

**Australian Service Oriented Architecture (SOA)
&
Service Oriented Development of Applications (SODA) Survey**

The 2005 Report



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Executive Summary

Service Oriented Architecture (SOA) is a software architectural concept where services support the requirements of software users. In an SOA environment, nodes on a network make resources available to other participants in the network as independent services that the participants access in a standardised way.

Service Oriented Development of Applications (SODA) is the process of developing applications deployed within a service-oriented architecture. These applications are generally composed of loosely bundled Web services which are 'orchestrated' to solve a business problem.

In May 2005 – seeking to better understand customer needs in an environment characterised by high levels of interest and excitement in SOA and SODA – InterSystems and Compuware conducted in-depth surveys of around 100 managers, IT architects, software developers and project managers at around 75 Australian organisations.

Key findings of the survey include:

1. The average percentage of organisations' applications currently based on SOA was 9%, a percentage expected to increase more than four-fold to 43% within three years.
2. 73% of organisations expected to gain 'Increased business flexibility / agility' from SOA; 60% expected 'Lower software integration costs'.
3. The median expected time before receiving a significant benefit was two years.
4. 64% of organisations had concerns about a 'Lack of in-house knowledge and expertise' about SOA.
5. 52% of organisations expected they 'Will make significant changes' (43%) or 'Have made significant changes' (9%) to their formal development methodologies to support SOA and SODA.
6. The median time for standardising on SODA – among the 78% of organisations, which knew when they would do so – was 1.5 years.
7. SODA was anticipated to have a positive effect meeting the challenges of 'Reusable code', 'Rapid response to business change' and 'Application integration'.

SOA Survey Findings

Q1. When will we reach Nirvana?

InterSystems began by defining 'Service oriented architecture (SOA)' as a software architectural concept where services support the requirements of software users. In an SOA environment, nodes on a network make resources available to other participants in the network as independent services that the participants access in a standardised way. Most definitions of SOA identify the use of Web services in its implementation.

The survey then asked: "What percentage of your IT applications are / will be SOA-based . . . Now? . . . In 3 years?"

Very few organisations had yet deployed a significant proportion of SOA-based applications – 77% of organisations said fewer than 20% of their applications were currently SOA-based. Of the others, 13% said 20-40% of their applications were SOA-based, 6% said 40-60% and 2% each said 60-80% or more than 80%.

The average percentage of applications which were SOA-based was currently 9%.

Looking three years out, a very different picture emerged, with organisations expecting rapid uptake of SOA-based applications. 49% of organisations said that more than 40% of their applications would be SOA-based, with 30% saying 40-60%, 12% saying 60-80% and 7% saying more than 80% of their applications. Of the others, 42% expected 20-40% of their applications to be SOA-based, with 9% saying less than 20%.

The average percentage of applications expected to be SOA-based in three years was 43%, representing a greater than four-fold increase.

Organisations are taking SOA very seriously, with a sense of urgency surrounding SOA deployment. For most organisations, however, the task of migrating to a service oriented architecture will still be less than 50% complete in three years time.

Q2. And when will SOA become mandatory?

Almost all respondents (97%) expected that it will be a requirement that most software supplied to their organisations will have to be SOA-based, either now or in the future. Only 3% said this would never be the case.

51% of organisations expected to require most suppliers to support SOA within three years, either 'Now' (3%), 'Within 1 year' (6%), '1-2 years' (20%) or '2-3 years' (21%). 46% of organisations expected to make it a requirement for most suppliers after 2008, either within '3-5' years (31%) or '5-10 years' (15%).

It appears that the migration to service oriented architectures will reach a peak of intensity in about three years time, but that non SOA-based applications will continue to be prevalent up until 2008 and beyond, including software sourced from external suppliers.

Q3. Show me the benefits

Organisations expected to see a range of benefits from SOA with strong agreement about the main ones. Interestingly, only one in a hundred organisations saw no need for SOA. It can be concluded that an overwhelming majority (99%) of organisations do see a need for SOA.

'Increased business flexibility / agility' was the most common benefit that organisations expected to gain from SOA, cited by 73% of organisations.

'Lower software integration costs' was also seen as a benefit at 60% of organisations.

A significant proportion of organisations expected other benefits including:

- 'Provide greater economics and efficiencies through re-use of code' (45%);
- 'Improving ROI on existing IT applications' (42%); and
- 'Cost effective development of composite applications' (35%).

