

The Mobility Project

Progress report

Janina Mincer-Daszkiewicz

University of Warsaw

jmd@mimuw.edu.pl

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Agenda

- Goal
- History of the project
- Achievements as for the beginning of 2011
- Business Card Pilot
- REST Mobility
- Further steps

Support daily duties of **International Relation Offices** which are responsible for handling international cooperation of Higher Education Institutions, in particular student and staff mobility, by enabling **electronic exchange of the involved data**

What data?

- Details of bilateral agreements (cooperating conditions)
- Personal data of mobile students and staff
- Details of the stay abroad
- Learning Agreements
- Transcript of Records
- Course catalogues

The Mobility Project – History 1

- **June 2008, EUNIS 2008** (Aarchus)
 - Presentation of the USOS Mobility module for IRO
 - **MUCI** (Polish consortium) and **CINECA** (Italian consortium) decide to start the project
- **June 2009, EUNIS 2009** (Santiago de Compostela)
 - First version of the mobility network is presented
 - Workshop of **RS3G** standardization body gathers other interested groups (national consortia, software companies, universities)
- **November 2009, RS3G Workshop** (Uppsala)
 - Brings together consortia and companies willing to take an active part in the project
 - Main problem domains identified
 - Discussion on WSDL starts

The Mobility Project – History 2

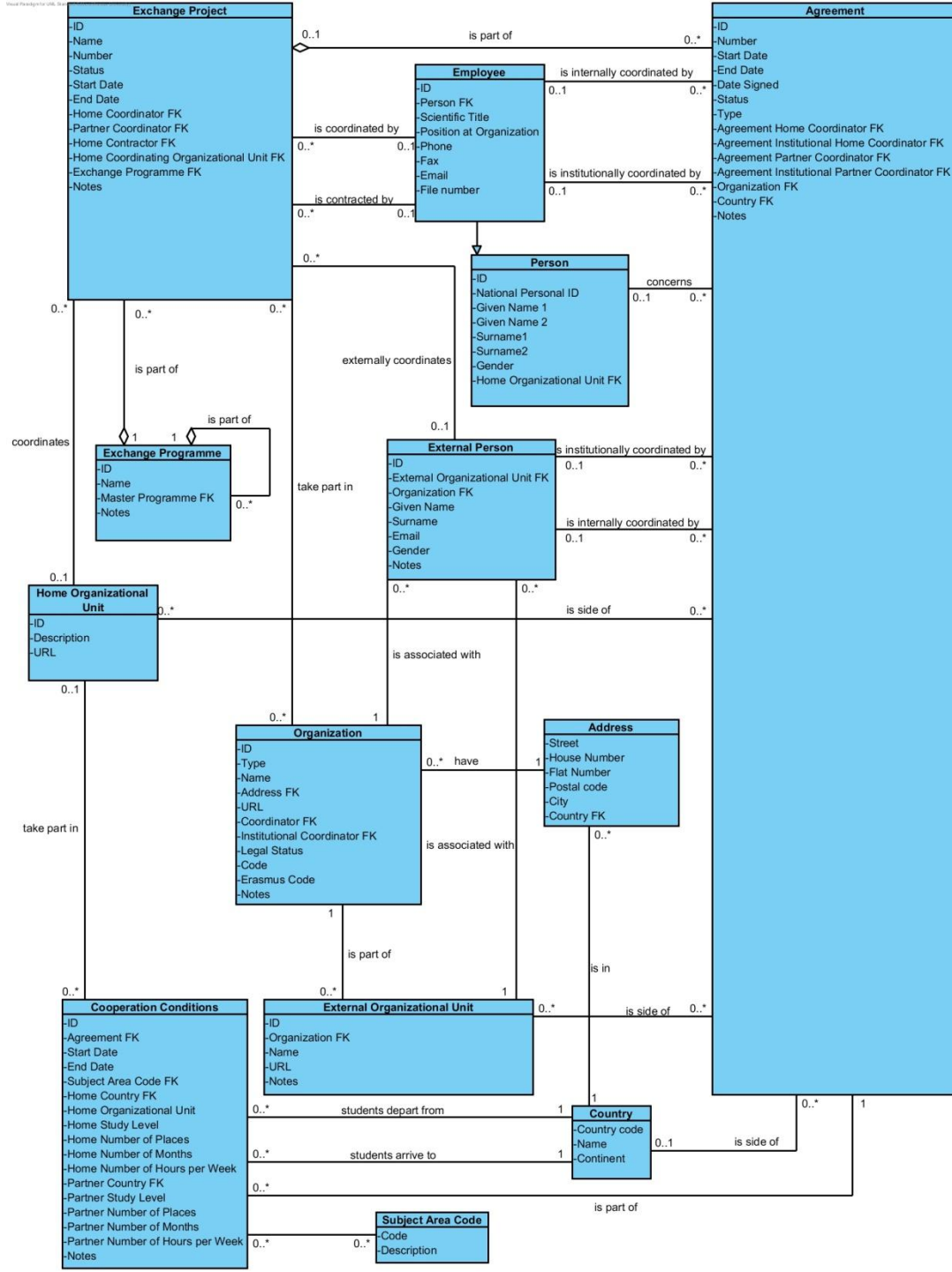
- **March 2010, RS3G Workshop** (Bologna)
 - Brings together the Mobility Group and **TERENA TF-EMC2** to discuss the aspects of security and of identity and access management
 - Possible solutions outlined
- **June 2010, EUNIS 2010** (Warsaw)
 - RS3G workshop - some important plans made on how to speed up the project (→ Coding Camp)
- **December 2010, RS3G workshop** (Malaga)
 - Joint meeting with **TERENA TF-EMC2**, technical security details discussed and approved



