The Current State of SOA Governance

An ebizQ White Paper

EXECUTIVE OVERVIEW

As organizations adopt SOA, the topic of SOA Governance is receiving an increasing amount of attention. SOA Governance refers to the articulation and enforcement of policies related to service lifecycles, implementation protocols, service access, information protection and service level agreements.

To get the practitioner's point of view on SOA adoption and SOA Governance, ebizQ conducted an online survey during August 2006. This paper shares the results of the SOA Governance Survey, along with ebizQ's observations on this critical current issue for organizations.

The survey findings revealed that while most organizations are doing something related to SOA, only a third of respondents classified their SOA adoption stage as deployed, while 65% are actively pursuing SOA in the form of planning, pilots or production deployments. Less than 20% of respondents have more than 50 services in production.

While 85% of organizations have, or will soon have, a corporate governance mandate, few have formalized governance roles and 70% are enforcing governance manually. Survey respondents recognize this discontinuity as only 17% characterized their SOA governance strategy as sufficient.

It is clear from this survey, and from the growth of SOA adoption across industries, that governance is a timely issue, and one to which organizations need to begin to pay attention. The rest of this report details the survey findings, relates them to market observations and provides recommendations for creating governance practices that will sufficiently meet the objectives of the organizational policies.

RESEARCH METHOD

During the month of August 2006, ebizQ hosted a fifteen question online survey on SOA Governance. The survey was open for four weeks from August 1, 2006 through August 28, 2006.

ebizQ promoted the survey to its members on its website and through newsletters and email blasts. Survey participants were eligible to win a SIRIUS Sportster Replay Radio with a six-month subscription. In addition, all survey participants received a notification of the availability of the survey results: this paper and a related Webinar.

The initial minimum target for number of responses was 100, and we received over 300 responses to the survey. The survey data analysis was performed by analysts from ebizQ.

OVERVIEW OF RESPONDENTS

The survey population is composed of 313 respondents from 21 industries. The top five industries represented are technology, financial/banking, public sector/government, insurance and healthcare/pharmaceutical. **Chart 1** depicts the respondent breakout by industry. The "other" category aggregates industries with a representation less than two percent. This includes: aerospace/defense, automotive, business services, chemical, consumer packaged goods, ecommerce, education, hospitality, manufacturing, marketing and media.

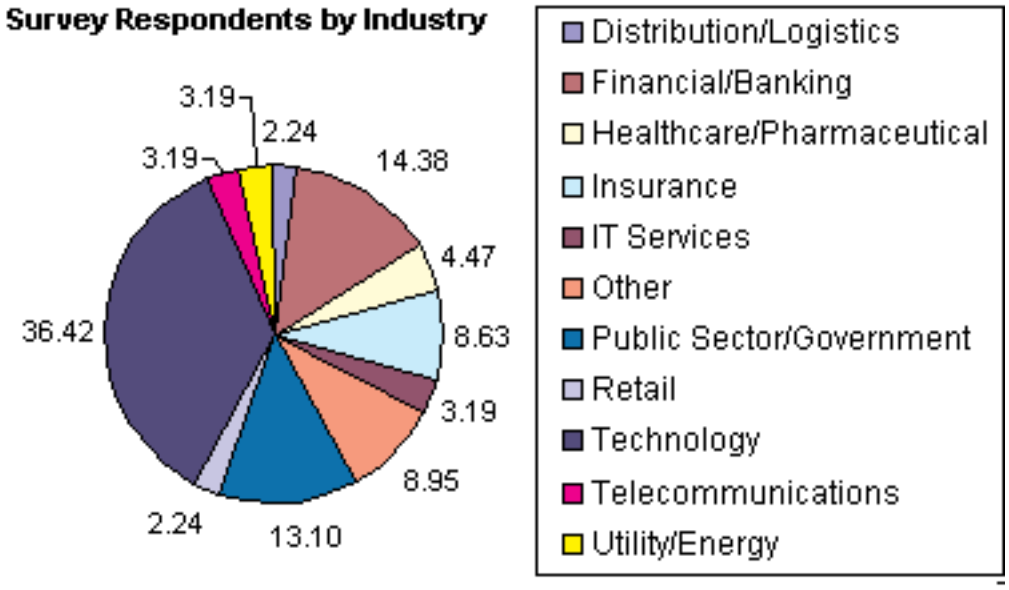

Chart 1: Survey respondents by industry.

CURRENT STATE OF SOA MARKET

SOA Adoption Stage and Deployment Levels

As **Chart 2** illustrates, the survey respondents are distributed across the SOA adoption stages, with the majority, 51%, in the early exploration and planning stages. While only 28% are deployed, 65% are actively pursuing SOA, in the form of planning, pilots or production deployments.

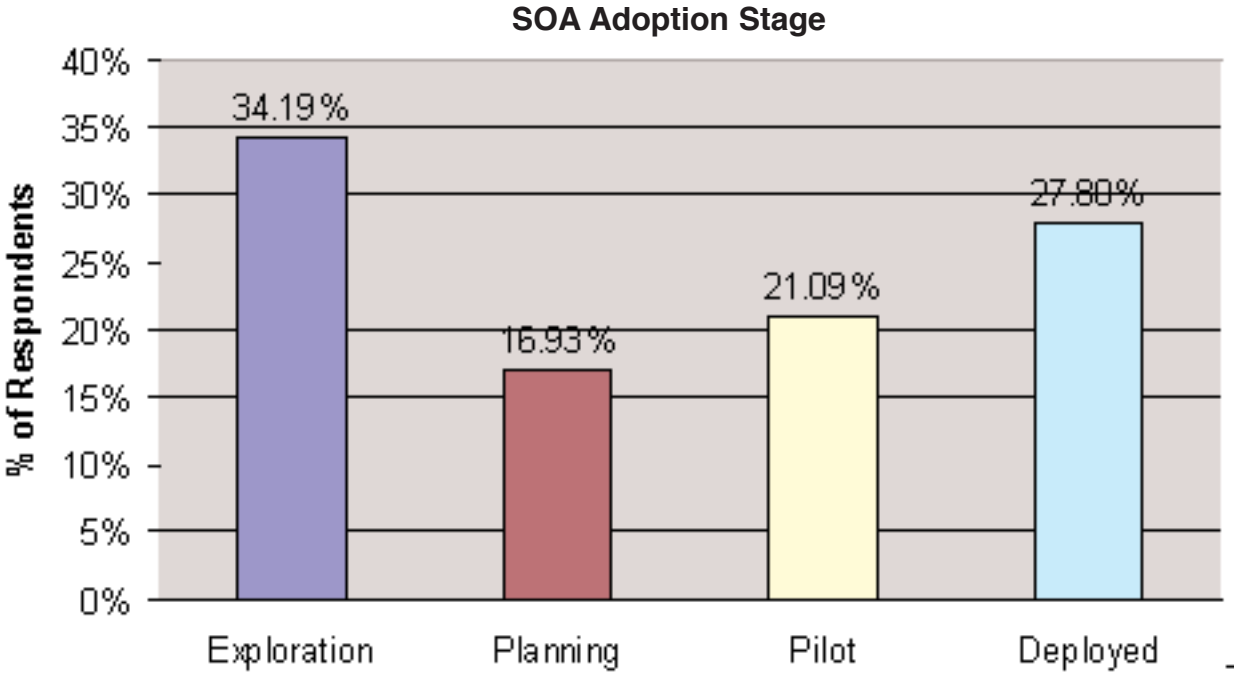

Chart 2: Percent of survey population in each SOA Adoption Stage: Exploration, Planning, Pilot and Deployed

With fewer than 30% of respondents classifying themselves as deployed, it's not surprising that only 19% had more than 50 services in production, as shown in **Chart 3**.

