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## Abstract

SOA is relatively new, so companies seeking to implement it cannot tap into a wealth of practical expertise. Without a common language and industry vocabulary based on shared experience, SOA may end up adding more custom logic and increased complexity to IT infrastructure, instead of delivering on its promise of intra and inter-enterprise services reuse and process interoperability. To help develop a shared language and collective body of knowledge about SOA, a group of SOA practitioners created this SOA Practitioners' Guide series of documents. In it, these SOA experts describe and document best practices and key learnings relating to SOA, to help other companies address the challenges of SOA. The SOA Practitioners' Guide is envisioned as a multi-part collection of publications that can act as a standard reference encyclopedia for all SOA stakeholders.

### 1.1 Intended Audience

This document is intended for the following audience:

- Business and IT leaders, who need to start and manage an SOA strategy across the enterprise/LOB
- Enterprise Architects who need to drive the vision and roadmap of the SOA program and the architecture of each implementation that falls under it
- Program Managers who need to manage a portfolio of sub-projects within an overall SOA business strategy
- Project Team Members, who need to map dependencies and develop a timeline that meets the business expectations
- Vendors who provide solutions and tools for new business capabilities to the business and IT
- Standards bodies which need a better understanding of use cases of how business and IT plan to leverage technology to meet their objectives.

# Introduction to Services Lifecycle

## Introduction

After establishing an architecture baseline based on the SOA reference architecture, practitioners should review the services lifecycle. This section briefly describes the service lifecycle and identifies the actors, potential tools, and artifacts associated with each stage of its stages. This document does not cover all the cultural, governance, and organizations changes required to make SOA a success; instead, it focuses on defining best practices for the services lifecycle. The services lifecycle is part of the execution stage in the SOA lifecycle diagram below.

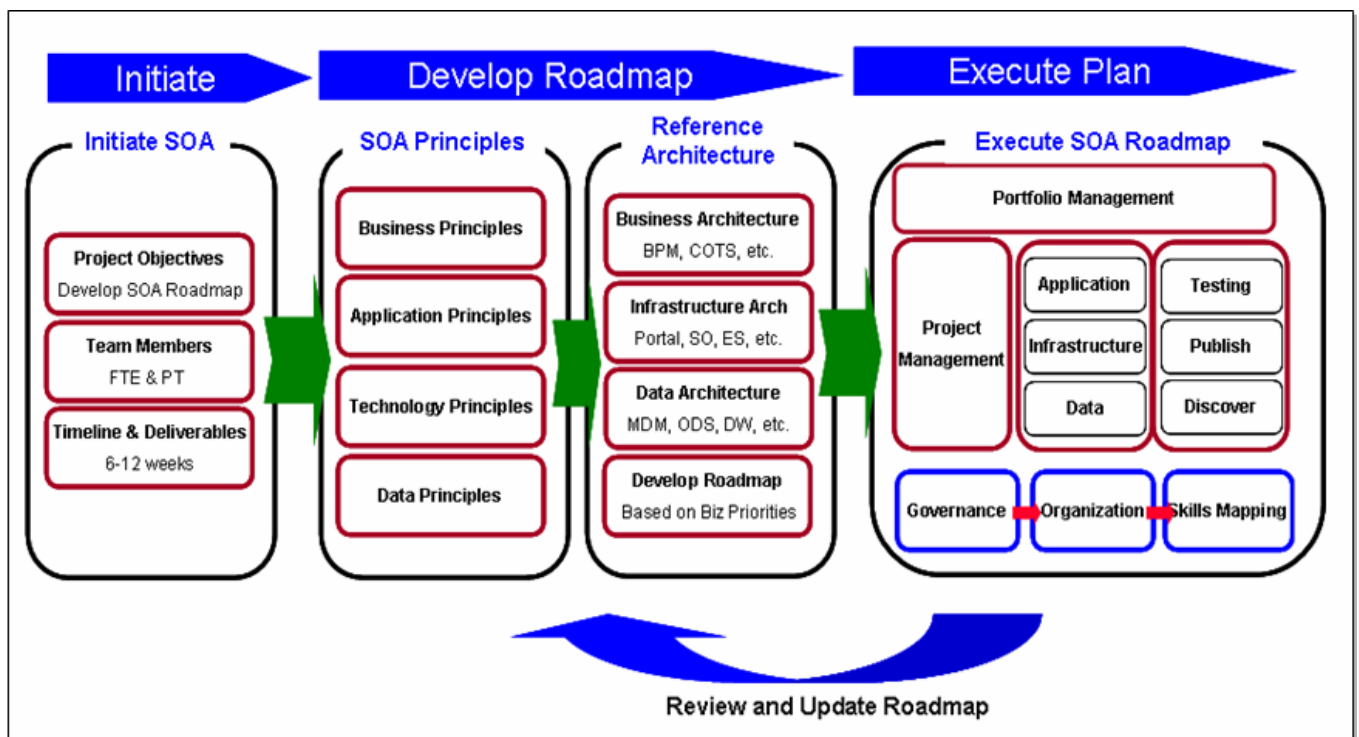
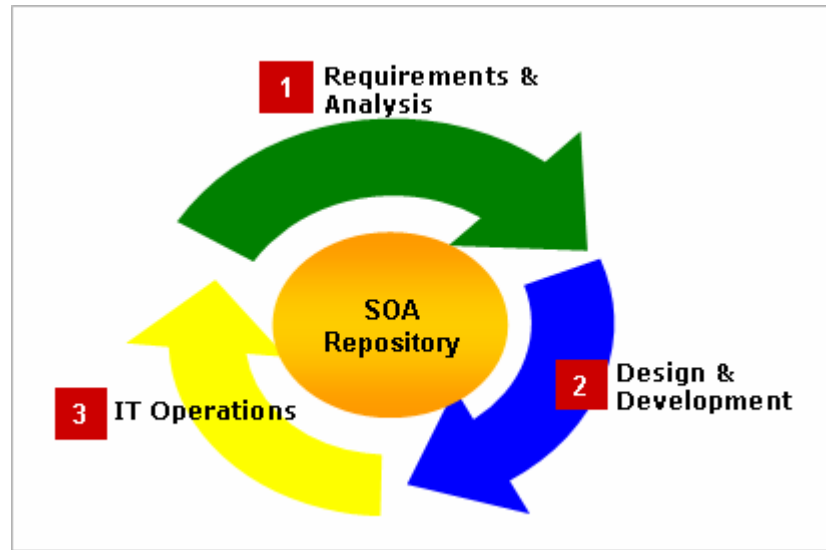