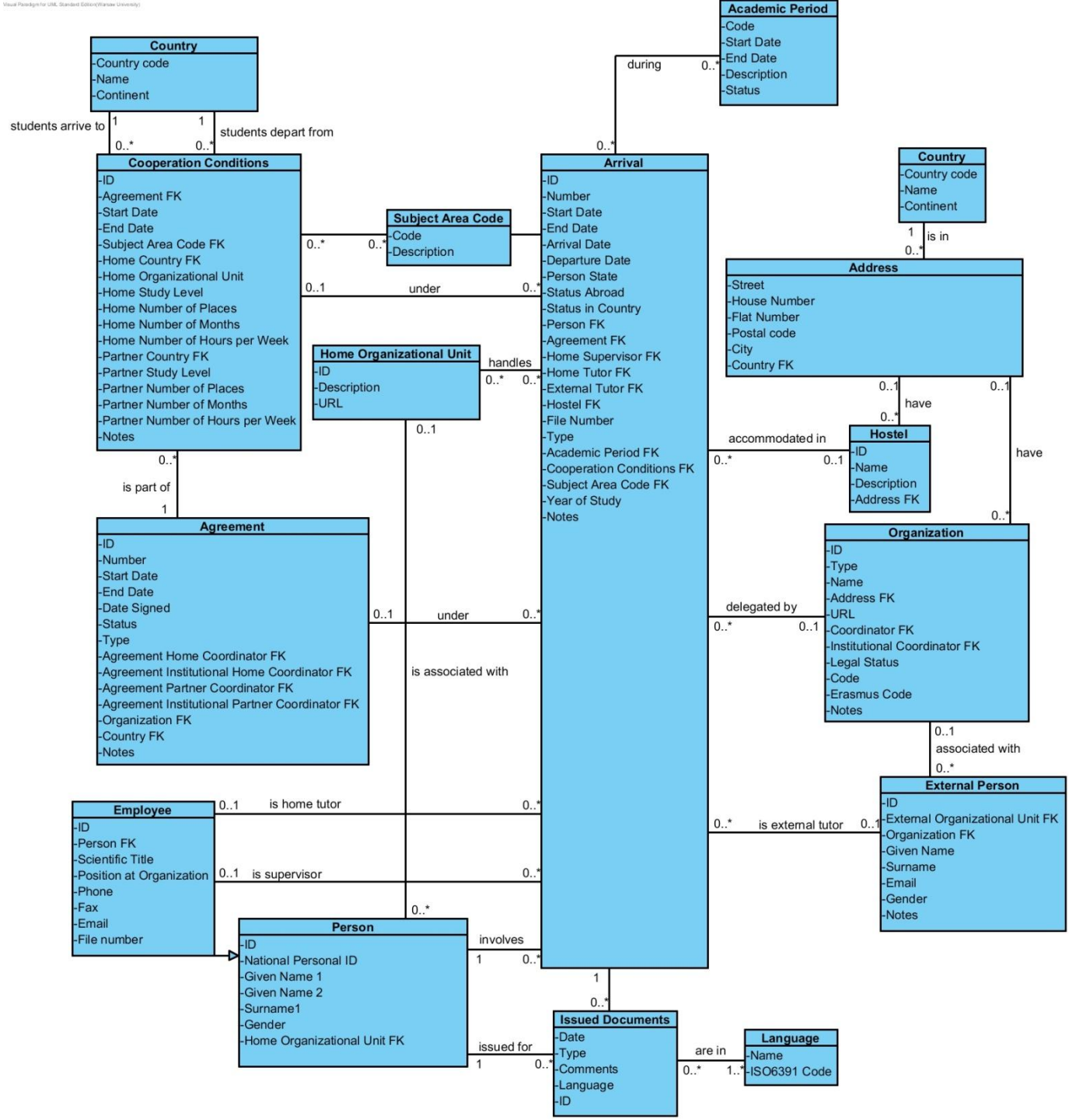
Achievements

What have we achieved as for the beginning of 2011?

Data model Agreements



Data model Arrivals



Data format – WSDL

- Requirements concerning data format
 - Should model the **problem domain** well
 - Should be as **simple** as possible and conform to existing **standards** as strictly as possible, **but**
 - Existing standards do not conform to each other
 - They do not cover fully the problem domain
- We tried to take into account achievements of:
 - *Metadata for Learning Opportunities* (MLO) – programs of study and course catalogs
 - *European Learner Mobility* (ELM) – Europass portfolio
 - SCHAC (*SCHema for Academia*) – LDAP attributes



SEND and GET requests (web services)

sendOrganizationData()

getOrganizationData()

sendAgreementData(), getAgreementData()

sendNominatedStudents()

getNominatedStudents()

sendArrivalDate(), getArrivalDate()

sendDepartureDate(), getDepartureDate()

sendLearningAgreement()

getLearningAgreement()

sendTranscriptOfRecords()

getTranscriptOfRecords()

