Reference Model and Reference Architecture for SOA

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Agenda

- SOA RM
- SOA RA
- Q&A/Discussion
Before we talk about SOA, Services or SaaS...

The tough questions for pragmatic people:

If SOA is architecture, how do we express it as architecture?

Is it sufficiently different from other types of architecture?

If SOA is “X”, what is !(SOA || X )?
1996 – remember this slide

THING ONE

THING TWO

The Internet

THING THREE
1998...

THING ONE

XML

THING TWO

THING THREE
2001...

THING ONE

THING TWO

THING THREE

Web Services
2003...

THING ONE

SOA

THING TWO

THING THREE
2005...

THING ONE

ESB

THING TWO

THING THREE
2008/9  (The marketers got lazy perhaps??)

Now it’s just the little cloud…
Snake Oil Advocates?

Is SOA a modern day *deus ex machina*? Is it something we are already doing yet can be quantified as a unique perspective? Is it Web Services?

SOA is not a product!!!

Once does not buy “post modernistic architecture”; you purchase a house built with “post modernistic architecture”.

SOA is definable using a normative ADL as a Reference Model.
Pragmatics: How do architects capture knowledge?

High Level Concepts FIRST!
So what is SOA exactly?

An Architectural Paradigm for organizing and using distributed capabilities that may be under the control of different ownership domains.

A framework for matching needs and capabilities.

A view of architecture focusing on “Services” as a mechanism to allow interactions between those with needs and capabilities.

A way of *thinking* about problems
Core Model for SOA

Visibility

Execution Context

Service

Service description

Real world effect

Interaction

Contract & Policy

Starbucks?
The OASIS Reference Model for SOA...

Is not architecture for a single SOA system. It is not even architecture – it is a model!

Is an *ABSTRACT* model for a range of Service Oriented architectures and analysis / comparison thereof.

Is a framework for understanding significant relationships among the entities in a SOA environment.

Industry standard - widely used (OASIS standard - 2006)
Using a singular point of reference is good!

Reference:
A Reference Model acts as a point of reference for a domain.

Durability:
By not tying it directly to existing technologies it can be reused over a maximum set of environments.
Service Interaction -> Behavior & Information Models
Real World Effect

- Execution Context
- Shared state
- Real world effect
- Contract & Policy
- Service
- Interaction
- Visibility
What about BPM?

Business Process, State alignment, orchestration, choreography, etc..

Core SOA

Applications, ECM, DB, ...

Not visible

What services are used for
Service Consumers
Service
Capabilities
Sources, functionality for capabilities
Where the SOA RA fits
What is a “Reference Architecture”?

Here’s how we characterize it…

<table>
<thead>
<tr>
<th>Reference Architecture</th>
<th>(vs.) Reference Model</th>
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<tbody>
<tr>
<td>Models the abstract architectural elements in the domain independent of the technologies, protocols, and products that are used to implement the domain</td>
<td>Describes the important concepts and relationships in the domain focusing on what distinguishes the elements of the domain</td>
</tr>
</tbody>
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- A reference architecture elaborates further on the model to show a more complete picture that includes showing what is involved in realizing the modeled entities
The OASIS Reference Architecture for SOA... (1/2)

Provides an architectural description of the paradigm that is SOA

   Builds off SOA RM and remains technology inert

Very abstract (by design)

   Broad applicably on the scale of the Internet itself

Recognizes the importance of adequately addressing stakeholders and participants and their role in a social structure

   Often overlooked on new SOA initiatives

   Affects issues related to security, policy, and contract management
Systems and Ecosystems

- Multiple ownership domains
  - No one entity controls everything
- Parallel development, deployment and usage of services
- A medium for people* to get their business done

* We include organizations and robots, but the canonical use case is people using a SOA-based system as a medium to `act at a distance’
Three Views of SOA

- Service Ecosystem
  - Captures what SOA means for people conducting their business

- Realizing a SOA-based system
  - Deals with the requirements for constructing a SOA

- Owning a SOA-based system
  - What are the issues involved in owning a SOA-based systems
## Viewpoint Specifications

<table>
<thead>
<tr>
<th>Viewpoint Element</th>
<th>Service Ecosystem</th>
<th>Realizing Service Oriented Architectures</th>
<th>Owning Service Oriented Architecture</th>
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<tbody>
<tr>
<td><strong>Main Concepts</strong></td>
<td>Captures what SOA means for people using it to conduct business.</td>
<td>Deals with the requirements for constructing a SOA.</td>
<td>Addresses issues involved in owning and managing a SOA.</td>
</tr>
<tr>
<td><strong>Stakeholders</strong></td>
<td>People (using SOA), Decision Makers, Enterprise Architects, Standards Architects and Analysts.</td>
<td>Standards Architects, Enterprise Architects, Business Analysts, Decision Makers.</td>
<td>Service Providers, Service Consumers, Enterprise Architects, Decision Makers.</td>
</tr>
<tr>
<td><strong>Concerns</strong></td>
<td>Conduct business safely and effectively.</td>
<td>Effective construction of SOA-based systems.</td>
<td>Processes for engaging in a SOA are effective, equitable, and assured.</td>
</tr>
<tr>
<td><strong>Modeling Techniques</strong></td>
<td>UML class diagrams</td>
<td>UML class, sequence, component, activity, communication, and composite structure diagrams</td>
<td>UML class and communication diagrams</td>
</tr>
</tbody>
</table>
Service Ecosystem View

- **Action in a SOA Ecosystem**
  (i.e., what does it mean to be part of a SOA)
- **Social Structure**
- **Acting in a Social Context**

Lay the foundation for securely and effectively participating in a SOA ecosystem
**Action**

Part of Acting in a SOA Ecosystem Model

*Action* is the application of intent by an actor to achieve a real world effect.

*An actor* is an entity that is capable of action.

*A goal* is a measurable state of the world that an actor is seeking to establish.

*A Real World Effect* is the actual result of performing an action.
A **stakeholder** is an individual entity, human or non-human, or organization of entities that has an interest in the states of participants and/or the outcomes of service interactions.
Realizing SOAs View

- Descriptions
- Visibility
- Interaction
- Policy & Contract Mechanisms
Service Description
Part of Service Description Model

- What it does
- How to access it
- How to communicate with it
- What are conditions of use
- Where to find measurements
Actions and Events
Part of Interacting with Services Model

Message exchange is the means by which service participants (or their agents) interact with each other.

A message conveys either an action or an event.
Owning SOAs View

- Governance of SOA Ecosystems
- Security in a SOA Ecosystem
- Management of SOA Ecosystems
- Testing of SOA Ecosystems (new)
SOA Governance
Part of Governance Model

SOA governance builds off general governance concepts
Managing Resources in a SOA
Part of Management Model

Management of Services rather than simply IT Management
Where we are

- Been active since May 2006
  - Most of the material is in place
  - 100+ page document
- Issued first OASIS SOA RA Public Review in early May ‘08
- Emphasis on the relationship between people and the systems they live with
Challenge & Recommendations

Challenge:
Putting into practice ("what are we suppose to do with this very abstract RA?")

Recommendations:
Use this SOA RA as quasi “checklist” of things to consider when architecting SOA solutions and validate other RAs and concrete architectures
Review and address Architectural Implications captured in various architectural models
Thank you!

Q&A

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”Wer nicht fragt, bleibt dumm!”

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