

## **Two GLUE2 use cases:**

- EMI-ES job management interface**
- ARC Middleware LDAP, XML, client libraries**

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- The EMI-ES information model
  - The Resource document
  - The Activity document
- ARC Middleware and GLUE2
  - ARC LDAP GLUE2 rendering
  - ARC XML GLUE2 documents
  - ARC client libraries

# EMI-ES Information Model



- Five port-types:

- ActivityCreation**

Only a URL to  
Access ResourceInfo

- ActivityManagement**

Single Activity  
information

- Delegation

- ActivityInfo**

Information  
port types

- ResourceInfo**

Need both for full info!

# EMI-ES Information Model



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Information  
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- WS based
- Uses the GLUE2 jargon whenever possible
- Each **PortType** represented as a **GLUE2 Endpoint**
- **ResourceInfo** → **Resource Document**:  
Based on GLUE2 XML schema (hierarchical)
- **ActivityInfo** → **Activity Document**:  
A GLUE2-like document (mostly flat)

# Resource Document Structure



```
<GetResourceInfoResponse>
```

```
<Services>
```

```
<ComputingService>
```

**ID, Type, HealthState, Capability, QualityLevel**

CreationTime, Validity, Name, OtherInfo, StatusInfo, Complexity, TotalJobs, RunningJobs, WaitingJobs, StagingJobs, SuspendedJobs, PreLRMSWaitingJobs, Associations

```
<ComputingEndpoint>
```

**InterfaceName = org.ogf.glue.emies.activitycreation**

**Capability, URL, ID, ImplementationName, ImplementationVersion, QualityLevel, HealthState, ServingState, Staging, JobDescription**

CreationTime, Validity, Name, OtherInfo, Technology, InterfaceVersion, InterfaceExtension, WSDL, SupportedProfile, Semantics, Implementor, HealthStateInfo, StartTime, IssuerCA, TrustedCA, DowntimeAnnounce, DowntimeStart, DowntimeEnd, DowntimeInfo, TotalJobs, RunningJobs, WaitingJobs, StagingJobs, SuspendedJobs, PreLRMSWaitingJobs, Associations

```
<AccessPolicy> </AccessPolicy>
```

```
</ComputingEndpoint>
```

```
<ComputingEndpoint>
```

**InterfaceName = org.ogf.glue.emies.activitymanagement , Capability, ...**

```
</ComputingEndpoint>
```

```
<ComputingEndpoint>
```

**InterfaceName = org.ogf.glue.emies.activityinfo , Capability, ...**

```
</ComputingEndpoint>
```

```
<Endpoint>
```

**InterfaceName = org.ogf.glue.emies.resourceinfo , Capability, ...**

```
</Endpoint>
```

```
<Endpoint>
```

**InterfaceName = org.ogf.glue.emies.activityinfo , Capability, ...**

```
</Endpoint>
```

```
<ComputingManager> </ComputingManager>
```

```
<ComputingShare> </ComputingShare>
```

```
<Location> </Location>
```

```
<Contacts> </Contacts>
```

```
<!-- non EMI-ES endpoints -->
```

```
<ComputingEndpoint>
```

**InterfaceName = org.nordugrid.gridftpjob , Capability, ...**

```
</ComputingEndpoint>
```

```
<Endpoint>
```

**InterfaceName = org.nordugrid.idapng , Capability, ...**

```
</Endpoint>
```

```
</ComputingService>
```

```
</Services>
```

```
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```

# Resource Document Structure

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<GetResourceInfoResponse>
```

```
<Services>
```

```
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```

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  CreationTime, Validity, Name, OtherInfo, StatusInfo, Complexity, TotalJobs, RunningJobs, WaitingJobs, StagingJobs, SuspendedJobs,  
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```

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  <ComputingEndpoint>
```

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    InterfaceName = org.ogf.glue.emies.activitycreation
```

```
    Capability, URL, ID, ImplementationName, ImplementationVersion, QualityLevel, HealthState,
```

```
    ServingState, Staging, JobDescription
```

```
    CreationTime, Validity, Name, OtherInfo, Technology, InterfaceVersion, InterfaceExtension, WSDL, SupportedProfile, Semantics,  
    Implementor, HealthStateInfo, StartTime, IssuerCA, TrustedCA, DowntimeAnnounce, DowntimeStart, DowntimeEnd, DowntimeInfo,  
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```
  <AccessPolicy> </AccessPolicy>
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</ComputingEndpoint>
```