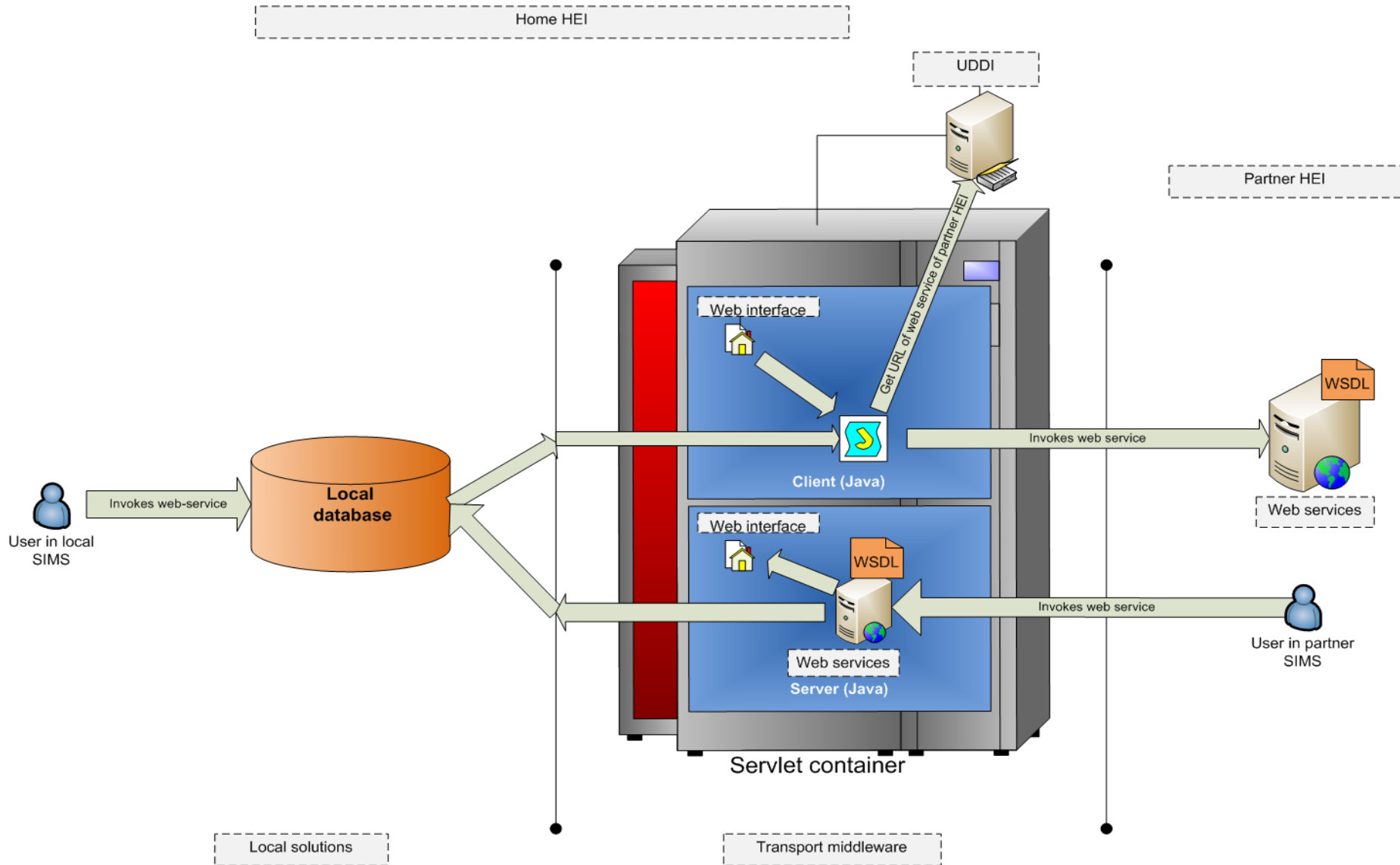
getCourseData()

validateNationalPersonalID()

Software

- Distributed network of web servers, one for each HEI
- UDDI (*Universal Description Discovery and Integration*) registry stores addresses of endpoints
- Technologies involved:
 - Java with Spring framework
 - Apache as HTTP server and Apache Tomcat as a servlet container
 - Apache Camel as a routing and mediation engine
 - Apache CXF as a web services framework
 - Apache jUDDI as a UDDI Registry implementation
 - Apache Qpid as an AMQP implementation
 - ICEfaces as RIA (*Rich Internet Application*) framework etc.
- Preconfigured, easy to install mobility package

Architecture of the mobility node



UDDI – Universal Description, Discovery and Integration (registry of Mobility nodes)

Mobility Client

- Information
 - Introduction
- Web Service Methods
 - OrganizationData
 - sendOrganizationData
 - getOrganizationData
 - AgreementData
 - sendAgreementData
 - getAgreementData
 - NominatedStudents
 - sendNominatedStudents
 - getNominatedStudents
 - ArrivalDate
 - sendArrivalDate
 - getArrivalDate
 - DepartureDate
 - sendDepartureDate
 - getDepartureDate
 - CourseData
 - getCourseData
 - LearningAgreement
 - sendLearningAgreement
 - getLearningAgreement
 - TranscriptOfRecords
 - sendTranscriptOfRecords
 - getTranscriptOfRecords
 - Other
 - validateNationalPersonalId
- UDDI Registry
 - Edit
- Help
 - WSDL

UDDI Registry

	Id	Name	WSDL URL
⊖	unipr.it	it:Universita degli Studi di Parma	http://usosphp.7878/mobility-server-transport/webservices/mobility-service?wsdl
⊕	uw.edu.pl	pl:Uniwersytet Warszawski	http://usosphp.7979/mobility-server-transport/webservices/mobility-service?wsdl

Details

Id * 246 left / 255

Name *

Language

Localized Name

WSDL URL *

Contact

Person Name

Phone Number

Service Name

Service Description

* - required

Web client (client= WARSAW, server= PARMA)

http://usosphp.mimuw.edu.pl:7979/mobility-client-web/index.jsp

Mobility Client

Information

- Introduction
- Web Service Methods
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 - sendNominatedStudents**
 - getNominatedStudents
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 - getCourseData
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 - getTranscriptOfRecords
 - Other
 - validateNationalPersonalId
- UDDI Registry
 - Edit
- Help
 - WSDL

Client

Id:

Name: pl:Unwersytet Warszawski

WSDL URL: http://usosphp.7979/mobility-server-transport/webservices/mobility-service?wsdl

Server

Id:

Name: it:Universita degli Studi di Parma

WSDL URL: http://usosphp.7878/mobility-server-transport/webservices/mobility-service?wsdl

