



# European Middleware Initiative (EMI) Standardization and Interoperability Updates

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# Primary Objectives



## Consolidate

**Consolidate** the existing middleware distribution **simplifying services** and components to make them more **sustainable** (including use of off-the-shelf and commercial components whenever possible)

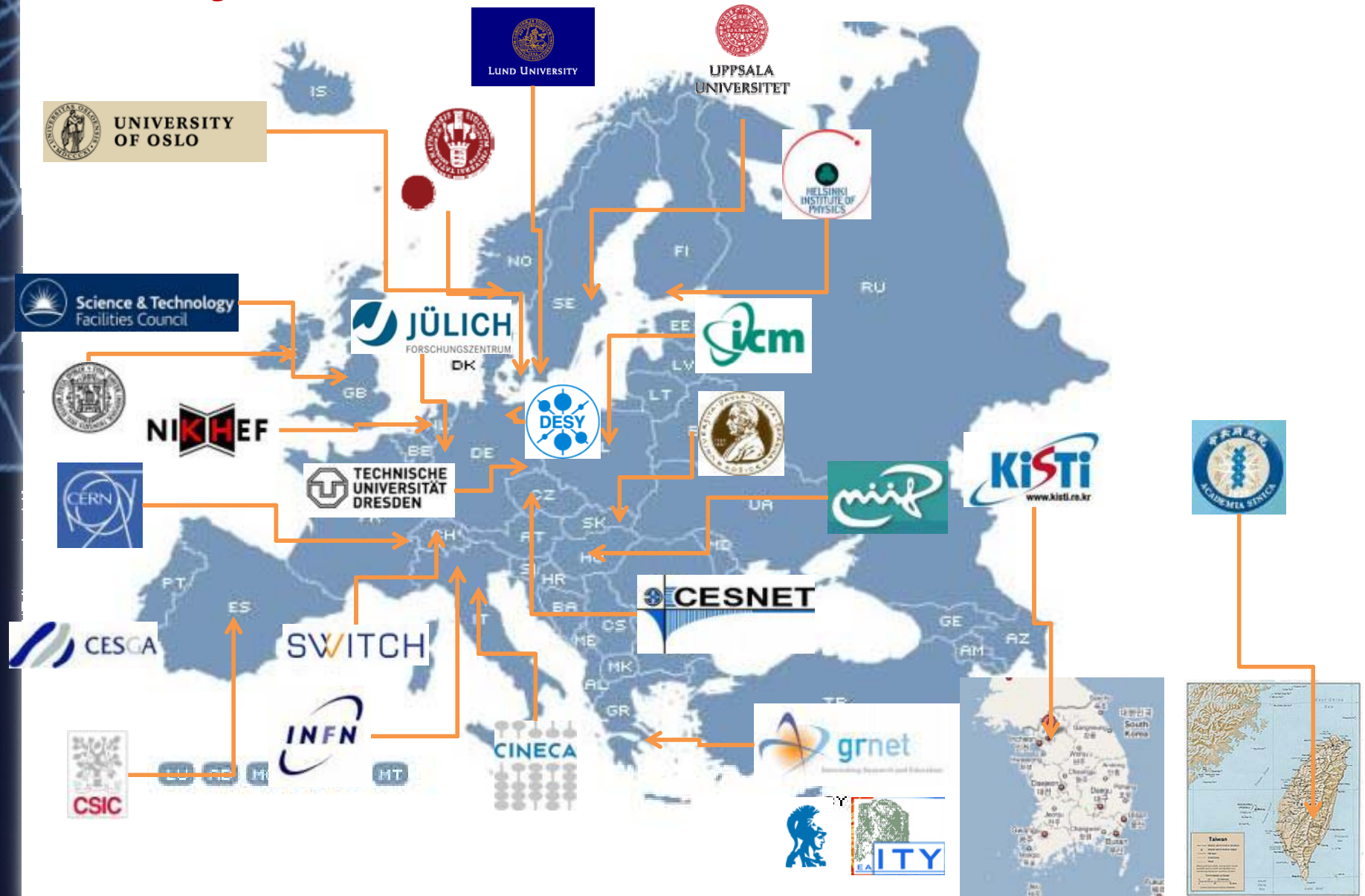
## Evolve

Evolve the middleware services/functionality following the **requirements** of infrastructures and users, mainly focusing on **operational, standardization** and **interoperability** aspects

