

Mobile Web Services

Course ID: 582496

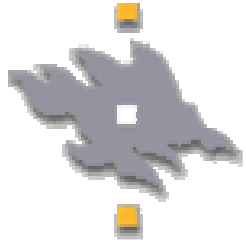
31 October 2005 - 08 December 2005

Monday & Thursday : 16:00-18:00

Device Hosted Mobile Web Services

8th December 2005

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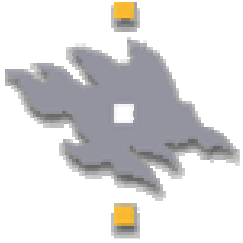


Device hosted Mobile Web Services

The mobile devices are getting computationally capable, such that they host Web Services on the Mobile devices directly.

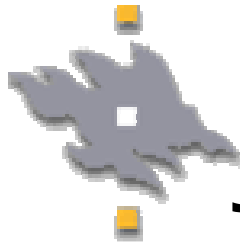
Mobile device equipped with capabilities of in phases

- a). Web Services Client
- b). Mobile Device as a Web Services provider:



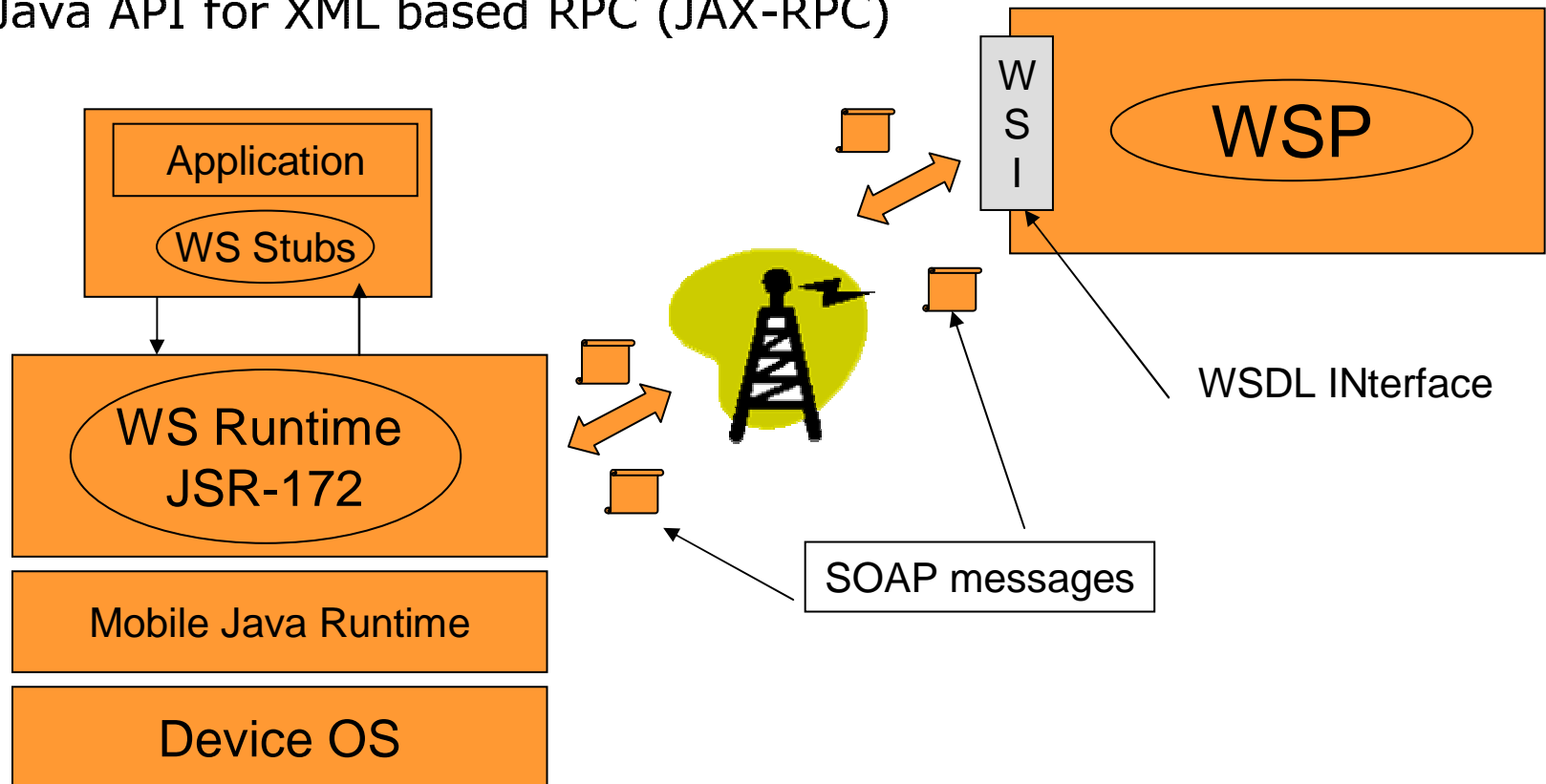
Web Services Client

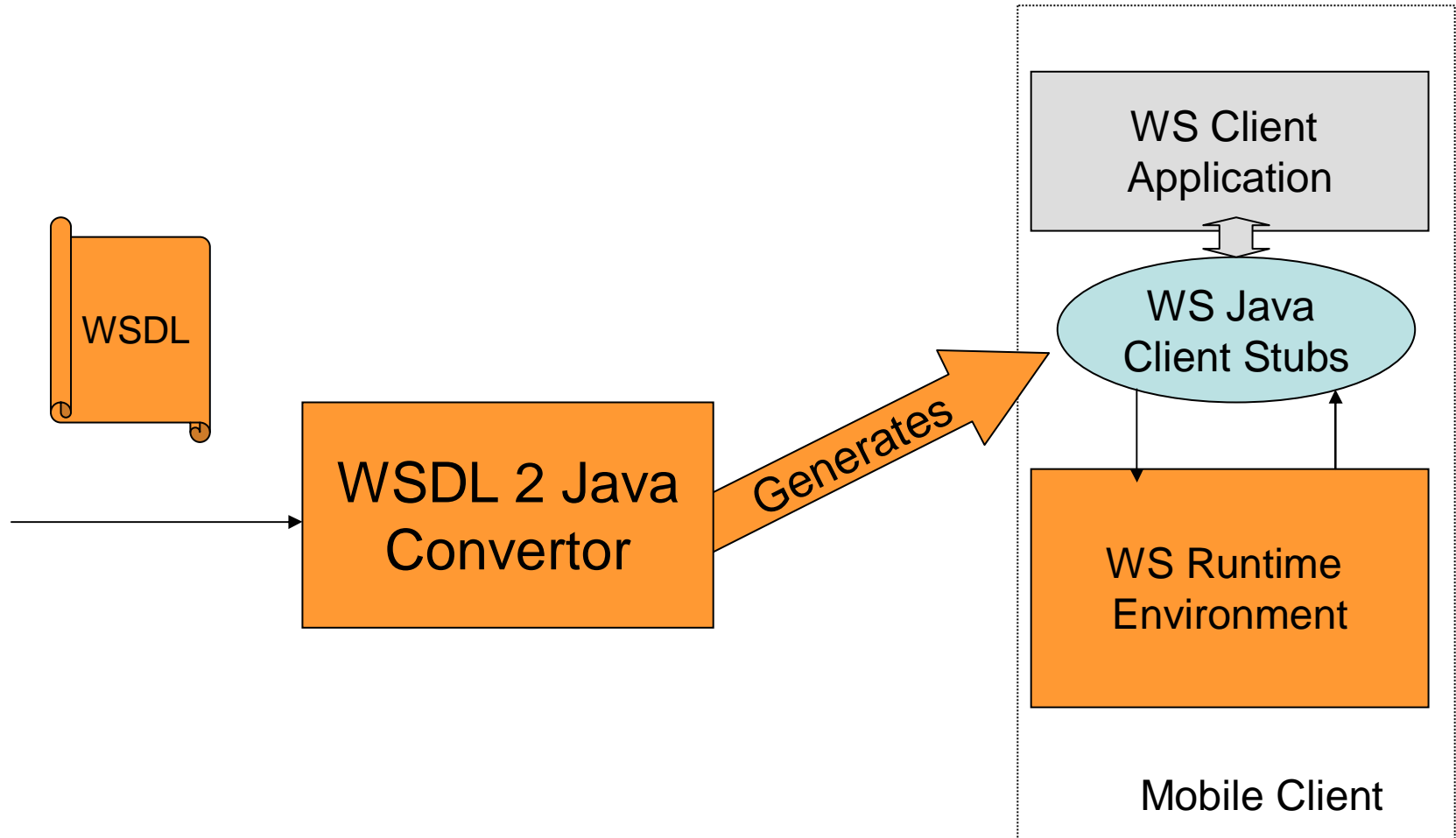
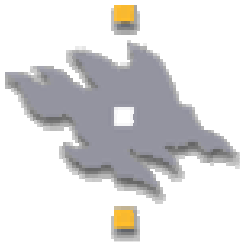
- Java Environment : JSR-172
- Symbian\C++ : Nokia Web Services Framework

