GLUE 2.0

Felix Ehm

CERN IT-GD
EGEE 2008

Introduction

- **What is GLUE**
  - Information Model
- **GLUE = Grid Laboratory Unified Environment**
- **How does the Environment which the information model tries to unify look like ?**

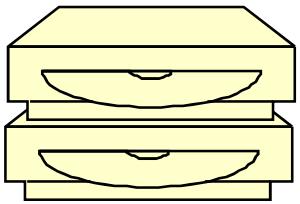
Introduction

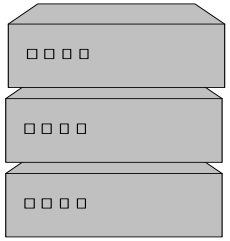
- **Environment with resources and consumers**

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

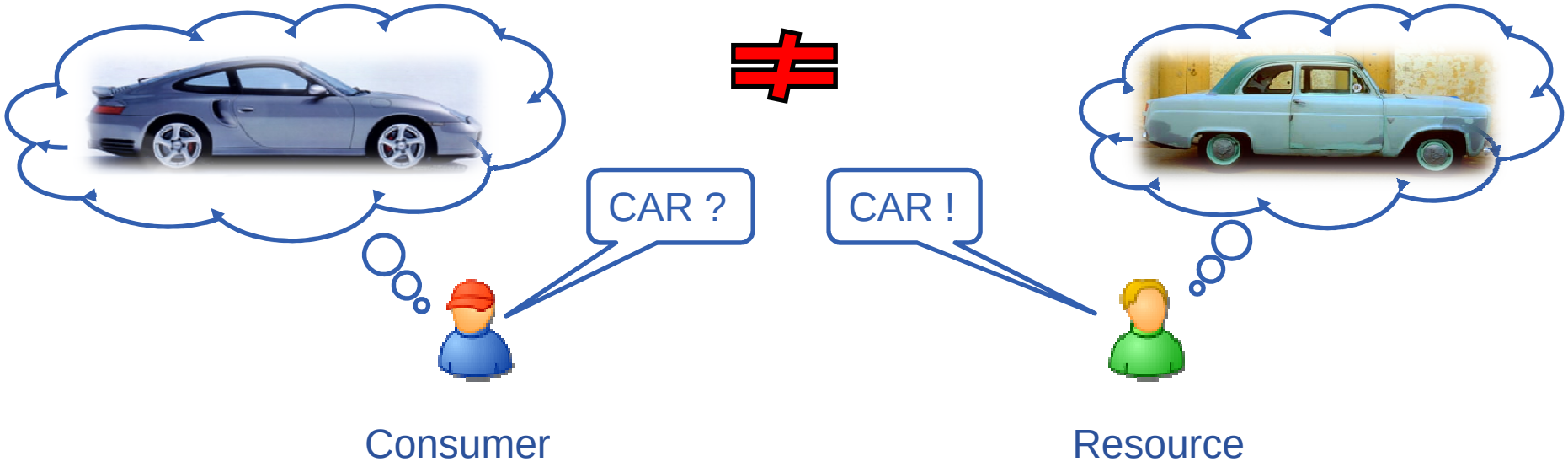
- **Resources have heterogeneous characteristics**
- **Service Interfaces are yet heterogeneous**
  - Converging towards common standards
- **Users have needs to be satisfied**
- **How to describe resources/services shared in Grid systems in order to enable:**
  - Resource awareness
  - Resource discoverability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

Introduction

- **What is GLUE ?**
  - Information Model
  - Defines a **common** conceptual data model to be used for Grid resource/service discovery and monitoring
    - Do we mean the same thing ?
    - Agreement on entities

Common Understanding

- **Definition:**
  - CAR = 4 Weels, Steering, Engine, (at least) 2 seats, 2 doors



History

- **History**
  - First version released in April **2002** by collaboration effort of EU-DataTAG,EU-DataGrid and US-iVDGL
  - v1.2 released Dec **2005** EGEE, LCG, Grid3/OSG, Globus and NorduGrid
  - Working group part of the **O**pen**G**rid**F**orum (OGF) from Oct **2006**
  - v1.3 released Jan **2007**
  - Current production version : 1.3

