SOA Governance” User Survey, Software AG, May 2008

Figure 2: Governance Reference Framework



Yet despite the complexities and constant change, some organizations have been able to transform their information silos into the holy grail of “alignment of business and IT.” While no two SOA implementations or strategies are exactly alike, companies successful with SOA do seem to share some key commonalities; a foundation for SOA success, if you will. These range from using an SOA road map and starting with SOA Governance early on, to ensuring that the SOA initiative actively involves the business side and follows an approach that suits an add-as-you-go mentality.

Of these, SOA Governance is emerging as one of the most important to get an SOA initiative off to the right start, deliver business value quicker and improve agility. Implementing SOA without governance can quickly lead to issues, and ultimately project failure (See *10 Dangers of an Ungoverned SOA*). SOA Governance helps navigate the complexities introduced with an “SOA jungle,” provides a holistic enterprise view, manages business changes and

provides measurements for compliance and success. SOA Governance helps ensure that SOA meets the organizational business drivers, such as measurable ROI, greater IT and business alignment, real-time business visibility, reduced risks, improved quality and business & regulatory compliance.

Beyond getting an SOA initiative off to a good start though, SOA Governance is essential to achieving SOA’s potential for long-term success. This is because SOA Governance encompasses all SOA activities throughout the lifecycle, from the initial definition through creation and execution.

Using a structured approach helps implement SOA Governance effectively across the enterprise. The Governance Reference Framework² (Figure 2) classifies the recommended elements for effective implementation of SOA Governance and management of SOA Assets into three groups:

- **Organizational elements** relate to people; what roles and structures are needed to define, enforce and monitor SOA governance policies.
- **Norms** relate to policies, procedures and processes; what standards are needed to govern the activities surrounding SOA.
- **Technology** relates to the tools; technologies that support SOA Governance to define, enforce and monitor the norms.

10 Dangers of an Ungoverned SOA

1. **Modeling process has no visibility of existing services and the processes they impact**
2. **Services may be accessed by those not entitled to do so**
3. **No awareness of the impact of changes made to service upon another related one**
4. **Absence of quality assurance processes before a service is deployed**
5. **Lack of holistic view of how IT and business are interlinked**
6. **Poor understanding of service deployment, consumption or downtime**
7. **Policy enforcement is manual, unstructured, and sporadic**
8. **No overall view of existing services means they are recreated again, not reused**
9. **Absence of lifecycle management creates version control issues**
10. **Lack of responsibility and ownership regarding service creation and consumption**

² Approach to Service-Oriented Architecture (SOA), Deployment Accelerator”, Software AG, October 2007

The methods that the Governance Reference Framework provides to measure and guide the SOA Governance plan can be adapted to suit the organization's needs. In addition, it helps an enterprise transition and fine-tune its organizational structure for more effective SOA Governance. This can be, for example, by establishing an SOA Competency Center (Figure 3) to gain the needed skills for SOA within the organization.

Leading analysts confirm that no single solution or technology will be able to meet the diverse SOA Governance requirements. Enterprises will need the support of a good SOA ecosystem, built from multiple vendors with a registry that unifies them.

The Governance Reference Framework also provides a set or catalog of norms that a company can use to jump-start its SOA Governance initiative. These norms help guide how the SOA actors perform their activities to best serve the needs of the company. Technology is the third fundamental element; these are the tools that facilitate effective SOA Governance. The right tools allow you to plan, design, manage and govern SOA infrastructures that support the enterprise's objectives across all aspects of the SOA lifecycle.

TOOLS CAN HELP CROSS THE ROI LINE

In fact, the choice of SOA Governance tools and when an organization implements them can often mean the difference between success and failure of the SOA initiative. An SOA is by nature complex, often crossing multiple departments, external groups, customers and partners. Just one service that delivers customer information, for example, could be consumed by the

customer (to update their information), finance (to validate and track the customer's bill) and logistics (to ship the customer's order.) In each case there may be different policies surrounding the use of that service. Tools are an essential part of these processes, without them an organization cannot manage and govern their SOA.

Many companies start off their SOA initiatives with the "management by Excel" approach. They list their small but growing catalog of services in an Excel spreadsheet, a virtual registry or "yellow pages". However this approach is quite inadequate for the complex, dynamic nature of an SOA.

EXCEL IS YET ANOTHER SILO

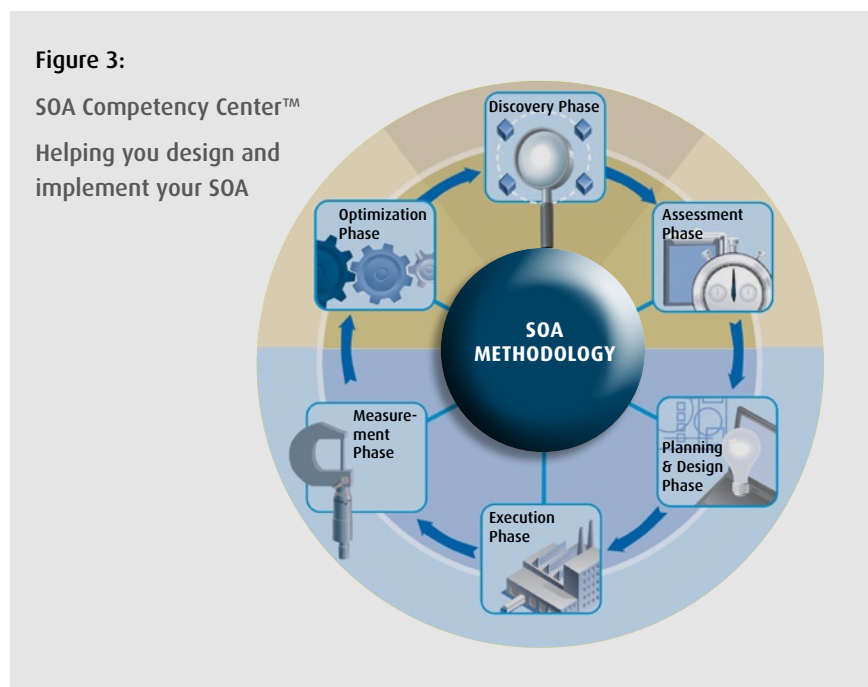
Besides the obvious downside of yet another manually maintained spreadsheet, Excel is not interconnected with the systems that are used to develop, deploy and run elements related to SOA. As services move through the lifecycle, at each step of the process the Excel sheet would need to be updated; and as services are being consumed, what then? How can an organization ever hope to measure if a service met the defined

SLA or enforce a policy if the information is trapped in a spreadsheet?

Using Excel or other unintegrated technologies limits the enterprise's ability to grow and adapt their SOA, plus these fail to provide a holistic enterprise SOA view. Rather it is better to start off with a small set of flexible tools specifically designed for the purpose of SOA, and add on as the organization's needs change. That way the organization has tools that facilitate the natural evolution of SOA; a "think big, start small" approach.

LONG-TERM SOA FLEXIBILITY

Flexible, modular SOA and SOA Governance tools have the biggest organizational impact. With them you can grow and adapt SOA as the organizational needs change over time. Modular and automated toolsets allow you to rapidly implement a customized, best-of-breed SOA Governance solution; this in turn promotes business agility, collaboration and reuse. Interoperability, best practices and open standards-based plug-in architectures combine for a long term approach that helps maintain SOA flexibility.



CENTRASITE™:

OPEN, FLEXIBLE AND SCALABLE

Effective SOA Governance starts with a central registry/repository to act as a “collaboration hub” for all SOA-related efforts – a view which has long been supported by leading analysts. An SOA registry/repository facilitates coordination because it provides enterprise-wide visibility. For example, users can find all available services plus those under development or in planning phases.