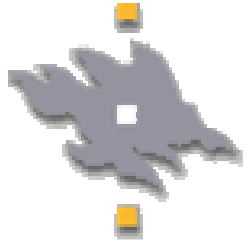


J2ME Web Services (JSR-172)

- J2ME Web Services specification comes with support for two packages:
 - Java API for XML processing (JAXP)
 - Java API for XML based RPC (JAX-RPC)

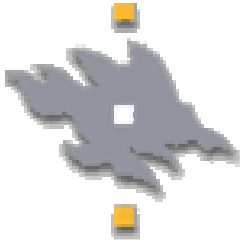






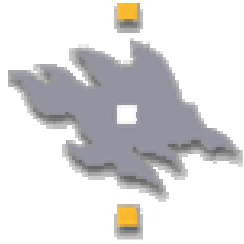
WSDL -> Mobile Java MIDP

- Compliant with WS-I Basic Profile
- SOAP 1.1
- HTTP 1.1
- Supports XSD:data types
 - ***boolean, byte, short, int, long, float, double, string***
 - arrays of primitive types, and complex types (structures containing primitive or complex types)
- Encoding:
 - Document/Literal message mode
- No Support for:
 - SOAP with Attachments.
 - SOAP message handlers.
 - Web service producer.
 - Service discovery support
- Doesn't Required to use XML encoding on the device.



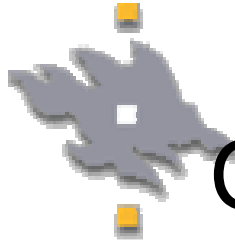
WSDL - JSR-172

- XML
 - Optional Support for:
 - DTD
 - Support for:
 - SAX2.0
 - XML Namespaces
 - UTF-8 & UTF-16 character Encoding
 - No Support for:
 - DOM
 - XSLT
- JAX-RPC



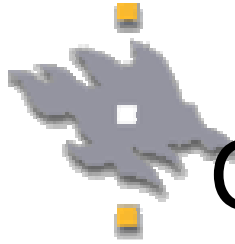
JSR-172 – A Simple Example

- A Web Service available at Forum Nokia, which can respond with the name of the capital For any given country.
- Requirement
 - Java 2 Standard Edition: [J2SE 1.4.2](#)
 - J2ME tool kit: [Sun Java Wireless Toolkit 2.3 Beta](#)
 - [JSR-172 Capital Web Service](#) from Forum Nokia



