



EUROPEAN MIDDLEWARE INITIATIVE

EMI Software Roadmap

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IBERGRID Conference
Santander, 09th June 2011

IBERGRID

5th IBERIAN GRID INFRASTRUCTURE CONFERENCE

Santander (Spain) • June 8-10, 2011



EMI Software Roadmap At a Glance



Kebnekaise (SW), 2104 m



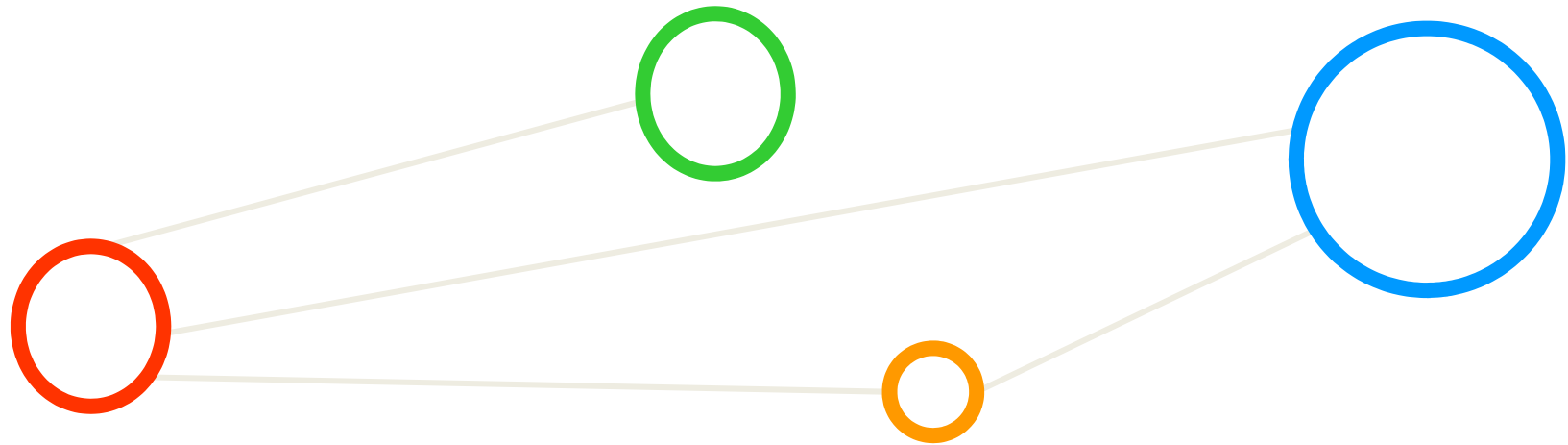
Matterhorn (CH), 4478 m



Monte Bianco (IT/FR), 4810 m



Outline



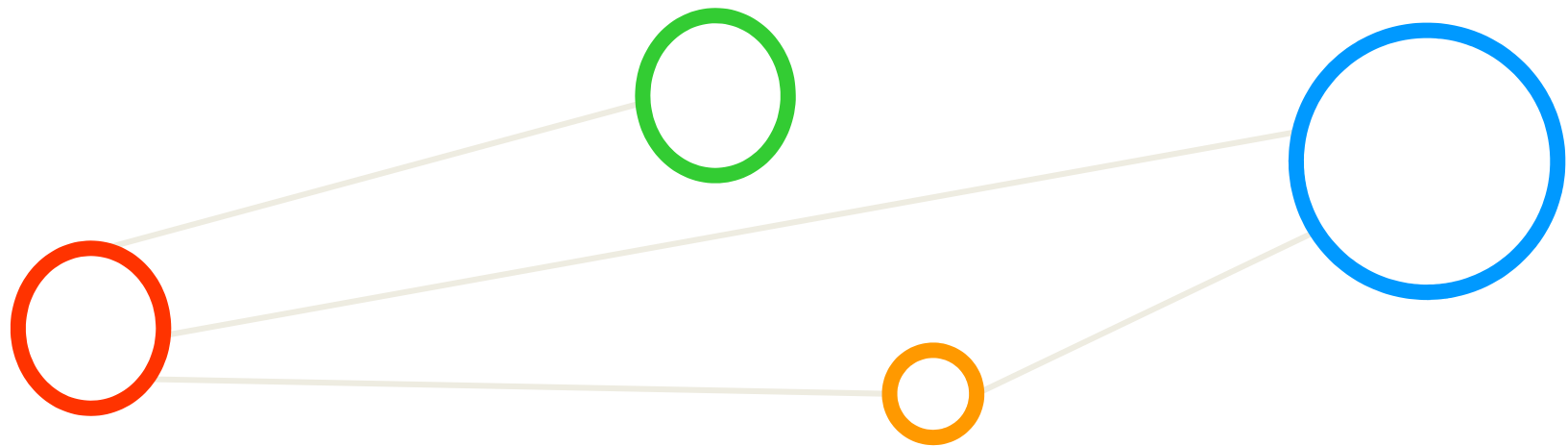
Outline



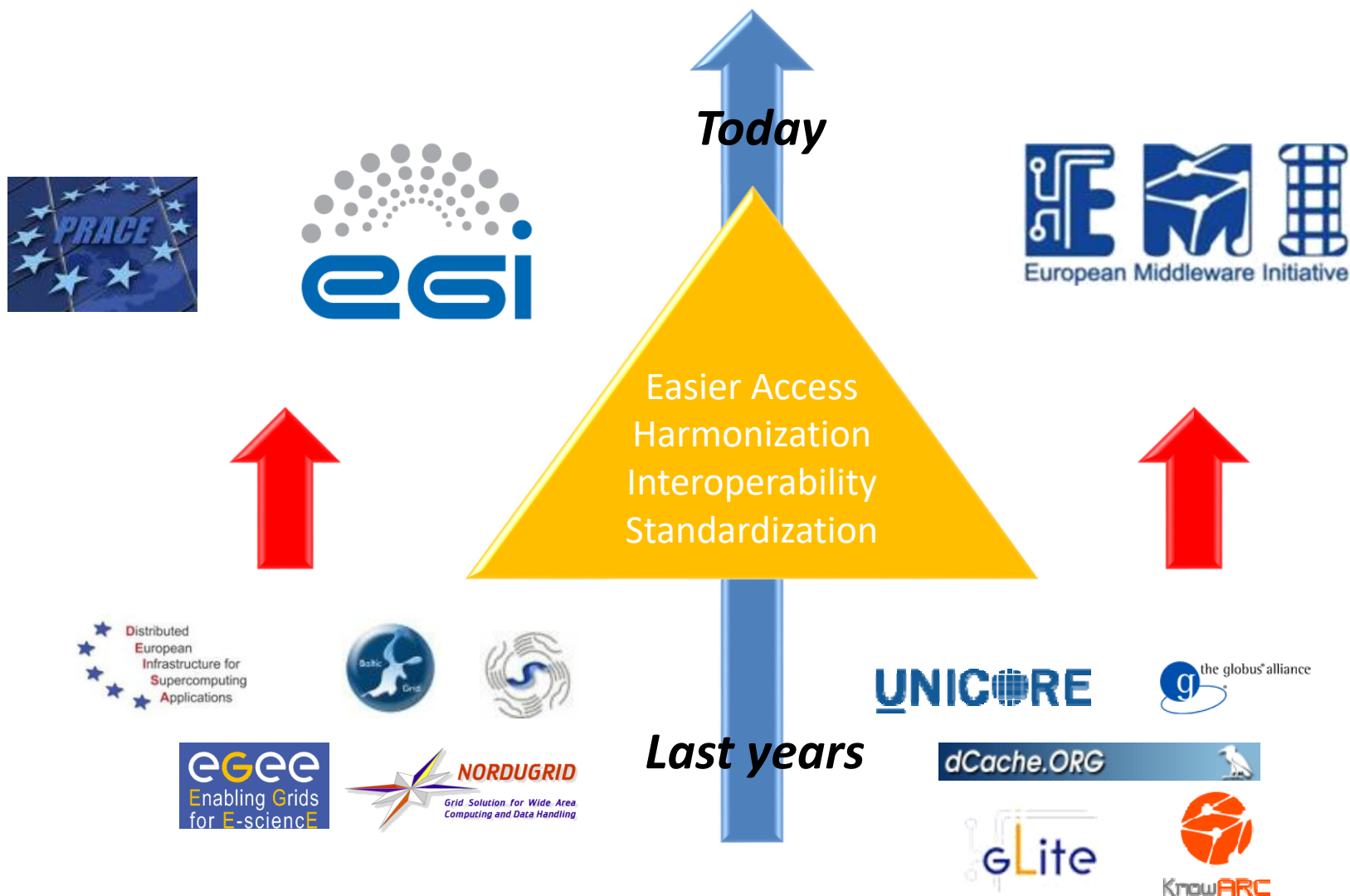
- EMI in DCI Context
- Software Roadmap
 - EMI Releases
 - Mountains?
 - Technical Developments
 - EMI 2 Outlook
- Responding to DCI Evolutions
 - Clouds?



