

Mobile Web Services

Course ID: 582496

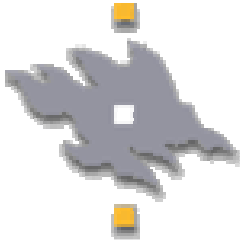
31 October 2005 - 08 December 2005

Monday & Thursday : 16:00-18:00

Network Hosted Mobile Web Services

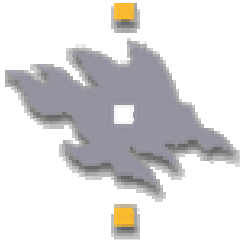
5th December 2005

Suresh Chande
Department of Computer Science
email: chande@cs.helsinki.fi



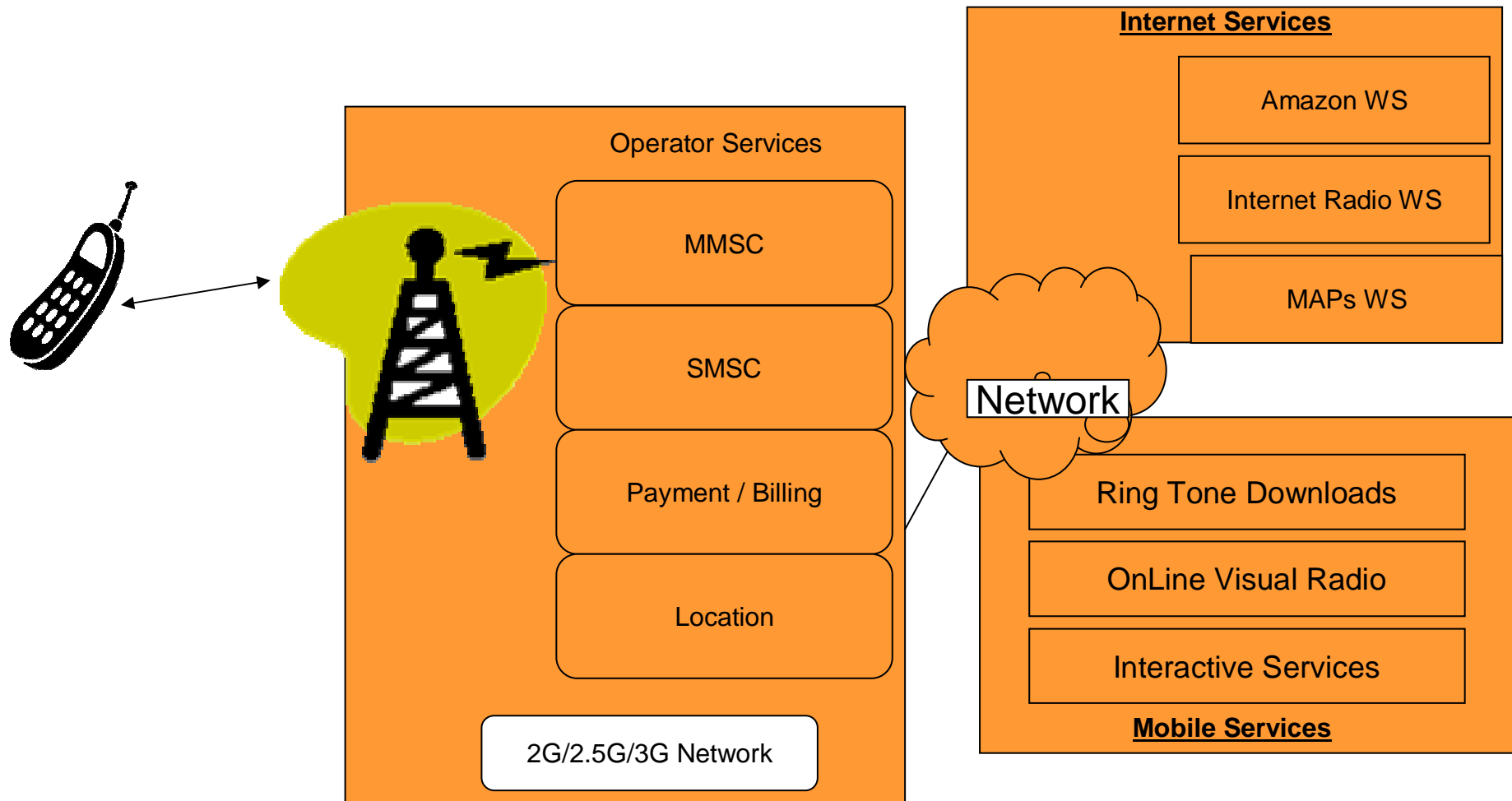
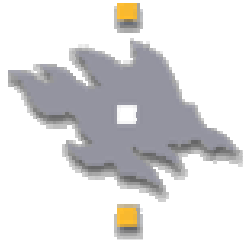
Mobile Services