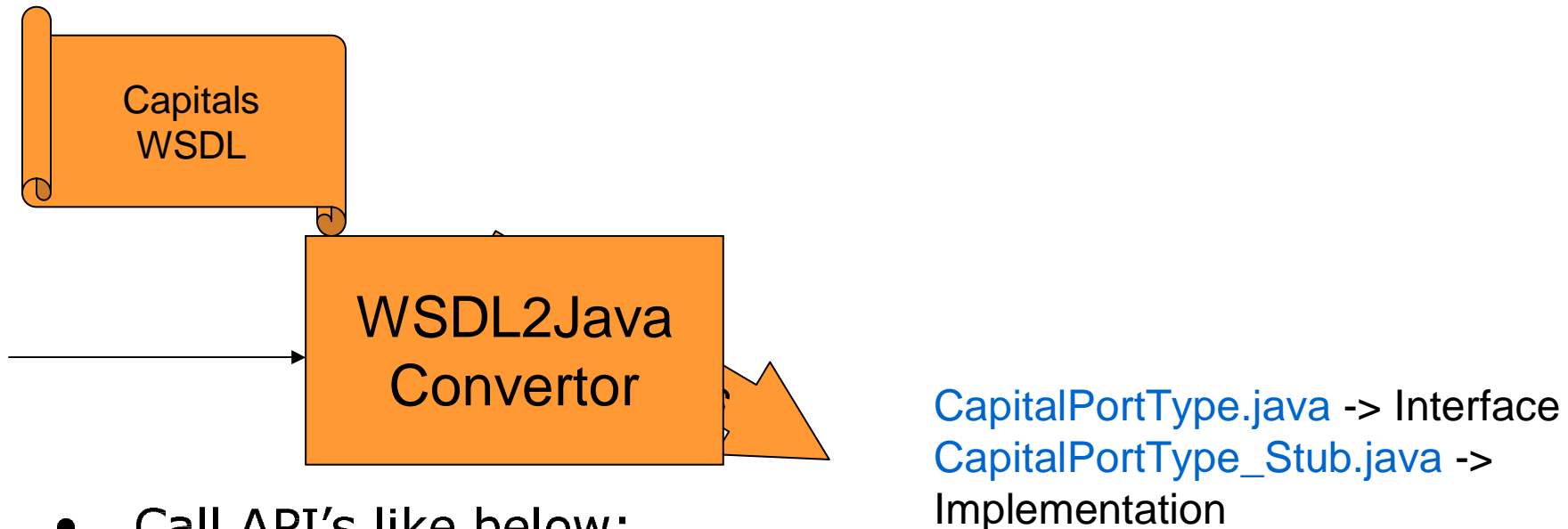
Capital Web Service – JSR-172

- Service Interface:
 - Operation: String <Capital> getCapital (String <Country>)
 - Input String<country>
 - Output String<capital>
- Endpoint : <http://194.137.80.38/CapitalService/Capitals>
- WSDL: [Capitals.wsdl](#)

