



EMI UNICORE Execution Services

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Scenario (1)

- Increasing of computing and data infrastructures in the last decade
- A number of major projects have been established within Europe to share the growing amount of resources
- The project **EGI-InSPIRE** has been created to coordinate and maintain a sustainable European infrastructure to support European research communities and their collaborators

Scenario (2)

- **EGI** continues from the previous **EGEE (Enabling Grid for E-sciencE)** started on May 2010 for four years
- EGI will guarantee the long-term availability of a **generic e-infrastructure** also collaborating with software providers in Europe to provide innovative solutions to deliver capability required by user communities

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Scenario (3)

- The **European Middleware Initiative (EMI)** is a collaboration of the four major software tools: **ARC, gLite, UNICORE** and **dCache**
- The EMI project will take in charge to **integrate** these tools into a **common software layer**
- EGI and EMI will work **together** providing European scientists and international organizations with well-designed services

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EMI Execution Services



- What is needed is a common access point to Computing Elements and Compute Nodes
- EMI Execution Services have been conceived as a set of standard web services for job submission and execution
- They're designed to reach interoperability and to offer multiple capabilities for different users in the scientific community

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EMI ES Specification (1)



- The **EMI Execution Services Specification** provides the interface description, data and state models, activity and resource specification for each single execution service
- The targets are the so-called **Computing Elements (CEs)**, services providing access to computing resources usually localized at a site

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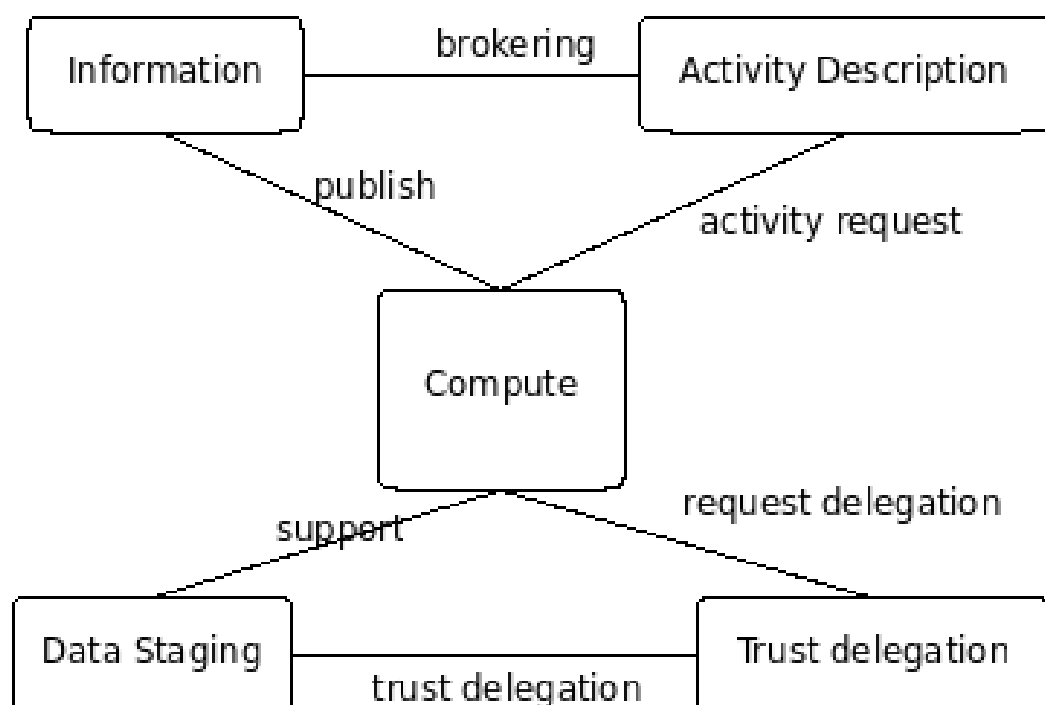
EMI ES Specification (2)

This specification covers many different aspects:

- Common Interfaces to create and manage activities
- EMI Activity Description Language
- Data staging capabilities
- Activity related information
- Resource related information
- Delegation

