

Web services standards

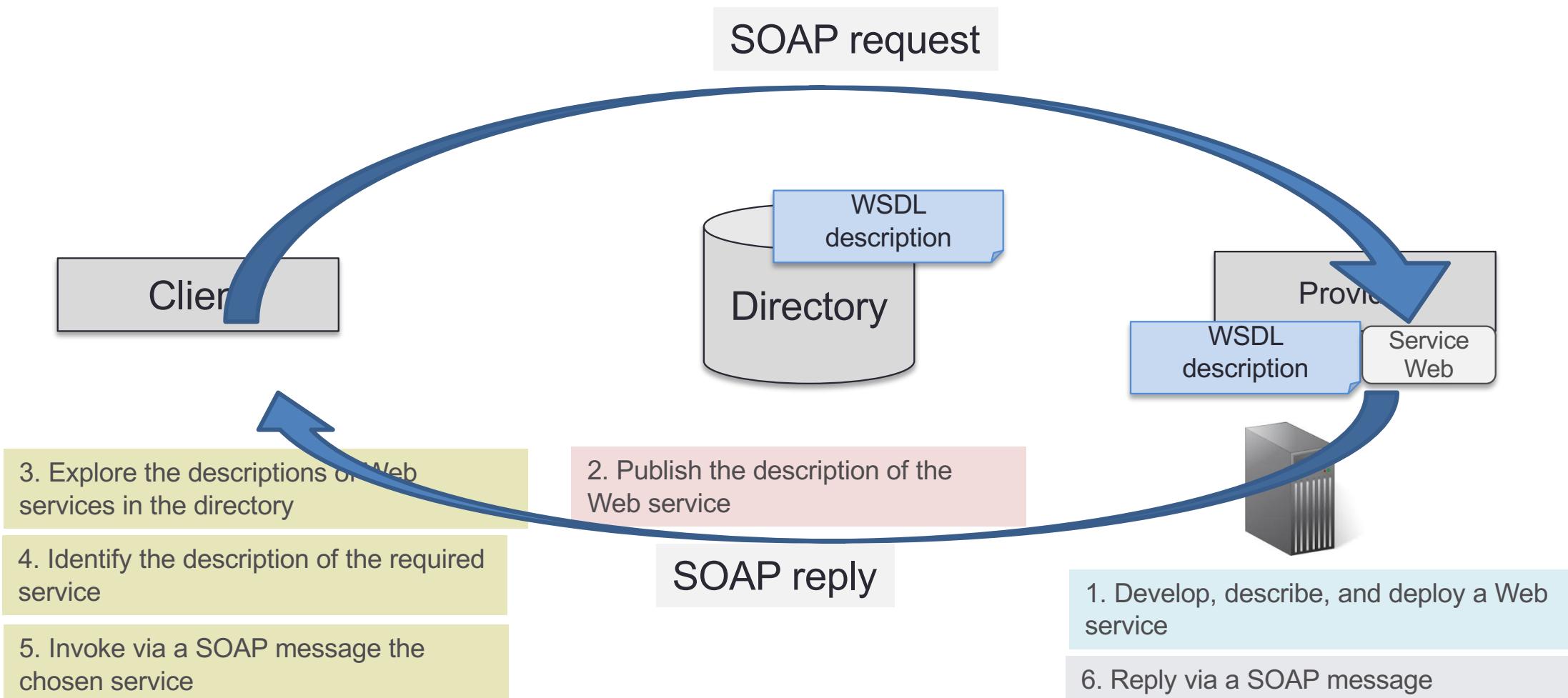
Web services standards

- Three XML based standards :
 - WSDL : Web Service Description Language
 - UDDI : Universal Description Discovery and Integration
 - SOAP : Simple Object Access Protocol

- ✓ Provided operations
- ✓ Data types
- ✓ Transport protocols
- ✓ URL of the service