This visibility is not limited to services either; all artifacts related to an SOA can be centrally stored and accessed, no matter whether they are related to planning, design, development or runtime. This promotes reliable communication and interoperability among diverse users and applications, especially enterprise-wide and on a global-level. A central registry/repository drives not only reuse but also provides the ability to efficiently govern across the entire lifecycle.

The CentraSite³ registry/repository is recognized by top analysts as the market's leading SOA Governance and Lifecycle Management platform. CentraSite is the

foundation for enterprise SOA Governance initiatives because it:

- Brings structure, scale and speed to SOA initiatives
- Guides reuse, automates SOA processes and simplifies complexities & interdependencies
- Enables enterprise SOA Governance with easy-to-use and automated end-to-end lifecycle management

CentraSite is pre-loaded with best practice policies to accelerate SOA adoption and lower project risks, and includes a structured approach and service automation delivered out of the box. This includes Design & Change Time Policies, such as Metadata

Validation, WS-I Compliance Check, WSDL Validation, Asset Certification and Approval Workflow; as well as Runtime Policies, such as WS-Security, Monitoring & Alerts, Routing and SLAs.

The flexibility and openness of the CentraSite design ensures that business and SOA objectives will continue to be met over the long-term. CentraSite employs an open standards-based plug-in architecture (*Figure 4, page 8*) that enables a modular and best-of-breed SOA Governance approach. Enterprises seeking to improve business agility using SOA Governance are no longer required to:

- Replace proven tools
- Use a single vendor's product stack from end-to-end
- Have their governance processes mandated by a certain vendor's implementation of governance
- Struggle with manual synchronization or a lack of interconnection between the SOA Governance domains

While there continues to be a lot of discussion surrounding emerging SOA standards, SOA standards are not fully mature yet. CentraSite architecture is based on an open-standards approach and supports the commonly-accepted SOA standards (See *SOA Governance Standards*). That means that as best practices, technologies and solutions for SOA Governance evolve they can easily be interconnected and implemented with CentraSite as a flexible, powerful command center.

CentraSite provides an easy way to begin using an SOA registry/repository with the free of charge CentraSite Community Edition⁴. Organizations with SOA initiatives, consultants, system integrators and software companies can start their SOA Governance initiatives with a product that offers UDDI v3 search using predefined metadata models,

SOA Governance Standards

CentraSite supports commonly-accepted SOA standards such as:

- JAXR L0 and L1: Java API for XML Registries
- UDDI v2 and v3: Universal Description, Discovery and Integration
- SOAP 1.1 and 1.2: Simple Object Access Protocol
- ebXML: Electronic Business using eXtensible Markup Language
- WebDAV: Web-based Distributed Authoring and Versioning
- WSDL: Web Services Description Language
- WS-Basic Profile 1.0 and 1.1
- WS-Policy 1.5 and WS-Policy 1.5 Attachment: Web Services Policy Framework
- SNMP v2 and v3: Simple Network Management Protocol

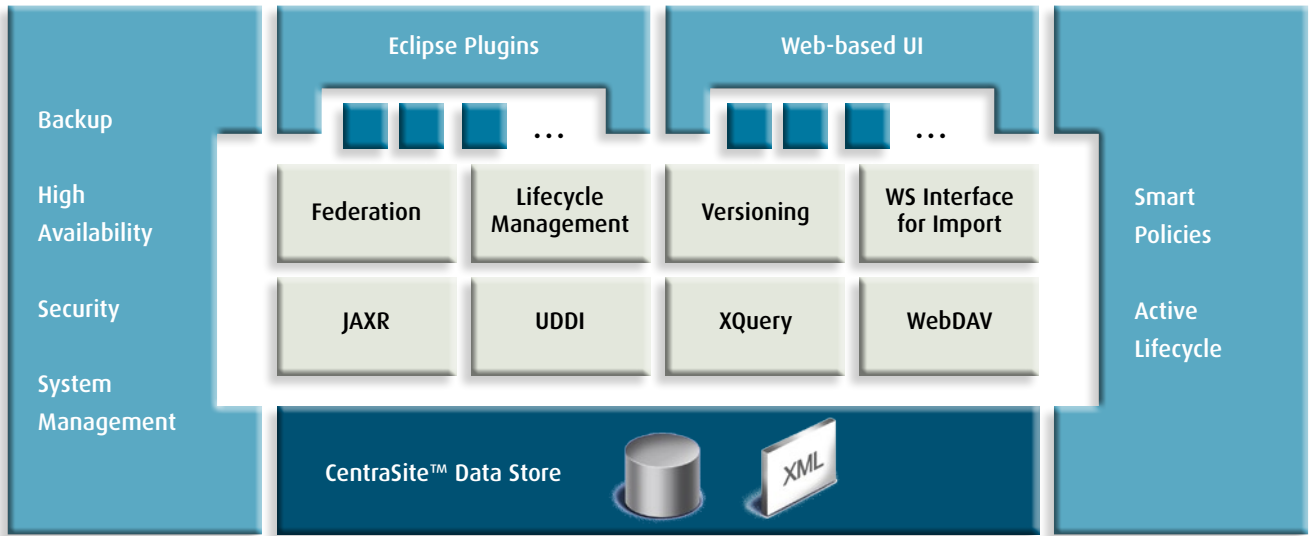
Other:

- Data Store Access (XSLT, XPath, XQuery, XQJ, XPDL)
- OOTB Eclipse
- SOA Management (JMX, WS-Security)
- Federation (LDAP, UDDI, CMDB)
- Repository Artifacts (BPEL 1.1 & 2.0, WSDL, XML Schema, SCA)

³ CentraSite is a registered trade name of Software AG and Fujitsu. More about CentraSite on www.softwareag.com/centrasite

⁴ Download the Community Edition of CentraSite at www.centrasite.org

Figure 4: CentraSite Architecture Overview



a JAXR interface to stored instances of artifacts, WebDAV access to the SOA repository, predefined reporting modules and both a Web-based interface as well as an Eclipse Registry Browser.

CentraSite also manages metadata generated from integration software, Web Service descriptions, application-specific data (e.g., XSLT, forms, etc.) and in general serves as a central store for documents in native XML and non-XML formats. WebDAV is used for storing and retrieving development artifacts in the CentraSite repository, such as process definitions in XPDL, models, sequences and more.

An implementation of the Java API for XML Registries (JAXR) is included, to interact with the CentraSite registry. The CentraSite registry/repository can be accessed using a browser-based interface (CentraSite Control) or an Eclipse-based interface. Services and Web Services definitions can be accessed via WebDAV, UDDI, JAXR and the XQuery API for Java (XQJ).

The Eclipse Reporting UI allows you to define reports, based on predefined and customized reports. You can visualize the results with CentraSite Control or by using

Eclipse. The Eclipse Registry Browser leverages the basic and advanced search abilities, browses on stored SOA assets to provide data in the tree/folder view and provides an analysis on the lineage chain of object associations.

In addition besides the functionality CentraSite provides to an SOA, its extensibility and standard-based architecture sets

the foundation for a wide-range of modular tools from a range of different vendors that increase SOA Governance transparency and control. Since SOA is exceedingly complex to manage and crosses the enterprise, no one company or vendor can claim to know it all, nor effectively span the SOA Governance space.

CentraSite's Open Design Facilitates:

SOA Challenges & Objectives	CentraSite
SOA Lifecycle Management	Manages all aspects of the SOA lifecycle
Open standards-based	Architecture is based on commonly adopted SOA standards
One source for all SOA data	Stores any metadata or SOA artifact
Standard models	Provides standard models that are easily extensible
Increase reuse & user adoption	User-friendly UI shows objects and relationships allows for easy navigation and drill-down
Extensibility	<ul style="list-style-type: none"> - Models are easily extensible - Can integrate with related tools - UI can easily be extended

INTRODUCING THE CENTRASITE COMMUNITY

The CentraSite Community is an SOA ecosystem comprising software vendors and consultancies whose technologies and methodologies complement and integrate with the CentraSite registry/repository to deliver a comprehensive end-to-end SOA Governance solution, from conceptual modeling through to resulting service deployment and monitoring.

