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SELECTING SOA PILOT PROJECTS

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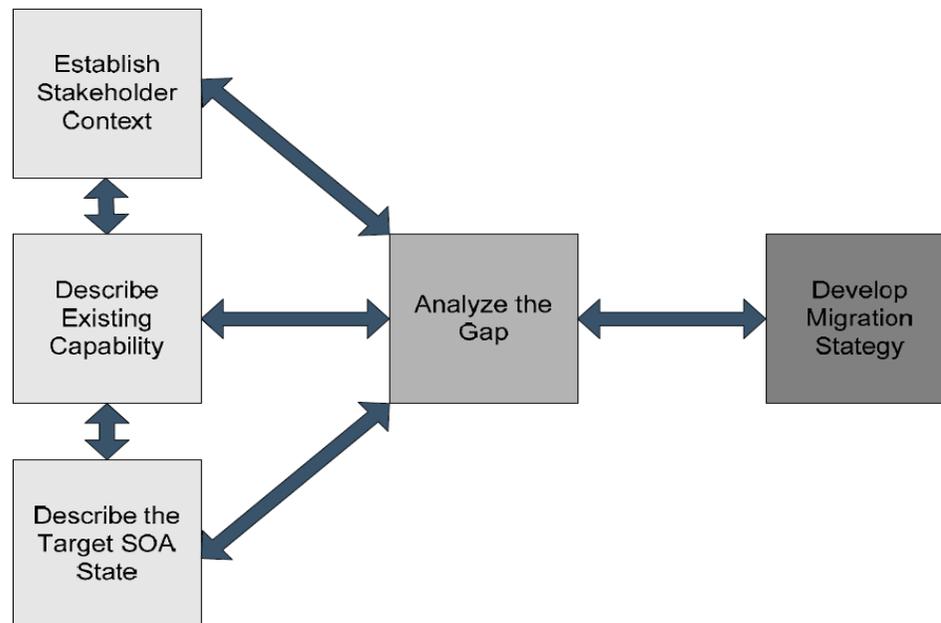


Overview of Presentation

1. Personal History of Services Research Involvement
2. Background
3. Piloting in a Major Transformation Project
4. Pilot Selection Method
5. Applying the Method
6. Case Study
7. Example Results
8. Discussion
9. Summary

Personal History of Services Research Involvement – 1

- Initially involved in Services research in 2005 in the area of Analysing Existing Components for use as Services
- Developed initial version of the SMART – Service Migration and Reuse Technique method
 - Grace A. Lewis, Edwin J. Morris, Dennis Smith, Liam O'Brien: Service-Oriented Migration and Reuse Technique (SMART). STEP 2005: pages 222-229



Personal History of Services Research Involvement – 2

- **Quality Attributes and SOA**

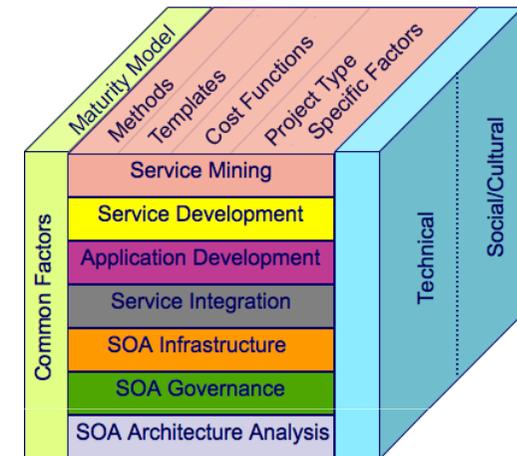
- Liam O'Brien, Len Bass and Paulo Merson, Quality Attributes and Service-Oriented Architecture, SEI Technical Report, CMU/SEI-2005-TN-014, September 2005
- Liam O'Brien, Len Bass and Paulo Merson, Quality Attributes for Service-Oriented Architectures, Proceedings of the International Workshop on Systems Development in SOA Environments, May 2007

- **Performance Modelling for Enterprise SOAs**

- Paul Brebner, Liam O'Brien, Jon Gray: Performance modeling evolving Enterprise Service Oriented Architectures. WICSA/ECSA 2009, pages: 71-80

Personal History of Services Research Involvement – 2

- Cost and Effort estimation for SOA Adoption
- Developed SMAT-AUS – A Framework for Scope, Cost and Effort Estimation for SOA Projects
 - Liam O'Brien: A Framework for Scope, Cost and Effort Estimation for Service Oriented Architecture (SOA) Projects. Australian Software Engineering Conference 2009: 101-110222-229
- Cost and Effort for Web Services Composition (with Zheng Li)
 - Zheng Li, Liam O'Brien: A Qualitative Approach to Effort Judgment for Web Service Composition Based SOA Implementations. AINA 2011: 586-593



Today's Presentation

- Some observations from the services research
 - Have had some engagements on real services-based projects but it is difficult to engage with organisations on real projects
 - As a result lacking the real insights on cost and effort estimation and access to real project data
- What I want to talk about today is the development of another method – SOA Pilot Selection
 - Developed when I was with NICTA (<http://www.nicta.com.au>)
 - Based on the previous services experience customers engaged us to help with selecting one or more pilot SOA projects
 - Developed the SOA Pilot Selection method as we undertook the project to give a solid foundation and rigorous approach to the selection process

