EMI 101 and Strategy Updates

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Open Grid Forum 35
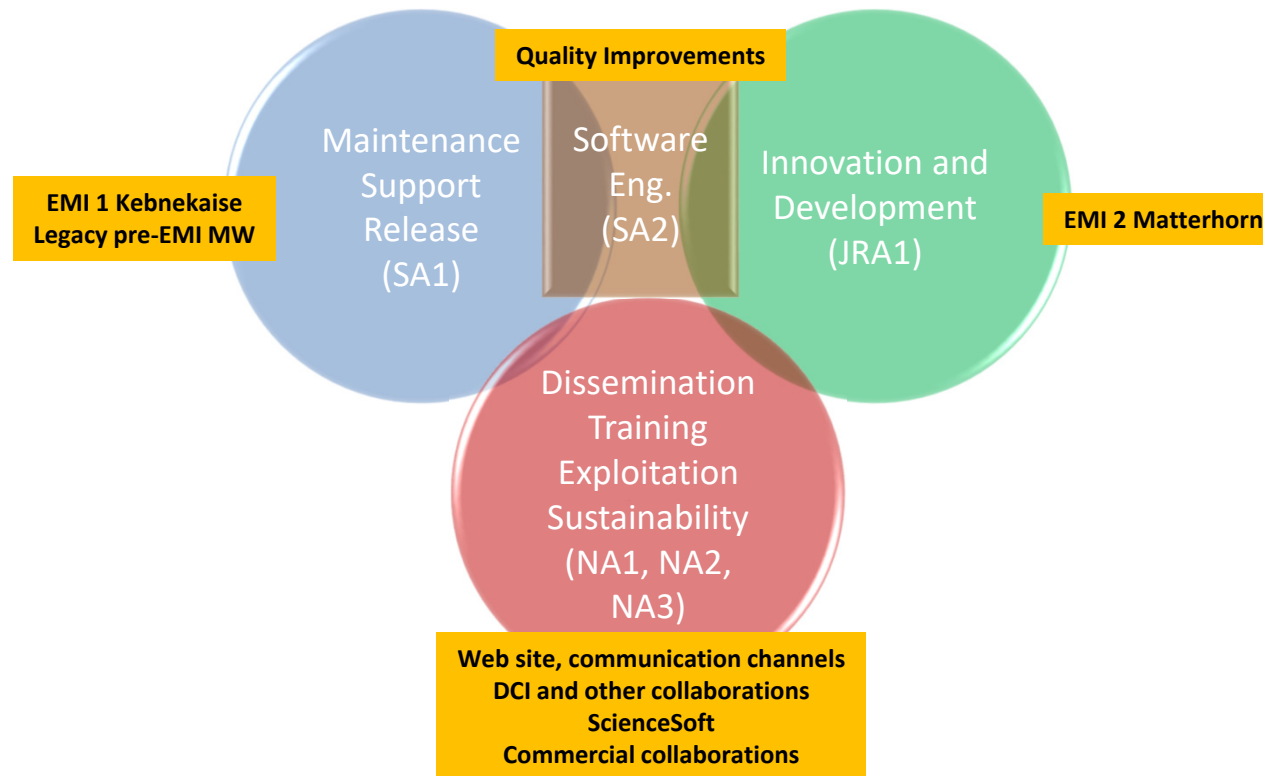*Delft, 19 June 2012*

Outline

EMI 101 and News

- Core objectives and achievements in Research

- Standardization Overview in EMI

- Updates on Strategies

- Future Activities around ScienceSoft

Conclusions

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EMI Main Achievements

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

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

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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)