Since its creation in June 2006 by Software AG and Fujitsu Software, the CentraSite Community has won awards⁵ and grown into an ecosystem of over 50 partners in 11+ countries that provide real-world SOA Governance solutions to bridge the many domains of SOA.

CentraSite Community partners not only recognize the diverse nature of IT environments, they are committed to developing solutions that continue to support long-term SOA strategies. Their complementary leading and integrated technologies address needs across the broad spectrum of SOA: Define, Create, Run and Govern (Figure 5). Interest in membership comes from vendors in many different sectors,

such as Enterprise Architecture, Enterprise Governance, Business Rules, Business Intelligence, CMDB, SOA Testing and SOA Management.

In the past, many of the integrations between vendors featured a “black box” approach – they were one-offs, designed for a particular customer requirement with little documentation available. Equally, details of exactly how the integration was achieved would remain in the heads of the few technical people who built it.

CentraSite Community partners take an entirely different perspective, with an open standards-based architecture philosophy that delivers proven integra-

tions with best-of-breed solutions that are repeatable, transparent and robust. These Community partnerships result in many benefits to organizations, irrespective of their stage of SOA adoption. These include:

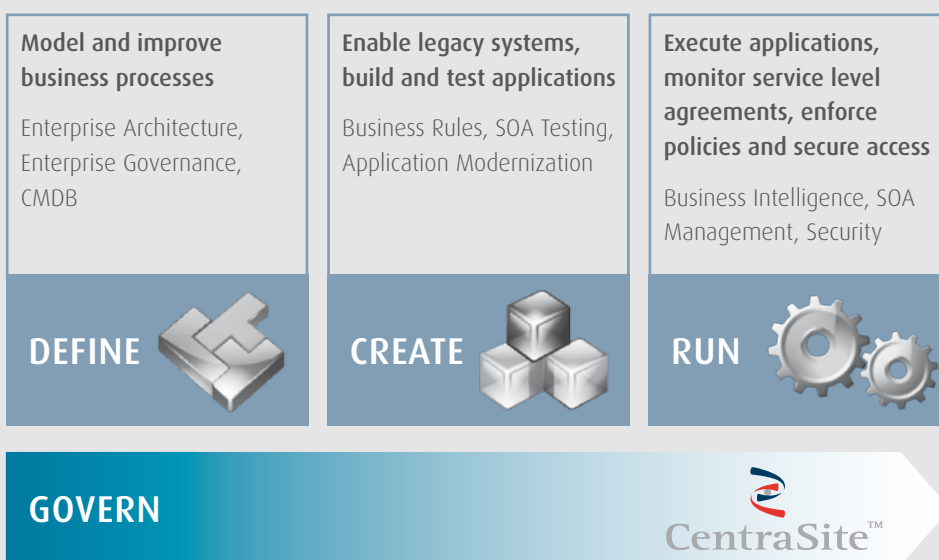
- Pre-packaged integrations that fast-track implementations
- Diverse areas of SOA can be brought together seamlessly
- No rip and replace demands – CentraSite will integrate with any vendor offering (competitive or not) using commonly accepted industry standards
- Broad range of expertise across the SOA landscape

Vendors who are not yet part of the Community can easily integrate with CentraSite, based on the proven standards-based approach.

In the following sections we highlight some of the major SOA-related sectors, why they are relevant to SOA Governance, their benefits to the business and introduce some of the real-world partner integrations with CentraSite.

Figure 5:

The CentraSite Community encompasses all key SOA areas, with vendors from many sectors participating



⁵ SYS-CON Media 2007 SOA World Reader’s Choice Awards Best Web Services or XML Site: CentraSite Community Portal, CentraSite Community

How do you change the enterprise to achieve your business goals?

WHAT IS ENTERPRISE ARCHITECTURE?

When we use the term Enterprise Architecture, or EA, we can be referring to either a process or a result. In the first case, EA is the process we use to holistically describe an enterprise, its interrelationships and business objectives, as well as plan changes that effectively achieve the defined goals. In the second case, EA is the documentation that describes the enterprise's business strategy, business model, information systems, and so on.

To manage scale and complexity, the EA process commonly uses methodologies and frameworks such as those defined by Zachman, TOGAF and Spewak's Enterprise Architecture Planning (EAP). EA also defines, establishes and maintains the internal controls needed to keep the organization in sync.

WHY EA?

There are many reasons why Enterprise Architecture is important for the organization. Some of the most common are that it:

- Supports better decision making.
- Helps manage complexities.
- Provides a transformation road map.
- Helps realize unique value propositions more quickly.

CHALLENGES OF EA

EA relies on a great deal of up-to-date information for effective planning and control. EA tools not only help manage complexities, but also facilitate the capture, analysis and optimization of the portfolio of business strategies, organizational structures, business processes, information flows, applications and technology infrastructure.

HOW DOES EA RELATE TO SOA GOVERNANCE?

One of the greatest challenges in implementing an SOA is to connect the business objectives with the actual execution in order to effectively realize critical enterprise initiatives. SOA Governance is the key as it both keeps the SOA initiative on track and in sync with business governance.

BRINGING EA AND SOA GOVERNANCE INTO ONE WORLD

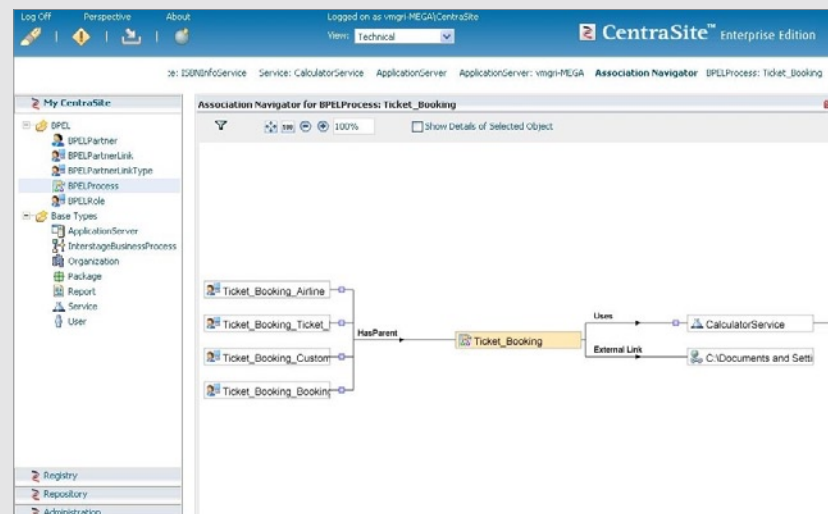
The partnership of Enterprise Architecture software vendors with Software AG provides an SOA Governance solution that connects the conceptual planning world with that of the concrete executional one. The integration between EA toolsets and Software AG's CentraSite provides increased visibility for Business and IT stakeholders and enables end-to-end management of SOA (*Figure 6*). This allows you to:

- Automate and enforce EA governance with dynamic design-time and runtime policies.
- Increase service reuse by making all services visible to the Enterprise Architect.
- Govern business services and processes as defined in EA over the entire lifecycle.
- Align business transformation with the SOA lifecycle.

Enterprise Architecture vendors make up the largest subset within the CentraSite Community, validating the importance of the relationship between the conceptual modeling world and the creation of services often based upon the models EA tools inspire. The following pages highlight some of the integrations created by leading EA partners in the Community.

