

# **IS Strategy**

## **Service Oriented Architecture (SOA)**

Version: 0.3

Last Updated: 5/31/2021 8:00 PM

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## **1. Document Introduction**

### **Purpose**

This document introduces IS's strategy for Service Oriented Architecture (SOA).

### **Scope**

All aspects related to the success of the SOA initiative.

### **Audience**

All IS personnel who are involved with SOA.

### **Strategy Owner (functional organization)**

IS Strategy & Planning.

### **Change Control**

Proposed changes to this strategy may be submitted to IS Strategy & Planning.

### **Related Processes and Frameworks**

Much of this Strategy is built around industry standards, protocols and leading practices. Some of these are documented in the following folders:

- <\\Chil-data1\share\Information Services\Arch\Planning\Future-Vision\Integration>
- <\\CHIL-DATA1\SHARE\Common\is\CIO-Exec-Board\SOA>

## Related Documents

- IBM's 4 SOA Planning documents ([document folder](#))
- An early-2007 SOA Strategy ([here](#))

## 2. Assumptions

This document makes the following assumptions:

1. The reader is familiar with basic SOA concepts, terminology, benefits and goals
2. The reader does **not** need an in-depth knowledge of SOA
3. The approvals of this document by carefully-selected IS technologists implies:
  - They certify the accuracy of the document contents
  - They are committed to align their efforts with the directions stated herein
4. The Strategy focuses on the "tip of the iceberg":
  - It stays at as high a level of abstraction for as long as possible
  - It provides details only for the near-term phases of the initiative
  - It relies on *just-in-time* decision making and ensuring future flexibility rather than locking in prematurely
5. This document is a comprehensive summarization of various other documents & sources:
  - Industry leading practices (eTom/SID, Zapthink, etc.)
  - Key vendor directions (Oracle/BEA, etc.)
  - Work & planning already done (IBM, COMPANY IS EA, etc.)
  - Subject matter expert knowledge and experience (EII team, ADS SOA readiness team, etc.)
6. The Strategy's overall goal is to maximize flexibility for the SOA initiative, meaning:
  - We will think globally, but act locally
  - We will consider standard SOA principles, but apply them judiciously and only when they fit
  - We will conceptualize long-range, but implement incrementally
  - We will model the ideal big picture, but focus on the 80/20
  - We will analyze options appropriately, but concentrate more on execution
  - We will prefer *progress* over *perfection*

If you have any questions or suggestions about these assumptions, please see the IS Strategy & Planning team immediately.

## 3. SOA Philosophy

A Gartner Group article summarizes some key recommendations which we think are appropriate:

1. Focus on avoiding the proliferation of unshareable services. Reward both reusability and reuse, and establish a center of excellence (COE) to provide guidance and governance.
2. Invest in systematically designed sets of fundamental core services. Make the design of services and service interfaces independent steps in software design, involve business analysts early and often, and coordinate service design with data design.
3. Don't underestimate the technical challenges of SOA. Despite the relative ease of the initial steps, recognize that large-scale SOA implementations require an SOA backplane and an understanding of key SOA-enabling middleware.

4. Don't underestimate the cultural, political and marketing challenges of SOA. Avoid starting too big, and avoid selling SOA to upper management too soon. Understand the diverse objectives that motivate different business audiences, and tailor your communications accordingly.

## 4. Outstanding Issues

As the SOA initiative continues, there are a number of issues which we will continue to monitor, and mitigate as necessary:

1. Organizational Commitment:
  - Will IS sustain the commitment needed to support the success of SOA?
  - Who will take over the SOA Program Manager role after Q1'09?
  - Who will fulfill key roles in the future that EA is playing now?
  - Can IS proceed safely in 2009 without external consulting services?
  - How will the SOA Initiative interact with other key initiatives, e.g. BSS/OSS, CDC/ODS, EDW, etc.? How will contention for resources be addressed?
  - Will the COMPANY business partners make the commitment required in later phases, especially around the area of funding and ownership of shared services? How early in the SOA Initiative should this question be addressed?
  - The IBM Strategy document identified 23 *core challenges*. How will these be managed?
2. SDLC for Service Development:
  - What methodology will we use?
  - What QAR checkpoints and milestones will we use?

## 5. Critical Success Factors

The SOA initiative will be successful to the degree that the following factors are met:

1. Business value driven
  - Deliver distinct value at each phase
2. Meld strategic and tactical view
  - Long and short term
  - Direct and indirect
  - Evolutionary and revolutionary
  - Thinking big and acting small
3. Secure executive sponsorship and champion
  - Set the tone for the commitment to SOA as a long term COMPANY (rather than IS only) strategy
4. Demands appropriate collaboration
  - Internal IS collaboration critical to fostering innovative approaches
  - Cross LOB collaboration critical to ensuring alignment of long-term SOA strategies
5. Requires dedication of workforce
  - KTBR only will significantly extend Service development timelines
  - Services will be developed as part of Enterprise projects rather than in preparation for Enterprise projects
  - Reduces SOA value proposition to Enterprise

## 6. Strategy: Why

We need to build an SOA capability that enables IS to “blow the doors” off project delivery. Our “Dream Statement” is reproduced here:

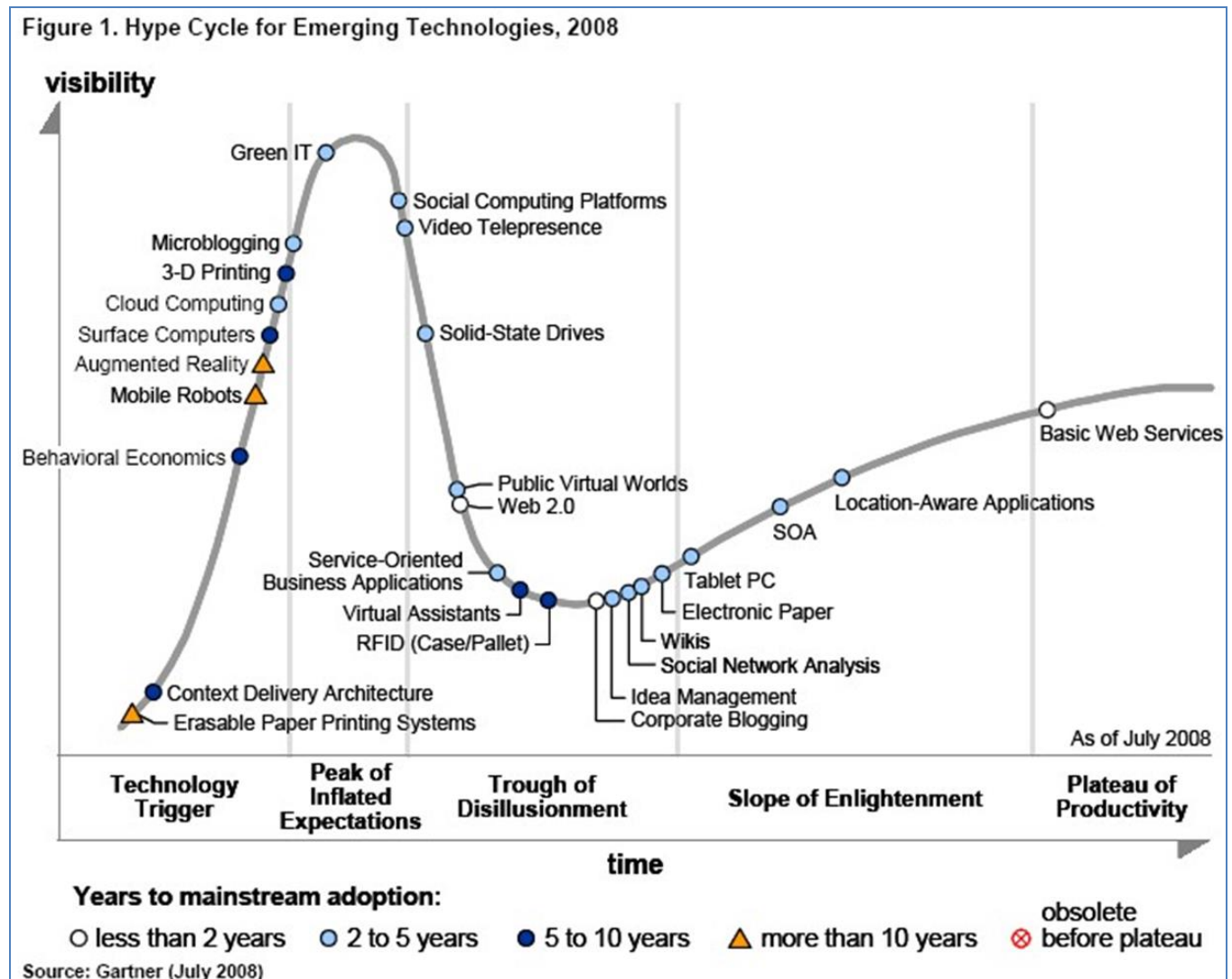
- Imagine the business agility that could result if IS could deliver robust business services in a matter of days or weeks instead of months. Imagine further, if some business solutions could be built and implemented by our business partners without any IS involvement. And imagine business interruptions no longer occurring, as self-healing networks and systems resolve incidents transparently to our customers and business partners through automated monitoring and recovery processes. Finally, imagine the overall cost of IT decreasing 20% (per Gartner Group). SOA promises faster, cheaper, better, more business-aligned, and more customer-focused IT.
- These capabilities would give COMPANY a significant competitive advantage in the wireless telecom space.

One article from the Corporate Executive Board summarizes the benefits of adopting SOA as follows:

| BENEFITS OF SOA ADOPTION |                                       |                                                                                                                                                                                                                                                                                             |
|--------------------------|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BENEFIT                  |                                       | DESCRIPTION                                                                                                                                                                                                                                                                                 |
| 1                        | <b>Faster Time-To-Market</b>          | As organizational component libraries grow, time-to-market shortens as a result of reusing existing components within newly developed services.                                                                                                                                             |
| 2                        | <b>Reduced Cost</b>                   | With evolving business demands, reduction in the cost of developing new technology occurs due to portions of the process flow pre-existing as components in the organization.                                                                                                               |
| 3                        | <b>Increased Security</b>             | Services used by multiple applications have a security mechanism providing multi-level authentication at both the client and service level.                                                                                                                                                 |
| 4                        | <b>Leveraging Initial Investment</b>  | Services interact through interfaces with internal details hidden, allowing for integration of existing disparate systems within an organization. Applications organizations also have the flexibility to move services to different machines or to move a service to an external provider. |
| 5                        | <b>Risk Mitigation</b>                | By leveraging existing components, developers reduce the risk of introducing new failures into the business service.                                                                                                                                                                        |
| 6                        | <b>Improved Business Intelligence</b> | By exposing and sharing information across once-siloed applications, companies can extract more actionable business performance data in real-time.                                                                                                                                          |
| 7                        | <b>Improved Internal Dialogue</b>     | As IT workers think according to business and not technical architectures, dialogue between IT and the rest of the business may improve.                                                                                                                                                    |