Request

Resource: xml/client=uw.edu.pl

Path: /server=unipr.it

Sample Data File: Upload a file

```
1 <?xml version="1.0" encoding="UTF-8"?><tns:sendNominatedStudentsRequest
2 xmlns:tns="http://mobility.usos.edu.pl" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
3 xsi:schemaLocation="http://mobility.usos.edu.pl MobilitySchema.xsd">
4   <tns:agreementId>
5     <tns:homeId>
6       <tns:organizationId>uw.edu.pl</tns:organizationId>
7       <tns:value>962/E/II08</tns:value>
8     </tns:homeId>
9     <tns:partnerId>
10      <tns:organizationId>unipr.it</tns:organizationId>
11      <tns:value>1207/E/XI08</tns:value>
12    </tns:partnerId>
13  </tns:agreementId>
14  <tns:academicYear>2008</tns:academicYear>
15  <tns:nominatedStudentsWithPersonalData>
16    <tns:uniquePersonalData>
17      <tns:student>
18        <tns:nationalPersonalId>PL:85 </tns:nationalPersonalId>
19        <tns:givenName1>Michał</tns:givenName1>
20        <tns:givenName2>Marek</tns:givenName2>
21        <tns:surname1>Kurzydowski</tns:surname1>
22        <tns:gender>1</tns:gender>
23      </tns:studentId>uw.edu.pl:8001</tns:studentId>
```

Data successfully sent.

Type	Line	Column	Report
------	------	--------	--------

Response

```
1 <?xml version="1.0" encoding="UTF-8"?><tns:sendArrivalDateResponse xmlns:tns="http://mobility.usos.edu.pl"
2 xsi:schemaLocation="http://mobility.usos.edu.pl MobilitySchema.xsd" xmlns:soap="http://schemas.xmlsoap.org
3 /soap/envelope/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"/>
```


Web server (server=PARMA)

http://usosphp.mimuw.edu.pl:7878/mobility-server-web/

Mobility Server

Navigation: [Home] [Previous] [1] [2] [3] [4] [Next] [End] Items: Page 15 Count 51 Id unipr.it

2009-11-13 14:28	getOrganizationDataRequest
2009-11-13 14:29	getOrganizationDataRequest
2009-11-13 14:31	getOrganizationDataRequest
2009-11-13 14:32	getOrganizationDataRequest
2009-11-13 17:04	sendAgreementDataRequest
2009-11-14 21:05	sendNominatedStudentsRequest

```
<tns:sendNominatedStudentsRequest xmlns:tns="http://mobility.usos.edu.pl" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://mobility.usos.edu.pl MobilitySchema.xsd">
  <tns:agreementId>
    <tns:homeId>
      <tns:organizationId>uw.edu.pl</tns:organizationId>
      <tns:value>982/E/108</tns:value>
    </tns:homeId>
    <tns:partnerId>
      <tns:organizationId>unipr.it</tns:organizationId>
      <tns:value>1207/E/108</tns:value>
    </tns:partnerId>
  </tns:agreementId>
  <tns:academicYear>2008</tns:academicYear>
  <tns:nominatedStudentsWithPersonalData>
    <tns:uniquePersonalData>
      <tns:student>
        <tns:nationalPersonalId>PL:85      </tns:nationalPersonalId>
      </tns:student>
    </tns:uniquePersonalData>
  </tns:nominatedStudentsWithPersonalData>
</tns:sendNominatedStudentsRequest>
```

The Mobility Project – History 3

- **March 2011, RS3G Coding Camp** (Barcelona)
 - Meeting IRO people, discussing technical issues, extending network of mobility nodes
 - Decision on developing the platform for **exchange of organization data** (so called infosheets or **business cards**)
- **Schedule for Mobility BC Pilot**
 - 1.05 – Partners exchange feedback from IRO's on BC data
 - 4.05-5.05 – UNICA Conference
 - 1.06 – WSDL extended with methods for getting/sending BC
 - 1.07 – Mobility nodes connected to local systems
 - 1.08 – Testing
 - 1.09 – Deployment
 - 26.09 – EAIE conference

Exchange of Organization Data

- First (necessary) step in any cooperation – each institution every year sends/gets hundreds of organization **Business Cards**
- **Easy to develop and easy to use:**
 - Business cards stored in XML format as flat files on disk (or obtained on the fly from the data stored in a local database)
 - **sendBusinessCard()** sends the data to a server
 - Server automatically posts it on the web (INSERT or UPDATE)
- Every institution can join with minimal effort (preparing XML file with the data and installing the mobility node)

New web services

- Services

sendBusinessCard()

getBusinessCard()

delivered by the mobility nodes of participating universities are published in the commonly available **Registry**

- The same mobility client/server can be used for testing new methods (eventually they will be integrated with local system for IRO)

University of Warsaw

List of partner organizations

University of Warsaw

List of partner organizations

University of Parma

show business card

Subsequent invocations of **sendBusinessCard()** as observed on the mobility server (example)

University of Warsaw

List of partner organizations

University of Parma

show business card

University of Porto

show business card

University of Warsaw

List of partner organizations

University of Parma

show business card

University of Porto

show business card

University of Oslo

show business card

Subsequent invocations of **sendBusinessCard()** as observed on the mobility server (example)

UW
Business
Card
Part I

University of Warsaw

Institution name	University of Warsaw
Website	www.uw.edu.pl
Address	Krakowskie Przedmieście 26/28 00-927 Warsaw, PL
Fax	+48 22 55 24 011
Erasmus code	PL WARSZAW01
Erasmus charter	45834-IC-1-2007-1-PL-ERASMUS-EUCX-1
Vice-rector for research and international relations	
Prof Włodzimierz Lengauer	+48 22 55 20 350 wlengauer@adm.uw.edu.pl

International Relations Office

Website	www.iro.uw.edu.pl
Location	Central Campus, Kazimierzowski Palace, 2. floor, rooms 22, 24, 28
Head of the office and erasmus institutional coordinator	
Sylwia Salamon	Tel: +48 22 55 24 009 s.salamon@uw.edu.pl
Erasmus incoming students	
Klementyna Kielak	Tel: +48 22 55 24 070 klementyna.kielak@adm.uw.edu.pl

