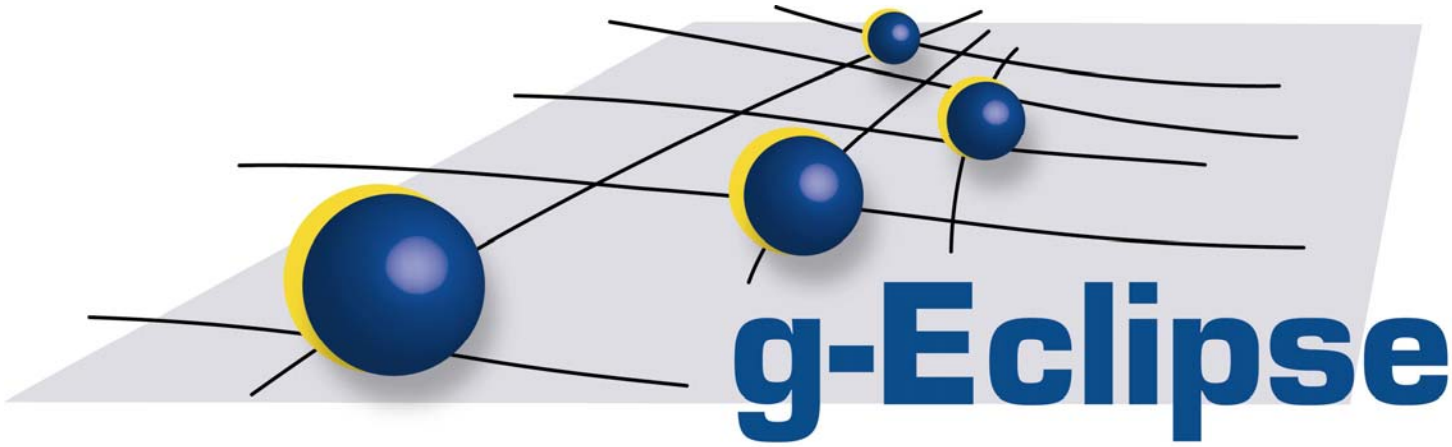

Easy Access to Grid infrastructures

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Dr. Mathias Stuempert (KIT-SCC, Karlsruhe)

EGEE User Forum 2008
Clermont-Ferrand, France
13th of February 2008

Status

- g-Eclipse is available and can be used to access Grid infrastructures independent of the middleware
  - g-Eclipse 0.5 in September supports gLite
  - g-Eclipse 1.0 is under development to support the GRIA middleware (www.gria.org)
    - Current Milestone (g-Eclipse 1.0M2)

- g-Eclipse is open for contributions
  - more middleware implementation
  - based on the “Eclipse way”
  - integration of existing tools

Potential of g-Eclipse

- The success of the WWW was based on the availability of a
  - Browser which enables access to
  - server infrastructure which use a common
  - protocol

- The current Grid is based on
  - Too many portals/CLI to access
  - Middleware dependent Grid infrastructure by using
  - many protocols, standards and proprietary software stacks

Potential of g-Eclipse (II)

- The future Grid should be
  - An extensible, middleware agnostic framework to access
  - Grid infrastructures independent of the used
  - protocols, standards and software stacks

- g-Eclipse has the potential for the client side "browser" of Grid infrastructures
  - Middleware independent
  - OS independent
  - reliable
  - extensible

g-Eclipse – basis

- Built on top of the extensible Eclipse eco system
  - Open Source changes the process of software development
  - Eclipse has 70% market share in tooling market
  - Important: Eclipse offers a Open Source development process for industry to deliver in time and quality
    - Planned, Transparency, Quality, Agile methods
  - Enabler for commercial products:
    - i.e. Lotus Notes, …

g-Eclipse – projects

- www.geclipse.eu
- Project funded by the European Commission (INFSO-32347)
- 7 partners

- Until autumn of 2008

- www.eclipse.org/geclipse
- Technology project at Eclipse Foundation
- Release 1.0.0 with stable API scheduled for autumn of 2008