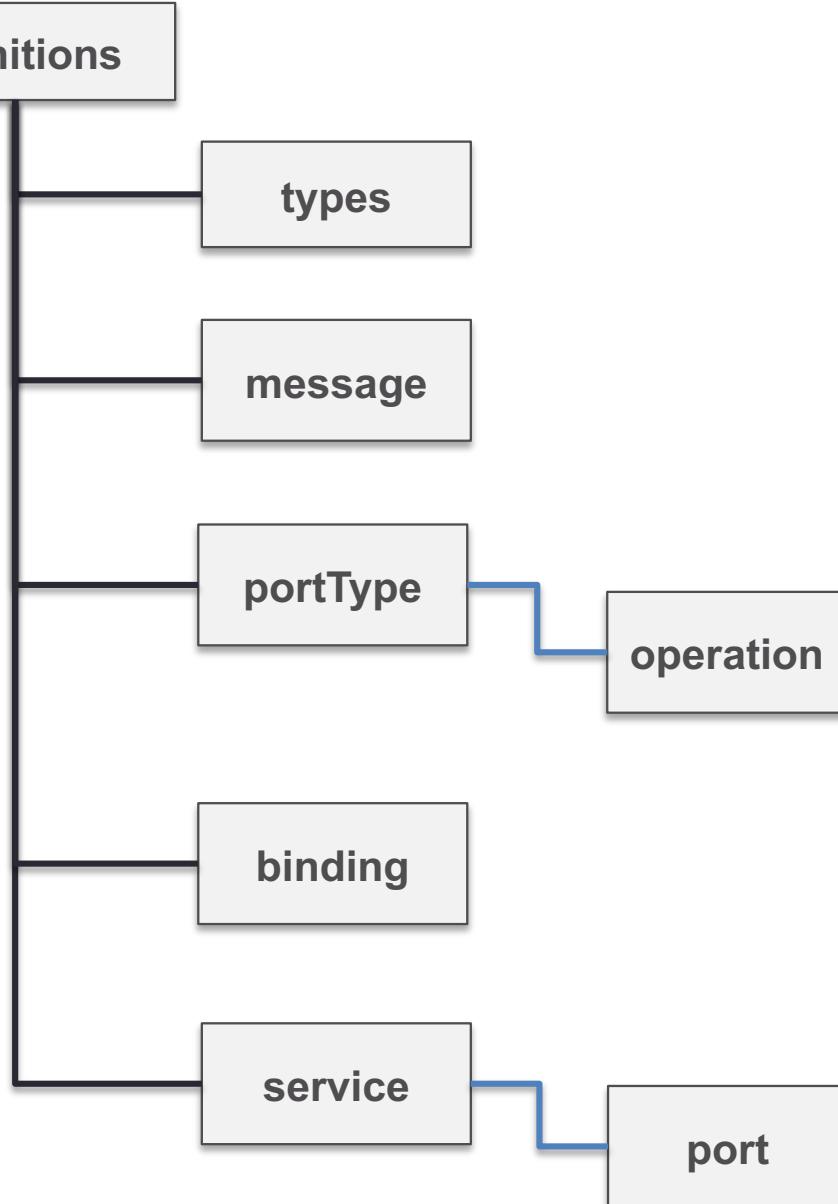
Web services standards



WSDL standard

WSDL

- XML-based Web services description language
- Describes web services independently of languages and development platforms
- Describes operations, input and output parameters, messages, supported transport protocols, and service location



```
<definitions>
  <types></types>
  <message>
    <part></part>
  </message>
  <portType>
    <operation>
      <input></input>
      <output></output>
    </operation>
  </portType>
  <binding></binding>
  <service>
    <port></port>
  </service>
</definitions>
```

The element definitions

- The root element of each WSDL document
- Lists all the namespaces needed to define the WSDL document

```
<definitions name="IdentiteWSService"
  targetNamespace="www.example.org/IdentiteWSService"
  xmlns:soap="http://schema.xmlsoap.org/wsdl/soap"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema/"
  xmlns="http://schema.xmlsoap.org.wsdl/"/>

  XML schema namespace

</definitions>
```

definitions

types

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```
<definitions>
```

```
  <types></types>
```

```
  <message>
```

```
    <part></part>
```

```
  </message>
```

```
  <portType>
```

```
    <operation>
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```
      <input></input>
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    </operation>
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  </portType>
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```
  <binding></binding>
```

```
  <service>
```

```
    <port></port>
```

```
  </service>
```

```
</definitions>
```

The element types

- Definition of data types exchanged by the service
- Main use of XML schema

```
<types>
  <schema xmlns="http://www.w3.org/2001/XMLSchema"
    targetNamespace="http://www.example.org/exampleWSDL"
    xmlns:tns="http://www.example.org/exampleWSDL">

    <complexType name="ClientIdentityType">
      <sequence>
        <element name="firstName" type="String"/>
        <element name="lastName" type="String"/>
        <element name="age" type="int"/>
      </sequence>
    </complexType>

  </schema>
</types>
```

```
public class ClientIdentity {
  private String firstName;
  private String lastName;
  private int age;
```



definitions

types

message

```
<definitions>
```

```
  <types></types>
```

```
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    <part></part>
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    <operation>
      <input></input>
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```
  <binding></binding>
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  <service>
    <port></port>
  </service>
```

