EMI Standardization Activities
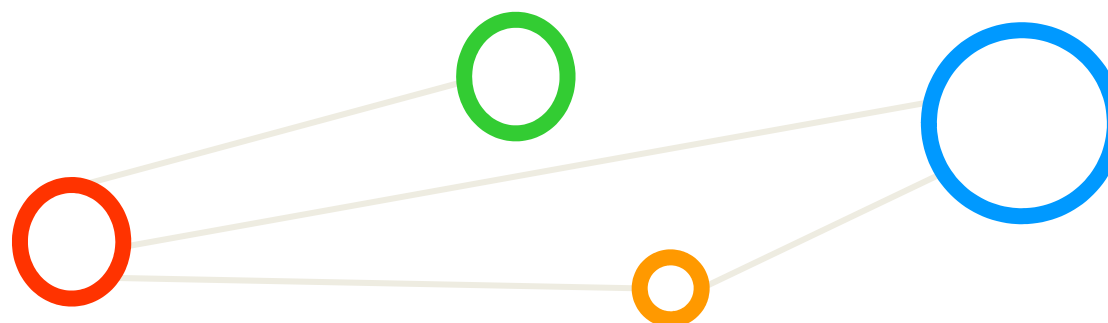## *As One Pillar in a larger Strategic Plan*

MORRIS RIEDEL

Juelich Supercomputing Centre
EMI Strategic Director

Open Grid Forum 36
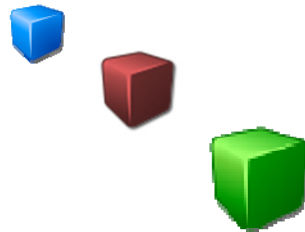*Chicago, 9th October 2012*

Outline

Outline

European Middleware Initiative
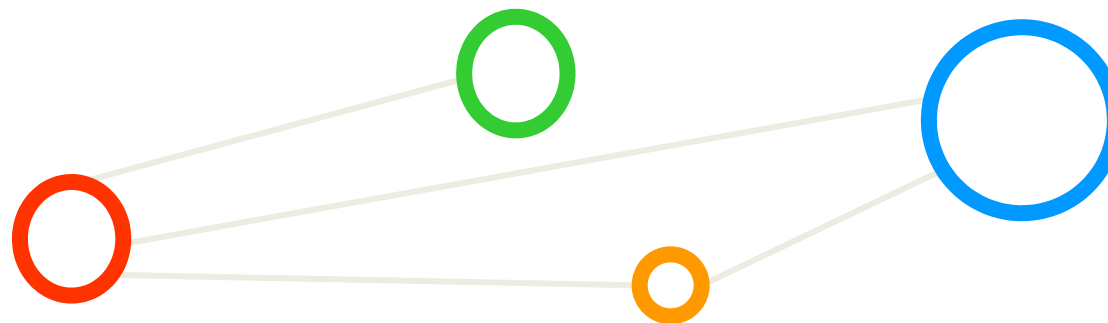
- Core objectives and Strategies