Source: “Service-Oriented Architecture: Theory and Practice”, CEB, June 2004

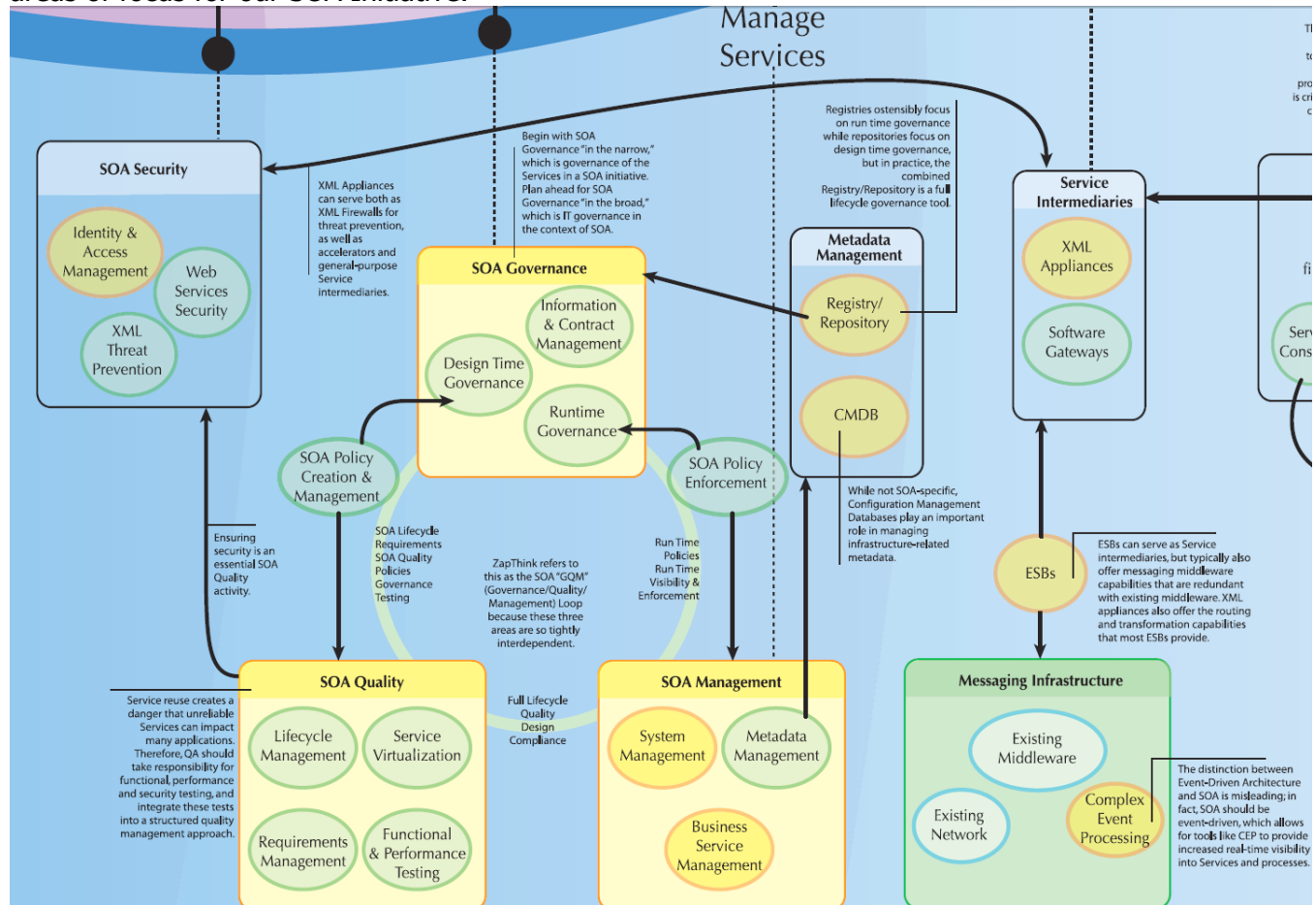
A Gartner Group Magic Quadrant on Emerging Technologies shows that SOA is now one of the more mature technologies in the hype cycle (from July 2008):



More details on why we are pursuing SOA can be found in the SOA Business Case.

## 7. Strategy: What

There is a comprehensive [Roadmap](#) From Zapthink.com that nicely depicts a long-range journey to SOA. A piece of it from the early part of the map is shown below. This generally represents the early areas of focus for our SOA Initiative.



## 8. Strategy: How

### A 4-Phase Approach

The following describes the 4 Phases that the SOA Initiative will undertake.

|                                             | Exploring<br>Ad Hoc Services                                                                                                                                                                                                                                                                                                                                                                                                  | Expanding<br>Standard Services                                                                                                                                                                                                                                                                                                                                                                        | Exploiting<br>Business Services                                                                                                                                                                                                                                                                                                                                                                                                                                  | Optimizing<br>Dynamic Services                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Themes</b>                               | <ul style="list-style-type: none"> <li>• Early explorative learning</li> <li>• Building foundational services</li> <li>• High innovation and learning = high recycling</li> <li>• Focused on building high-ROI services</li> <li>• Bottom up versus top down</li> <li>• Agile versus waterfall</li> <li>• Execution versus process driven</li> <li>• Just-in-time governance</li> <li>• Business process awareness</li> </ul> | <ul style="list-style-type: none"> <li>• Expansion of experiences and knowledge</li> <li>• Standardizing service design</li> <li>• Increased maturity = higher stability</li> <li>• Focused on building intermediate services</li> <li>• Repeatable delivery practices</li> <li>• Execution focused process driven</li> <li>• Right-sized governance</li> <li>• Business process alignment</li> </ul> | <ul style="list-style-type: none"> <li>• Exploitation of experiences and knowledge</li> <li>• Integrating service design with business processes on a per-project basis</li> <li>• Increased integration = higher responsiveness</li> <li>• Focused on building integrated services</li> <li>• Highly coordinated delivery practices</li> <li>• Process-centric execution</li> <li>• Best practice governance</li> <li>• Business process integration</li> </ul> | <ul style="list-style-type: none"> <li>• Optimized service delivery and value proposition</li> <li>• Integrated service design with business processes across LOB's</li> <li>• Increased coverage = higher value</li> <li>• Focused on building enterprise services</li> <li>• Highly optimized delivery practices</li> <li>• Best in class governance</li> <li>• Business process enablement</li> </ul> |
| <b>Orientation</b>                          | <b>Function Oriented</b><br>• Developing foundations and expertise in service development                                                                                                                                                                                                                                                                                                                                     | <b>Service Oriented</b><br>• Process and service modeling expertise building within LOB's                                                                                                                                                                                                                                                                                                             | <b>Process Oriented</b><br>• Business process integration via services                                                                                                                                                                                                                                                                                                                                                                                           | <b>Value Oriented</b><br>• Dynamic application assembly and optimization                                                                                                                                                                                                                                                                                                                                 |
| <b>% of functions expressed as services</b> | <10%                                                                                                                                                                                                                                                                                                                                                                                                                          | <40%                                                                                                                                                                                                                                                                                                                                                                                                  | <80%                                                                                                                                                                                                                                                                                                                                                                                                                                                             | >80%                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>% of services reused</b>                 | <5%                                                                                                                                                                                                                                                                                                                                                                                                                           | <20%                                                                                                                                                                                                                                                                                                                                                                                                  | <50%                                                                                                                                                                                                                                                                                                                                                                                                                                                             | >50%                                                                                                                                                                                                                                                                                                                                                                                                     |

This Strategy document focuses on the first of the 2 Phases. More detail on Phases 3 and 4 will be explored as we get closer to them.

## Phases by Domains

In each of the 4 Phases, a number of activities will need to be accomplished. These are grouped into 6 domains as shown below.

|                | Exploring<br>Early learning | Expanding<br>Standardized service interfaces | Exploiting<br>Assemblies of reusable services | Optimizing<br>Business process managed services |
|----------------|-----------------------------|----------------------------------------------|-----------------------------------------------|-------------------------------------------------|
| Management     |                             |                                              |                                               |                                                 |
| Architecture   |                             |                                              |                                               |                                                 |
| Infrastructure |                             |                                              |                                               |                                                 |
| Process        |                             |                                              |                                               |                                                 |
| Organization   |                             |                                              |                                               |                                                 |
| Projects       |                             |                                              |                                               |                                                 |

This matrix is an expansion and customization of the iSOAMM (the Independent SOA Maturity Model) as described here. The differences are here:

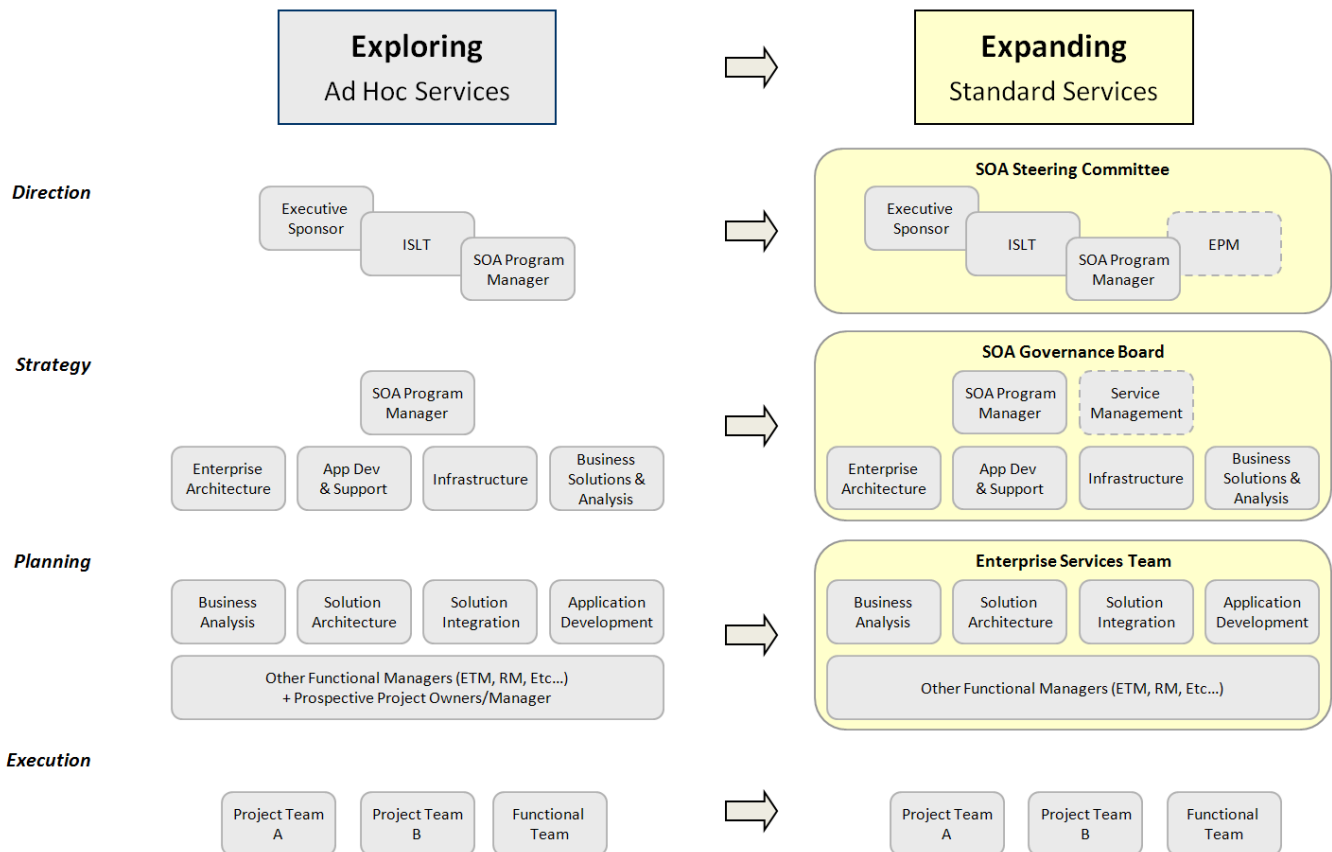
| iSOAMM               | Our Model                                                                                               |
|----------------------|---------------------------------------------------------------------------------------------------------|
| Governance           | Management                                                                                              |
| Service Architecture | Architecture (includes both Service Architecture and the SOA Reference Architecture)                    |
| Infrastructure       | Infrastructure                                                                                          |
| Service Development  | Process (includes both Service Development and the Project Lifecycle)                                   |
| Enterprise Structure | Organization                                                                                            |
| -                    | Projects (identifies the types of projects, or specific projects, that may be implemented in the Phase) |