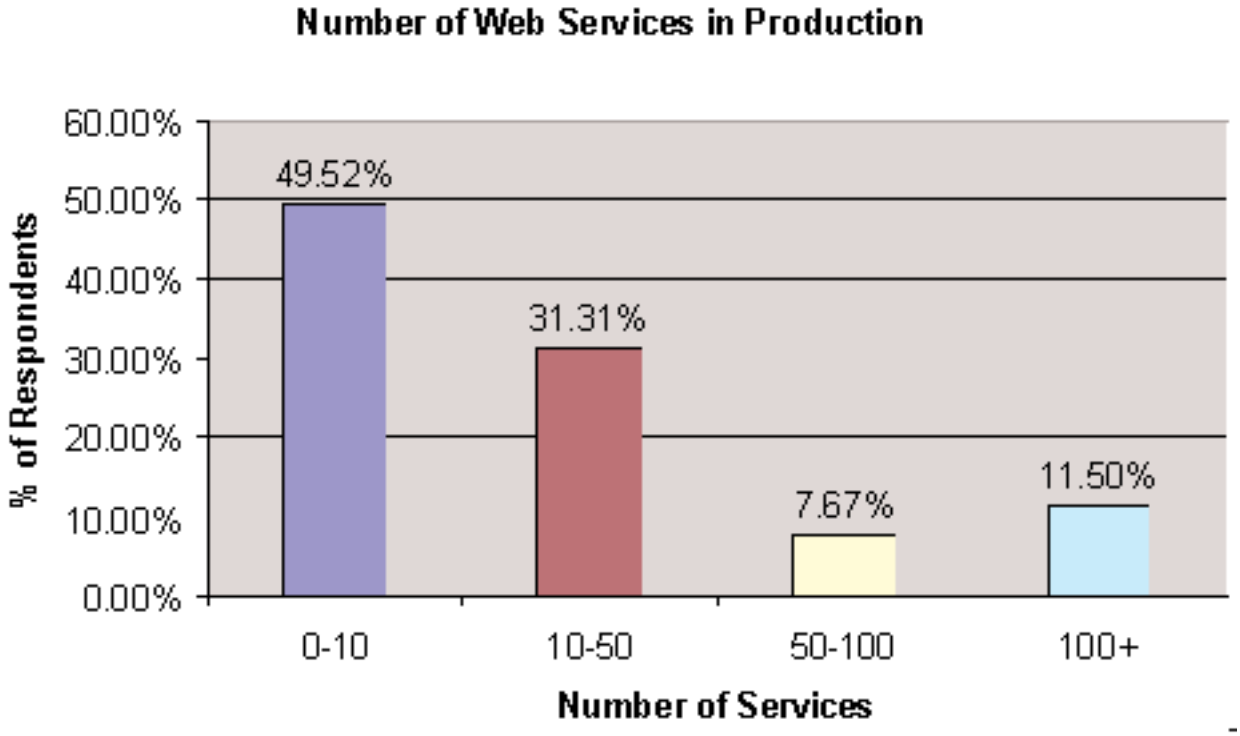

Chart 3: Percent of survey population whose production Web service count falls in each of these ranges: 0-10, 10-50, 50-100, 100+

[1] *Number of services was plotted using the midpoint of each range.*

To better understand the relationship between SOA adoption stage and number of services in production, we correlated the two data sets and produced **Chart 4**. The bubbles in Chart 4 show the relative size of the survey population for each combination of SOA adoption stage and range of production services.

For the most part, the correlated data plotted as expected: with respondents in early SOA adoption stages clustered at the low end of services, and deployments (light blue, column 4) distributed across the service ranges. What was interesting, and unexpected, were the exploration and planning bubbles at the higher end of the production services range. Looking deeper into the data, these aggressive planners and explorers are from early innovator industries with large IT portfolios: financial/banking, insurance, technology and telecommunications.

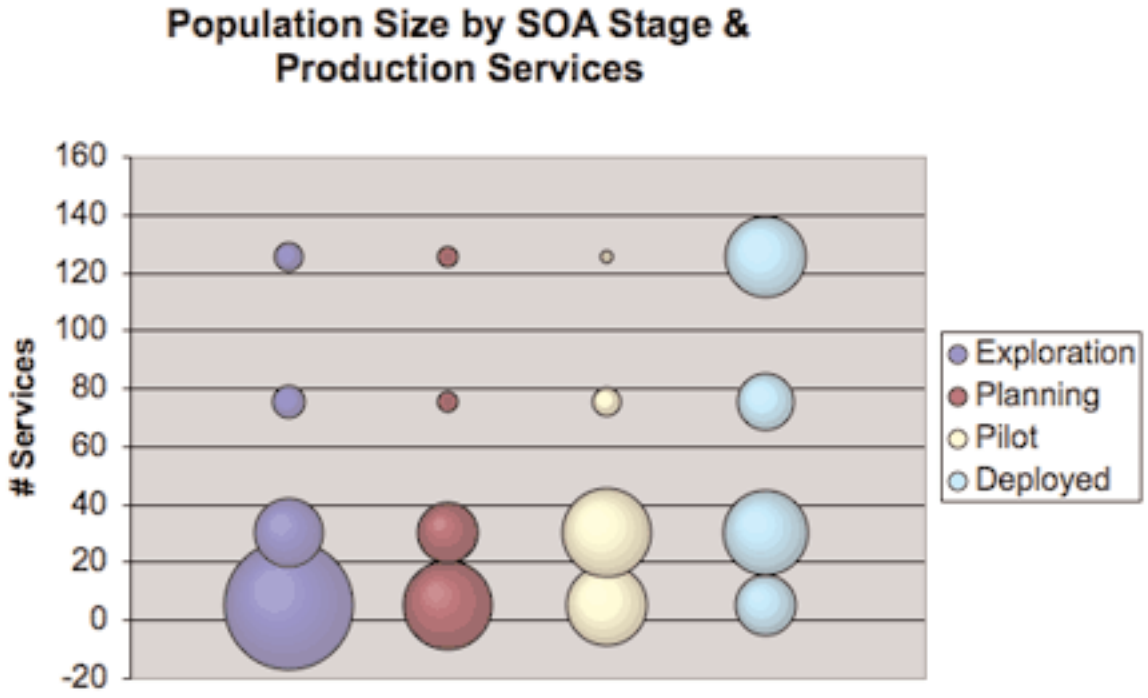

Chart 4: Population distributed by SOA adoption phase and number of production services

SOA Adoption Drivers

The survey respondents indicate their SOA adoption is largely business-driven. As **Chart 5** shows, the most popular SOA adoption driver is to increase business agility. Even more telling are the combinations of drivers. The most popular pairings, in order, were:

- Increase Business Agility and IT Reuse
- Increase Business Agility and Business Process Optimization
- Business Process Optimization and IT Reuse

The “IT combination” of IT Reuse and Composite Application Development was fifth. For respondents who only noted one driver, Increase Business Agility was the clear winner, followed by Business Process Optimization and IT Reuse.

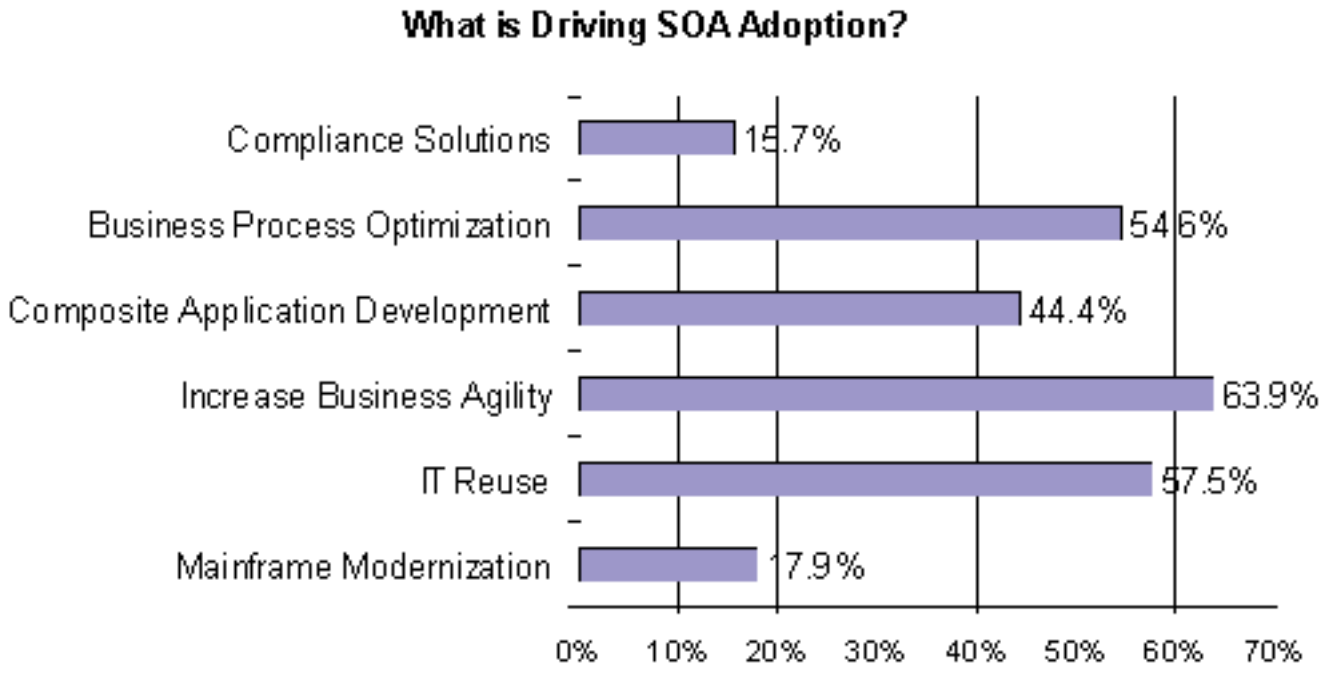

Chart 5: What is driving SOA adoption?

