

Eclipse Technology Project: g-Eclipse

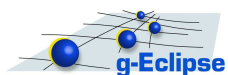
Release Review Version 0.5.0 (Incubation)

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v1.0.

Date: September 11, 2007

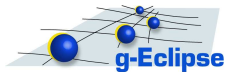
Abstract: This document contains the Release Review Documentation for the Eclipse Technology g-Eclipse Project
Please add your comments and votes to https://bugs.eclipse.org/bugs/show_bug.cgi?id=202791





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1 Overview

Over the last few years Grid infrastructures have been becoming the backbone of those fields of science and research that require solving complex computational problems. At the same time, the commercial application of Grid technologies has led to new categories of offerings (e.g. on-demand offerings) and will likely play an important role in the “software as a service” landscape. However, the complexity of Grid infrastructures is often discouraging to new and inexperienced users and impedes the use of Grid technologies in new application domains.

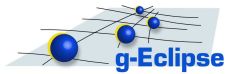
By providing g-Eclipse, an integrated, Grid-enabled environment based on Eclipse, this project aims at facilitating the use of Grid infrastructures. As an integrating tool, g-Eclipse has an impact on the different actors in the Grid domain:

- Grid **application users** are able to access the Grid with standardized, but customized user-friendly interfaces in g-Eclipse
- Grid **resource providers** can reduce the cost of operation while the complexity of the Grid is reduced with supporting tools
- Grid **application developers** are empowered to speed up the development cycle of new Grid applications

The consortium that started the g-Eclipse project receives funding from the European Union under contract number IST-034327 to implement and establish g-Eclipse.

Since March 2007, the project delivers monthly milestone releases. Currently, there are about 3000 files with more than 70000 lines of code (LoC).

In the future, g-Eclipse will come with exemplary support for the EGEE Middleware gLite/LCG (see <http://glite.web.cern.ch>), which is deployed on the biggest Grid infrastructure currently available. However, as g-Eclipse is following a frameworks and exemplary tools approach, other Middleware such as UNICORE and Globus Toolkit 4 (GT4) can also be integrated by extending g-Eclipse. In the 9 months to follow, a 2nd Grid Middleware (GRIA, <http://www.gria.org>) will be implemented by the g-Eclipse consortium along with the new partner IT Innovations to prove the quality of the g-Eclipse framework. Both Grid Middleware specific implementations are not included in the 0.5.0 release, and it has to be discussed if and how these implementations can be included in a future 1.0 release distributed from Eclipse.org.



2 Features

g-Eclipse in version 0.5.0 includes the Grid Middleware-independent Grid model and exemplary tooling on top of it:

- Wizards: Grid Project Wizard, Grid Connection Wizard, Job Description Wizard, Workflow Diagram Wizard
- Views: Authentication Token View, Connections View, Grid Projects View, GVid View, Job Details View, Jobs View, Process Status Viewer, Terminal View, Web View
- Editors: JSDL Editor, JDL Editor, Workflow Editor
- Preference pages for CA Certificates, Application Parameters, GVid, Job Settings, Terminal, VO-Declarations, Webview, Workflow Diagram

A Grid Middleware implementation for gLite is *not* included in the 0.5.0 release, but available from external sites (see <http://wiki.eclipse.org/g-Eclipse-Middleware-Extensions> for a list). Although the initial project plan did foresee this, the project team decided to shift the integration to the 1.0.0 release for several reasons:

- Getting early feedback: One of the goals of the 0.5.0 release is about getting early feedback from the community. To achieve this, it is not required to deliver the gLite implementation from Eclipse.org (similar to the way of applications server integration in WTP)
- It is not yet sure if all IP requirements of the Eclipse Foundation can be met, because the gLite Middleware relies on many 3rd party libraries. The g-Eclipse team and the Eclipse Foundation have to balance reasons if it is worth the effort to follow the Eclipse IP Process for all of them.
- A possible solution could be the integration of another Grid Middleware by the g-Eclipse team. The team will integrate a 2nd Grid Middleware, (GRIA) in its 2nd project year. It must be discussed, if a Grid Middleware implementation can be brought through the Eclipse Legal Process, and which of the two (or both).