```
</definitions>
```

The element message

- Description of messages received and sent by the Web service
- Input and output of the Web service operations

```
<message name = "getIdMsg">
  <part name= "clientId" type= "xs:string"/>
</message>
```

```
<message name= "getIdentityMsg">
  <part name= "clientIdentity" type= "tns:ClientIdentityType"/>
</message>
```

The element message

- Description of messages received and sent by the Web service
- Input and output of the Web service operations

```
<message name = "getIdMsg">
    <part name="clientId" type="xs:string"/>
</message>

<message name= "getIdentityMsg">
    <part name="clientIdentity" type="tns:ClientIdentityType"/>
</message>
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The element message

- Description of messages received and sent by the Web service
- Input and output of the Web service operations

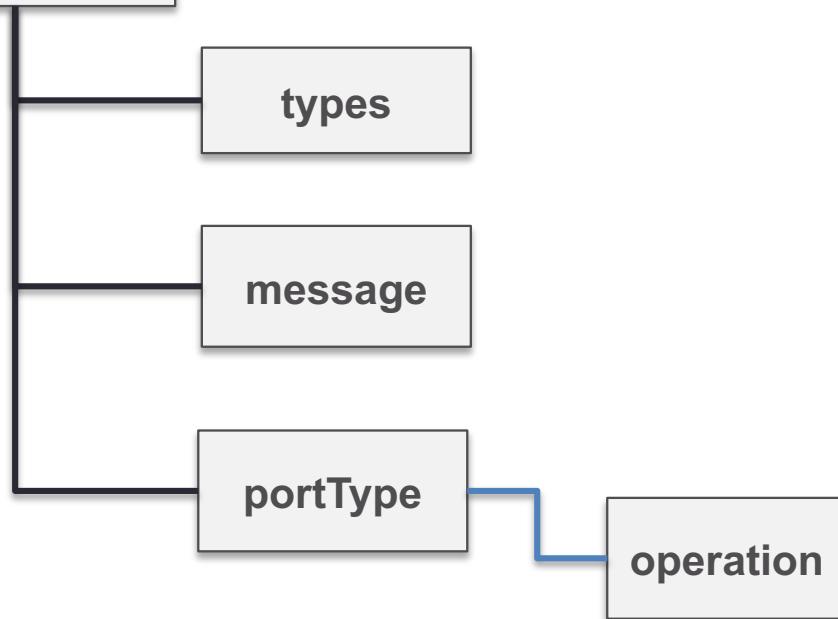
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<complexType name="ClientIdentityType">
  <sequence>
    <element name="firstName" type="String"/>
    <element name="lastName" type="String"/>
    <element name="age" type="int"/>
  </sequence>
</complexType>

<message name ="getIdMsg">
  <part name="clientId" type="xs:string"/>
</message>

<message name="getIdentityMsg">
  <part name="clientIdentity" type="tns:ClientIdentityType"/>
</message>
```



definitions



<definitions>

<types></types>

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<operation>
<input></input>
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</operation>
</portType>

<binding></binding>

<service>
<port></port>
</service>

</definitions>

The element portType

- Defines a set of operations offered by the Web service