Figure 1: SOA Lifecycle

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## Definition

The service lifecycle begins at inception (definition) and ends at its retirement (de-commissioning or repurposing). The service lifecycle enables service governance across its three stages: requirements and analysis, design and development, and IT operations.



*Figure 2: Three Stages of the Services Lifecycle*

The above diagram illustrates the three stages and the need for an enterprise service repository to enable service governance.

- **Requirements & analysis:** business initially identifies and prioritizes the business needs. Based on the identified priorities, non-technical staff work closely with business analysts to document the business process, rules, and requirements. High-level requirements include:
  - Visually map business process starting from Level 0 downwards
  - Define each of the business processes
  - Identify business owners for each of the processes
  - Identify objectives and current business services gaps
  - Map Input and output data elements
  - Prioritize business processes and business services
  - Capture all the aspects of business service definitions
  - Simulate user interface and/or business processes.

- **Design & development:** during the design phase, the business analysts work closely with the architect to hand off the business requirements. The architect is responsible for the high-level estimates, design, and handover to the development team. The development teams are responsible for developing, assembling, testing, and handing over the composite application to IT operations. Following are some high-level design requirements:
  - Review requirements and identify alternatives for each business process
  - Design and estimate the components for each of the services, such as portal, integration, infrastructure, data, policy, and business (logical) services
  - Identify reuse opportunities for business services
  - Develop and execute to a detailed project plan
  - Track and report progress to business and IT management
  - Obtain business sign-off at delivery of each business service.
- **IT operations:** this team is responsible for the testing, staging, and production environment with the production environment taking the highest priority. IT operations is responsible for sizing the network and data center. In addition, IT operations is responsible for deploying, monitoring, and providing tier 1 support for all applications supported by IT. Following are some of the high-level requirements:
  - Review requirements and identify infrastructure needs
  - Establish systems environment consisting of development, system integration testing, performance testing, user acceptance, and product environments
  - Assist solutions development teams in systems and application configuration, periodic builds, and capacity planning
  - Track and manage dependencies among services and assets
  - Deploy and manage business services in production
  - Provide application support for business services based on business priority

The details for each of the stages are described later in this section. Following is the high-level IT-process for delivering composite applications to the business.