`eu.geclipse.core` core g-Eclipse framework with extension points for Grid Middleware-specific implementations; this plug-in provides interfaces, abstract implementations, and appropriate managers that must be used in a Middleware-specific way.

`eu.geclipse.ui` central UI classes for Wizards and Views used by different Middleware implementations

`eu.geclipse.core.filesystem` Grid filesystems based on the Eclipse Filesystem

`eu.geclipse.core.jobs` Grid jobs API

`eu.geclipse.glite.editor` editor for JDL (Job Description Language) files

`eu.geclipse.gvid.*` Grid visualisation view with video transport

`eu.geclipse.info` GLUE model, Grid info system

`eu.geclipse.jsdl.*` editor for JSDL (Job Submission Description Language) files

`eu.geclipse.terminal.*` terminal emulation and ssh connection

`eu.geclipse.webview` integrated web browser

`eu.geclipse.workflow.*` workflow editor for Grid workflows

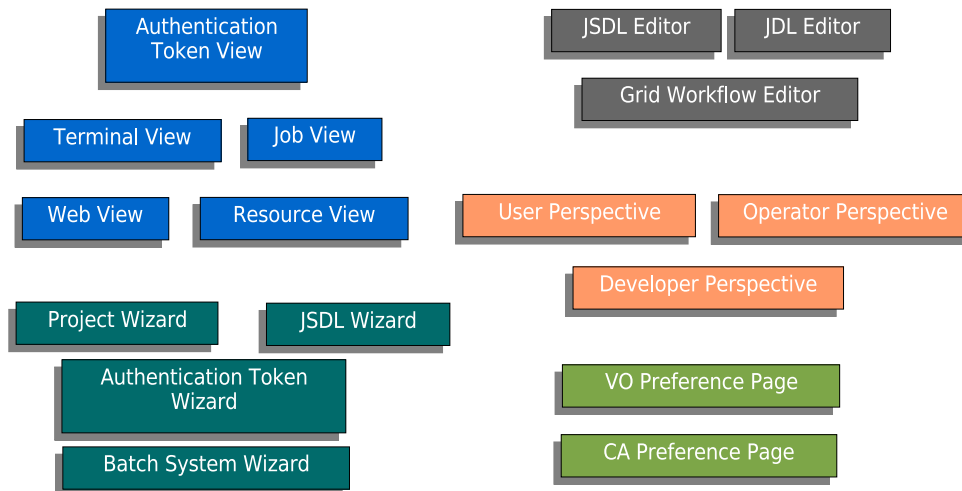


Figure 2.1: g-Eclipse User Interface Contributions

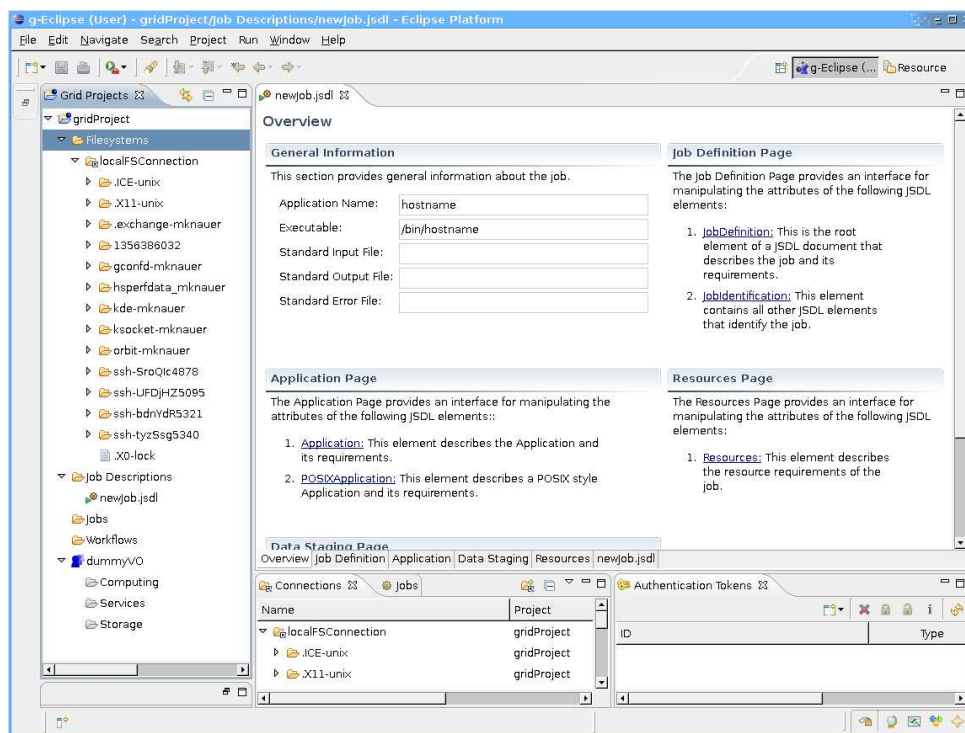


Figure 2.2: g-Eclipse User Perspective

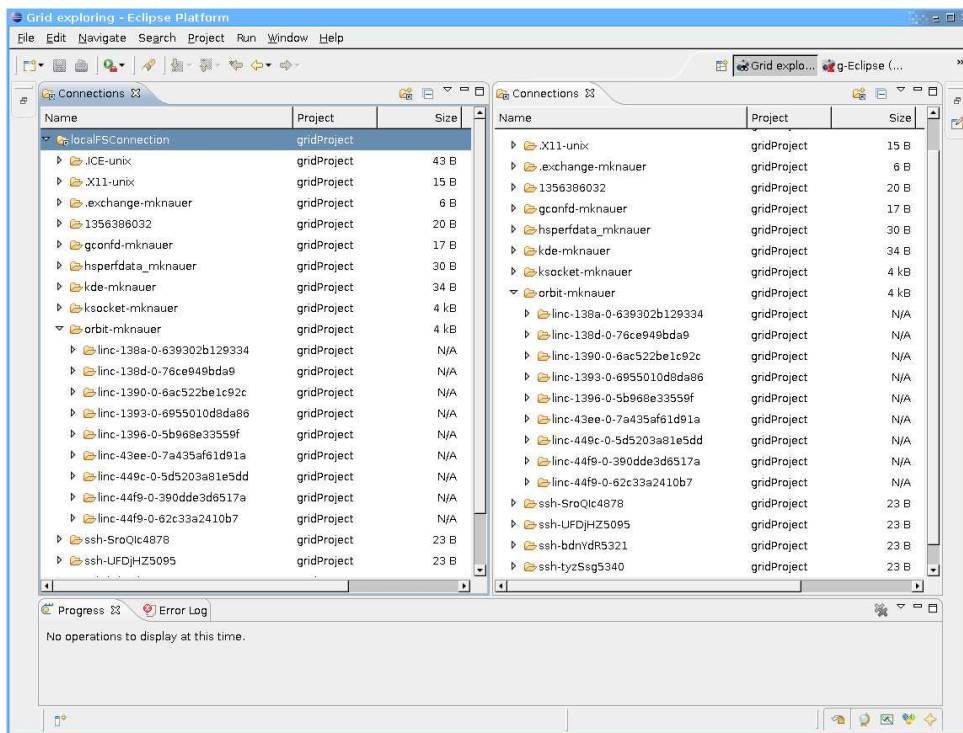


Figure 2.3: g-Eclipse Grid Explorer Perspective

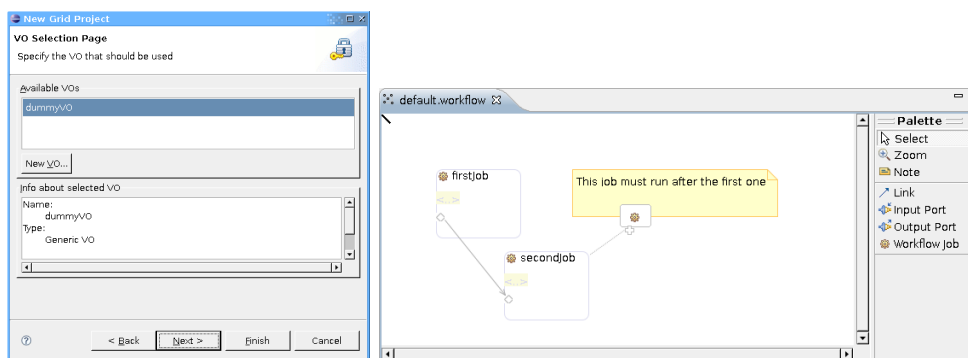
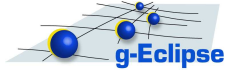