External Exposure of Services

The majority of services are being deployed for internal use. Fifty-nine percent of the survey population indicated only a small percent (0-10%) of their services are exposed externally (**Chart 6**). The industries with the greatest tendency to expose services externally are: technology, financial/banking and public sector/government.

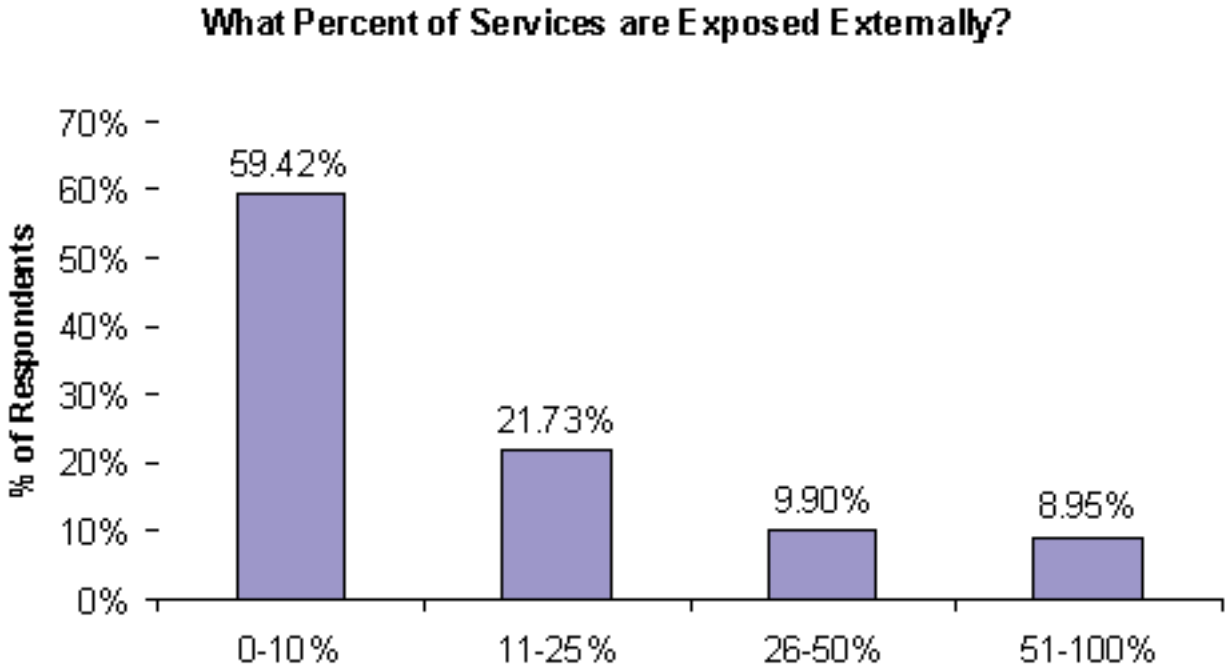

Chart 6: What percentage of services are exposed externally?

SOA Market Observations

Despite all the hype promoting high service-oriented architecture adoption rates, the survey findings show that adoption is still in the early stages. Only 28% of respondents consider themselves deployed. However, 65% of respondents are actively considering SOA, in the form of planning, pilots or deployment. Interestingly, SOA is being adopted for business reasons, with business agility the leading driver.

Based on the small numbers of services deployed, and the tendency for internal use, overall adoption appears to be cautious and incremental. Industries with aggressive SOA adoption, in terms of number of production services, are financial/banking, insurance, technology and telecommunications.

DEFINING SOA POLICIES

In a service-oriented architecture, policies dictate service design and deployment, technical protocol implementation, service access, information protection, and service level agreements. The articulation and enforcement of SOA policies fall under the domain of SOA Governance.

Both the strong response to the survey (three times the expected population) and the survey results show that SOA governance is an important current issue. As shown in **Chart 7**, the overwhelming majority of survey respondents work in organizations that have, or will soon have, corporate mandates for governance.

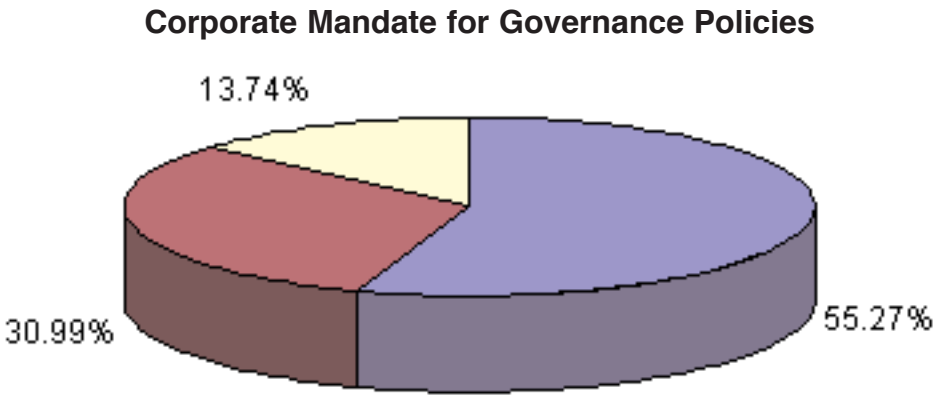

Chart 7: Is the creation and enforcement of governance policies, which may include IT, business and security policies, a corporate mandate in your organization?

The policies in place are mostly technical (IT and security), although 52% of respondents did indicate existence of business policies (**Chart 8**). Respondents noted industry-specific policies for banking, insurance, healthcare, credit card processing, as well as Sarbanes-Oxley.

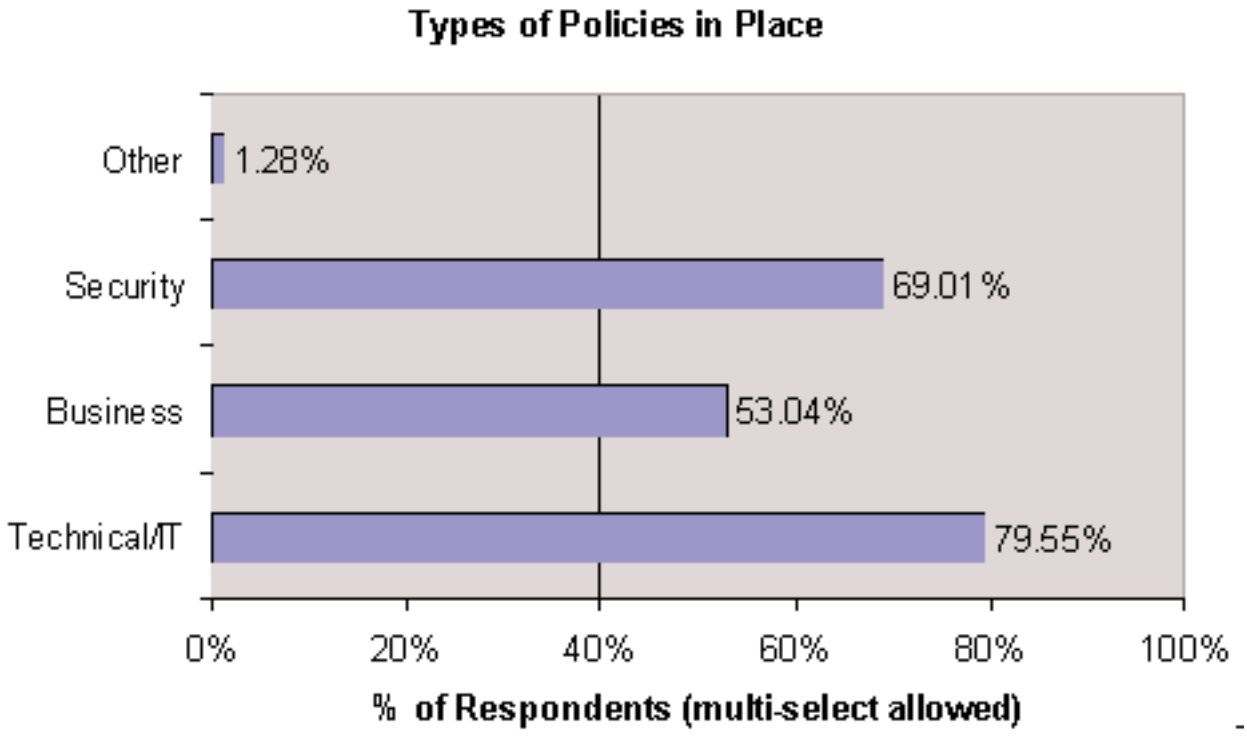

Chart 8: The types of policies in place in the respondents' organizations.