## Support

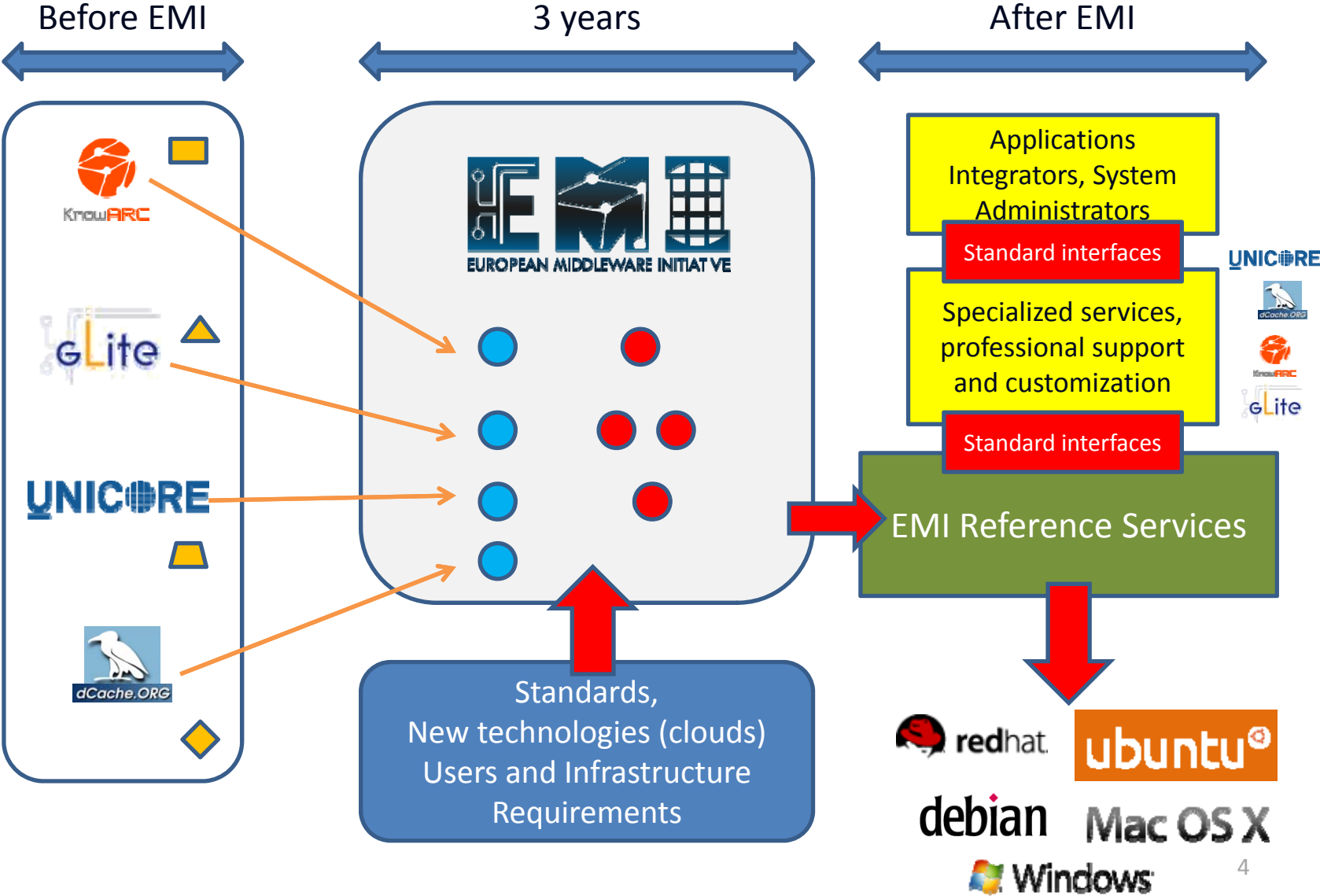
Reactively and proactively **maintain** the middleware distribution to keep it in line with the growing infrastructure usage