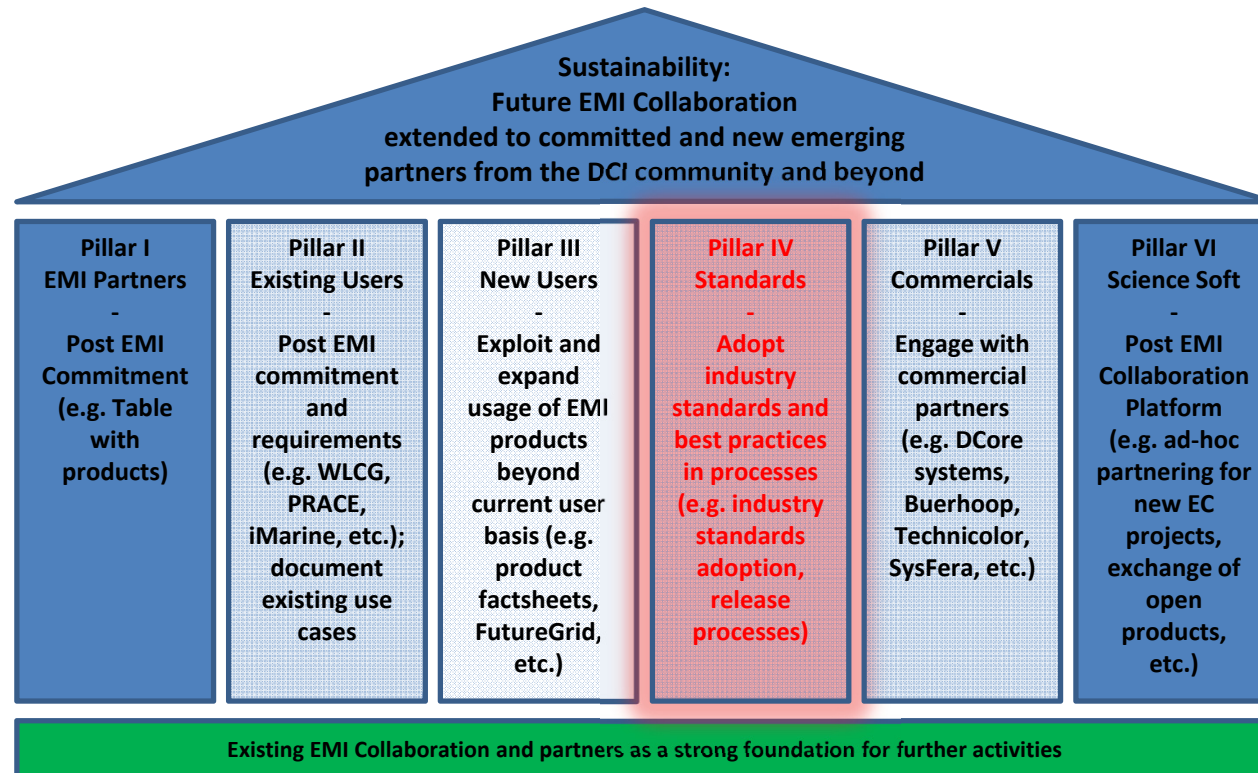2.5. Common interfaces within EMI and between HTC and HPC (MJRA1.3, MJRA1.7)

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)

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

EMI — EUROPEAN MIDDLEWARE INITIATIVE

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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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

The EMI Core Business

Research
grids, HPC

To enable

Develop

Technology

EMI
Core

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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

2011

2012

2nd release

EMI 2 Matterhorn

EMI 1 Kebnekaise
Open Source process adoption
Distribution consolidation

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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