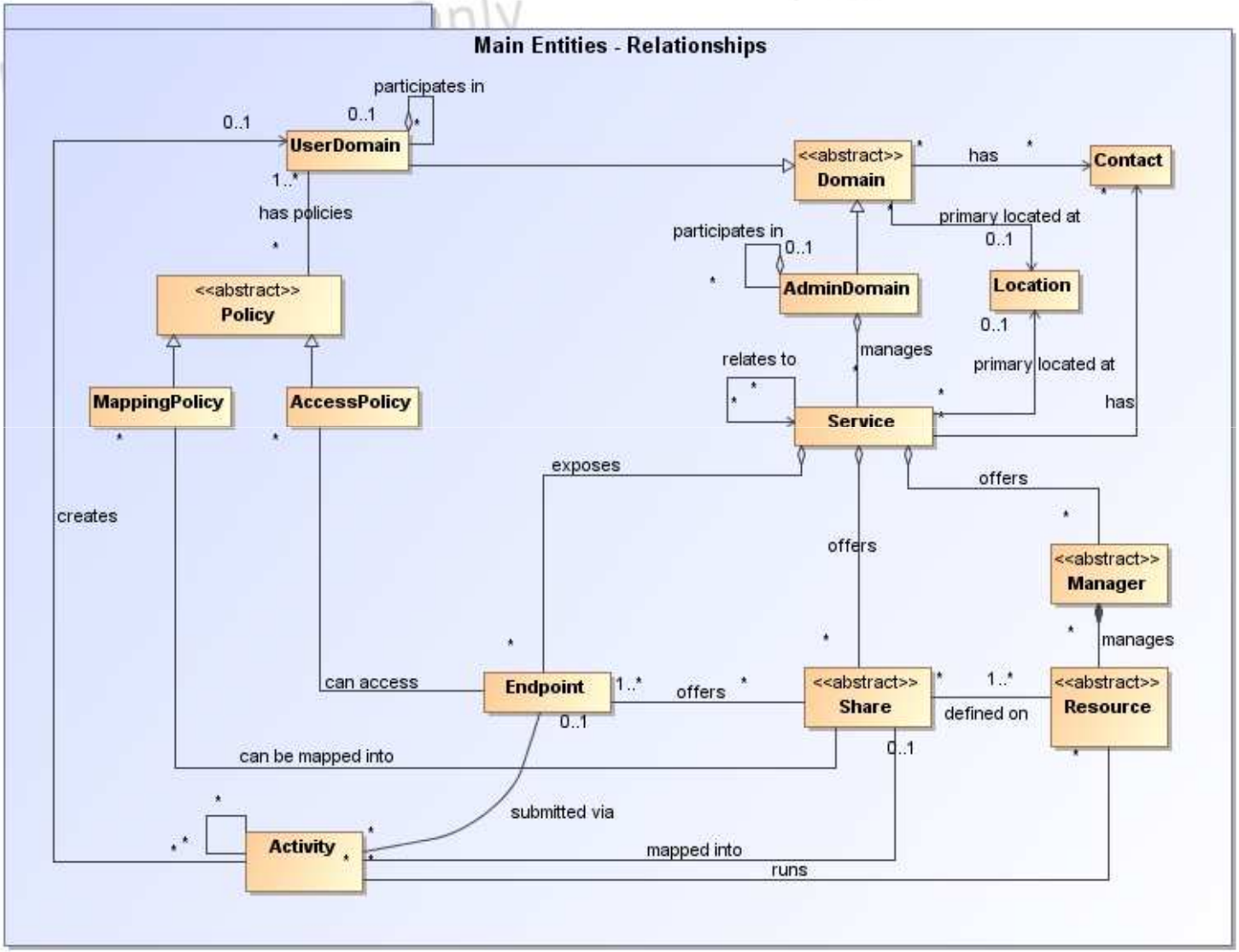
Current Situation

- **Several Grid infrastructures using different schema definitions**
  - e.g.: NorduGrid, TeraGrid, NAREGI
- **The most widely deployed schema definition is GLUE Schema 1.x**
  - Designed to support service/resource selection
  - Adopted by gLite and other grid middlewares (e.g. OSG)
- **Information basis for Grid Services**