- Standardization Overview in EMI

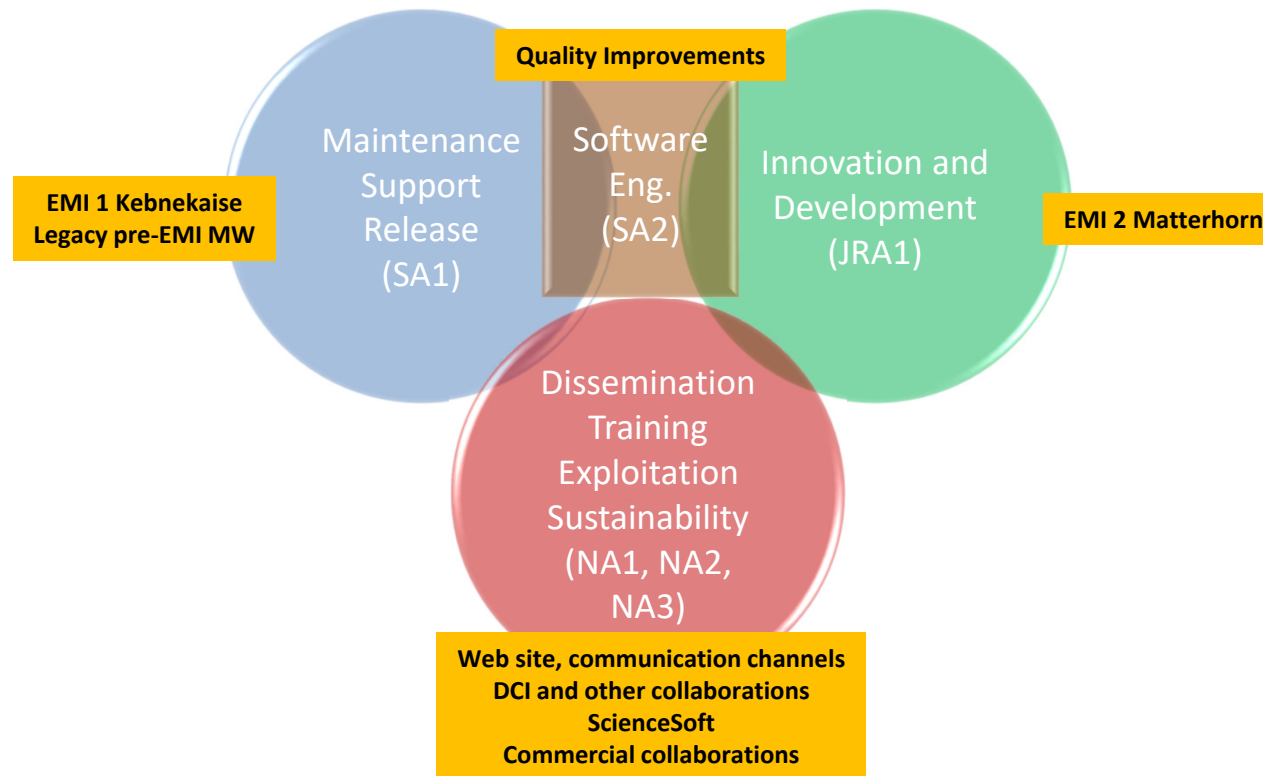- EMI Strategies Update

Conclusions

Questions

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Objectives and Strategies

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Past & What is EMI?

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EMI Activities at a Glance

Quality Improvements

Maintenance Support Release (SA1)

Software Eng. (SA2)

Innovation and Development (JRA1)

**EMI 1 Kebnekaise
Legacy pre-EMI MW**

EMI 2 Matterhorn

Dissemination Training Exploitation Sustainability (NA1, NA2, NA3)

**Web site, communication channels
DCI and other collaborations
ScienceSoft
Commercial collaborations**

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EMI Objectives & Standards

1. Simplify and streamline the services for EGI, PRACE and other DCIs

2. Increase interoperability, manageability, usability and efficiency

3. Support efficient, reliable operations of EGI, PRACE and other DCIs

4. Strengthen the participation of user communities in the definition of the services

---

1.1. Common layers of functionality (MJRA1.3, MJRA1.10, MJRA1.12)

1.2. Management of security credentials (MJRA1.10 , MJRA1.12)

1.3. Common standards (DNA3.2.1, MJRA1.3, MJRA1.7, MJRA1.10, MJRA1.12)

1.4. Certification process (DSA1.1, DSA2.2.3, DSA2.3.3)

1.5. Common repository (DSA2.2.3, DSA2.3.3)

2.1. Common messaging system (Done in Y1)

2.2. Accounting and monitoring using messaging (Nagios probes, APEL SSM)

2.3. Extend job management services (WNoDeS, EDGI Bridges)

2.4. Instrumentation interfaces in all services (Nagios probes)

2.5. Common interfaces within EMI and between HTC and HPC (MJRA1.3, MJRA1.7)

3.1 SLA-based User Support (MNA1.3, MNA1.4.2 , DSA1.1, DSA1.4.2, MSA1.2.3)

3.2 - Reactive maintenance services (MNA1.3 , DSA1.1, DSA1.4.2)