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

New contributions

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Core channel development

Research
grids, HPC

To enable

Distribute

Channel

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

EMI
Core

Develop

Technology

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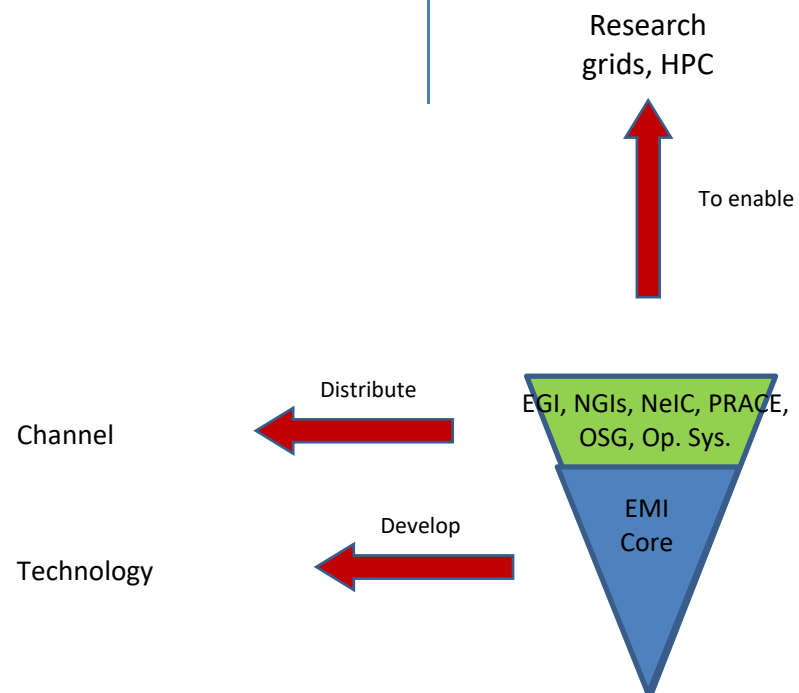
Core channel development

MoUs, OLAs with contributors and application developers

- MoU and OLA signed with EDGI
- MoUs with DCI projects and international coordination projects (IGE, iMarine,CHAIN)

MoUs and SLAs with infrastructure coordination projects

- MoU and SLA signed with EGI already in year 1
- MoU signed with PRACE this year, SLA to be signed in October
- Continuous monitoring and revision

Maintenance, Support and Release

- Continuous support through GGUS (EGI)
- Release provisioning through EGI/UMD, Fedora/EPEL or directly to sites and technical partners depending on channel requirements

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The Reference Market

Research
grids, HPC

To enable

Manage

Infrastructure

Distribute

Channel

Develop

Technology

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

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

EMI
Core

Reference
market
segment

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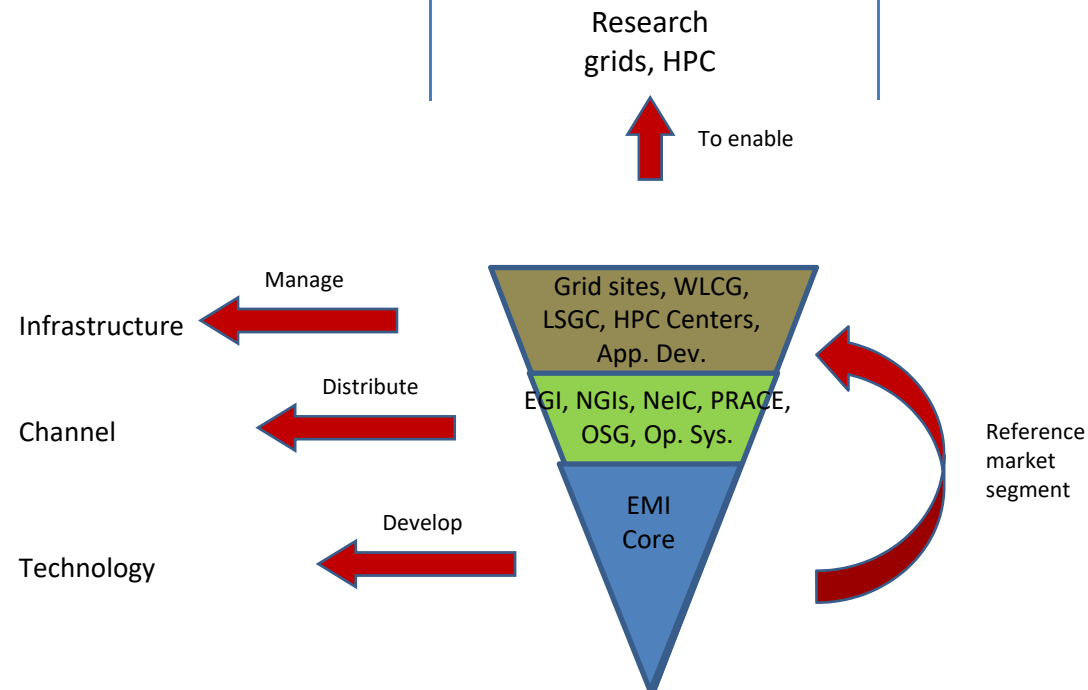
EMI Services Deployment

