EMI Status And Plans

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Outline

• Status Before EMI
• Consolidation and Harmonization
  – GLUE 2.0
  – ERIS
  – EMIR
• Envisaged Situation post EMI
• General Remarks
Situation Before EMI

- LCG Clients
  - BDII top
  - BDII site
  - BDII resource
  - gLite

- ARC LIB
  - Classic Info Index
  - Service: ARC

- Classic Info Server
  - reg

- Unicore Registry
  - reg

- CIP
  - Service: Unicore

01/12/2011
# Comparison Matrix

<table>
<thead>
<tr>
<th>Stack</th>
<th>Service Level</th>
<th>Registry</th>
<th>Information Model</th>
<th>Data Model</th>
<th>Global Cache</th>
<th>Transport Model</th>
<th>Federated</th>
</tr>
</thead>
<tbody>
<tr>
<td>gLite</td>
<td>BDII (resource)</td>
<td>GOC DB (Not EMI)</td>
<td>GLUE 1.3</td>
<td>LDIF</td>
<td>BDII (Top)</td>
<td>Pull</td>
<td>Kind of</td>
</tr>
<tr>
<td>ARC</td>
<td>Classic Info Server</td>
<td>Classic Info Index</td>
<td>NorduGrid Schema</td>
<td>LDIF</td>
<td>No</td>
<td>Pull</td>
<td>Not really</td>
</tr>
<tr>
<td>Unicore</td>
<td>CIP</td>
<td>Unicore Registry</td>
<td>GLUE 2.0</td>
<td>XML</td>
<td>No</td>
<td>Pull</td>
<td>Not really</td>
</tr>
<tr>
<td>EMI</td>
<td>ERIS</td>
<td>EMIR</td>
<td>GLUE 2.0</td>
<td>LDIF</td>
<td>BDII</td>
<td>Pull</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Activity started before EMI

Brought together many stakeholders
  • Within an open forum (OGF)

Produced an agreed standard (recommendation)
  • Widely accepted

90% of the problem solved
  • Agreement on use cases
  • Agreement on naming and semantics
  • The rest is just a translation and data transport issue.
GLUE 2.0 Status

- GLUE 2.0 support from EMI 1
  - Information System Components

- GLUE 2.0 in EMI 2
  - All Service must publish GLUE 2.0 information
  - Consumers should be able to use GLUE 2.0
    - WMS, FTS etc.

- 46% of Sites are GLUE 2.0 enabled
  - 181 out of 390 are publishing the GLUE2AdminDomain
    - See GGUS Ticket #75529
Resource Information Service

- Service-level information interface
  - Fundamental building block
- Recommended Interface
  - LDAPv3 interface to GLUE 2.0 information
    - We already have 10 years of experience
    - Path of least resistance (low-cost, low-impact)
  - Information providers
    - Extract information from the underlying service
    - Produce GLUE 2.0 information in the LDIF format
EMI Registry - Aims

• Common Index Service
  • For Publication and Discovery of Services
    • Discover all the ERIS

• Unified Information Model
  • The GLUE Service part of the GLUE 2.0 model

• Support for federations
  • Natural to existing Infrastructures
  • Inter-Federation Lookups
    • Campus Grids, NGIs etc.
  • Multi-Federation service discovery
    • EGI, WLCG etc.

• Proposed solution from EMI
Clients, APIs and Libraries

• WLCG clients
  • Glue 1.3 only
• ARC lib
  • GLUE 2.0 enabled
• EMI Registry client
  • This is required and can be considered an internal EMI interface
• SAGA SD API
  • Can incorporate the EMI Registry client
• Unicore CLI
  • Uses and internal library
• What does WLCG want?
Global Information Aggregation

• Top-level BDII
  • Caches all information from all resources
  • Currently no major plans
    • Waiting for requirements

• Possibilities
  • Use EMI Registry for Service Discovery
    • Contact the resources (ERIS) directly for further information
  • Publish dynamic information using messaging
    • Remove freshness requirement from global cache
  • Global Metadata cache for detailed search
    • Discover resources using the EMI Registry
    • Obtain dynamic information from the messaging system
EMI’s Vision

EMI Client → EMI Cache → EMI Registry → EMI Info Service → Service

pull → pull → pull → pull

EMI Info Service: Service

EMI Status And Plans

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Impact for WLCG

- No change required for top-level BDII usage
  - Exists client do not need to change
- No change required for service-level usage
  - Interface stays the same
- New service for service discovery
  - No complex migration required
- Lays the foundation for the future
  - Provides solid building blocks
  - Common solutions for all middleware components
    - Hence interoperable
  - Still need to address the clients issue within EMI
• The information model is key
  • Describes the real entities in a Grid infrastructure
    • Objects, relationships and attributes
  • Use cases interact with the model
  • The model should evolve with the technology
    • From a protocol based architecture in the late 90s to a SOA in 2002
  • Minor updates address missing use cases
  • Major updates address technology changes
  • A common forum already exists
    • The place to go for discussing changes
  • The model is implementation independent.
General Comments

• Be careful with dynamic information and multiplicity
  • Affects service quality due to data volume and turbulence

• Split use cases (KISS)
  • Service Discovery
    • Static information only
      • Static for the lifetime of the service
  • Service Monitoring
    • State information
      • Which is dynamic
  • Service Metadata
    • Everything else
General Comments

• Information Quality
  • Garbage in, Garbage out
  • Need to validate information before it is published
    • Improved configuration
      • Validation step
    • Improved information providers
      • Automate where possible
      • Validate output
  • Only publish what is required
    • If it is important it will be correct
    • It is better to publish 1 attribute accurately than 10 inaccurately
Summary

- Harmonization
  - Major goal for EMI

- Three core building blocks
  - GLUE 2.0
  - ERIS
  - EMI Registry

- Focus on the information model
  - Update GLUE 2.0 if required
  - The model should evolve with the technology and use cases

- Agree on the primary interfaces
  - Service level
  - Global Level