External Exposure of Services

Even though governance is important, respondents indicated policy setting and enforcement most often comes from individuals in the field. Few organizations currently have formal policy setting/enforcement roles. This is shown in Charts 9 and 10. In **Chart 9**, architects are the most frequent policy setters. Other policy setters included: IT management, business leaders, security administrators, and in two instances, external consultants.

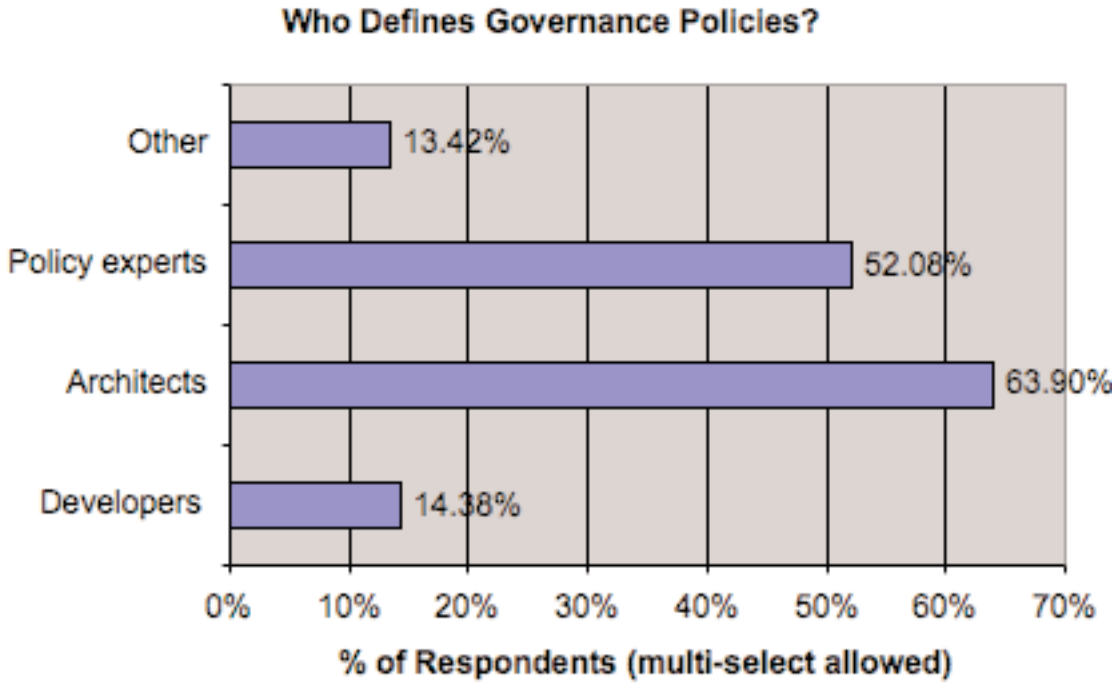

Chart 9: Who defines governance policy in your organization?

The survey reported a low uptake for formal governance roles as shown in **Chart 10**. Forty percent of respondents have none of the listed formal governance roles in their organizations. The most surprising data point was that only 40% of respondents have a security policy expert, while 69% of respondents have security policies in place. This finding indicates an ad hoc approach to policy setting and enforcement, despite the high level of corporate governance mandates. This contradiction will be problematic for organizations over time. For governance to be consistent and successful, organizations must implement more formalized practices and roles.

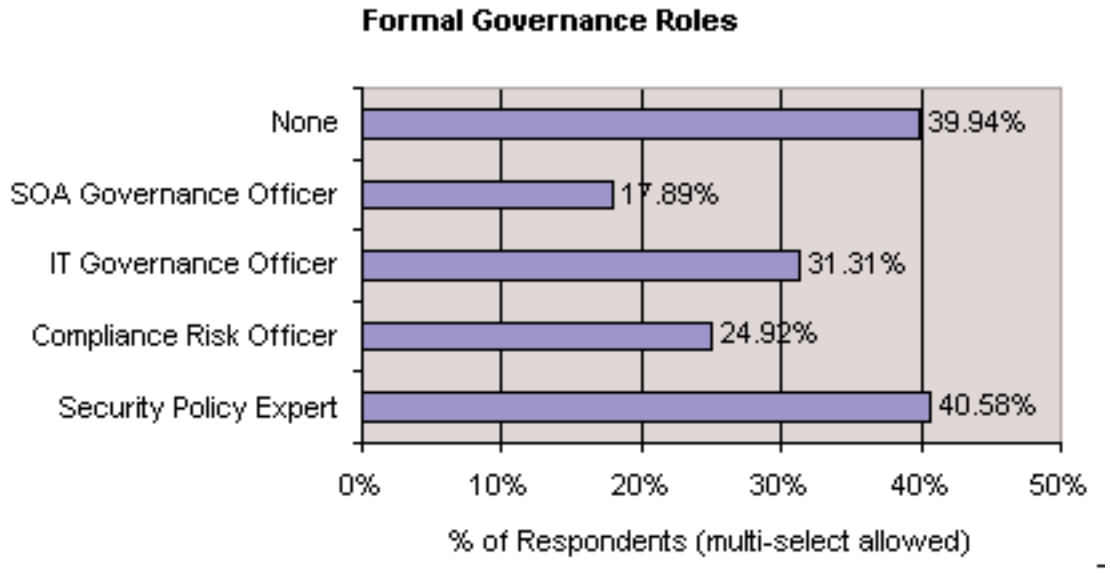

Chart 10: Do you have any of these roles in your organization?

Given the relative newness of SOA, it isn't surprising to see only 18% of the total respondent population has a SOA Governance Officer in place. To understand when SOA Governance Officers are installed, we looked at the relationships between the hiring of a SOA Governance Officer and the SOA adoption stage, as well as the correlation between that officer's hiring and the number of services in production. The results are shown in **Chart 11**.

Chart 11 has two plot lines. The top (blue, diamond points) line shows the percentage of respondents with a SOA Governance Officer by production services range. The production service ranges are shown at the top of the chart. For example, 12% of respondents with 0-10 production services have a SOA Governance Officer.

The bottom (pink, square points) line shows the percentage of respondents with a SOA Governance Officer by SOA adoption stage. The SOA adoption stages are shown at the bottom of the chart. For example, 9% of respondents in the exploration phase have a SOA Governance Officer.

Both plot lines show SOA Governance officers are installed in organizations where SOA has reached a higher level of maturity. The "by number of production services" plot line shows 33% of organizations with greater than 50 production services have a SOA Governance Officer. The "by stage" plot line shows that a SOA governance officer is four times as likely to be present for an organization in deployment (35%) as exploration (9%).