The survey strongly supports the view that SOA will turn software from an inhibitor to an enabler of business change. Although this is not the primary benefit that organisations expect to gain, it is a by-product of increased agility and lower software integration costs.

Q4. When will I get a payback?

InterSystems also asked respondents how long it would be before their organisation experienced a significant benefit from SOA.

49% of organisations surveyed expected to receive a significant benefit within two years, either 'Benefiting now' (9%), 'Within 1 year' (11%) or '1-2 years' (29%). The other half expected a benefit after two years, either '2-3 years' (22%), '3-5 years' (17%) or '5-10 years' (11%).

The median time expected to receive a benefit – two years – is relatively early in the SOA migration process. Over the next three years, fewer than 50% of applications are expected to be SOA-based (see Q1) and most organisations will not require most software supplied to be SOA-based (see Q2).

This supports the view that organisations' expectations for SOA benefits are outpacing actual SOA deployment and that the IT industry is poised on the verge of a significant trough of disillusionment.

Q5. Have you hit any roadblocks?

The road to Nirvana is not expected to be entirely smooth. The vast majority (97%) of organisations surveyed experienced one or more inhibitors to SOA adoption. Only 3% of organisations said there were 'No inhibitors'.

In response to this question, a certain degree of inflated expectation was still in evidence. Organisations surveyed ticked more boxes in the question about benefits (ticking on average 3.3 boxes in Q3) than inhibitors (ticking an average 2.4).

Whereas organisations broadly agreed on the benefits of SOA, inhibitors varied with no one inhibitor chosen by a majority of respondents. The most common roadblock, cited by 49% of organisations, was 'Complexity'. The second most common roadblock, chosen by 42%, was 'Lack of standardisation or difficulty in describing specific services'.

The third most common inhibitor, chosen by 39%, was 'Change management issues'. 'Architectural governance issues' were an inhibitor for 36% of organisations. Other inhibitors were 'Cost' (27%), 'Lack of or uncertainty around commercial frameworks' (23%), 'No perceived need for SOA' (12%) or 'Other' (8%).

The survey results echo IT analyst firms who warn of the challenges ahead, both in standardising how business processes and information are described to enable the interoperability of SOA-based services, and in organisational change management.

Q6. So what's the bottom line?

The scale of the challenges that organisations face in migrating to service oriented architectures was underscored when InterSystems asked what organisations were spending extra money on to adopt SOA.

Five areas of extra spending stood out, two concerning skills and training, and two concerning IT infrastructure and software. Business process change was also an important area of extra spending. In descending order the areas of additional spending were:

- 'Additional skills' (44%);
- 'IT infrastructure' (44%);
- 'Training for in-house IT staff' (39%);
- 'Business process change' (39%); and
- 'New software' (38%).

While the move to SOA is seen as inevitable by almost all organisations, the survey shows that it will still require effort and expenditure to implement. Only 12% of organisations said they would be spending no extra money on SOA, leaving 88% which will be.

As much or more of this extra spending will be on people, through additional skills and training, as the IT infrastructure and software they employ.

Q7. Ignorance and confusion reigns

When it came to organisations' concerns about service-oriented architectures, there was good news and bad news.

The bad news is that 64% of organisations had concerns about a 'Lack of in-house knowledge and expertise'. And 55% also felt that SOA was 'Not widely understood, too much confusion'.

Other significant concerns were 'Lack of management buy-in' (37%) and 'SOA is currently over-hyped, benefits will be long term' (30%). Only 7% of organisations had 'No concerns'.

The good news was that relatively few organisations had concerns that SOA:

- 'Doesn't help solve current business problems' (9%);
- 'Is being used to promote vendor lock-in' (12%); or
- 'Was not focussed on realisable business benefits' (17%).

While it may be an exaggeration to say that ignorance and confusion reigns, the survey points to a considerable gap between organisations' high expectations of SOA and their ability to execute quickly due to lack of knowledge and expertise or understanding of SOA.

Q8. Effect on insourcing vs outsourcing

The survey found that the adoption of SOA will contribute to the continuing trend towards less in-house software development by organisations.

Altogether 56% of organisations surveyed said there would be less in-house software development. While bad news for in-house development staff, there was good news for organisations.

The main reason for less in-house development, cited by 46% of organisations, was 're-use of code', one of the key touted benefits of SOA. The other reason given for this, cited by 29% of organisations, was 'an increase in externally sourced software and services'.