Narrowing the focus specifically to Phase 1 and 2, we would fill in the sections as follows:

|                | Exploring<br>Early learning                                                                                                                         | Expanding<br>Standardized service interfaces                                                                                                            |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Management     | <ul style="list-style-type: none"> <li>• SOA Program Manager</li> <li>• SOA Governance Board</li> <li>• Enterprise Services Team</li> </ul>         | <ul style="list-style-type: none"> <li>• SOA Governance Board</li> <li>• Enterprise Services Team</li> <li>• (Possibly) Center of Excellence</li> </ul> |
| Architecture   | <ul style="list-style-type: none"> <li>• SOA Reference Architecture (as defined)</li> </ul>                                                         | <ul style="list-style-type: none"> <li>• SOA Reference Architecture (v.2 as necessary)</li> </ul>                                                       |
| Infrastructure | <ul style="list-style-type: none"> <li>• ESB (ALSB) to Production</li> <li>• SSF (as is)</li> </ul>                                                 | <ul style="list-style-type: none"> <li>• (Possibly) Oracle ESB in Sandbox</li> </ul>                                                                    |
| Process        | <ul style="list-style-type: none"> <li>• Agile SDLC Experimentation</li> <li>• Scrum Experimentation</li> <li>• Service Doc Templates</li> </ul>    | <ul style="list-style-type: none"> <li>• Agile SDLC Defined</li> <li>• Trained Scrummasters</li> <li>• Tweaked Templates &amp; Tools</li> </ul>         |
| Organization   | <ul style="list-style-type: none"> <li>• No reporting structure changes</li> <li>• Co-location of team</li> </ul>                                   | <ul style="list-style-type: none"> <li>• To be determined</li> </ul>                                                                                    |
| Projects       | <ul style="list-style-type: none"> <li>• EII, Phases 1, 2 and 3</li> <li>• Ring-Back Tones</li> <li>• Selected Project for Service Reuse</li> </ul> | <ul style="list-style-type: none"> <li>• To be determined</li> </ul>                                                                                    |

## 9. Strategy: Who

Planning, Development, and Governance for SOA will evolve between Phase 1 and 2, following this model:



### Organizational Structure

- The **Direction** will be set and monitored by the SOA Steering Committee.
- The **Strategy** will be formulated and driven by the SOA Governance Board (SGB).
- The details of **Planning** including technical readiness will be determined by the Enterprise Services Team (EST).
- The actual **Execution**, or development and implementation of services, will be done by various teams:
  - Project teams will be established to create specific services.
  - Functional teams will build and maintain the necessary infrastructure and technology to run services.

## Roles & Responsibilities

### Steering Committee:

- Sponsor the SOA Initiative, including staffing and funding.
- Communicate SOA policies and direction.
- Review reports from the SGB and re-align focus as necessary.

### SGB:

- Set the strategy and action plans to drive the SOA Initiative forward.
- Create plans to build organizational structures needed for SOA.
- Communicate the strategy, plans and status to the ISLT, and the high-level vision to the rest of IS.
- Work with the EST to ensure that all groups within IS are ready and able to perform their role.
- Approve updates to the SOA Roadmap as proposed by the EST. (?)
- Monitor SOA metrics and attainment of established SOA goals. (?)

### SOA Working Group:

- Assess the readiness of the organization for SOA.
- Create plans to remedy organizational skill gaps.
- Identify needed processes and tools; evaluates options and implements solutions.
- Coordinate the skills-based training needed by the practitioners.

### EST:

- Periodically review pending business needs and identify service opportunities. (?)
- Recommend updates to the SOA Roadmap and monitor service-oriented projects. (?)

### Teams:

- Design, document, develop, assemble and test services, with a view toward reuse.
- Reuse existing services whenever possible.
- Use an agile, iterative, concurrent development lifecycle as appropriate.

## Decision Making

- Major SGB decisions are reviewed and/or approved by the ISLT.
- Major EST decisions are reviewed and/or approved by the SGB, and escalated to the ISLT as warranted.

## 10. Service Categorization

Services will be categorized using a 2-dimension matrix suggested in *The Definitive Guide to SOA (Oracle Service Bus) 2nd Ed.*, and customized using TMForum's *Enhanced Telecom Operations Map (eTom, release 7.0)*. On the vertical dimension is the SOA abstraction scale, from concrete to highly abstract. On the horizontal dimension is the functional category scale. The combined structure, at a high-level, is shown below:

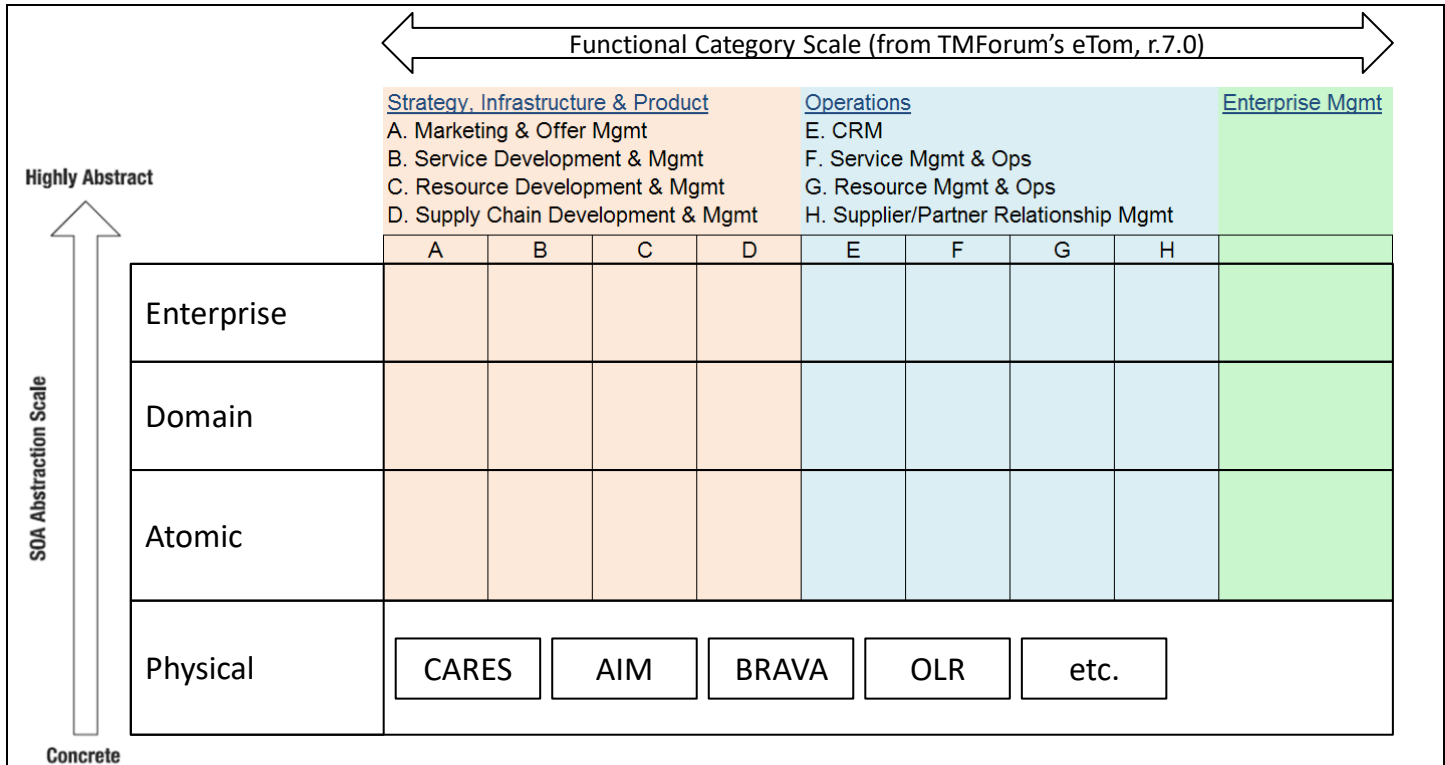


Figure 12-5. SOA abstraction scale with the named service levels

From: *The Definitive Guide to SOA (Oracle Service Bus) 2nd Ed.*

Note that the Physical level, which includes application software and packages, is not segmented by functional categories, as they typically cross multiple categories.

### Service Level Descriptions

An extract from *The Definitive Guide* provides these descriptions of the 4 service levels starting at the bottom of the scale:

- **Physical:** This level is used to represent the things that you cannot change (or cannot easily change). For example, external web services that are provided by your partners or suppliers would be categorized as being in the physical level. The services provided by Salesforce.com are another example of external functionality that belongs in this level. Commercial applications, like Siebel and SAP, are also categorized into the physical level, because you really have very little (or no) control over those applications. Even your own applications may be categorized into the physical level. It's the level where individual software systems live.
- **Atomic:** This level is used for publishing application/system-specific services and functionality. For example, if you created an EJB application that handles order management and then wrote one or more web services to publish that application's functionality, the application itself would

be categorized in the physical level, but the web services that connect to the application would be categorized into the atomic level.

- **Domain:** This level's services aggregate and orchestrate the lower-level atomic services. This is the level of abstraction where you will first realize application independence. The domain services are used to make the lower-level atomic services behave in a rational and more business-oriented manner. This will make more sense when we add our next scale to the coordinate system.
- **Enterprise:** This is the highest level of abstraction. We think of this level as the API for the entire enterprise. Services at this level of abstraction don't recognize the arbitrary boundaries of databases, applications, or business domains. These services can go anywhere and do anything (by making use of the domain level of abstraction). However, services at the top level of the abstraction scale must not know the implementation details of the hundreds or thousands of components that live further down the abstraction scale. Enterprise services "paint with a broad brush," issuing commands to the various domain-level software components and expecting timely results.

### Service Level Guidelines

*The Definitive Guide* (chapters 12-13) suggests a number of leading practices that we will generally follow, unless granted exceptions from the appropriate governing body. A few of them are these:

- Each service level knows about the level below it, but not the level above it.
- Every service level can know about the enterprise level.
- Web services are used between the service levels, whenever practical.
- If the service must cross functional category boundaries to do its job, it must exist in the enterprise level.
- The enterprise level cannot "skip" the domain level below it.