UW Business Card Part II

Erasmus outgoing students

Monika Satała

Tel: +48 22 55 20 818
monika.satala@adm.uw.edu.pl

Other exchange students

Grażyna Andrejuk

Tel: +48 22 55 20 434
grazyna.andrejuk@adm.uw.edu.pl

More staff contact information

http://www.bwz.uw.edu.pl/en/?page_id=43

List of Erasmus Departmental Coordinators

http://www.bwz.uw.edu.pl/nowa/en/wp-content/uploads/2010/02/Coordinators_2010_2011.pdf

Mobility management

Centralized

Exchange program information

Academic System

Two semester system

Academic Calendar
(exams included)

Academic Year: October, 1st – end of June
(the last date may differ year on year)
 Semester 1: 1st October – mid February
 Semester 2: mid February – end of June

Deadlines for applications

Semester 1 /whole academic year: **May, 15**
 Semester 2: **November, 15**

Admission website
(on-line registration compulsory)

www.mobility.uw.edu.pl

Orientation week
(organized by IRO;
strongly encouraged)

Semester 1: last week of September
(exact dates may differ from year on year)
 Semester 2: first week of Semester

UO
Business
Card
Part I

University of Oslo

Institution name	University of Oslo
Website	www.uio.no
Address	P.O. Box 1072 Blindern N-0317 Oslo, NO
Fax	+47 22858488
Erasmus code	N Oslo01
Prof Ole Petter Ottersen	+47 22856303 rektor@uio.no

International Relations Office

Website	www.uio.no/english/studies/admission/exchange/erasmus/
Location	Lucy Smiths hus Problemveien 7, 0313 Oslo
Head of International Education Office	
Guri Vestad	Tel: +47 22858482 guri.vestad@admin.uio.no
Erasmus incoming students	
Helene Johansen	Tel: +47 22856207 helene.johansen@admin.uio.no
Erasmus outgoing students	
Jan Morten Øien	Tel: +47 22857889 j.m.oien@admin.uio.no

UO Business Card Part II

Exchange program information

Academic System	Two semester system
Academic Calendar (exams included)	Academic Year: Mid August – mid June <i>(the dates may differ year on year)</i> Semester 1: Mid August – mid December Semester 2: Early January – mid June www.uio.no/english/studies/about/academic-calendar/
Deadlines for applications	Semester 1 /whole academic year: May, 31 Semester 2: October, 31
Admission website	www.uio.no/english/studies/admission/exchange/erasmus/
Orientation week	Semester 1: last week of September <i>(exact dates may differ from year on year)</i> Semester 2: first week of Semester
Course Catalogue	www.uio.no/english/studies/courses/
Language of Instruction	Norwegian English* <i>*for details please check the websites of the relevant faculties</i>
Workload per semester	Maximum 30 ECTS

Additional useful information

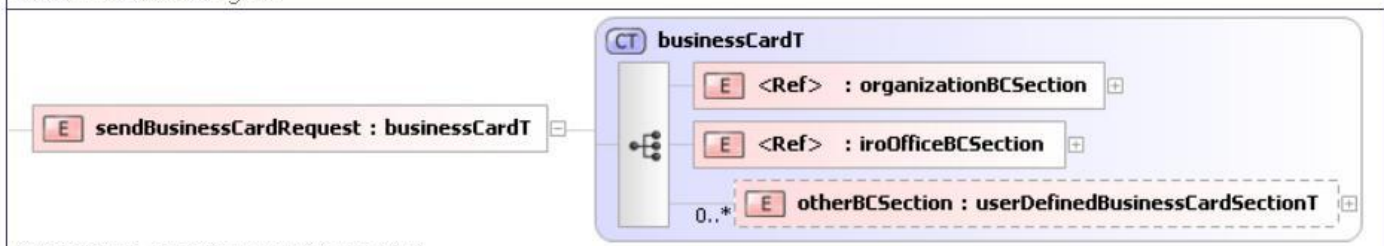
Information for new students	www.uio.no/english/studies/new-student/
Language courses for Erasmus incoming students	www.uio.no/english/studies/admission/exchange/erasmus/
Housing assistance	Housing reservation possible – information will be provided in the acceptance packet.
Housing options	www.uio.no/english/studies/new-student/housing/
Housing application deadlines	June 25 for autumn semester and November 25 for spring semester.

- All Items
 - Elements
 - getBusinessCardRequest (tns)
 - getBusinessCardResponse (tns)
 - iroOfficeBCSection (tns)
 - organizationBCSection (tns)
 - sendBusinessCardRequest (tns)
 - sendBusinessCardResponse (tns)
 - Complex Types
 - addressT (tns)
 - businessCardT (tns)
 - descLineT (tns)
 - itemNameT (tns)
 - itemValueT (tns)
 - staffSectionItemT (tns)
 - userDefinedBusinessCardSectionT (tns)
 - userDefinedSectionItemT (tns)
 - Simple Types
 - countryCodeT (tns)
 - domainT (tns)
 - emailT (tns)
 - facsimileTelephoneNumberT (tns)
 - idAttrT (tns)
 - organizationIdT (tns)
 - personalPositionT (tns)
 - telephoneNumberT (tns)
 - Schemas
 - BC.xsd (tns)

Business Cards of Higher Education Institutions

Definition Type	Element
Name	sendBusinessCardRequest
Namespace	http://mobility.usos.edu.pl
Type	tns:businessCardT
Abstract	False
Documentation	Send university business card.
XSD Schema	BC.xsd

