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Earth Science requirements tracing using test suites

Describe the scientific/technical community and the scientific/technical activity using (planning to use) the EGEE infrastructure. A high-level description is needed (neither a detailed specialist report nor a list of references).

Earth Science (ES) is an all-embracing term for sciences related to the planet Earth, covering a large and diverse user community. The major disciplines use physics, geology, mathematics, chemistry, and biology to build a quantitative understanding of the principal areas or spheres of the Earth system. Examples of thematic areas are: atmospheric sciences, hydrology, geology, and geophysics. The DEGREE project is a consortium of ES partners aiming at promoting the uptake of Grid technology in ES.

Report on the experience (or the proposed activity). It would be very important to mention key services which are essential for the success of your activity on the EGEE infrastructure.

The test suite is organized in 3 parts: the test suite organization document, the test suite specification documents and the application software. The test suite organization document provides a high level overview of the test suite as well as templates. The test suite specification documents are written using the common template specifying the test cases and test procedures for each application. Each ES application consists of the application software, data, database schemas, documentation and contact points for technical and scientific support. The test specification for each ES application consists of one or more test cases; each test case is designed to address one or more specific ES requirements. The results of performing the specified tests are documented in the test reports. The reports are usable for the Grid developers to find weaknesses and requirement gaps in their software. A total of 7 test suite specifications is available and can be downloaded from the DEGREE site.

Describe the added value of the Grid for the scientific/technical activity you (plan to) do on the Grid. This should include the scale of the activity and of the potential user community and the relevance for other scientific or business applications

The ES community has two main IT related challenges: Modeling, which requires vast amounts of computational resources, and exploration and production of large shared data sets. In both Grid can play an important role. ES requirements for Grid are based on several requirements studies. Both ES and Grid have evolved and at the present state it is not known to what extent requirements have been implemented. A method is needed in order to provide an unbiased way to monitor progress of Grid and trace ES requirements. It is not sufficient to provide only the requirements, as they might be misunderstand or misinterpreted by possible lack of domain knowledge. The test suites aim at providing well-documented test specifications and real applications plus data to the Grid developers. They can use the test suites to check whether the developed Grid software matches the ES requirements. Also, showing working application examples are more convincing than a statement certain requirements are met.

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