3.3. Proactive maintenance services (MN3.3, DSA1.1, MJRA1.19.2)

3.4. Software release management (MNA1.3, MNA1.4.2, MSA1.2.3)

4.1. Dissemination, training and sustainability plans (DNA2.2.2 , DNA2.3.2, MNA2.2.3, DNA3.1.1, MNA3.1)

4.2. Collaboration programs (including commercial companies) (MNA1.3, DNA3.1.1, MNA3.2, MN3.3, MoUs)

4.3. Coordination and promotional activities (DNA3.2.1, MNA3.2, MNA3.4.1)

The EMI Core Business
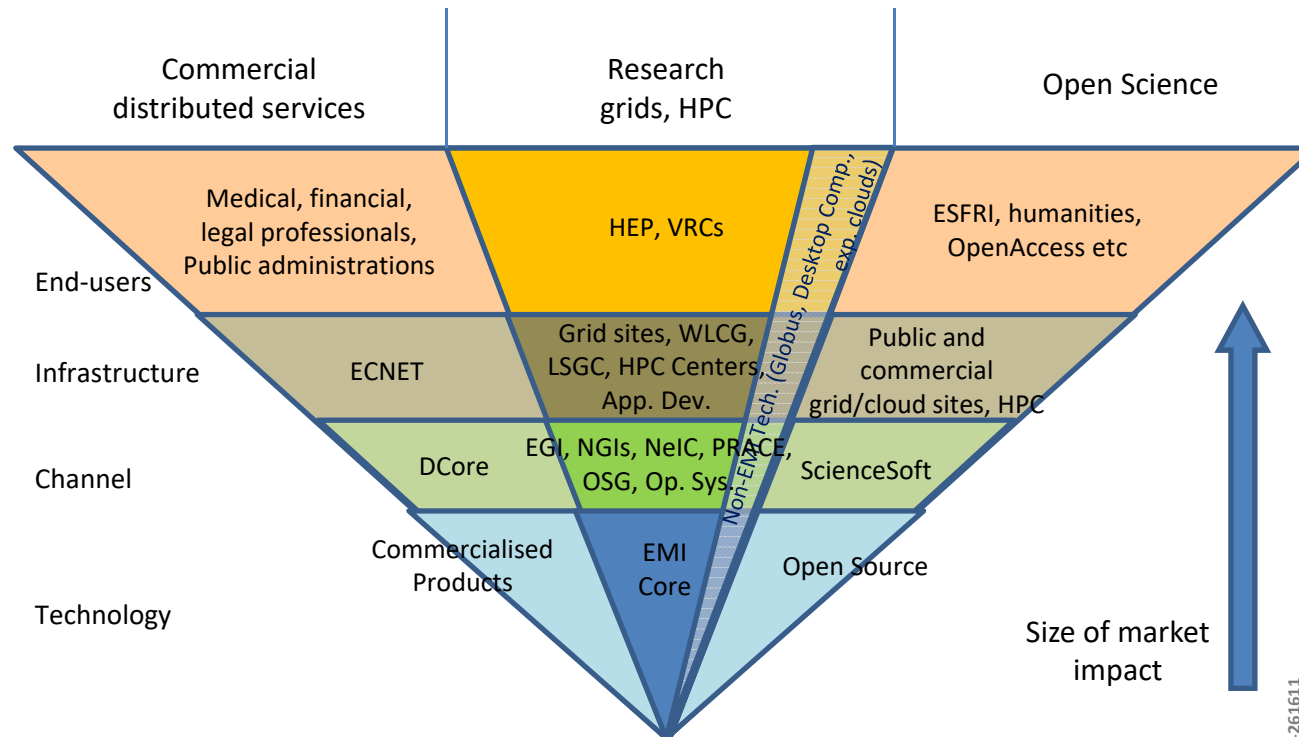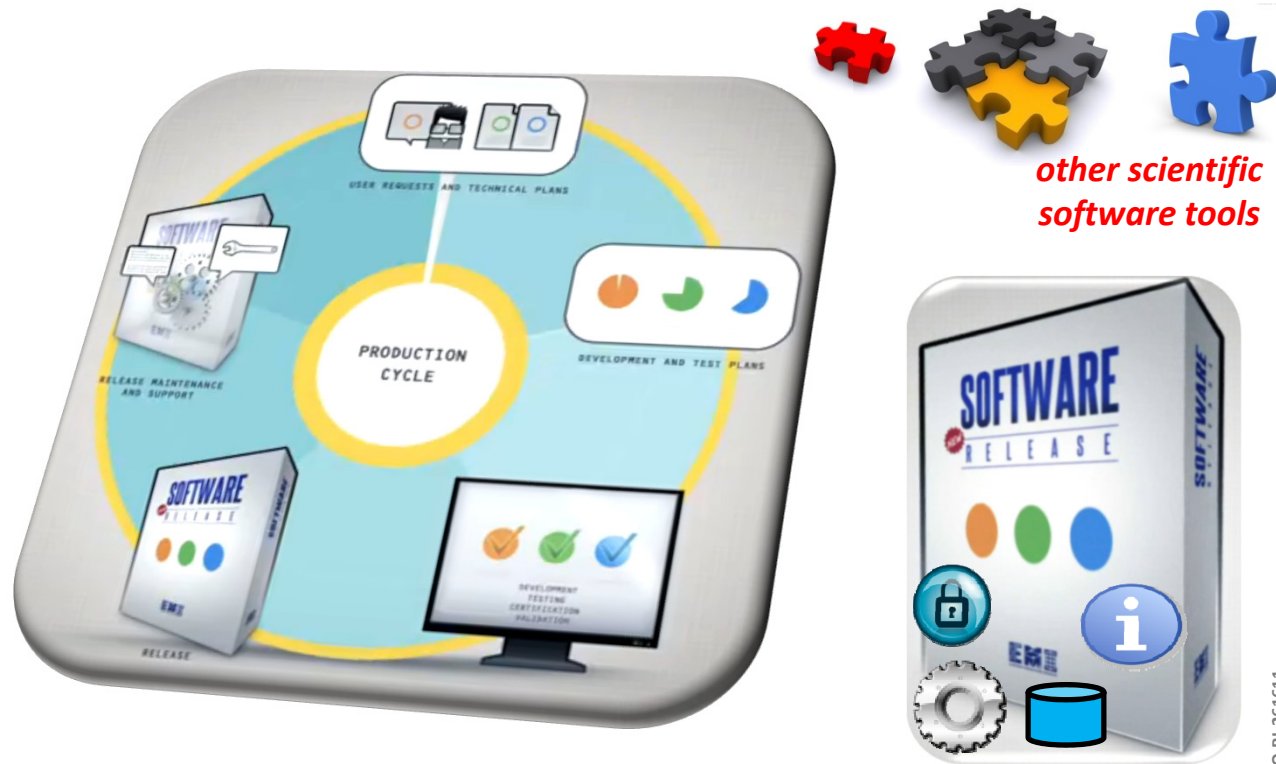
Research
grids, HPC