Figure 6:

CentraSite Impact Analysis of a business process; synchronized EA and SOA landscapes provide end-to-end visibility and enable effective SOA Governance



www.mega.com



The partnership of MEGA and Software AG unites SOA Governance and Enterprise Architecture to bring SOA transparency and control enterprise-wide.

Automated discovery and synchronization incorporates services into business processes and workflows to facilitate communication, increase reuse and ensure consistency. In addition, business process analysis models designed to reveal inefficiencies in the production chain help pinpoint where service automation will have the greatest business impact. Role-based access provides perspectives for a wide range of users,

from the CIO and business process analysts to internal auditors and project managers. Some key benefits:

- Leverages SOA across business process optimization initiatives to automate workflow models end-to-end.
- Provides a Meta-Object Facility (MOF) 2.0 compliant platform along with an embedded customizable methodology library.
- Includes templates for governance frameworks such as ITIL, eTOM and TOGAF.
- Extends SOA Governance across compliance, risk management and audit initiatives.

ASSOCIATED PRODUCT

MEGA Modeling Suite describes all organizational assets, from strategic objectives and customer value chains to IT systems and infrastructure

THE MEGA AND CENTRASITE INTEGRATION

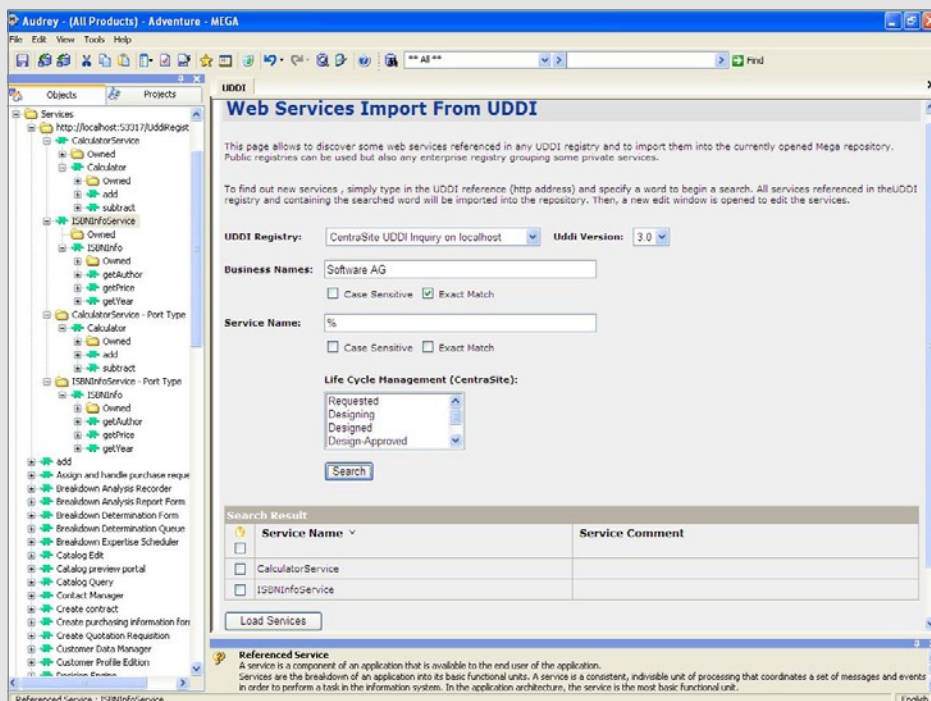
The MEGA-CentraSite integration facilitates SOA planning, management and SOA-based

business process optimization to shorten the time between business process design and implementation, for example:

- MEGA can discover services stored in CentraSite by name, organization or life-cycle state (Figure 7).
- Existing services in CentraSite can be reused and orchestrated in MEGA as part of existing and new workflows.
- MEGA-defined workflows can be connected in CentraSite with other SOA artifacts.
- CentraSite's Impact Analysis reveals the effect of design and implementation changes to related EA artifacts.
- MEGA's Impact Analysis links SOA Governance information with business processes and objectives.

Figure 7:

After searching for a Web Service from CentraSite, several are found and can be imported into Mega for further reuse



www.qualiware.com

MAKE IT HAPPEN
qualiware

The partnership of QualiWare and Software AG intersects the SOA Governance and Enterprise Architecture domains with a focus on enterprise-level quality improvements.

QualiWare's Enterprise Architecture Framework provides a holistic proven approach to organizing knowledge content. The flexible, state-of-the-art environment facilitates a successful path from strategic vision to SOA Governance and process management. Some key benefits:

- Quickly assess the impact of changes to any part of the architecture (Figure 8).
- Effectively manage architectural changes; clearly define, implement and integrate

- changes into the business operation
- Configure new functions and capabilities without the need for development.
- Gain flexibility with user-defined metamodels, versatile business models and a full complement of object-oriented design and analysis capabilities.

ASSOCIATED PRODUCT

QualiWare EA Suite is a toolset for implementing EA initiatives; it ensures that all areas of the architecture are linked and integrated. QualiWare's EA Suite provides a tailored, metamodel-driven approach for all aspects, methods and types of business models. Its object-based model repository and functionality is ideal for management and governance of large scale enterprise architecture initiatives.

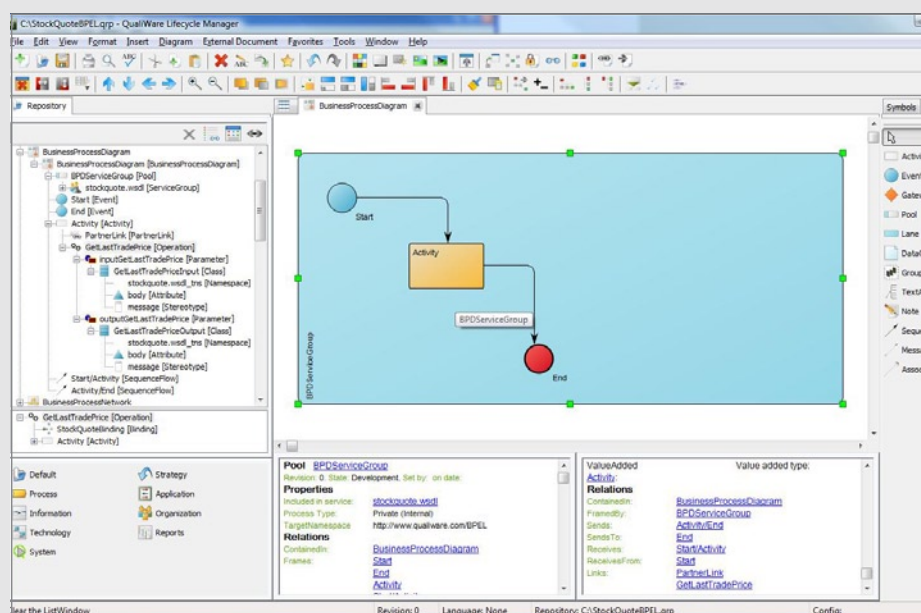
THE QUALIWARE AND CENTRASITE INTEGRATION

The QualiWare EA Suite integration with CentraSite provides the customer with one solution for modeling, designing, implementing and governing the SOA environment. The QualiWare EA and CentraSite SOA

Governance repositories are synchronized on various levels, for example:

- Web Services defined in either system can be reused in the other. This allows the QualiWare model analysis and design to cover all aspects of the realized environment. The web service definitions include all details, such as bindings, operations, parameters, attributes and methods.
- Business processes expressed in BPMN notation in QualiWare are synchronized with CentraSite for further development; either BPEL or XPDLL can be used to transfer the process definitions to CentraSite.
- As a result, CentraSite can apply governance to any of these definition levels.

