• Week #1
  • (January 4 - 8)
  • **Current Generation Networks: From 2G to 2.5G**
• Week #2
  • (January 11-15)
  • **Value added Services in Current Generation Networks**
• Week #3
  • (January 18-22)
  • **Next Generation Network Vision**
• Week #4
  • (January 25 – 39)
  • Web Services
  • Project specification available
• Week #5
  • (February 2 - 6)
  • Tool kits
• Week #6
  • (February 9 - 13)
  • Web services
Chapter V II
Web Services as a Value Added Service Technology (Part II)
Outline

• Web services for value added service engineering in NGN

• Digital imagery
Applying Web services to value added service engineering in NGN

1. Parlay-X
2. OMA Deployment patterns
Parlay-X ...

1. Introduction
2. Architecture
3. The services
Introduction

1. Specifications available in their third version
   - White paper + actual specifications

2. Application interfaces
   - Aim at covering all telecommunication capabilities
     - Stand alone capabilities (e.g. presence, call control)
     - Combined capabilities (presence + call control)

3. Use the reference Web service principles (e.g. coarse grained) technologies (e.g. WSDL)
Architecture

Parlay Applications

Parlay X Applications

Parlay X Web Services

Parlay Gateway

Network Protocols (e.g. SIP, INAP etc)

Increasing abstraction

Network Elements
The services

1. Call control
2. Messaging
   - SMS
   - MMS
3. Payment (e.g. volume charging)
4. Account management (e.g. account credit expiration date query)
5. User status (online / offline)
6. Terminal location
Parlay-X Call Control ...

Make a call
Get call information
End call
Cancel call request
Parlay-X Call Control ...

- Handle busy
- Handle Not reachable
- Handle No answer
- Handle off Hook
Parlay-X Conferencing Basics...

Allow the creation of a multimedia conference call and the dynamic management of:

- Conference
- Participants
- Media
Parlay-X Conferencing Basics…

Service model entities
- Conference
  “Context / virtual room” to which participants can be added
- Participants
  Parties involved in the conference
- Media
  audio/video/chat
Parlay-X Conferencing Basics…

- Conference
  “Context / virtual room” to which participants can be added
- Participants
  Parties involved in the conference
- Media
  audio/video/chat
Parlay-X Conferencing Basics…

Create conference
- Create a multimedia conference with initially no participant

GetConference Info
- Information on status (e.g. active, terminated)

EndConference

Several possibilities
- Maximum duration has expired
- All participants have left
Parlay-X Conferencing Basics…

inviteParticipant
- Add a new participant to the conference
disconnectParticipant
- Disconnects the participant
addMediaForParticipant
  Executed on a single participant
  - Add a media stream to the media set used by participant
Parlay-X Conferencing Basics…

deleteMediaForParticipant
disconnectParticipant
getParticipantInfo
Parlay-X MMS …

Send Message
Get Message Delivery Status
Get Received messages
Get messages URIs
Notify message reception
OMA ...

1. Introduction
2. Architecture (ARCH)
3. OMA Web Service Enabler (OWSER)
Introduction

OMA
- Industry association created in 2002
- Focus on mobile services
- Aims at:
  - Consolidating standards for wireless services (e.g. 3GPP/PP2, IETF, W3C)
  - Producing new standards if needed
  - Tackling the two issues
Architecture

Aim at providing a general architecture for mobile services

- Requirements
- Principles
- Functional entities
- Common framework
- Service adaptability
Principles

- Signalling protocol neutrality and independence from programming languages, operating systems and so on
- Leverage existing standards
- Interoperability, scalability
- Service adaptability
- Consistency with Internet models
OMA Web service enabler (OWSER)

Aim at providing solutions to common problems faced by designers when using Web services in an OMA environment

- Practical deployment patterns
- Common functions (e.g. charging, security)
- Network Identity specifications (i.e. specific aspects of security – Based on Liberty alliance specifications)
- WSDL Style guidelines
- Test requirements
Examples of deployment patterns

The adapter pattern

```
Requestor --> Adapter --> Legacy
1
2
3
4
```
Examples of deployment patterns

The gateway pattern

- Requestor
- Gateway
- Web service

1. Requestor → Gateway
2. Gateway → Web service
3. Web service → Gateway
4. Gateway → Requestor
Examples of deployment patterns

The proxy pattern
Examples of deployment patterns

The delegate pattern

- Legacy
- Web service
- Delegate (WS1)

1. 
2. 
3. 
4.
Examples of deployment patterns

The orchestrator pattern
Examples of deployment patterns

The filter pattern

Requestor -> Filter -> Web Service 1

1  2  3

2  3

1
Examples of deployment patterns

The workflow pattern

- Requestor 1
- Web service 4

- Requestor 2
- Web service 1

- Requestor 3
- Web service 2

- Requestor 4
- Web service 3

Numbers indicate the order of interactions: 1, 2, 3, 4.
Digital Imagery

1. Introduction
2. Business model
3. Examples of interactions
Introduction ...

Common Picture Exchange (CPXe)

Purpose
- Automation of manipulation, printing and sharing digital images

Involved companies
- Most companies active in the digital imaging industry (e.g. Kodak, HP, Konica, Olympus and others)
Business model ...

Changes to the original Web service model

- Motivation:
  - UDDI does not provide the level of fine granularity required by the industry
    - Where to get poster size glossy print in a given city
    - Located at a given distance from an hotel
    - With given opening hours

- Changes
  - Possibility to give much more low level granularity about services
  - Possibility for searching such type of information
Business model

Broker (Human + Agent)
Two types of broker:
- UDDI
- Service locator

Requestor (Human + agent)

Provider (Human + agent)
Note: Provider keeps Information accessible By service locator
Business model ...

Service locators
- Interact (on behalf of service requestor with UDDI and/or catalogues to find service(s) meeting specific criteria
- May be deployed by providers to direct to her/his services
- May be deployed by an independent party
- Accessible via a standardized API

- Catalogues
  - Standardized way for service providers to provide more details about their services (e.g. closing hours of an outlet)
  - Kept in service provider domain
  - Accessible via a standardized API by:
    - Service requestors
    - Service locators
Business model ...

Catalogues (Examples of info)
- Service property list
- Store list
  - Street address
  - Hours of operations
- Product list
- Price list
- Category list
Examples of interactions ...

<table>
<thead>
<tr>
<th>Requestor</th>
<th>Locator</th>
<th>UDDI</th>
<th>Provider 1</th>
<th>Provider 2</th>
</tr>
</thead>
</table>

Search

Bind
Examples of interactions ...

Requestor     UDDI     Provider 1     Provider 2

Search

Bind
Examples of interactions ...

Requestor               Provider 1

Search

Bind
To probe further ...

- **Parlay-X**
  - Parlay-X Web services white paper
  - Parlay-X Web services specifications including the one on conferencing
    http://www.parlay.org/specs/index.asp

- **OMA**
  - http://www.openmobilealliance.org/
    Digital imagery
    T. Thomson et al., CPXe: Web services for Internet Imaging, IEEE Computer Magazine, October 2003