EMI in DCI Context



A European Vision



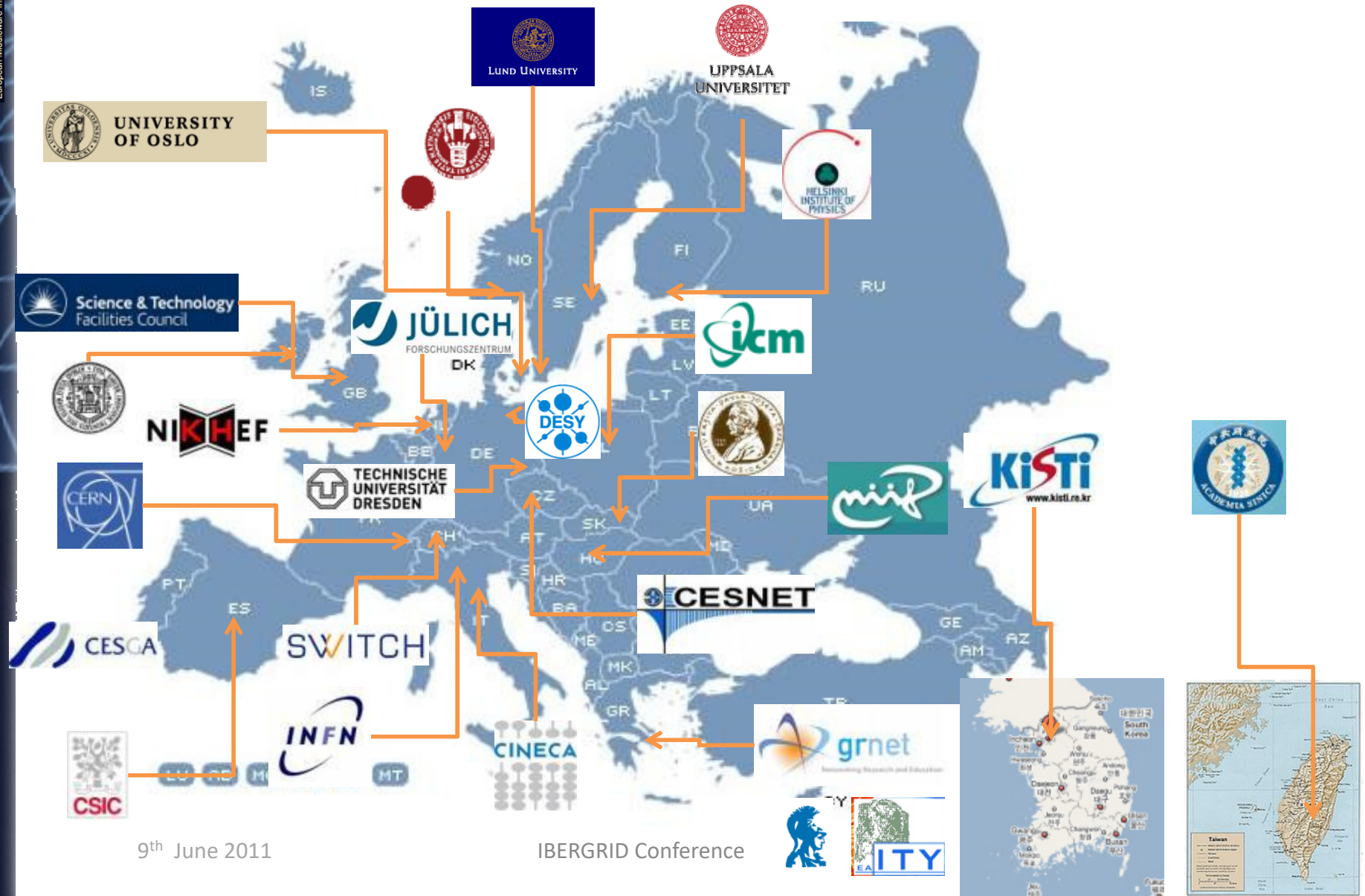
EMI Mission Statement



The **European Middleware Initiative (EMI)** project represents a close collaboration of the major European middleware providers - **ARC, gLite, UNICORE and dCache** - to explore and implement sustainable models to **harmonise, evolve and support** the distributed computing and data management middleware for **deployment in EGI, PRACE and other distributed e-Infrastructures**



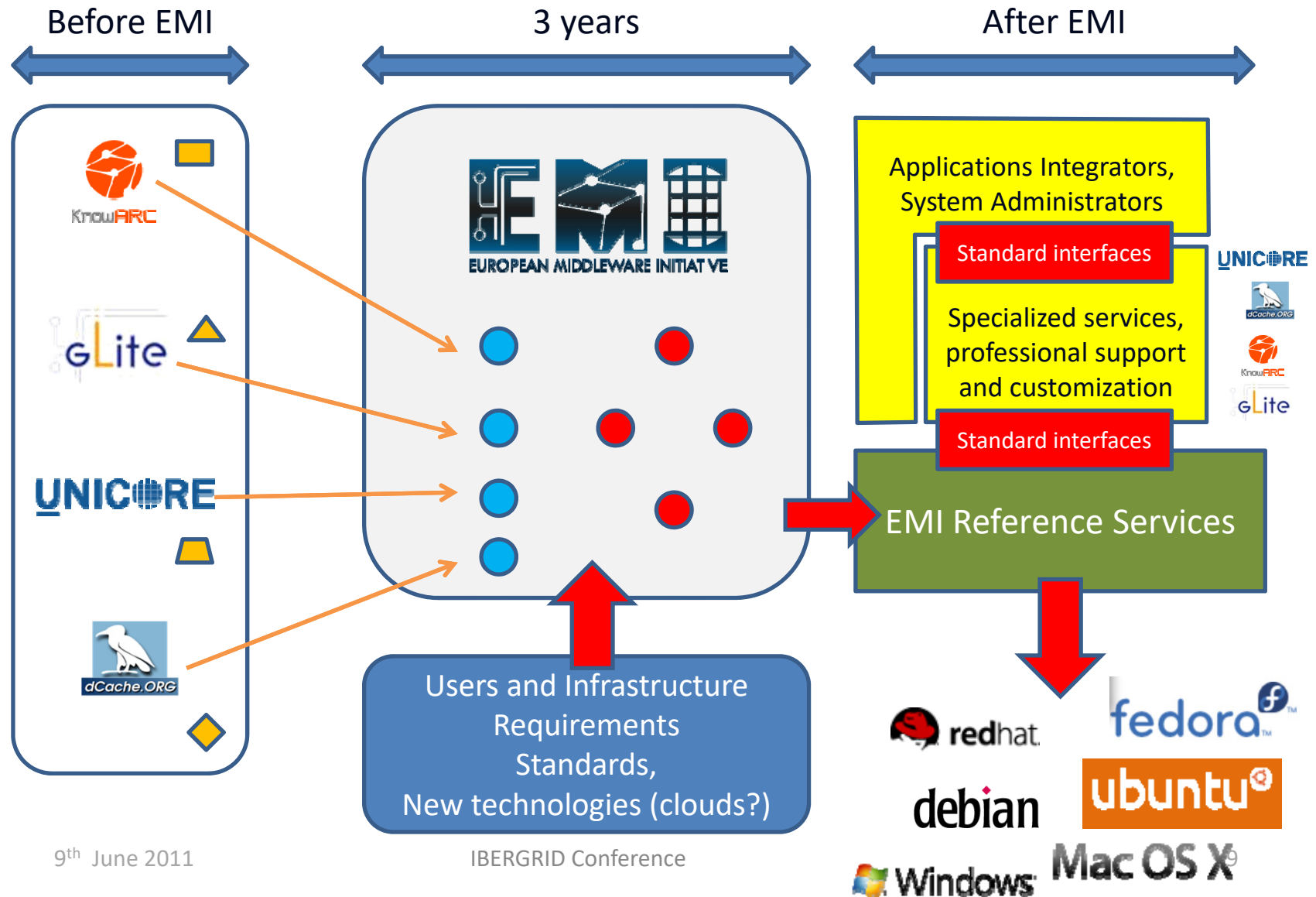
Partners (26)