31% of organisations saw 'little change in in-house development' and 13% took the position that there would be 'more in-house development due to a decrease in externally sourced software and services'.

SODA Survey Findings

Q1. What methodology do you use today?

Service Oriented Development of Applications (SODA) is the process of developing applications deployed within a service-oriented architecture. These applications are generally composed of loosely bundled Web services that are said to be 'orchestrated' to solve some business problem.

Seeking to better understand organisations' SODA requirements, Compuware began by asking which development methodology organisations currently used.

58% of organisations used 'Waterfall development', a traditional software development methodology that proceeds in a step-by-step fashion from gathering requirements to complete implementation. 48% of organisations used 'Rapid Application Development (RAD)', a more modern methodology featuring an iterative approach to the design and delivery of software.

The use of advanced development methodologies, more attuned to SODA requirements, was far less common. These included:

- 'Agile Computing' (22%), a methodology that adapts to changing business requirements through the frequent delivery of small pieces of a total system;
- 'Architected, Model Driven (AMD)' (13%), a methodology that enables SOA through modeling the business and business processes; and
- 'Architected, Rapid Application Development (ARAD)' (8%), featuring a unified process, business modeling, rapid application development and legacy systems integration.

9% of organisations used 'Other' methodologies, and 8% were 'Not sure'.

The survey shows that organisations face major challenges in adopting Service Oriented Development of Applications. These will include retraining existing development staff or acquiring staff with additional skills and implementing tools to support a more business-centric approach to software development.

Q2. So why change the methodology

When Compuware asked organisations what changes they were making to their formal development methodologies to support SOA and SODA, 52% expected they 'Will make significant changes' (43%) or already 'Have made significant changes' (9%).

Only 7% of organisations 'Do not believe that any change is required'. However, 41% of organisations said that they had made (21%) or would be making (20%) only 'minor changes' to support SOA and SODA.

While most organisations seem prepared for the changes that SOA will bring, it appears likely that many organisations either underestimate the changes that will be required to support SOA and SODA, or overestimate the ability of their current development methodologies to support them.

Q3. Why two frameworks when one will do?

When organisations were asked what development frameworks they were currently using, 'J2EE' emerged as the most popular, chosen by 73% of respondents.

56% of organisations used Microsoft's '.NET' development framework. And there was a significant overlap between the two, with 37% of organisations employing 'Both' J2EE and .NET frameworks. Only 8% of organisations used 'Other' development frameworks.

The survey is consistent with the view that most large organisations have invested heavily in J2EE for enterprise-wide development, but that .NET adoption is growing rapidly within medium-sized enterprises and at the departmental or business unit level with large organisations.

Both J2EE and .NET offer a framework for the Service Oriented Development of Applications (SODA).

Q4. Racing towards a SODA standard

The survey found that SODA was rapidly emerging as a standard development approach within organisations. This is despite the current prevalence of traditional development methodologies (see Q1) and the reluctance of many organisations to acknowledge the need for significant change (see Q2).

However, there was considerable uncertainty surrounding the timeframe for using SODA as a standard approach, with 21% of respondents saying they did not know when this would occur. There was little doubt it would happen – only 1% of organisations said they would ‘Never’ standardise on SODA.

The median time for standardising on SODA – among the 78% of organisations which knew when they would do so – was 1.5 years.

25% of organisations were standardising on SODA in ‘1-2 years’. And 29% were standardising on SODA even sooner, either ‘Now’ (11%) or ‘Within 1 year’ (18%). Another 24% of organisations expected to take longer than two years, either ‘2-3 years’ (15%) or ‘more than 3 years’ (9%).

Despite the uncertainty, organisations are standardising on SODA at a remarkably rapid rate, with this phase of SOA migration preceding the requirement for most software supplied to organisations to be SOA-based (see SOA Q2).

Q5. Obstacles to be overcome

While organisations faced a number of obstacles in shifting their applications development approach to SODA, these obstacles only confronted a minority of respondents.

The most common hurdle to be overcome, cited by 41% of respondents, was ‘Understanding SODA’. ‘Finding SODA’ solutions was a problem for 33% of organisations. 20% of organisations said they faced a ‘Steep learning curve’ in shifting to SODA and 17% thought it was an obstacle that SODA was ‘Perceived as hype’.

Fewer than one in ten organisations thought that either ‘Cost’ (8%) or ‘Market acceptance’ (9%) were obstacles in shifting to SODA.