XSD Schema Diagram



Liquid XML Studio - FREE Community Edition 7.1.4.1284

XSD Schema Code

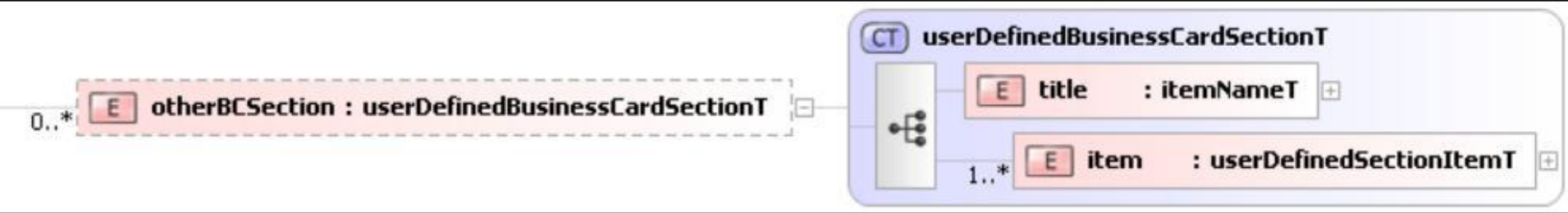
```

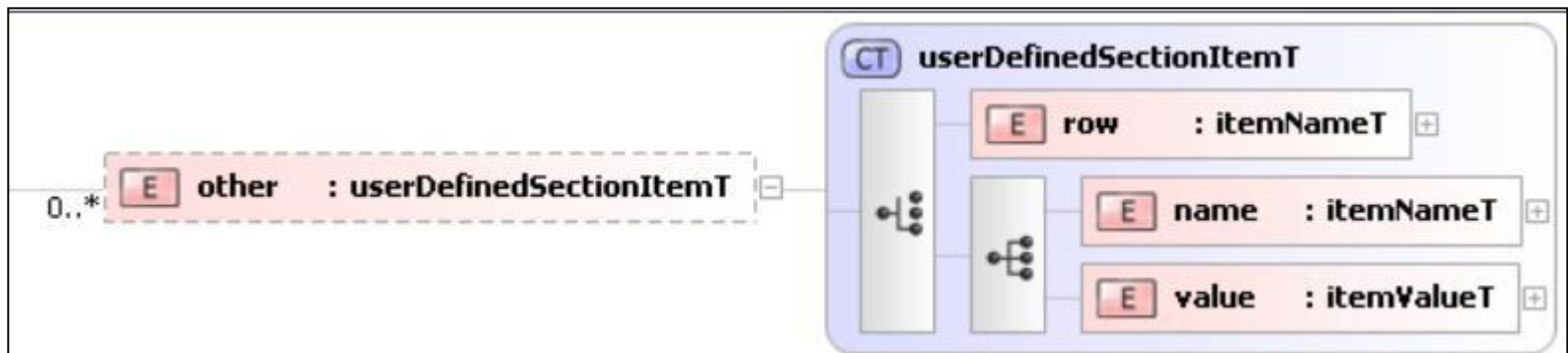
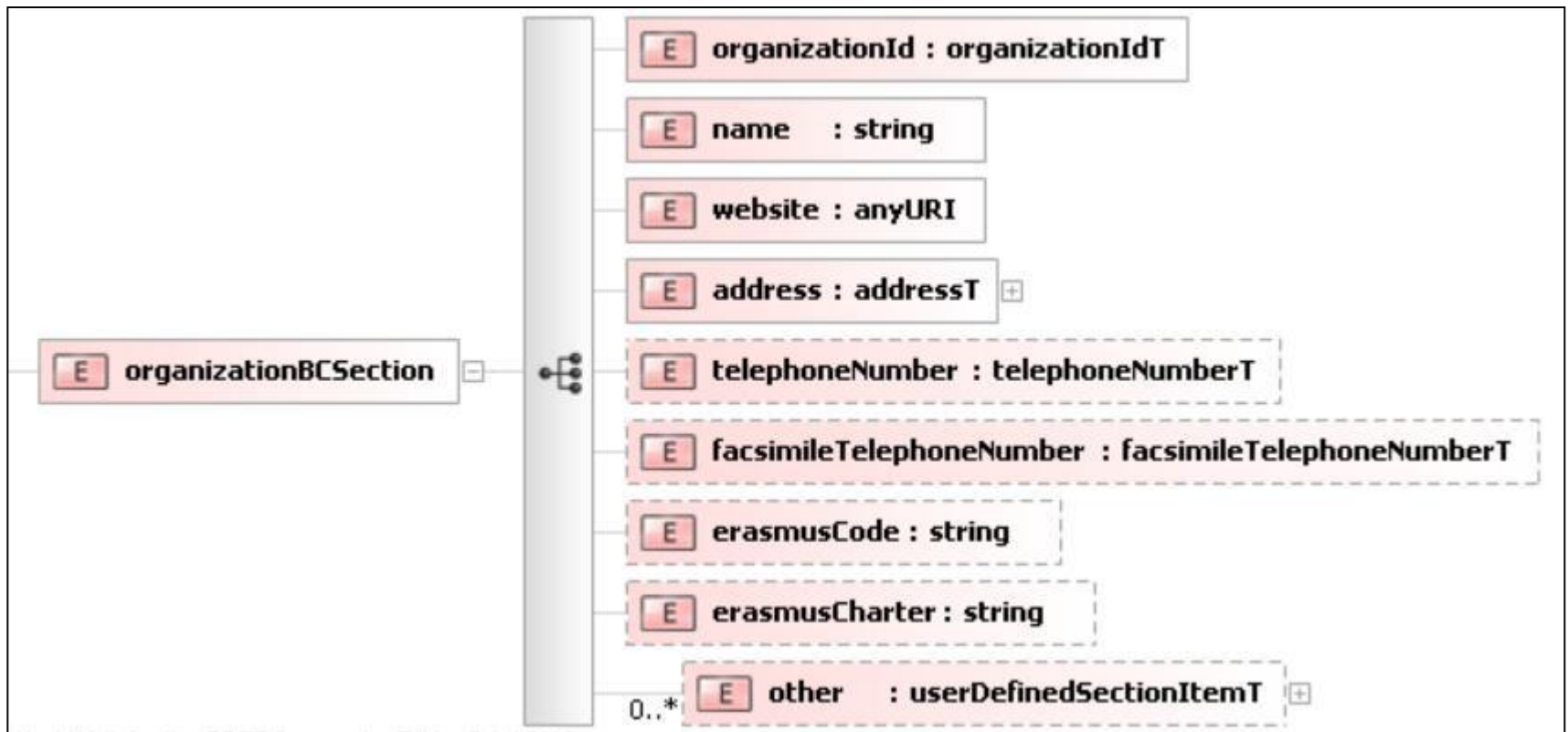
<xsd:element name="sendBusinessCardRequest" type="tns:businessCardT" >
  <xsd:annotation>
    <xsd:documentation>Send university business card.</xsd:documentation>
  </xsd:annotation>
</xsd:element>
  