Grid project

Resource Broker

Replica Manager

Computing

Storage

Infrastructure

Grid project

Programming languages

Applications

Domain services

Batch apps

Interactive apps

Workflows

Web services

Infrastructure Providers

Policies

Virtual Organisations

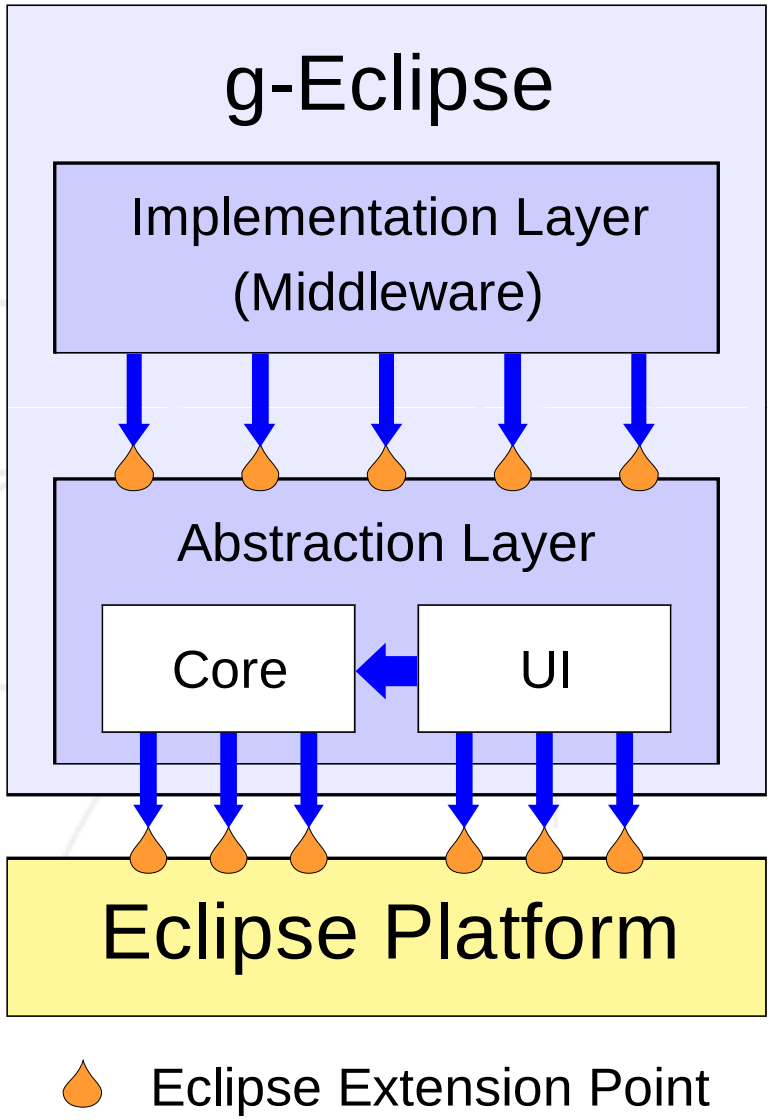
Service Providers

Members

Roles

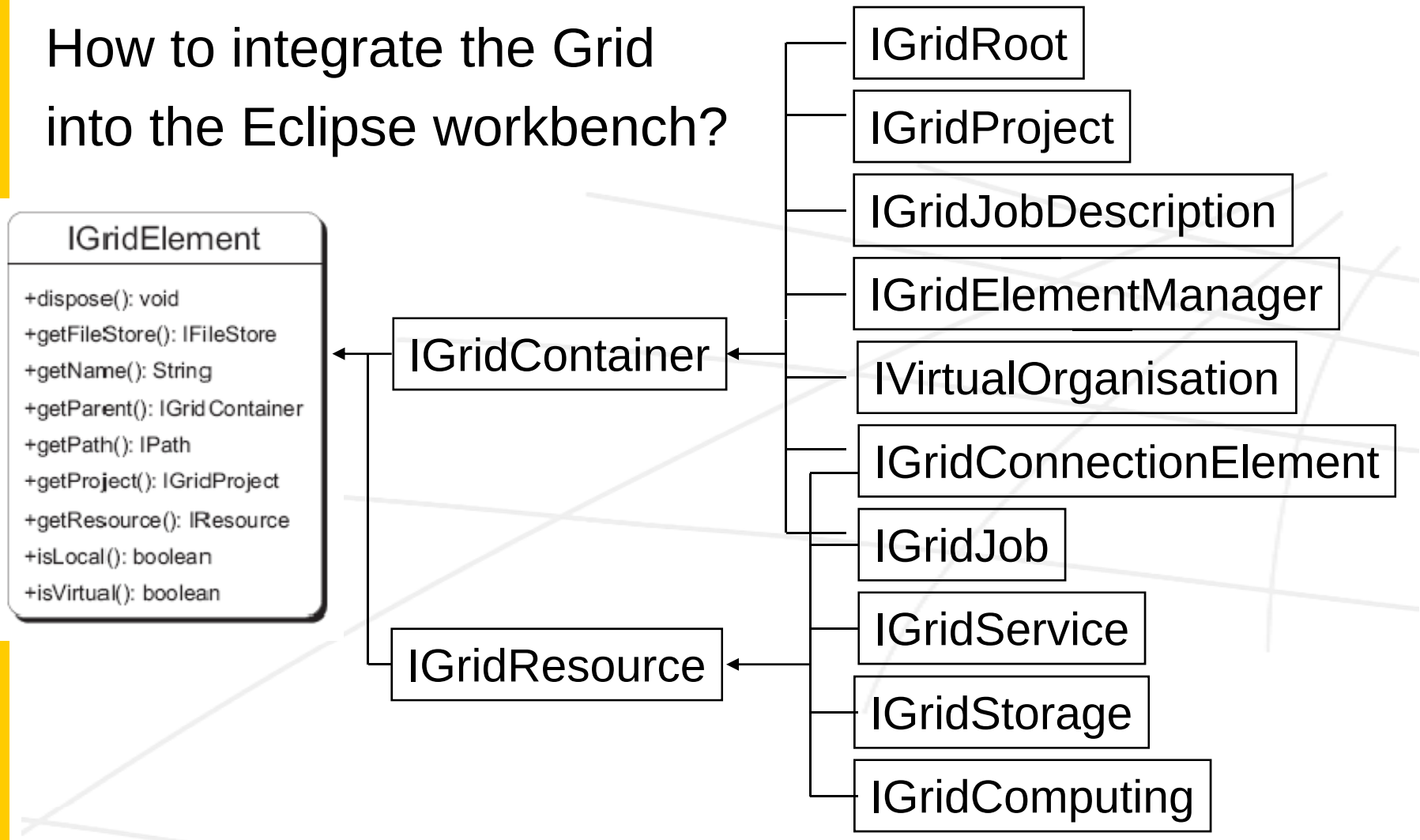
Architecture - Overview

- Abstraction Layer
  - Core functionalities, e.g.
    - Authentication/Authorization
    - VO management
    - Data management
    - Job submission
  - Common user interface, e.g.
    - Views
    - Wizards
    - Dialogs
    - Preference pages
- Implementation Layer
  - Extended core functionalities
