Accessing Grid infrastructure with Eclipse

Dr. Harald Kornmayer (NEC Laboratories Europe)
Mathias Stümpert (Forschungszentrum Karlsruhe)

on behalf of the g-Eclipse consortium
Grid definition

• The meaning of Grids depends ….
  – but we expect that the Grid infrastructure exists
    • i.e. Grids for e-Science
    • g-Eclipse is (currently) all about the client

• Definition of Grids by Foster and Kesselmann
  – “To solve together a scientific problem, the distributed resources of scientists within different administrative domains can be dynamically and coordinately connected by using fast networks to build a „virtual computing center/organization”
Grid architecture

- User Interface
- Domain specific Services
- High Level Grid Services
  (Resource Broker, Replica Services)
- Grid Middleware
- Fabrics
  (computing, storage, network)

i.e. EGEE infrastructure
The reality for the Grid user

- Infrastructure for scientists were built in the past years.
- Many application domains start using Grid infrastructures
- But…
  - Grid technology is complex
    - Different systems are used
      - Middleware, Installation, Monitoring
    - Different programming paradigms
      - Batch type systems vs. service oriented systems
      - Many programming languages

→ The threshold is too high for the “standard” user!
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 Organisation 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!!
g-Eclipse – the idea

- Grid infrastructure are complex systems
  - Provide tools to hide the complexity

- Users want easy access to the system

- Users act within **different roles**
  - Grid applications users
  - Grid resources providers and operators
  - Grid application developers

- Users are middleware agnostic
  - Build a middleware independent framework

- Provide a general UI framework/eco system for the different Grid actors based on **a reliable platform**
  - (re-)use Eclipse and contribute!
  - gain OS independence (by using JAVA!)
g-Eclipse architecture

- g-Eclipse
  - Implementation Layer (Middleware)
  - Abstraction Layer
    - Core
    - UI
- Extension Points
- Eclipse Platform

© 2007 by Kornmayer/Stuempert; made available under the EPL v1.0 | Oct. 11th, 2007
g-Eclipse – the project

- www.geclipse.eu
- Project funded by the European Commission (INFSO-32347)
- 6 partners
- until end of 2008

- www.eclipse.org/geclipse
- Technology project at Eclipse Foundation
- Release 0.5.0 finished at 28th of September 2007
- Middleware independent release 1.0.0 scheduled for end of 2008
Demo

- Grid Project
- Authentication, Authorization
- Information System / Registry
- Data Management
- Job Management
- Site Management
- Deployment
- Development (remote debugging)
- Visualization
If you don‘t have a Grid

- Bjorn at ESE: „I don‘t have a Grid at home, only a computer to control my heating!“
- Make use of the Training Grid Gilda

https://gilda.ct.infn.it/testbed.html

- Apply for a certificate
- Join the VO „geclipsetutor“
- Download g-Eclipse
- Get temporary access
Roadmap

• Eclipse release cycle
  – for assuring the quality a monthly milestone release cycle is applied
Summary

• g-Eclipse can be used to access Grid EGEE infrastructure
  – release g-Eclipse 0.5.0 is available since September
  – g-Eclipse will support a second Grid middleware in 2008
  – the platform approach will be proved with GRIA middleware (www.gria.org)

• g-Eclipse is open for contributions
  – More middleware implementation
  – based on the “Eclipse way”
    • Download, feedback (bug reports, mailing lists, …)
    – Integration of existing tools

• More information
  www.eclipse.org/geclipse  www.geclipse.eu