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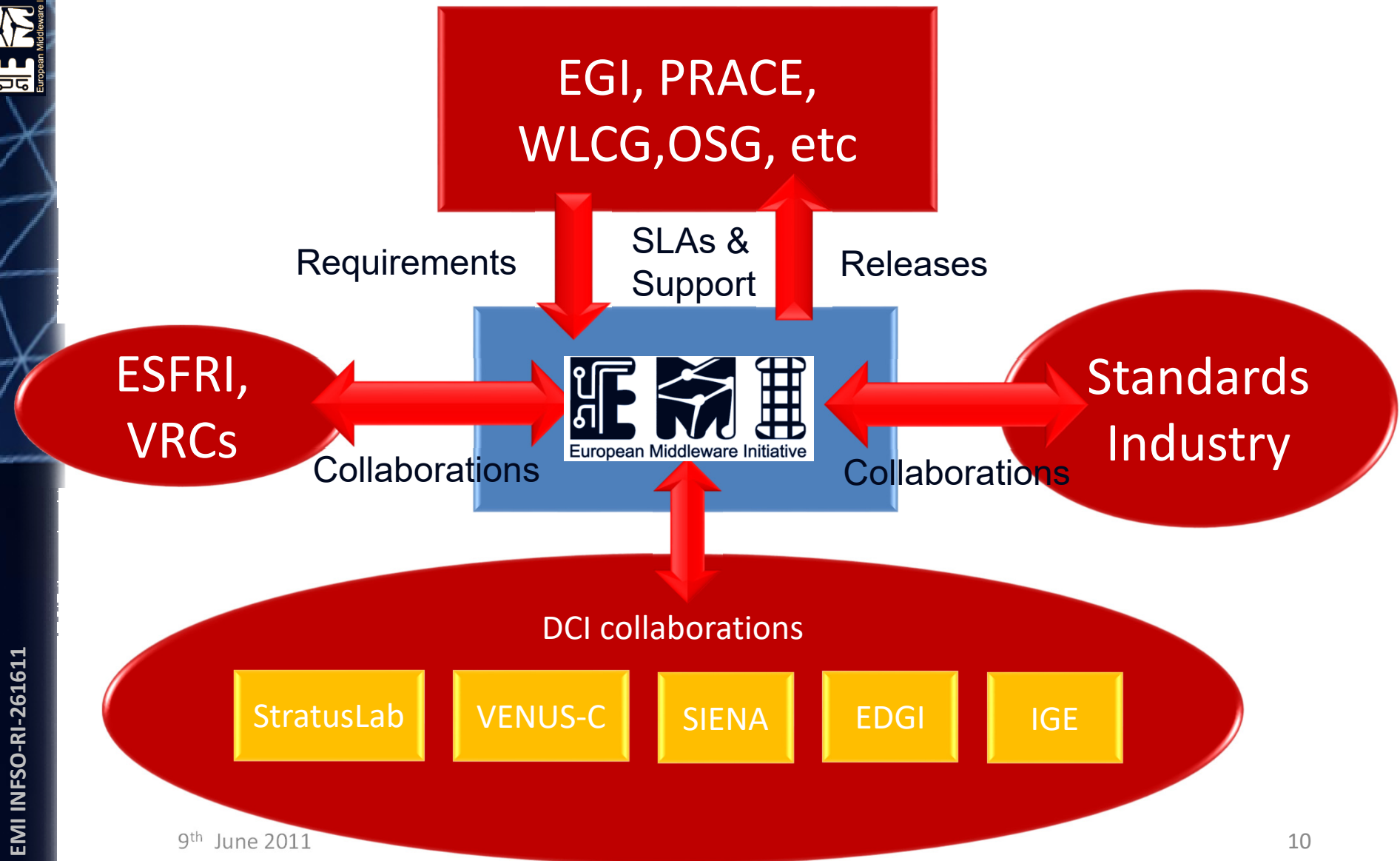
EMI Middleware Evolution