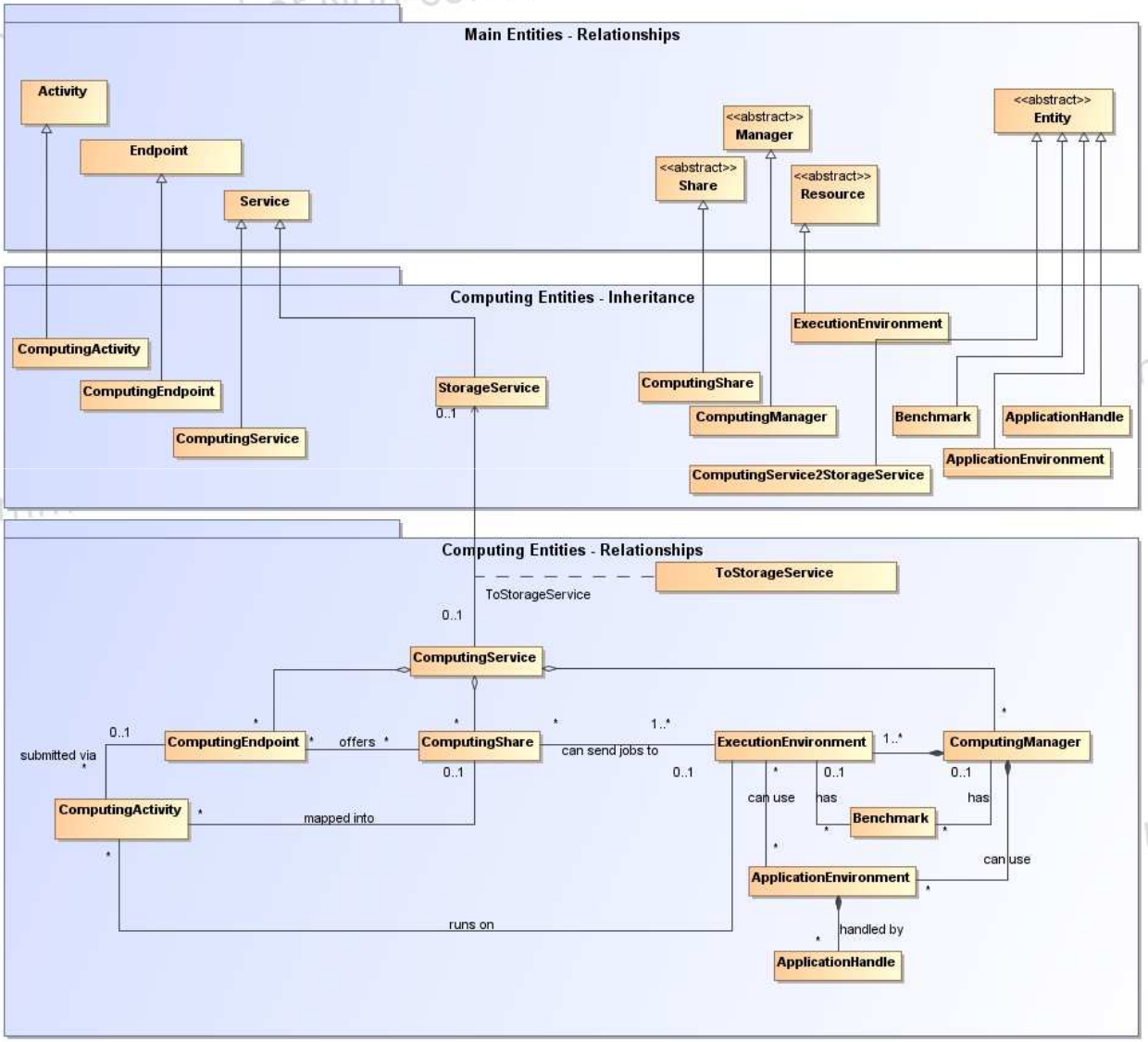
GLUE 2.0

- **GLUE v2.0**
  - Ideas raised during 1.3 discussions
  - Elaborated in respect of 1.3 limitations
  - Design started Feb 2007
- **Two documents have recently terminated the Public Comment period**
  - 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

