Extending the Services and Sites of Production Grids by the Support of Advanced Portals

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Abstract

The main concern of production Grids is to provide a 100% stable and robust Grid infrastructure usable in 7/24 mode for a large user community. In order to achieve this stability leaders of the production Grids are not ready to take any risk with adopting and deploying newly developed services unless they are convinced that these new features are also absolute stable and robust, and generally accepted by a large user community. Unfortunately, this is a 22-catch. If they do not deploy the new services, the users have no chance to try and test these new services and hence they cannot be popular enough to justify their deployment in the production Grids.

Another problem of the production Grids is that they require the satisfaction of very strict rules for new sites that would like to join. As a result, these production Grids cannot grow as quickly as it was expected in the beginning of the Grid era.

These anomalies can be circumvented by advanced portal technology where the portal is not simply a user interface to the production Grid but rather a collection of higher level Grid services that can facilitate in many ways the work of both Grid application developers and Grid administrators. Such an advanced portal is the P-GRADE Grid portal that is the official portal of two EGEE VOs: VOCE (Virtual Organization Central Europe) and HunGrid (Hungarian VO of

EGEE). Besides, P-GRADE portal is the official portal of SEE-GRID which is a 100% EGEE based Grid infrastructure serving all the countries of the South-East European region. Recently, the EGRID VO of EGEE established a P-GRADE portal to support their economics related Grid activity and the biomed community showed interest to connect the portal to their workflow management engine. Besides the EGEE community, the portal is successfully used as service for several national Grids like the UK National Grid Service, the Croatian, Turkish and Swiss Grid.

In the beginning P-GRADE portal was designed as a generic, high-level, graphical, workflow-oriented portal to support the work of Grid application developers by hiding the low-level, Grid technology specific details of Grid program development. After gaining many feedbacks from the portal users we have realized that a portal can provide much more than single user access support for the Grids. It can solve many problems that are not addressed satisfactorily by the basic Grid middleware of production Grids:

1. Solving Grid interoperability

2. Extending Grids with volunteer sites without compromising their robustness

3. Increasing Grid reliability by

   - Regular and automatic monitoring and testing of the underlying Grid infrastructure
   - Applying user centric testing and error-recovery mechanisms
   - Pre-filtering the usage of Grid sites based on the Grid monitoring results

4. Providing better load-balancing among Grid sites by extending the broker services of production Grids

The current paper will highlight these issues and will show how the portal can solve these problems.