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DCI Collaborations



SLAs, MoU and Networking

SLA + MoU



MoU



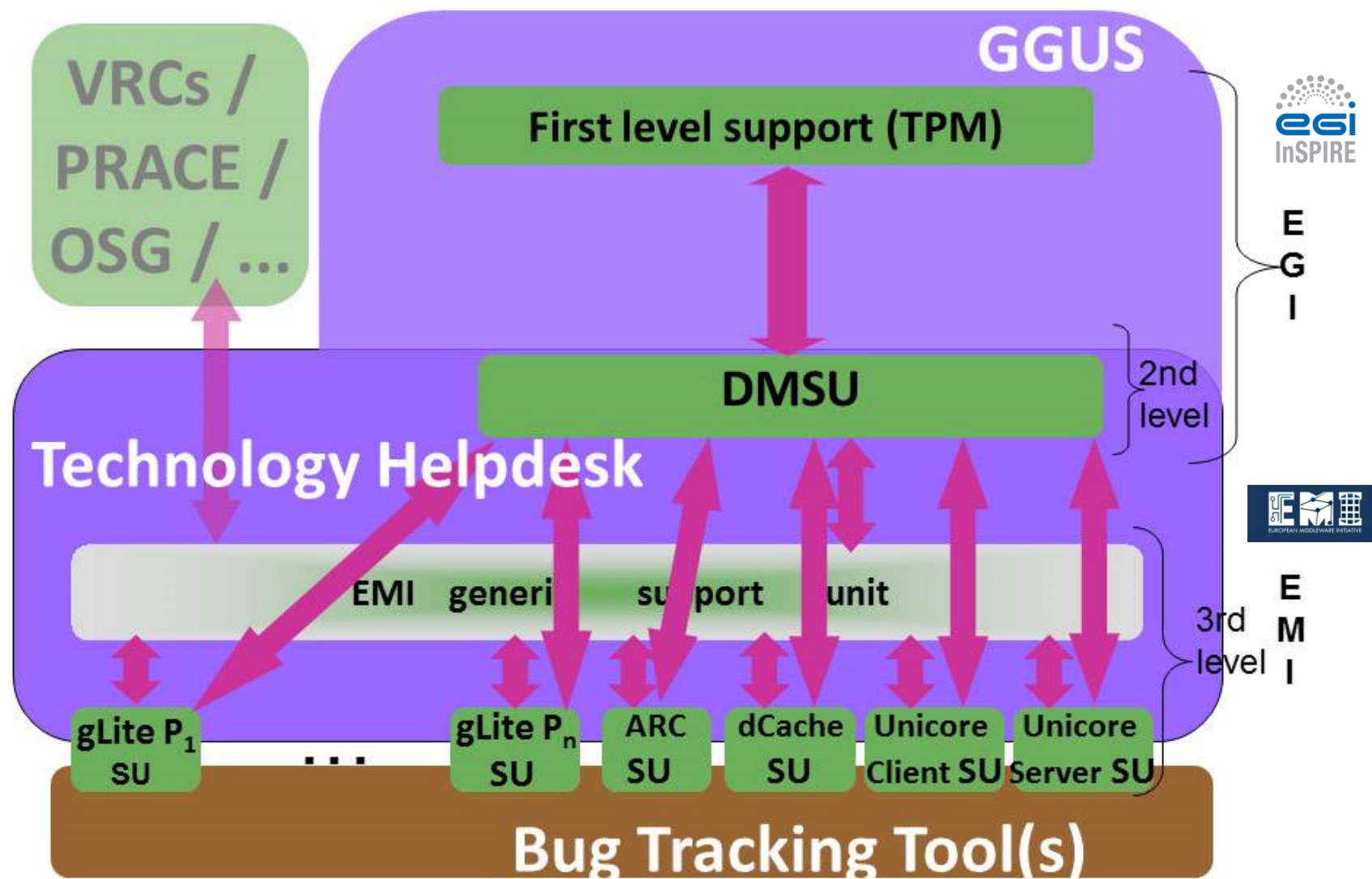
d4SCIENCE-II



Common initiatives

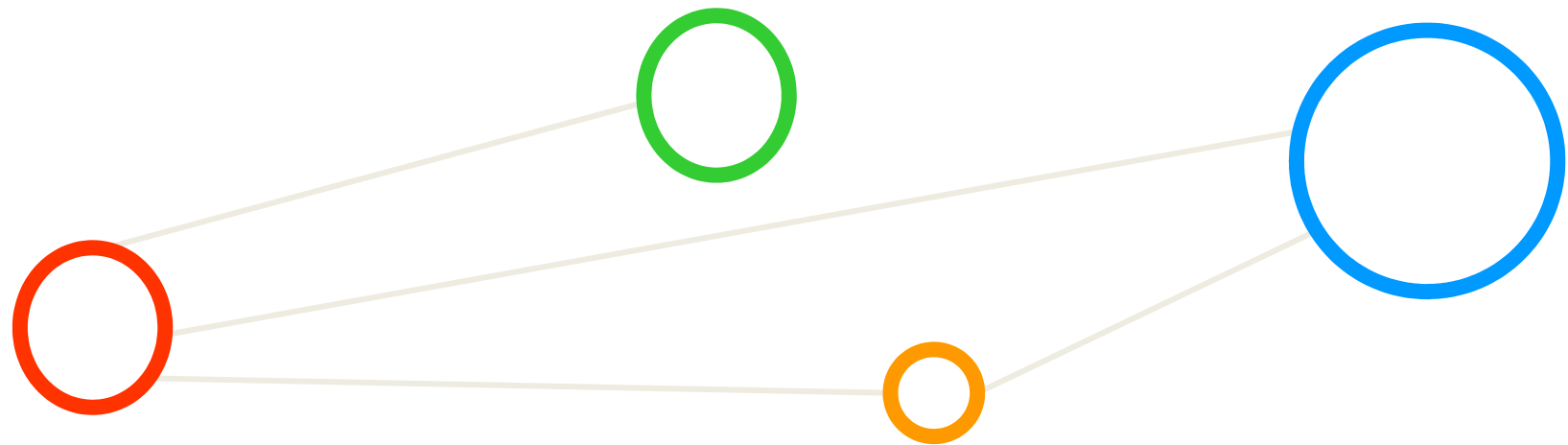


Support collaboration with EGI et al.



P: product; SU: support unit; DMSU: deployed middleware support unit; VRC: virtual research community

Software Roadmap



It's all about climbing mountains...

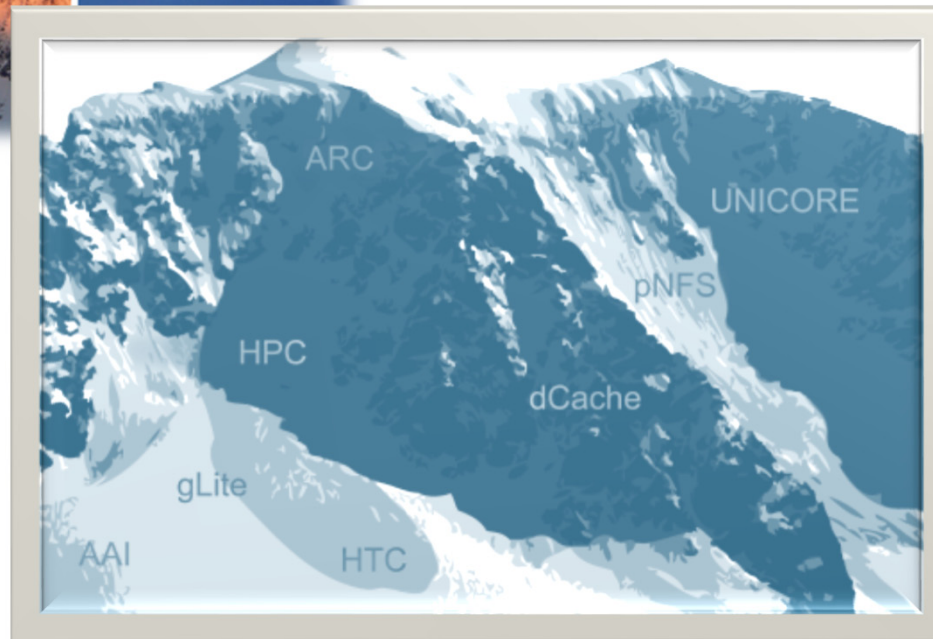
Kebnekaise (SW), 2104 m



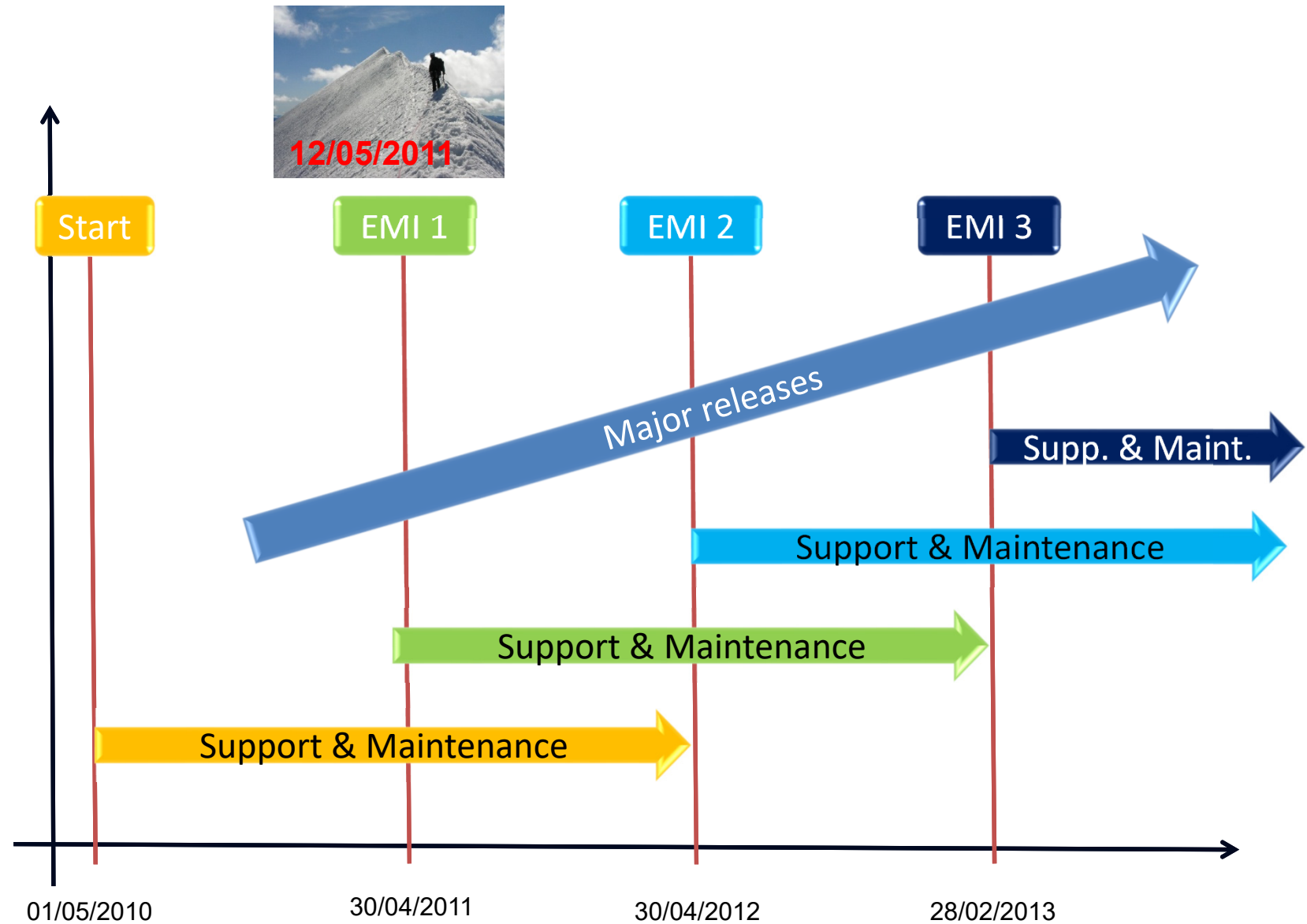
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EMI Release Overall Roadmap