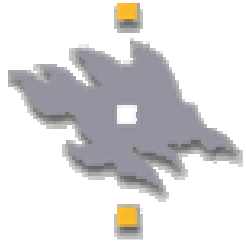


Capital Web Service – JSR-172

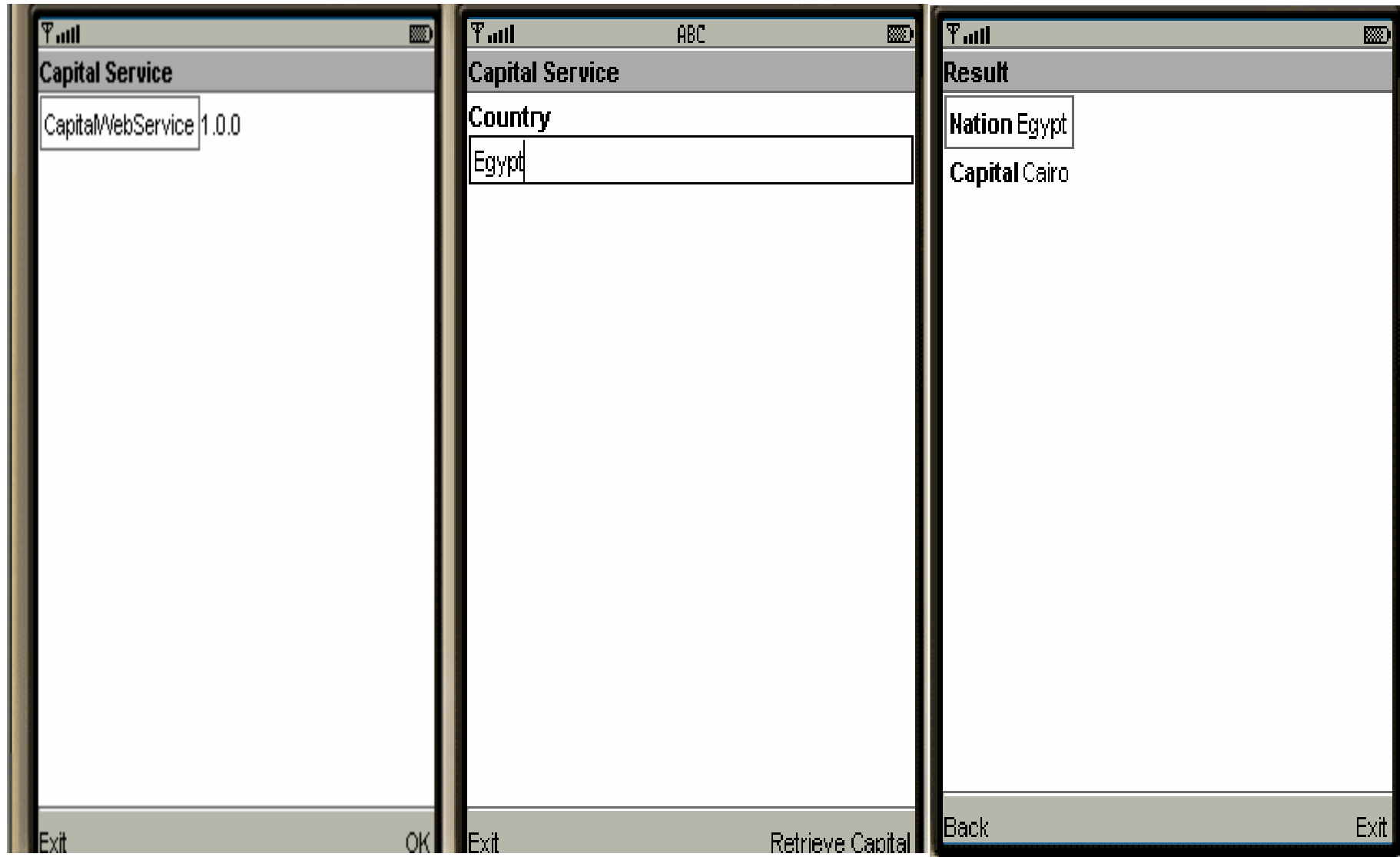
- WSDL 2 Java Stub Convertor creates two classes in this case:

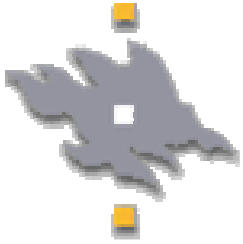


- Call API's like below:
 - `CapitalPortType capitalWebService = (CapitalPortType) new CapitalPortType_Stub();`
 - `capitalWebService.getCapital("Finland"); // Helsinki`



Screen Shots

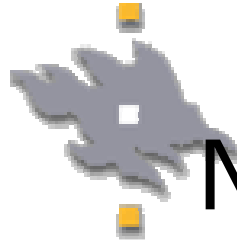




Limitation on JSR-172

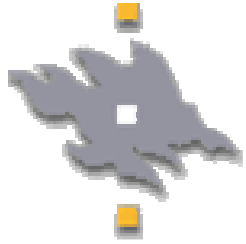
Can not be used with many available Web Services deployments already available as they are not necessarily limited the simple data set supported by JSR-172, i.e:

- ***boolean,***
- ***byte,***
- ***short,***
- ***int,***
- ***long,***
- ***float,***
- ***double,***
- ***string***
- array of primitive data types []