Background

- Many organisations are undertaking large ICT-based transformation projects
- They are introducing SOA to take advantage of the proposed benefits associated with it – cost efficiency, agility, adaptability and legacy leverage
- Transformation and SOA is a risky business!
- It is important, especially in large organisations, to clearly identify what projects and how the organisation as a whole will benefit by using SOA
- Piloting SOA on one or more projects will give a better understanding of the challenges and issues around introducing SOA

Piloting in a Major Transformation Project

- Phased introduction (e.g. Piloting) of technology and process change is a sensible way of managing risks in a large transformation program but...
- What do you typically learn from a pilot project?
 - “We liked the colours and layout of the webpages...”
 - “The pull-down menus were great...”
 - “System response times were acceptable...”
 - “It helped us do our job better...”
- What do you typically not learn from a pilot project?
 - How many concurrent users was the pilot system supporting? (one or two)
 - How many transactions a day did you process? (a few)
 - How realistic/representative is the Pilot of the production solution?
 - Have a range of architecture/people/costs/schedule risks been properly explored?
 - Are you really in a better governance position?

Pilot Selection Method

Why is a Method Needed?

- Pilot selection and evaluation can significantly reduce long term risks for the client by:
 - Supporting business focussed value-stream for SOA implementation
 - Avoiding or mitigating a stove-piped and fragmented program approach
 - Improving communication between stakeholders
 - Clarifying and crystallising the transformation roadmap
 - Prompting the right decision at the right time to move SOA transformation forward
- The use of a structured, evidence-based approach is an important tool in achieving these outcomes. Some benefits are:
 - Outcome of selection process is more objective and less likely to invoke political sensitivity
 - Systematic approach ensures some areas are not overlooked
 - Easier to evolve method as lessons learned

Pilot Selection Method

What Characteristics are we Looking for in a Method?

- *Instructive*, must help in driving the organization forward rather than acting purely as a classification framework. Must take into account SOA best practices, roadmaps and maturity models;
- *Effective*, must require the least work to get the best result and allow initial exclude/include decisions to be made early;
- *Accessible*, to present views and information in the language of the client(s);
- *Tradeoff driven*, both benefit and risk must be surfaced to aid in client decision making;
- *Balanced*, considers and informs the environment, candidate projects, and the transformation roadmap;
- *Contextual*, uses context to allow effective application at any point in a roadmap and in any organizational situation;
- *Justifiable*, must have traceability to underlying factors considered;
- *Adaptable*, must be useable at varying levels of granularity from high-level knowledge driven, to 'gut feel', to metric driven evaluation;
- *Unbiased*, must facilitate decision making by the client but must not embody client goals except through customisation based on client responses.