# Project Partners



EMI INFO-RI-261611

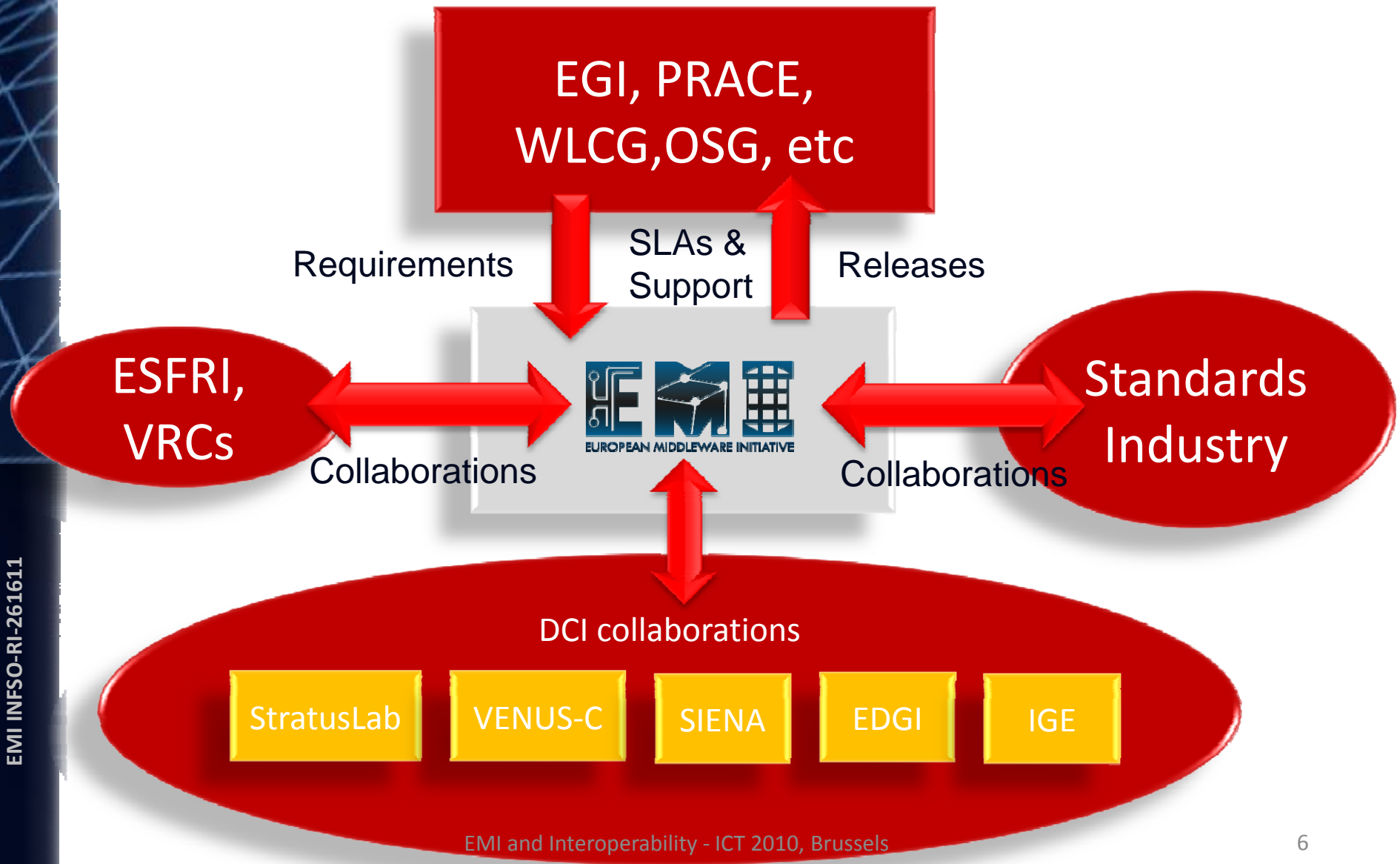
# EMI Middleware Evolution



# Types of Interoperability

- EMI works on three interoperability scenarios
  - Interoperability between different implementations of the same services or functionality
    - Using Standards
  - Interoperability among HTC and HPC resources/technologies
    - Policies, technology and approach-awareness (i.e. Brokering)
  - Interoperability with emerging technologies
    - Collaboration with other DCIs: StratusLab, VENUS-C, EDGI, IGE

# Collaborations



# Community Vs. De Facto Standards

- In the EMI plan all services must:
  - Implement the ‘best’ relevant standards
  - Implement them in the same way
- ‘Best’ means:
  - A ‘**community**’ standard, if it is useful, usable or can be realistically improved