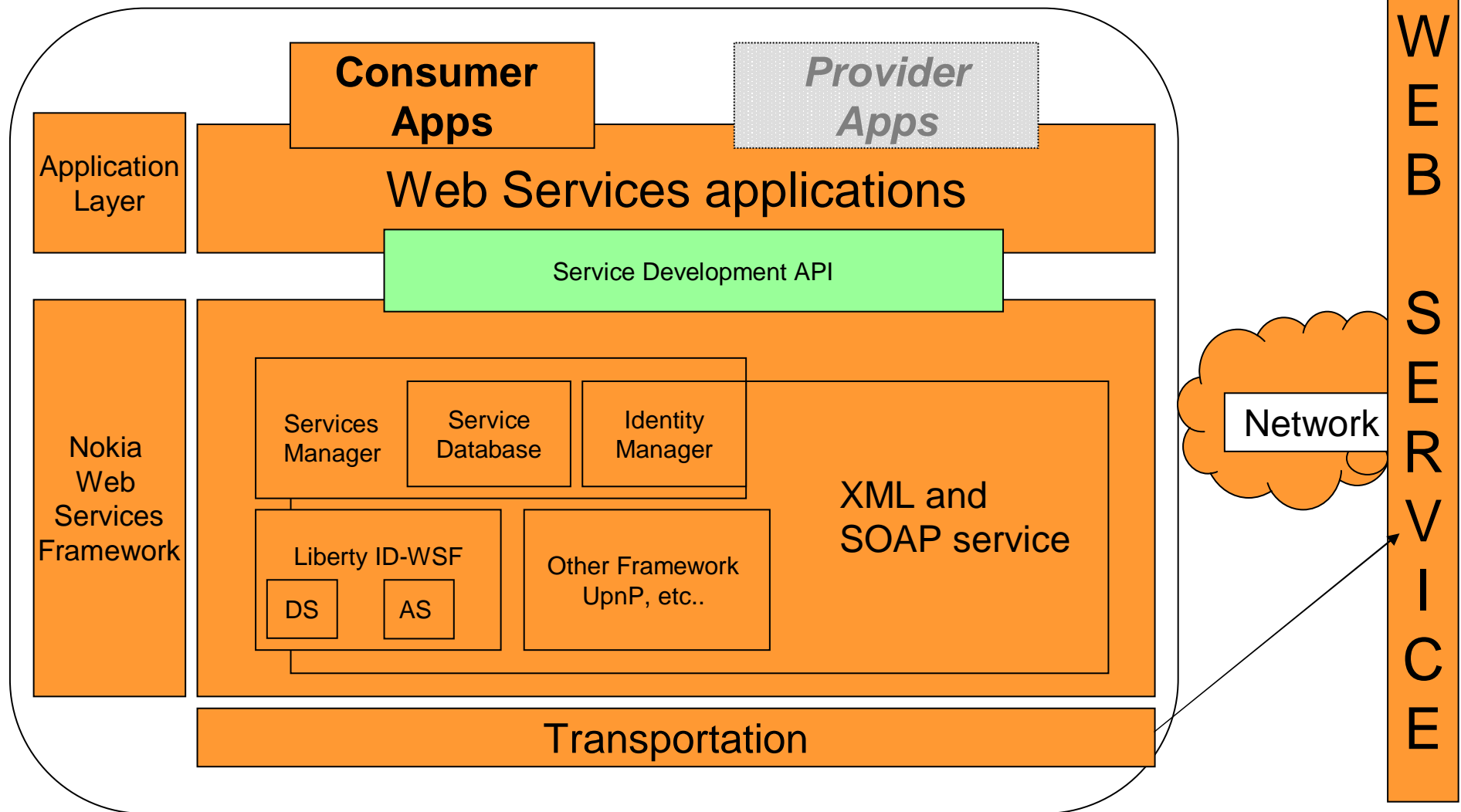


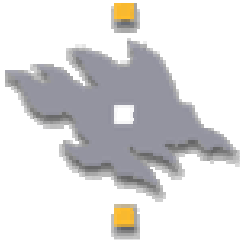
Nokia Web Services Framework

- A Set of C++ API's on Series 80 Platform / similarly will also be available with the release Series 60 3.0
- Support provided for:
 - XML
 - SOAP
 - WS-Security
 - WS-I
 - Liberty Alliance Web Services Framework (ID-WSF)



