Service-Oriented Architecture

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Introduction

SOA

- Changing markets, increasing competitive pressures, and evolving customer needs are placing greater pressure on IT to deliver greater **flexibility** and **speed**. Today, every organization is faced with predicting change in a global business environment, to rapidly respond to competitors, and to best exploit organizational assets for growth.

- In response, leading companies are adopting service-oriented architecture (SOA) to deliver on these requirements by overcoming the complexity of their application and IT environments.

- SOA provides an enterprise architecture that supports building connected enterprise applications to provide solutions to business problems. SOA facilitates the development of enterprise applications as modular business web services that can be easily **integrated and reused**, creating a truly flexible, adaptable IT infrastructure.

Business Problem Addressed by SOA

■ **Mergers** This refers to two or more companies or organizations joining to form a single, new company.

■ **Acquisitions** This refers to a company increasing its size substantially by buying or acquiring another company.

■ **Changing market conditions** In particular, this involves the fast introduction of new products and the repackaging of existing products in order to survive in a highly competitive market.

Business Problem Addressed by SOA

■ The nature of business relationships A large organization typically has many relationships with external business entities such as business partners and suppliers. These relationships are fluid in nature and frequently change.

Software Design

Software design is all about building a design plan that delves into the different elements that make up a system. It shows how they work together to fulfill the system requirements.

- **Software requirements specification —** a document that describes the expected behavior of the system.
- **High-level design** — this type of design fragments the system design into a more specific view of subsystems and modules. It focuses on how the system implements with modules and how these modules interact with one another.
- **Detailed design** — software design also generates a detailed system design that delves into the problem of implementing modules. It comes in handy to development teams because it defines the logical structure of every module.

Software Architecture

- Usually only a few computer programs are sufficient to service a small company or organization. These small programs are easy to manage, and there is no need for an overall design.
- However, as we consider bigger and bigger organizations, the number of computer programs grows, and there is greater need for an overall design or design strategy in order to avoid chaos.
- This overall design or design strategy is called software architecture.
  - Software architecture is similar in nature to building architecture. Both types of architecture require planning according to some principles.
  - For example, in building architecture the steel structure must be designed to support the current floor as well as future additions. In a similar manner, software architecture must be designed for both the current requirements and any upcoming requirements that can be foreseen.

Software Architecture?

- Software architecture is about defining a structured solution that meets the business and technical objectives. Software architecture works as a blueprint for a software system.

- Software architecture focuses on developing the skeleton and high-level infrastructure of software.
  - Software design, on the other hand, concentrates on the code level design. It addresses problems like the functions of individual modules, the scope of classes, the purposes of different functions, and the like.

Service-Oriented Architecture (SOA)

Service-Oriented Architecture, defines a way to make software components reusable and interoperable via service interfaces.

- Services use common interface standards and an architectural pattern so they can be rapidly incorporated into new applications

SOA

- SOA is a set of components which can be invoked and whose interface descriptions can be published and discovered.
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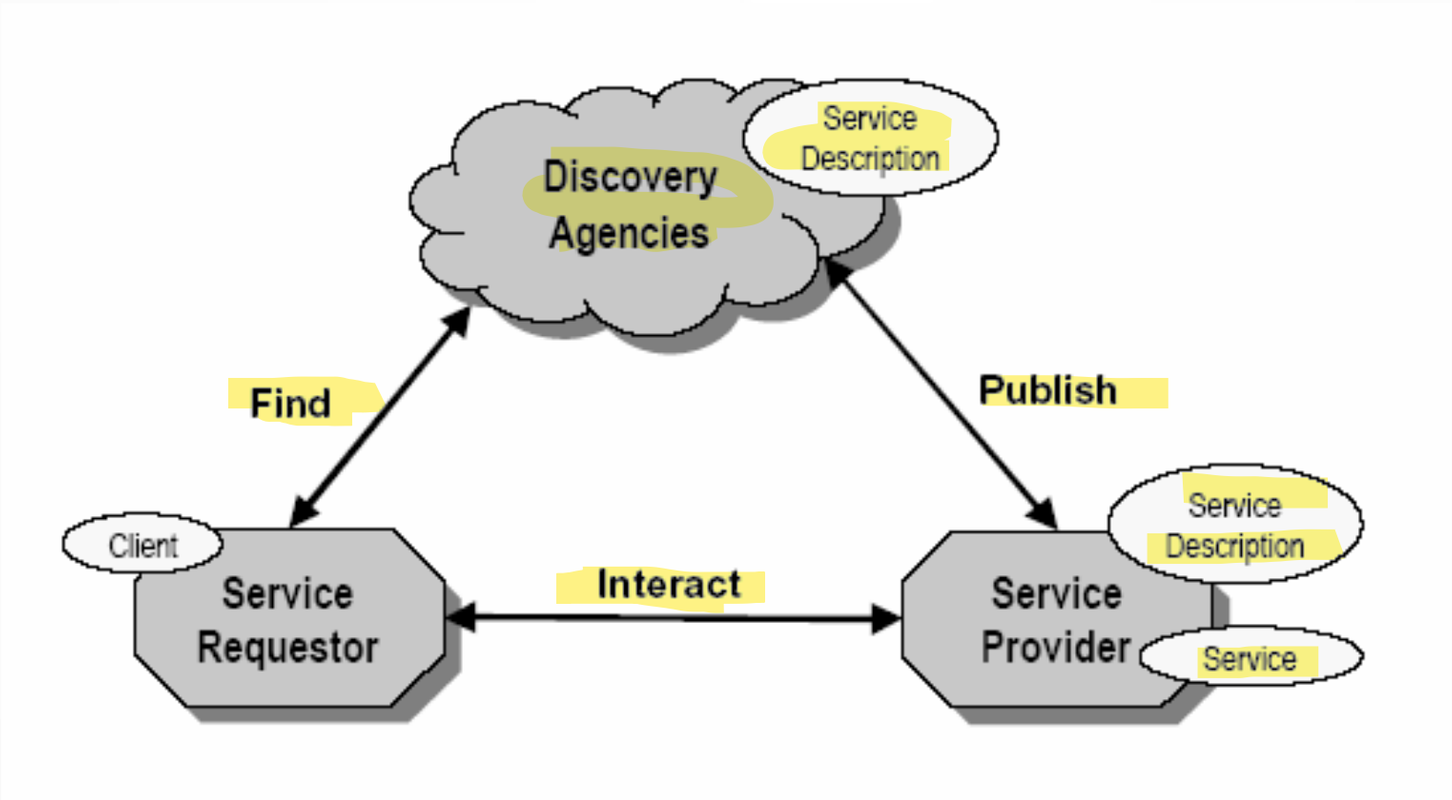
- SOA is an architectural software concept that defines the use of services to support business requirements.

SOA



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