Earth Observation
How to use EO data in GRID

OVERVIEW:
- Study Objectives
- Study Logic
- Activities Description
  - Approach to Requirements Definition
- Dissemination activities
Earth Observation Study Logic

1. **Existing G/S info**
   - EO data archives
   - User Community Info

2. **Data Provider Info**

3. **Selected EO Applications**

4. **Future Missions Details**

5. **Analysis of future GRID aware EO G/S**

6. **GRID aware EO applications Prototyping**

7. **Infrastructure Analysis for EO Applications**

8. **EO Application Requirements Definition**

9. **EO Application Requirements**
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EO Application Requirements Definition

The main objectives:

- definition of requirements for seamless access to distributed data, applications and resources,
- identification of specific requirements for selected EO applications, in terms of performances, processing power, required data.
- Identification of EO users community in terms of expected services/benefits the GRID technology can provide.
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Approach to Application Requirements

Access Requirements Definition

EO Applications Selection

Application Requirements Definition

Selected EO Applications

Entire Earth Observation process includes the following stages:

1. **Existing G/S info**
   - EO data archives

2. **User Community Info**
3. **Data Provider Info**

4. **Access Requirements**

5. **Application requirements**

6. **EO Application requirements**

Selected EO Applications

User Community Info

EO Applications Selection

Application Requirements Definition

Access Requirements Definition

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Approach to Requirements Definition

- **Access Requirements Definition:**
  - for seamless access to distributed data and resources,
  - for collaborative environment
  - for meta-data and data dictionaries, based on International Standards

- **Application Requirements Definition:**
  - for identification of EO applications to be ported over GRID
  - for expected performances, results and necessary data
  - for needed archive facilities, network and computational power requirements

- **EO Application Selections**
  - based on the previous outcomes, for the selection of best candidates to GRID implementation.
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Approach to Requirements Definition

- Required Input:
  - info about EO users community
  - features of required data/products
  - info about EO archives (size, location, access)
  - info about EO products dissemination/distribution channels
  - info about applications based on data fusion and integration
The main objectives:

- to define guidelines for the creation of a programming and execution environment for distributed applications,
- to consider existing elements as drivers for the design and implementation of EO aware GRID infrastructure, e.g.:
  - AMS, a mass storage system that will play an important role both in the DataGRID ESA site and for EO applications of SpaceGRID
  - MUIS, a multimission system providing services to users on several ESA and non-ESA EO satellite missions, that could be ported over a GRID infrastructure.
The main objectives:

- to demonstrate the capability and the benefits of the GRID technology when targeted on selected EO applications
- through implementation activities based on the following steps:
  - definition of the integration steps between EO applications and GRID infrastructure,
  - definition of solution for COTS integration in a GRID environment, (e.g. IDL)
  - definition of a prototype development environment (LINUX)
The main objectives of the Analysis:
- to define G/S systems where GRID technology could be the driver in the system design,
- to analyse which current G/S activities seem to be more suitable for a GRID-based solution,
- to take into account on-going interoperability activities (INFEO, MASS)

Scenarios suggested as starting point:
- Typical: multiple acquisition stations, multiple processing centres, distributed data archives
- Single Actors: a single TTC, a single centre containing all functions,
- Multiple Processing Centres: with world-wide distributed processing centres.
Proposed Conferences:

- 22nd EARSeL Symposium “Geo-Information for European-wide integration”, Praha 4-6 June 2002
  - Innovative Uses of Internet
  - Public Access to Remote Sensing Information