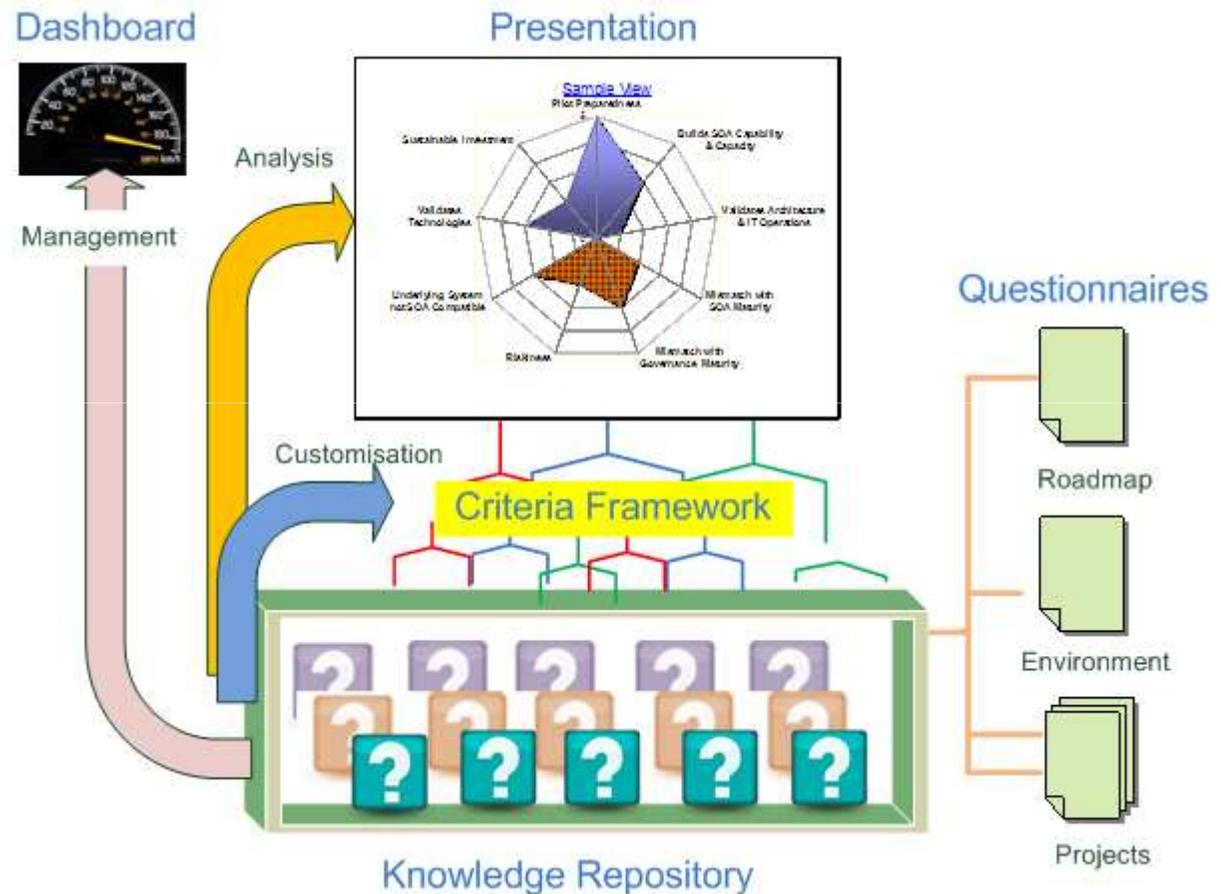
Method Concepts

- Content

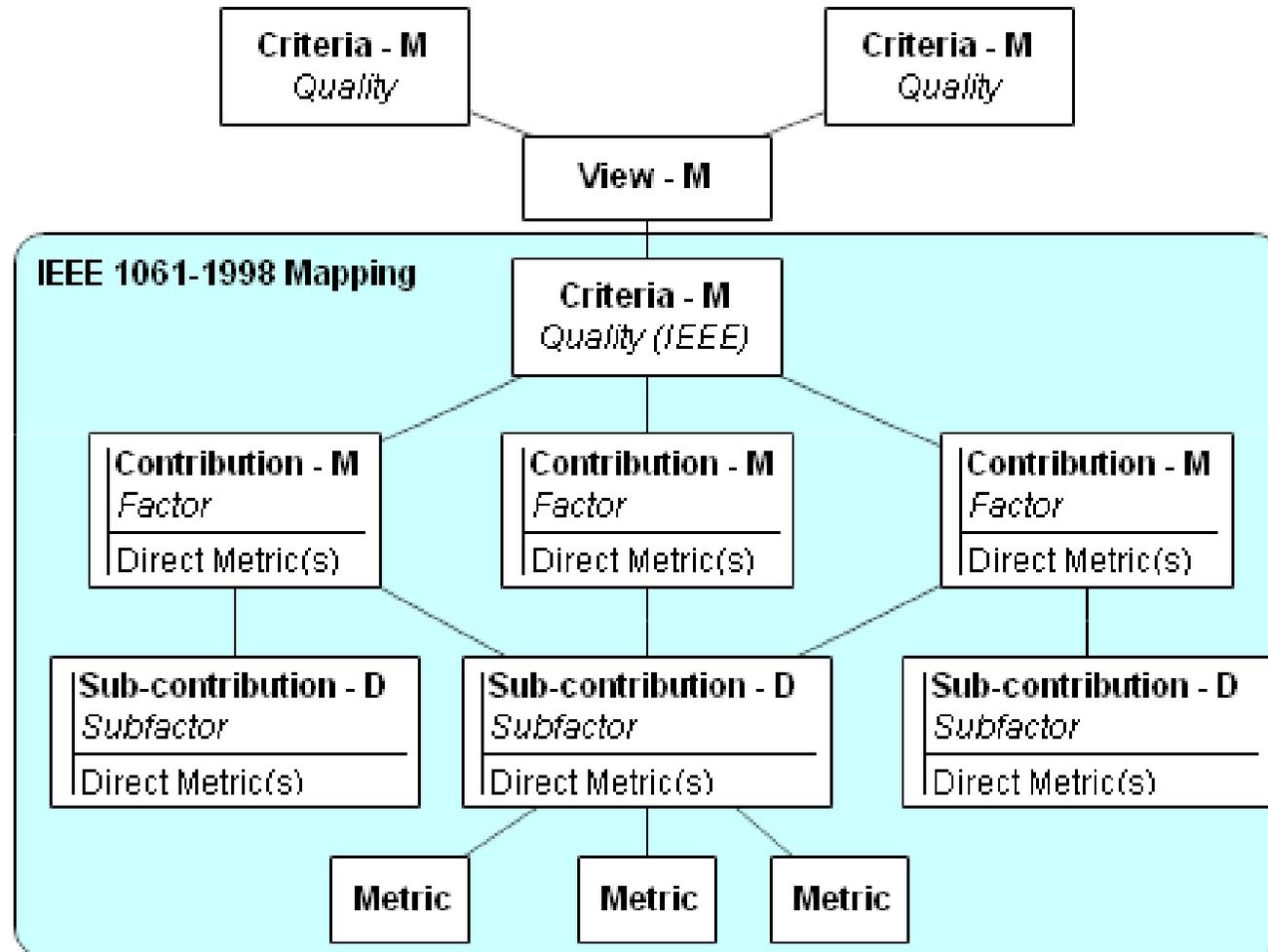
- Criteria Framework
- Knowledge Repository
- Questionnaires
 - Roadmap
 - Environment
 - Projects
- Dashboard