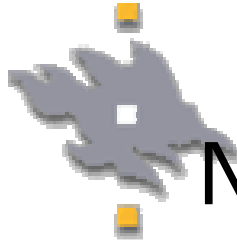
- Past & Current:
 - A tightly coupled solution has been developed to enable a solution for mobile devices (Corba, C++, C#)
 - Mobile Specific technologies have been used to enable application Integration(protocols)
- Current & Future:
 - A loosely coupled solution (XML, Coarse Grained interfaces)
 - OPEN Technologies more close to the Web Model is sought for (WML, cHTML -> XHTML, XML, Open Web Architectures)
- Future:
 - Standardized API's for Application developers to access and utilise Mobile Services
 - Service Oriented Architecture making all equal players
 - Web Services will play a major role in fueling and making open IT solutions available creep into Mobile Environments
 - Service Composition and reuse of existing Services to building higher level will provide means for new innovations



MOBILE Services Interactions

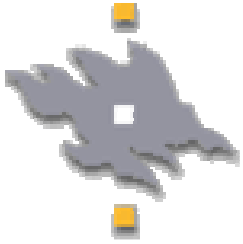
- Network Hosted Web Services Main Interactions foreseen :
 - Network Operator Server \leftrightarrow IT Server / Operator-IT Infrastructure
 - Server \leftrightarrow Mobile Terminal
- Device Centric Communications
 - Mobile Terminal \leftrightarrow Terminal





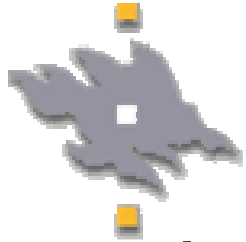
Network Hosted MWS Deployments

- Device Management : Configuring and Managing devices
- Delivery
- Notification
- Payment / Billing / charging
- Presence
- SMSC
- MMSC
- Locations
- Profile
- Call Handling
- User Management
- Group management



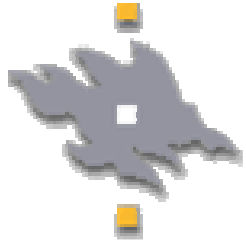
Two Major Activities

- OMA: Open Mobile Alliance
 - OMA Web Services Enabler (OWSER) Release 1.0, 15th July 2004
URL: http://www.openmobilealliance.org/release_program/owser_v10.html
- Parlay X Web Services 2.0
 - Parlay released a set of Web Services Specification 2.0 during March 2005



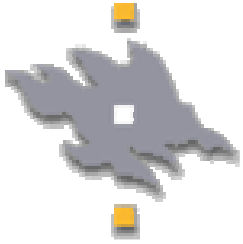
Open Mobile Alliance (OMA)

- **Mission:** Facilitate global user adoption of mobile data services by specifying market driven mobile service enablers that ensure service interoperability across devices, geographies, service providers, operators, and networks, while allowing businesses to compete through innovation and differentiation.
- **Intention:**
 - Develop a specification that defines the application of web services within the OMA architecture.
 - Generate a recommendation and/or specification and a set of best practices that describe how to apply web services with the OMA Architecture.
 - Drives Open standards for inter-operable Mobile Services
- Mobile web services working group within OMA will create guidelines on how the interfaces should be specified
- The Mobile Web Services group is addressing :
 - A specification Suite that will aid developer to apply Web Services :
 - Web Services Discovery
 - Access &
 - Leverage Service enablers with OMA Framework
- OMA mobile Web Services framework standardisation
 - How to use Web Service technologies and specifications in the mobile domain
 - Use existing specifications and work as much as possible (don't re-invent the wheel)
 - Actual specification done in other forums (e.g. OASIS, WS-I and W3C)



