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

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
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

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
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

EMI ES Specification (3)
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**).
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.
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
Next Steps

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

Thank you!

EMI is partially funded by the European Commission under Grant Agreement RI-261611