- Actions

- Customisation
- Analysis
- Management
- Presentation



Criteria Framework



The core knowledge reusable across engagements

Criteria Framework in the Tool



Framework Items List

Refresh

View

Depth



New Item

◀◀ ◀ Next ▶▶

Showing Records 1 to 25 of 94

View Framework Report

| Prefix ▲ | Name | Type | Parents | Children | Metrics | Depth | Gap | Project | Span | | | Delete |
|----------|-------------------------------|-----------------|---------|----------|---------|-------|---------|---------|-------------|---------|-----|--------|
| | | | | | | | | | Environment | Roadmap | | |
| ▶ BC | Builds SOA Capability and | Criteria | | 3 | | 1 | Refresh | No | No | No | No | Delete |
| ▶ BC | Promote Transformation | Contribution | 1 | 3 | | 2 | Refresh | No | No | No | Yes | Delete |
| ▶ BC | Builds Experience & Expertise | Contribution | 1 | 6 | | 2 | Refresh | No | No | No | No | Delete |
| ▶ BC | Maintain Momentum & Vitality | Contribution | 1 | 5 | | 2 | Refresh | No | No | No | No | Delete |
| ▶ BC1 | Services Discovery and | SubContribution | 5 | | 1 | 3 | Refresh | No | No | No | No | Delete |
| ▶ BC10 | Learns and Evolves | SubContribution | 5 | | 1 | 3 | Refresh | No | No | No | No | Delete |
| ▶ BC2 | People and Skills | SubContribution | 4 | | 2 | 3 | Refresh | No | No | No | No | Delete |
| ▶ BC3 | Culture and Management | SubContribution | 1 | | 1 | 3 | Refresh | No | No | No | No | Delete |
| ▶ BC4 | Security and Runtime | SubContribution | 3 | | 1 | 3 | Refresh | No | No | No | No | Delete |
| ▶ BC5 | Policies and Procedures | SubContribution | 4 | | 1 | 3 | Refresh | No | No | No | No | Delete |
| ▶ BC6 | Responsiveness and agility | SubContribution | 2 | | 1 | 3 | Refresh | No | No | No | No | Delete |
| ▶ BC7 | Builds Experience and | SubContribution | 3 | | 1 | 3 | Refresh | No | No | No | No | Delete |
| ▶ BC8 | Manages Complexity | SubContribution | 2 | | 1 | 3 | Refresh | No | No | No | No | Delete |
| ▶ BC9 | Promotes Maintainability | SubContribution | 2 | | 1 | 3 | Refresh | No | No | No | No | Delete |
| ▶ GM | Mismatch with Governance | Criteria | | 4 | | 1 | Refresh | No | No | No | No | Delete |
| ▶ GM | Governance Gap | Contribution | 1 | 1 | | 2 | Refresh | No | No | No | No | Delete |
| ▶ GM | Governance Exposure - | Contribution | 1 | 1 | | 2 | Refresh | No | No | No | No | Delete |
| ▶ GM | Governance Exposure - | Contribution | 1 | 1 | | 2 | Refresh | No | No | No | No | Delete |
| ▶ GM | Governance Influence | Contribution | 1 | 1 | | 2 | Refresh | No | No | No | No | Delete |
| ▶ GM1 | Governance Framework and | SubContribution | 1 | | | 3 | Refresh | No | No | No | No | Delete |
| ▶ GM2 | Dependence on Governance | SubContribution | 1 | | | 3 | Refresh | No | No | No | No | Delete |
| ▶ GM3 | Reliance on Growth in | SubContribution | 1 | | | 3 | Refresh | No | No | No | No | Delete |
| ▶ GM4 | Influence Governance | SubContribution | 1 | | | 3 | Refresh | No | No | No | No | Delete |
| ▶ NC | Underlying System not SOA | Criteria | | | | 1 | Refresh | No | No | No | No | Delete |
| ▶ NC | Migration Path | Contribution | | | | 1 | Refresh | No | No | No | No | Delete |