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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Market size and dynamics

Market composition

- Site administrators
- High-level grid services and application developers

Market size

- The Infrastructure VO has about 4000 registered users
- About 1/2 to 2/3 of them are infrastructure operators (2000-3000)

Market dynamics

- Niche, mature market, saturated by the existing technology providers (mostly EMI)
- Relatively slow growth
  - *3% increase in the number of sites in the past 12 months*
  - *Available computing and data resources have increased by 30%*
- New users mainly for generational turn-over
- However available resources

Dissemination to Market

NA2

Redesigned web site

Product Factsheets

Social networks

Technical Articles

Videos

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End-user market

Research
grids, HPC

HEP, VRCs

Perform research

End-users

Manage

Infrastructure

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

Distribute

Channel

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

Requirements

Develop

Technology

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Core
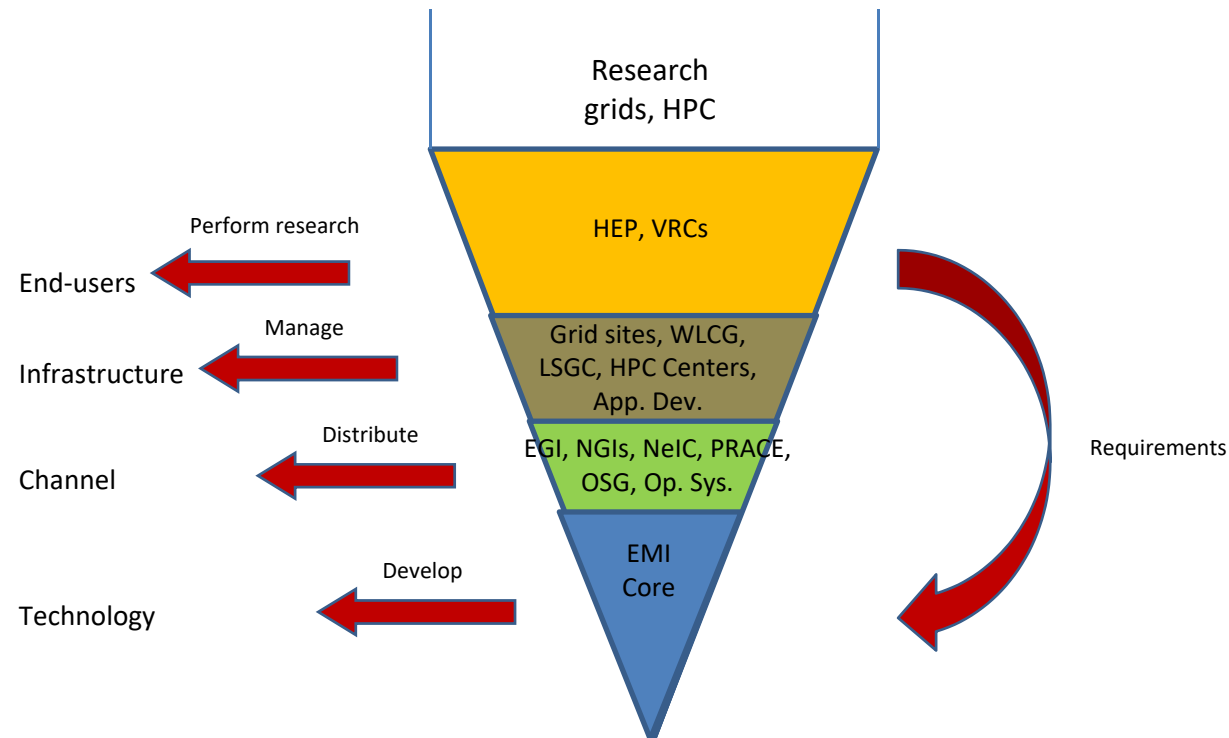
End-user relationships

