

JSDL Standard Adaptation in g-Eclipse

Nicholas Loulloudes
(University of Cyprus)

On behalf of the g-Eclipse Consortium

The g-Eclipse Project



- **Funded by the European Community**

- Duration: July 2006 – December 2008
- Funding: 2 Million Euro
- Consortium members:
 - Forschungszentrum Karlsruhe
 - Poznan Supercomputing and Networking Center
 - Johannes-Kepler-University Linz
 - University of Cyprus
 - Innoopract Informationssysteme GmbH
 - University of Reading
 - IT Innovation
 - NEC Research Europe



Open Source Project



- **g-Eclipse is an official Eclipse Technology Project**
 - Around 20 developers among the 8 partners
 - 14 members with committer status at Eclipse.org
 - Some first contacts to external contributors established.
- **Source code released under Eclipse Public License**
 - **Version 0.5** released in September 2007
 - Available for free download
 - Supported platforms: Linux, Windows, Mac OS X
 - Roughly 50 plug-ins, 2500 classes and interfaces aka 300.000 LOC
 - Monthly release cycle (**1.0 M5** released April 2008)

Grid Reality – The Problem



- **Accessing a Grid is difficult**
- **Different systems are available**
 - Middleware (gLite, Globus, GRIA, Unicore ...)
 - Installation (rpm, tar, Quattor, ...)
- **Different Programming Paradigms**
 - Batch Type systems Vs. Service Oriented Systems
 - Many programming Languages.
- **Interaction with a Grid is mostly done via CLI**

The threshold is too high for the “standard” user.

g-Eclipse – The Idea



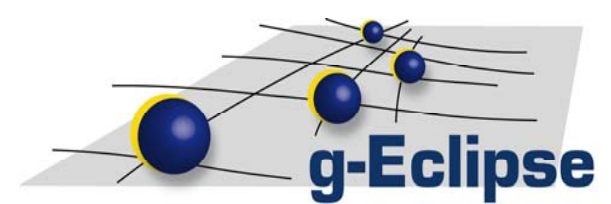
- Provide a user-friendly UI for accessing Grids
- Provide an extensible, middleware-independent, framework for accessing Grids
- Supports the roles of Grid **users**, **developers** and **operators**.
- Provide the necessary tooling to hide the complexity (wizards, editors...)
- Substitute (where possible) **CLI** with **GUI**
- Conform to Grid Standards. (JSDL, ...)

g-Eclipse - Technical Overview



- **g-Eclipse is based on the Eclipse platform**
 - It is modular (OSGi) and extensible (Extension point mechanism of Eclipse)
- **Provide a middleware-independent architecture that:**
 - Abstracts common grid concepts
 - Provides core functionalities
 - Is extensible by middleware-specific plug-ins
- **Provide a graphical user interface that:**
 - Is based on the abstract core and therefore
 - Looks the same for any middleware
 - Behaves (at least) very similar for any middleware

g-Eclipse – Current Status



Currently supported middlewares:

- **gLite** - Batch system for the scientific user
- **GRIA** - Service-oriented infrastructure for industry and commerce
- **AWS** adapters (cloud computing) in preparation



g-Eclipse and JSDL



- **g-Eclipse aims for full support of the JSDL standard.**
 - Gain independence from the underlying middleware.
- **JSDL is the main Job Description Language in g-Eclipse.**
- **Currently g-Eclipse supports :**
 - JSDL Standard v1.0 (to be upgraded to JSDL 1.0 Errata Release)
 - POSIX extensions
 - Parameter Sweep and Sweep Functions extensions (initial work is there)
- **JSDL is used for:**
 - Describing gLite jobs.
 - Describing GRIA jobs.
 - Workflows.

g-Eclipse and JSDL (II)



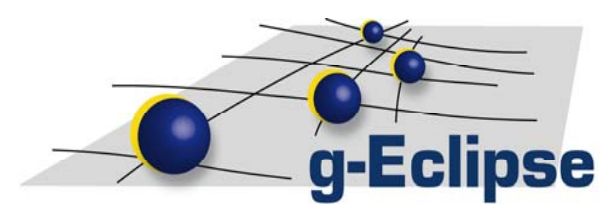
- **JSDL documents are manipulated through:**
 - JSDL document creation **Wizard** (creation)
 - A multi-page JSDL document **Editor** (editing)
- **g-Eclipse users are aware only of JSDL documents.**
- **JSDL documents are translated to middleware-specific job description documents during job submission**
 - Operation transparent from the user
- **On-demand translation of JSDL documents to other middleware-specific job description documents**
 - JDL (Job Description Language for gLite)
 - RSL (Resource Specification Language for Globus)

Future work on JSDL



- **Update g-Eclipse internal JSDL model to JSDL 1.0 Errata.**
- **Fully support for Parameter Sweep Extension.**
 - Identify possible use-cases for Parameter Sweep Extension.
- **Provide JSDL check-styles for different middleware - utilized by the JSDL editor.**
- **Extend the JSDL editor as a stand-alone Eclipse feature.**
 - Promotes the JSDL standard within Eclipse communities.

Contact the g-Eclipse Team.



g-Eclipse Web Pages:

- <http://www.eclipse.org/geclipse>
- <http://www.geclipse.eu>

g-Eclipse Team: [contact \[at\] geclipse.eu](mailto:contact@geclipse.eu)

g-Eclipse Development Mail List: [geclipse-dev \[at\] eclipse.org](mailto:geclipse-dev@eclipse.org)