Customisation and Questionnaires

Criteria Tree Refresh

NICTA Engagement Show All

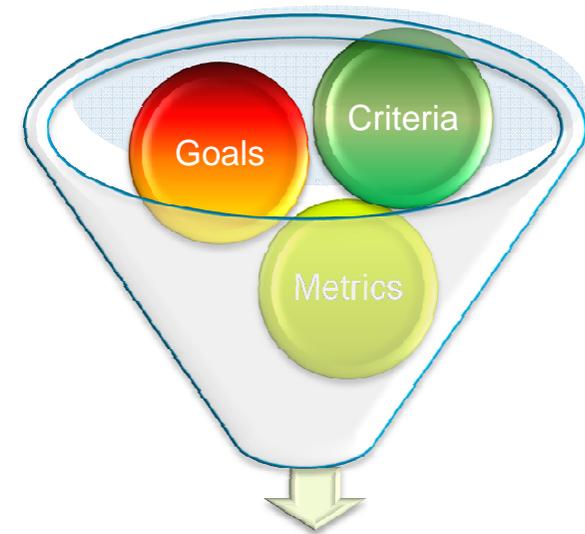
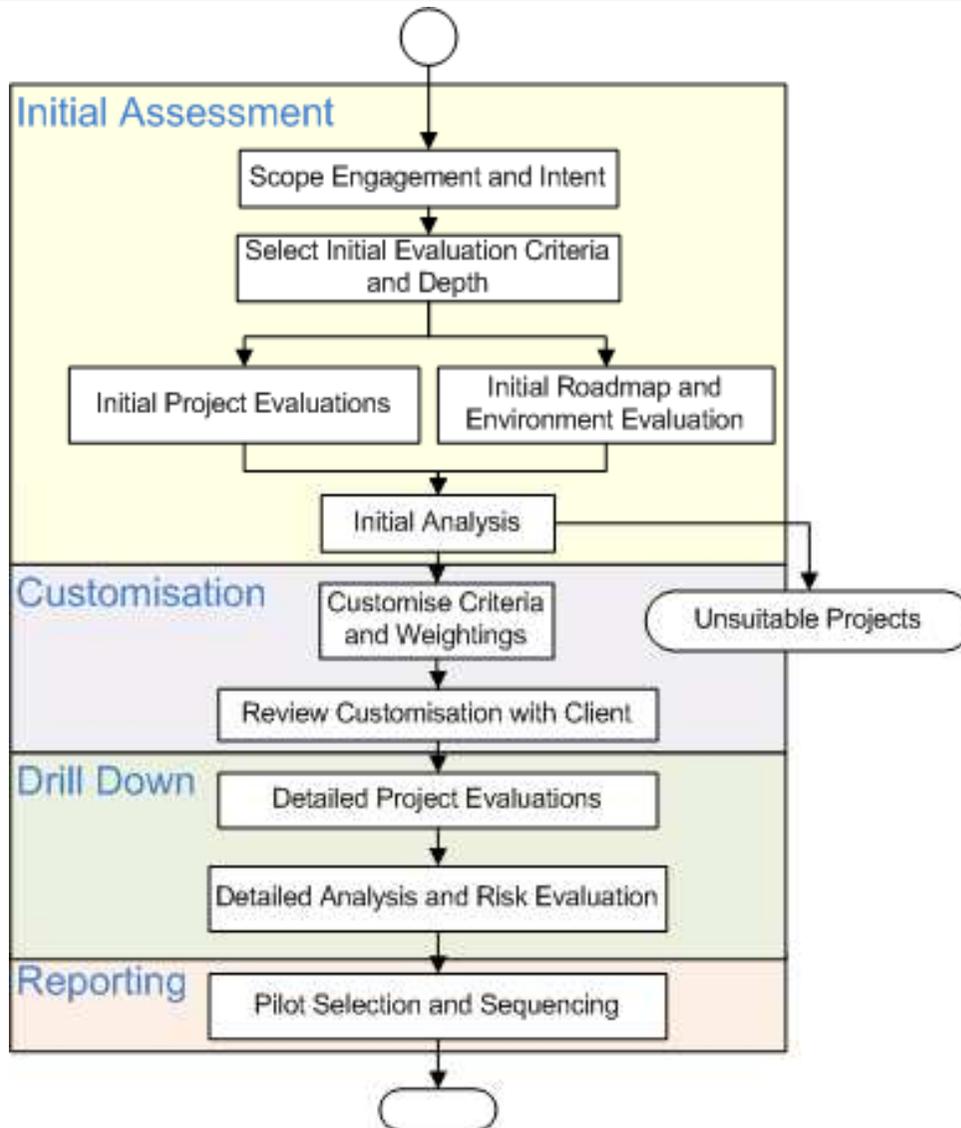
Engagement: RPDE 2096 Pilot Selection Work Package

Commit Revert Showing Records 1 to 25 of 34

[View Applicable Criteria Report](#)

| | Context | In Question Set? | Enabled? | |
|--|-----------|------------------|----------|------|
| ✓ BC Builds SOA Capability and Capacity [Criteria] | Average | Toggle | Toggle | Open |
| ✓ BC Promote Transformation [Contribution] | Very High | Toggle | Toggle | Open |
| ✓ BC2 People and Skills [SubContribution] | | Toggle | Toggle | Open |
| BC2 Increase Skilled Staff [Metric] | Low | Toggle | Toggle | Open |
| ✗ BC2 Staff Training in SOA [Metric] | | Toggle | Toggle | Open |
| ✓ BC3 Culture and Management [SubContribution] | | Toggle | Toggle | Open |
| BC3 Organisational Culture and Management [Metric] | Low | Toggle | Toggle | Open |
| ✓ BC5 Policies and Procedures [SubContribution] | | Toggle | Toggle | Open |
| BC5 Policy and Procedure Development and Exercise [Metric] | | Toggle | Toggle | Open |
| BC Builds Experience & Expertise | | Toggle | Toggle | Open |
| BC1 Services Discovery and Management [SubContribution] | | Toggle | Toggle | Open |
| BC1 Advancing Knowledge of Service Discovery and Management [Metric] | | Toggle | Toggle | Open |
| BC2 People and Skills [SubContribution] | | Toggle | Toggle | Open |
| BC2 Increase Skilled Staff [Metric] | Low | Toggle | Toggle | Open |
| ✗ BC2 Staff Training in SOA [Metric] | | Toggle | Toggle | Open |
| BC4 Security and Runtime Enforcement [SubContribution] | | Toggle | Toggle | Open |
| BC4 Security Skills and Practices [Metric] | | Toggle | Toggle | Open |
| BC5 Policies and Procedures [SubContribution] | | Toggle | Toggle | Open |
| BC5 Policy and Procedure Development and Exercise [Metric] | | Toggle | Toggle | Open |
| BC7 Builds Experience and Capability [SubContribution] | | Toggle | Toggle | Open |
| BC7 Builds Effective Experience and Capability [Metric] | | Toggle | Toggle | Open |
| BC10 Learns and Evolves [SubContribution] | | Toggle | Toggle | Open |
| BC10 Lessons Learned and Best Practices [Metric] | | Toggle | Toggle | Open |
| BC Maintain Momentum & Vitality | | Toggle | Toggle | Open |
| BC1 Services Discovery and Management [SubContribution] | | Toggle | Toggle | Open |