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EMI ES Specification (3)



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UNICORE EMI ES

The UNICORE EMI ES are composed by four main web services, associated to the corresponding interface elements:

- The **DelegationService**
- The **CreateActivity**
- The **ActivityManagement**
- The **ResourceInfo**

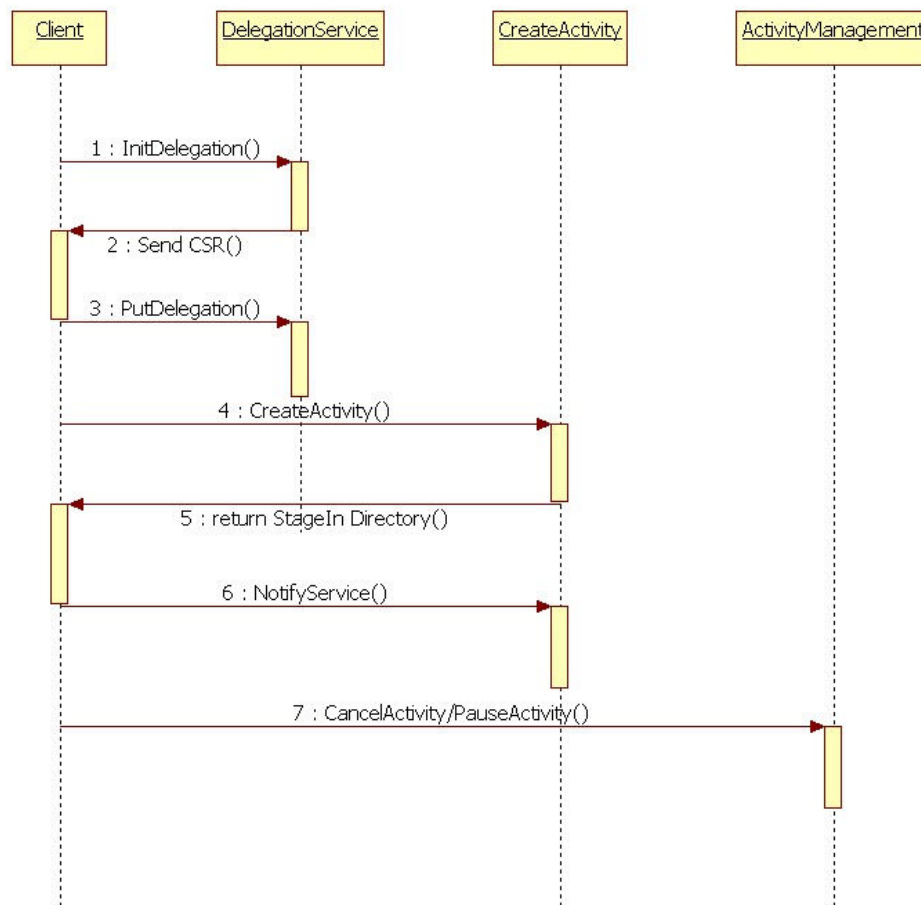
CreateActivity

- The **CreateActivity** interface method gets an Activity Description in XML format (**ADL**), then creates an activity java object to submit a single job
- The Activity Description is validated, the activity is created and the **UNICORE Client** gets back the **url path** to import input files into the **StageIn** directory
- When input files have been copied inside the directory (**globus_url_copy**) the Client notifies the Server with the **notify** method

DelegationService

- The **DelegationService** forwards a **CSR (Certificate Signing Request)**, the Client creates and signs a **Proxy** certificate with its Private Key and sends it to the Server
- The Server stores the Proxy with its proper **delegation id** into an **hashmap**, more then a Proxy can be associated to different delegation ids for a single user (example with **different VOs**)

