



Managing Computational Activities on the Grid - from Specifications to Implementation

GLUE 2.0 Specification
Sergio Andreatto



User Needs Vs. Resource Characteristics



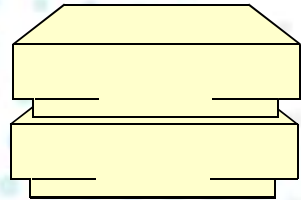
Where can I run a job requiring OS Linux, IA64 architecture, with software package X and Y



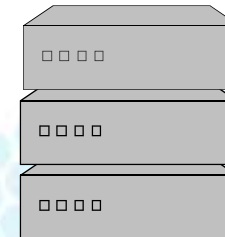
As part of the VO A, how much storage can I use on the Grid?



I offer 15 TB of storage, 10 TB are free and usable by GREEN VO



I can offer IA64 machines with OS Linux using BES interface to users of BLUE VO



Problem Statement

- Resources have heterogeneous characteristics
- Service Interfaces are yet heterogeneous
 - Converging towards common standards
- Users have needs to be satisfied
- How to describe resources/services shared in Grid systems in order to enable:
 - Resource awareness
 - Resource discoverability
 - Resource requirements expression
 - Resource basic monitoring

Situation Before OGF GLUE

- Several Grid infrastructures using different schema definitions
- The most widely deployed schema definition is GLUE Schema 1.x
 - Designed to support service/resource selection
 - Adopted by gLite and other Grid middlewares
- Other schemas exist:
 - e.g.: NorduGrid, TeraGrid, NAREGI
- For interoperable Grids, we need to unify the modeling of Grid resources into a community standard