```
<portType name="IdentityPT">
  <operation name="getIdentity">
    <input message="tns:getIdMsg"/>
    <output message="tns:getIdentityMsg"/>
  </operation>
</portType>
```

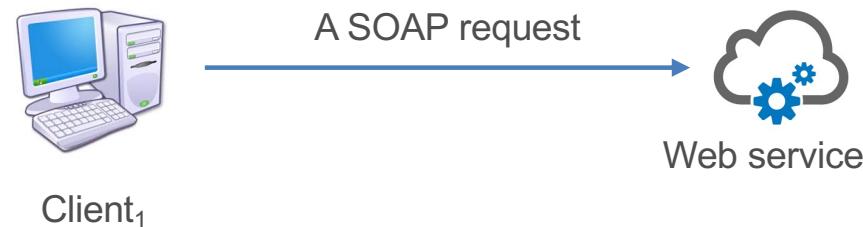


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<message name= "getIdentityMsg">
  <part name="clientIdentity" type="tns:ClientIdentityType"/>
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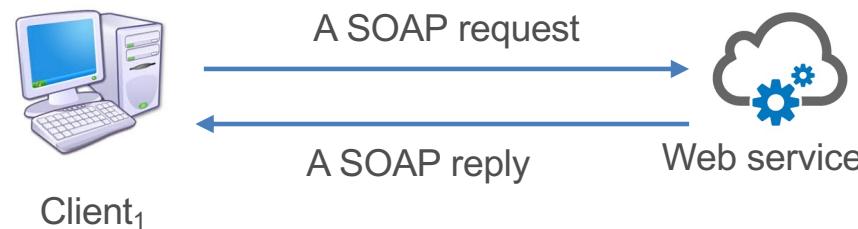
Web service operations : one way

- There are four types of operations
 - **One-way**: the service receives a request and does not send an answer



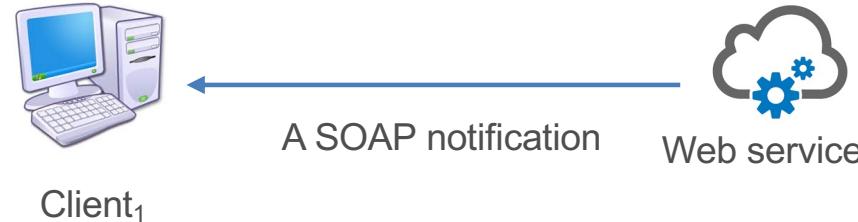
Web service operations : request/response

- **Request/Response**: the service receives a request and sends a response message to the client



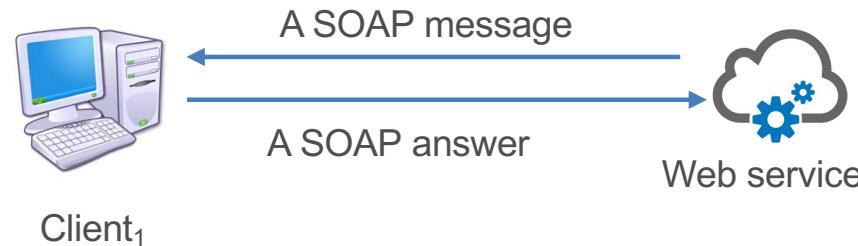
Web service operations :notification

- **Notification:** the service sends a message to the client and does not wait for an answer



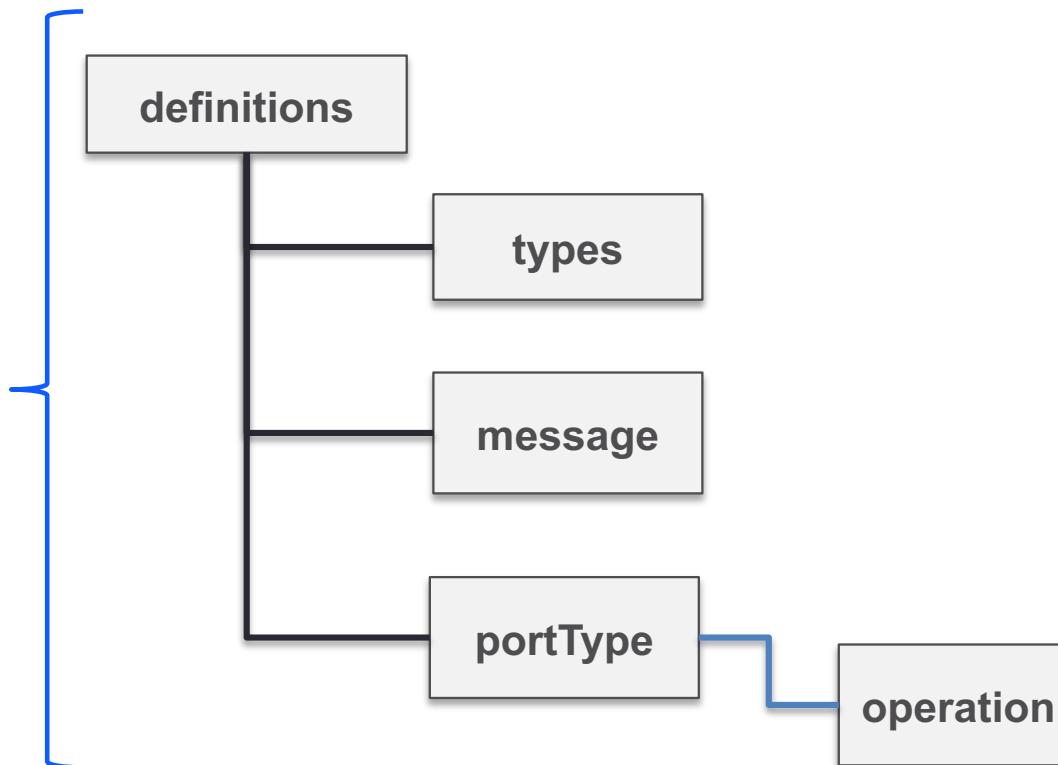
Web service operations : solicit response

- **Solicit-Response**: the service sends a message to the client and receives an answer



Summary

Abstract part



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