Common Policies ensure Quality



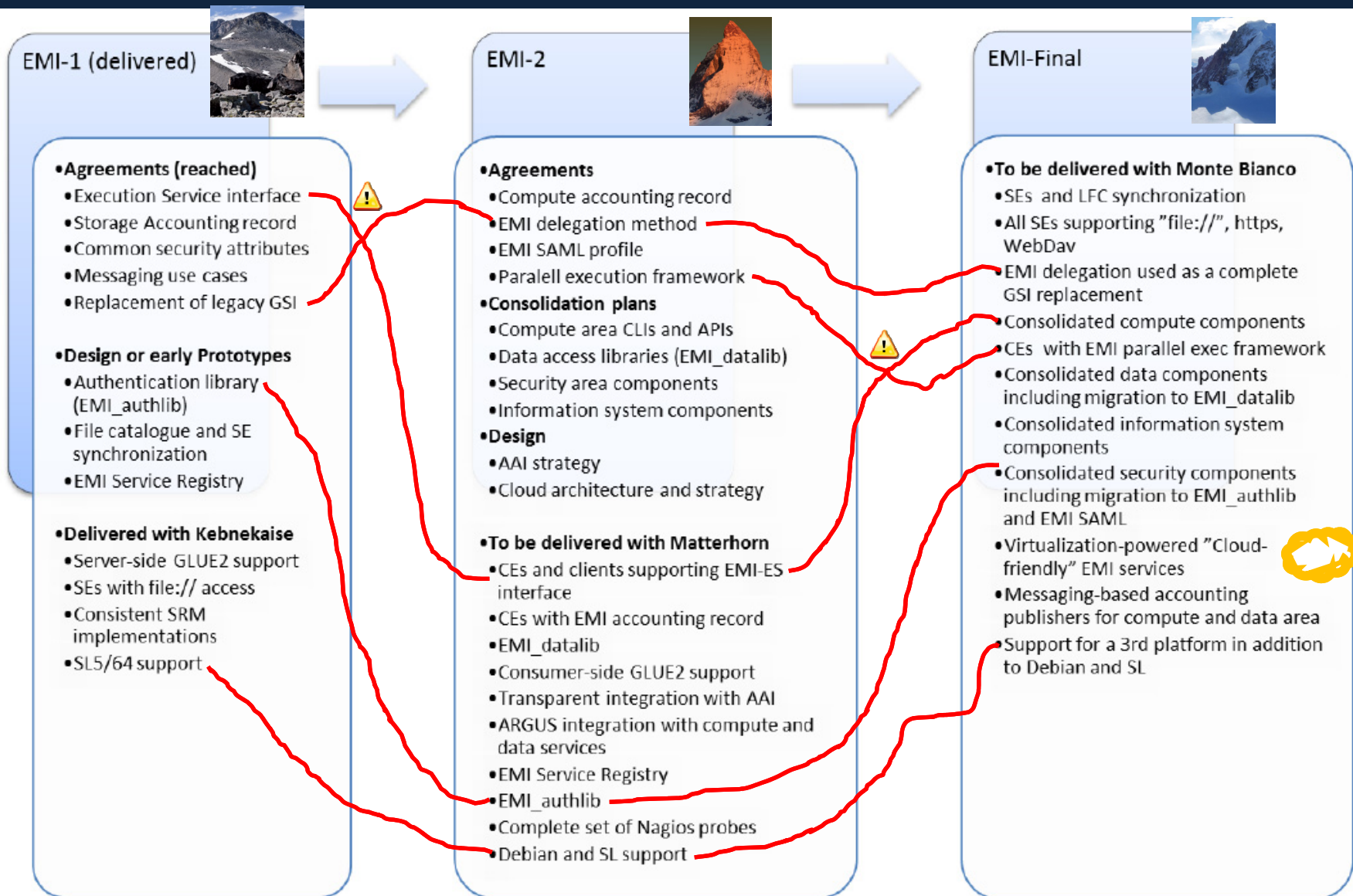
EMI Policy Documents

NEW - Training Videos:

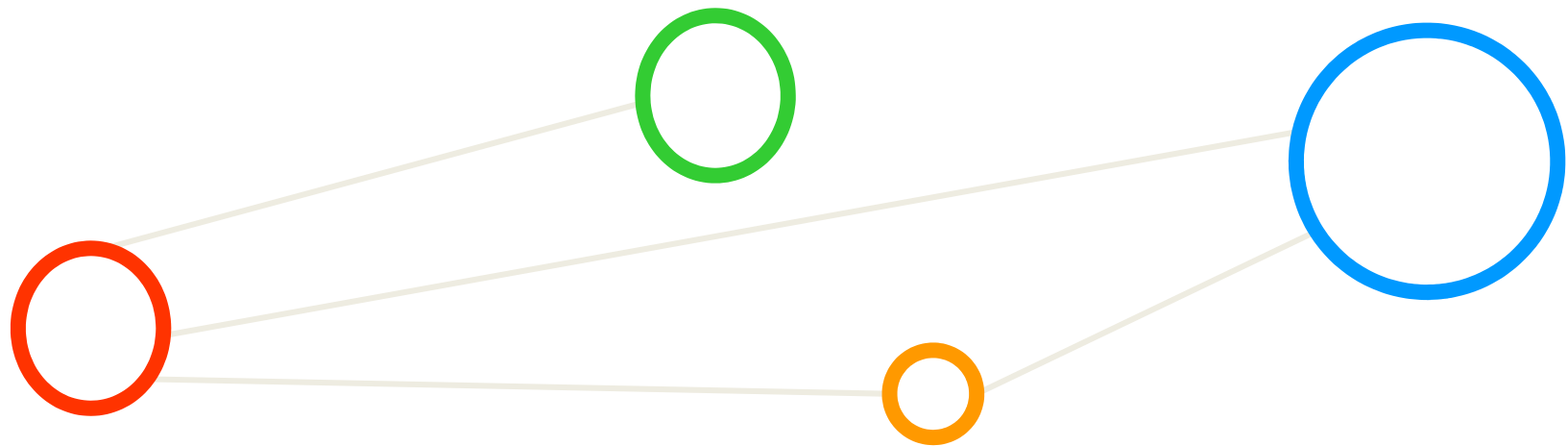
- [Integration, Configuration and Packaging policies](#)
- [Release, Change, Testing, Certification and Documentation policies](#)

Policy	Description	Status	Latest Approved version
Release Management	This policy describes how releases are managed in EMI	Stable	v1.0 approved on 24.01.2011.
Change Management	This policy describes how to introduce changes in the EMI release.	Stable	v2.0 approved on 28.03.2011.
Configuration and Integration	This policy describes how to build and integrate your software into the EMI release	<i>v2.0 waiting PEB approval: to be done after EMI-1 release (*)</i>	v1.0 approved on 03.12.2010.
Packaging	This policy describes how to create software packages.	Stable	v1.0 approved on 11.03.2011
Testing	This policy describes how to test your software components.	v3.0 in progress	v2.0 approved on 28.02.2011
Documentation	This policy describes how to prepare software documentation.	Stable	v2.0 approved on 07.04.2011
Certification	This policy describes how to certify your software components.	Stable	v2.0 approved on 17.03.2011