```
<ComputingEndpoint>
```

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  InterfaceName = org.ogf.glue.emies.activitymanagement , Capability, ...
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```
</ComputingEndpoint>
```

```
<ComputingEndpoint>
```

```
  InterfaceName = org.ogf.glue.emies.activityinfo , Capability, ...
```

```
</ComputingEndpoint>
```

```
<Endpoint>
```

```
  InterfaceName = org.ogf.glue.emies.resourceinfo , Capability, ...
```

```
</Endpoint>
```

```
<Endpoint>
```

```
  InterfaceName = org.ogf.glue.emies.activityinfo , Capability, ...
```

```
</Endpoint>
```

```
<ComputingManager> </ComputingManager>
```

```
<ComputingShare> </ComputingShare>
```

```
<Location> </Location>
```

```
<Contacts> </Contacts>
```

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```

```
  InterfaceName = org.nordugrid.idapng , Capability, ...
```

```
</Endpoint>
```

```
</ComputingService>
```

```
</Services>
```

```
</GetResourceInfoResponse>
```

Might change  
wrt  
official GLUE2  
XML schema

# Activity Document Structure



**<ActivityInfoDocument>**

**<!-- Mandatory -->**

**ID**

**State**

**IDFromEndpoint**

**Owner**

**<!-- Optional -->**

CreationTime, Validity, LocalIDFromManager JobDescription, RestartState, ExitCode, ComputingManagerExitCode, Error, WaitingPosition, UserDomain, LocalOwner, RequestedTotalWallTime, RequestedTotalCPUTime, RequestedSlots, RequestedApplicationEnvironment, Sdtin, Stdout, StdErr, LogDir, ExecutionNode, Queue, UsedTotalWallTime, UsedTotalCPUTime, UsedMainMemory, SubmissionTime, ComputingManagerSubmissionTime StartTime, ComputingManagerEndTime, EndTime, WorkingAreaEraseTime, ProxyExpirationTime, SubmissionHost, SubmissionClient, OtherMessages

**<!-- EMIES specific -->**

**StageInDirectory**

**StageOutDirectory**

**SessionDirectory**

**ComputingActivityHistory**

**</ActivityInfoDocument>**



# Activity Document Structure



**<ActivityInfoDocument>**

**<!-- Mandatory -->**

**ID**

**State**

**IDFromEndpoint**

**Owner**

**<!-- Optional -->**

CreationTime, Validity, LocalIDFromManager JobDescription, RestartState, ExitCode, ComputingManagerExitCode, Error, WaitingPosition, UserDomain, LocalOwner, RequestedTotalWallTime, RequestedTotalCPUTime, RequestedSlots, RequestedApplicationEnvironment, Sdtin, Stdout, StdErr, LogDir, ExecutionNode, Queue, UsedTotalWallTime, UsedTotalCPUTime, UsedMainMemory, SubmissionTime, ComputingManagerSubmissionTime StartTime, ComputingManagerEndTime, EndTime, WorkingAreaEraseTime, ProxyExpirationTime, SubmissionHost, SubmissionClient, OtherMessages

**<!-- EMIES specific -->**

**StageInDirectory**

**StageOutDirectory**

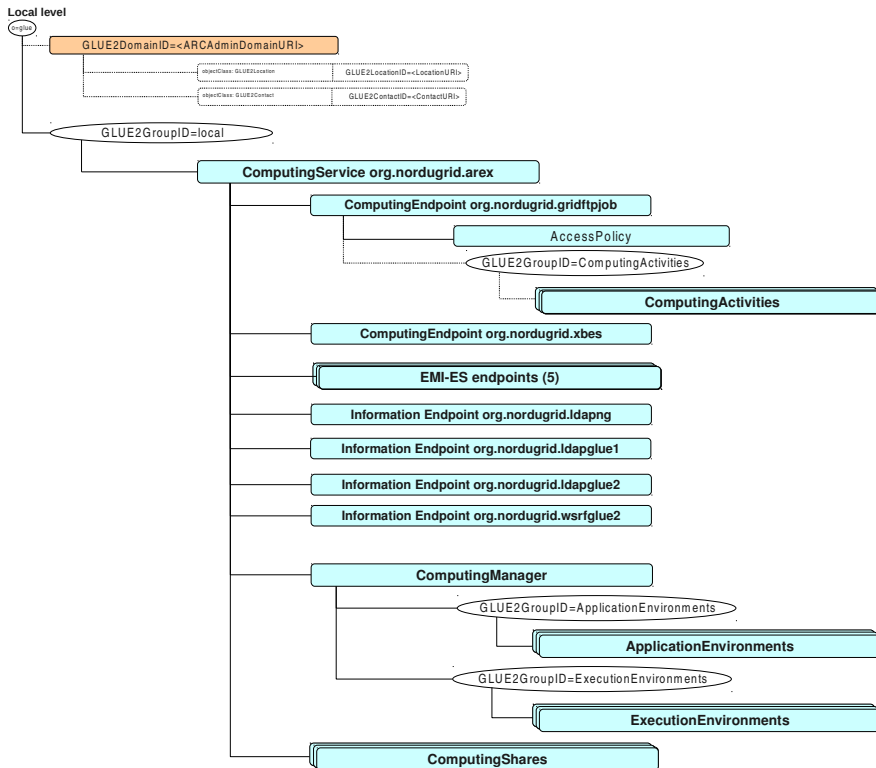
**SessionDirectory**

**ComputingActivityHistory**

**</ActivityInfoDocument>**

Adoption of flat GLUE2 XML schema might make this document a GLUE2 document.