  - Middleware specific functionalities



Grid Model

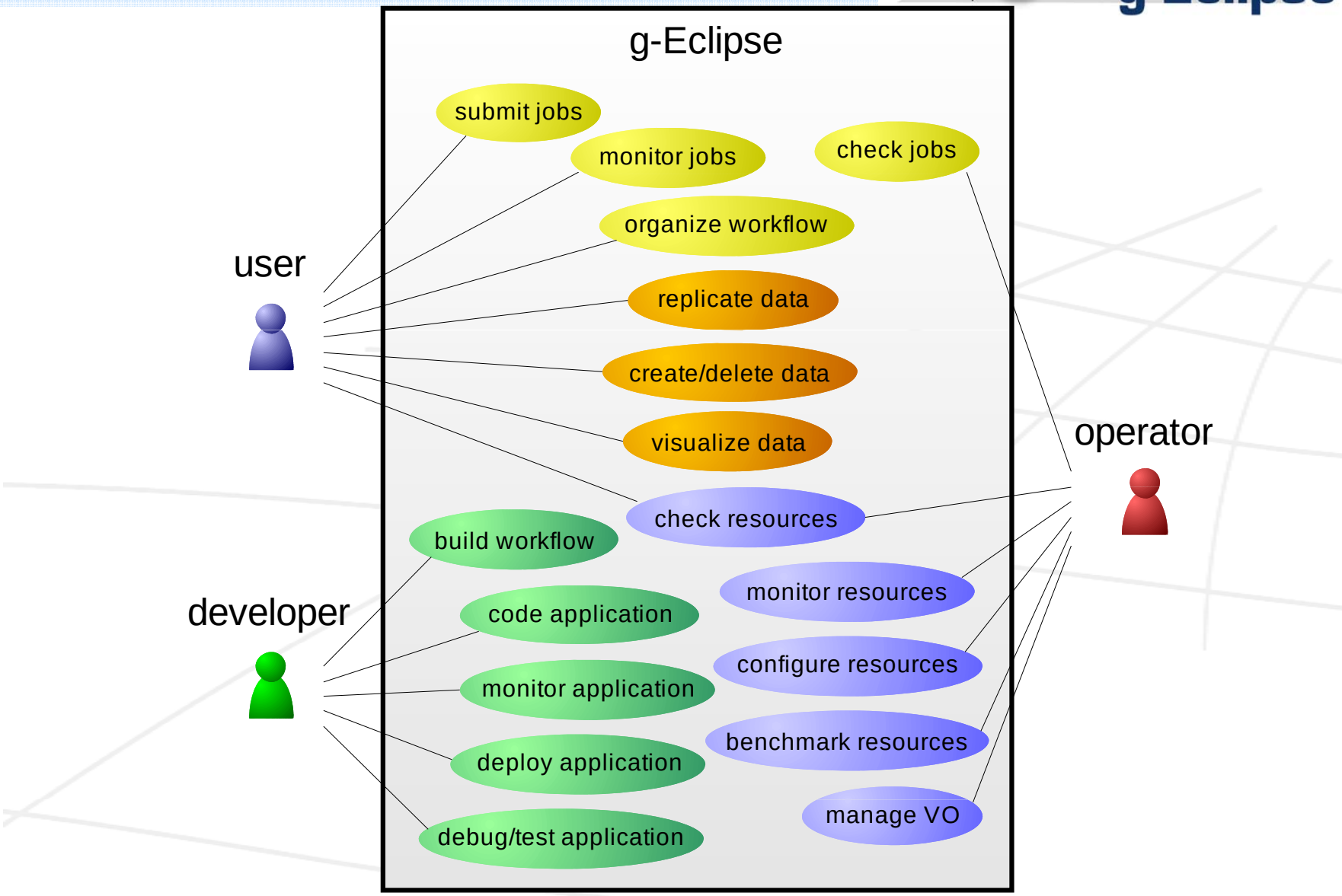
How to integrate the Grid into the Eclipse workbench?



Grid application life cycle

- In most cases, e-Users (e-Scientists, e-Engineers, e-Stock Traders) have their application(s)
  - Legacy code written in different languages (FORTRAN, C, C++, …)
- e-Users want to collaborate
  - A Virtual Organization is build around a Virtual Computing Center on existing (and new) infrastructure
- e-Users create Grid projects
- e-Users want to interact with the Grid
  - without knowing all details!!
    (development, deployment, testing, management, …)
- → Tooling is necessary!!
  - Wizards, Editors, …
  - Hide the complexity!!