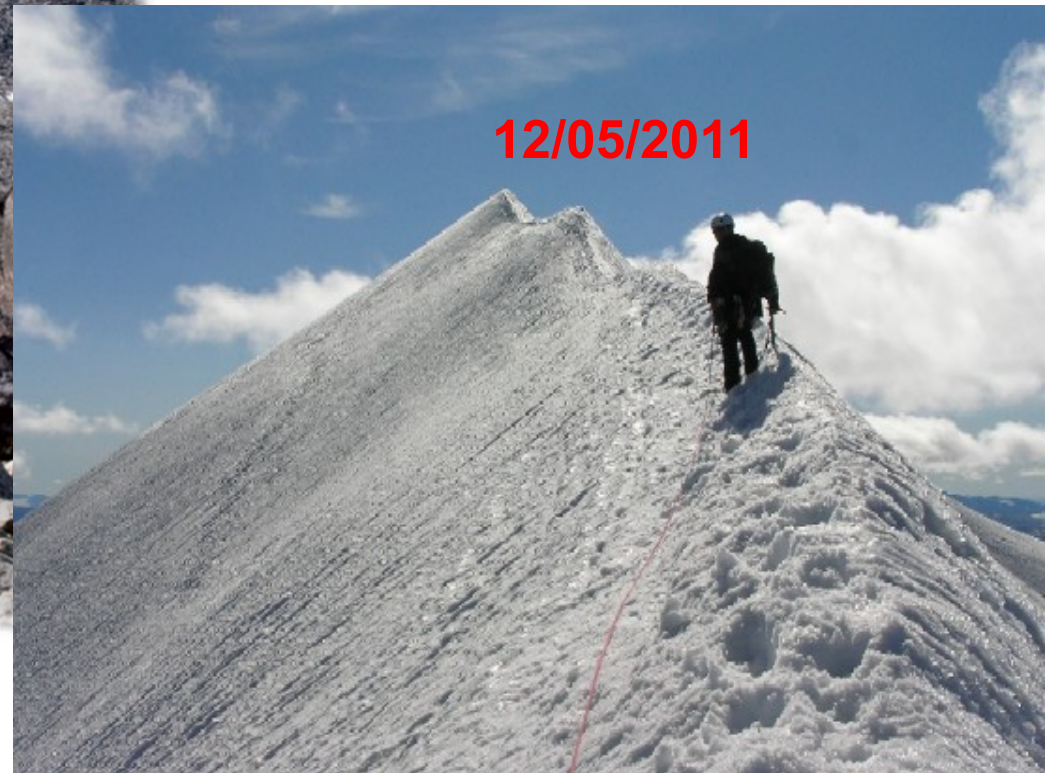
Roadmap (many tracks for climbing)



EMI 1 'Kebnekaise' Release



EMI 1 'Kebnekaise' available



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EMI 1 Highlights



- Mainly Software Integration
 - Goal: Middleware harmonization
 - Four different technologies available as integrated release
 - Some product developments
- Important agreements established
 - EMI - Execution Services specification
 - Storage Accounting Record Specification
 - Common security attributes & several messaging use cases
- Standardization and harmonization perspective
 - Important plans to decrease amount of components/SLOCs
 - Increased standardization adoption



New Functionality: GLUE2



Enable effective and efficient operations of the DCIs like EGI and PRACE by improving the existing middleware services with new required functionality focusing on usability, manageability and service operations... [DOW]

- Consistent information ecosystem in EMI 1
 - Avoids adapter-based transformations & semantic loss across EMI components; easier operations in EGI
 - Decision to use standard-based information model GLUE2
 - LDAP and XML renderings
 - GLUE2 support in job management services
 - CREAM CE, ARC CE, and UNICORE
 - SEs publishing initial GLUE2 storage information
 - dCache, DPM, and StoRM
 - Production support for GLUE1.3 kept where available



New Functionality: File:// Access



Enable effective and efficient operations of the DCIs like EGI and PRACE by improving the existing middleware services with new required functionality focusing on usability, manageability and service operations... [DOW]

- Storage elements with file:// access in EMI 1
 - NFS clients are able to use EMI SEs in an easy manner
 - Support for NFS4.1/pNFS makes SEs industry competitors
 - dCache supports NFS4.1/pNFS (production)
 - DPM supports NFS4.1/pNFS (experimentally)
 - StoRM supports this functionality via the corresponding underlying file system if available
 - To be released with next EMI update



New Functionality: HTTP & WebDAV SEs



Enable effective and efficient operations of the DCIs like EGI and PRACE by improving the existing middleware services with new required functionality focusing on usability, manageability and service operations... [DOW]



- EMI 1 Storage elements support HTTP(S) (+ WebDAV)
 - HTTP(S) as most widely used standards in the Web & DCIs
 - Adoption of WebDAV makes EMI SEs 'fit for business'
 - dCache offers HTTP(S) (and additionally WebDAV) in EMI 1
 - DPM offers HTTP(S) in EMI 1
 - StoRM offers support very soon (next release)
 - Complete adoptions with WebDAV across storage elements planned for EMI 2



New Security Developments



Enable effective and efficient operations of the DCIs like EGI and PRACE by improving the existing middleware services with new required functionality focusing on usability, manageability and service operations... [DOW]

- VOMS 2.0 / VOMS-Admin
 - SAML-based access (VOMS-admin)
 - RESTful interface to obtain attributes
 - GSI removal
 - Good progress with VOMRS convergence
- ARGUS 1.2
 - CREAM CE works together ARGUS
 - UNICORE can work together with ARGUS
 - ARGUS PDP handler prototype for ARC service container
 - Blacklisting already used by DPM, dCache and LFC

EMI 1 Integrated Release



EMI Software Repos

[About EMI](#)
[Documentation](#)
[Support](#)
[Mailing list](#)

News

EMI 1 Released
(12/05/2011)

Welcome to the EMI Software Repository

EMI is a collaboration among the major European providers of middleware and software on research infrastructure. ARC, dCache, gLite and UNICORE work together to provide software from a single distribution by infrastructure providers, site administrators or researchers.

The goal of EMI is to provide software compliant with the major Operating Systems from existing software components.

Latest Supported Releases

EMI 1 (Kebnekaise)

Base	SL5 (i386)	SL5 (x86_64)
Updates	SL5 (i386)	SL5 (x86_64)
Third-Party	SL5 (i386)	SL5 (x86_64)
Sources	SL5	



[YUM Repo files \(RPM\)](#)

[EMI 1 Base YUM Repo file \(.repo\)](#)

[EMI 1 Updates YUM Repo file \(.repo\)](#)

[EMI 1 Third-Party YUM Repo file \(.repo\)](#)

[GPG Key](#) [IBERGRID Conference](#)

EMI 1 Integrated Release



Integrate emerging components into the broader EMI component ecosystem in order to avoid incompatibilities as well as to ensure that the components can be used together ... [DOW]

- JRA1 Delivered a consolidated and streamlined set of services and components from ARC, gLite, UNICORE, and dCache as integrated release for EMI 1
 - Including many re-factoring of existing components
 - Phasing out duplicate and obsolete components from the original middleware stacks
 - Adopt common solutions like APIs, libraries, methods, etc.
 - One central Globus toolkit version avoids incompatibles among the different EMI components in the EMI 1 release
 - OS Integration: SL5/64bit as reference platform

Standardization as one key approach

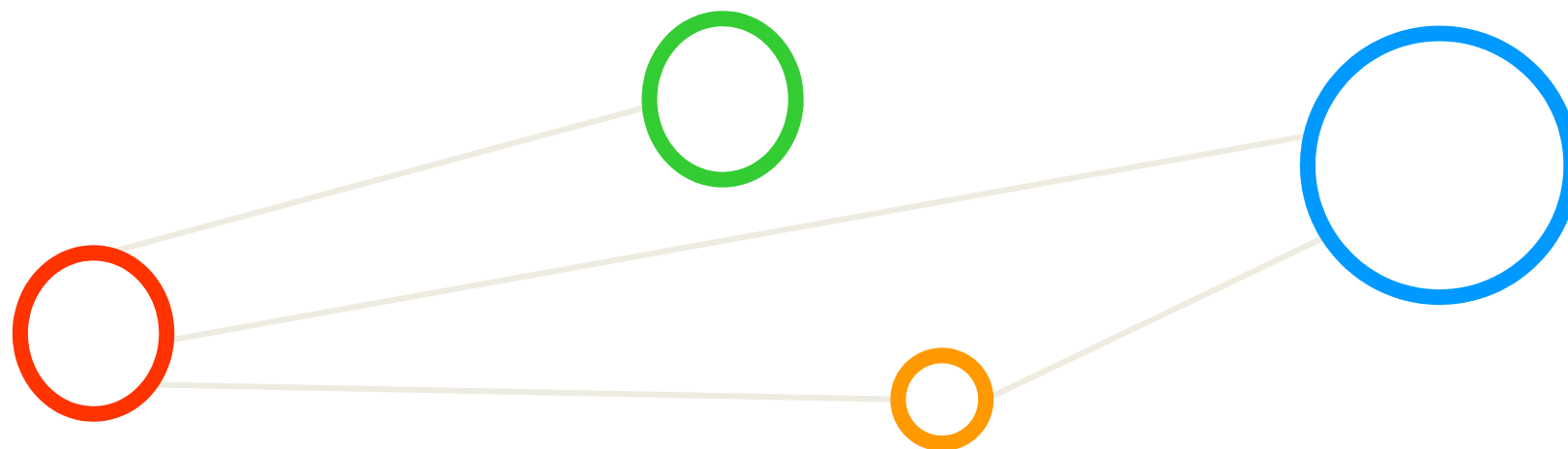


Guide and validate the open standard adoption process in EMI and participate in standardization bodies in order to promote and drive standards that are relevant to the EMI project ... [DOW]