There appears to be an emerging disconnect between the aggressive timeframes that organisations expect SOA and SODA to be realised, and the sorts of obstacles that they face, which are characteristic of the early stages of implementation.

Q6. SODA – the panacea for all ills

Despite any confusion surrounding SODA, organisations surveyed displayed considerable confidence and optimism it would have a positive effect on a number of important development challenges.

Compuware asked respondents what effect SODA would have on a range of development challenges, with possible responses of ‘Much Worse’, ‘Worse’, ‘No change’, ‘Improved’, or ‘Much Improved’.

Responses in relation to many significant challenges were very positive, including:

- SODA was anticipated to have the most positive effect on the challenge of ‘Reusable code’, with positive responses outweighing negatives by 73%;
- It was also expected to greatly assist ‘Rapid response to business change’, with positive responses outnumbering negatives by 72%;
- Organisations said SODA would also address ‘Application integration’ challenges, with positives outweighing negative responses by 71%.

Organisations said SODA would effect a smaller improvement on a range of other challenges, including:

- ‘Application performance and quality’ (58% more positives than negatives);
- ‘Developer productivity and consistency’ (53% more positives); and
- ‘Reducing maintenance costs’ (48% more positives).

The only area in which SODA was expected to have a somewhat negative impact was on ‘Shortage of application development skills’, with negative responses outnumbering positives by 19%.

While it was probably an exaggeration to say that organisations anticipated SODA to be the panacea for all software development ills, optimism appears to be running dangerously high. This provides further evidence that a trough of disillusionment is imminent.

Q7. Make mine a formal process methodology

When Compuware asked organisations whether they had a formal process methodology in place, 62% of organisations said they did, with another 12% planning to put one in place. 26% did not have a formal process methodology in place or plans to do so.

Of organisations, which employed a formal process methodology, 37% used ‘IBM Rational Unified Process’ (RUP), an iterative software design methodology developed by Rational Software, now part of IBM. RUP is a process framework that is commonly employed for large software development teams and projects.

21% of organisations used ‘Agile’ methodologies, practice-based methodologies for modeling and documenting software-based systems in an effective and lightweight manner. 18% used ‘In-house’ process methodologies they had developed themselves.

Other process methodologies included ‘Object Consulting’s Process MeNtOR’ (8%), ‘Microsoft Solutions Framework’ (4%), ‘Waterfall’ (3%) and ‘Other’ (10%).

Methodology and Demographics

Compuware and InterSystems International Corporation fielded the Australian Service Oriented Survey in May 2005.

Participants at the Application Development, Integration and Web Services conference in Sydney were asked to complete surveys conducted by InterSystems on Service Oriented Architecture (SOA) and Compuware on Service Oriented Development of Applications (SODA).

A total of 89 conference participants from 72 companies completed InterSystems’ SOA Survey and 106 participants from 76 companies completed Compuware’s SODA Survey. Survey participants held a range of positions including management, IT architecture, software development and IT project management.

Participants came overwhelmingly from large and medium-sized organisations. 68% represented large organisations with more than 1000 employees, and 49% represented organisations with more than 2000 staff.

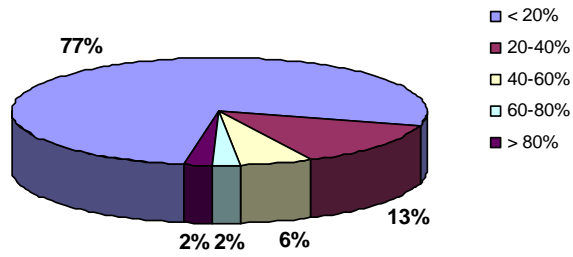
24% of respondents came from medium sized organisations comprising organisations with 150-500 employees (11%) or 500-1000 employees (13%). Only 12% of respondents represented smaller organisations with fewer than 150 employees.

The government sector was well represented, with 45% of respondents working in the government sector compared with 55% from the private sector.

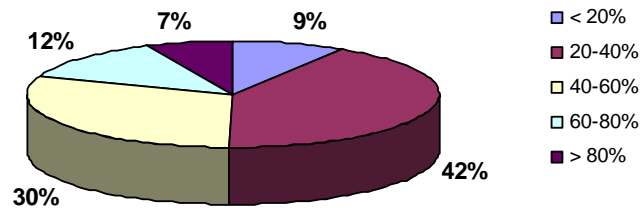
SOA Raw Data

Q1. What percentage of your IT applications are/will be SOA-based?