Figure 8:
QualiWare analysis of a CentraSite generated service



www.alfabet.com



The partnership between alfabet and Software AG delivers end-to-end SOA Governance by uniting Enterprise Architecture Management and IT Planning with SOA design and implementation.

Service information is captured as an integral part of the Enterprise Architecture. EA and IT Planning best practices are built-in to provide both service planning and change management with transparency on the entire SOA lifecycle. The alignment of current and future architecture and SOA initiatives with business priorities, SOA strategies and IT deliverables means that a wider audience has a better understanding of where to

implement SOA to achieve the most business value. This benefits business analysts and solution architects, as well as CIOs managing the program portfolio. The partnership allows organizations to:

- Use IT Planning best practices to install a formal process for systematically introducing SOA to the enterprise.
- Capture an inventory of dynamic data from business, technology, information and application architectures, organizational structures, hierarchical planning processes, service lifecycle and financial data – a complete information base to support SOA-related decision making.
- Perform visual assessments and quantitative metric comparisons with user-friendly data views that appeal to the diverse pool of stakeholders involved in planning for services.
- Evaluate and relate service performance data to enterprise-specified criteria to ensure business-IT alignment.

ASSOCIATED PRODUCT

alfabet's planningIT supports all aspects of the IT planning process from demand to

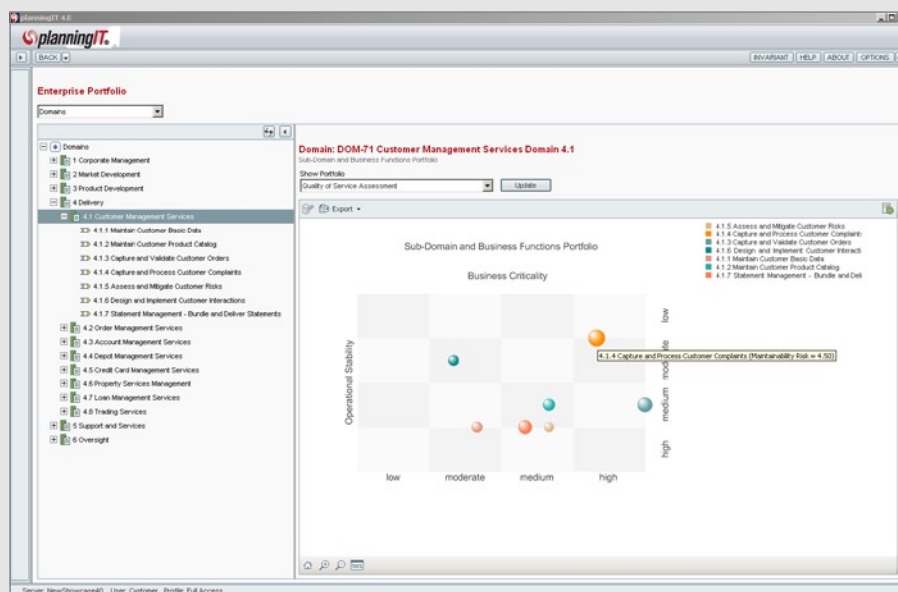
budget. This facilitates collaborative planning with automated full architecture lifecycle support, “what-if” scenarios and simulation of future states.

THE PLANNING IT AND CENTRASITE INTEGRATION

The planningIT-CentraSite integration bridges the gap between IT Planning and Management and SOA Governance, thereby linking business objectives with the services that implement them, for example:

- Web Service performance data stored in CentraSite can be analyzed using planningIT to determine quality of service, technical performance, user satisfaction and so forth.
- Business planners can evaluate if the services support the business objectives as intended, are candidates for reuse in another business process, adhere to SLAs or should be retired.
- Planners can shape the criteria for enhanced business planning using data stored in CentraSite; dimensions such as Business Criticality, Operational Stability and Maintainability Risk (*Figure 9*).

Figure 9:
planningIT's Portfolio Analysis of Web Service performance data sourced from CentraSite



How can your organization maintain quality in a complex and constantly changing environment?

WHAT IS SOA TESTING?

Contrary to what one might have expected, SOA Testing involves far more than just applying traditional QA techniques and unit test approaches to SOA. Enterprise SOA applications are complex, modular, decentralized and dynamic. Conventional testing methods are mostly ineffective; no longer can you “draw a box around it” or leave testing to be a “last step before production” project activity.

On a very simplistic level, an SOA implements business processes as a collection of one or more services; individual services can be added or tuned to quickly create new business capabilities. This means that to meet the demands of service reusability, for example, service quality and trust need to be established and re-verified throughout the service lifecycle. SOA Testing needs an end-to-end quality management strategy to ensure business requirements are met. This strategy should also address testing for performance and security across multiple integration layers, a variety of delivery platforms and at both the business process and service level.

WHY SOA TESTING?

Some of the most common reasons why SOA Testing is important to the success of an SOA initiative are that it:

- Establishes trust and predictability.
- Helps manage exceptions and ensure service levels are met.
- Improves reuse and agility as services are more reliable.
- Helps reduce costs and improve quality.

CHALLENGES OF SOA TESTING

SOA introduces a number of challenges to the world of testing, many of them complex and difficult to control. These range from loosely coupled services and lack of a service user interface, to a “work-in-progress” environment, external business units and distributed development. Testing needs to ensure continuous quality across all services, endpoints and interfaces. Automated SOA Testing tools make it possible to keep up with the dynamic nature of an SOA.

HOW DOES SOA TESTING RELATE TO SOA GOVERNANCE?

Fundamental to SOA Governance are the key elements of trust and credibility. SOA

Testing verifies that SOA assets meet the functional and operational business requirements, and provides an actionable means of enforcing policy within the testing process. To maintain a continuous quality focus across all SOA lifecycle stages, SOA Testing tools need to be integrated with SOA Governance tools.

BRINGING SOA TESTING AND SOA GOVERNANCE INTO ONE WORLD

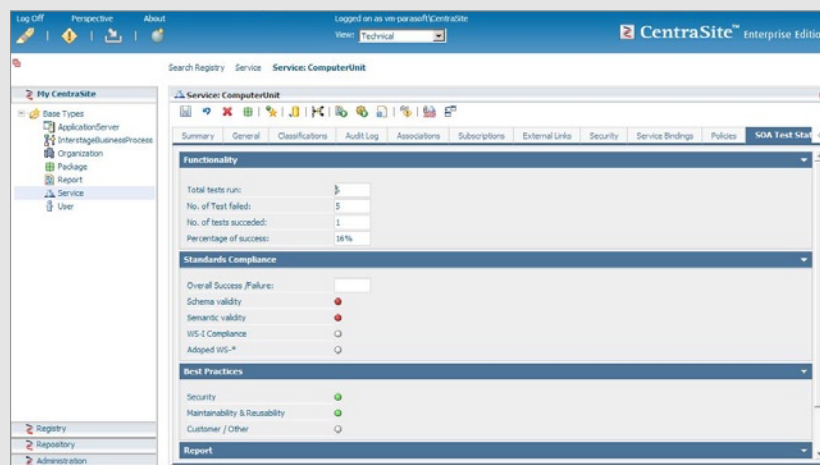
The integration between SOA Testing tool-sets and Software AG’s CentraSite helps ensure quality and compliance throughout the service lifecycle – a key SOA Governance requirement. This automated approach allows you to:

- Detect defects earlier and reduce costs.
- Manage SOA Testing scripts across the service lifecycle.
- Trigger lifecycle stages based on testing results.
- Activate test procedures based on lifecycle state changes.
- Store test results as part of the SOA asset metadata (*Figure 10*).

The following section highlights several integrations between CentraSite and leading Testing vendors.

Figure 10:

The UI extension of the detailed service view via the additional “SOA Test Status” tab, contains the test result summary



www.itko.com



The partnership of iTKO and Software AG unites SOA Governance with automated quality.