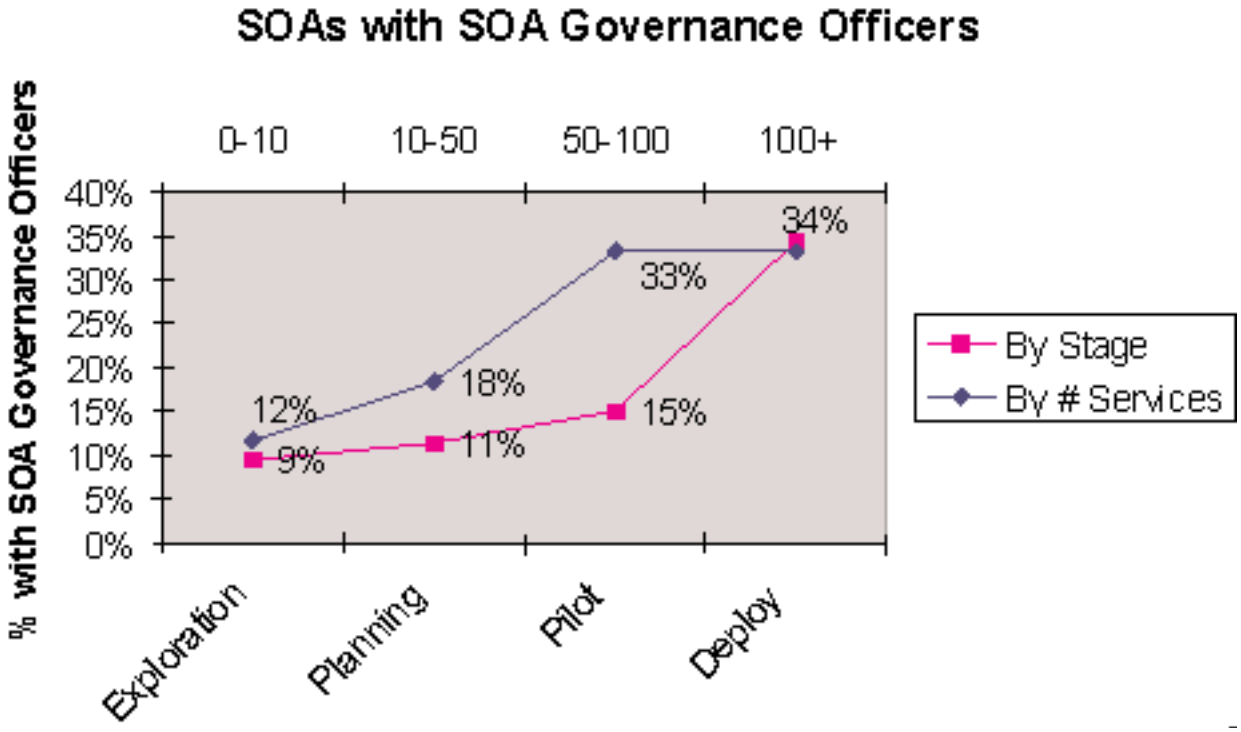

Chart 11: For organizations with a SOA Governance Officer in place, this chart shows the relationships with SOA adoption stage, and number of services (range) in production.

Observations

Governance, composed of policy setting and enforcement, is critical for ensuring business and information technology success. While the survey respondents work in environments that have governance mandates and active policy setting, there is a lack of formal governance roles. This trend carries into SOA governance. Currently, only a small percentage of respondents have SOA Governance Officers. This reveals the relative immaturity of SOA implementations. However, we believe the position of SOA Governance Officer will experience exponential growth as organizations transition from early SOA stages to deployment, and as service catalogs grow.

ENFORCING SOA GOVERNANCE

Current SOA Governance Enforcement Practices

SOA governance encompasses standards, policies, procedures, controls, tools and people. Design-time SOA governance focuses on interface standards, service design, re-use practices, and service cataloging (registry/repository). However, as enterprises evolve from a handful of smaller, experimental, internally focused projects to business-driven projects with broader scope and scale, their view of SOA governance will need to broaden to include runtime concerns.

Runtime governance includes mechanisms for protecting the business, customers and partners, minimizing disruption to business operations, and providing monitoring and measurements of runtime operations. Protection includes service access authentication and authorization, last-mile security, data encryption/decryption, compliance auditing, and threat detection and response. Minimizing disruption requires establishing and enforcing service level agreements, quickly diagnosing and resolving problems, understanding dependencies prior to service changes and system maintenance, and enabling policy changes without impacting business service implementations. Providing real-time visibility into service interactions, including metrics on service usage, performance, service levels, and key business indicators to provides the information both business and IT need to manage the runtime service environment.

The majority of respondents are relying on manual processes to enforce SOA governance as **Chart 12** shows. These manual processes include design reviews, manual audits and after-the-fact reporting. Less than 6% have automated runtime monitoring of policies, and less than 5% automatically check services for policy enforcement before services are checked into a repository.

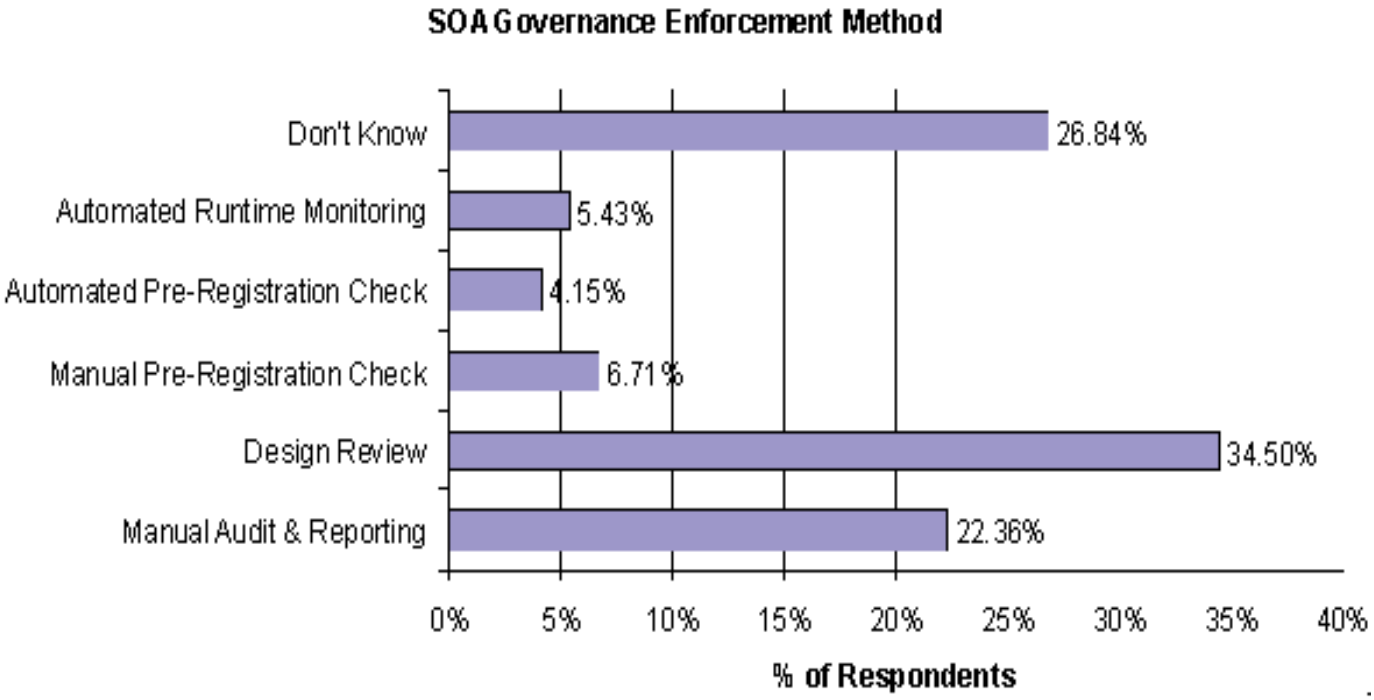

Chart 12: How is SOA governance enforced?

In order to better understand how manual policy management correlates to the stage of SOA adoption, we compared each organization's governance method against their number of production services. These results are shown in **Chart 13**. As expected, there are large clusters of respondents using manual methods to govern the lower ranges (0-10, 10-50) of production services.

When we dug a bit deeper behind the numbers, there were two surprises in the governance enforcement results. First, when we looked at the results relative to industries, we were surprised to see no automation in the insurance industry as this is a highly regulated industry. The insurers participating in the survey rely on manual audit and reporting, and design reviews. We believe this is because 26 of 27 insurers fell into the lower ranges (0-10, 10-50) of production services. Industries with the highest automation levels were healthcare/pharmaceutical and financial/banking.

The second surprise was the lack of correlation between exposing services externally and governance automation. Of the 127 respondents exposing more than 10% of their services for external use, 62% have no governance-related automation, 24% have design-time automation, and only 14% have runtime automation. Again, this might relate to number of services. Eighty-one perecent of respondents are exposing a maximum of 20 services externally.

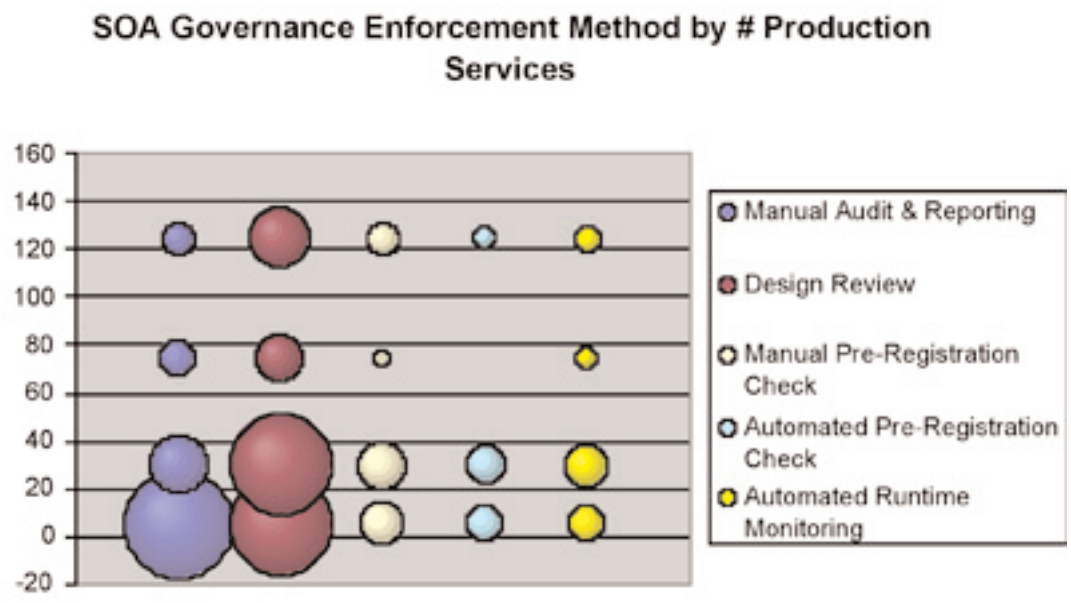

Chart 13: For known enforcement methods, this chart distributes the population by SOA enforcement method and number of production services.