Use cases

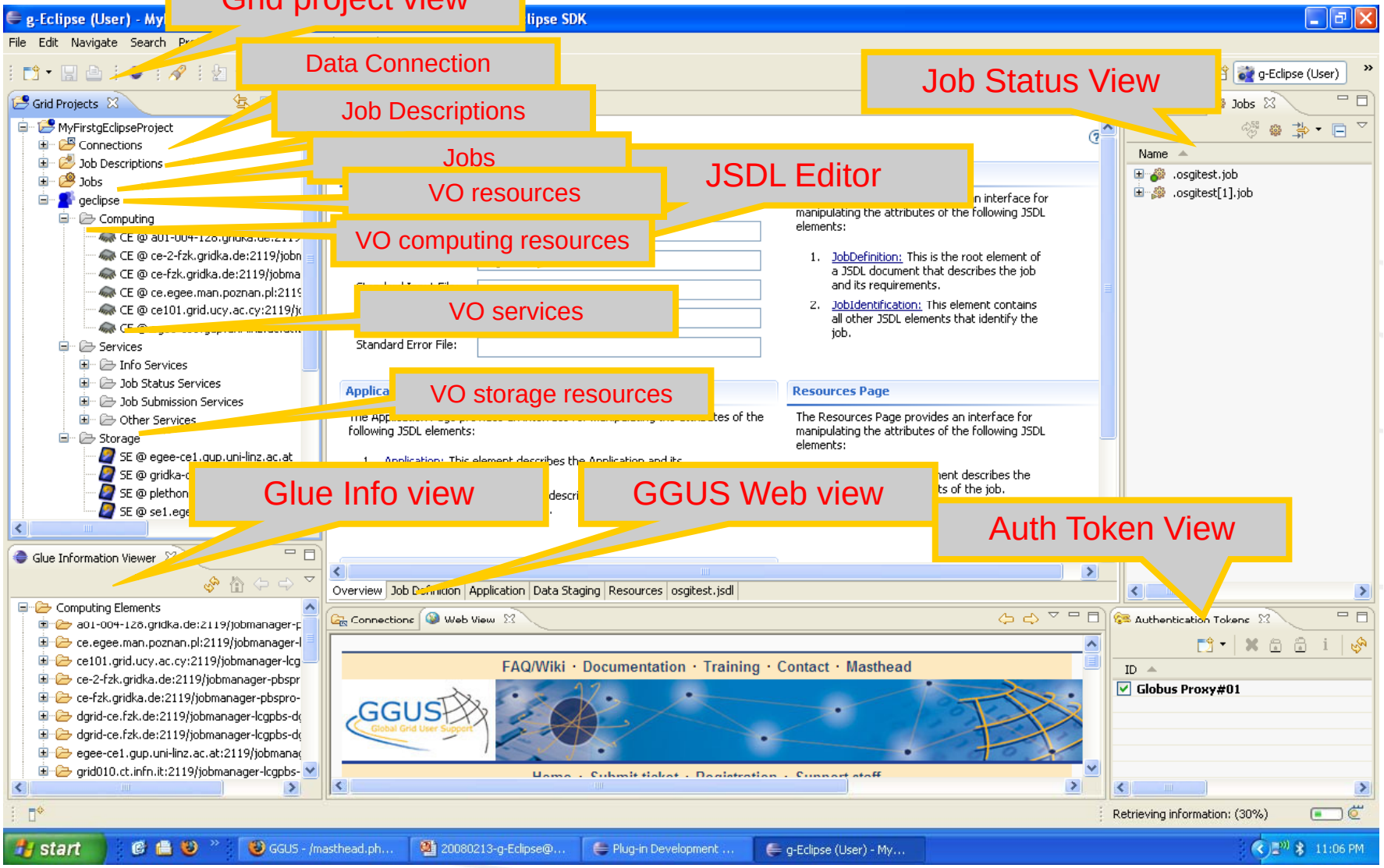

g-Eclipse
submit jobs
monitor jobs
check jobs
organize workflow
user
replicate data
create/delete data
visualize data
operator
check resources
build workflow
monitor resources
developer
code application
configure resources
monitor application
benchmark resources
deploy application
manage VO
debug/test application