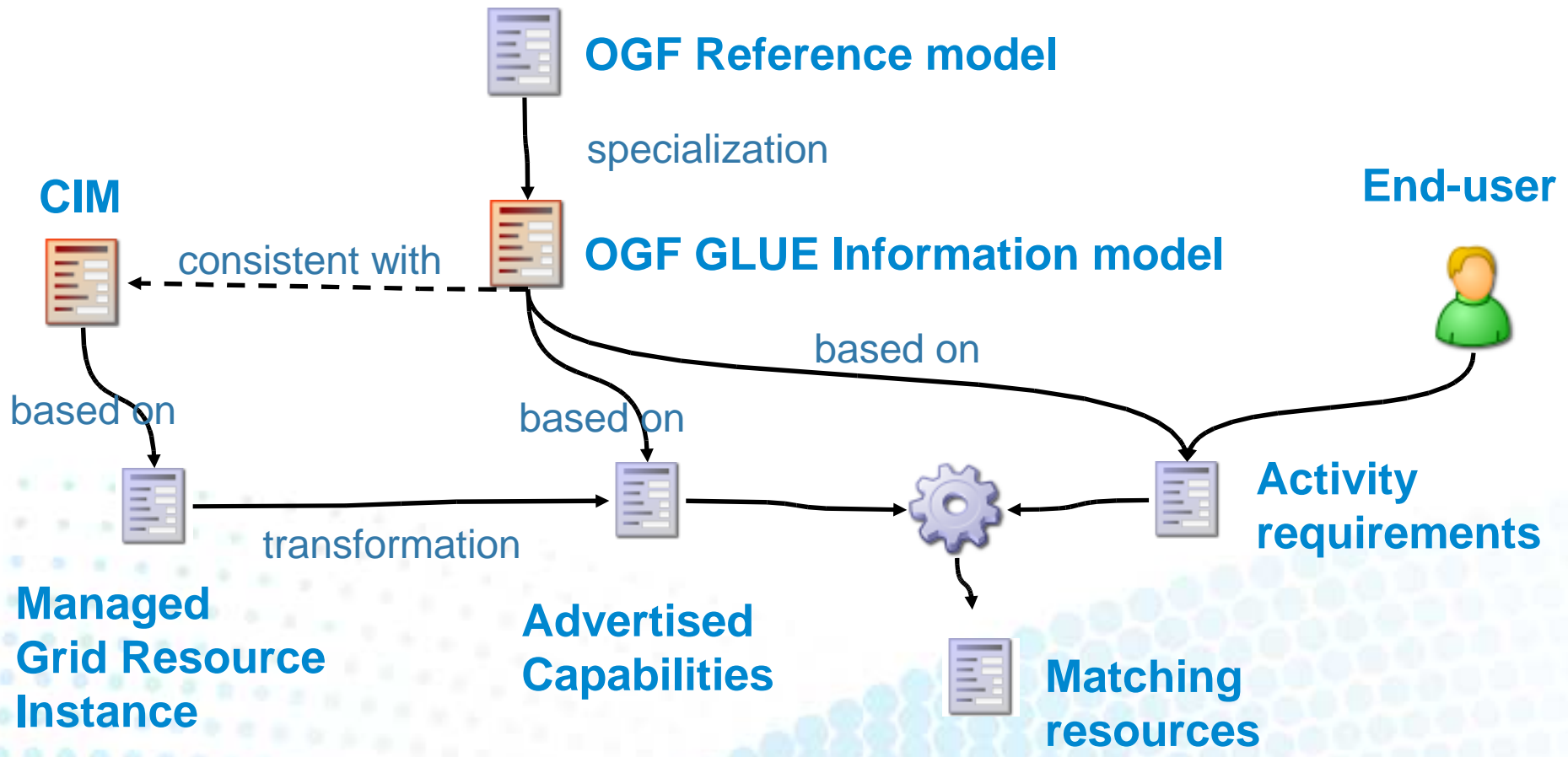
OGF GLUE WG

- New OGF Working Group approved at OGF 19 (Jan 2007)
- Co-chairs:
 - Sergio Andreozzi (OMII-Europe)
 - Laurence Field (EGEE)
 - Balazs Konya (NordGrid)
- Focus:
 - facilitate interoperability between Grid infrastructures via common information models and reference implementation for describing Grid resources in response to use cases
- Goal:
 - define a use case document collecting use cases from different Grid projects/infrastructures
 - define a conceptual model defining the abstract schema GLUE 2.0 satisfying the collected use cases.
 - develop reference implementations
- Unify modeling approaches and experience in production systems

Contributors to OGF GLUE Planning for Adoption

- OMII-Europe
- EGEE
- ARC
- TeraGrid
- UNICORE/DEISA
- D-Grid
- AustralianGrid
- NAREGI
- NGS
- OSG
- BREIN
- ...

OGF Information Modeling Architecture



Check this OGF doc
<http://forge.ogf.org/sf/go/doc13726>

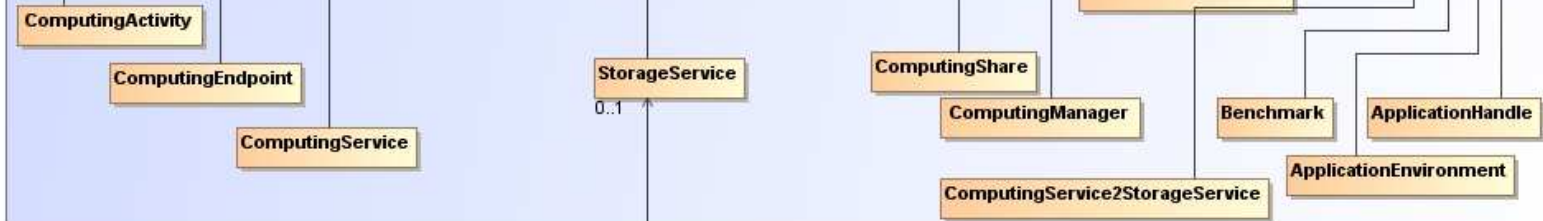
OGF GLUE Documents

- Two documents have been recently submitted for Public Comment
 - GLUE Specification – v.2.0
 - Conceptual model in three sub-models
 - Main Entities
 - Computing Entities
 - Storage Entities
 - GLUE v. 2.0 – Reference Realizations to Concrete Data Models
 - XSD
 - SQL
 - LDAP
- GLUE Use Cases – live document

