



## JRA1 – MIDDLEWARE RE-ENGINEERING

In the second phase of EGEE, JRA1 provides a reference open source implementation of the foundation services that are application-independent and need to be deployed at all sites connected to the infrastructure. On top of this foundation, an open-ended set of application-specific, higher-level services that can be deployed on-demand at specific sites are either provided directly by the project or integrated from other sources and projects.

Since the first phase of EGEE, JRA1 produced a number of middleware releases (called “gLite”, pronounced *gee-light*), comprising security, information and monitoring, data, job management, and helper services. These services were developed to follow a *Service Oriented Architecture*, mostly based on web-services that aim to be compliant with the Web Services Interoperability (WS-I) recommendations. They have been integrated and tested to form a consistent software stack that still allows individual components to be used independently. gLite has been completed and is now the major middleware used on the main EGEE Grid infrastructure. This stack needs to be supported, maintained, further evolved, in particular in view of emerging standards, and some components must be completed and hardened from the current prototype stage to a production-level release.

The experience gained with early releases allowed the EGEE project to distinguish between application-independent “Grid Foundation Middleware” and higher-level “Grid Services”. Grid Foundation Middleware comprises all services that need to be deployed on a production Grid infrastructure in order to provide a consistent, dependable service. It can therefore be regarded as the “Middleware Infrastructure”. Grid Services, on the other hand, comprise higher-level services that certain users and Virtual Organisations (VOs) require. While the focus of EGEE-II is on Grid Foundation Middleware, key Grid Services are provided in order to offer end-to-end solutions to the EGEE applications and to validate the effectiveness of the Grid Foundation Middleware. Many of the Grid Services are provided by other sources and projects as well. The Grid Foundation Middleware is also based on other common basic Grid tools such as Condor and the Globus toolkit.

Components have been deployed on several environments, including the EGEE Pre-Production service (used for testing) and the Production services (the main Grid infrastructure). The gLite middleware has also been used by other communities such as the DILIGENT project. The user feedback received has been a valuable driver for improving the functionality, usability and performance of the middleware. The last major gLite release (version 3.0) was released on 4 May 2006 and is deployed on the Production Service infrastructure.

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### JRA1 Webpages

JRA1 homepage: <http://cern.ch/egee-jra1/>

gLite homepage: <http://www.glite.org>

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