

Service :: Web Service :: Component :: Module,  
SOA :: SCA

## What's behind these terms?

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## Module

- Definitions are ambiguous.
- Concept of Module / Modularization was introduced by David Parnas and comes along with
  - Information Hiding,
  - Data encapsulation.

2

## SW Module - Definition

- A Program is divided into two parts
  - *Public*  
Contains the interface definition of the program. I.e. the information necessary for the public to use the program.
  - *Private*  
Contains the implementation of the program.

ADA, MODULA-2

3

## SW Module - Definition contd.

- A Software Module is the aggregation of operations and data to be able to realize a self contained assignment.
- Communication between a module and its environment is only allowed via a unique interface.
- It is not necessary to know something about the internal work of a module to be able to integrate it into a program system.
- Correctness of a module has to be testable without any knowledge about how it is embedded into a program system.

Günther Blaschek, Gustav Pomberger: Software-Engineering, Hanser, 1993

4

## Component

- A Component is a piece of software which:
  - can be independently developed / delivered,
  - has a well formed interface,
  - can be composed with other components.
- A Component is defined and described through its interface(s).

5

## Service

- A Service is an independent piece of software.
- A Service can be a part of a (SW) system or provide its functionality independently.
- A Service is an abstraction of a program, a business process etc. providing a defined functionality.
- Each Service has its own interface. It is enough to know this interface for using the Service functionality.
- The usage of such Service is platform neutral.

6

## Web Service

- A Web service is a software system designed to support inter operable machine-to-machine interaction over a network. It has an interface described in a machine-process able format (specifically WSDL). Other systems interact with the Web service in a manner prescribed by its description using SOAP messages, typically conveyed using HTTP with an SML serialization in conjunction with other Web-related standards.

*W3C, Web Services Architecture, February 2004*

7

## Service :: Component :: Module

- History  
Evolution of Information Technology comes along with new trends and so with new terms.
- Terms Component and Module are used similar
- In case of SW systems the term Component or Module is used.
- The term Service is used when services are provided and invoked through networks. Mostly in the context of distributed systems.

8

## SOA - Service oriented architecture

- SOA is an architecture for distributed systems to offer services over a network.
- SOA consist of a service with an interface, an application which uses that service and an infrastructure for the communication between service and application.

9

## SOA

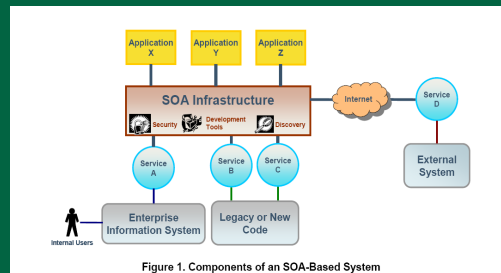


Figure 1. Components of an SOA-Based System

10

## SOA - Properties

- Message- orientation: A Service in SOA is defined by the message-exchange of the provider and the requester.
- Description- orientation: A Service is described by machine- process able meta data.
- Granularity of a Service is defined by its scope of provided functionality.

11

## SOA - Properties

- Network orientation: A network can be used as infrastructure for the communication.
- Platform neutral: Messages are sent in a platform- neutral format. (e.g. XML)

12

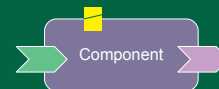
## SCA - Overview

- Model for building applications and systems
- Builds systems based on SOA
- SCA builds Service Oriented Architectures within 2 steps:
  - Implementing of components
  - Assembly of sets of components
- Sets value on the decoupling of Service implementation and assembly from the details of infrastructure and service access.
- Original Members: BEA, IBM, Oracle, SAP...
- Now OASIS is responsible for the SCA Standards

13

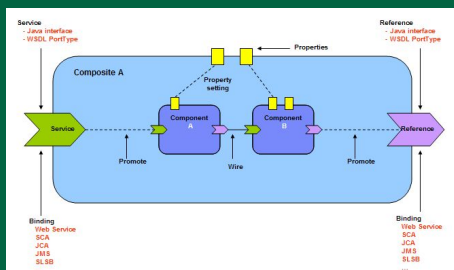
## SCA - Component

- SCA Components are independent
  - of technical implementation details
  - of the infrastructure of a system



14

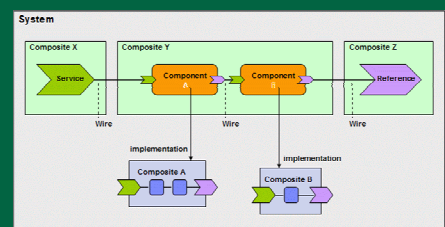
## SCA - Composite



15

## SCA - System

- Elements:
  - Composite
  - Component
  - Service
  - Reference
  - Wire



16

## SOA :: SCA

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- SOA describes an abstract model for Service Oriented Architectures
- SCA offers a way how to implement such a Service Oriented Architecture.

Thank you for your attention!

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