```

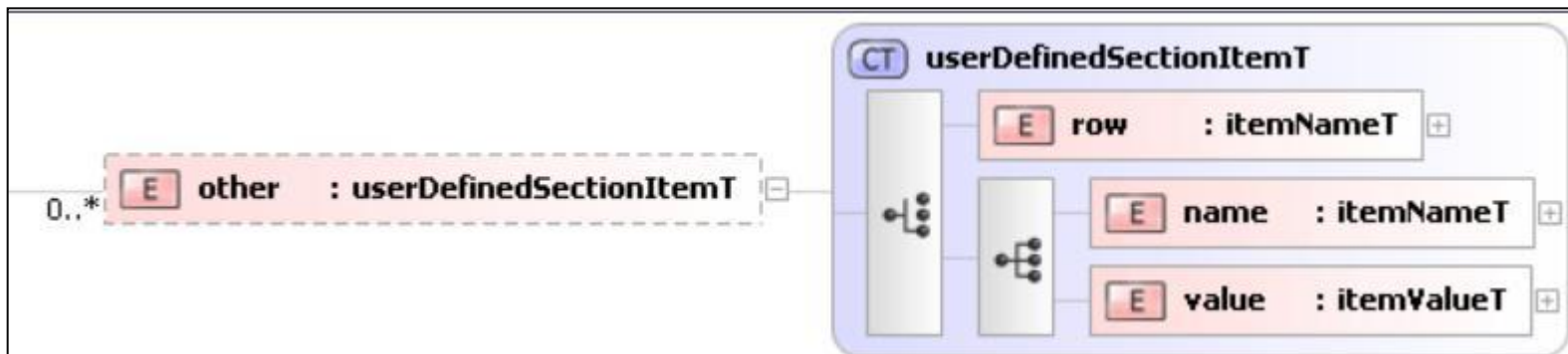
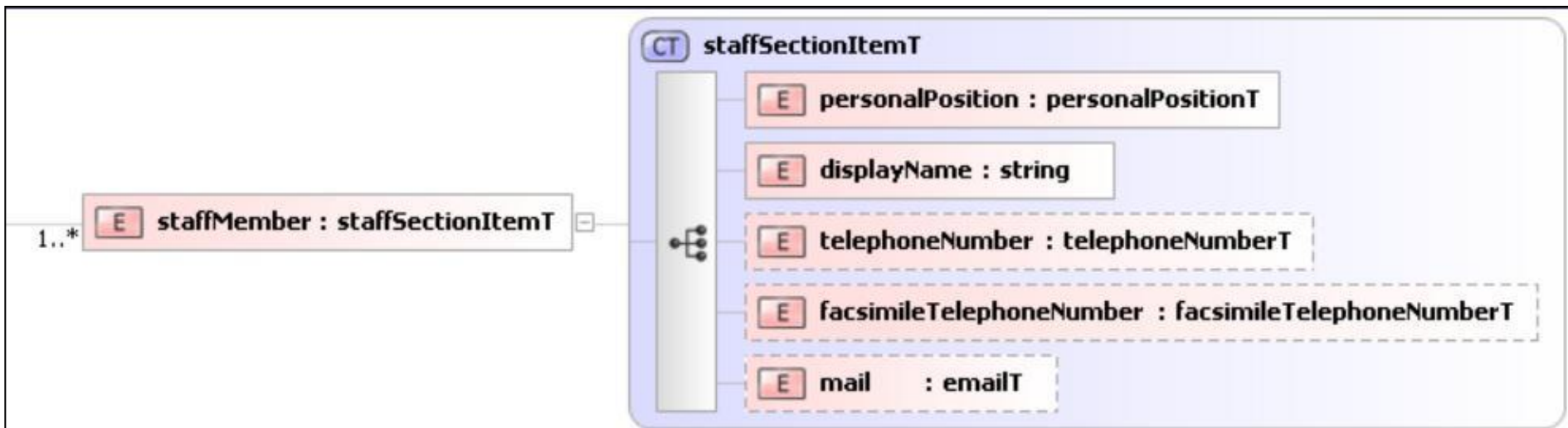
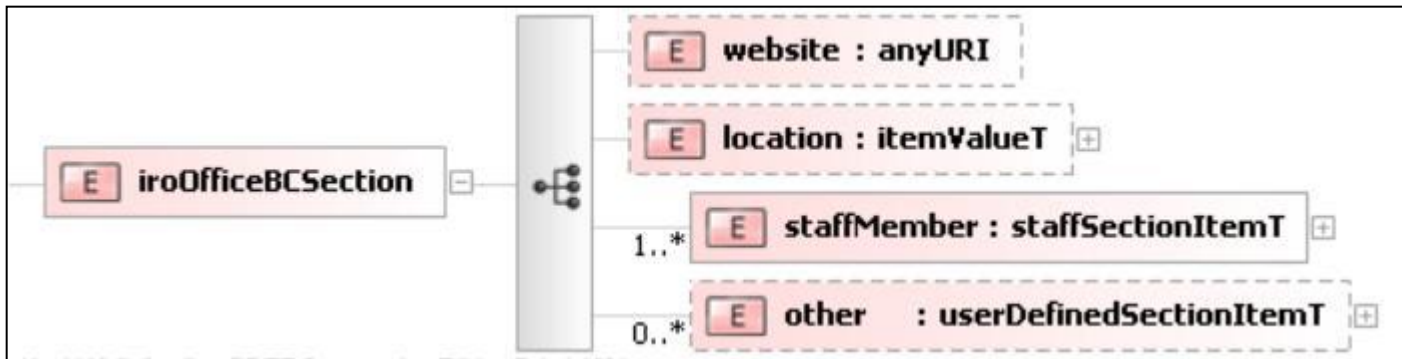
Child Elements

