

# OSDC/PIRE research proposal

Service-ware Research Group, Information Technology Research Institute, AIST

The Service-ware Research Group focuses on research into the design, deployment and integration of cloud-based services with an emphasis on data management and data integration. Examples of current projects include large scale analytical processing of Big Data (including satellite data archives from GEO Grid [<http://www.geogrid.org/>]) and database processing over Linked Data [<http://linkeddata.org>].

## **Development of a geospatial workflow services with a science application.**

### Introduction

We have developed a workflow engine called lavatube, [<http://www.sourceforge.net/lavatube>], which is being improved to be a cloud-based workflow service. It is basically BPEL-like workflow engine but is tuned to support geospatial image processing. The GUI runs on the browser using HTML5 and the workflow engine can combine OGC(Open Geospatial Consortium) compliant web services.

### Research Goals:

Student can challenge one or both of following goals.

1) Design and implementation of lavatube modules which can interface with other programming infrastructure(such as Hadoop mapreduce). By this achievement, parallel programming tasks can be combined with BPEL style high-level workflow engine such as lavatube.

2) Create an application using the GEO Grid data: In GEO Grid we have many satellite archives including the data from selene[<http://www.kagua.jaxa.jp>] which is stored in our hadoop file system. It includes 60 million spectrum data with moon images/DEM and the creation of an application using these kind of data with lavatube is the task. Visualization of the result using google earth/map which lavatube has the interface can be also expected.

### Knowledge base and/or skills to be achieved

An interest in geospatial data processing with high level workflow tools and the ability of hadoop/mapedure based application programming.