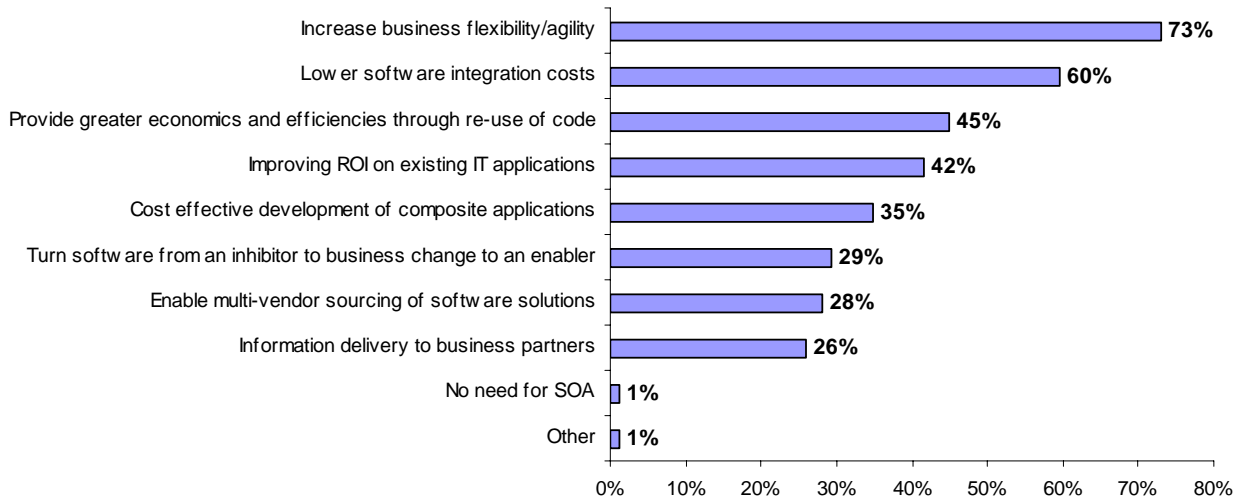
Q1a. Now...



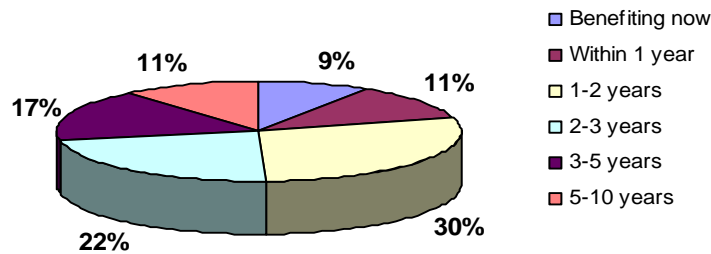
Q1b. In 3 years?



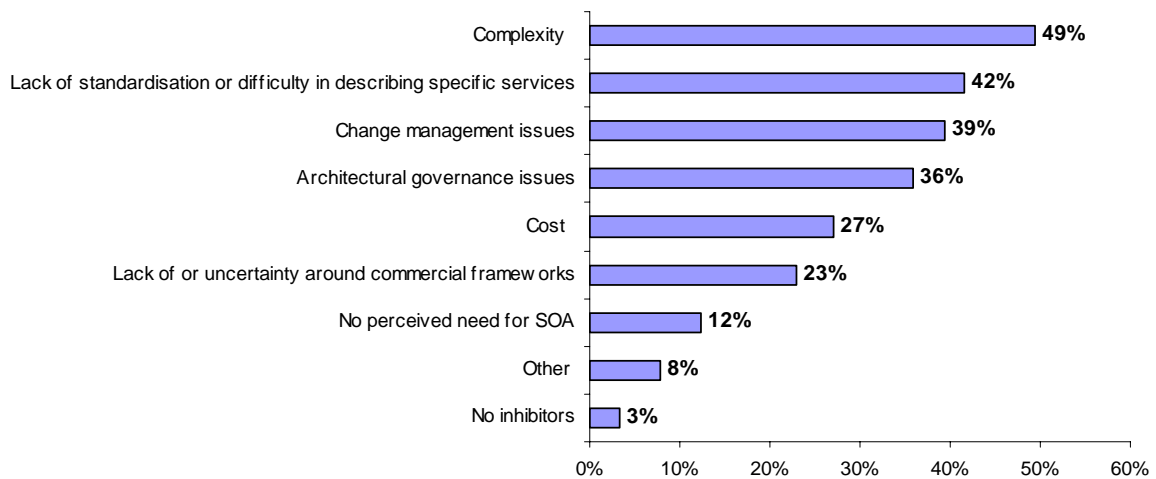
Q3. What benefits does your organisation expect to gain from SOA?

