

Business Process Digitalization and Cloud Computing

3. Realizing the promise of SOA

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October 3, 2018



Table of contents

1. The Evolution of SOA
2. The Challenge of SOA

A definition of SOA

- SOA is concerned with the **independent construction of services** which can be combined to realize **meaningful, higher level** business processes within the context of the enterprise.
- A Service Oriented Architecture describes several **aspects** of services within an enterprise:
 - ▶ The granularity and types of services
 - ▶ How services are constructed
 - ▶ How the services communicate at a technical level
 - ▶ How the services are combined together (i.e. orchestrated)
 - ▶ How the services interoperate at a semantic level (i.e. how they share common meanings)
- How services contribute to IT and Business Strategy

Key of success

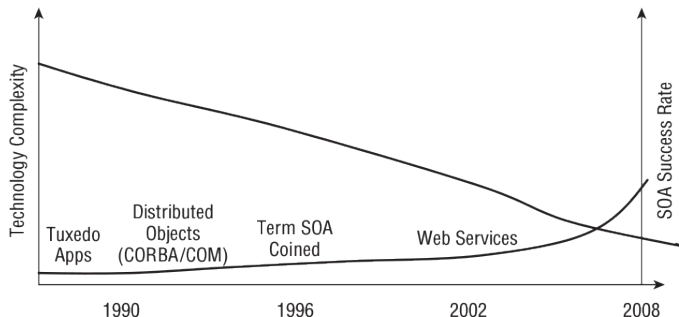
The usage of SOA permits to **improve**:

- customer retention and **satisfaction**
- **reduce costs and time** to market
- take advantage from disruptive technologies

From a more **technical** point of view:

- **integrate** multiple systems
- **support** multiple channels and devices
- **scale** horizontally to support very large-scale and highly reliable requirements
- add new **functionality**
- **converge** on a common service infrastructure
- manage **reuse**

What went wrong?



- 1 Old technology like CORBA, RPC and DCOM was just **too difficult** for the average programmer to master
- 2 Industries had not figured out **what a good service was** (characteristics, interface, interaction)

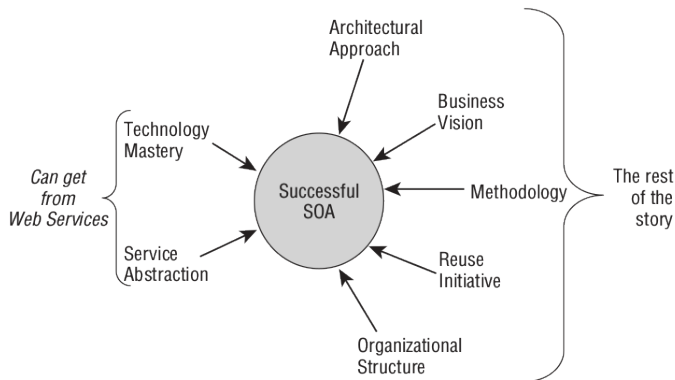
What about today?

- 1 Web Services are much **easier** to use than previous technologies (tools and environments have been devolved)
- 2 Services are built into **platforms based** on Java, .NET, or something known.
- 3 Service **abstraction** layer is built into the Web Service technologies.

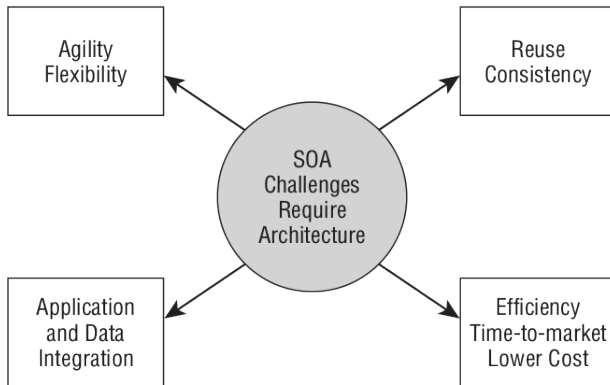
What we learned from the past?

Technology can cause you to fail, but it doesn't make you succeed.

- You need to know **how to use the technologies** to build enterprise applications, not just isolated services



The challenge of SOA



Reusability is based on:

- Ability to publish, search for, evaluate, and **register as a consumer of a service**.
- Capabilities for **managing and maintaining a service** life cycle across organizational boundaries.
- Ability to **guarantee availability** and lifetime of a service version.
- Mechanisms for **decoupling** the consumer's life cycle from the provider's.

Reuse: Design-Time & Run-Time service discovery

To reuse services, you have to be able to **find the services that exist**, and you have to be able to examine them

Run-time registry

A **registry** is used at run time to identify a service endpoint for a requested service interface

Design-time repository

A **repository** is used at design time to find existing services for inclusion in processes during the design of that process

Efficiency in development

Making **development more efficient** means building more functionality, in less time, at less cost.

Solutions:

- Have a **reference architecture** that guides the development of services.
- Use Business Process Management (BPM) to **define business processes**, based on service composition and a layered set of services.
- Have efficient processes that **manage the integrity** of the total set of services for both providers and consumers in accordance with the overall vision and the business and information models.

Integration of Applications and Data

Difficult integration due to a variety of **different technologies and protocols**

Solutions:

- Have an enterprise, **common semantic model** for the shared information.
- Have a **reference architecture** that differentiates between business services and integration services.
- Have a reference architecture that describes common **patterns for integration**.
- Have infrastructure capabilities that enable **semantic transformation** between existing systems and the enterprise model.

Agility, Flexibility and Alignment

Agility and flexibility occur when new processes can quickly and efficiently be created from the existing set of services.

Solutions:

- Have a reference architecture that defines the **business** and **information** aspects of SOA and their **relationship** to the enterprise.
- Have an enterprise, common **semantic model** that is used to inform the service interface design.
- Use **model-based development** techniques to ensure the traceability between the business models and the implemented systems.
- Have processes that **enable** and **validate conformance**.

Business process modeling towards SOA

The flexibility of business process comes from the ability to **quickly construct new business processes from business services**.

So business processes should:

- Be **specified** using Business Process Models and **executed** in a business process management system
- Be **composed of activities** that are implemented by business services (provided by the SOA)
- **Pass information** into, out of, and within the processes in the form of documents, which are built on top of the common information model

Questions?