This overcomes the limitations of conventional testing methodologies and provides accelerated delivery of an integrated quality process for SOA. QA can quickly construct test cases assisted by virtualization of any technology component not (yet) available. This drives a high level of test automation and reuse across the application lifecycle. To ensure trust in critical business applications, orchestrated test suites help verify that scalability or latency issues will not show up in production. Key benefits include the ability to:

- Invoke and verify services, as well as critical layers of the underlying application the service exposes, including Web UIs, ESB and integration servers, Java objects, databases and mainframes.
- Ensure adherence to behavior and performance polices.
- Enable complete, collaborative and continuous SOA testing.

ASSOCIATED PRODUCT

iTKO LISA is a comprehensive automated testing tool built especially for SOA and composite application integration. iTKO LISA's declarative, no-code testing approach helps maximize quality delivered and minimize business risk. LISA provides implementation and testing teams with a 360-degree view of quality and reliability at every stage of the lifecycle across applications and into implementation layers.

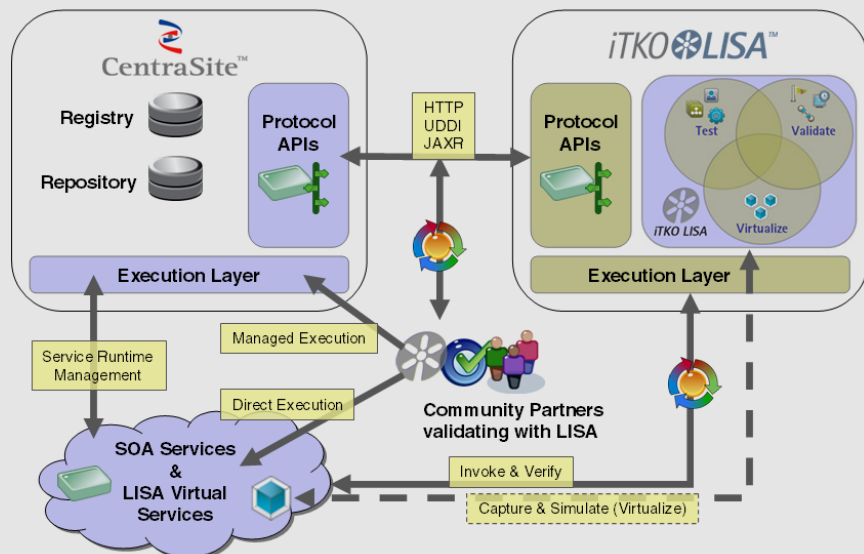
THE iTKO LISA AND CENTRASITE INTEGRATION

The iTKO LISA-CentraSite out-of-the-box, native integration (*Figure 11*) provides an immediate and continuous quality

- reference point for an SOA initiative that:
- Certifies and enforces SOA policies (e.g., structural, behavioral or performance-related) before publishing as well as at runtime; policies declared in CentraSite are certified and enforced with iTKO LISA.
- Functionally validates SOA endpoints to help ensure reliability and trust.
- Automatically executes tests via action templates; events or state changes in CentraSite, such as promotion of one state to another or adding a WDSL, invoke a validation test in iTKO LISA via action templates.
- Reports test results back to CentraSite via UDDI or JAXR.
- Verifies that new service versions will not disrupt the business.

Figure 11:

iTKO LISA test cases can be stored in and invoked directly from CentraSite, enabling services and underlying layers to be validated with rich test data and metrics feeding back into the SOA repository



www.parasoft.com



The partnership of Parasoft and Software AG means SOA initiatives get off to a fast start: automatically generated tests are instantly executable, while inherent best practices and workflows help ensure error prevention is always paramount.

In addition, workflow elements promote reuse of testing assets in a distributed development environment. The ability to graphically model and test complex, multi-layered transactions over multiple protocols, then report test results directly to CentraSite and view them in the integrated UI, streamlines SOA testing efforts. This joint approach means:

- Validation of implementation of service policies, contracts and business scenarios using a series of automated regression suites
- Automatically generated test cases and test suites can be run as part of the nightly regression test process.
- Service reliability, quality, security and interoperability can be ensured.
- There is correlation of test cases with requirements and bug tracking systems, automation of test execution provides results in the format or test management framework of your choice.

ASSOCIATED PRODUCT

Parasoft SOAtest is designed to handle the evolving complexities inherent in testing an SOA related to policy compliance, security, scenario testing, scalability, and so on. A streamlined collaborative workflow, along with the ability to rapidly construct, reuse and place any use case into a continuous regression suite facilitates the creation of realistic test scenarios at any stage of the SOA lifecycle.

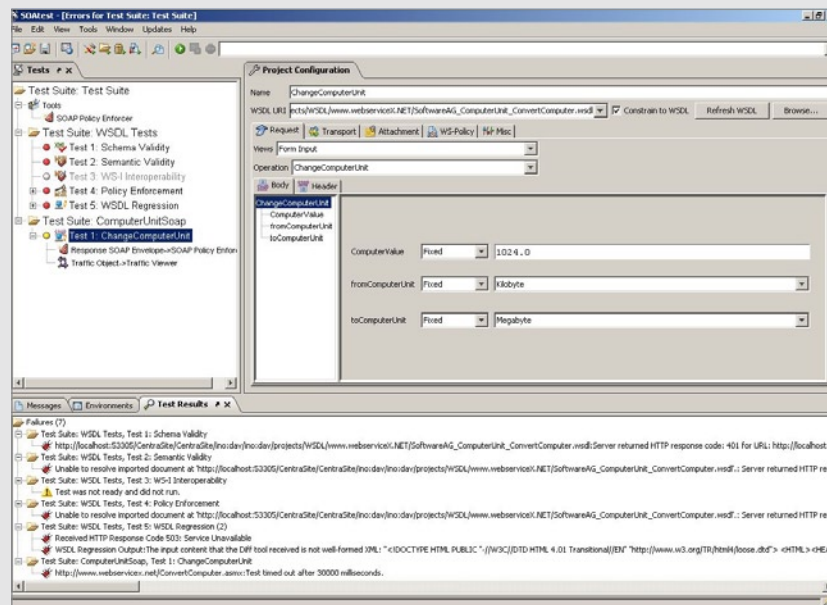
THE PARASOFT SOATEST AND CENTRASITE INTEGRATION

The Parasoft SOAtest-CentraSite integration provides a number of benefits to an SOA initiative, such as:

- Extension of the UI within CentraSite enables the display of a Parasoft test results summary, with a link to the detailed test report stored in the CentraSite WebDAV repository. In doing so, CentraSite acts as a cockpit indicating a service's quality or test coverage.
- Ability to assess a service's historical quality data, which can be used as the basis for assessing its suitability for reuse.
- Based on CentraSite service descriptions, SOAtest automatically creates executable test scenarios, such as a set of tests for each operation of a service in a WSDL file or all services used in a specific business process (*Figure 12*).
- Intelligent "stubs" can validate a service's conformance to mutually agreed test standards. This means services can be exposed to a third party in confidence, with no "finger pointing" should issues arise.

Figure 12:

An executed test on a service whose description (including associated policies) was imported from CentraSite can be viewed in SOAtest



How can your organization ensure what should happen, does happen?

WHAT IS SOA MANAGEMENT?

SOA Management is not the same thing as SOA Governance, rather it is an integral part of SOA Governance. To put them in context, if we wanted to build a car, SOA Governance would plan, design, build and operate the car; while SOA Management would observe who drove the car, where and how fast it went, take the keys out of the ignition if a 10-year-old tried to drive it around the block, and raise an alert if the car's engine or brakes were not performing as expected. In terms of an SOA, SOA Management focuses on the runtime visibility, monitoring, performance and security aspects. It provides the information for "what is really happening in production?" It makes sense that for effective SOA Governance, you need to know how and where your services are being used and be able to control them.