To enable

Develop

Technology

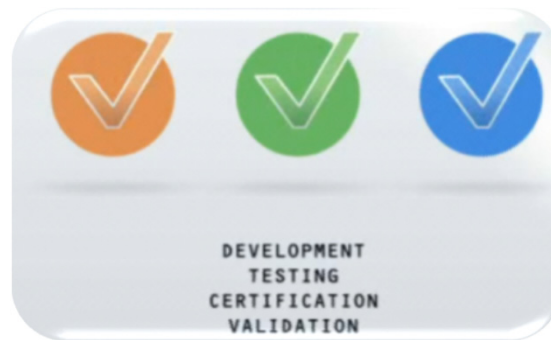EMI
Core

The EMI Vision and Strategy

EMI — EUROPEAN MIDDLEWARE INITIATIVE

Commercial distributed services | **Research grids, HPC** | **Open Science**

End-users
- Medical, financial, legal professionals, Public administrations
- HEP, VRCs
- ESFRI, humanities, OpenAccess etc

Infrastructure
- ECNET
- Grid sites, WLCG, LSGC, HPC Centers, App. Dev.
- Public and commercial grid/cloud sites, HPC

Channel
- DCore
- EGI, NGIs, NeIC, PRACE, OSG, Op. Sys.
- ScienceSoft

Technology
- Commercialised Products
- EMI Core
- Open Source

Non-EMI Tech. (Globus, Desktop Comp., exp. clouds)

Size of market impact

10.000 ft Perspective

*other scientific
software tools*

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Present Achievements

- Middleware jointly developed & maintained

- Release process harmonized with policies

- Open Standards adoption increased & refined

- Implement several ways for sustainability

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Innovation and Development

EMI 2 Matterhorn
New functionality
New services
Agreements and standardization

29 Product Teams
56 products
101 planned development tasks
94 completed or largely completed

2012

2nd release

EMI 2 Matterhorn

2011

EMI 1 Kebnekaise
Open Source process adoption
Distribution consolidation

EMI as reference platform

EMIR, CANL, Nagios Probes, EMI-ES, XACML Profile, ARGUS, StAR, etc

European Middleware Initiative

OLA

New PT

EDGI Bridges to access desktop computing resources through the EMI Computing Elements

Works with EMI

WNoDeS to access batch resources through a common interface supporting both grid and cloud models

New contributions

EMI Services Deployment

As of May 2012 the EMI services are deployed on

352 EGI sites
299 from 42 Euro/CERN
27 from Asia-Pacific
26 from Canada and LA

A cumulative total of **1095** service instances are deployed

For an estimated base of around **20000** end users using the EMI UI and APIs of which around **2000** are infrastructure operators