# ARC LDAP/XML GLUE2



# ARC XML chunk

<InfoRoot>

<Domains xmlns="http://schemas.ogf.org/glue/2009/03/spec\_2.0\_r1" xmlns:xsi="http://www.w3.org/2001/XMLSchema" xsi:schemaLocation="https://raw.githubusercontent.com/OGF-GLUE/XSD/master/schema/GLUE2.xsd">

<AdminDomain BaseType="Domain" CreationTime="2012-08-24T09:52:18Z" Validity="60">

<ID>urn:ogf:AdminDomain:ARCTESTDOMAIN</ID>

<Name>ARCTESTDOMAIN</Name>

<Distributed>undefined</Distributed>

<Services>

<ComputingService BaseType="Service" CreationTime="2012-08-24T09:52:18Z" Validity="60">

<ID>urn:ogf:ComputingService:gridtest.hep.lu.se:arex</ID>

<Name>gridtest</Name>

<Capability>executionmanagement.jobmanager</Capability>

<Type>org.nordugrid.execution.arex</Type>

<QualityLevel>pre-production</QualityLevel>

<Complexity>endpoint=11,share=1,resource=1</Complexity>

<TotalJobs>0</TotalJobs>

<RunningJobs>0</RunningJobs>

<WaitingJobs>0</WaitingJobs>

<StagingJobs>0</StagingJobs>

<SuspendedJobs>0</SuspendedJobs>

<PreLRMSWaitingJobs>0</PreLRMSWaitingJobs>

<ComputingEndpoint BaseType="Endpoint" CreationTime="2012-08-24T09:52:18Z" Validity="60">

<ID>urn:ogf:ComputingEndpoint:gridtest.hep.lu.se:emies:https://gridtest.hep.lu.se:50000/arex:ac</ID>

<Name>ARC CE EMI-ES ActivityCreation Port Type</Name>

<URL>https://gridtest.hep.lu.se:50000/arex</URL>

<Capability>executionmanagement.jobcreation</Capability>

<Technology>webservice</Technology>

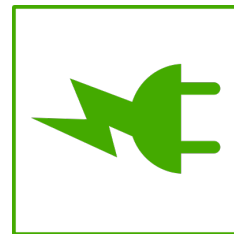
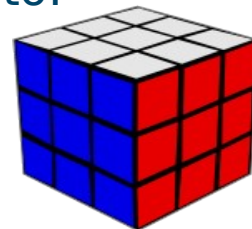
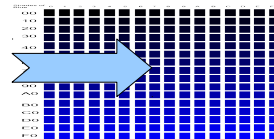
<InterfaceName>org.ogf.glue.emies.activitycreation</InterfaceName>

<InterfaceVersion>1.14</InterfaceVersion>

<WSDL>https://twiki.cern.ch/twiki/pub/EMI/EmiExecutionService/</WSDL>

<Semantics>https://twiki.cern.ch/twiki/pub/EMI/EmiExecutionService/</Semantics>

- A client library for accessing grid resources.
- Provides a simple but powerful API to:
  - **discover services**
  - **create and manage jobs**
  - handle data transfers
  - handle user credentials
- Features a modular architecture: it uses **plugins** to be able to talk to different services.



- **ServiceEndpointRetriever**  
queries information system for GLUE2 Endpoints  
**index-levels/registry services**
- **TargetInformationRetriever**  
queries information system **local-levels (Ces)**  
for GLUE2 Endpoints
- **JobRetrievers**  
retrieves list of jobs, obtains information on  
specific jobs represented as  
**ComputingActivities.**

These are the retrievers that support GLUE2 information.

## ServiceInformationRetriever

- EMIR (EMI Registry)

## TargetInformationRetriever

- GLUE2 LDAP
- ARC GLUE2 WSRF
- EMI-ES ResourceInfo

## JobRetrievers

- LDAP GLUE2
- EMI-ES ActivityInfo/ActivityManager

# THANKS!

- **EMI-ES Specification v1.14-1**  
[https://twiki.cern.ch/twiki/pub/EMI/EmiExecutionService/EMI-ES-Specification\\_v1.14-1.odt](https://twiki.cern.ch/twiki/pub/EMI/EmiExecutionService/EMI-ES-Specification_v1.14-1.odt)
- **GLUE2 Model**  
<http://www.ogf.org/gf/docs/gfd.php?gfd=147>