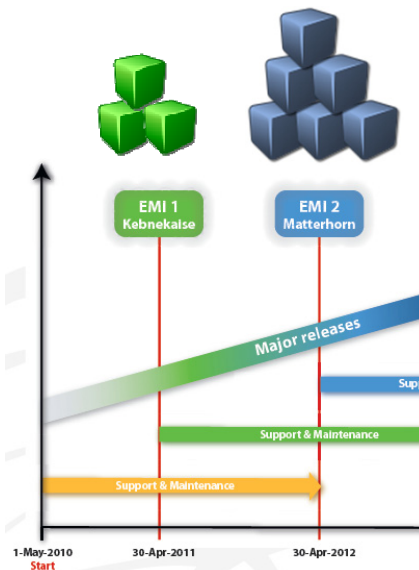
- Active contributions to OGF Working Groups
 - Grid Interoperation Now (GIN) CG
 - EMI and international Grid interoperability
 - Production Grid Infrastructure (PGI) WG
 - EMI input via EMI ES around job management
 - GLUE2 WG
 - EMI implements specs and provides feedback & XML rendering
 - Usage Record (UR) WG
 - EMI input via storage accounting StAR spec. & compute experience
 - Storage Resource Manager (SRM) WG
 - EMI provides implementation feedback & production experience



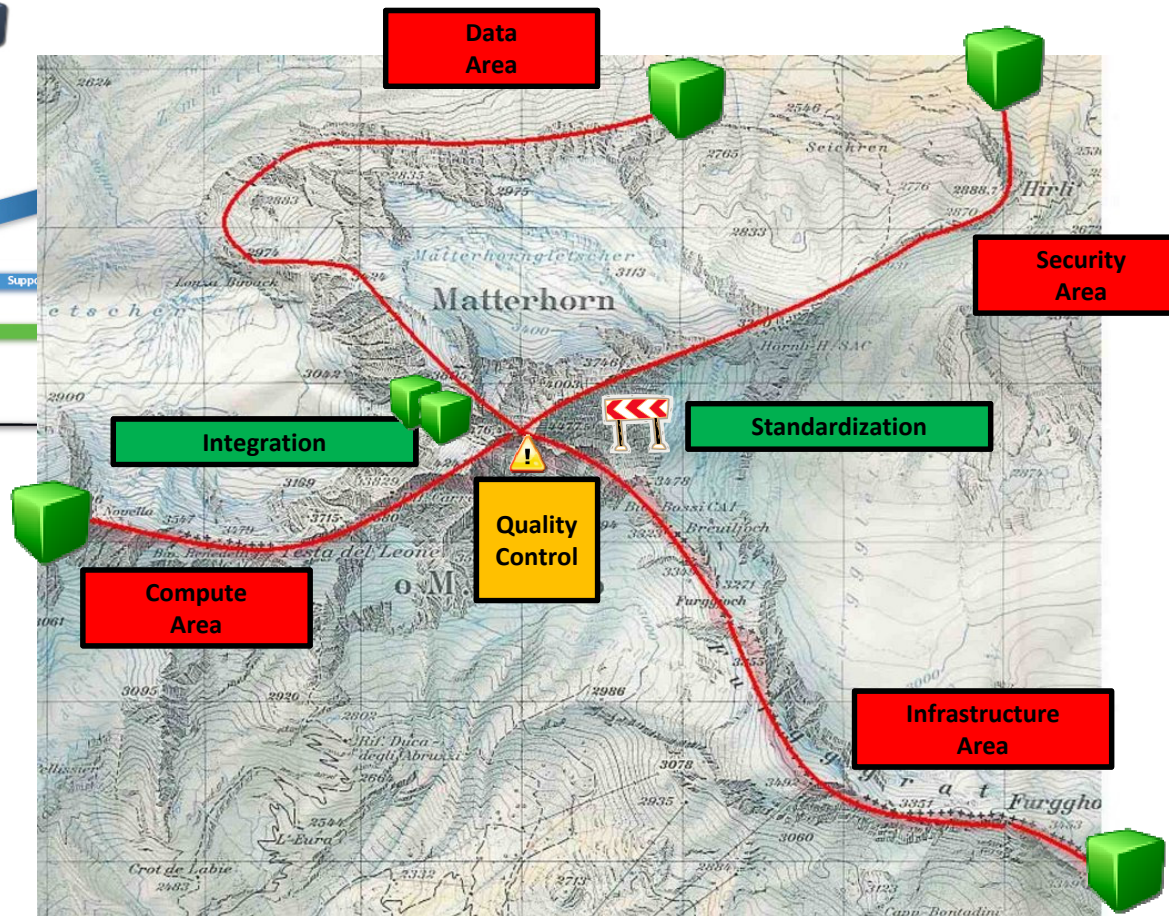
Towards EMI 2 'Matterhorn' Release



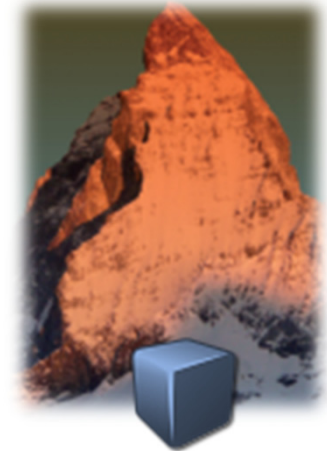
EMI 2 'Matterhorn' - a new mountain...