Applying the Method

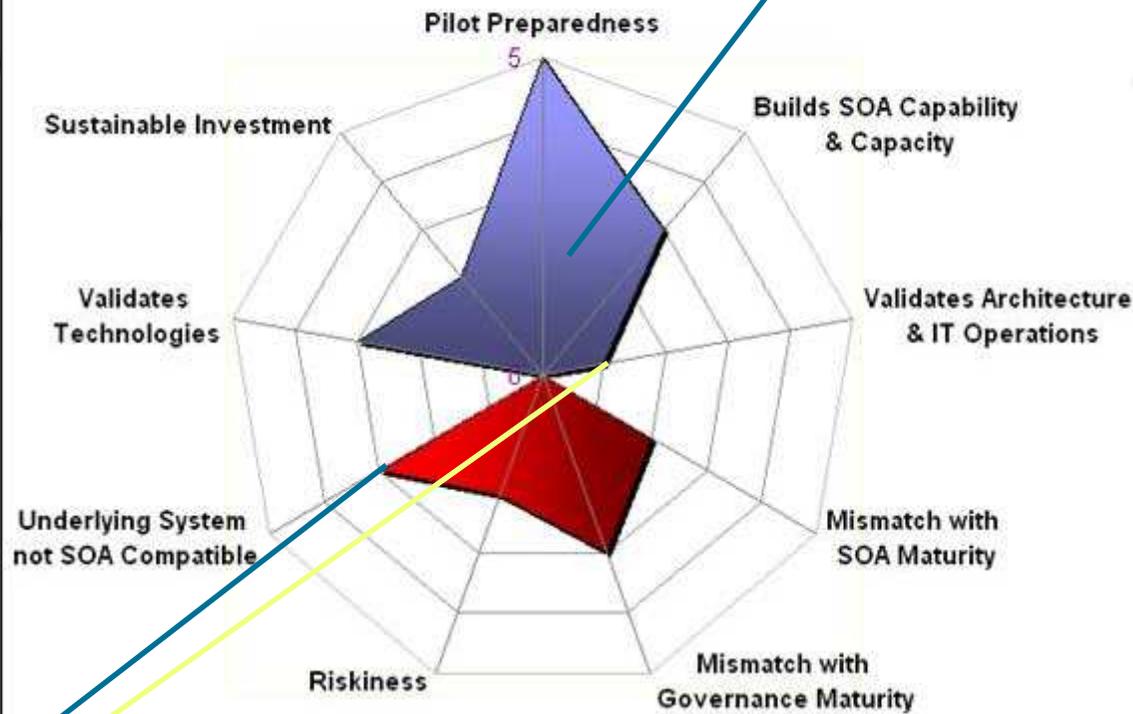


Selection of Pilot

Results Presentation

Each metric is composed of multiple measures
e.g. Pilot Preparedness = Weighted Score
Combination of Visibility, Readiness, Relevance,
& Robustness

Project Metrics - Sample



Benefits

Risks

Diametrically opposed benefits and risks ideally should cancel each other out or lean more to the benefit side.

Major Differences from Maturity Model Approaches

- Maturity Model

1. Absolute baseline. Where is organisation now?
2. No internal feedback. Categorisation and Classification system. Not designed to directly help evolve strategy.
3. Does not think in terms of tradeoffs/benefits/risks. Senior executives struggle to understand what does it all mean?

- Pilot Selection Method

1. Relative baseline. What are strengths and weaknesses compared to current context?
2. Learning framework. Uses results obtained during engagement to refine and guide desirable outcomes.
3. Results are directly expressed as tradeoffs, benefits and risks. Senior executive can use results directly for decision support.