  - A ‘**de facto**’ standard, if no community standard exists or what exists is clearly not usable
- The adoption of good de facto standards is not an alternative to widely agreed community standards, but rather a first practical step in the standardization roadmap to provide feedback and create awareness

# Standardization Activities (1)

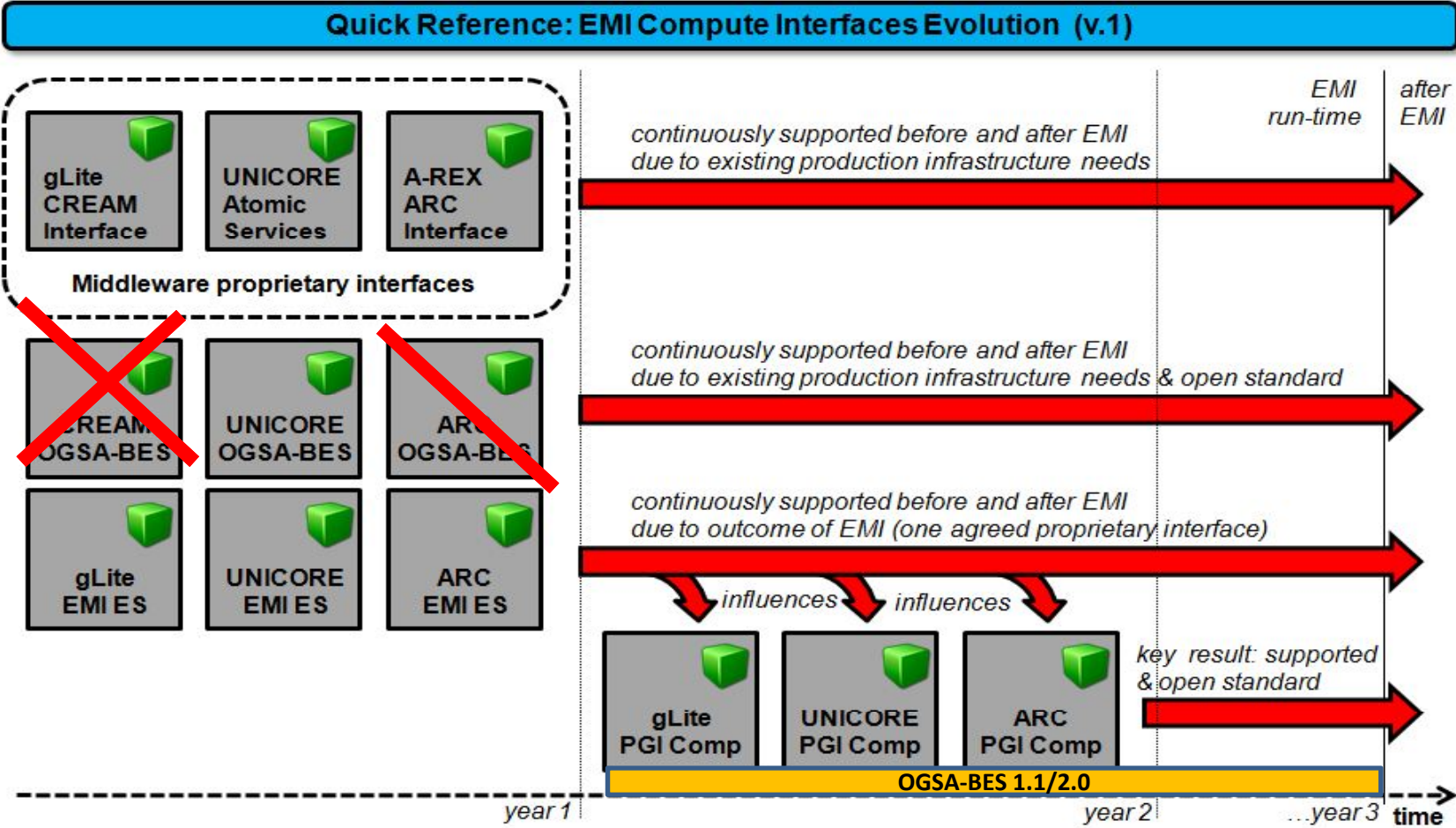
- Actively take part in the European standardization roadmap coordinated by the European Commission and SIENA → David Wallom Presentation later
- Actively take part in SDOs → OGF & OASIS (& IETF)
  - Consumer:
    - Feedback, recommendations, lessons learned from the adoption of community standards
  - Contributor:
    - Skills and expertise
    - Feedback and recommendations from the adoption of 'good de facto standards'
  - Early adopter:
    - Feedback on the adoption of early standard versions