WHY SOA MANAGEMENT?

In order to achieve the benefits of SOA, you need to know how effective your SOA

is and be able to maintain control. What good is reuse if lower priority consumers cause service performance to drop below SLAs for your key customers? Or where unexpected consumers cause performance bottlenecks or obtain access to sensitive data? Even worse, what if one of these exceptions related to a Sarbanes-Oxley requirement or exposed credit card numbers? Without SOA Management, you may not even be aware of the problem.

CHALLENGES OF SOA MANAGEMENT

Conventional security and management solutions cannot deliver the control and visibility needed in the complex environment that comprises an SOA. SOAs need SOA-specific solutions that are able to auto-discover producers, consumers, dependencies and rogue services; apply security and policies dependent on the service user; handle services consumed outside the firewall; and report results back in real-time.

HOW DOES SOA MANAGEMENT RELATE TO SOA GOVERNANCE?

The relationship between SOA Management and SOA Governance is an interdependent one (Figure 13). The visibility, monitoring and security requirements as defined in the SOA Governance policies will drive the requirements for an SOA Management solution.

BRINGING SOA MANAGEMENT AND SOA GOVERNANCE INTO ONE WORLD

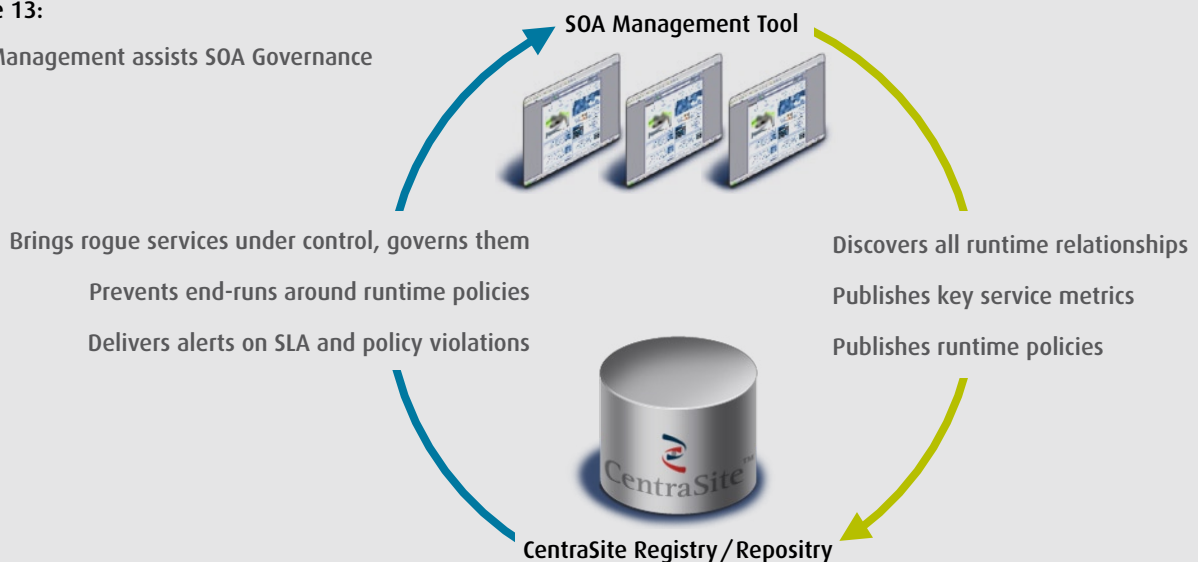
The partnership of SOA Management vendors with Software AG provides end-to-end visibility across design, change and runtime. Feedback improves planning, alerts where more controls are needed and validates if requirements are met. This integrated and automated approach allows you to:

- Discover unknown services and configuration changes.
- Use advanced security features, such as XML threat & intrusion protection.
- Perform advanced impact analysis based on runtime dependencies.

The next section highlights some of the real integrations of Community SOA Management partners and CentraSite.

Figure 13:

SOA Management assists SOA Governance



www.amberpoint.com

AMBERPOINT

The partnership of AmberPoint and Software AG connects the SOA Governance and SOA Management domains with advanced visibility and monitoring capabilities that bridge the gap between design-time intentions and runtime realities.

Ongoing automatic discovery of deployed components, services and dependencies is used to create runtime SOA blueprints that support SOA Governance. Strategic instrumentation of the entire service network provides end-to-end SOA visibility with policy enforcement at key points to minimize latency (Figure 14). In addition, a pioneering policy reuse mechanism and

automatic policy provisioning system reduce costs by minimizing the time and skills required to set new policies. The partnership enables organizations to:

- Monitor and manage business transactions flowing across many technologies, from leading platform vendors to open source SOA solutions and low-level custom components.
- Identify rogue services and policies, as well as outdated service versions on production servers.
- Submit all synchronized information (services, endpoints and policies) for approval before promotion to the production environment.

ASSOCIATED PRODUCT

The AmberPoint SOA Management System is a comprehensive platform for runtime governance of SOA applications. It enables policy-based management of the service network, providing unprecedented visibility into and control of a services-based environment including supporting components such as EJBs, databases, third-party appliances, etc.

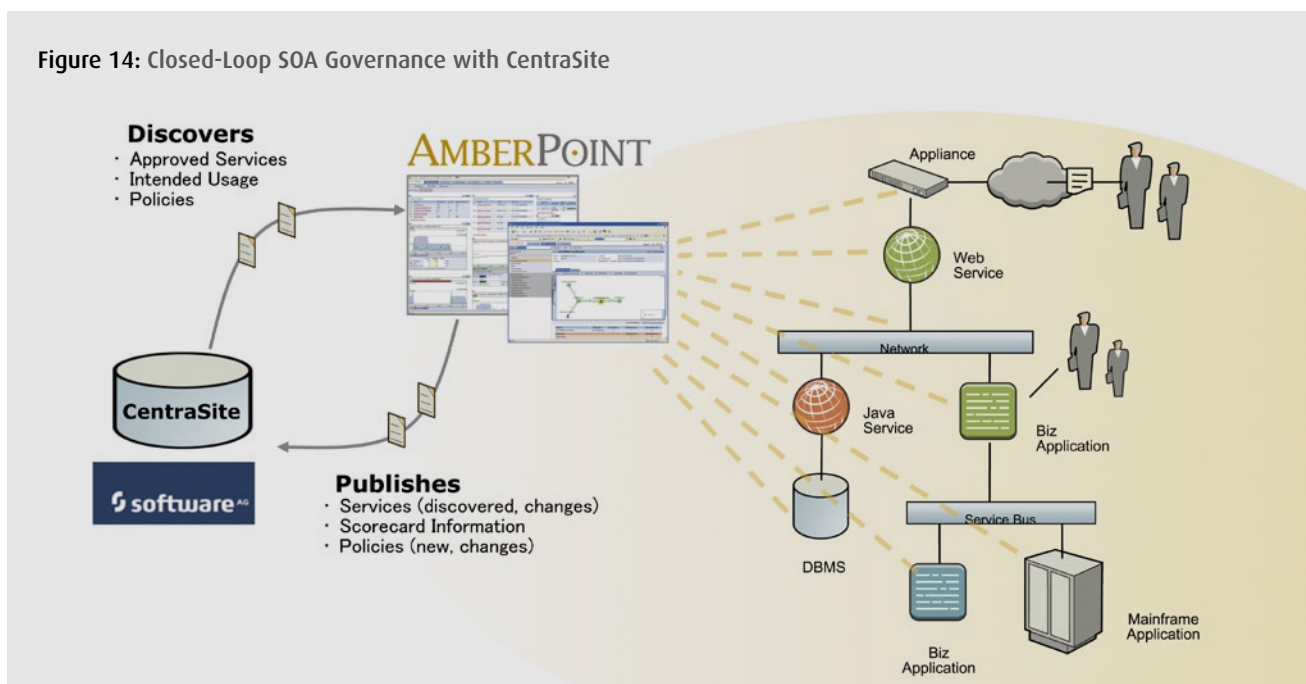
THE AMBERPOINT SOA MANAGEMENT SYSTEM AND CENTRASITE INTEGRATION

The AmberPoint-CentraSite integration (via UDDI) keeps complex SOA design-oriented activities and deployed realities in line.