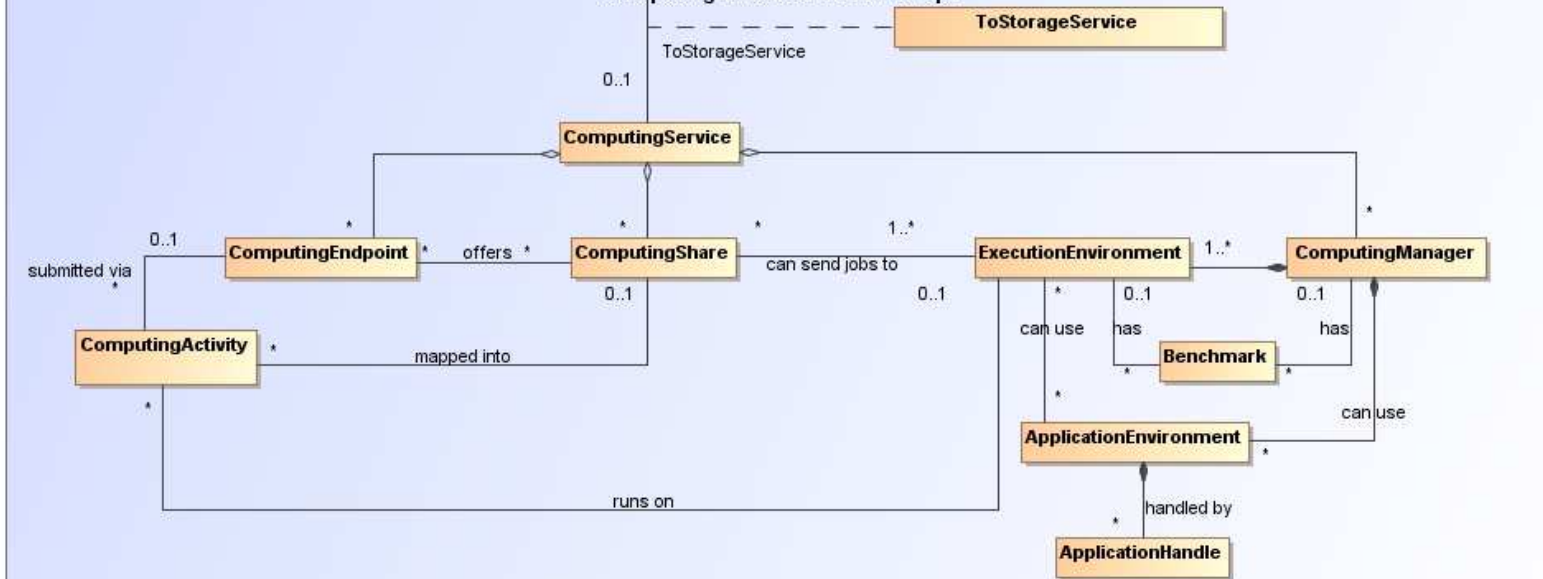
Main Entities - Relationships



Computing Entities - Inheritance



Computing Entities - Relationships