# Standardization Activities (2)

- Open Grid Forum (OGF)
  - Production Grid Infrastructure (PGI) Working Group
  - Grid Interoperation Now (GIN) Community Group
  - Usage Record (UR) Working Group
  - Grid Storage Management (GRM) Working Group
  - Job Submission and Description Language (JSDL) WG
  - Simple API for Grid Applications (SAGA) WG
- Organization for the Advancement of Structured Information Standards (OASIS)
  - Security Assertion Markup Language (SAML)
  - Extensible Access Control Markup Language (XACML)

# Execution Service Pre-Studies et al.



# Adoption Overview (1)

Component	GSI	HTTP(S)	GridFTP	REST	OGSA-BES	JSDL	SRM	GLUE2	PGI
All WS-based Services in EMI		X							
All data transfer clients			X						
All client tools dealing with data							X		
All EMI self-describing services								X	X
All compute services within EMI									X
ARC components									
UNICORE components									

# Adoption Overview (2)

Component	GSI	HTTP(S)	GridFTP	REST	OGSA-BES	JSDL	SRM	GLUE2	PGI
dCache	X		X						
StoRM	X	X	X						
VOMS	X			X					
GridFTP Server	X								
ARC Classic CE	X		X						
UNICORE-BES					X	X			
UNICORE-Atomic Services						X			
Compute									
CREAM					X	X			
A-REX					X	X			
ARGUS									
APEL									



# Adoption Overview (3)

Component	LDAP	XACML	SAML	OGSA-RUS	NFS	WEBDAV
All WS-based Services in EMI						
All data transfer clients						
All client tools dealing with data						
All EMI self-describing services						
All compute services within EMI						
ARC components	X	X	X			
UNICORE components		X	X			

# Adoption Overview (4)

Component	LDAP	XACML	SAML	OGSA-RUS	NFS	WEBDAV
<u>dCache</u>					X	X
StoRM					X	X
VOMS						
<u>GridFTP Server</u>						
ARC Classic CE						
UNICORE-BES						
UNICORE-Atomic Services Compute						
CREAM						
A-REX						
ARGUS		X	X			
APEL				X		



# Thank you

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

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