

SOA Maturity Model Scenarios

Srikanth Inaganti

Mostly maturity models are being used as auditing tools to validate an enterprise journey towards a particular goal. Then the question to be answered is – Why not to use maturity model itself as a roadmap? In a previous paper titled, “SOA Maturity Model,” the need for improving or adjusting the process and technology to go hand-in-hand in order for it to be a methodology has been described for a successful SOA adoption at the enterprise level [4]. This article based on [1] is aimed at showcasing an updated version of the maturity model and details a couple of scenarios in detailing why SOA maturity is the resultant of both IT process and service (technology) maturity. The article also discusses the desirable region that signifies good enterprise SOA implementation.

Updated Maturity Model Brief

The following is the updated visual representation of the SOA maturity model that has both process and technological elements mapped in to each of the service maturity levels.

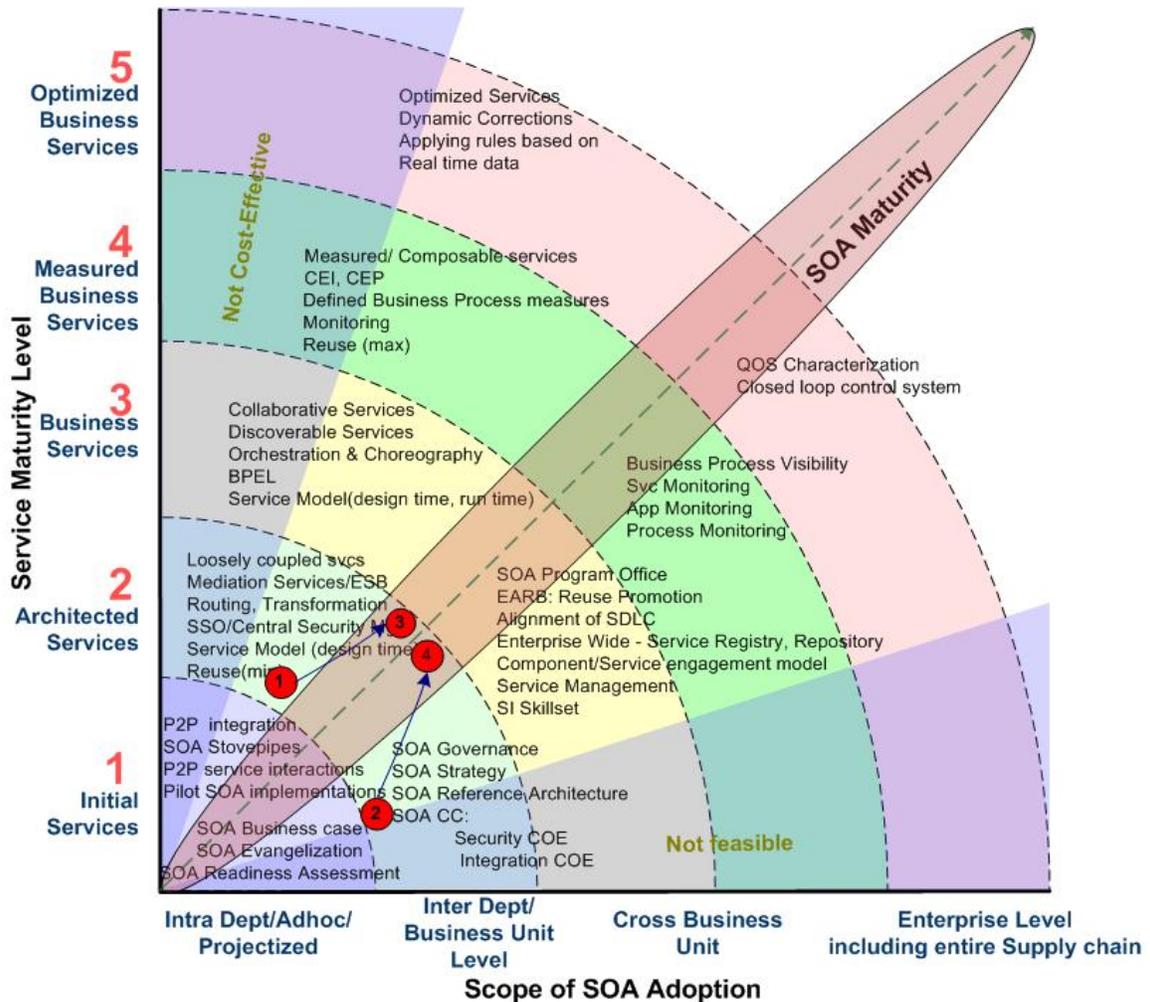


Figure 1

1. X-axis represents the scope of SOA adoption. The point to be noted here is that scope automatically translates to IT process maturity expected, i.e., the bigger the scope of any IT implementation, the more robust the IT processes supporting it should be for successful implementation.
2. Y-axis represents service maturity. This directly maps technological capabilities built on top of or available from service infrastructure components such as service bus, service registry, service repository, service management tool kits, etc.
3. Concentric circles depict the scope expected to be addressed, if the organization is assessed at a particular maturity level. That means if service maturity is at level 3, scope of adoption should be across a business unit in order to gain maximum benefits from SOA transformation.
4. Not Cost Effective Region: Service level maturity of 5 with intra departmental SOA adoption may not be cost effective, the reason being that the enterprise must have bought service infrastructure components like service bus, registry, repository, and management toolkit but the scope being addressed doesn't justify the investment made. The only way the enterprise could reap maximum benefit is by expanding the scope of SOA adoption.
5. Not Feasible Region: On the other hand, enterprise SOA cannot be implemented with fundamental SOA techniques: It may not be possible to achieve benefits since enterprise lacks critical features offered by service infrastructure that otherwise would be costly to build or to source it internally.
6. In order to achieve success, both SOA transformation, service maturity and process maturity should progress hand-in-hand. The diagonal line representing "SOA Maturity" would directly represent maximum SOA- ROI line. If the enterprise is found to be in the vicinity of this line during the audit, the auditor can safely declare that the SOA transformation is healthy since IT processes are helping technology to deliver the expected business benefits.

The following scenarios describe the dependencies between process and service maturity leading to overall SOA maturity for better ROI.

Scenario 1 (Transition from Level-1 to Level-2)

LEVEL-1:

This level is characterized by P2P interactions/integrations, SOA stovepipes with no clear direction/vision, and some pilot implementations with minimal or no governance. Most of these efforts are IT driven with decisions taken locally that lack enterprise perspective [6], [7].

SOA is an evolutionary architecture and the best way to adopt slowly, steadily, and iteratively. Initially the organization starts with building few components/services that are pretty obvious. These components or services can be obtained from redundancy analysis across the portfolio of applications. The choice of services and components (SOA core) is extremely critical and needs to be made very selectively with the aim of making the efforts a definite success to retain the executive management support for a longer duration.

