

## ZAPTHINK ZAPNOTE™

### iTKO ENSURING CONTINUOUS SOA QUALITY

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#### Abstract

Quality means far more than simply reducing defects. Fundamentally, quality means building something that meets the requirements of its users, now and into the future. However, requirements continue to evolve, both during projects as well as once the projects are complete.

Service-Oriented Architecture (SOA) is an approach to organizing and abstracting IT resources in a flexible manner that allows for such continually changing business requirements. This core agility benefit of SOA collapses like a house of cards, however, if the Services or the applications that consume and compose them are of poor quality.

As a result, organizations require SOA quality tools like the iTKO LISA Complete SOA Testing Platform, which enables complete, collaborative and continuous testing of all layers of abstraction in a SOA implementation, including the business process, Service composition, and Service implementation layers, in a way that maintains functional integrity of the SOA implementation even as it experiences continuous change.

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## The Challenge of SOA Quality

Traditional software quality assurance (QA) essentially consists of design time and deployment time activities. Basically, given the requirements, QA means making sure that the software is as defect-free as possible given budget and schedule constraints, and then continually monitoring the working software to make sure that it meets the requirements set out for it at deployment time. That basic approach to quality is fine for organizations that know in advance what their requirements are, when those requirements are stable, and when the goal is simply to build software that meets those requirements.

Such assumptions, however, are frequently false—in many cases, requirements aren't fully developed, and they typically change over time. As a result, one important goal of software is to respond to changes in requirements without extensive additional rework. Service-Oriented Architecture (SOA) is a particularly effective approach in such situations, and the broad recognition that the build-to-today's-requirements approach to software is no longer effective is one of the primary motivations for SOA.

Properly implemented, SOA enables organizations to effect requirements changes via declarative reconfiguration of Service metadata during “change time,” which occurs after deployment of Services as users reconfigure and compose those Services. As a result, managing quality through such changes means managing the quality of metadata, as well as the implementation layer behind the Services. Such change time quality assurance focuses on metadata, and how well those metadata satisfy the requirements that apply during change time.

The most important of these change time quality issues center on Service compositions. On the one hand, Service compositions implement business processes, and on the other hand, they both consume Services and expose Services. Assuring the quality of a SOA implementation on a continual basis, therefore, requires *functional integrity*, which guarantees the expected behaviors at three layers of abstraction: the business process layer, the Service composition layer, and the Service implementation layer. Functional integrity is essential because any change at any layer impacts the layer below. In other words, assuring functional integrity across all the layer for the SOA implementation is essential for maintaining the proper operation of the implementation.

One challenge with this multi-layer quality requirement is that today's business process models are generally too abstract for automated validation. Instead, it's only possible to automatically validate processes implemented at the Service composition layer, which is as a result an important benefit of SOA. In essence, there's an important distinction between abstract processes and implemented processes that SOA implementations help to resolve.

While SOA should increase an organization's ability to deliver new and changed Services faster, the Services abstraction at the heart of SOA actually hides quality issues with the underlying implementation. As a result, it's important to ensure quality across all layers of abstraction, even though every underlying resource and integration becomes another

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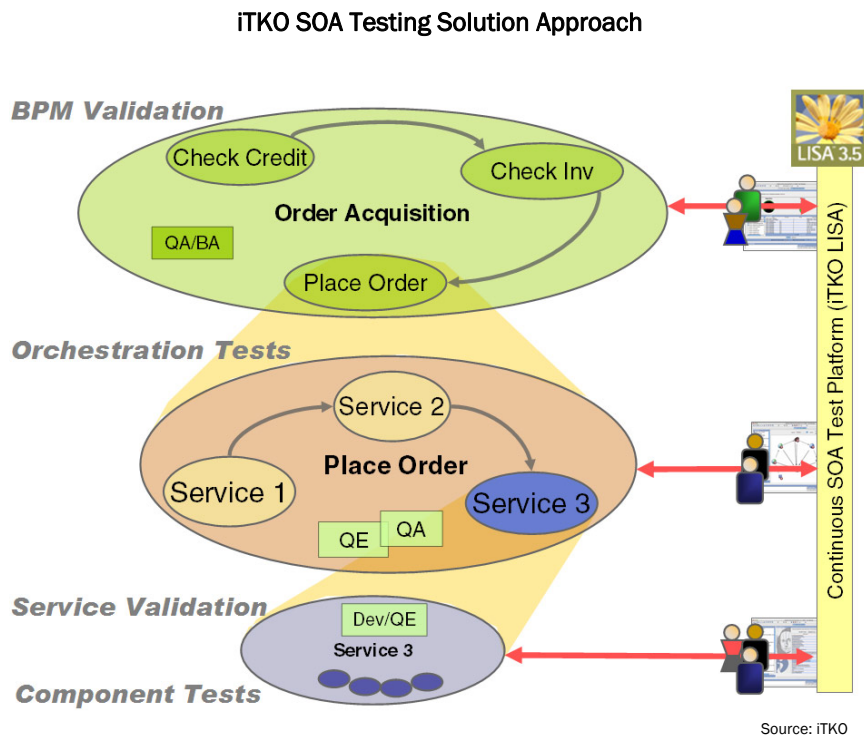
potential point of failure. To insure functional integrity, therefore, it's essential to validate all layers of the application within the context of the live, changing production environment. Simply testing via the client or the user interface is not sufficient for guaranteeing the quality of the SOA implementation.

