

**Report of STSM**  
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**Cost Action IC0801 “Agreement Technologies”**

**Applicant:**

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**Host Institute:**

Dr. Axel Polleres  
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National University of Ireland, Galway

**Period:**

June 1<sup>st</sup> – September 1<sup>st</sup>

## **Purpose of the visit**

This STSM has been coordinated in order to setup a collaboration between the Reasoning and Querying Unit (URQ) from DERI, lead by Dr. Axel Polleres, and the Knowledge Adaptation and Reasoning for Content (KWARC) research group from Jacobs University Bremen, lead by Prof. Dr. Michael Kohlhase. The goal of this visit was joining the efforts of these two research groups to develop an approach for achieving interoperability in large databases, as applied to XMPP<sup>1</sup>-based instant messaging services.

## **Description of the work and results obtained**

The time line of the STSM was organized as follows:

### *1) Learning about the work done in DERI*

We participated in a series of tutorials, detailing how client – server communication is done via XMPP stanzas. These tutorials were organized by Cisco, DERI's industry partner. We were also introduced to the Cisco SDK, used for parsing XMPP stanzas and connecting to Cisco's XCP server. The main task of our project was set to implementing a module that would run on this server, that would make use of an RDF triple store as a database for storing user information and for implementing a more complex functionality of instant messaging features (i. e. groups modeled as ontology classes, complex privacy rules).

### *2) Developing a mapping from XMPP to an ontology*

We developed an ontology that would map the relevant XMPP stanzas to RDF triples. For handling the roster contacts and groups, we reused parts of Sioc<sup>2</sup>. However, for modeling privacy rules, we had to devise our own model.

### *3) Importing the data into a semantic format*

The processing of XMPP stanzas and the mapping to RDF was done via a module implemented in C++ and making use of the SDK provided by Cisco, that was set up to run as a component of an XMPP-compatible server.

### *4) Small-scale evaluation*

The final evaluation of the server component was done as part of a meeting with Cisco developers. The project was well received, leading to a possible collaboration between Cisco and DERI, for the purpose of integrating our module into Cisco's internal XCP server for instant messaging within the company.

## **Future collaborations**

We plan to continue to extend and complete the work we started in

Galway, via an initial remote collaboration from Bremen, furthered by enrolling in a MSc degree on-site in DERI within the next year.

## **Project publications/articles resulting or to result from the STSM**

We plan to release a white-paper detailing the mapping of XMPP stanzas to RDF via the ontology we devised.

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1 Extensible Messaging and Presence Protocol – <http://xmpp.org/>

2 Semantically-Interlinked Online Communities ontology – <http://sioc-project.org/>