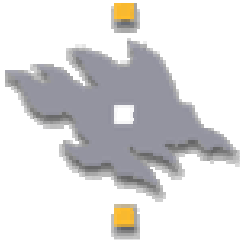
OMA : Open Mobile Alliance

- Leading industry forum for developing market driven, interoperable mobile service enablers
- OMA was Formed in 2002 by nearly 200 (currently over 360) companies including the world's leading mobile operators, device and network suppliers, information technology companies and content and service providers.
- creates interoperable mobile data service enablers that work across devices, service providers, operators, networks, and geographies
- Several Consolidation of Mobile Standardization Bodies have happened within a year of OMA Formation:
 - Such as : WAP Forum, Location Interoperability Forum (LIF), SyncML Initiative, MMS-IOP (Multimedia Messaging Interoperability Process), Wireless Village, Mobile Gaming Interoperability Forum (MGIF), and the Mobile Wireless Internet Forum (MWIF)



OMA Enablers

- List of Current Enablers:
 - Billing, Browsing, Client provisioning, data Synchronization, Device Management, Digital Rights Management, DNS, Download, Email notification, Games, IMS, Presence, Mobile Location, MMS, Push to Talk Over Cellular, User Agent Profile, Web Services,
- Web Services Enabler utilises WS Standards:
 - SOAP
 - HTTP
 - WS-I Basic Profile
 - Optionally: UDDI

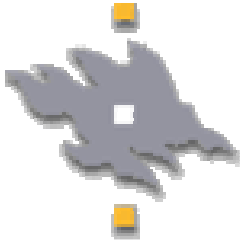


OMA Web Services Enabler

Charter:

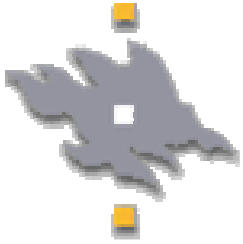
Develop specifications that define the application of Web Services within the OMA architecture

- Web Services infrastructure that can readily be used by OMA enablers. Discover and access network or device-based capabilities and service enablers by 2nd and 3rd party application developers using consistent and standard methods
- OMA Web Services Enabler Specifications Consists of :
 - **Overview:** Overview of OMA WS Enabler
 - **Core Specification:** Basic Web Service infrastructure that is needed to offer and consume Web Services in an OMA environment
 - **Network Identity specification:** Network Identity related capabilities of the OWSER
 - **Best Practices WSDL Style Guide:** Guidelines to use WSDL
- OMA Web Services Enabler release 1.0 on: 15 July 2004
- Further Reading:
http://www.openmobilealliance.org/release_program/owser_v10.html



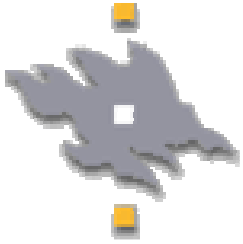
OWSER

- Provide specifications and guidelines for Web Service technologies, implementations and deployments to integrate and interoperate within the OMA architecture.
- Ensure interoperability across servers and terminals supporting web services protocols through the use of standardized protocols.
- Provide the Common Functionality across the different Enablers available at the Network/service operator Infrastructure:
 - **Service Discovery**
 - **Messaging.**
 - **Security**
 - **Identity**
 - **Charging**
 - **Management & Provisioning**
 - **Service Level Agreement & Management**



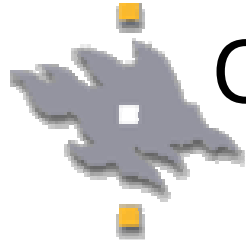
OWSER [Contd..]

- Many of the Features have been left out until there is more mature standardized technologies:
 - Messaging, Security, Policy, Management, Service Level agreement, Co-ordinations
- OWSER Takes into account support for Web Services in two levels:
 - Direct: When the Web Service requestor is fully capable for a complete Web Services stack
 - Indirect: When a WS Proxy is needed when the Web Services requestor can not contain



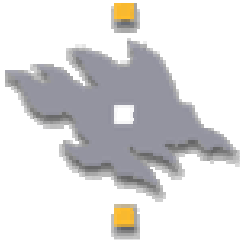
OWSER [Contd..]