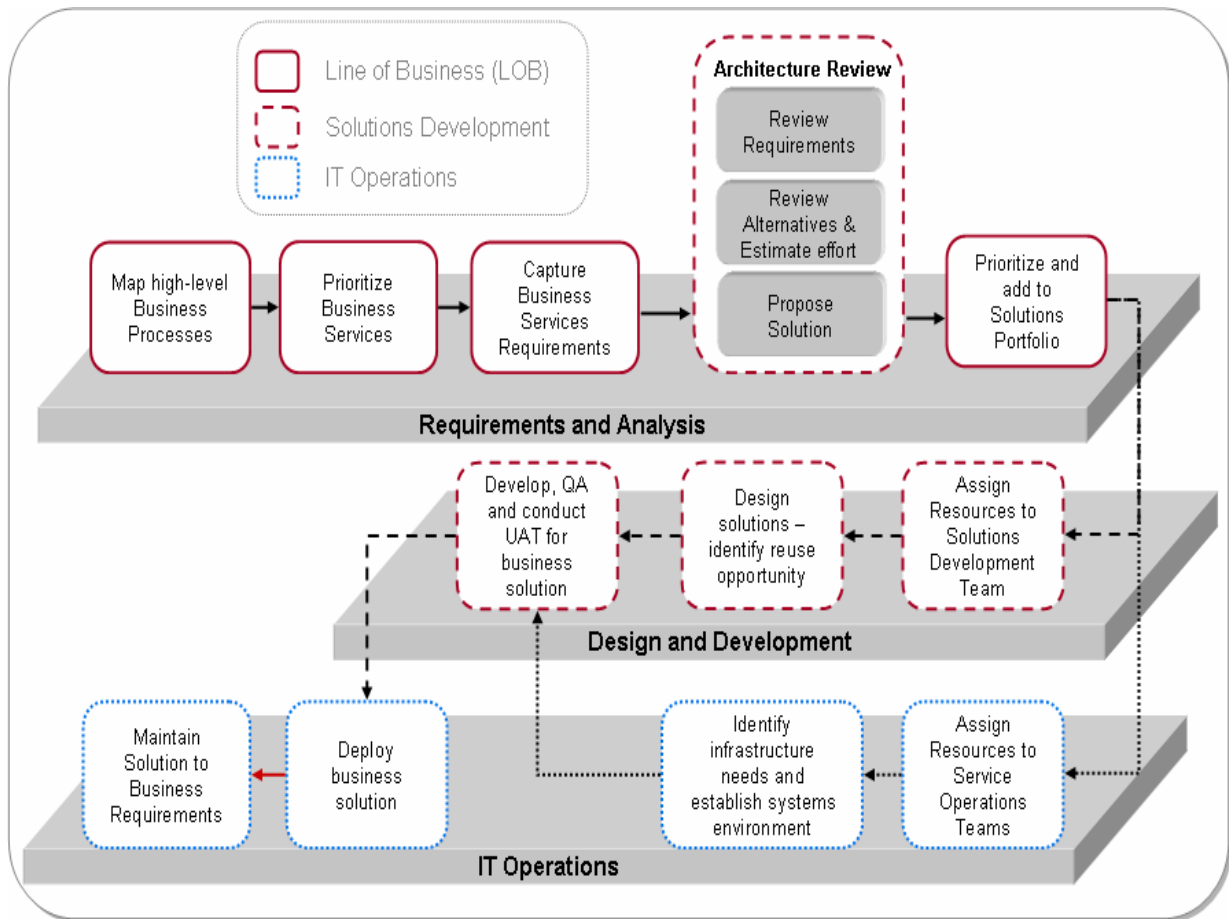


Figure 3: IT-Process of delivering business composite applications

This process also identifies the role of each of the three organizations in delivering the business application.

## Service Lifecycle Governance

Governance is a set of processes, tools, and organizational structure that is essential for delivering on the SOA promise. Effective re-use of services can only be achieved when organizations adhere to standards and follow proper procedures throughout the service lifecycle. As services are shared among applications, organizations must take care in design, development, and deployment of services to ensure that there is no impact on existing consumers of a service.

Services are shared among various organizational silos with conflicting priorities. Effective governance helps ensure maximum re-usability with minimum disruption. The primary responsibilities of the SOA governance function include:

- Publication of SOA standards and best practices
- Definition and execution of processes to promote the use and re-use of services at project level
- To be the custodian of all shared services for the enterprise or LOB
- To be the propagator of standards and best practices across the organization
- Advertise SOA achievements within the organization.

Services governance underpins the entire service lifecycle.