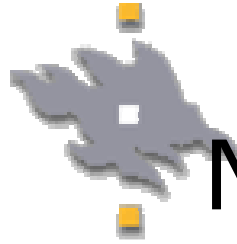
MOBILE DEVICE





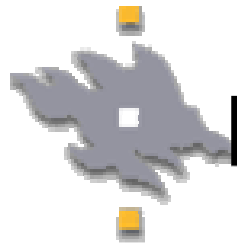
NWSF: Basic Elements

- Service Manager: Co-ordinating Connections, Storing Identity and Service information
- Liberty ID WS : Provides a Discovery and Authentication Service
- XML: XML Parsing, SOAP Enveloping and WS-Security headers
- Basic Services:
 - HTTP Basic-auth
 - OASIS WS-Security



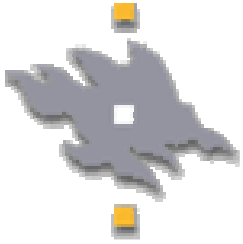
NWSF: MWS Security Concerns

- Some examples of the type of user information a service can request for:
 - Location of the Mobile Subscriber
 - Identity of the Requestor
 - Address of the Mobile Subscriber
- Security is handled by the following 3 steps:
 - Authenticating the requester
 - Discover available Services
 - Connection to the Service



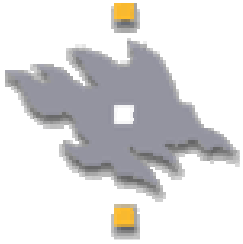
NWSF: Basic Elements [Contd..]

- Service database: A database of Service information/description
- Service description: Contains information on how to access a specific service, as it contains details such as: ID-WSF used, endPoint for the IDp, Endpoint reference for the WS
- Identity Providers: Maintains useraccounts, Authenticates users / authentication assertions to other systems about these users.
- Many other services are:
 - Service Matching, Security Policies,
 - WSDL 2 Symbian C++ Code convertors



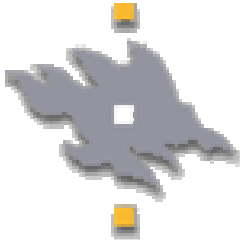
Liberty Alliance

- This is an Alliance project involving close to 150 international companies, non-profit and governmental organization, operating since 2001
- Set out with a Mission to define open standards for federated network identity that supports all current and emerging network devices
- Mainly seeking to provide businesses, governments, employees, and consumers a more convenient and secure way to control identity information
- Few of the Key functionalities are provided by the Identity Framework:
 - Authentication
 - Message protection
 - Service discovery & Addresssing
 - Policy
 - Common data access Protocols
 - Transport Protocols



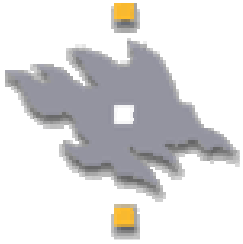
Liberty Alliance [Contd..]

- Liberty WSF supports 3 types of Web Services :
 - Identity Based
 - Identity Consumed
 - Basic
- Two Concrete Public demonstration based on Liberty ID-WSF
 - Nokia-AOL demonstrated Radio@AOL: Access and Personalize radio, Authentication, Discovery and permission-based attribute sharing
 - Vodafone, Trustgenix and Gamefederation multi-player mobile gaming proof of concept. Liberty ID-WSF for Authentication and personalization



Liberty Alliance [Contd..]

- Federation Framework (ID-FF)
 - Provides core protocols, schemata and profiles. This allows implementers to create standardized, multi-vendor identity federation network.
- Web Services Framework (ID-WSF)
 - Provides a set of protocols, schemata and profiles to provide a basic framework of identity services, such as: Identity Service discovery and invocation.
- Service Interface Specification (ID-SIS)
 - Utilize the ID-FF and ID-WSF to provide network Identity services, such as contacts, presence detection or wallet services that depend on networked identity.



References

- Java based Mobile Web Services Client – JSR-172
 - J2ME tool kit: [Sun Java Wireless Toolkit 2.3 Beta](#)
 - [JSR-172 Capital Web Service](#) from Forum Nokia
- Liberty Identity Web Services Framework, Whitepaper / Specification:
 - https://www.projectliberty.org/resources/whitepapers/Liberty_ID-WSF_Web_Services_Framework.pdf
 - <http://www.projectliberty.org/specs/draft-lib-idwsf-overview-v1.0-07.pdf>