Figure 2.4: g-Eclipse: New Grid-Project Wizard and the Workflow Editor



3 Non-Code Aspects

3.1 User Documentation

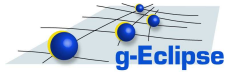
User documentation has been created for this initial release:

- How-to and installation guides available on the web
- Eclipse Help System
- Eclipse Cheat-Sheets
- Article in the German Eclipse Magazin (2007, 12)
- Video
- How to contribute documentation

This includes a guide for the Gilda Testbed which can be used to get access to an exemplary Virtual Organization (VO) 'geclipsetutor' to test g-Eclipse.

3.2 Localization or Externalization

g-Eclipse is available for the English language; strings are externalized.



4 APIs

- The core API of g-Eclipse is the Grid Middleware independent framework
- The UI contributions are built on top of this API
- With the implementation of a 2nd Grid Middleware on top of the framework, the g-Eclipse team will prove the quality of the framework
- The JSDL Editor and the JDL Editor are independent from any Grid Middleware

Although the API has reached a high level of stability in the last few months, it has to be noted that this is not a 1.0 release and minor changes might be necessary. The implementation of the 2nd Grid Middleware will help to ensure that the framework is truly Middleware independent.

5 Architectural Issues

The main goal of providing a Grid model and framework that is independent from the underlying Grid Middleware has been met. Additional Middleware support can be added by implementing the interfaces defined in the core plug-in (`eu.geclipse.core`) and the extension points:

- `gridElementCreator`
- `authTokens`
- `authTokenProvider`
- `applicationDeployment`
- `caCertificateLoader`
- `connectionManagement`
- `gridJobStatusServiceManager`
- `problemProvider`

User interface contributions that are Middleware specific can be added via the extension points declared in the UI plug-in `eu.geclipse.ui`:

- `jobSubmissionWizard`
- `jobDetailsFactory`
- `connectionWizard`
- `newVoWizards`
- `efs`
- `authTokenUI`

A detailed description of the architecture can be found in the architecture document that is available for download from <http://www.eclipse.org/geclipse/resources/D1.5.pdf>.



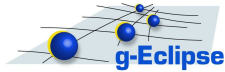
6 Tool Usability

g-Eclipse contains tooling for almost all tasks that are necessary in a Grid-enabled environment. This includes accessing and managing data, creating job descriptions, submitting and controlling jobs, and creating workflows.



7 End-of-Life

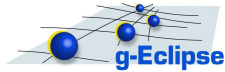
This is an initial release, so there are currently no deprecated or removed APIs or features.



8 Bugzilla

As of 2007-09-10 there are

- 472 bugs in technology/gEclipse
- 385 of them are in state **resolved**, **verified**, or **solved**
- open bugs for the 0.5.0 release: 2 (**critical**), 3 (**major**), 59 (**normal**), 1 (**minor**), 5 (**trivial**), and 11 (**enhancement**)
- There are no blockers left, all open bugs for 0.5.0 will be fixed until the release



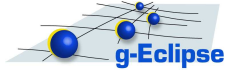
9 Standards

- g-Eclipse uses Java 1.5, compatible with Eclipse 3.3
- Job Submission Description Language (JSDL) Specification, Version 1.0 (OGF)
(see <http://www.ogf.org/documents/GFD.56.pdf>)
- Grid Laboratory Uniform Environment (GLUE) schema support
(see <http://glueschema.forge.cnaf.infn.it/Spec/V13>)
- Job Description Language Attributes Specification for the gLite Middleware (JDL)
(see <https://edms.cern.ch/file/555796/1/EGEE-JRA1-TEC-555796-JDL-Attributes-v0-8.pdf>)



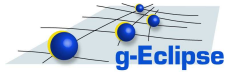
10 UI Usability

- Following Eclipse UI usability guidelines
- Usability changes based on users' feedback