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Dissemination to Market

NA2

Redesigned web site

Product Factsheets

Social networks

Technical Articles

Videos

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Standardization Overview

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Core Vision Drivers and Tools

Sustainability:
Future EMI Collaboration
extended to committed and new emerging
partners from the DCI community and beyond

Pillar I EMI Partners	Pillar II Existing Users	Pillar III New Users	Pillar IV Standards	Pillar V Commercials	Pillar VI Science Soft
-	-	-	-	-	-
Post EMI Commitment (e.g. Table with products)	Post EMI commitment and requirements (e.g. WLCG, PRACE, iMarine, etc.); document existing use cases	Exploit and expand usage of EMI products beyond current user basis (e.g. product factsheets, FutureGrid, etc.)	Adopt industry standards and best practices in processes (e.g. industry standards adoption, release processes)	Engage with commercial partners (e.g. DCore systems, Buerhoop, Technicolor, SysFera, etc.)	Post EMI Collaboration Platform (e.g. ad-hoc partnering for new EC projects, exchange of open products, etc.)

Existing EMI Collaboration and partners as a strong foundation for further activities

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Standardization Pillar Activities

Pillar IV Standards

EMI Products Open Standard Adoptions
(e.g. adoption of OGF, OASIS, IETF industry standards, etc.)

Standardization Pre-Studies
(e.g. interoperability with EMI-ES, STAR, CAR, delegation, etc.)

Use of Common Profiles
(e.g. SAML and XACML profiles, etc.)

Standardization Activities in the Open Grid Forum
(e.g. participation in OGF, etc.)

Contributions to DCI Standards Ecosystem
(e.g. contributions to SIENA and EGI roadmaps, etc.)

Pillar IV Standards - Adopt industry standards and best practices in processes (e.g. industry standards adoption, release processes)

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Standardization Overview

Pillar IV – Standards

– Amount of adopted open standards increased

– Interoperability between EMI products increased

– Visibility of EMI (members) increased in dedicated OGF EMI tracks

– Standard adoption discussions with end-users via OGF GIN tracks

EMI specifications and chairs drive OGF progress

– Several EMI members are chairs of OGF groups (GLUE2, UR, PGI, etc.)

– EMI-Execution Services (EMI-ES) specification via OGF PGI/BES/JSDL

– Computing Accounting Record (CAR) specification via OGF UR

– Storage Accounting Record (STAR) specification via OGF UR

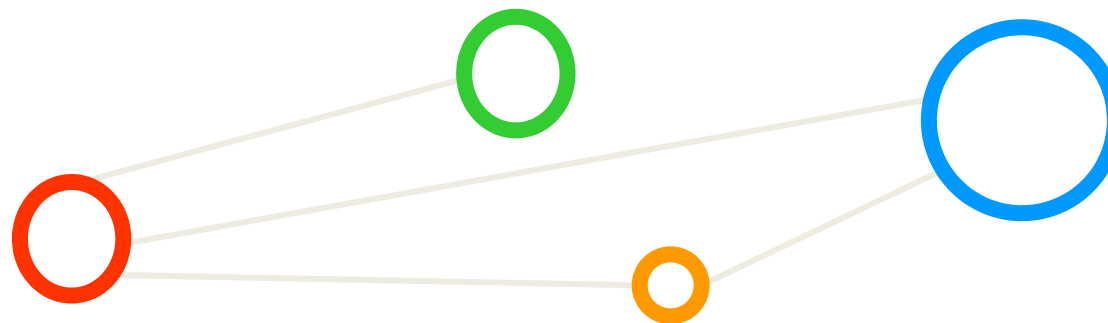– Common EMI profiles (SAML, XACML) in discussion in OGF security

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Standard Adoptions Overview

	A-Rex	ARC Info System	ARGUS	BDII	CREAM	dCache	DPM	EGIIS	FTS	LFC	SAGA-SD-RAL	StoRM	UNICORE	WMS	VOMS
EMI-ES (PGI)	EMI 3				EMI 3								EMI 3	EMI 3	
GLUE2			EMI 3					EMI 3						EMI 1	EMI 3
GridFTP															
HTTPS (not GSI)	EMI 3				EMI 3	EMI 3	EMI 3					EMI 3		EMI 3	
JSDL															
NFS 4.1/pNFS															
OGSA-BES															
POSIX/IO							EMI 1								
SAGA-ISN															
SAML															
SRM													EMI 3		
UR (Compute)	EMI 3				EMI 3								EMI 3		
UR (Storage)						EMI 3	EMI 3		EMI 3			EMI 3			
WebDAV							EMI 3						EMI 3		
WSRF															
XACML	EMI 3														

Update:
STS Service adopts WS-Trust

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Increasing Value

Commercial distributed services

Research grids, HPC

Open Science

End-users

Medical, financial, legal professionals, Public administrations

HEP, VRCs

ESFRI, humanities, OpenAccess etc

Infrastructure

ECNET

Grid sites, WLCG, LSGC, HPC Centers, App. Dev.