Complex Computing Service

BLUE VO

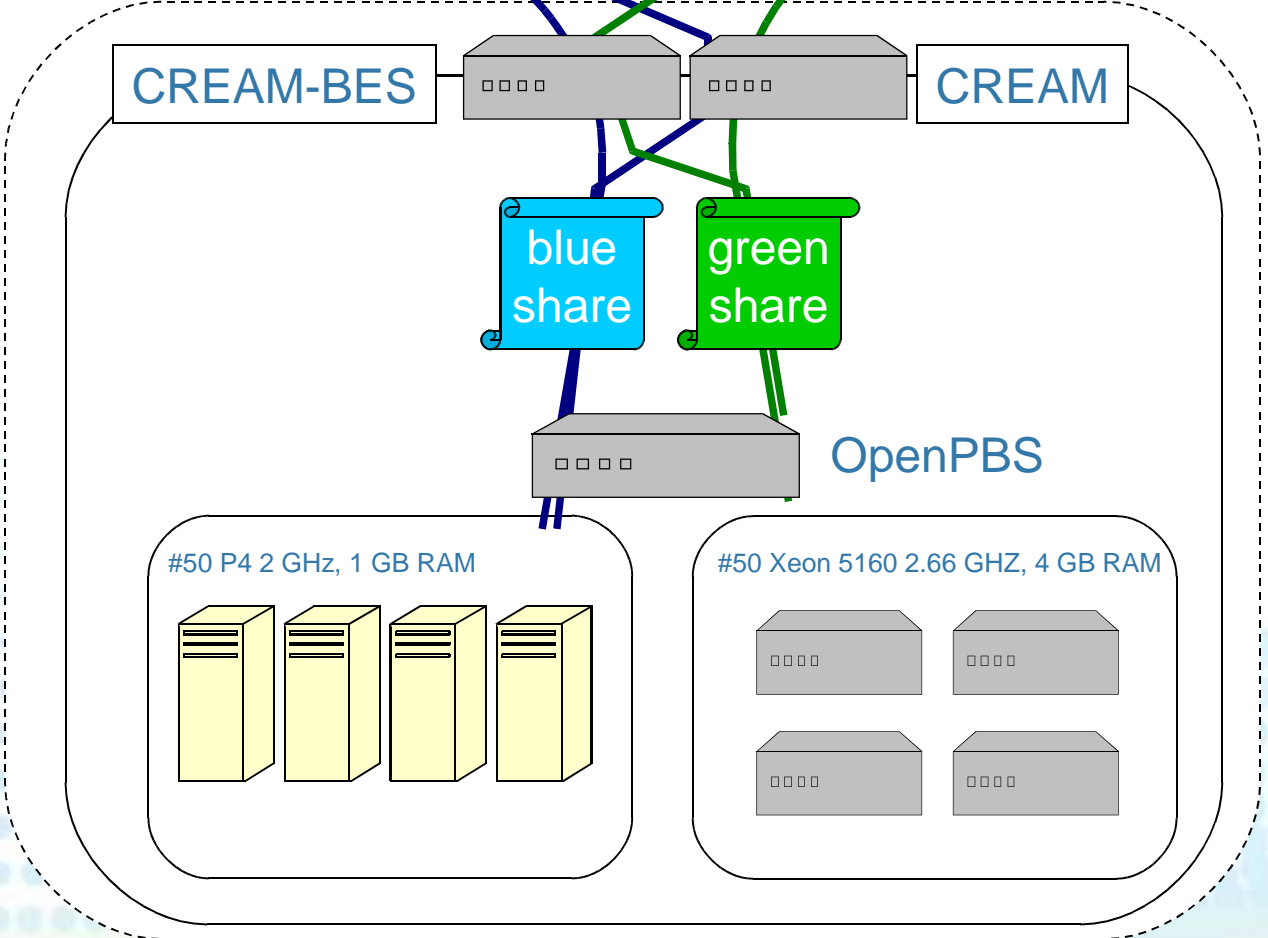
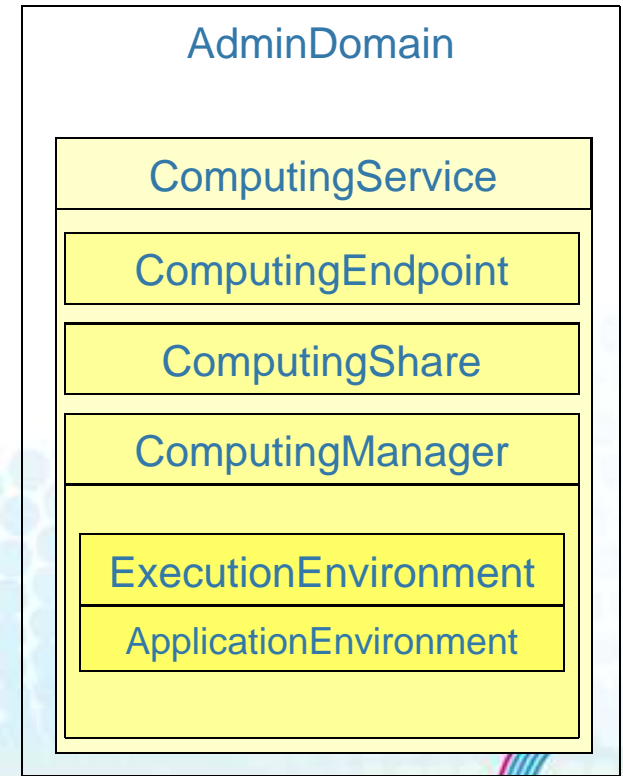