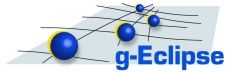
11 Schedule

- <http://www.eclipse.org/geclipse/resources/MilestonePlanning.pdf>
- 0.5.0 M0 [January 2007] (internal release)
- 0.5.0 M1 [February 2007] (internal release)
- 0.5.0 M2 [2007-03-30]
- 0.5.0 M3 [2007-04-27]
- 0.5.0 M4 [2007-05-25]
- 0.5.0 M5/RC0 [2007-06-29]
- 0.5.0 RC1 [2007-08-01]
- 0.5.0 RC2 [2007-09-03]
- 0.5.0 final [2007-09-28] (scheduled)
- Webinar [October 2007] (scheduled)



12 Communities

- Active committers (14) and contributors from 6 partners (Forschungszentrum Karlsruhe GmbH, IN-NOOPRACT, Inc., Poznan Supercomputing and Networking Center, Johannes Kepler Universität, University of Reading, University of Cyprus)
- Positive voting of 3 contributors
- Participation (Talks, Demo, BoF) at Eclipse events (Eclipse Summit 2006, EclipseCon 2007, Eclipse Summit 2007) and dedicated Grid events
- Weekly public conference calls on VRVS
- Developer mailing list with about 400 e-mails, newsgroup not actively used by the team and by the users
- PR activities: The g-Eclipse team created newsletters that were distributed on several events and conferences and from the Eclipse Foundation web site.



13 IP Issues

See IP Log at <http://www.eclipse.org/geclipse/project-info/iplog.txt>

- Initial code contribution got IP clearance from Eclipse Legal (CQ1351)
- All CQs of this release got IP clearance from Eclipse Legal (CQ1698)
- External contributions are listed in the IP Log and were submitted via Bugzilla

List of committers:

- kbylec - initial committer, active
- sgirtelse - committer since 2007-08-15, active
- mknauer - initial committer, active
- hkornmaye - initial committer, active
- tkockerba - initial committer, active
- rlichwala - initial committer, not active, no contributions
- mpabis - initial committer, active
- mpolak - initial committer, active
- mstumpert - initial committer, active
- athandava - initial committer, active
- gtsouloup - initial committer, active
- mwojtysia - committer since 2007-08-10, active
- pwolniewi - initial committer, active
- nloulloud - committer since 2007-08-21, active

14 Project Plan

Version 1.0.0 is called the mature release and is scheduled for June 2008. Among other improvements it will include

- an implementation for a second Grid Middleware GRIA together with the IT Innovation Centre, Southampton, United Kingdom.
- a revision of the core features
- the final definition of API and extension points

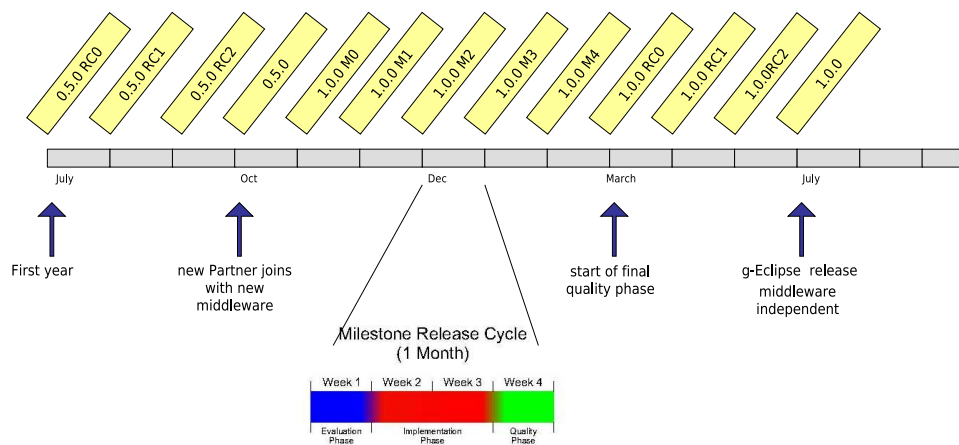


Figure 14.1: g-Eclipse Planning