Public and commercial grid/cloud sites, HPC

Channel

DCore

EGI, NGIs, NeIC, PRACE, OSG, Op. Sy

ScienceSoft

Technology

Commercialised Products

EMI Core
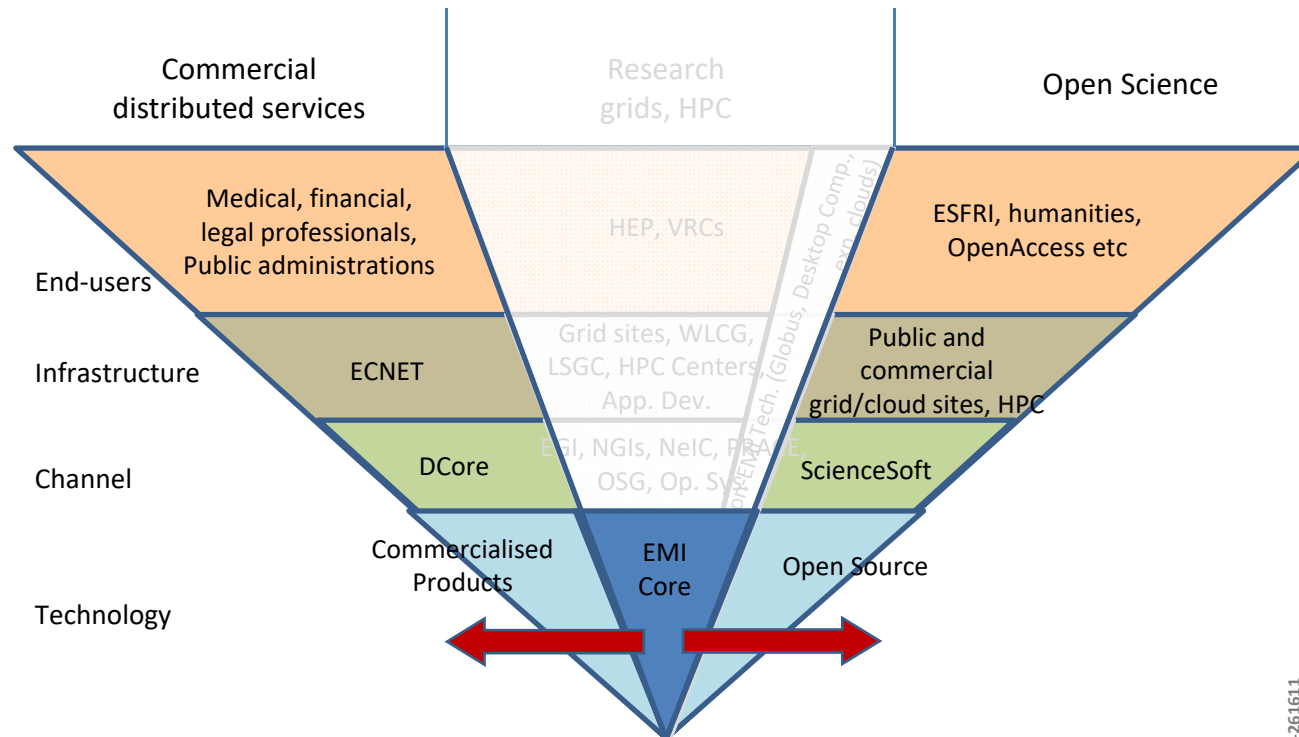
Open Source

DCore Systems

Services for eGovernment and legal/healthcare professionals

DCore System is the holding company of a commercial incubation program partnering SMEs with academic labs

With the goal of

– Exploiting open source technology to provide high-quality, professional services

– Creating synergies between research think-tanks and user-oriented commercial practices

– Providing sustainability by sharing part of the revenues with the academic labs