### Service Definition by Level

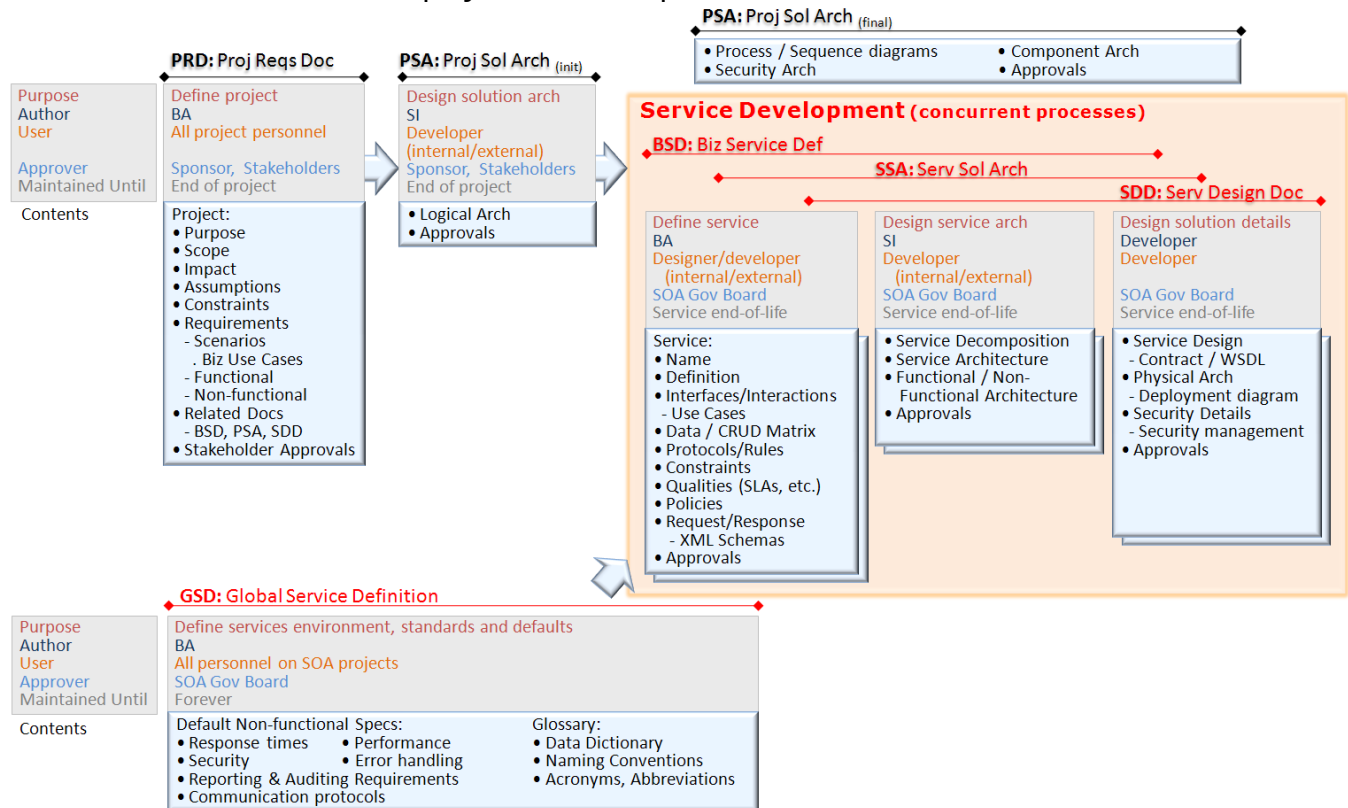
Generally, services will be defined by specific roles, as shown below:

| Level      | Defined by        |
|------------|-------------------|
| Enterprise | EA's/SA's         |
| Domain     | SI's              |
| Atomic     | Development Leads |
| Physical   | Development Leads |

## 11. Strategy: Key Processes

### Service Documentation

A key change in the standard SDLC to accommodate services is the documentation and development of the services. Phase 1 of the EII project has developed this model for service documentation:



Supporting this model are the new templates shown, specifically:

- The Business Service Definition (BSD)
- The Service Solution Architecture (SSA)
- The Service Design Document (SDD), and
- The Global Service Definition (GSD, a generic BSD)

This model and the templates are likely to evolve as EII moves into Phases 2 and 3.

### Service Cataloging

A Service Catalog will be built that will house the service documentation. This will enable service developers to easily identify what existing services they may be able to reuse.

## Service Maturity Model

In the Service Catalog, each service will have meta-data associated with it indicating its maturity level against a number of dimensions. This will serve numerous purposes, such as knowing which services are ready to be used by 3<sup>rd</sup>-parties.

| CMMI Levels                                                                                                                                                                        | Initial                                                                                                                                             | Managed                                                                                                                                 | Defined                                                                                                                              | Quantitative                                                                                                                                                             | Optimizing                                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension (HP)                                                                                                                                                                     | 1. Ad-hoc                                                                                                                                           | 2. Basic                                                                                                                                | 3. Standardized                                                                                                                      | 4. Managed                                                                                                                                                               | 5. Adaptive                                                                                                                                          |
| <b>Service Ownership</b>                                                                                                                                                           | No owner, or service under control of the project owner                                                                                             | Service is owned in a technology-centric context                                                                                        | Service is controlled within IT SOA governance                                                                                       | Service is owned in a business-centric context                                                                                                                           | Service is controlled within Enterprise SOA governance                                                                                               |
| <b>Service Alignment</b>                                                                                                                                                           | Provides system functionality without clear context and mapping to a business process                                                               | Service aligns with a domain context (such as an application - e.g. AIM, MyAccount - or a business transaction - e.g. customer look-up) | Service aligned to the documented Business Process Model (e.g. based from NGOSS)                                                     | Service aligns with fundamental business process regardless of application or use context (e.g. a feature activation via retail, CCC, web, or IVR uses the same service) | Service has an approved development roadmap tied to enterprise strategy                                                                              |
| <b>Service Lifecycle</b><br>(includes development, versioning, storage, catalogs, etc.)                                                                                            | Service is installed for a specific application without regard for version history and tracking; service was developed using a new or ad-hoc method | Service instances are identified and configurations are documented; new service versions use a standard release method                  | Service is entered into a discoverable registry with historical versions; service development uses an established, repeatable method | Service capacity is measured, modelled, and expanded as needed to ensure demands are met                                                                                 | Service requirements and functions are periodically evaluated for satisfaction of consumer needs, resulting in no action, improvement, or retirement |
| <b>Service Management</b><br>(includes SLA - availability, response time, restoration, notification, Measurement, and Monitoring)                                                  | No SLAs are documented and no performance measures are collected                                                                                    | SLAs are documented with limited input from consumers (internal, business partners, or external)                                        | SLAs are well-documented with input from consumers, and are routinely measured by the identified Service Manager                     | SLAs are automatically measured, incorporate system alerts, and are acted upon for Issue Management                                                                      | Performance data is used for Problem Management and proactive service improvement                                                                    |
| <b>Service Quality</b><br>(composed of - ities? Not QoS - i.e. not Gold, Silver, Bronze; includes Maintainability and Interoperability - i.e. use of standard interface contracts) | Service meets required functionality; performance is not formally monitored                                                                         | Service meets required x-ities; SLAs are met no less than 90% of the time                                                               | Service meets required x-ities; SLAs are met 99% of the time                                                                         | Service meets required x-ities; SLAs are met 99.99% of the time                                                                                                          | Service meets required x-ities; SLAs are met 99.9999% of the time                                                                                    |

|                                                                                                    |                                                                                |                                                                                                                                                             |                                                                                                                                                            |                                                                                                                              |                                                                                                                                       |
|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>Service Reuse</b><br>(Do we need a definition of "reuse" and the objectives/context for reuse?) | Service is a "point solution" whose design might not consider reuse            | Service use and function contexts are analyzed for opportunities to make them generic and reusable                                                          | All service usage is recorded and shows that the service is used by more than one consumer; service design supports reuse - it is generic and configurable | Service use and functions are analyzed for affinities to identify opportunities to simplify the service or service portfolio | Service use may be orchestrated by business end users, if appropriate; service design supports flexible reuse - it is easily extended |
| <b>Security</b>                                                                                    | Service may not comply with all relevant security standards                    | Service functionality provides for authentication, transaction authorization, and data protection                                                           | Service complies with all COMPANY security standards (internal or adopted industry standards), and uses security infrastructure such as firewalls and IAM  | Service adheres, enforces, and monitors security policies, providing measurable audits, integrity, and confidentiality       | Service operates within a governance and risk management framework to improve performance in security policy management               |
| <b>Service Documentation</b><br>(includes requirements, standard docs, and new service docs)       | Service developed from an informal request and no formal documentation written | Service has basic documentation for requirements, design, and service contract, but documentation may not be complete or may not use all standard documents | Service has a complete documentation package (as approved by the SOA Governance Board) entered in an accessible service repository                         | Documentation is versioned and cross-referenced with other services and consumers for impact analysis                        | Documentation is updated in sync with service changes, improved for clarity and process changes                                       |

## Service Glossary

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A Service Glossary will be built that will define the SOA technical jargon. Its beginnings look like this:

| Term | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Type   | Sources                                                                                                               |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------|
| ESB  | <p>In computing, an enterprise service bus (ESB) refers to a software architecture construct. This construct is typically implemented by technologies found in a category of middleware infrastructure products, usually based on recognized standards, which provide fundamental services for more complex architectures via an event-driven and standards-based messaging engine (the bus).</p> <p>An ESB generally provides an abstraction layer on top of an implementation of an enterprise messaging system, which allows integration architects to exploit the value of messaging without writing code. Contrary to the more classical enterprise application integration (EAI) approach of a monolithic stack in a hub and spoke architecture, the foundation of an enterprise service bus is built of base functions broken up into their constituent parts, with distributed deployment where needed, working in harmony as necessary.</p> | source | <a href="http://en.wikipedia.org/wiki/Enterprise_service_bus">http://en.wikipedia.org/wiki/Enterprise_service_bus</a> |
| JMS  | <p>The Java Message Service (JMS) API is a Java Message Oriented Middleware (MOM) API for sending messages between two or more clients. JMS is a part of the Java Platform, Enterprise Edition, and is defined by a specification developed under the Java Community Process as JSR 914.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | source | <a href="http://en.wikipedia.org/wiki/Java_Message_Service">http://en.wikipedia.org/wiki/Java_Message_Service</a>     |
| RPC  | <p>Remote procedure call (RPC) is an Inter-process communication technology that allows a computer program to cause a subroutine or procedure to execute in another address space (commonly on another computer on a shared network) without the programmer explicitly coding the details for this remote interaction. That is, the programmer</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | source | <a href="http://en.wikipedia.org/wiki/Remote_procedure_call">http://en.wikipedia.org/wiki/Remote_procedure_call</a>   |

## 12. Strategy: When

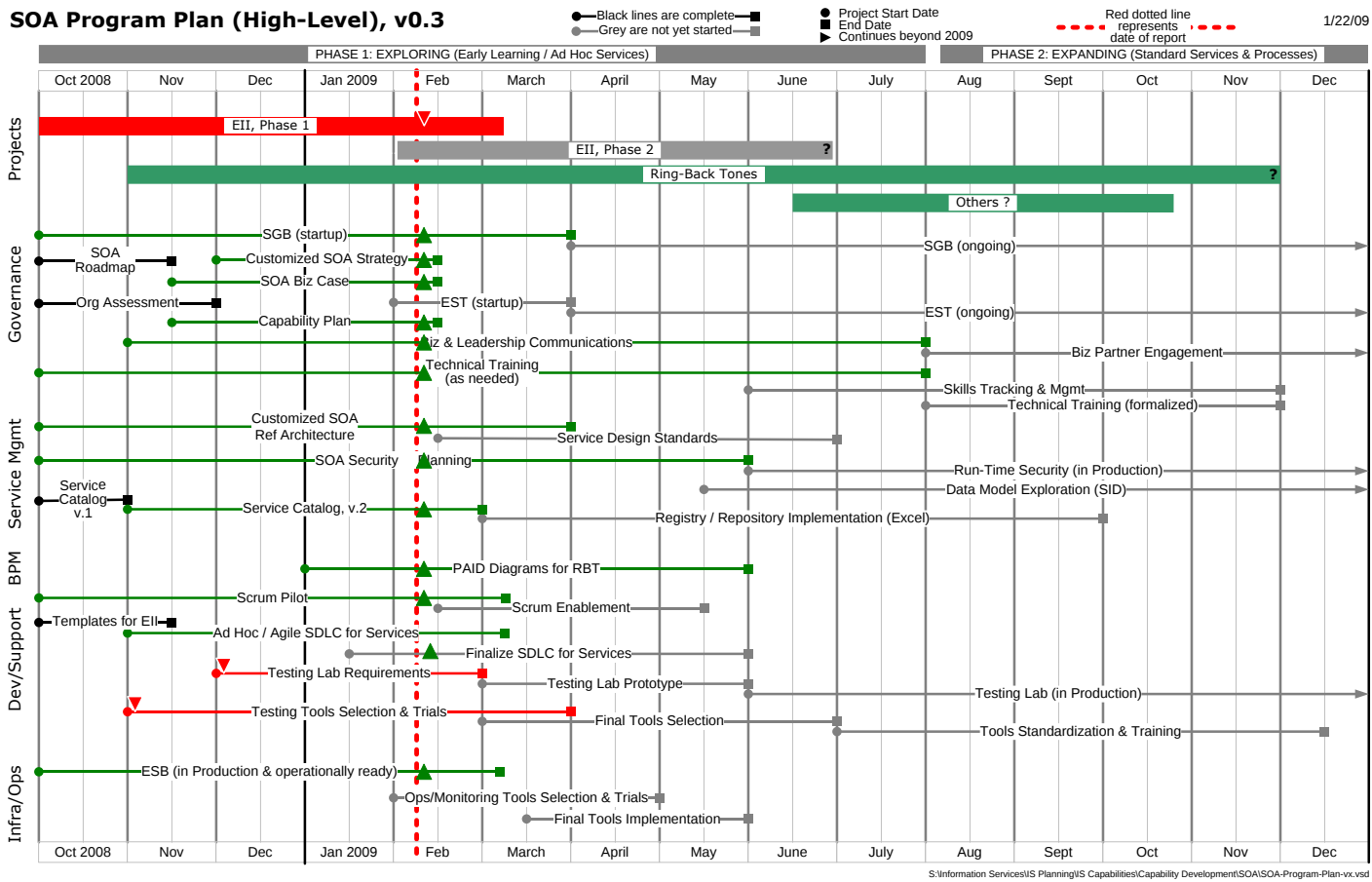
### Readiness Assessment

A preliminary template for assessing readiness is shown below:

| Area<br>(Leader)                | People |    |                                         |              |        | Process                                                                                   | Technology                                       |
|---------------------------------|--------|----|-----------------------------------------|--------------|--------|-------------------------------------------------------------------------------------------|--------------------------------------------------|
|                                 | Biz    | IS |                                         | Def'd<br>R&R | Skills |                                                                                           |                                                  |
| Governance<br>(Rick Kick)       |        | X  | Executive Sponsor                       | ✓            | ✓      | Sustained Org. Commitment & Support                                                       | Updated Job Descriptions                         |
|                                 |        | X  | SOA Program Manager                     | ✓            | ✓      | SOA Biz Case & ROI Analysis; COMPANY SOA Strategy; Journey Map Planning; Implement. Plans | SOA Entry Points (from IBM*)                     |
|                                 |        | X  | SOA Governance Board                    | ✓            | ✓      | Gov Process; Prioritization                                                               | SGMM (IBM)                                       |
| Service Mgmt<br>(Andy Sofronas) |        | X  | Enterprise Architecture                 | ✓            | ✓      | Service Environment Architecture                                                          | Stds/Protocols; SOA Ref Arch; eTom               |
|                                 |        | X  | Solutions Arch:<br>• Services Architect | ✓            | ✓      | Service Mapping & Maturity                                                                | Service Catalog                                  |
|                                 |        | X  | Solutions Arch:<br>• Security Architect | ✓            | ✓      | Data Privacy; Access Security; SOX                                                        | Various TBD                                      |
|                                 |        | X  | Solutions Arch:<br>• Data Gov Arch      | ✓            |        | Definition of Service Ownership R&R's                                                     |                                                  |
|                                 |        | X  | Information Mgmt                        | ✓            | ✓      |                                                                                           | Service Registry Tool                            |
| Biz Proc Mgmt<br>(Mike Cozzi)   | X      | X  | Biz Partners                            | ✓            |        | Service Requirements                                                                      | PAID Diagrams                                    |
|                                 |        | X  | BSA                                     | ✓            | ✓      | Service Identification; High-Level Service Design                                         | Documentation Templates (TBD)                    |
| Dev./Supp.<br>(Dave Higham)     |        | X  | Enterprise Services Team (EST)          | ✓            |        | Agile SDLC for Services                                                                   |                                                  |
|                                 |        | X  | SI                                      | ✓            | ✓      | Service Component Architecture                                                            | PSA & SSA Templates                              |
|                                 |        | X  | BA                                      | ✓            | ✓      | Service Definition Process                                                                | PRD, GSD & BSD Templates; Ravenflow              |
|                                 |        | X  | Development & Support Teams             | ✓            | ✓      | Service Design                                                                            | Integrated Development Environment; SDD Template |
|                                 |        | X  | Testing Team                            | ✓            | ✓      | Testing Processes                                                                         | Services Lab / Automated Testing Tools           |
|                                 |        | X  | Project Mgmt                            | ✓            |        |                                                                                           |                                                  |
| Infra / Ops<br>(Dave Dennen)    |        | X  | Environment Services                    | ✓            | ✓      | Environment Creation                                                                      |                                                  |
|                                 |        | X  | Platform Services                       | ✓            | ✓      | Initial Platform Creation                                                                 | Server Mgmt Tool                                 |
|                                 |        | X  | SCM                                     | ✓            | ✓      | Service Assembly and Testing                                                              | Source Code Configuration Mgmt Tool              |
|                                 |        | X  | Release Mgmt                            | ✓            | ✓      | Service Deployment and Delivery                                                           |                                                  |
|                                 |        | X  | Operations Service Mgmt                 | ✓            | ✓      | Service Support; SLA Management                                                           | Shared Services Foundation; ESB                  |
|                                 |        | X  | Security Ops                            | ✓            | ✓      | Run-Time Security Management                                                              | Various TBD                                      |
|                                 |        | X  | Network Ops                             | ✓            | ✓      | Event Mgmt & Service Monitoring                                                           | Monitoring Tool                                  |

# Preliminary Roadmap

An overall timeline for SOA looks like this:



### 13. Strategy: Implementation Planning

Following are key sections extracted from the IS Implementation Services Playbook.

#### Impact Analysis

| Impacted Area, Process, or Capability                                                  | ISLT                                                                                                                                               | SOA Program Manager                                                                                                                   | SOA Governance Board ("SGB")                                                                                | Service Mgmt / Architecture                                                       | Business Process Mgmt                                                                                         | Enterprise Services Team ("EST")                                                                                         | Infrastructure / Operations                       | Worker Bees                                                                                                                                |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Analysis</b>                                                                        |                                                                                                                                                    |                                                                                                                                       |                                                                                                             |                                                                                   |                                                                                                               |                                                                                                                          |                                                   |                                                                                                                                            |
| What is the source of the change?                                                      | Overseeing of the SOA initiative                                                                                                                   | Developing, maintaining & communicating the SOA Roadmap                                                                               | Governing the major SOA decisions                                                                           | Maintaining the SOA Reference Architecture (RA)                                   | Thinking in terms of services, service ownership, & shared services                                           | Coordinating the development of services; New SDLC & Tools                                                               | New responsibilities & tools                      | New tools & processes                                                                                                                      |
| Is the impact large or small in size?                                                  | Big                                                                                                                                                | Huge                                                                                                                                  | Huge                                                                                                        | Big                                                                               | Huge                                                                                                          | Huge                                                                                                                     | Huge                                              | Big                                                                                                                                        |
| Is the impact positive or negative?                                                    | Positive                                                                                                                                           | Positive                                                                                                                              | Positive                                                                                                    | Positive                                                                          | Positive                                                                                                      | Positive                                                                                                                 | Positive                                          | Positive                                                                                                                                   |
| How does the source of the change impact the end product of the process or capability? | ISLT will need to periodically review progress; provide strategic direction to the SGB; authorize resources for SOA; and resolve escalated issues. | Champion the SOA initiative, driving the strategy with the SGB & informing the ISLT of direction. Ensuring IS readiness and training. | Set SOA direction for governance and technology. Prioritize service requests and their resource allocation. | Maintain the RA; ensure standards adherence, and provide service design patterns. | Standardize biz terminology; Document, analyze, & improve biz processes; Educate the biz; Arbitrate tradeoffs | Provide first line analysis of shared service needs. Manage the service catalog. Provide SMEs to SOA projects as needed. | A new dimension of managing run-time activities   | Move from waterfall to agile methods, to document and develop services, and align to the RA; A new range of testing concepts & activities. |
| What benefits and rewards might we expect with the implementation of this change?      | Enhanced project throughput & business alignment                                                                                                   | Identification of opportunities for org improvement                                                                                   | Identification of better project alignment & sequencing                                                     | Better chance to blend EA direction into IS Roadmap                               | Identification of opportunities for biz process improvement                                                   | Identification of opportunities for reuse                                                                                | Chance to be more involved in business operations | Enhanced skills                                                                                                                            |

| Impacted Area, Process, or Capability                                                                                                                                                                         | ISLT                                                                                        | SOA Program Manager                                                           | SOA Governance Board ("SGB")                                          | Service Mgmt / Architecture               | Business Process Mgmt                                                                            | Enterprise Services Team ("EST")                                                    | Infrastructure / Operations                                                                      | Worker Bees                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------|-------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| What challenges and difficulties might we expect with the implementation of this change?                                                                                                                      | Complex technical issues may not be fully appreciated                                       | Coordinating and aligning all the various active threads                      | Normal start-up issues with any new board                             |                                           | Biz resistance to costs/delays needed by shared services                                         | Developing resources just in time for project needs                                 | Operational complexity leads to more potential failures                                          | Learning curve for new technologies                                                              |
| Are the process or capability owners aware of the planned changes?                                                                                                                                            | Yes                                                                                         | Yes                                                                           | Yes                                                                   | Yes                                       | IS-Yes; Biz-No                                                                                   | Some                                                                                | ?                                                                                                | Some                                                                                             |
| What are the consequences of not making the change?                                                                                                                                                           | Continued delivery issues and resource contention                                           | (N/A)                                                                         | (N/A)                                                                 | Diminished skill competencies             | Continued high integration costs & time to market                                                | (N/A)                                                                               | (N/A)                                                                                            | Diminished skill competencies                                                                    |
| What expectations do we have of the process or capability owners in helping drive the changes so that they are successful and sustainable?                                                                    | Commit to SOA and demand the same from their teams                                          | Coordinate the overall program and monitor progress                           | Make timely decisions and communicate them                            | Maintain & explain the Ref Arch as needed | Biz take time to learn SOA concepts, and see bigger picture                                      | Proactively plan and communicate what needs to be done                              | Build & maintain skills; Follow any documented tasks                                             | Build & maintain skills; Follow any established standards                                        |
| Will there be impacts to costs for this change?                                                                                                                                                               | (N/A)                                                                                       | (N/A)                                                                         | (N/A)                                                                 | (N/A)                                     | Reusable services take longer to develop                                                         | (N/A)                                                                               | (N/A)                                                                                            | (N/A)                                                                                            |
| 1/.What, if any, risks are associated with the impact to this area, process, or capability?<br>2/.How will the risk be mitigated?<br>3/.Will the risk require the attention of your Leadership & Sponsorship? | (N/A)                                                                                       | 1/. IS Groups may mature at different rates<br>2/. Close follow up<br>3/. Yes | (N/A)                                                                 | ?                                         | 1/. Biz resistance<br>2/. User ed<br>3/. Yes, including high-level "arm-twisting" when necessary | 1/. Vendor/Product changes (e.g. Oracle-BEA ESB)<br>2/. Close monitoring<br>3/. Yes | ?                                                                                                | 1/. Mistakes while learning<br>2/. Build time in plans<br>3/. No                                 |
| How will the proposed change affect the sequence, dependencies, effort, or duration of any other implementation tasks to be executed?                                                                         | (N/A)                                                                                       | Relation between SOA and ITIL is to be determined                             | Relation between SOA and EII/RBBT will be managed                     | (N/A)                                     | Time to document processes & services carefully (e.g. PAIDs)                                     | Relation between SOA and BSS/OSS is to be determined                                | (N/A)                                                                                            | (N/A)                                                                                            |
| List the tasks, reviews, and or action items that are required to be carried out in order to fully assess and confirm the identified impact.                                                                  | 1.) Review plans & docs periodically<br>2.) Set priorities<br>3.) Fund & staff as necessary | (Numerous)                                                                    | 1.) Define role & charter<br>2.) Clarify members<br>3.) Begin meeting | 1.) Review plans & suggest improvements   | 1.) Focus group education & brainstorming with selected biz partners                             | 1.) Define role & charter<br>2.) Clarify members<br>3.) Begin meeting               | 1.) Review readiness assessment<br>2.) Identify tasks<br>3.) Plan for readiness<br>4.) Get ready | 1.) Review readiness assessment<br>2.) Identify tasks<br>3.) Plan for readiness<br>4.) Get ready |