- Provides Guidelines and notational representation of Practical Web Services Deployment patterns.
- Deployment Patterns categorized into:
 - Web Services Requestor, Web Service & Web Services Registry
- Deployment Patterns documented :
 - Routing, Gateway, Proxy, Interceptor, Adaptor, Delegate, Filter, Orchestration, Referral, Sequence, Workflow



OWSER provides guidelines for the Following Service Enablers to be utilized

- Billing,
- Browsing,
- Client provisioning,
- Data Synchronization,
- Device Management,
- Digital Rights Management,
- DNS,
- Download,
- Email notification,
- Games,
- IMS,
- Presence,
- Mobile Location,
- MMS,
- Push to Talk Over Cellular,
- User Agent Profile,



OMA References

OMA Web Services Enabler Release (OWSER) 1.0

- http://www.openmobilealliance.org/release_program/owser_v10.html

OWSER1.0 Overview:

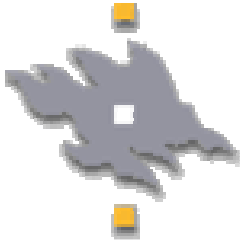
- http://www.openmobilealliance.org/release_program/docs/CopyrightClick.asp?pck=OWSER&file=V1_A/OMA-OWSER-Overview-V1_0-20040715-A.pdf

OWSER1.0 Core Specifications:

- http://www.openmobilealliance.org/release_program/docs/CopyrightClick.asp?pck=OWSER&file=V1_A/OMA-OWSER-Core-Specification-V1_0-20040715-A.pdf

OMA Web Services Enabler (OWSER) Network Identity Specifications:

- http://www.openmobilealliance.org/release_program/docs/CopyrightClick.asp?pck=OWSER&file=V1_A/OMA-OWSER-Network_Identity-Specification-V1_0-20040715-A.pdf

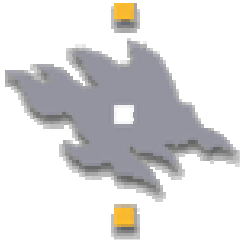


Parlay

AIM:

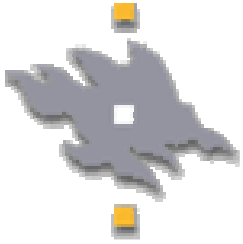
To link IT applications with the capabilities of the telecommunications world by specifying and promoting application programming interfaces (APIs) that are secure, easy to use, rich in functionality, and based on open standards

- Members Include:
 - Leading IT companies, Internet service vendors (ISVs), software developers, network device vendors and providers, service bureaus, application service providers (ASPs), application suppliers, and large and small enterprises



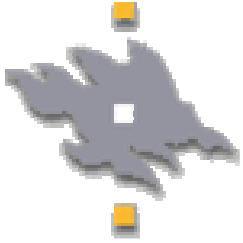
Parlay's Objectives

- Applications creation for both Consumer and Enterprise sectors by Exploit Operator Network features and capabilities
- Enable IT Developer to exploit Telecom Operator Infrastructure
- Enable new Business models and relationship between Network operators and service providers



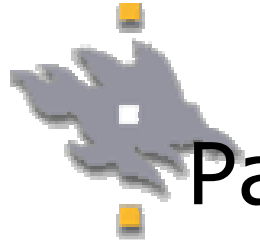
Parlay X Web Services

- Web Services based Synchronous access to Network operators services for use by Service providers,
For example: SMS, Multimedia Messaging, Payment, Account Management, User Status, User Location
- Needs:
 - Inter-operability across Multi-vendor Service Components
 - Expand Telecom ecosystem into IT developer Space
 - Decouple the protocols in IT & Telecom
 - Manage and Expand the Mobile Environment with the success of the IT Solutions over the Internet/Web World.



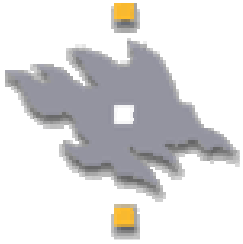
Parlay-X 2.0

- This is the current Parlay Web Service Interfaces defined for Parlay's Open Service Access, or OSA which are open standard API's to access functionalities of Network Operators



Parlay X 2.0 Web Service Interfaces

- Common: Namespace conventions, datatypes,
- Third Party Call
- Call Notification
- SMS
- MMS
- Payment
- Account Management
- Terminal Status
- Terminal Location
- Call Handling
- Audio call
- Multimedia Conference
- address List Management
- Presence



Future challenges

- Mobile Devices are also available over non-cellular infrastructure / WLAN
 - PDA's
 - Mobile Devices
 - Several other devices (Skype - Phones)
- Who will be the Network side WS Service providers for them
- How will the Reachability/ User accountability addressed in the Converging Industry
- What are the Developer platform specific implications for Mobile Web Services / Network hosted services:
 - For example will we have :
 - SAMS like API in Java environment for Mobile Services connected to J2EE ?
 - Whats in .Net ?
 - What other environments ?