Coordination

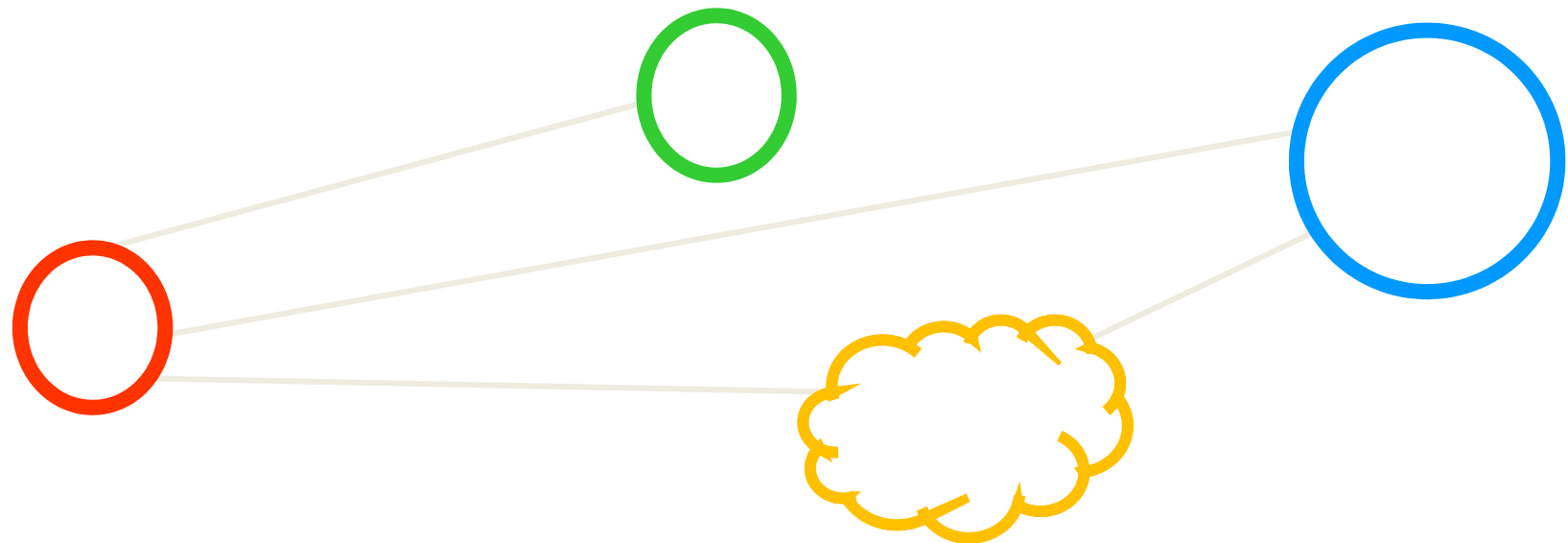


Planned Major Year Two Activities



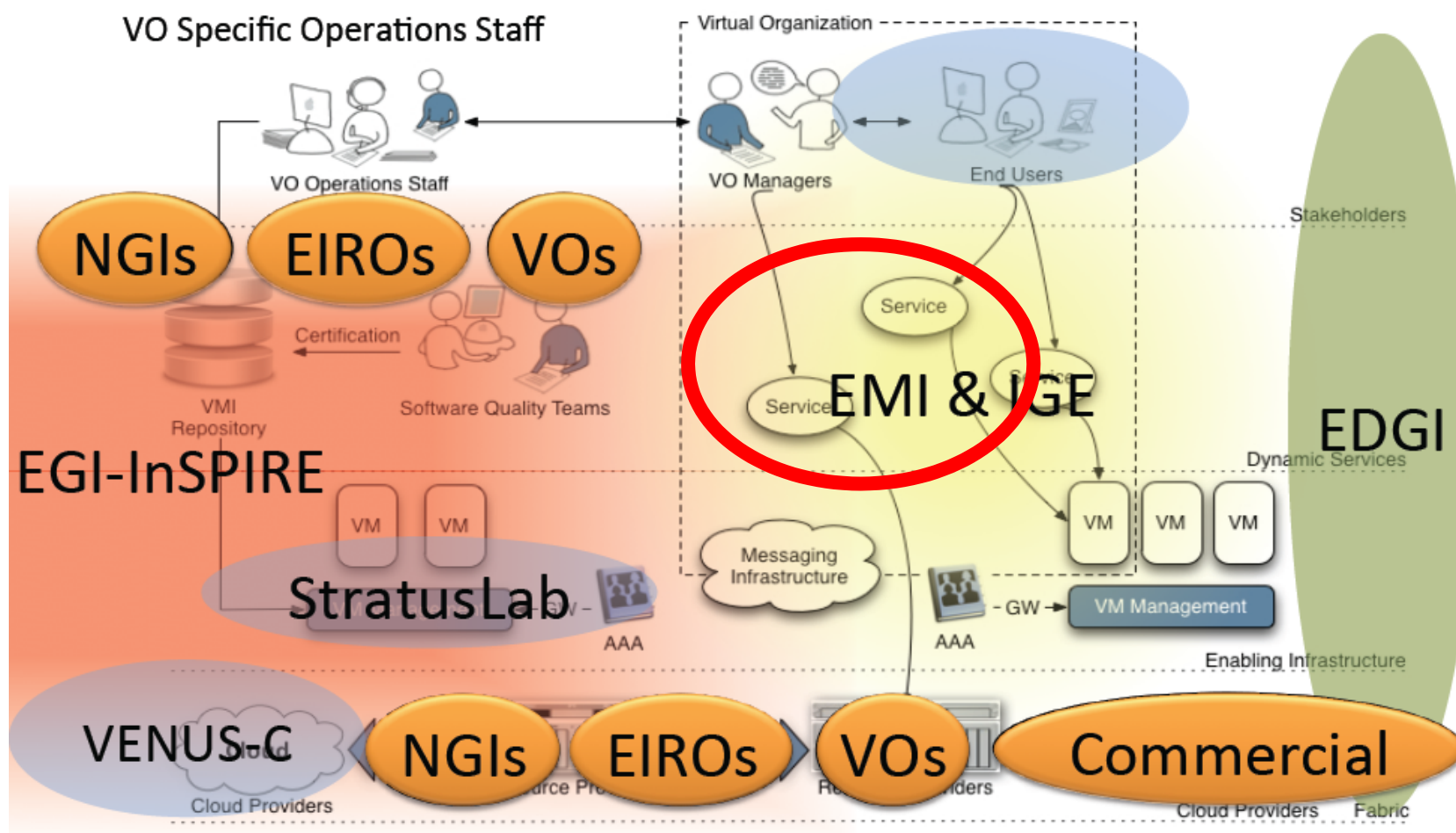
- Developments
 - EMI – Execution Service Implementations
 - EMI Accounting Records and CE support
 - Common Libraries for data access and AuthN
 - Argus Integration in Compute and Data
 - NAGIOS Probes for EMI Services
- Important agreements established
 - Common EMI Delegation method
 - EMI Parallel Execution Framework & EMI Cloud strategies
- Standardization and harmonization perspective
 - Even more decrease amount of components/SLOCs
 - Increased standardization adoption and new standards

Responding to DCI Evolutions



Observe and respond to DCI Evolutions...

- (slide courtesy of Steven Newhouse – EGI Director)



EMI Cloud Approaches

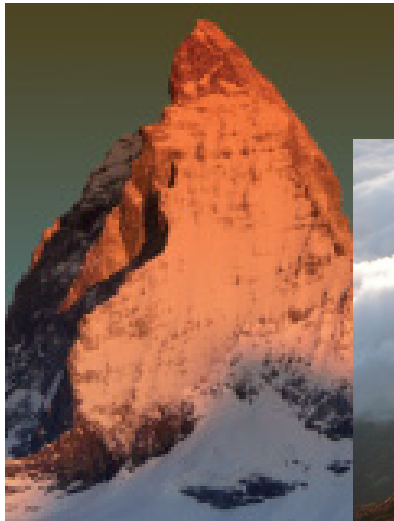


Increase the relevance and usability of the EMI grid middleware by actively managing user requirements in collaboration with infrastructure and community projects and initiatives... [DOW]

- Responding to cloud and virtualized DCI evolutions
 - Production remains priority for EMI software provisioning!
 - Evolution needs to be correctly understood
 - EMI Cloud Working group has been established
 - EMI and cloud approaches have been researched and several documents are available (report, paper, etc.)
 - [\[https://twiki.cern.ch/twiki/pub/EMI/EmiJra1T5TaskForceCloudandVirtualization/EMIVirtCloudReport-v0.7.doc\]](https://twiki.cern.ch/twiki/pub/EMI/EmiJra1T5TaskForceCloudandVirtualization/EMIVirtCloudReport-v0.7.doc)
 - Standardization approaches observed (OCCI, CDMI, etc.)
 - Existing work is baseline for setting up an EMI cloud strategy in the next months collaboratively with EGI



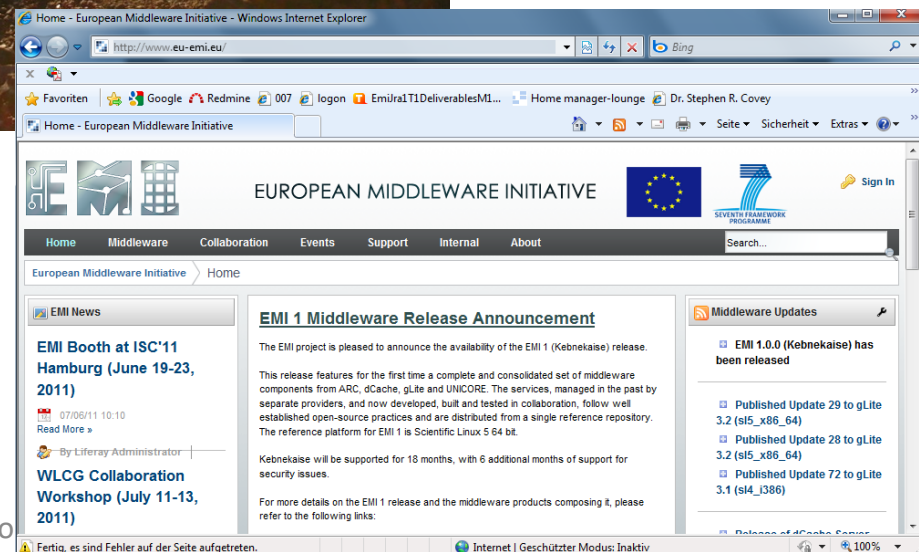
We have started climbing – watch us!



www.eu-emi.eu

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Thank you

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