Roles and Contexts

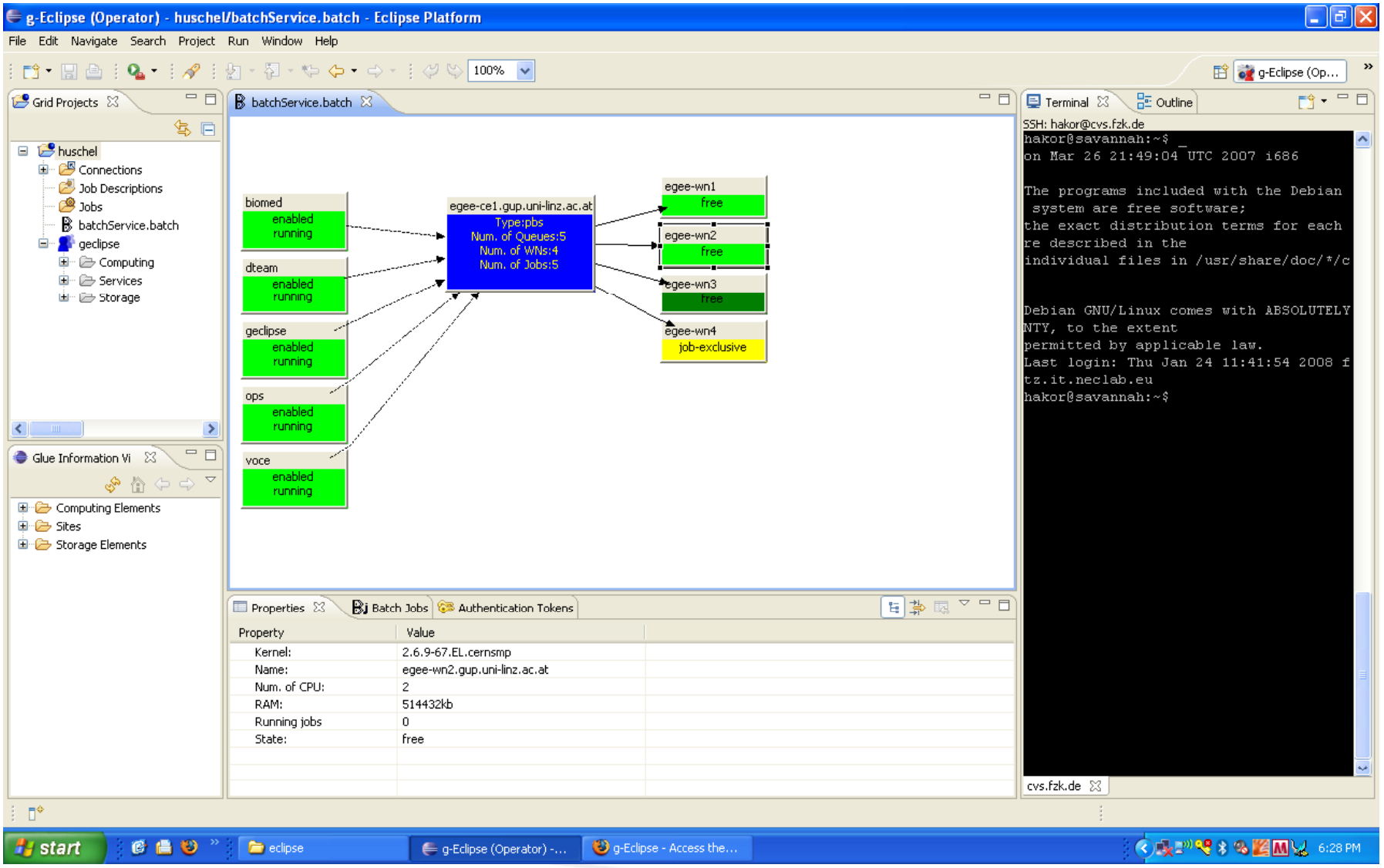
- Grid user plays different roles
  - Grid applications user
  - Grid resource provider and operator
  - Grid application developer
  - ….
- Grid user acts in different contexts
  - Virtual Organizations
  - Projects
  - …

- g-Eclipse supports “Contextualization”
  - Depending on the user role/context a different set of tools is used by/presented to the user
- g-Eclipse supports “Customization”
  - Build the user-preferred workbench
  - Persistent over sessions