Dcore Systems Products

GALA
Flexible. Secure. Efficient

Digital Secure Archiving

Sinefo

Mobile Online Security

QPAD

Distributed Project Management

SAFEH

Secure Data Management for Healthcare

COURTICE

Secure Data Management for Law Professionals

HFILE

Secure File and E-mail Storage and Sharing

European Middleware Initiative

dCache, LFC, DPM, Hydra, VOMS, Argus

Storage

Encryption

Authorization

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ScienceSoft

A new initiative

Promoted by EMI in collaboration with EGI, StratusLab, iMarine, OpenAIRE and a number of other projects and SMEs

With the goal of

– Exploring the feasibility and advantages of creating an open source community for software specific to scientific communities

– Collecting community requirements, propose realistic solutions

– Making the activities of producing and using open source software for science more transparent and collaborative across communities and projects

– Implement a sustainable business model based on existing successful examples (Apache, Eclipse, Drupal, SourceForge, etc)

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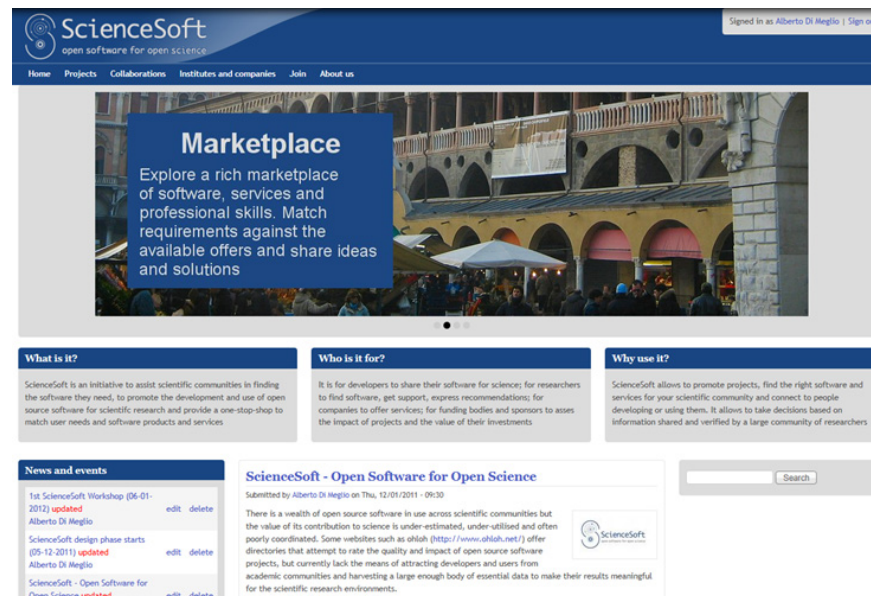
ScienceSoft Requirements

Requirements/Gaps
- Lack of continuity in support, development, coordination of software
- Non-optimal communication between users and developers
- Lack of consistent real usage information
- Limited access to other users' experience
- Limited or complex ways of finding what exists already
- Limited possibilities of influencing the production of software
- Lack of visibility and recognition of development activities
- Difficult to assess the user "market" and the potential revenues
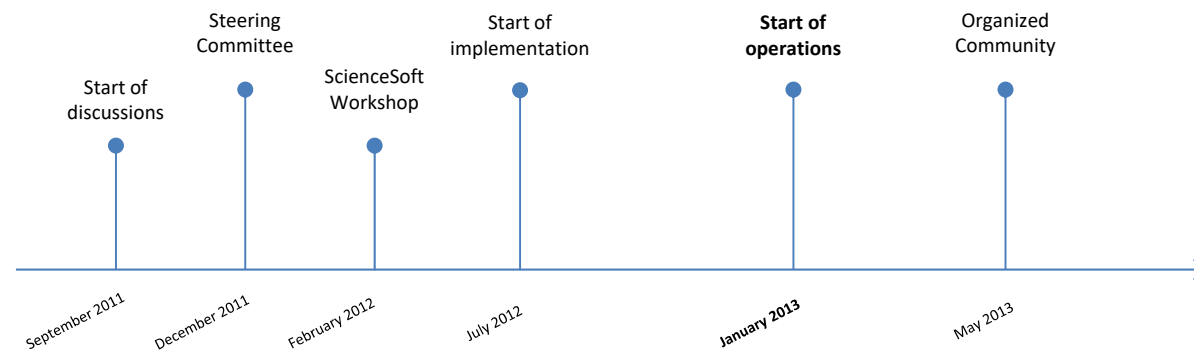
Possible solutions
- Software and services catalogues
- Generation of usage statistics
- Honour system (Peer-reviews)
- Citation system to allow software to be referenced in papers
- Marketplace for products, services, and people to match user needs and software products and skills
- Platform integration support based on the catalogues information
- Support for creation of ad-hoc communities and groups
- Coordination, collaboration and discussion tools
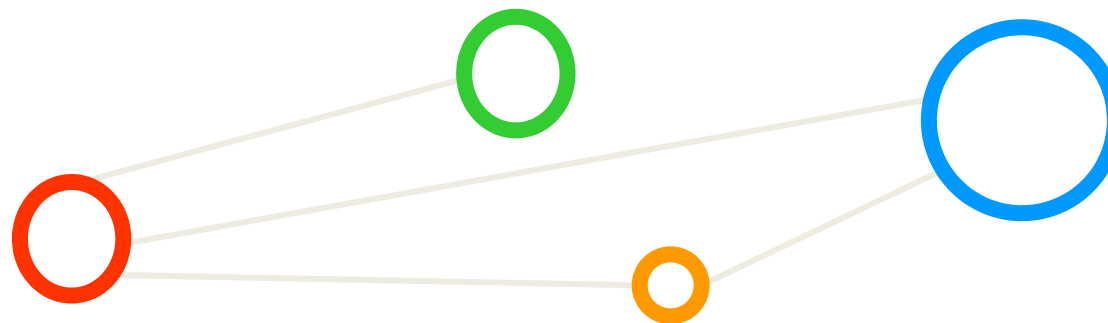- Support for organization of technical events