Disseminating information about initial successes helps to gain support from all parts of the enterprise and, in turn, strengthens the business case for enterprise-wide SOA. This phase would be useful to evangelize principles, best practices, guidelines, etc.

Later, the existing or affected applications (SOA pilots) could be refectories to use the deployed services and components.

Once the business case is approved, readiness assessment (SOA maturity assessment) will trigger the enterprise wide SOA roll-out. Note that maturity assessment has been one of the primary entry points for any enterprise wide architecture roll-outs.

LEVEL-2:

Institutionalizing SOA Governance would help in setting up executive, management, and technical controls on overall SOA transformation. Formulating or refining the strategy based on the results from level-1 would bring out a clearly defined roadmap. SOA Reference architecture would help to provide the architectural, design patterns and solution instantiations to specific problems within different domains with the aim of keeping VDAs away [6].

Without the above SOA Reference Architecture, SOA Governance, and SOA strategy.

- It is not possible to decide on uniform service mediation layer/component (ESB) that can be promoted across the enterprise as a standard platform. This is because of the fact that ESB interoperability is still an issue in the context of (i) vendor divide across JBI and SCA; (ii) lack of guarantee in providing uniform SLAs by different vendors of middleware – extremely important in the interconnected SOA world.
- Service maturity may be higher but that makes the whole SOA efforts not expandable to other business units.
- It is not possible to have a unified service model (PIM) for all the services
- It is not possible to have a central security strategy leading to SSO across the enterprise

To explain this diagrammatically, position (1) represents a case where an organization is assessed with high technology maturity and less process maturity. Position (2) represents a case where an organization is assessed to have low technology maturity and high process maturity. Both cases require some amount of expert consulting in identified areas to push them towards the SOA Maturity diagonal line to positions (3) and (4) respectively. For position (3), engagement would involve refining the existing processes and initiating new processes to correlate technology maturity. For position (4), engagement would involve improving both technology and process maturity, as depicted, to the desired state as per SOA goals and objectives. Typically, these consulting engagements would be of some size and 6 to 8 weeks in duration with a 2-3-member team.

Having security COE, integration COE would help taking the evangelization efforts further.

Scenario 2 (Transition from level-2 to level-3)

Level 3:

In order to better handle increased scope, we need to have some additional streamlined processes. Since the effort is going beyond a particular business unit, there needs to be a program office that co-ordinates the overall effort beyond the business unit boundaries to minimize the losses due to different working styles, processes, and technologies in place.

A key question at this stage would be – How do the application owners and architects become aware of services available from other business units?

Service discovery has two parts associated with it – design time and runtime. During the design time, finding, or awareness about, a service requires interaction between various teams such as ARB (taskforce on reuse), the program management office, and the application development team, as part of the review process in spite of having a service repository, at the enterprise level, that can provide all the artifacts or details about the service.