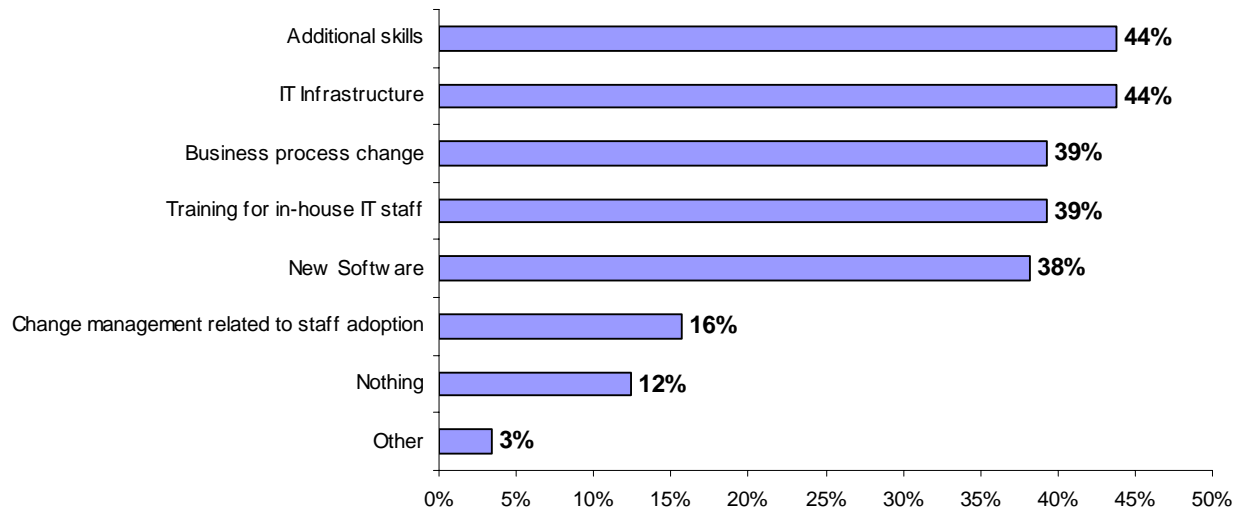
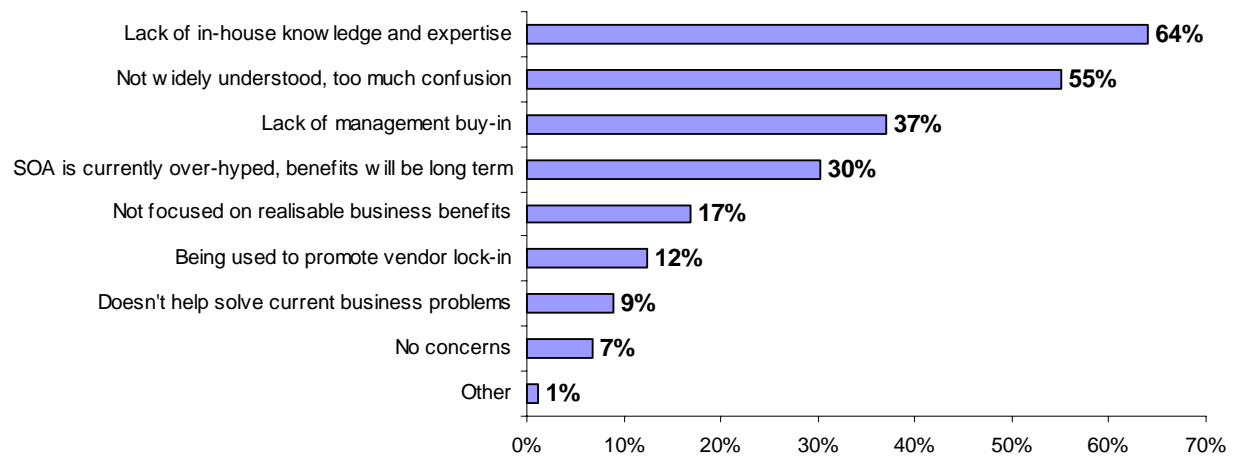


Q4. How long will it be before your organisation experiences a significant benefit from SOA?