## SOA Success Model

| Area                                                                                             | Description                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1.) Current State</b>                                                                         | <b>Definition</b>                                                                                                                                                                                                                                                                                                                                                                                         |
| A. Point-to-point integrations between different application types.                              | Makes it significantly complex to manage the environment and reduces time-to-market new product rollout                                                                                                                                                                                                                                                                                                   |
| B. 'Tight coupling' between systems                                                              | Increases testing time                                                                                                                                                                                                                                                                                                                                                                                    |
| C. Shared services with no registry                                                              | Shared services w/o a registry limits reusability                                                                                                                                                                                                                                                                                                                                                         |
| D. Challenges with integrating multiple platforms, protocols, languages, and standards           | There are no standard interfaces between our systems and external systems operated by partners, which would make it difficult for enforcing policies and Service Level Agreements and management                                                                                                                                                                                                          |
| E. Current Business Support Systems have very limited ability to support future business demands | There are business systems that do not support the ability for the company to add new products and services                                                                                                                                                                                                                                                                                               |
| <b>2.) Future State</b>                                                                          | <b>Definition</b>                                                                                                                                                                                                                                                                                                                                                                                         |
| A. SOA integration patterns and best practices                                                   | Component integration patterns must be collated to facilitate efficiency of operations and management of integration related activities. This solution requirement must address time-to-market for new products and services                                                                                                                                                                              |
| B. Internal application integration                                                              | The architecture must reduce complexities associated with multiple and inconsistent point-to-point integration                                                                                                                                                                                                                                                                                            |
| C. Partner interaction                                                                           | The architecture must support patterns associated with Partner interaction such that consistent solutions can be developed to implement and manage growing partner interaction requirements                                                                                                                                                                                                               |
| D. Map the technology capabilities to concrete vendor products and packages                      | The architecture must facilitate the definition and mapping of capabilities relevant to COMPANY to specific vendor products and packages                                                                                                                                                                                                                                                                  |
| <b>3.) Goals</b>                                                                                 | <b>Definition</b>                                                                                                                                                                                                                                                                                                                                                                                         |
| A. Business Alignment                                                                            | The primary goal of Service Oriented Architecture (SOA) is to align the business world with the Information Systems (IS) world in a way that makes both more effective.                                                                                                                                                                                                                                   |
| B. Asset Re-use                                                                                  | Reduce duplication of services and create a shared services environment.                                                                                                                                                                                                                                                                                                                                  |
| C. Business Agility                                                                              | Enable an architecture that provides faster time-to-market of new COMPANY services.                                                                                                                                                                                                                                                                                                                       |
| D. Increased Innovation                                                                          | The integration of business and technology is the main source of innovation today. IS investments pay off when they are coupled with changes to workflow.                                                                                                                                                                                                                                                 |
| <b>4.) Critical Success Factors</b>                                                              | <b>Definition</b>                                                                                                                                                                                                                                                                                                                                                                                         |
| A. The creation of the SOA Governance Board SGB                                                  | This governing body is expected to drive the SOA initiatives at COMPANY (through adoption of the SOA Vision and the Reference Architecture), and it should be given a clear mandate to do so.                                                                                                                                                                                                             |
| B. Start implementing SOA Vision                                                                 | Evangelize the adoption of the SOA Vision toward an enterprise-wide adoption from the both IS and business perspectives. Full benefits of SOA can be realized only from a business and IT alignment.                                                                                                                                                                                                      |
| C. Create and adopt ESB                                                                          | Create an ESB at least at a project level, and continue its adoption toward an enterprise level usage. Expand reach of the SOA; consider the potential for extending connectivity beyond usual applications and platforms to non-traditional endpoints. ESB's effectiveness results from integration of processes, data, and applications, as a sufficient number of services are required for mediation. |
| D. Start a Registry                                                                              | Start cataloging existing services. Consider adopting a formal registry/repository, which has indirect benefits like versioning of services as well. A formal registry/repository is needed to transition into the systematic services level.                                                                                                                                                             |
| E. Identify and implement one or more SOA pilot projects                                         | This entails identification and implementation of pilot projects to demonstrate the business value of SOA. These pilots should be non mission-critical services and, wherever possible, be a parallel path to existing systems to mitigate risk. Subsequent endeavors should consider mission critical services.                                                                                          |
| F. Existing services enhancements                                                                | Start exposing more legacy functionality as services (e.g., CARES functions) , by wrapping (or by re-engineering or re-development as needed), and then start adding newer services (i.e., not necessarily based on legacy), based on business goals. This                                                                                                                                                |

|                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                             | activity can be conducted as part of the integration activities.                                                                                                                                                                                                                                                                                                              |
| G. Reuse business services                                                                                  | Start by reusing business services in projects, and transition into reuse at an enterprise level                                                                                                                                                                                                                                                                              |
| H. Identify infrastructure for choreography/orchestration                                                   | Identify product requirements, and evaluate and select product for building composite applications using a standards based process server for choreography/orchestration with support for state management, human tasks management, and transaction compensation.                                                                                                             |
| I. Define business process models / component business services                                             | Create business architecture and business modeling in a way that allows or suggests re-factoring as needed to improve the process and allow flexibility. This initiative is about identifying, aligning, and defining business services that can be leveraged (both from a product delivery and from a technical infrastructure perspective) across multiple product domains. |
| J. Create composite applications                                                                            | Pursue creation of composite applications with the ability to choreograph/orchestrate business and system activities into reusable process components for rapid deployment. This initiative implements the technologies and builds the middleware infrastructure necessary to enable standards like BPEL (Business Process Execution Language).                               |
| K. Define and implement Identity Management, Centralized Audit & Logging, and End-to-end Services Security. | Review business processes to determine where security for service-based solutions is necessary. Define an enterprise-wide security architecture that contains all the end-to-end security services necessary to support business operations, including authentication, authorization, confidentiality and non-repudiation.                                                    |
| L. Define and implement BPM                                                                                 | Investigate business performance management software that integrates the monitoring and dashboard function with the tooling and business process runtime to more rapidly effect change, and with support for analysis of historical data. Consider using dashboards for monitoring, key performance metric management and real-time business intelligence.                    |
| M. Monitor technologies on the horizon                                                                      | As SOA and Web Services evolve, monitor and evaluate developments in technology.                                                                                                                                                                                                                                                                                              |

## Roles & Responsibilities

|                                  |                                                                                            | Daily Basis                                                                                                                                       | Weekly                                                              | Monthly                                                                                           | Quarterly Basis                                                                                      |
|----------------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>ISLT People</b>               |                                                                                            | Provide resources for the SOA initiative, periodically review the SOA team's recommendations, and demonstrate management commitment to SOA.       |                                                                     |                                                                                                   |                                                                                                      |
| Responsibilities                 |                                                                                            | Explain SOA rationale when asked. Defend direction as needed.                                                                                     | -                                                                   | -                                                                                                 | Review SOA direction & status. Adjust priority, commitment, resourcing and communications as needed. |
| Messages to Deliver              |                                                                                            | "SOA is our direction."<br>"The primary drivers are marketplace agility & reduced integration costs."<br>"Service re-use is a secondary benefit." | -                                                                   | -                                                                                                 | "Changes in direction are approved by the ISLT."                                                     |
| Verification / Compliance Method |                                                                                            | (N/A)                                                                                                                                             | -                                                                   | -                                                                                                 | EA will update SOA Ref Arch. SOA Pgm Mgr will present status to ISLT.                                |
| <b>ELT</b>                       |                                                                                            | Take the SOA message to all IS teams, provide resource support, and insist upon adherence to the direction.                                       |                                                                     |                                                                                                   |                                                                                                      |
| Responsibilities                 |                                                                                            | -                                                                                                                                                 | Support active SOA projects. Reinforce agreed-upon standards.       | -                                                                                                 | -                                                                                                    |
| Messages to Deliver              |                                                                                            | -                                                                                                                                                 | "My team will follow standards and meet commitments on time."       | -                                                                                                 | -                                                                                                    |
| Verification / Compliance Method |                                                                                            | -                                                                                                                                                 | Weekly project status review.                                       | -                                                                                                 | -                                                                                                    |
| <b>SOA Gov Board</b>             |                                                                                            | Plan the future direction for SOA, and manage the service portfolio process on an ongoing basis                                                   |                                                                     |                                                                                                   |                                                                                                      |
| Responsibilities                 | * R Kick<br>• A Sofronas<br>• D Higham<br>• M Cozzi                                        | -                                                                                                                                                 | -                                                                   | Review new service needs. Coordinate shared service decisions.                                    | Revise SOA direction (with Pgm Mgr)                                                                  |
| Messages to Deliver              | • D Dennen                                                                                 | -                                                                                                                                                 | -                                                                   | "Here are our service priorities."<br>"Here's how specific business services will be decomposed." | "Here's where we're going."                                                                          |
| Verification / Compliance Method |                                                                                            | -                                                                                                                                                 | -                                                                   | ?                                                                                                 | ISLT review.                                                                                         |
| <b>Ent Svcs Team (EST)</b>       |                                                                                            | Ensure that SOA teams are prepared for SOA, the processes are effective, and the delivered                                                        |                                                                     |                                                                                                   |                                                                                                      |
| Responsibilities                 | * D Higham<br>• Nair/Sanghani<br>• Hisey/Casas<br>• Krieter/Dunlap<br>• Chelluri/Stalsberg | -                                                                                                                                                 | Review artifacts being developed. Provide SME support to SOA teams. | Review & revise SOA processes, tools and templates.                                               | -                                                                                                    |
| Messages to Deliver              | • Summers/Mohan<br>• Walowit/Amundsen<br>• Buysse/Hanson                                   | -                                                                                                                                                 | -                                                                   | "Here are our SOA development standards."                                                         | -                                                                                                    |
| Verification / Compliance Method |                                                                                            | -                                                                                                                                                 | -                                                                   | SGB review.                                                                                       | -                                                                                                    |
| <b>ASSOCIATES</b>                |                                                                                            | Develop SOA artifacts following all applicable standards and guidelines, and suggest process improvements as appropriate                          |                                                                     |                                                                                                   |                                                                                                      |
| Responsibilities                 |                                                                                            | Understand IS standards & guidelines. Develop skills as necessary. Produce artifacts per standards.                                               | -                                                                   | -                                                                                                 | -                                                                                                    |
| Messages to Deliver              |                                                                                            | "Our work will be to spec & be on time." "Here are some suggestions."                                                                             | -                                                                   | -                                                                                                 | -                                                                                                    |
| Verification / Compliance Method |                                                                                            | Peer review. (Later) PQF.                                                                                                                         | -                                                                   | -                                                                                                 | -                                                                                                    |