HEP (WLCG)

– Main end-user community (95% of grid infrastructure)

– Participation in high-level coordination bodies (MB, GDB)

– Participation in technical requirement analysis (TEGs)

LSCG

– Established more direct relationship for technical discussions

Other VRCs

– Traditional grid users

– Computational Chemistry

– Environmental sciences (iMarine)

– Biomedical (NeuGrid, WeNMR)

PRACE Users

– Just started, until now only channel development, more to come after MoU signing

Core market extension

Research
grids, HPC

HEP, VRCs

End-users

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

Infrastructure

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

Channel

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Core

Technology

Expand

Non EMI Tech. (Globus, Desktop Comp., exp. clouds)
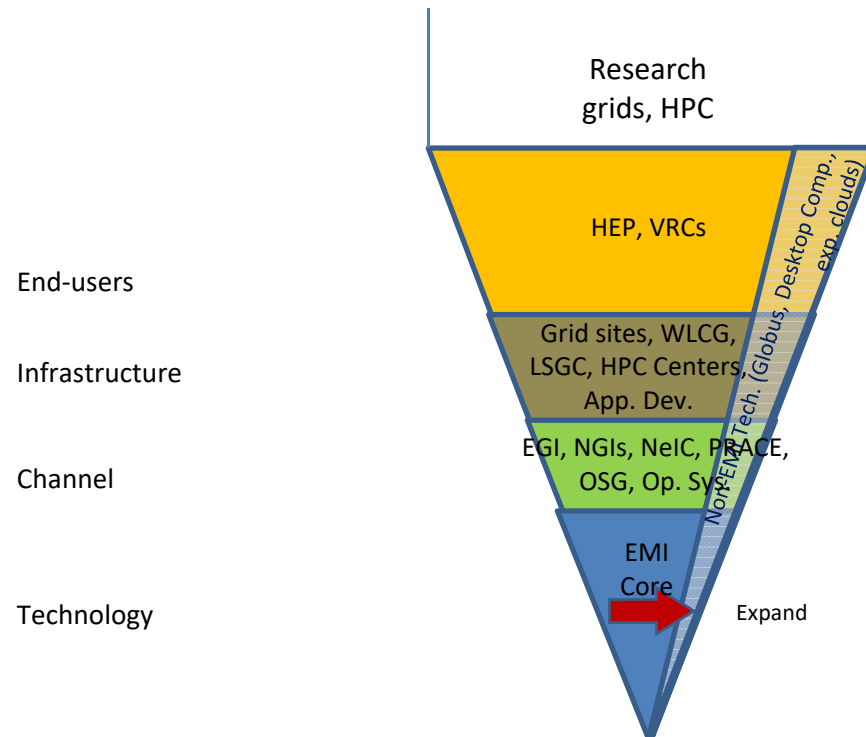
Core market extension

Standardization

- Work with standardization bodies (OGF) and other technology providers
- Ease migration to EMI from other technologies

Interoperability

- Extend EMI with interoperable solutions (WNoDeS, EDGI Bridges)
- Remove hard barriers preventing use of EMI services