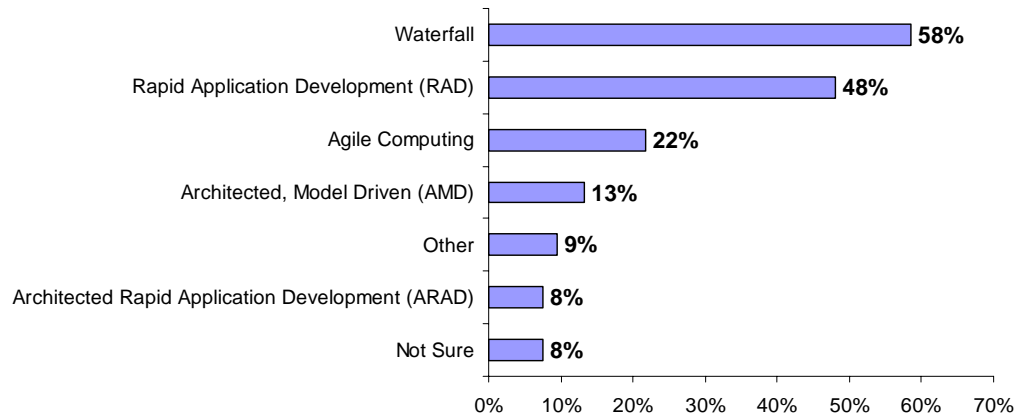
Q5. What are the inhibitors to adoption of SOA within your organisation?



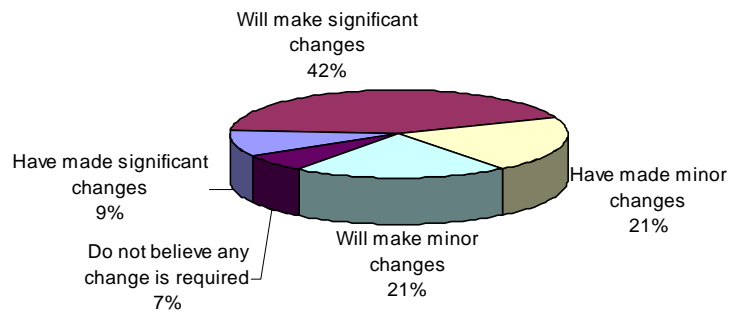
Q6. What is your organisation spending extra money on to adopt SOA?**Q7. What concerns do you have about SOA?**

SODA Raw Data

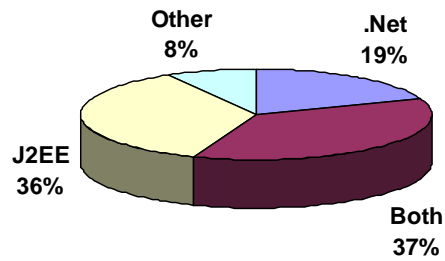
Q1. Which development methodology are you currently using?



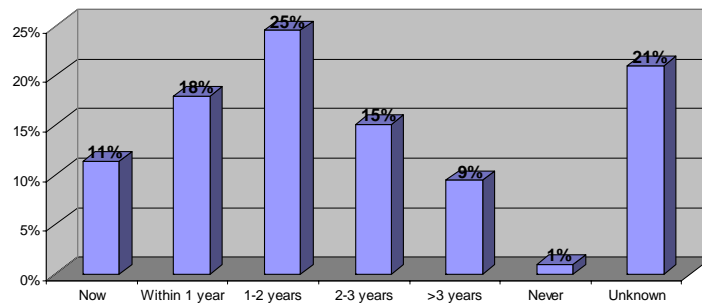
Q2. Are you making changes to your formal development methodology to support SOA and SODA?



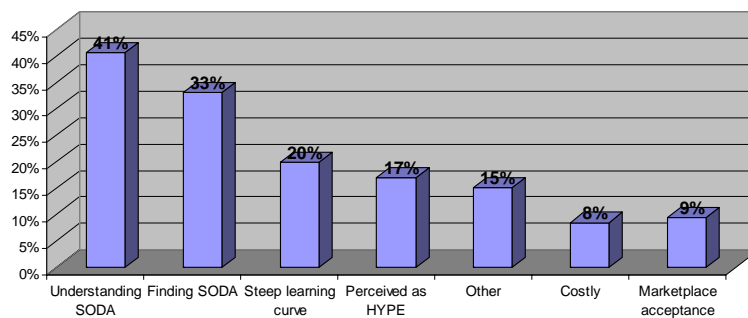
Q3. What development frameworks are you currently using?



