Comparison of European Grid Projects

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Project:

GEMSS

Area:

Accounting Services

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1. Introduction

1.1. Objective and Structure

This document is one of thirteen templates that have common goal to gather information related to main European Grid Projects in order to make their accurate comparison in the framework of GRIDSTART initiative. We believe that the participation of particular projects members in preparation of this document will allow comparing all activities in a credible and exhaustive way.

The proposed structure of the description consists of two parts. The former is concerned with the general overview and architecture together with the contents of layers (the first template). The latter includes the main components of the Grid infrastructure (remaining 12 templates). Since information regarding the project architecture is to be quite general, more detailed description should be provided in the review of the main aspects of the Grid infrastructure. In order to prepare uniform description for each project, we identify the important issues that have to, should or can be included into particular components. Common issues for all components and these specific for this component are briefly described in the next section.

We ask you to proceed according to this schema. However, a feedback is obviously welcome. For some projects the document has been partially completed on the basis of descriptions found at the official web pages. In this case, we ask you to revise already filled in sections, correct and complete them if necessary.

You should take into consideration future plans while you fill in particular sections. Actually they are even more important then the current state of the project components. If you are not going to design some elements in the scope of the project at all, please, note it in the proper section.

1.2. Uniform description

All the descriptions of the Grid infrastructure components are divided into three parts: **General** section includes main requirements and functionality, **Details** section relates to the issues specific for particular component and **External** defines its connections with other components and users.

As it was mentioned above, some of the issues are common for all components or at least repeat for many of them. Such issues, appearing for many or even all areas are shortly characterized below.

In **General** section:

Main requirements determine the objectives and requirements of the workpackage or the software module responsible for the design of functionality related to the particular domain of the Grid infrastructure.

Functionality contains a set of operations provided by the project in the given area.

In **External** section:

Interfaces define services, SDKs, APIs and so forth which can be used in order to access the functionality of the component.

Low level Grid middleware is the middleware providing basic Grid functionality as for example Globus or UNICORE.

Relations with other components determine components that utilize or are utilized by component being described as well as data and information flow between them.

Issues that are specific for this particular domain of the Grid infrastructure are presented in the sequel. Some of them, which we consider to be clear, have been skipped, however, if they turn out to be vague, please, contact the authors of this document (ariel@man.poznan.pl).

The **Details** section deals with the mechanisms to track, limit or charge for the consumption of resources in the system. Although it is often considered within the security area, we have decided to separate it from other sections due to its importance.

Method for resource consumption measurement defines the manner of measurement of resource allocation, reservation, quota exceeding etc.

Virtual accounts describe techniques of temporary accounts management.

Payment strategies in **Economy issues** paragraph determine methods for charging such as prepaid, use and pay later, pay as you go and grants based.

2. Accounting Services

2.1. General

- **Main requirements**
  - Flexible business models must be supported, including a telephone pricing model and dynamic pricing model.
  - Payment models must support at least a fixed fee and pay per use model.
  - A verifiable audit trail must be created by the Grid infrastructure to record all business transactions. Current bills must be downloadable by authorized client personnel.
  - Account billing must be transparent, with each bill broken down into the individual costs agreed in the signed contract for Grid use.
  - All GEMSS software components must have a clearly identified owner and/or supporter. This is important for a future exploitation plan.
- **Functionality**
  - Support for / integration with a well-respected licence manager such as FlexLM.
  - Auditable logging, at both the client and service provider sites, using some form of database.
  - Account manager software running at the service provider site to allow clients to request account status and billing information. This might be customized at each service provider in order to integrate with existing accounting practices.

2.2. Details

We feel it is essential for realistic exploitation to base our business models on the real world, rather than invent some new and untested Grid models. We use existing, well supported, payment mechanisms (like credit cards) and standard business procedures (like contract exchange prior to service).

- **Method for resource consumption measurement**
  Digital contracts are exchanged, and recorded by both the client and service provider as auditable information. Billing for Grid jobs is based on these recorded contracts.
- **Types of resources for accounting**

- **Virtual accounts**
  Service provider support client accounts. To set-up an account the client must provide payment details, such as a credit card number or bank details, and pass a manual credit check. Once an account is open Grid jobs can be charged to it. Each client's and service providers account dept can allocate an account reference and set of invoice numbers. These auditable references will appear on digital contracts.
- **Economy issues**

  Supported application types
  Medical applications
  Types of resources for charging
  For exploitation real money, via a credit card or bank details, will be used. We do not see any need for credits or some new charging mechanism that what is used in the world today.
  Payment strategies
  We will provide a flexible structure to support many payment models. For the project we will implement a telephone payment model (contract with fixed prices) and a dynamic pricing model.
- **Security issues**
  Both sides of a transaction will maintain an auditable database of information relating to Grid jobs. This includes exchanged digital contracts, job submission records and result download records.

2.3.External

- **Interfaces**
- **Low level grid middleware**
- **Relations with other components**