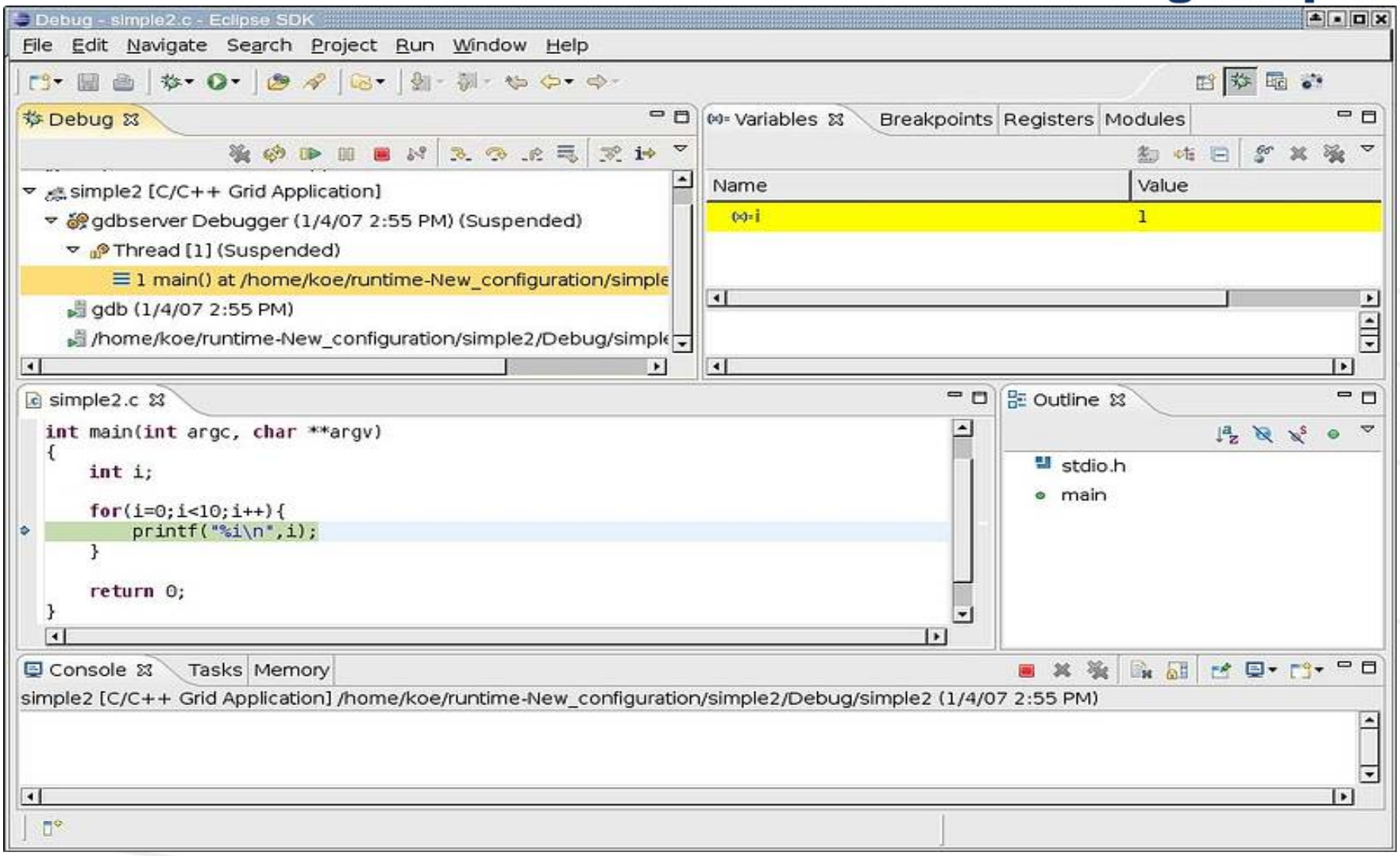
User perspective



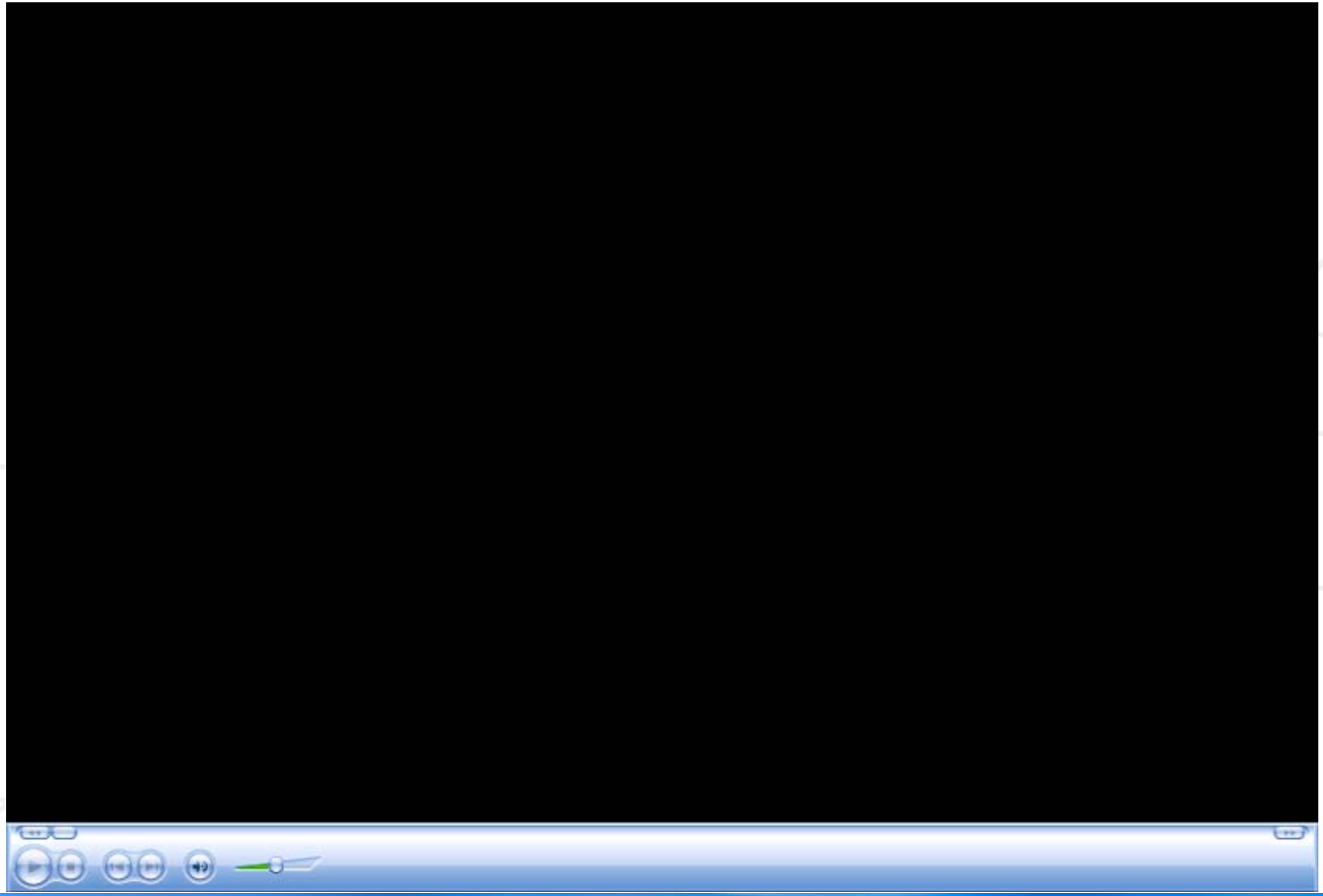
Operator perspective



Developer perspective

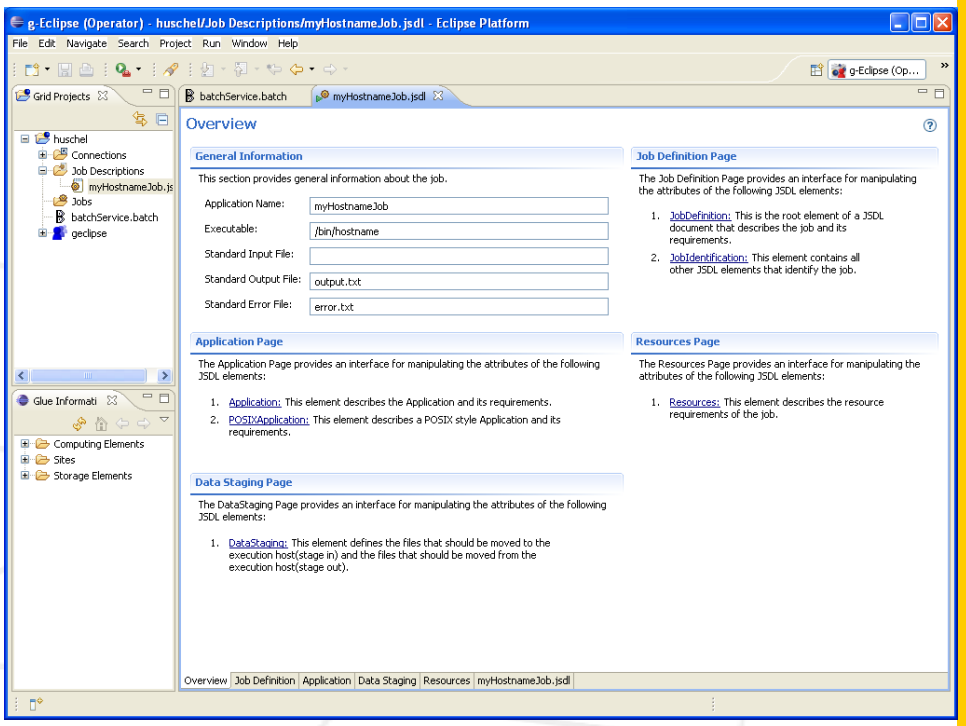


Visualisation



Standards

- JSDL editor
  - Mulitpage editor following the OGF JSDL standard
  - Submission to different middleware possible
    - gLite: XSLT transformation
- GLUE schema browser
  - Browse through your resources
- Eclipse is based on OSGi
  - Enables dynamic code deployment