Policy Change Management

Currently, when policies change, respondents primarily engage in manual activities to ensure current and future services are in compliance. As **Chart 14** shows, 48% of respondents resort to changing processes, and another 27% re-deploy new versions of existing services. Only 14% employ tools to ensure runtime enforcement. As the number of deployed services grows, we would expect that organizations will look for more tools to manage change.

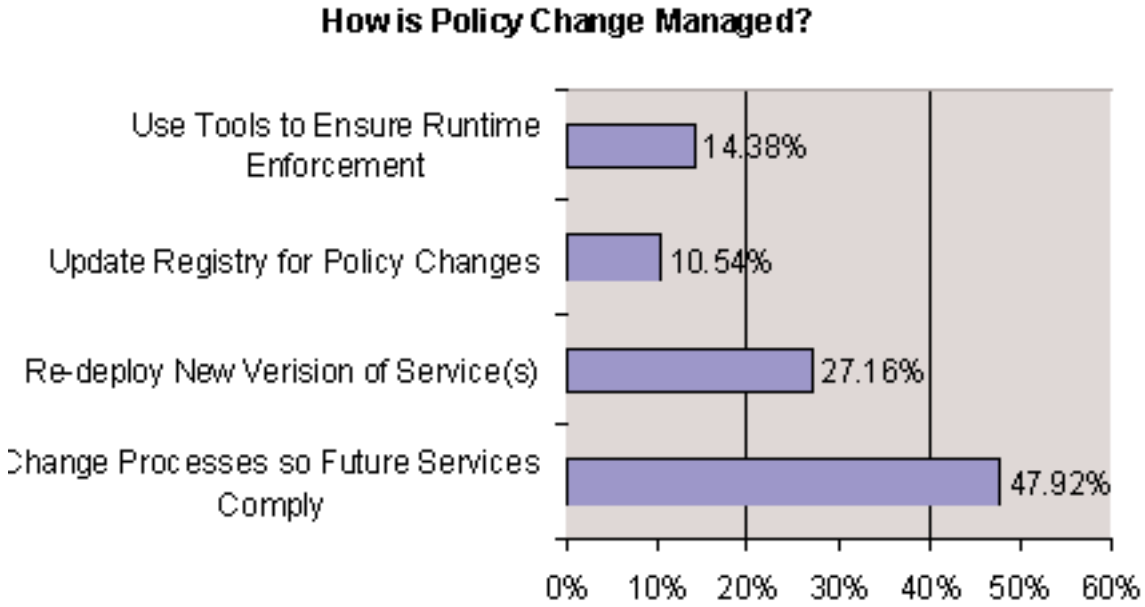

Chart 14: How is policy change managed?

Governance Issues

The biggest governance issues reported in the survey are enforcing policies at runtime, and managing the effects of policy change in both the design and runtime environments (**Chart 15**). It appears that even at the early stages of SOA adoption where manual enforcement practices predominate, respondents are already concerned that these practices are insufficient.

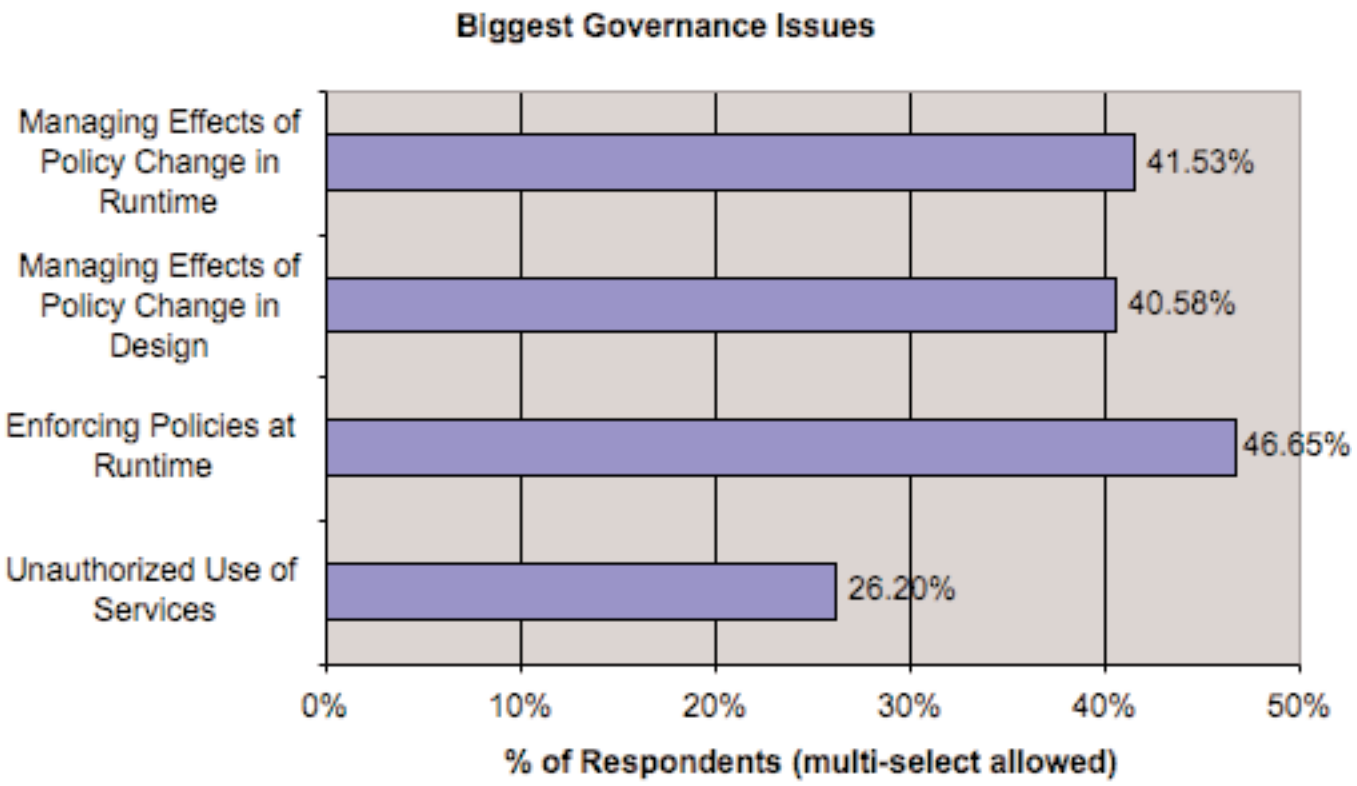

Chart 15: What are your biggest governance issues?

Satisfaction with Current Governance Practices

In general, respondents are not confident that their current governance approach is sufficient. As shown in **Chart 16**, 40% of the population stated their overall governance approach is insufficient, 17% stated their approach is sufficient, and 43% aren't sure.

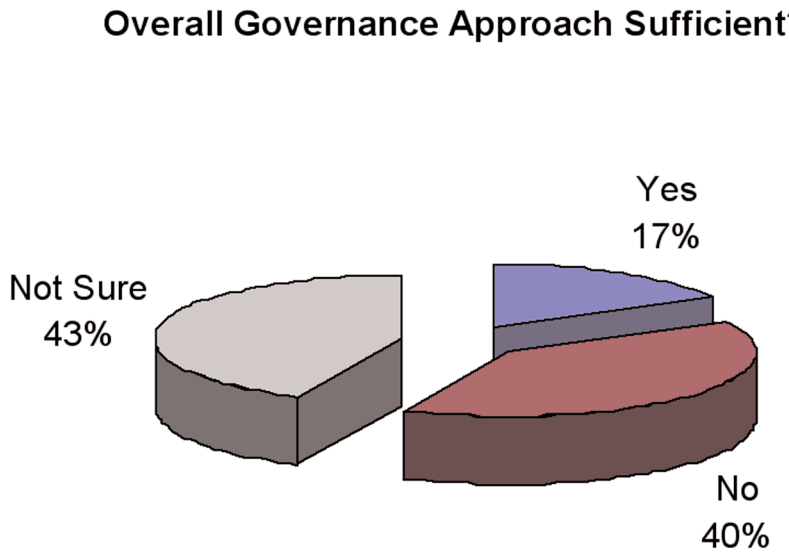

Chart 16: Is your overall governance approach sufficient for meeting business, compliance and IT needs?