Requirements analysis

- What do users REALLY want when they ask for cloud?
- Show that the same can be obtained with EMI services and in a more secure fashion
- Main example
  - *User-defined execution environment is WeNMR main reason to consider cloud*
  - *Setup pilot project with WeNMR and Sara/NIKHEF to use CREAM and WNoDeS instead*

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Sustainability and innovation

Many definitions of sustainability

- Most of them related to financial aspects
  - *Where to find the money*
- We believe a complementary definition is required
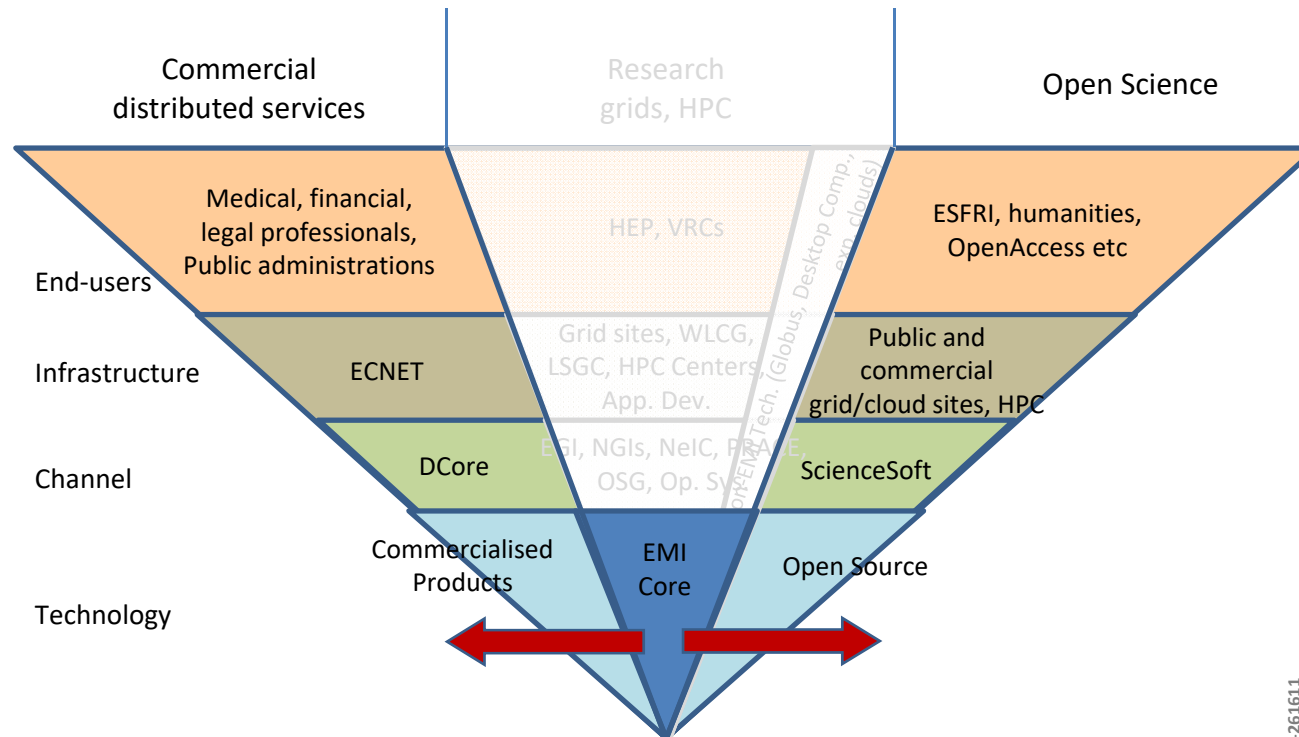 - *How to produce innovation*

EMI Core Business

- Must be preserved, a large successful infrastructure needs it and will need for several years
- We have analysed the EMI products cost and the partner commitment and developed software support plans spanning the next few years