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Participate in ScienceSoft!

http://sciencesoft.org

ScienceSoft Timeline

Start of discussions — September 2011
Steering Committee — December 2011
ScienceSoft Workshop — February 2012
Start of implementation — July 2012
Start of operations — **January 2013**
Organized Community — May 2013

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Conclusions

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Conclusions

- During the second year EMI has increased outputs
  - Developments, standardization pre-studies, future strategies,…
- The core business has been well supported and work has been done to strengthen the EMI market position
- A clear and practical sustainability plans has been developed and its implementation has started
- Ever increasing set of standards (e.g. beyond OGF standards in the data domain with WebDAV/NFS4.1)
- EMI Members drive OGF activities in many groups

- Join ScienceSoft and help form it to community needs

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Process of eScience, Wednesday, 10:30–12:00, Chair: Steven Newhouse

Robert Darby, Simon Lambert, Brian Matthews, Michael Wilson, Kathrin Gitmans, Sunje Dallmeier-Tiessen, Salvatore Mele and Jari Suhonen.

Enabling Scientific Data Sharing and Re-use

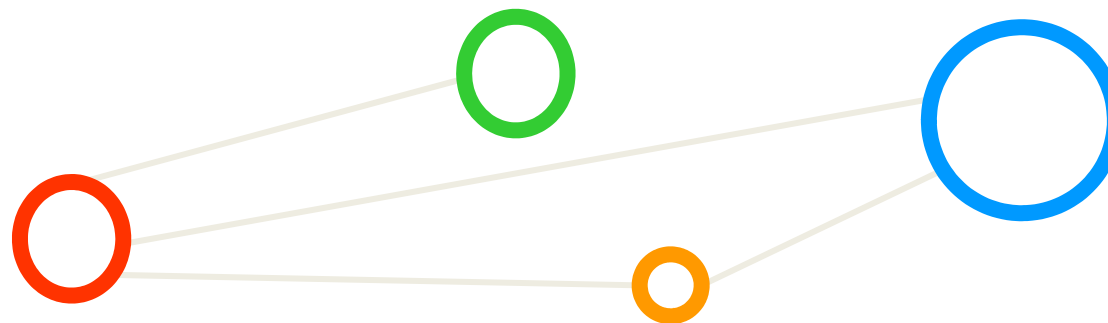Shirley Crompton, Brian Matthews, Erica Yang, Cameron Neylon and Simon Coles.

Collaborative Information Management In Scientific Research Process

Cristina Aiftimiei, Alberto Aimar, Andrea Ceccanti, Marco Cecchi, Alberto Di Meglio, Florida Estrella, Patrick Fuhrmann, Emidio Giorgio, Balázs Kónya, Jon Kerr Nilsen, Morris Riedel and John White.

Towards next generations of software for distributed infrastructures : the European Middleware Initiative

Questions?

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Questions?

- TBD (All): Discussions around EMI
- OSG

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Thank you

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