To understand how governance is working, or not, we compared responses to the "governance sufficiency" question to the number of production services deployed, and current levels of governance automation.

We started with the comparison of number of services deployed, since number of services often suggests SOA maturity. As **Chart 17** shows, the satisfaction levels are generally consistent across the service ranges, with the

100+ group having both the highest satisfaction rate (31%) and the least uncertainty (28%). Number of services alone does not appear to influence governance satisfaction.

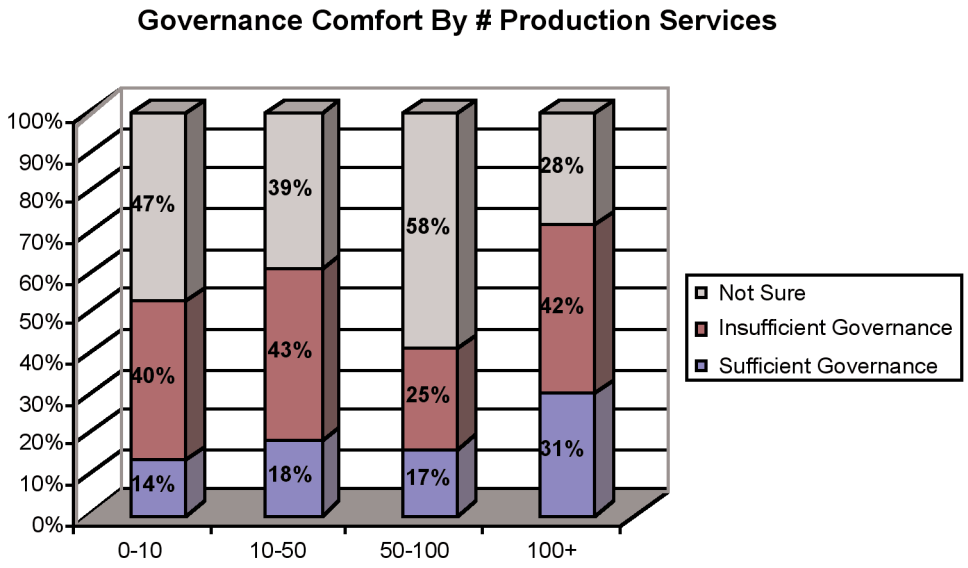

Chart 17: Governance comfort by number of production services.

Next, we compared responses to the "governance sufficiency" question with a general question regarding governance automation. As **Chart 18** shows, 70% of respondents have no automated governance solutions in place, 20% have automated governance in design and development environments, and only 10% have automated runtime governance.

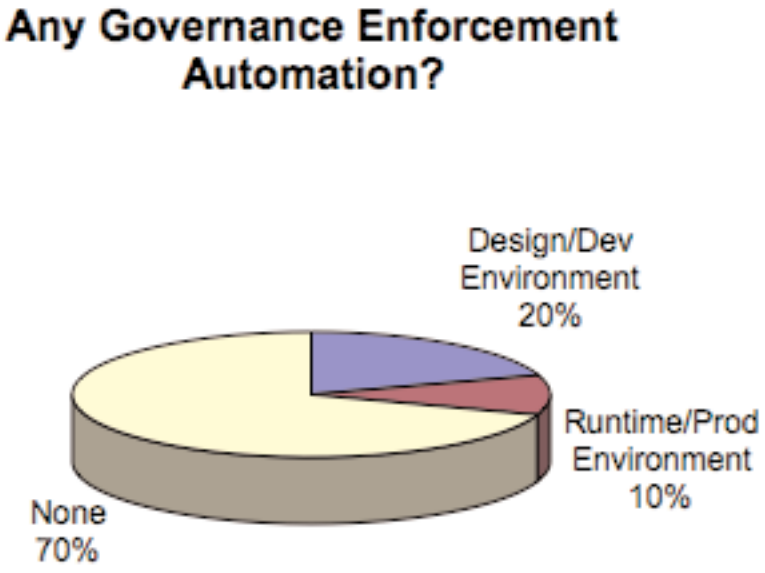

Chart 18: Have you implemented any form of governance enforcement automation?

When we correlated the results between automated governance and levels of satisfaction (**Chart 19**) it became clear the automated governance solutions provide a much higher degree of confidence than manual solutions. Of those who feel their governance solutions are sufficient, 33% have design-time automation and 26% have runtime automation. Of those lacking confidence (column 2) in their governance solutions, 18% have design-time automation and 7% have runtime automation.

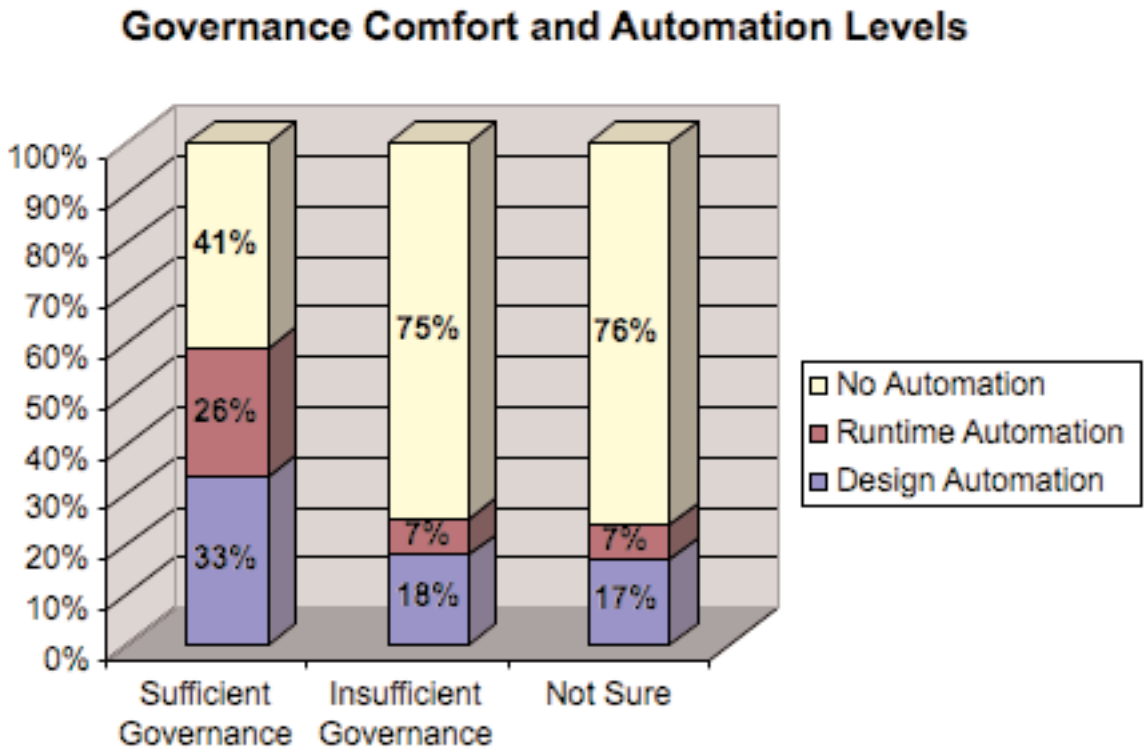

Chart 19: Governance comfort levels and automation breakouts.

In order to gain an understanding of what types of automation are necessary to provide confidence in governance solutions, we correlated the governance automation responses (design, runtime, none) with number of services in production for both those who felt their governance solutions were sufficient (**Chart 20**) and those who felt their governance solutions were insufficient (**Chart 21**).

Comparing Charts 20 and 21, the biggest differentiator between those who feel their governance solution is sufficient and those who believe their governance is insufficient is the degree of runtime automation. This trend becomes evident as the number of services increases. In the 0-10 production services range the degree of runtime automation is similar for both the sufficient and insufficient groups. However, for the remaining ranges - 10-50, 50-100, 100+ - the runtime automation of the sufficient group exceeds the insufficient group by factors of 20, 3, and 4 times, respectively. Degree of automation, and particularly runtime automation, is the greatest influencer on the overall governance satisfaction.