During the runtime, as the scope increases beyond different business units, federation across different vendor registries might be a problem. Assuming that we have gone past the first problem with a central registry, dynamic discovery will still be another problem to be thought about – due to registry querying and search criterion being different for different services.

The only solution is to have a review board tasked with promoting components or services reuse – by being involved in the projects/applications lifecycle right at the business discovery phase [3]. ARB will have complete knowledge of services and components within the repository. ARB conveys the right information and impression about the capabilities of enterprise services and components to the application development teams. Following ARB inputs on enterprise services and components by an application development team and the owners should be enforced by PMO as part of the SOA Governance management controls. This requires that SDLC process should be fine tuned to support reuse promotion.

And, also, ARB service team engagement models have to be defined. This whole process results in the right level of collaboration across various teams and leads to maximum reuse.

Having to resolve the discoverability and collaboration issues would set the ground for orchestration and choreography in building composite services and applications.

Level 4 and Level-5

At levels 4 and 5, there is a need for streamlining many of the operational and infrastructure related processes, based on ITIL, involving business, development, architecture, operations, and infrastructure teams. The main focus areas would be to automate business process visibility by using information integration techniques, monitoring, and self-correction mechanisms using services offered by SOA components such as BRE, Policy Managers, and infrastructure components related to virtualization and GRID.

BREs provide a facility to change the behavior of the service end-points, based on the rule validations. Policy managers would provide a facility to influence service connectivity capabilities such as routing, transformation, authentication, authorization, load balancing, caching, decryption/encryption, alerting/notification, auditing, etc. – by interacting with other supporting infrastructure components. Server and storage virtualization infrastructure components would bring in new techniques to manage the increasing complexity of the deployments and to optimize the utilization of the resources. GRID infrastructure would help to make the SOA deployments resilient, using automatic process migration.

Summary

This article depicted the fact that SOA transformation progress depends on wide-ranging IT processes in the domains of SDLC, architecture, organization, operations, infrastructure, etc. The generic scenarios discussed above would help in understanding step-by-step progress towards enterprise SOA. By making maturity model simple, value-deterministic at each level, and by detailing the activities/processes that are interconnected with each other and their influence on technology adoption from one level to other – it can be used as a roadmap as well [2]. As long as required metrics/KPIs are defined along with activities interconnected with each other, the number of levels of maturity doesn't matter. In addition to the impact of the generic scenarios discussed, every enterprise should assess what exactly is required to avoid gold-plating [5] by customizing the proposed generic maturity model based on goals and objectives.

Acronyms

ARB	Architecture Review Board
BRE	Business Rules Engine
COE	Center Of Excellence
ESB	Enterprise Service Bus
ITIL	Information Technology Infrastructure Library
JBI	Java Business Integration

KPI	Key Process Indicators
PMO	Project/Program Management Office
PIM	Platform Independent Models
SCA	Service Component Architecture
SDLC	Systems Development Life Cycle
SOA	Service Oriented Architecture
VDA	Vendor Driven Architecture

References

1. "SOA Maturity Model" presentation by Srikanth Inaganti at Enterprise Architecture Conference, Austin, Texas held on July 23rd – 25th, 2007.
2. "Emerging Role of An Enterprise Architect" presentation by Allen Brown at Open Group Enterprise Architecture Practitioner's Conference at Austin, Texas held on July 23rd-25th 2007.
3. Reuse Framework for SOA by Srikanth Inaganti, BP Trends June/May 2007
4. SOA Maturity Model by Srikanth Inaganti and Sriram Aravamudan, BP Trends, May 2007
5. "Maturity Matters" by Malcom Wheatley, PM Network - July 2007, Volume 21, No. 7
6. Avoid Vendor Driven Architecture by David Linthicum at ZapThink
7. Killer, Gorilla, Guerilla SOA
8. Maturity Models: An Auditing Tool or a Methodology?: BP Trends Monthly E-mail Advisory note, March 20, 2007

Acknowledgements

I would like to thank Dr. Udaya Bhaskar Vemulapati, General Manager, Wipro Technologies for giving the required time and support to bring forth this article as part of our SOA Center of Excellence efforts. Thanks to my colleagues Srinivasa Rao Chintala and Sriram Aravamudan for giving the review feedback comments.

Author

Srikanth Inaganti is a Lead Consultant in the Enterprise Consulting and Architecture Practice division of Wipro Technologies. Srikanth Inaganti, PMP, E-Architect, ECAP Group, Wipro Technologies srikanth.inaganti@wipro.com, Office # 91 40 3079 5110; Mobile # 91 9849058064

Disclaimer: The views expressed in this article/presentation are that of authors and Wipro does not subscribe to the substance and veracity of the said opinion.