## Training Requirements

|                                                      |                                                                                  | Users                |                   |                   |                           |                   |                   |                |                 |                |                            |                       |                      | Delivery Mechanism      |                    |     |
|------------------------------------------------------|----------------------------------------------------------------------------------|----------------------|-------------------|-------------------|---------------------------|-------------------|-------------------|----------------|-----------------|----------------|----------------------------|-----------------------|----------------------|-------------------------|--------------------|-----|
| Course                                               | Information Sharing or Skill                                                     | SOA Governance Board | Service Registrar | Service Architect | Business Services Analyst | Service Developer | Service Assembler | Infrastructure | Service Support | Service Tester | Service Security Architect | Configuration Manager | Self Guided User Aid | ILT - Internal/External | Knowledge Transfer | CBT |
| Introductory                                         |                                                                                  |                      |                   |                   |                           |                   |                   |                |                 |                |                            |                       |                      |                         |                    |     |
| SOA 101                                              | Basic SOA concepts & principles                                                  |                      | X                 | X                 | X                         | X                 | X                 | X              | X               | X              | X                          | X                     |                      | X                       |                    |     |
| Web Services 101                                     | Web services concepts & principles                                               |                      | X                 | X                 | X                         | X                 | X                 | X              | X               | X              | X                          | X                     |                      | X                       |                    |     |
| Services 101                                         | The basic concepts & principles of services                                      | X                    | X                 | X                 | X                         | X                 | X                 | X              | X               | X              | X                          | X                     |                      | X                       |                    |     |
| Organizational shared services                       | The vision of shared services within the organization                            | X                    | X                 | X                 | X                         | X                 | X                 | X              | X               | X              | X                          | X                     |                      | X                       |                    |     |
|                                                      | Issues & challenges in the environment and the need of shared services           | X                    | X                 | X                 | X                         | X                 | X                 | X              | X               | X              | X                          | X                     | X                    |                         |                    |     |
| Organizational objectives and roles                  | Description on how the organization will function in a post SOA world            | X                    | X                 | X                 | X                         | X                 | X                 | X              | X               | X              | X                          | X                     | X                    |                         |                    |     |
|                                                      | Explain roles and responsibilities                                               | X                    | X                 | X                 | X                         | X                 |                   |                |                 |                |                            |                       | X                    |                         |                    |     |
| Reference Architecture 101                           | Describe reference architecture and the need for it in our environment           |                      | X                 | X                 |                           | X                 | X                 | X              | X               | X              | X                          | X                     |                      | X                       |                    |     |
| Organizational Roadmap                               | Describe the roadmap and vision for SOA                                          |                      | X                 | X                 | X                         | X                 | X                 | X              | X               | X              | X                          | X                     |                      | X                       |                    |     |
|                                                      |                                                                                  |                      |                   |                   |                           |                   |                   |                |                 |                |                            |                       |                      |                         |                    |     |
| Development/Architecture                             |                                                                                  |                      |                   |                   |                           |                   |                   |                |                 |                |                            |                       |                      |                         |                    |     |
| Distributed Computing 101                            | Basic concepts & principles of distributed systems                               |                      |                   | X                 |                           | X                 |                   | X              |                 | X              |                            | X                     |                      |                         |                    | X   |
| Networked SOA                                        | Basic concepts & principles of a networked SOA                                   |                      |                   | X                 |                           | X                 |                   | X              | X               | X              |                            | X                     |                      |                         |                    | X   |
| Advanced Reference Architecture                      | Detailed description of the Reference Architecture                               |                      | X                 | X                 | X                         | X                 | X                 | X              | X               | X              | X                          | X                     |                      | X                       |                    |     |
| SOA for Architects                                   | Detailed description of SOA concepts & principles                                |                      |                   | X                 |                           | X                 |                   | X              | X               |                | X                          |                       |                      | X                       |                    |     |
| Web Services for Architects                          | Detailed description of Web services protocols & standards                       |                      |                   | X                 |                           | X                 |                   | X              | X               |                | X                          |                       |                      |                         | X                  |     |
| Designing SOA applications                           | Detailed description on service design                                           |                      |                   | X                 |                           | X                 |                   | X              | X               |                | X                          |                       |                      | X                       |                    |     |
| ESB 101                                              | Understanding the ESB                                                            |                      |                   | X                 |                           | X                 |                   | X              | X               | X              |                            |                       |                      |                         |                    | X   |
|                                                      |                                                                                  |                      |                   |                   |                           |                   |                   |                |                 |                |                            |                       |                      |                         |                    |     |
| Business Process                                     |                                                                                  |                      |                   |                   |                           |                   |                   |                |                 |                |                            |                       |                      |                         |                    |     |
| Business Process Management 101                      | BPM concepts & principles                                                        |                      |                   | X                 |                           | X                 |                   | X              | X               | X              |                            |                       |                      |                         | X                  |     |
| Business Process Management System (BPMS)            | Detailed understanding of the BPMS                                               |                      |                   | X                 |                           | X                 |                   | X              | X               | X              |                            |                       |                      |                         | X                  |     |
| Process Modeling, Analysis and Design                | Detailed understanding of practical techniques for modeling, analysis and design |                      |                   | X                 | X                         | X                 | X                 |                | X               |                | X                          |                       |                      | X                       |                    |     |
| Developing Business Process Models in the Real-World | Understanding the nature of business process modeling in real-world situations   |                      |                   | X                 | X                         | X                 | X                 |                | X               |                | X                          |                       |                      | X                       |                    |     |
| Process Mapping 101                                  | Process mapping concepts & principles                                            |                      |                   | X                 | X                         | X                 | X                 |                | X               |                | X                          |                       |                      | X                       |                    |     |
| Process Integrity 101                                | Basic concepts & principles on the integrity of processes                        |                      |                   | X                 | X                         | X                 | X                 | X              | X               | X              | X                          | X                     |                      |                         |                    | X   |
|                                                      |                                                                                  |                      |                   |                   |                           |                   |                   |                |                 |                |                            |                       |                      |                         |                    |     |
| Process and Roles                                    |                                                                                  |                      |                   |                   |                           |                   |                   |                |                 |                |                            |                       |                      |                         |                    |     |
| SOA Governance                                       | Understanding SOA Governance                                                     | X                    | X                 | X                 | X                         | X                 | X                 | X              | X               | X              | X                          | X                     |                      |                         |                    | X   |
| Services Governance                                  | Understanding Services Governance                                                |                      | X                 | X                 | X                         | X                 | X                 |                | X               | X              | X                          |                       |                      |                         |                    | X   |
| Architecture Governance                              | Understanding Architecture Governance                                            |                      |                   | X                 |                           | X                 |                   |                |                 |                |                            | X                     |                      |                         |                    | X   |
| Business Process Governance                          | Understanding BPM Governance                                                     |                      |                   |                   | X                         |                   |                   |                | X               |                |                            |                       |                      |                         |                    | X   |
| SOA-Driven Project Governance                        | Understanding Project Governance                                                 | X                    |                   | X                 | X                         | X                 |                   |                |                 | X              | X                          |                       |                      |                         |                    | X   |

## Key Messages

|                       | <u>To:</u><br>SGB                                                                                                                                   | <u>To:</u><br>ST/Project Teams                                                                                                                                       | <u>To:</u><br>ISLT                                                                                                                                   | <u>To:</u><br>ELT                                                                                                                                                                    | <u>To:</u><br>IS Assoc                                                                                                                                              | <u>To:</u><br>Biz Part.                                                                                                                                                                                            |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>From:</u><br>SGB   |                                                                                                                                                     | <ul style="list-style-type: none"> <li>- Get all IS teams ready</li> <li>- What help do you need?</li> <li>- These are the strategic decisions we've made</li> </ul> | <ul style="list-style-type: none"> <li>- Vision, Strategy</li> <li>- Program status</li> <li>- Resource needs</li> <li>- Escalated issues</li> </ul> | <ul style="list-style-type: none"> <li>- SOA Intro</li> <li>- Vision</li> <li>- Timeframes, milestones</li> <li>- Impacts</li> <li>- WIIFM</li> <li>- Get your team ready</li> </ul> | <ul style="list-style-type: none"> <li>- SOA Intro</li> <li>- Vision</li> <li>- Impacts</li> <li>- WIIFM</li> <li>- See the EST to get trained and ready</li> </ul> | (LATER)<br><ul style="list-style-type: none"> <li>- SOA Overview</li> <li>- Rationale</li> <li>- Impacts, such as SDLC changes</li> <li>- WIIFM</li> <li>- Success Stories</li> <li>- Importance of BPM</li> </ul> |
| EST/<br>Project Teams | <ul style="list-style-type: none"> <li>- Here's our detailed plan for getting ready</li> <li>- We need you to make these decisions</li> </ul>       |                                                                                                                                                                      | n/a                                                                                                                                                  | <ul style="list-style-type: none"> <li>- Prepare for these changes in processes and tools</li> </ul>                                                                                 | <ul style="list-style-type: none"> <li>- Services SDLC Intro</li> <li>- Standards, Processes, Tools Intro</li> <li>- Training &amp; support options</li> </ul>      | n/a                                                                                                                                                                                                                |
| ISLT                  | <ul style="list-style-type: none"> <li>- Govern the SOA Initiative</li> <li>- Ask for needed resources</li> <li>- Give us regular status</li> </ul> | <ul style="list-style-type: none"> <li>- Put into place the standards, processes, tools and training needed to support SOA</li> </ul>                                |                                                                                                                                                      | <ul style="list-style-type: none"> <li>- Work with the SGB &amp; EST to make SOA work within your areas</li> </ul>                                                                   | <ul style="list-style-type: none"> <li>- SOA is the direction</li> <li>- We need your commitment to make it work</li> </ul>                                         | (LATER)<br><ul style="list-style-type: none"> <li>- Here's where we're headed and why</li> <li>- Here's what we need from you</li> </ul>                                                                           |
| ELT                   | <ul style="list-style-type: none"> <li>- Issues that need SGB attention</li> </ul>                                                                  | <ul style="list-style-type: none"> <li>- Issues that need EST attention</li> </ul>                                                                                   | <ul style="list-style-type: none"> <li>- Issues with SGB that need escalation</li> </ul>                                                             |                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>- Take the time to learn</li> <li>- Make these changes work</li> <li>- Suggest ideas for improvement</li> </ul>              | n/a                                                                                                                                                                                                                |
| IS Associates         | <ul style="list-style-type: none"> <li>- Questions or ideas on SOA direction or governance decisions</li> </ul>                                     | <ul style="list-style-type: none"> <li>- Questions or ideas on standards, processes or tools</li> </ul>                                                              | n/a                                                                                                                                                  |                                                                                                                                                                                      |                                                                                                                                                                     | n/a                                                                                                                                                                                                                |
| Biz Partners          | (LATER)<br><ul style="list-style-type: none"> <li>- Services we need</li> <li>- Requirements for services</li> </ul>                                | (LATER)<br><ul style="list-style-type: none"> <li>- Requirements for BPM tools</li> </ul>                                                                            |                                                                                                                                                      | n/a                                                                                                                                                                                  | n/a                                                                                                                                                                 |                                                                                                                                                                                                                    |

