Contribution ID: **117** Type: **Oral**

ESIP - Grid based Satellite Data Processing Platform

Thursday, 5 March 2009 18:00 (20 minutes)

The Environment oriented Satellite Data Processing Platform (ESIP) is developed through the SEE-GRID-SCI (SEE-GRID eInfrastructure for regional eScience) project (2008-2010), funded by the European Commission. ESIP provides a Grid based software platform for satellite image processing and development of environmental applications. The services and interactive tools are available by Web applications. ESIP will be extended to a larger Grid infrastructure by processing real data for SEE regions.

Impact

The content of the satellite images supplies information on the earth surface, weather, climate, geographic areas, pollution, and natural phenomena. The main processing consists of imagery classification that is actually a search of information through combinations of multispectral bands of the satellite data. Moreover, the data exploration and interpretation depends on many variables such as satellite image type (e.g. Landsat), location, vegetation, season, and context (e.g. clouds). All these specific and variable conditions require flexible software tools to support an optimal research within the space of solutions. The ESIP platform will support the development and the execution of the Grid based applications concerning particularly with the processing of satellite images and generally with environmental related processing and studies. ESIP will use spatial data provided by the GENESI-DR project's services, and will be a basic platform for the GISHEO (ESA) and EnviroGRIDS (FP7) projects.

URL for further information

http://www.see-grid-sci.eu/

Conclusions and Future Work

The ESIP platform will be developed for the gLite middleware available on EGEE and SEE-GRID infrastructures. It will support the rapid development of environment applications such as GreenView through the SEE-GRID-SCI project. The primary aim of this application is a refinement of surface and vegetation parameters in SEE regions based on satellite images. New interactive tools, pattern processing, and services will be developed to make ESIP appropriate for general processing of spatial data.

Keywords

Grid computing, satellite image, workflow, process description, environmental application

Detailed analysis

ESIP is based on the gProcess platform developed by the MedioGrid national research project. The gProcess toolset supports the flexible description, instantiation, scheduling and execution of the Grid processing. ESIP provides the user with the possibility to explore the optimal solutions for Grid processing and information searching in the multispectral bands of the satellite images. The optimal processing is achieved in terms of code optimization, total execution time, and data communication costs over the Grid.
The ESIP platform is a collection of Grid services and tools providing the following basic functionality:
- Visual manipulation based interactive description of the Grid based satellite image processing by pattern

workflow
- Development of hypergraphs as a composition of basic operators, services, and subgraphs
- Pattern workflow instantiation for particular satellite image
- Satellite data management, access and visualization
- Workflow based Grid execution

Author: Prof. GORGAN, Dorian (Technical University of Cluj-Napoca)

Co-authors: Prof. PETCU, Dana (West University of Timisoara); Dr POP, Florin (University Politehnica of Bucharest); Dr NEAGU, Gabriel (National Institute for Research and Development in Informatics - ICI Bucharest); BÂCU, Victor (Technical University of Cluj-Napoca)

Presenter: Prof. GORGAN, Dorian (Technical University of Cluj-Napoca)

Session Classification: Astronomy and Astrophysics

Track Classification: Experiences from application porting and deployment