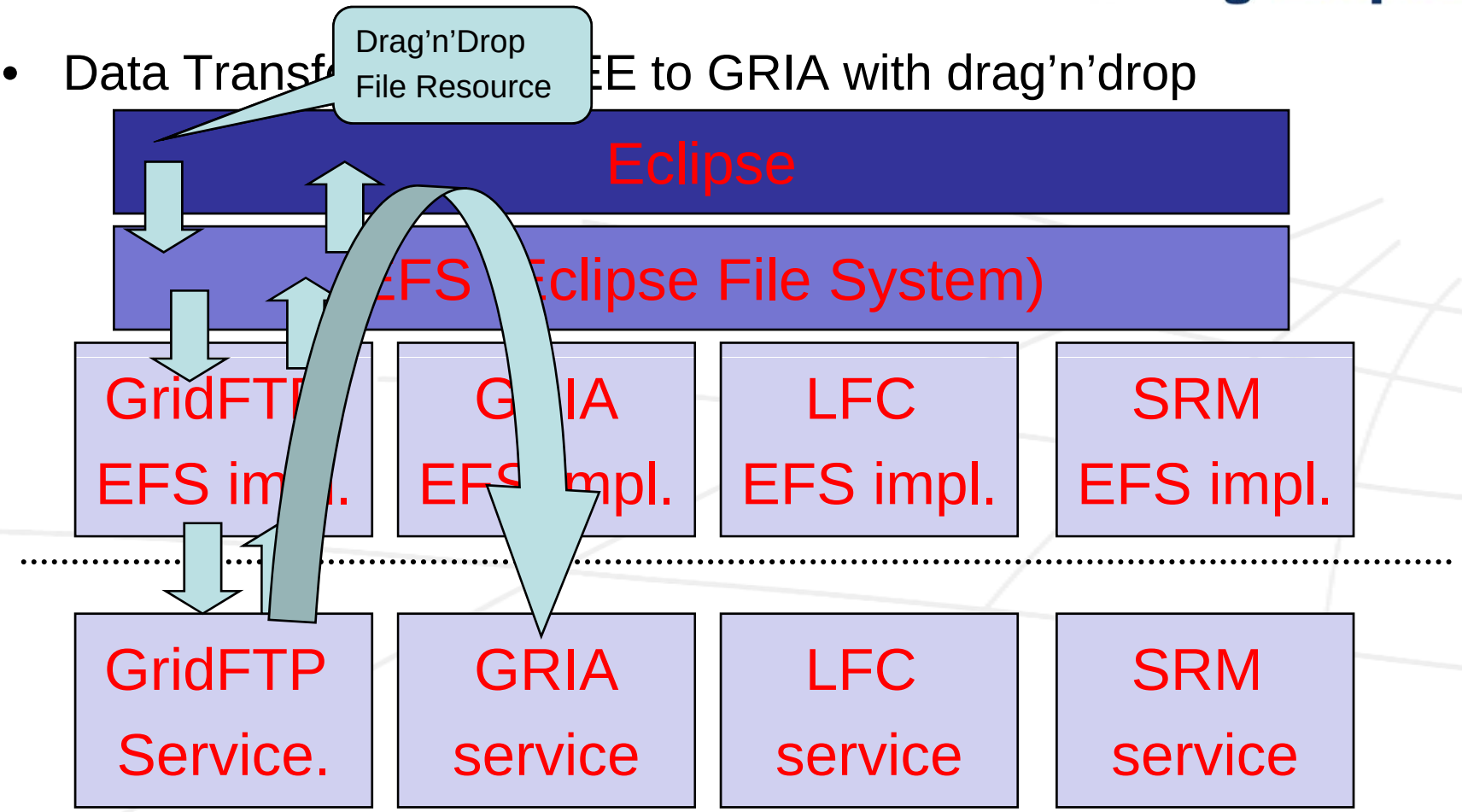


Middleware status

	GRIA	gLite
Authentication token	YES	YES
VO concept	NO	YES
Info System	YES	YES
Data access	YES	YES
Job definition	YES	YES
Job submission	YES	YES
Workflow definition and submission	NO	YES

Interoperability

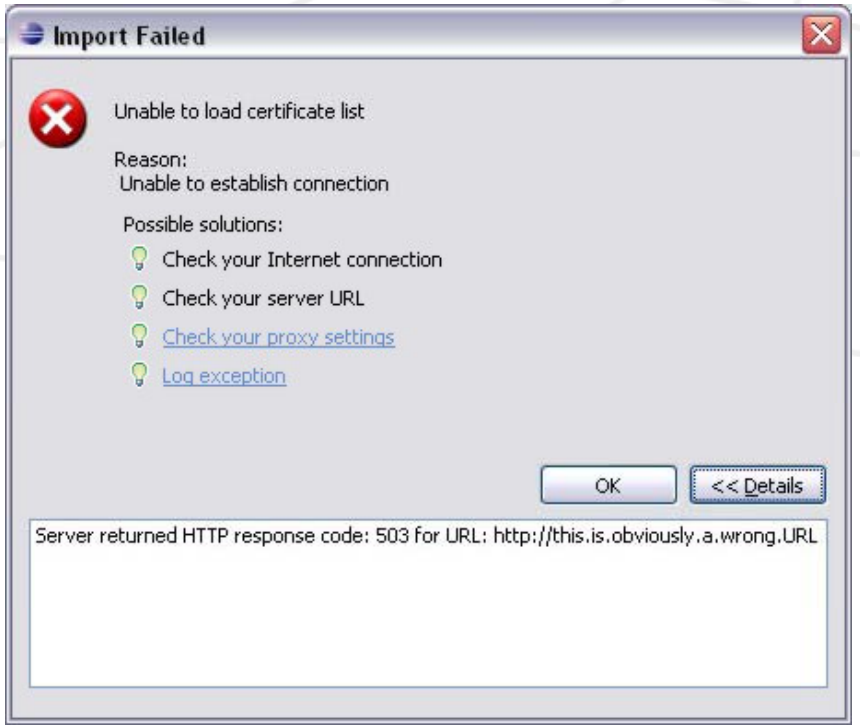
- Data Transfe EE to GRIA with drag'n'drop



- Data Transfer to every EFS implementation is possible!

Manage Complexity

- By providing solution to common problems on Grid infrastructures
  - g-Eclipse provides an extended problem reporting mechanism based on the Eclipse core exception
  - Problems have associated solutions
  - Solutions may be
    - passive: just a descriptive text
    - active: provide an action that helps the user to solve the problem, e.g. open an associated preference page



Contribute

- Use our tool and send us feedback!
  - We do it the Eclipse way!
  - Webpage www.eclipse.org/geclipse or www.geclipse.eu
  - Newsgroup
    - http://dev.eclipse.org/newslists/news.eclipse.technology.g-eclipse/
  - Developer mailing list
    - https://dev.eclipse.org/mailman/listinfo/geclipse-dev
  - Bugzilla
    - https://bugs.eclipse.org/bugs

- Bring your application!!!!
  - Contact {at} geclipse.eu

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