Another challenge is that different groups own these layers, and they have different lifecycles as well. Quality assurance is more straightforward in tightly coupled architectures when every aspect of the application was under a single point of control, because bugs were much easier to find through straightforward, client-centric testing. In the context of SOA, however, composite applications can span several enterprises and abstract multiple technology types, including legacy data sources, heterogeneous platforms, and externally hosted applications.

## iTKO: SOA Testing that Maintains Functional Integrity

iTKO, Inc. rises to the challenge of maintaining functional integrity for SOA implementations by offering the *iTKO LISA Complete SOA Testing Platform*, a software suite for testing applications in a SOA environment. By allowing multiple business technology layers to be exercised within a single test case, iTKO enables all IT personnel to participate in complete, collaborative, and continuous software quality processes. iTKO LISA Complete SOA Testing Platform (LISA) performs unit, functional, regression, load and performance tests, without requiring test coding or script maintenance. LISA enables testing of Web applications, Web Services, J2EE, .NET, Java objects, JMS/messaging, databases, and other technologies as well,

iTKO models the validation of business processes by mapping from the abstract business process model to subprocesses, Service compositions, Services, as well as the underlying implementation models. From there, iTKO LISA tests the implementation models with traditional testing techniques for the appropriate platform and environment. The various parts of the iTKO SOA testing solution approach are shown in the figure below:



Most importantly, LISA enables what iTKO refers to as the “Three C’s” of SOA quality: Complete, Collaborative and Continuous testing:

- LISA enables complete testing of business workflows across each SOA layer of abstraction as well as the underlying heterogeneous technology implementation, at both a system and component level.
- Entire teams can use LISA collaboratively to test every part of a SOA implementation, at every phase in the development and deployment lifecycle, with rich functional and load testing capabilities. LISA also enables both developers and non-programmers to define and share test cases, providing requirements traceability during the entire Service lifecycle.
- LISA also provides continuous validation of a changing SOA deployment during runtime and change time, ensuring that Services and Service compositions will continue to meet business requirements as the system dynamically changes.

Furthermore, LISA provides *Continuous Deployment Testing* (CDT), which delivers live, constant functional testing and performance monitoring of critical business workflows and all of the components and communications within such distributed, interdependent systems. LISA also provides transparency for testing the entire SOA architecture as it continually evolves. Equally as important to fixing problems is the ability to simulate “what if” problem scenarios of what may occur in a highly interdependent SOA implementations as changes occur.

## The ZapThink Take

Quality means far more than simply reducing defects. Fundamentally, quality means building something that meets the requirements of its users, now and into the future. Being defect-free is a necessary, but by no means sufficient criterion for a quality product. Software quality is no different. While many software quality assurance efforts focus on eliminating bugs, the bug-hunting process is only the starting point for software quality.

The real challenge with software quality, as with any other quality effort, is in guaranteeing that the software meets the requirements set out for it. In an ideal world, QA personnel would simply take the requirements document, use it to build a test plan, and run tests against that plan. Once the project passes all the tests, it’s ready to go live. But in the real world, requirements continue to evolve, both during projects as well as once the projects are complete. And there’s nothing worse than evolving requirements for throwing a wrench in the most carefully laid QA plans.