Name	Type	Min Occurs	Max Occurs
organizationBCSection	tns:organizationBCSection	(1)	(1)
iroOfficeBCSection	tns:iroOfficeBCSection	(1)	(1)
otherBCSection	tns:otherBCSection	0	unbounded

Derivation Tree





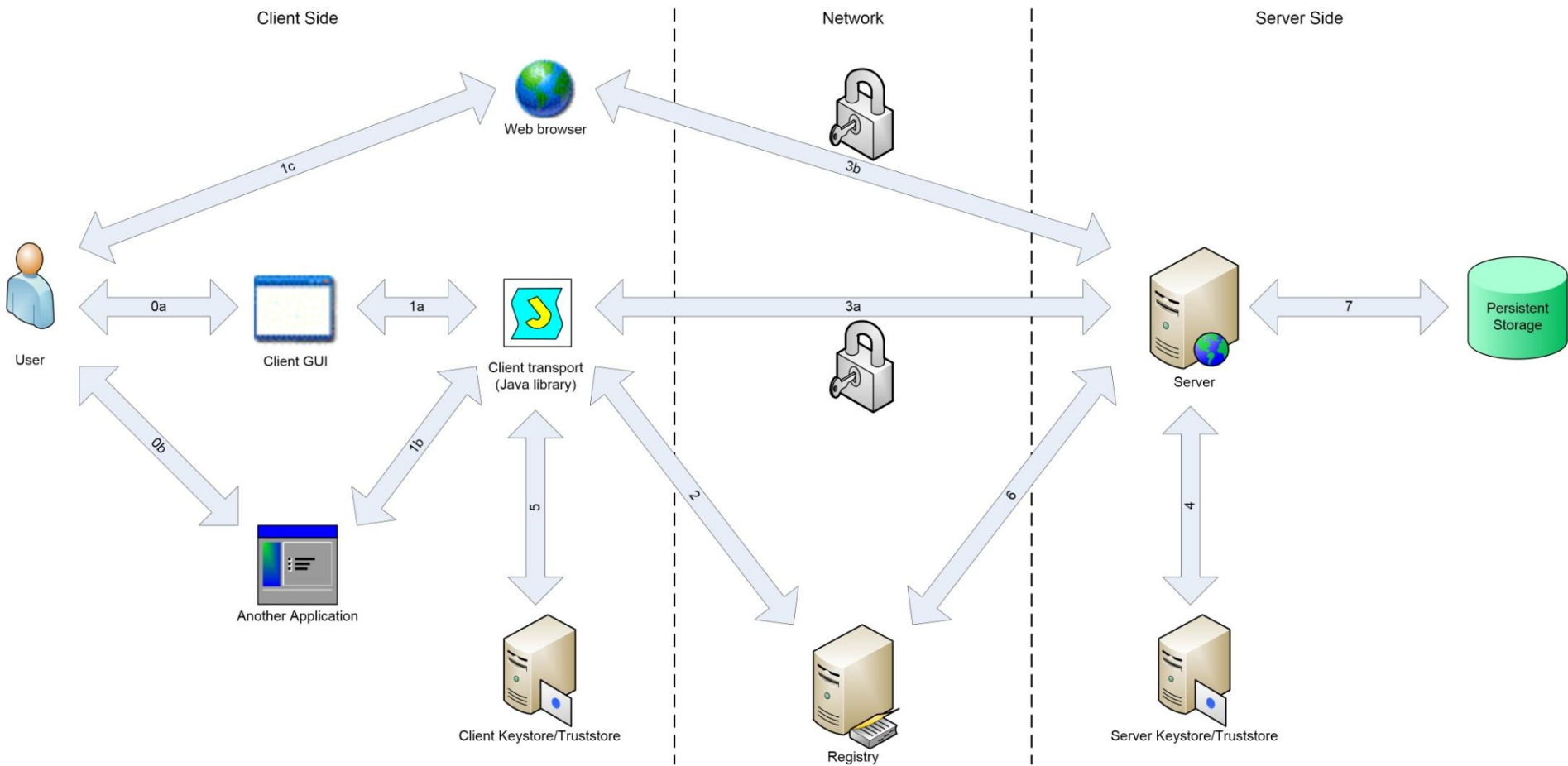


Other issues

- Scalability – **Broadcast** button will also be available
- Security – **TERENA certificates** are used by the mobility nodes
 - Client checks server certificate (TLS)
 - Server gets the client id from the received message, looks for the id in the registry, reads the associated domain, compares with the domain inside the client's certificate
- Registry – We are now replacing UDDI with registry developed as part of core middleware of **GEANT3**
DJ3.3.2 **GEMBus** Deliverable (by Roland Hedberg) – some technical problems still need to be solved

Other issues

- **REST implementation** of the mobility network is finished and will soon be posted on the project web page
- REST uses WADL instead of WSDL (but the data format is the same)
- REST and SOAP implementations will use the same GEMBus registry
- REST and SOAP use the same security model and certificates
- REST Mobility and SOAP Mobility might eventually both be deployed on GEMBus, depending on preferences of the HEIs



Architecture of the REST Mobility network

Problems to solve, steps to make

- Recognize real life scenarios of various universities, describe business cases, test business model - processes are similar but local requirements and procedures need not (IRO staff)
- Agree on the amount and format of exchanged data (IRO staff)
- Develop software – involve software vendors from various European countries (IT people)
- Deploy software in cooperation with partner institutions (IRO staff and IT people)
- Make a first (easy) step – install software for exchange of organization data

Build Mobility network

