

6. Services Composition

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Services Composition

- Service Oriented application is composed by a set of services
- Services are (sometimes) aggregation of other services
- We speak about
 - Orchestration
 - Choreography
 - Mashups

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Orchestration

- Describes the automated arrangement, coordination, and management of services
- Represented by BPEL – runtime **executable process**
- Coordination of events in a process
- Directs and manages the on-demand assembly of multiple component services to create a composite application or business process.

Choreography

- Multi-party Collaboration
- Choreography(Collaboration) Description Language (WS-CDL) – language for describing **multi-party contracts** (extension of WSDL)
- Describes the message exchange patterns
- Applies to shared co-ordination across multiple autonomous systems
- Can be used to monitor message exchanges

Choreography Types

- **Abstract Choreography** defines

- Type of information exchanged
- Sequences and conditions

- Does not cover

- Physical message structures
- Endpoints
- Messaging conditions and control

Choreography Types

- **Portable Choreography** defines
 - Physical structure of the information that is exchanged (incl. WSDL, port types, operations)
 - Details of technology used (security, reliability)
 - Rules that express the conditions that are used to control the sequence of exchange of information

Choreography Types

- Final type of choreography is **Concrete Choreography** with all the details specified

	Abstract	Portable	Concrete
<i>Types of Messages</i>	Identified	Identified	Identified
<i>Message Structure</i>	Not Defined	Defined	Defined
<i>Conditions</i>	Identified	Identified	Identified
<i>Condition evaluation rules</i>	Not defined	Defined as far as possible	Defined as far as possible
<i>Technology used</i>	Not defined	Defined	Defined
<i>Message Endpoint Data</i>	Not defined	Not Defined	Defined

Choreography Model

- Participants, Roles and Relationships
- Choreography Structure
- Choreography Composition and Import
- Types, Variables and Tokens
- Interactions
- Activities and Control Structures
- Choreography Exceptions and Transactions
- Semantics

Mashup

- ***Mashup*** is a web page or application that uses and combines data, presentation or functionality from two or more sources to create new services
- Data mashups – composed service from several data sources (uses single representation)
- Consumer mashups – combines different data types (visual elements and data from various sources)
- Business mashups – combined application

Mashup

Mashups

Software Composition for the Web

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<http://www.pautasso.info/>

<http://www.jopera.ethz.ch/research/usi-mashup.pdf>