GREEN VO



GLUE 2.0
concepts

UserDomain



05/06/08

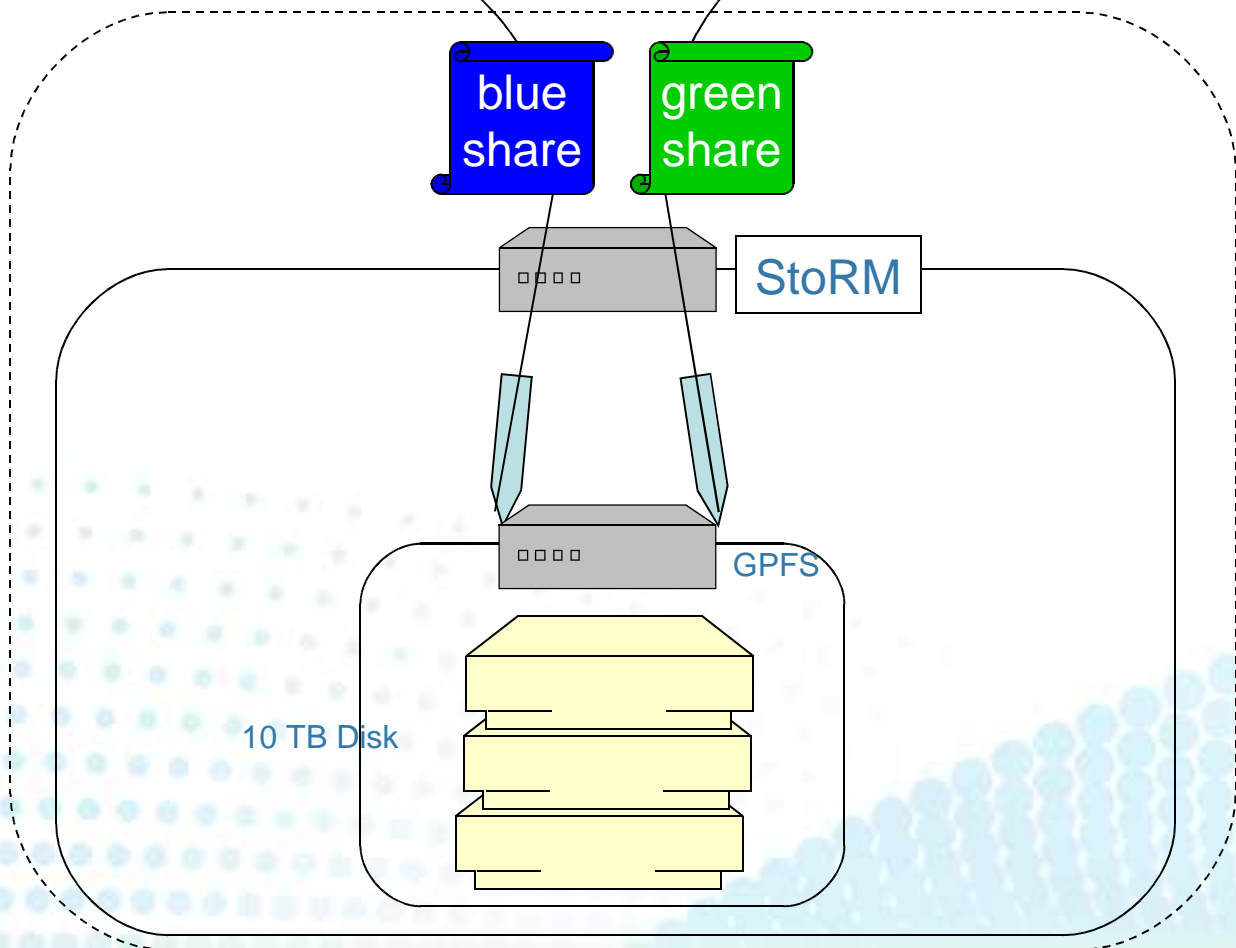
AdminDomain



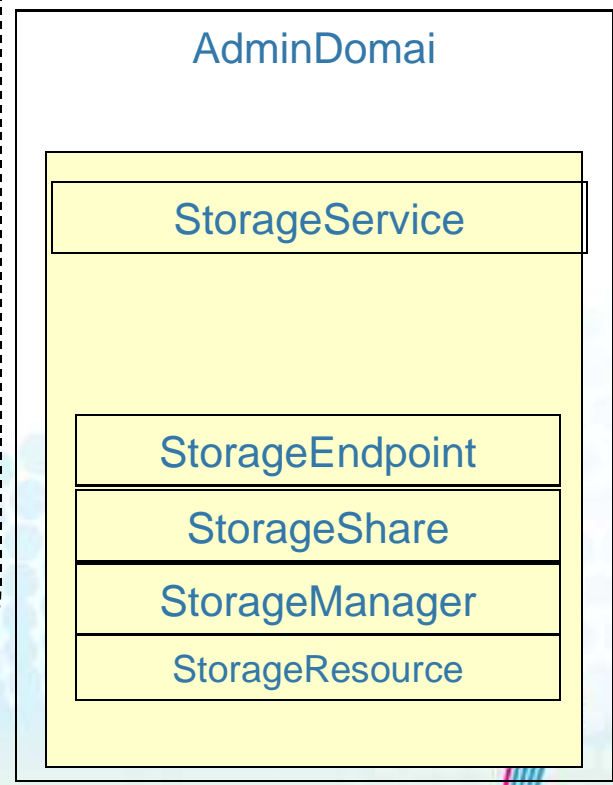
GLUE 2.0: Storage Entities by Example



GREEN VO



GLUE 2.0 concepts



05/06/08 AdminDomain



Implementations

- The GLUE Conceptual Model is currently realized in three concrete data models:
 - XML Schema
 - SQL
 - LDAP

- Framework to manage GLUE 2.0 providers
 - GLUEMan (<http://glueman.sf.net>)

Profiling Usage of GLUE with other OGF Specs

- The OGF GLUE WG started to define how GLUE can be integrated with
 - BES: expose GLUE information
 - JSDL: express requirements using GLUE vocabulary
 - For more info, see:
<http://www.ogf.org/OGF23/materials/1274/GLUE-BES-HPC-Profile.ppt>
- First public draft expected after the summer

References

- OGF GLUE Working Group

<http://forge.ogf.org/sf/sfmain/do/viewProject/projects.glue>

- GLUE 2.0 Documents

<http://www.ogf.org/pipermail/glue-wg/2008-May/000740.html>

- OGSA Information Modeling Architecture

<http://forge.ogf.org/sf/go/doc13726>