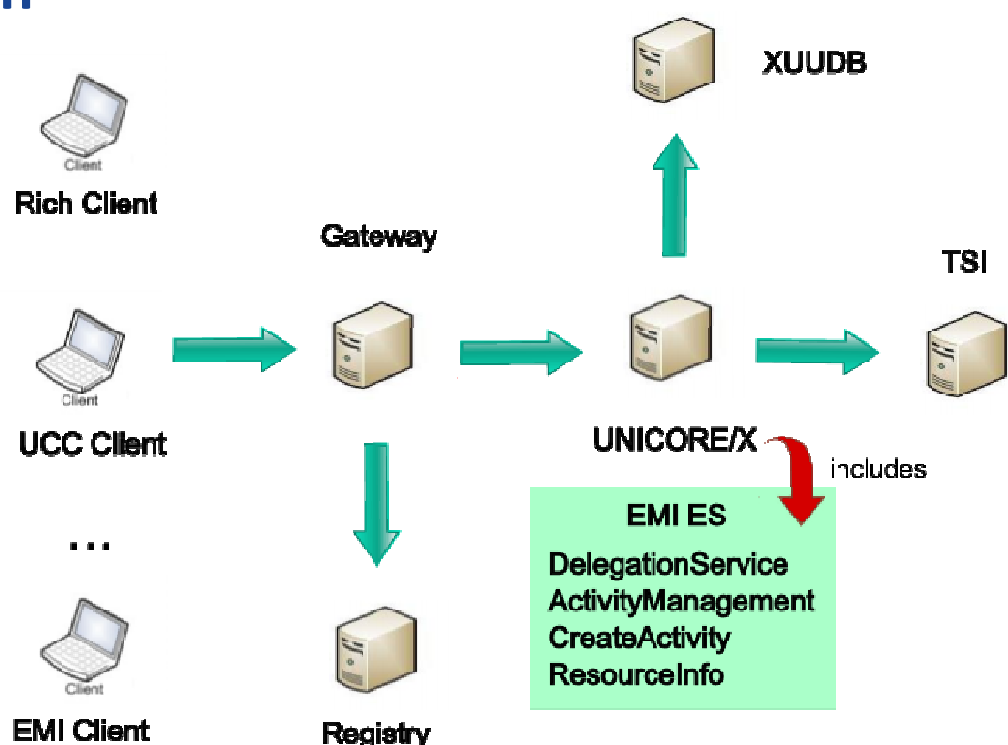
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ActivityManagement

- **ActivityManagement** interface offers methods to perform **getStatus**, **remove**, **pause**, **resume**, **getInfo**
- When the **getStatus** method is invoked the ActivityManagement service retrieves the job status numeric value and maps it to the corresponding ActivityStatus object

Global System View

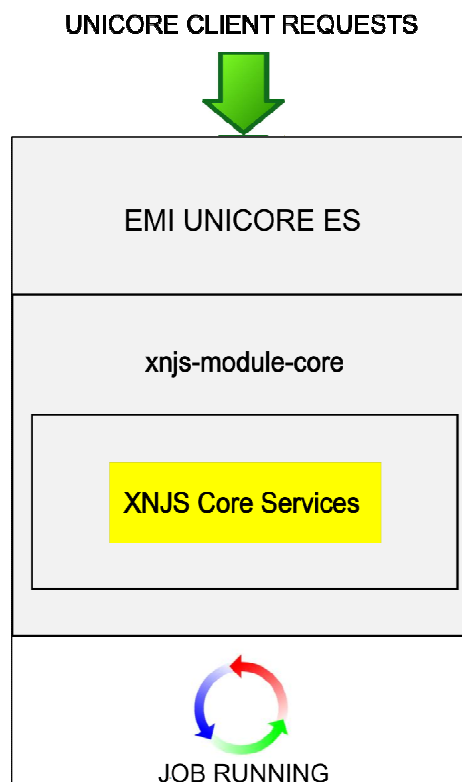


UNICORE Services

- **UNICORE XNJS libraries** have been included as dependencies and a new code layer has been added above
- **xnjs-module-core** has been included into the project configuration file, in order to import base **XNJS** functionalities
- The **XNJS class** provides methods to start services and support job submission

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Core Services



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Next Steps

- Common Authentication Libraries
- Extended Trust Delegation and SAML
- Storage Data Management



Thank you!