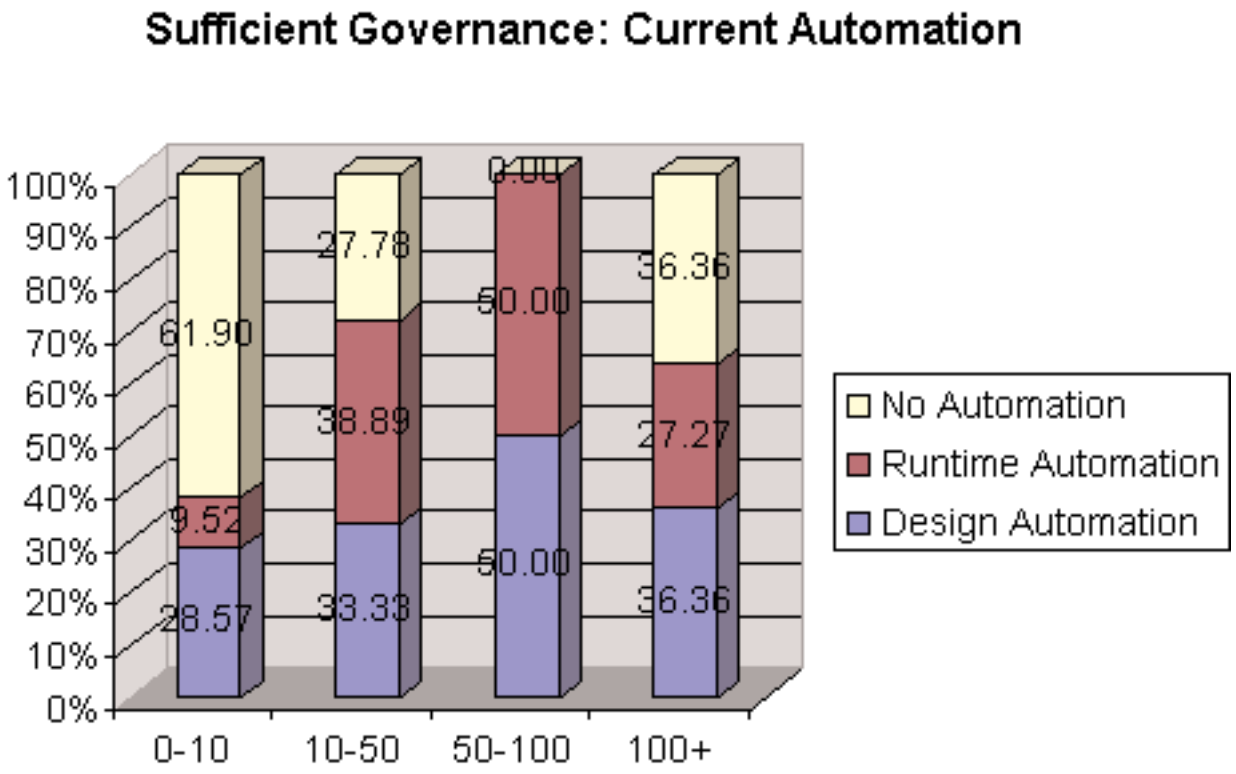

Chart 20: This chart drills into "sufficient governance," showing the current automation by the number of production services.

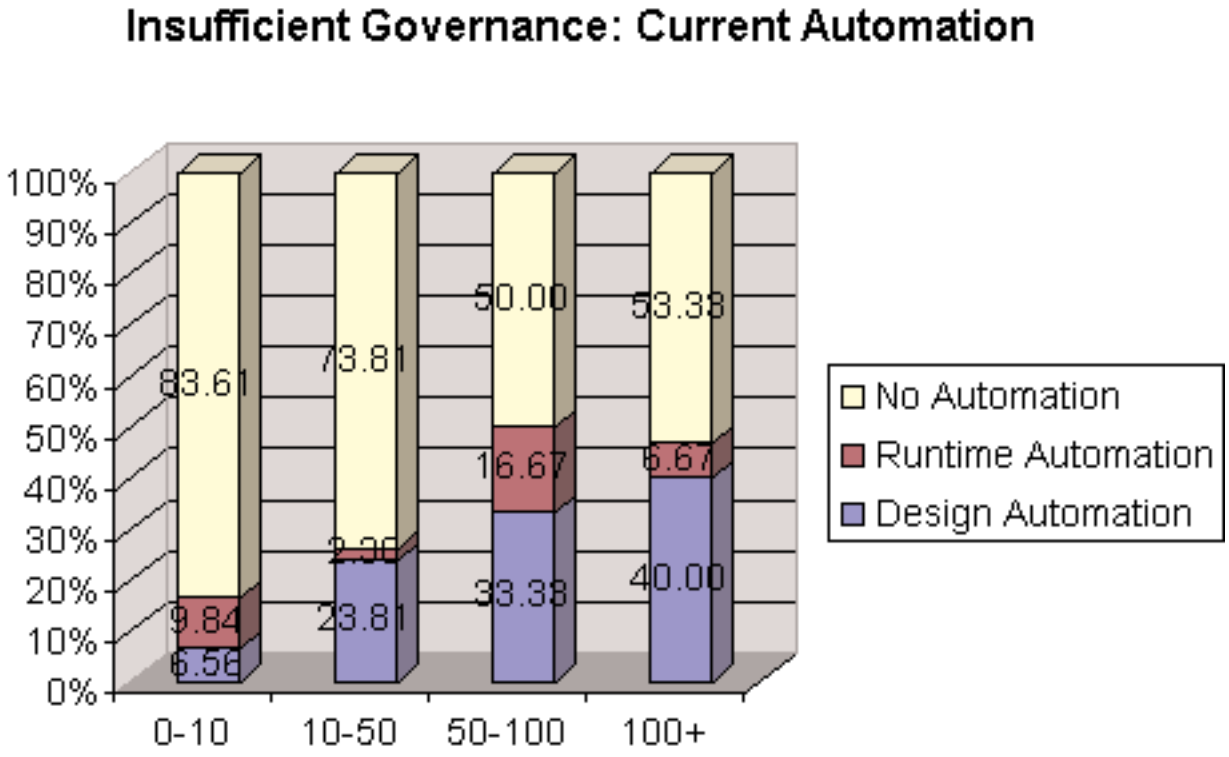

Chart 21: This chart drills into "insufficient governance," showing the current automation by the number of production services.

Observations

Currently, SOA Governance is predominantly handled manually, causing problems and concern for practitioners. We expect these manual practices to implode as demand grows from increased SOA adoption, larger service catalogs, and changes to services and policies over time. Inability to keep up with either SOA growth, or the rate of change, exposes an organization to significant risk. This could negatively impact business agility, the leading driver for SOA adoptions, or force implementation teams to bypass SOA Governance, resulting in increased exposure to undue technical, business and security risks.

CONCLUSIONS

According to our survey respondents, service-oriented architecture is real. The majority of survey respondents, 65%, are actively pursuing SOA, in the form of planning, pilots, or production deployments. Wisely, the bulk of these practitioners are starting off by implementing small numbers of services, primarily for internal use. Companies are taking an evolutionary approach to SOA, starting by deploying a few services internally. We believe this to be a good tactic, which will reduce the risk of SOA adoption.

According to survey respondents, who represent 21 different industries, governance is a mandate. However, currently there is a lack of formal governance roles, indicating a lack of maturity in governance execution. While the majority of companies have implemented SOA governance practices, the enforcement is predominantly manual. Currently the manual procedures are posing issues in runtime enforcement. Now and in the future the manual practices will cause significant issues in managing the effects of policy changes. This in turn will negatively impact business agility, the number one driver behind SOA adoption.

As organizations transition from early-stage SOA adoption to deployment, and grow their service catalogs, the demand for SOA governance will overwhelm the capacity of manual controls and enforcement. The organizations with more mature SOA implementations, with over 50 services in production, are implementing automated design and/or runtime governance solutions. SOA governance solutions offering closed loop—design time to runtime—service lifecycle management and loosely coupled, policy driven, runtime enforcement will offer organizations higher levels of business agility.

For SOA success, organizations should consider their governance strategy early, and implement it incrementally, in concert with their overall SOA plan.

SURVEY AND RESEARCH SPONSORSHIP

Funding for ebizQ's survey on SOA Governance was provided by Progress Software

As enterprises expand their service-oriented architectures in terms of both scope and scale the need for automated, runtime governance, as part of a holistic SOA governance strategy, is imperative. The Actional Web Services Management and SOA Governance suite from Progress Software provides a powerful runtime governance solution that enterprises can adopt incrementally, in concert with their SOA evolution, to ensure visibility, security and control of the activities of services and end-to-end business processes in the runtime environment. To learn more about Actional products, visit www.progress.com/actional today.