Case Study

A large Australian Federal Government Agency

CASE STUDY

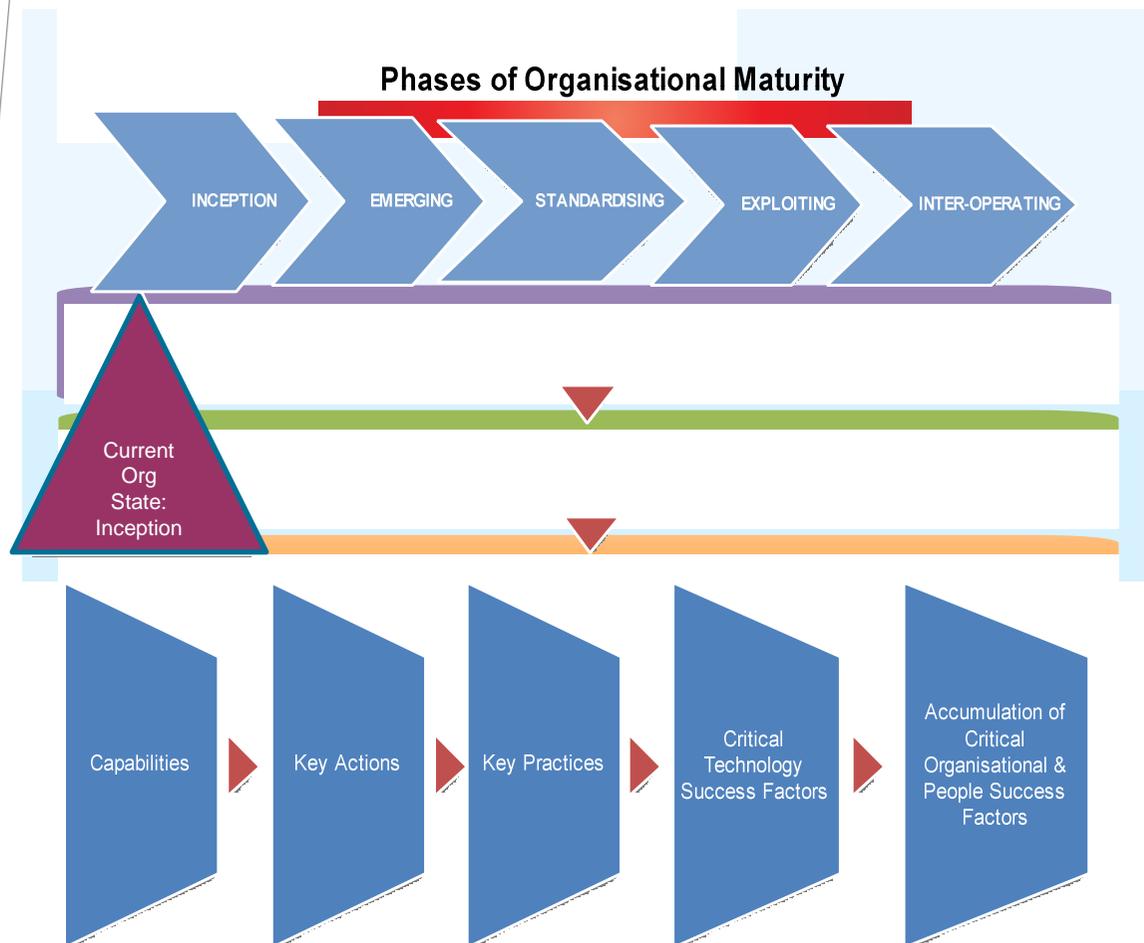
Initial Assessment and Customisation

- Engagement with the CIO Group within the Agency
- Projects Filtered
 - 22 Initial Candidate Projects
 - 6 projects analysed in detail
- Initial discussions with CIO Group to understand the context, business drivers, desired outcomes and any information and documentation on existing technologies that will be part of the SOA environment
- Tool Customised to client requirements with identified set of criteria
 - Client is in Inception stage so early business wins and project visibility very important
- Roadmap created to help guide decisions
- Involvement of CIO Group personnel in meetings with the Project Team for detailed analysis (1.5 – 2 hour meetings)

Initial Assessment – Criteria Determination

- Criteria Determined
 - Benefits
 - Pilot preparedness;
 - Sustainable investment;
 - Builds SOA capability and capacity;
 - Validates architecture and IT Operations;
 - Validates technologies.
 - Risks
 - Underlying systems not being SOA compatible;
 - Mismatch with governance maturity;
 - Mismatch with SOA maturity;
 - Riskiness – other evaluated risk factors

Initial Roadmap



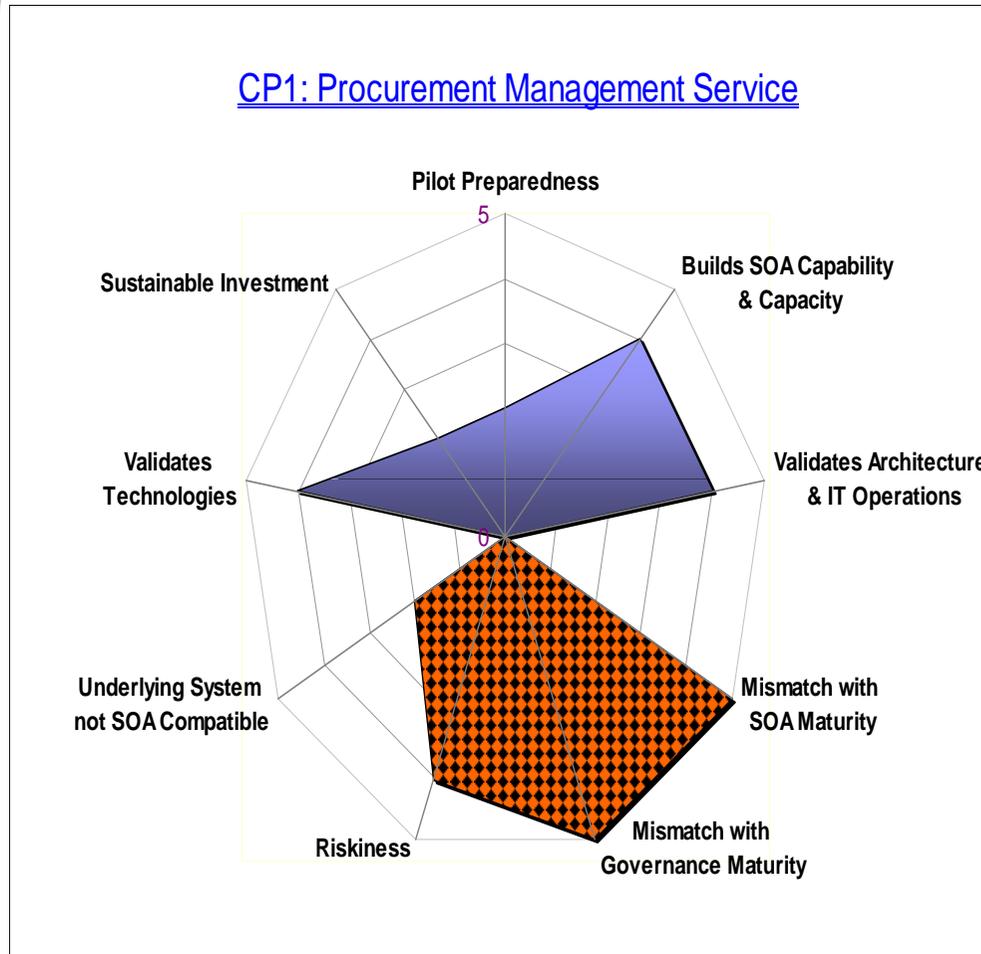
This model developed from an approach outlined in “A New Service-Oriented Architecture (SOA) Maturity Model” white paper, Sonic Software Corporation, AmberPoint Inc, BearingPoint Inc., Systinet Corporation. This has been significantly modified and extended for SOA within the Agency.