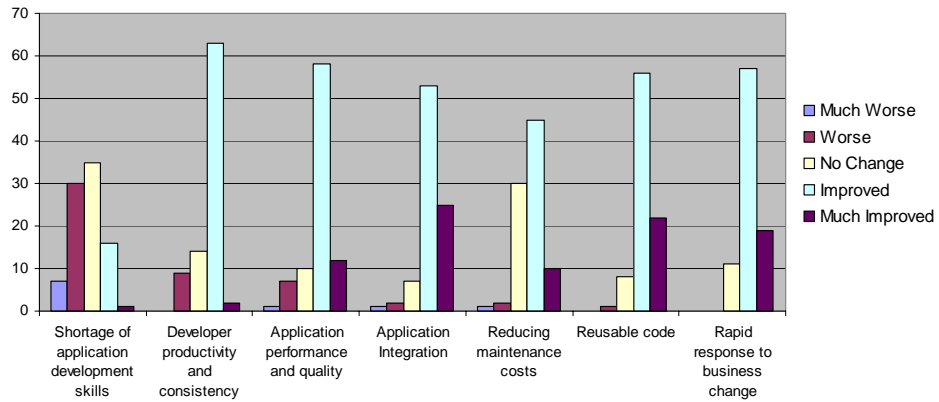
Q4. What is the timeframe for using SODA as a standard development approach within your organisation?



Q5. What is your biggest obstacle when shifting to your application development approach to SODA?

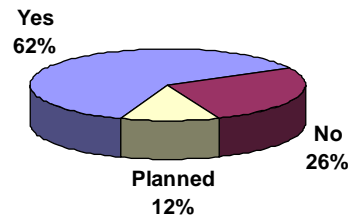


Q6. What effect do you anticipate that SODA will have on these challenges?

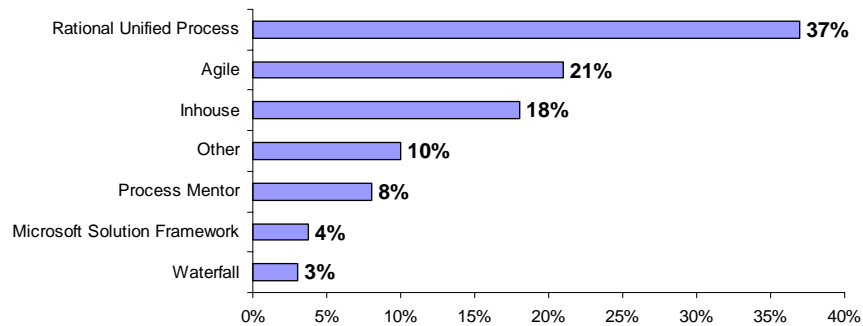


	Much Worse	Worse	No Change	Improved	Much Improved
Shortage of application development skills	7	28	33	15	1
Developer productivity and consistency	0	8	13	59	2
Application performance and quality	1	7	9	55	11
Application Integration	1	2	7	50	24
Reducing maintenance costs	1	2	28	42	9
Reusable code	0	1	8	53	21
Rapid response to business change	0	0	10	54	18

Q7. Does your organisation have a formal process methodology in place?



Q7.1. If yes, what methodologies does your organisation use?



About Compuware

Compuware (NASDAQ: CPWR) maximises the value IT brings to the business by helping CIOs more effectively manage the business of IT. Compuware solutions accelerate the development, improve the quality and enhance the performance of critical business systems while enabling CIOs to align and govern the entire IT portfolio, increasing efficiency, cost control and employee productivity throughout the IT organization. Founded in 1973, Compuware serves the world's leading IT organisations, including more than 90 percent of the Fortune 100 companies.

To learn more about Compuware please visit www.compuware.com.au

About InterSystems

Headquartered in Cambridge, Massachusetts, InterSystems Corporation (www.InterSystems.com) has served the needs of IT organisations and independent software vendors for more than two decades. InterSystems' showcase products, the CACHÉ post-relational database and the ENSEMBLE universal integration platform, enable the rapid creation and fast integration of high-performance applications.

Over four million people use mission-critical applications based on InterSystems' software. Twenty regional offices serve application developers and integrators around the world, and 24 x 7 support is provided for all InterSystems products.

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