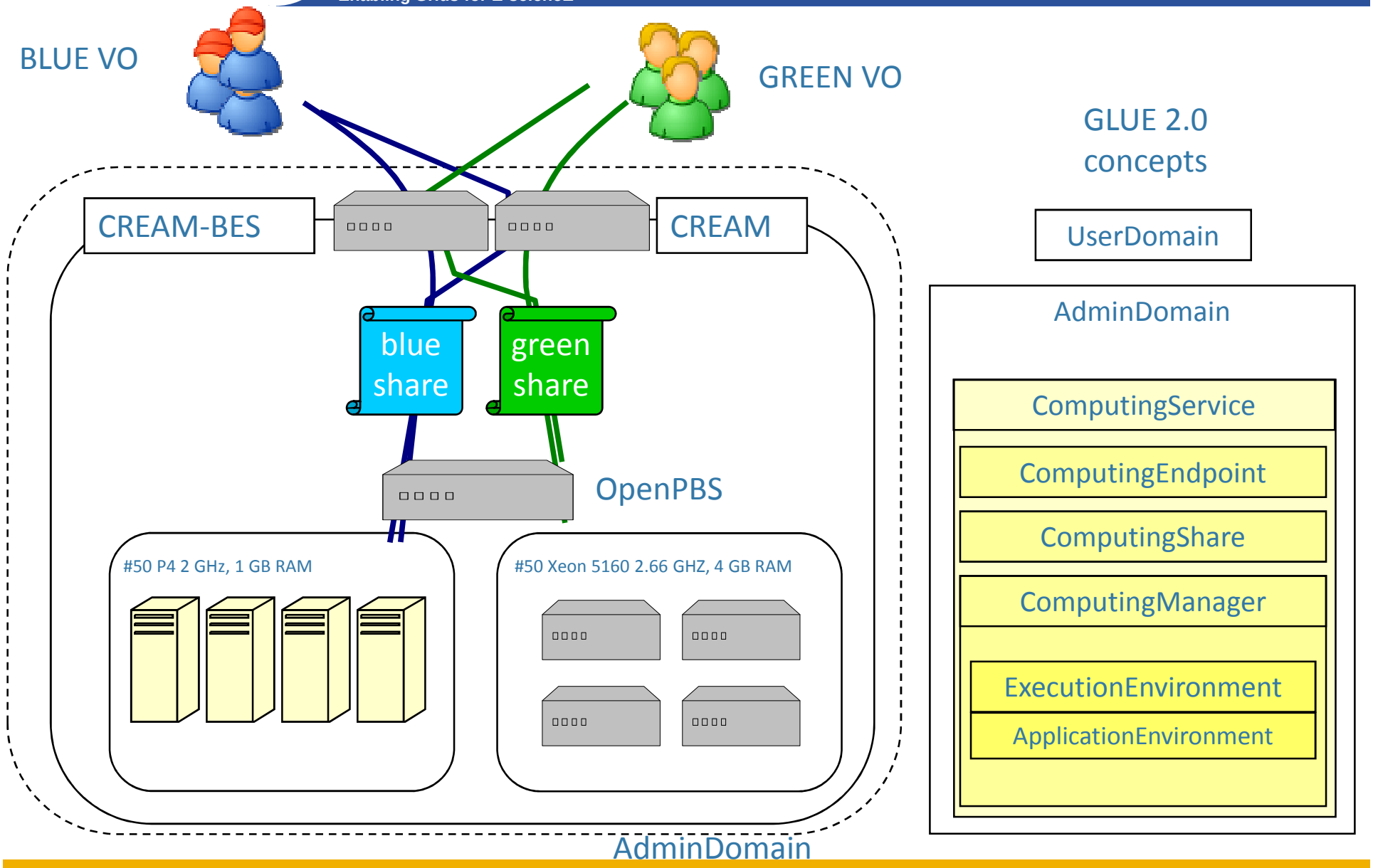
Main Entities



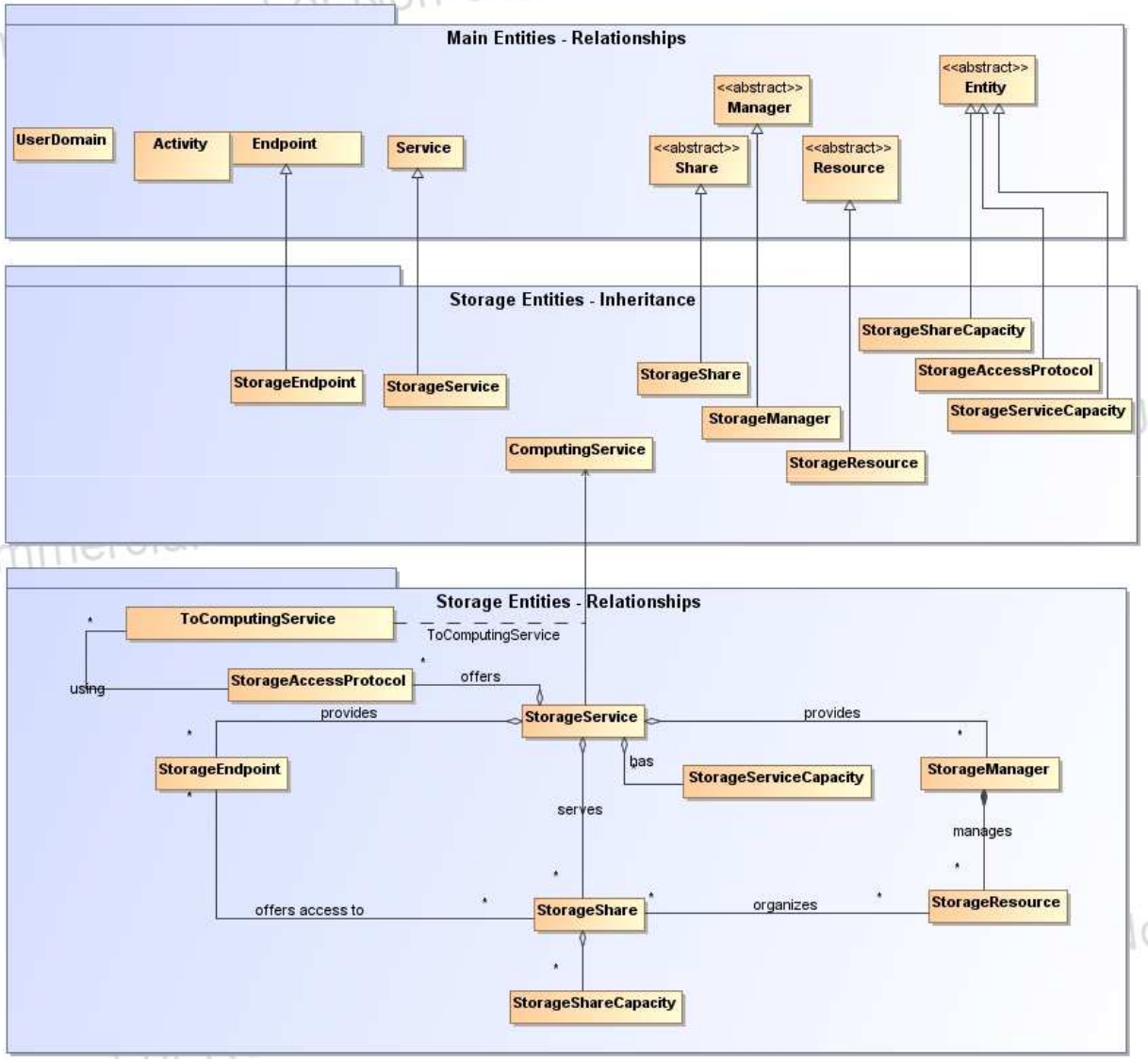
Computing Entities



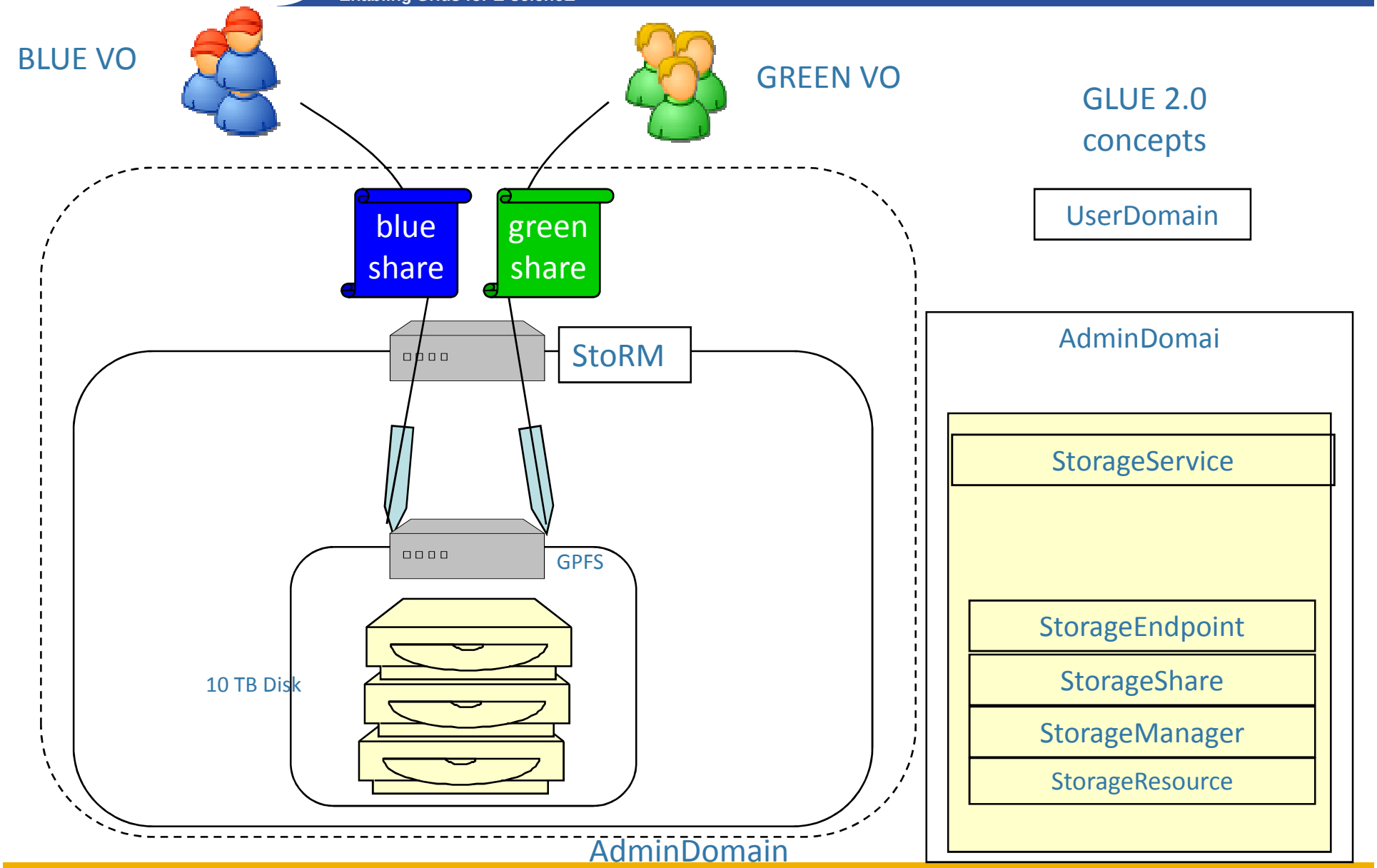
Computing Entities Example



Storage Entities



Storage Entities Example



Benefits

- **So, makes the difference to Glue 1.3 ?**
  - Identification of main entities
  - Higher flexibility
    - Attributes/Entities are optional
    - Service2Service relationship
    - Domain2Domain relationship
  - Predefined Values for Attributes
    - Closed / open enumeration
  - Less ambiguity
    - Attributes are more defined
    - e.g. total CPUs accounting
  - Allows non model specific attributes by *Extention* entity
- **However:**
  - Gained complexity
  - Not backward compatible to v1.3

Contributors for Adoption

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

Whats next?

- **Need to resume regular phone-conferences to digest all the comments and move to final version**
  - From October ’08
- **Preliminary Implementation Experience reports**
- **Deployment plans**
  - Deployment of schema on BDII instances : 2 months
    - Parallel with 1.3
  - New Infoproviders after 4-6 months
  - Obsoleting old info providers after 1,5-2 years

A Calculation Of Effort

- **Discussions, discussions..**
  - 45 telephone conferences within 422days (~1,15years)
  - ~6 participants / phone conference
  - min 1,5h each => 67h of talking (rather 90h)
  - 42 draft versions => every 10days a new version
  - 18,261 words, 55pages => solidified ~272words/hour

References

- **OGF GLUE Working Group**
  - http://forge.ogf.org/sf/sfmain/do/viewProject/projects.glue-wg
- **GLUE 2.0 Documents**
  - http://www.ogf.org/pipermail/glue-wg/2008-May/000740.html