## Communications Planning

| Communication Planning          |                                                                                              |                                                                                                             | Target   |                  |         |             |        | Timing          | Delivery |           |         |              |                | Responsibilities |                 |               |                          |                 |                                                         |
|---------------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|----------|------------------|---------|-------------|--------|-----------------|----------|-----------|---------|--------------|----------------|------------------|-----------------|---------------|--------------------------|-----------------|---------------------------------------------------------|
| Communication Meeting/Task      | Key Messages                                                                                 | Purpose                                                                                                     | ISLT/IGB | ELT/IS Directors | SOA SGB | Func. Mgrs. | IS PMO | IS Stakeholders | Other    | Frequency | Website | Team Meeting | Targeted Email | Face to Face 1:1 | Brown Bag lunch | Demonstration | Provide Input to Content | Task Owner      | Responsible for Delivery of Communication               |
| Phase One                       |                                                                                              |                                                                                                             |          |                  |         |             |        |                 |          |           |         |              |                |                  |                 |               |                          |                 |                                                         |
| SOA Steering Committee          | Strategic direction, assign priority, fund allocation, issue escalation                      | To provide strategic direction by driving the strategy with the SGB                                         |          | x                | x       | x           |        |                 |          | Daily     |         | x            |                | x                |                 |               | SOA SGB                  | Program Manager | ~ ISLT<br>~ Rick K.                                     |
| SOA Steering Committee          | <b>Changes in:</b> Strategic direction, assigned priority, fund allocation, issue escalation | To provide strategic direction by driving the strategy with the SGB                                         |          | x                | x       | x           |        |                 |          | Quarterly |         | x            |                | x                |                 |               | SOA SGB                  | Program Manager | ~ ISLT<br>~ Rick K.                                     |
| Executive Leadership Team (ELT) | Commitment to SOA strategy and projects                                                      | To establish commitment to the SOA initiative by re-enforcing agreed upon standards                         |          |                  |         | x           |        |                 |          | Weekly    |         | x            |                | x                |                 |               | Func. Mgrs               | ?               | ?                                                       |
| SOA Governance Board (SGB)      | Share status, assign resources, resolve issues, approve changes                              | To keep the senior leadership informed of the SOA's strategic progress and key upcoming activities.         | x        | x                |         |             |        |                 |          | Monthly   |         | x            | x              |                  |                 |               | SOA Steering Committee   | Program Manager | ~ Sofronas<br>~ Higham<br>~ Cozzi<br>~ Kick<br>~ Dennen |
| SOA Governance Board (SGB)      | <b>Changes in:</b> Status, assign resources, resolve issues, approve changes                 | To keep the senior leadership informed of the SOA's strategic progress and key upcoming activities.         | x        | x                |         |             |        |                 |          | Quarterly |         | x            | x              |                  |                 |               | SOA Steering Committee   | Program Manager | ~ Sofronas<br>~ Higham<br>~ Cozzi<br>~ Kick<br>~ Dennen |
| Enterprise Services Team (EST)  | Shared service needs, service catalog progression, assign SME resources, as needed           | To ensure commitment and keep stakeholders informed of SOA's tactical progress and key upcoming activities. |          |                  | x       | x           | x      |                 |          | Weekly    |         | x            | x              |                  | x               |               | ?                        | Func. Mgrs.     | Various Func. Mgr.'s                                    |

## 14. Strategy: Risk Management Overview

See the separate document: SOA Risk Assessment here:

<S:\Information Services\IS Planning\IS Capabilities\Capability Development\SOA\Risk-Assessment.doc>.

## 15. Strategy: Next Steps

A key milestone for the SOA Initiative is set for mid-February 2009, when the SGB is set to become self-sustaining, and the IS Capabilities team will not be supporting it full-time. To that end, the following are the action items that are planned to be completed by then:

### Vision & Business Case

- Write SOA Strategy
- Write SOA Business Case
- Document SOA's Role vis-à-vis "B3"
- Develop SOA Overview Presentation
- Present SOA Overview to IS
- Present SOA Status Updates to IS Mgmt at EA Quarterly Updates

### Engagement

- SGB: Gain Infrastructure Leader commitment
- SGB: Gain SGB members' commitment to ownership of tracks
- SGB: Update track contents and dates
- SGB: Establish a feedback mechanism (SGB mailbox?)
- EST: Complete ADS readiness assessment
- EST: Expand readiness assessment to other areas

### Leadership

- Follow up SOA Messages at leaders' team meetings
- Determine need for a CoE for Services; If needed, write Plan

### Implementation Effectiveness

- Get SOA on 1 List
- Determine SOA budget (tools/standards, generic service development)
- Monitor & support EII Phase 1, for processes & templates
- Update SDLC for services
- Inventory current services
- Develop a Service Maturity Model; Assess current services
- Write a Metrics Plan
- Write an Organization Plan (job descriptions, roles, etc.)
- Assess need for supporting tools; Write requirements
- Implement tools (assess, acquire, standards, training, etc.)

### Sustainability

- Write a Communications Plan
- Implement Communications
- Write an Incentives Plan
- Implement Incentives
- Govern overall SOA program
- Monitor suitability of processes & tools; Adjust as needed

## 16. Appendices

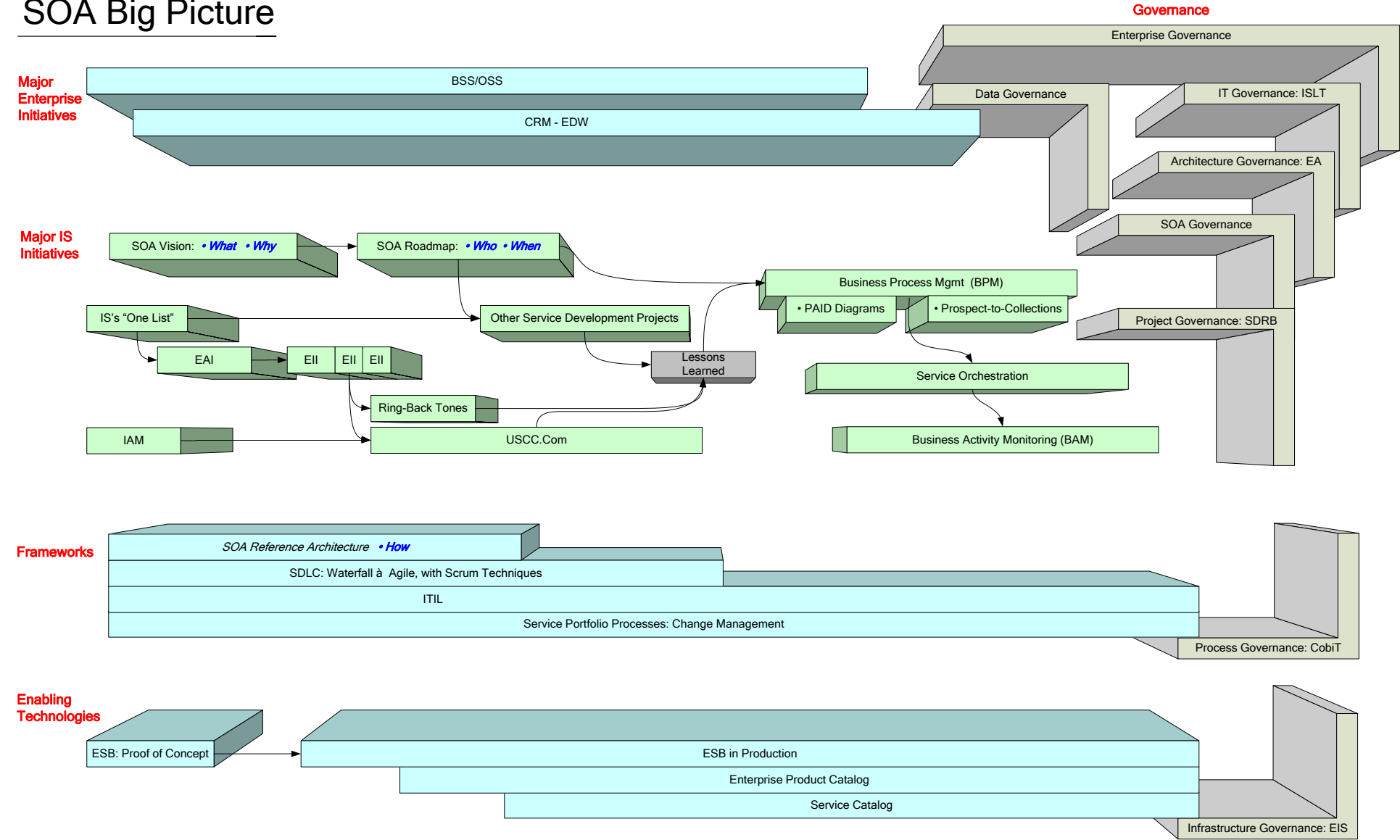
### Document Revision History & Approvals

The revision history shows changes and approvals to this document.

| Version | Date     | Description                                       | Author       | Approved by |
|---------|----------|---------------------------------------------------|--------------|-------------|
| 0.1     | 11-20-08 | Draft the SOA Strategy                            | Mark Dattoli |             |
| 0.2     | 12-9-08  | Some processes added                              | MD           |             |
| 0.3     | 2-25-09  | Service categorization added & I.S. Playbook docs | MD           |             |
|         |          |                                                   |              |             |

SOA Initiative in Context

SOA Big Picture





## SOA Initiative: Brief by IS Capability Team

### IS Capability Initiative Brief: Implementing SOA as an IS Capability

#### Statement of Opportunity

- One of the key leading practices in the IT industry is the concept of Service-Oriented Architecture (SOA).
  - The primary value proposition of SOA lies in **business agility** – “increasing the reuse of services and business rules, by allowing internal processes to be driven from established and trusted business data, resulting in nimble response to changing conditions” (Corp Exec Board).
  - USCC IS has embarked upon the SOA journey with a number of initiatives by various IS groups. We can benefit by ensuring that all these efforts are aligned and building in concert toward a mature IS SOA capability.



|  <b>People</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  <b>Process</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  <b>Technology</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>IS</b></p> <ul style="list-style-type: none"> <li>is leading the business in the <b>governance</b> of SOA</li> <li>is promptly <b>developing</b> robust services</li> <li>is effectively <b>deploying</b> services</li> <li>is efficiently <b>monitoring</b> services &amp; resolving issues</li> </ul> <p><b>Business partners</b></p> <ul style="list-style-type: none"> <li>are <b>trained</b> on the concept and impact of SOA</li> <li>are providing <b>leadership</b> and <b>governance</b></li> <li>are acting as <b>SMEs</b> for new service definitions</li> <li>are thinking with a service mindset and envisioning <b>new solutions</b> that capitalize on SOA opportunities</li> </ul> | <ul style="list-style-type: none"> <li>The links and interfaces among SOA, eTom, BPM, ITIL and other <b>disciplines</b> are defined *</li> <li><b>Leading practices</b> for service development are implemented throughout IS</li> <li><b>Service Repository processes</b> are in place</li> <li><b>Technical training</b> resources are finalized for IS associates, and made available as needed</li> <li>Training processes and materials are identified for <b>business partner training</b></li> <li>All related <b>process documentation</b> is updated and communicated appropriately</li> </ul> <p>* <b>Abbreviations</b><br/>                     eTom: Enhanced Telecom Operations Map (TMForum)<br/>                     BPM: Business Process Mgmt/Modeling<br/>                     ITIL: IT Infrastructure Library</p> | <ul style="list-style-type: none"> <li>After analysis of SOA approaches and alternatives (such as WOA) our near-term <b>architectural approach</b> is adjusted to enhance results and minimize risk</li> <li>A long-range <b>Roadmap</b> for SOA implementation, integration, and adoption is created and placed under change control</li> <li>Existing <b>templates</b> used in the IS SDLC are tweaked to support service development</li> <li>Appropriate <b>tools</b> will be selected and rolled out</li> <li>The <b>Services Catalog</b> is updated and rolled out</li> <li>The <b>Services Repository</b> is updated and rolled out</li> <li>Appropriate <b>metrics</b> are defined, collected, reported and operated on</li> </ul> |

#### Dream Statement

- Imagine the business agility that could result if IS could deliver robust business services in a matter of days or weeks instead of months. Imagine further, if some business solutions could be built and implemented by our business partners without any IS involvement. And imagine business interruptions no longer occurring, as self-healing networks and systems resolve incidents transparently to our customers and business partners through automated monitoring and recovery processes. Finally, imagine the cost of IT decreasing 20% (per Gartner Group). SOA promises faster, cheaper, better, more business-aligned, and more customer-focused IT.
- These capabilities would give USCC a significant competitive advantage in the wireless telecom space.



## A Conceptual SOA Diagram

(source: [www.soasoftware.com/images/img\\_ref\\_model.JPG](http://www.soasoftware.com/images/img_ref_model.JPG))