Environments of continually changing business requirements, of course, are the perfect breeding ground for SOA. SOA leverages a metadata-driven Service abstraction to provide greater power and flexibility to business users, with the clear purpose of enabling IT to respond to changing requirements in an agile manner. This core agility benefit of SOA collapses like a house of cards, however, if the Services or the applications that consume and compose them are of poor quality.

As a result, iTKO’s focus on functional integrity for SOA implementations and on complete, collaborative, and continuous testing are absolutely necessary for ensuring quality SOA implementations. Even so, a tool as sophisticated as iTKO LISA is not sufficient for ensuring quality. After all, if an organization hasn’t built quality into their architecture, then it doesn’t matter how sophisticated the SOA testing tools are. As with so many other aspects of SOA, the tools don’t give you the best practices. Instead, the best practices of SOA help you get the most out of your tools.

## iTKO Features

### iTKO LISA 3.5 Complete SOA Test Platform

#### Overview:

iTKO LISA 3.5 Complete SOA Test Platform ensures component and integration quality while testing, releasing and deploying enterprise software in today's complex, heterogeneous and distributed SOA development environments.

#### Features:

- **Complete testing** – Testing of heterogeneous SOA implementations, including every tier of an application, regardless of location. LISA also offers unit, regression, system, load, and monitoring in one tool.
- **Collaborative quality assurance** – Everyone in the IT organization, as well as business analysts, are responsible for quality, leveraging diverse skill sets.
- **Testing of evolving systems** – LISA enables the testing of all components even before the user interface exists, as well as integrating with the team's application lifecycle management tools and processes. Enables "what-if" scenarios for preventing unintended system-wide consequences of changes. LISA also tests constantly evolving, interdependent systems during and after deployment.

#### Value Propositions:

- **Provides business continuity** – With LISA in place, the business continuity expected of SOA implementations can keep pace with the organization's ability to rapidly and flexibly develop and deploy SOA.
- **Empowers less-technical users** – Through a declarative test management interface, LISA gives less-technical users access to middle-tier systems, involves them in testing and sharing testing processes, and enables the testing of incomplete systems.
- **Increases the agility of development and testing teams** – With LISA as a shared platform, the development becomes more productive through faster, continuous builds. The QA team can get involved earlier and conduct continuous integration testing.



Profile: iTKO	December 2006
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## Related Research

- *Web Services Testing Report (ZTR-WS105)*
- *SOA Quality & Reliability ZapForum Podcast (ZTP-0243)*
- *SOA Quality and Governance: Satisfying the Metarequirement of Agility ZapFlash (ZAPFLASH-2006824)*
- *Quality SOA ZapFlash (ZAPFLASH-2006725)*
- *Mindreef ZapNote (ZTZN-1183)*



## About ZapThink, LLC

ZapThink is an IT advisory and analysis firm that provides trusted advice and critical insight into the architectural and organizational changes brought about by the movement to XML, Web Services, and Service Orientation. We provide our three target audiences of IT vendors, service providers and end-users a clear roadmap for standards-based, loosely coupled distributed computing – a vision of IT meeting the needs of the agile business.

ZapThink helps its customers in three ways: by helping companies understand IT products and services in the context of Service-Oriented Architecture (SOA) and the vision of Service Orientation, by providing guidance into emerging best practices for Web Services and SOA adoption, and by bringing together all our audiences into a network that provides business value and expertise to each member of the network.

ZapThink provides market intelligence to IT vendors and professional services firms that offer XML and Web Services-based products and services in order to help them understand their competitive landscape, plan their product roadmaps, and communicate their value proposition to their customers within the context of Service Orientation.

ZapThink provides guidance and expertise to professional services firms to help them grow and innovate their services as well as promote their capabilities to end-users and vendors looking to grow their businesses.

ZapThink also provides implementation intelligence to IT users who are seeking guidance and clarity into the best practices for planning and implementing SOA, including how to assemble the available products and services into a coherent plan.

ZapThink's senior analysts are widely regarded as the "go to analysts" for XML, Web Services, and SOA by vendors, end-users, and the press. Respected for their candid, insightful opinions, they are in great demand as speakers, and have presented at conferences and industry events around the world. They are among the most quoted industry analysts in the IT industry, and their recent book, *Service Orient or Be Doomed!*, is the leading book on the business concept of Service Orientation.

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

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

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