For example:

- Bi-directional exchange of design-time metadata and runtime information with CentraSite helps maximize component reuse and minimize disruptions.
- Runtime policies in CentraSite are automatically synchronized and enforced by AmberPoint.
- Service Scorecards published to CentraSite provide vital performance data, such as throughput, availability, response times, faults, service level agreement violations and exceptions. This allows developers and architects to select services based on behavior and service characteristics relative to performance.
- Service-to-consumer dependencies published to CentraSite facilitate impact analysis based on actual runtime usage.

Figure 14: Closed-Loop SOA Governance with CentraSite





www.actional.com



The partnership of Actional and Software AG joins the SOA Governance and SOA Management domains to provide full lifecycle policy enforcement with advanced visibility and monitoring capabilities.

This enables, for example, performance monitoring for SLAs, automatic discovery of dependencies, and historically-based traffic and performance analysis. Service dependencies can be managed better across the SOA landscape and the root cause of problems diagnosed faster. Costs for governance, security and compliance are reduced both initially and over time. Service metrics and alerts are real-time so the user has a clear view, for example, into average response times for a particular

service throughout the business day. Some key benefits include:

- Obtain an accurate picture of the SOA in operation with “always-on” SOA Management; detect even unanticipated issues as services and consumers change over time.
- Use efficient and lightweight agents to monitor SOA performance, enforce security and privacy policies, and then aggregate the information for advanced impact analysis.
- Snapshot problem transactions to help isolate the root cause of issues without impacting performance.
- Automatically discover process flows and apply defined policies across the entire process with just a few key strokes.

ASSOCIATED PRODUCTS

Actional for SOA Operations provides end-to-end visibility across the SOA landscape to accelerate problem resolution and mitigate risks.

Actional for Continuous Service Optimization (CSO) provides business insight into SOA operations for decision support and integrated runtime controls for continuous optimization of business outcomes.

Actional for Active Policy Enforcement

ensures compliance with security and regulatory policies. It centralizes SOA policy creation and management, provides consistent, distributed policy enforcement and helps reduce costs.

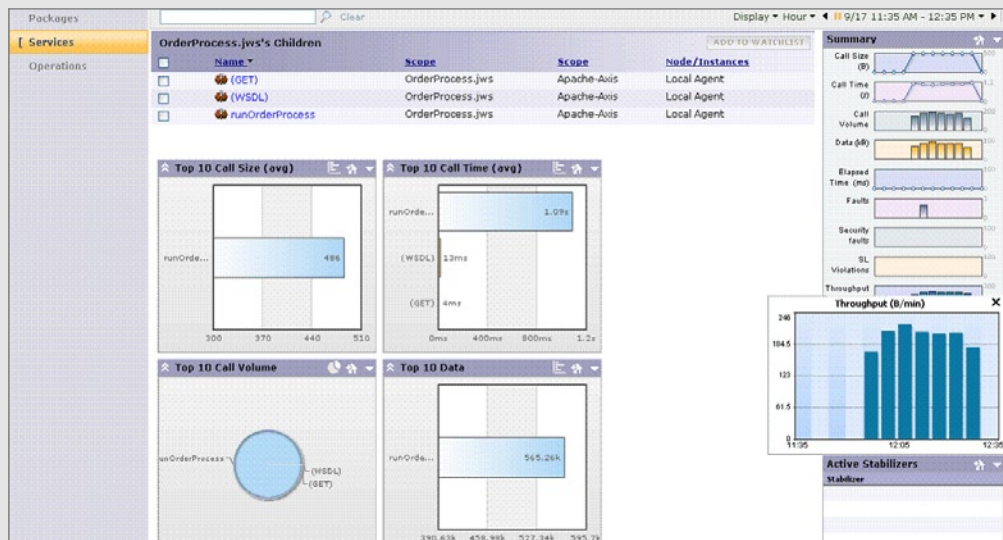
THE ACTIONAL AND CENTRASITE INTEGRATION

The Actional-CentraSite integration provides increased runtime visibility, monitoring and control that allow you to:

- Get deep visibility into your SOA Infrastructure to enable root cause analysis.
- Jump start SOA Governance by automating registration of existing deployed services to CentraSite.
- Provide automatic correlation between service interactions and business processes.
- Merge dependencies from Actional into the existing dependencies of CentraSite to get a complete view of your SOA Environment.
- Detect rogue services and unexpected consumers and bring them into the governance process.
- Quickly diagnose the root cause of policy violations (*Figure 15*).

Figure 15:

A simple click within CentraSite takes you into a detailed metrics report from Actional



CONCLUSION

As you have seen in this white paper, there are many facets of SOA Governance and a wide range of integrations possible across the SOA lifecycle. Summarized below are some of the key aspects in order to achieve maximum business agility with an SOA:

- Consider the need for SOA Governance before you embark on your SOA initiative.
- Think of the Governance Reference Framework – and consider your organization, its norms (policies, procedures and processes) and the technology tools that can help support SOA Governance.
- A registry/repository should be at the heart of your technology tools, recording your services, their lifecycle stages, helping to enforce policies and acting as a command center for governing SOA
- Use a designed-for-purpose tool – not Excel as a quick fix or interim solution.
- CentraSite, the market leading SOA registry/repository is a tool ideally suited for the command center role.
- The registry and repository should be open and capable of integrating with other best-in-class solutions to provide comprehensive end-to-end SOA Governance. In addition, how do registry/repositories vendors approach integration with existing tools in your specific IT environment?
- A great way to build up your understanding of an SOA registry/repository is to download the free Community Edition of CentraSite at www.centrasite.com

This is the first version of this white paper, and it will be updated over time to include additional integration solutions across the areas of SOA referred to, plus several others, as integration projects with complementary vendors is an ongoing process.

Lastly, look out for the forthcoming SOA Link Cookbook, which goes into the subject of standards in more detail, and provides a more in-depth technical explanation of how CentraSite can be integrated with other technologies you already have or are considering investing in.

FURTHER READING

Please see the following links if you would like to know more about the subjects covered in this white paper:

– SOA GOVERNANCE

Software AG Business Community – includes white papers, best practice guides, and discussion forums
www.softwareag.com/bc

– CENTRASITE

CentraSite Developer Community – includes latest CentraSite product news, plug-in downloads and discussion forums
<http://communities.softwareag.com/centrasite>

CentraSite Community – includes partner profiles, latest white papers, SOA Governance newsletter and latest partner-related downloads/demos
www.centrasite.com

– STANDARDS

JAXR: Java API for XML Registries
<http://java.sun.com/webservices/jaxr/index.jsp>

UDDI: Universal Description, Discovery, and Integration
<http://uddi.xml.org/>

SOAP: (formerly known as) Simple Object Access Protocol
<http://www.w3.org/TR/soap>

WebDAV: Web-based Distributed Authoring and Versioning
<http://www.webdav.org/>

WSDL: Web Services Description Language
<http://www.w3.org/TR/wsdl>

WS-Policy: Web Services Policy Framework
<http://www.w3.org/TR/ws-policy>

ebXML: Electronic Business using eXtensible Markup Language
<http://www.ebxml.org/>

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