The following documents were also referenced and are useful resources:

- Single Information Environment (SIE) Architectural Intent 2010.
- OSIMM – The Open Group Service Integration Maturity Model. Draft Technical Standard – v1.8.
- Zapthink’s Service-Oriented Architecture Roadmap 3.0.
- Assessing your SOA Program. Andrew Pugsley, HP Worldwide SOA Service Program.
- IBM “Increase Flexibility with the Service Integration Maturity Model (SIMM)”, <http://www.ibm.com/developerworks/webse rvices/library/ws-soa-simm/>

Example Results – 1

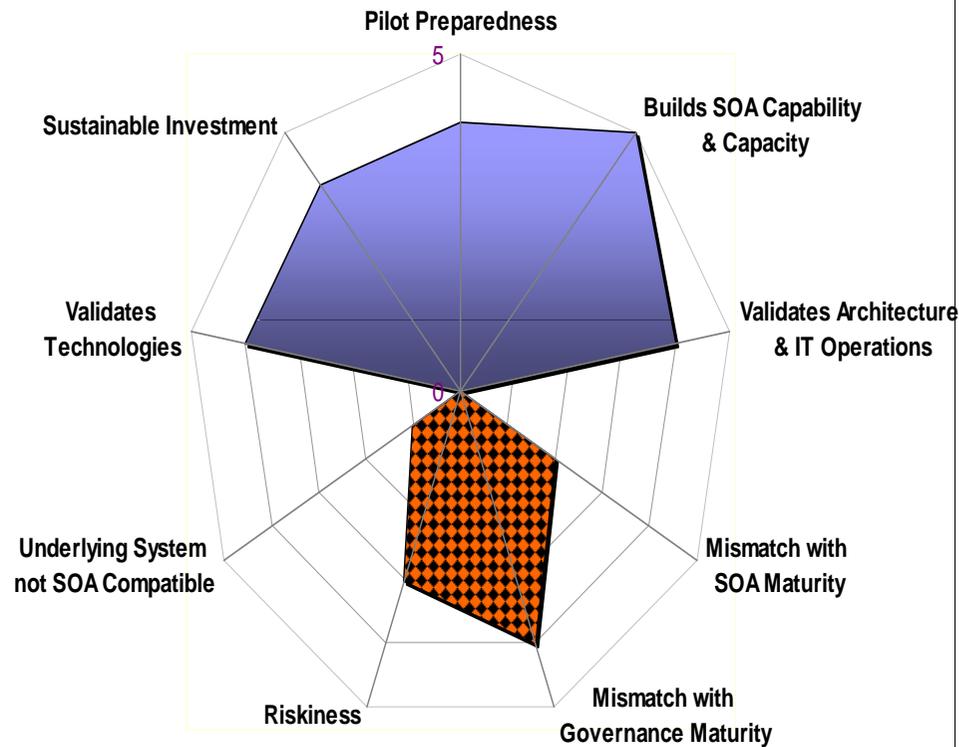
CP1: Procurement Management Service



- Upper portion is benefits, lower portion refers to the **risks** involved in the project.
- There are some benefits from undertaking the Procurement Management Service as a pilot but there are **a lot of risks** involved as well. One of the main reasons is that there is a **very large amount of work** in the project and if it **could be decomposed**, then some pieces of the work may have made better pilots.

Example Results – 2

CP4: Authoritative Records Management Service



- There are many benefits in choosing the Authoritative Records Management Service as a pilot and there are **not many risks** associated with it.
- It is still the clients choice as to which tradeoff they will decide to accept!

Discussion

- Client has acted on these results and initiated the pilot program (\$10m-\$20m investment)
- Results are point in time and focus on the right pilots at the right time
- Client organisation is currently at Inception stage. Business value, visibility and ability to move the organisation mindset towards SOA is important
 - Dashboard allowed us to
 - Clearly monitor progress of assessments
 - Highlight and discuss areas which are set aside and their impact
 - At the conclusion of these pilots the situation will be different
 - Environment will have changed
 - Roadmap will have evolved
 - Other candidates will almost certainly be preferred. Hence the radar graphs change with time
 - Recommendation was a pilot sequence to capitalise on this evolution – ARMS followed by other pilot to make use of the services developed

Summary

- The application of the pilot selection method and the engagement with the Agency significantly reduces long term risks for the Agency's pilot program
- The method provided a structured evidence-based approach
- Supports business focused value-stream for SOA implementation
- Avoids stove-piped and fragmented program approach