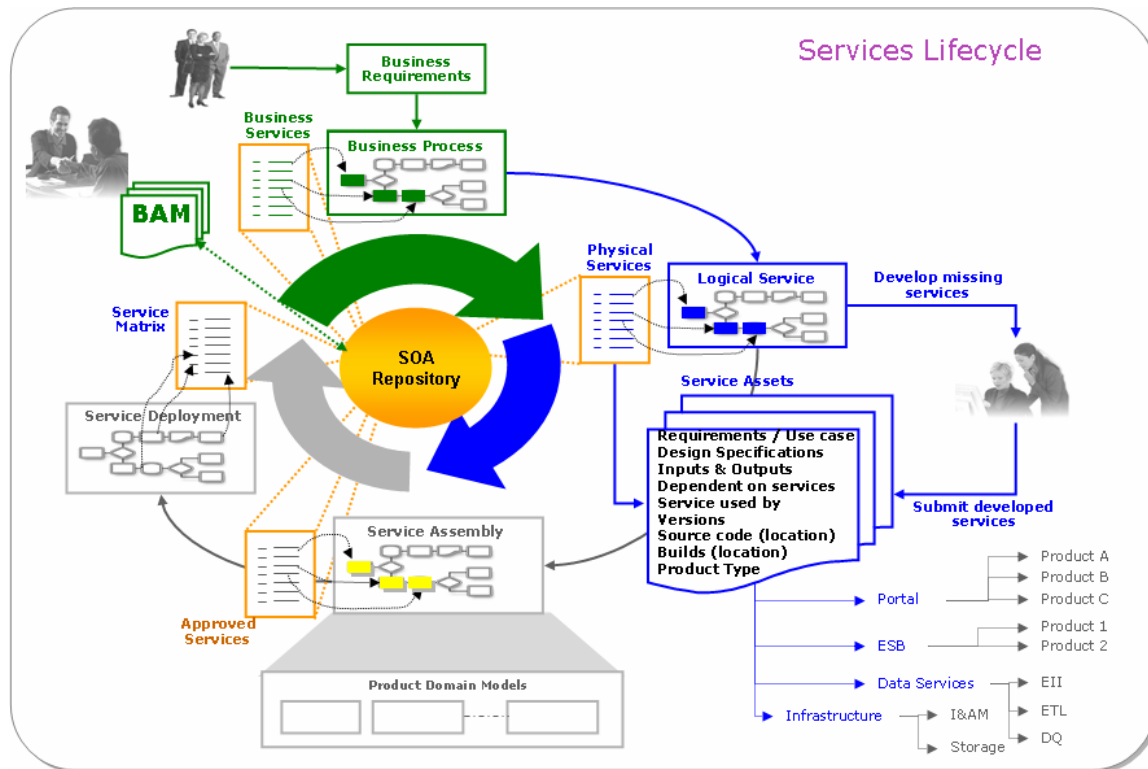


Figure 4: Service Lifecycle Governance

The above diagram illustrates the services lifecycle at a high level and observes the following stages.

## 1.2 Requirements and Analysis

The business analysts work with the business to capture the business requirements, preferably in the form of business processes. For initial SOA projects, teams typically focus on a business process that is not enterprise- or LOB-wide, but limited to the scope identified by the leadership team while approving the project funding. The team captures the business logic for the composite application being delivered.

Once the team captures the business process, the business analyst identifies any duplication of the process across the enterprise or LOB. The business analyst searches the SOA repository for business processes that the team could potentially reuse. Once this phase is complete, the business analyst uploads the artifacts to the SOA repository, which in turn triggers the governance process.

The governance process should be specific to the organization and the project. Teams should not consider this stage complete until all approvals are in, especially from the business owners.

## 1.3 Design

Business analysts shall pass on the requirements and business processes to the architect to design the application. Each IT organization typically has its own approach or framework for designing applications.

During this phase the architect identifies the services and their implementation. The architect then searches the SOA repository for potential reuse. The architect need not limit the search for services currently deployed in production; the search could be expanded to search for services currently under development by other teams.

At the end of this process, the architect may have identified services for reuse that have already deployed in products, services that need to be modified to create a new version, services that need to be developed, and services that need to be decommissioned.

The architect uploads all the design artifacts to the SOA repository, triggering a governance process that includes approval from enterprise architecture review boards, project managers, and operations. The project manager shall also use this information for distributing the service development tasks.

## 1.4 Service Development

The architect sends development teams the design details, preferably from the SOA repository. The development teams could be distributed in multiple locations, and each team may have a expertise in a business or product domain.

The development teams develop and test the composite application in an iterative manner and upload the artifacts to the enterprise service repository. When the development teams indicate that the service is ready for deployment, they trigger the governance process.

## 1.5 IT Operations

This team is typically responsible for providing the development, QA, staging, and production environment. As the service development organization receives the design details from the architects, IT operations establishes the environment for development. IT Operations often manages the QA environment as well, because it should be identical to the production environment.

The development team typically provides a build to the operations team. For composite applications consisting of services, the development team provides the IT operations teams with the service assembly. The recommended best practice would be to assemble services based on the information found in the SOA repository.

Once IT operations has assembled the services the team deploys those services to the target node. The business analyst and architect would have defined the business, security, and management policies

during the earlier stages. It is now the responsibility of the IT operations to monitor and provide metrics to the business to track business KPIs and review IT-SLAs.

The recommended best practice is for the IT operations teams to map the product instance—including hardware, node name, product version, and application version—back to the SOA repository.

## 1.6 Business Dashboard

Business would like to view different types of information that combine data from monitoring systems, operations data stores, and BPM tools. Such information might fall into one of the following categories:

- IT-SLAs
- Business activity monitoring
- Policy management
- Service maturity model (matrix for monitoring the life of the service, and a searchable attribute in the enterprise service repository).

### Contributing SOA Practitioners

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