New channels development

- The current core channels are not enough
- However, we cannot spread too thin, current core costs 90% of the budget
- We have selected two:
  - *a commercial partnership*
  - *an open source initiative for science*

Increasing Value

Commercial distributed services

Research grids, HPC

Open Science

Medical, financial, legal professionals, Public administrations

HEP, VRCs

ESFRI, humanities, OpenAccess etc

End-users

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

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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)
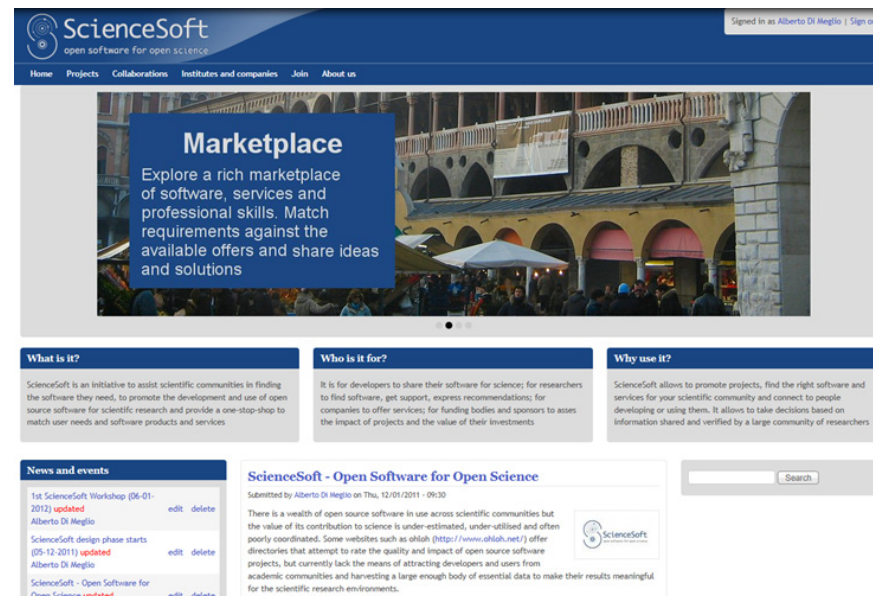
ScienceSoft Requirements

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
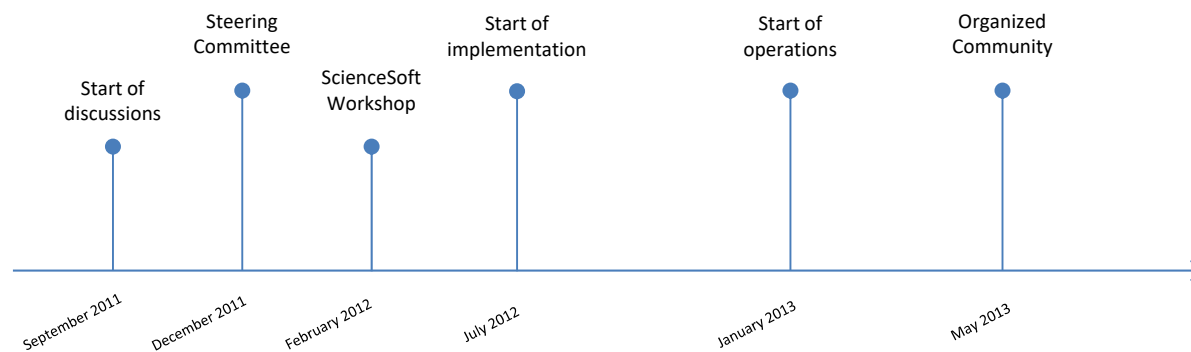
Possible solutions
- Software and services catalogues
- Generation of usage statistics
- Honour system (Peer-reviews)
- Citation system to allow software to be referenced in papers
- Marketplace for products, services, and people to match user needs and software products and skills
- Platform integration 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

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

- 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)

- Join ScienceSoft and help form it to community needs

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Thank you

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