



The European Middleware Initiative

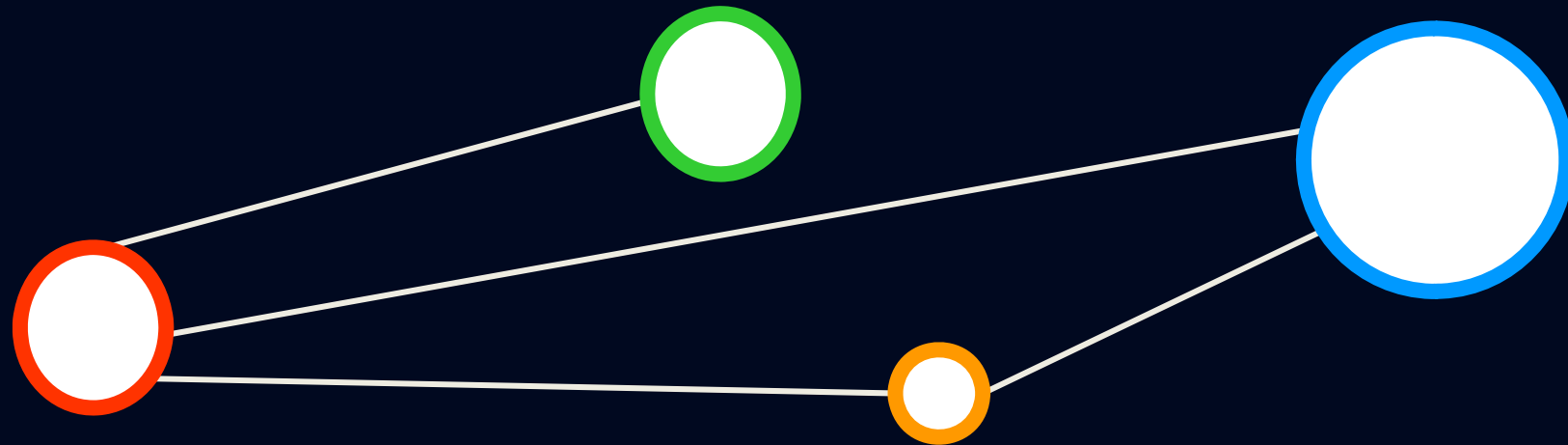
Delivering Key Technologies to Distributed Computing Infrastructures

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DEISA & EMI Deputy Technical Director

Outline

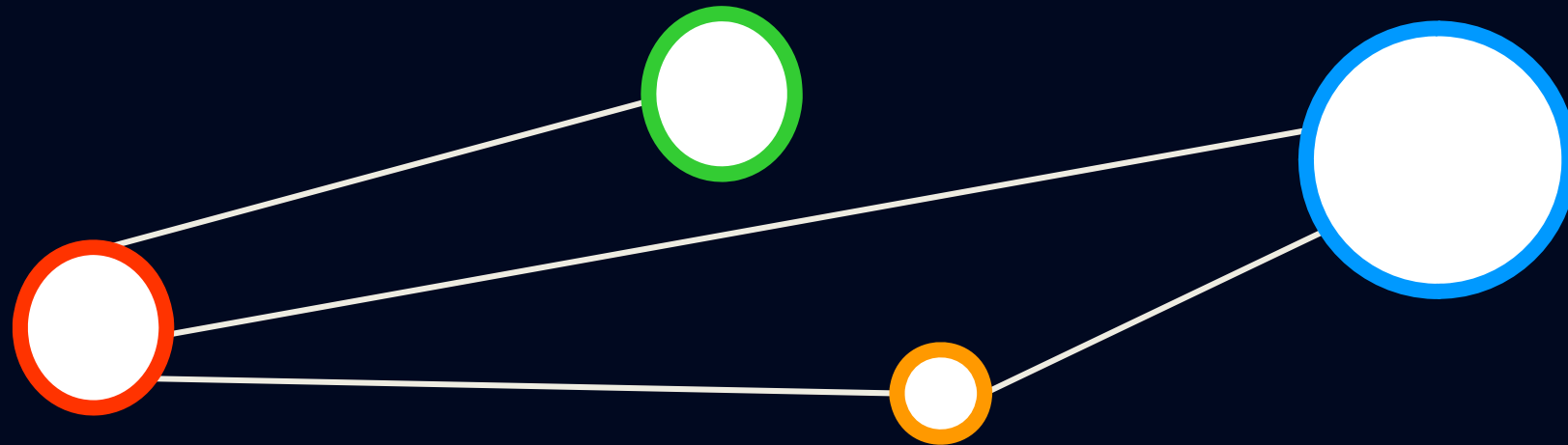


Outline

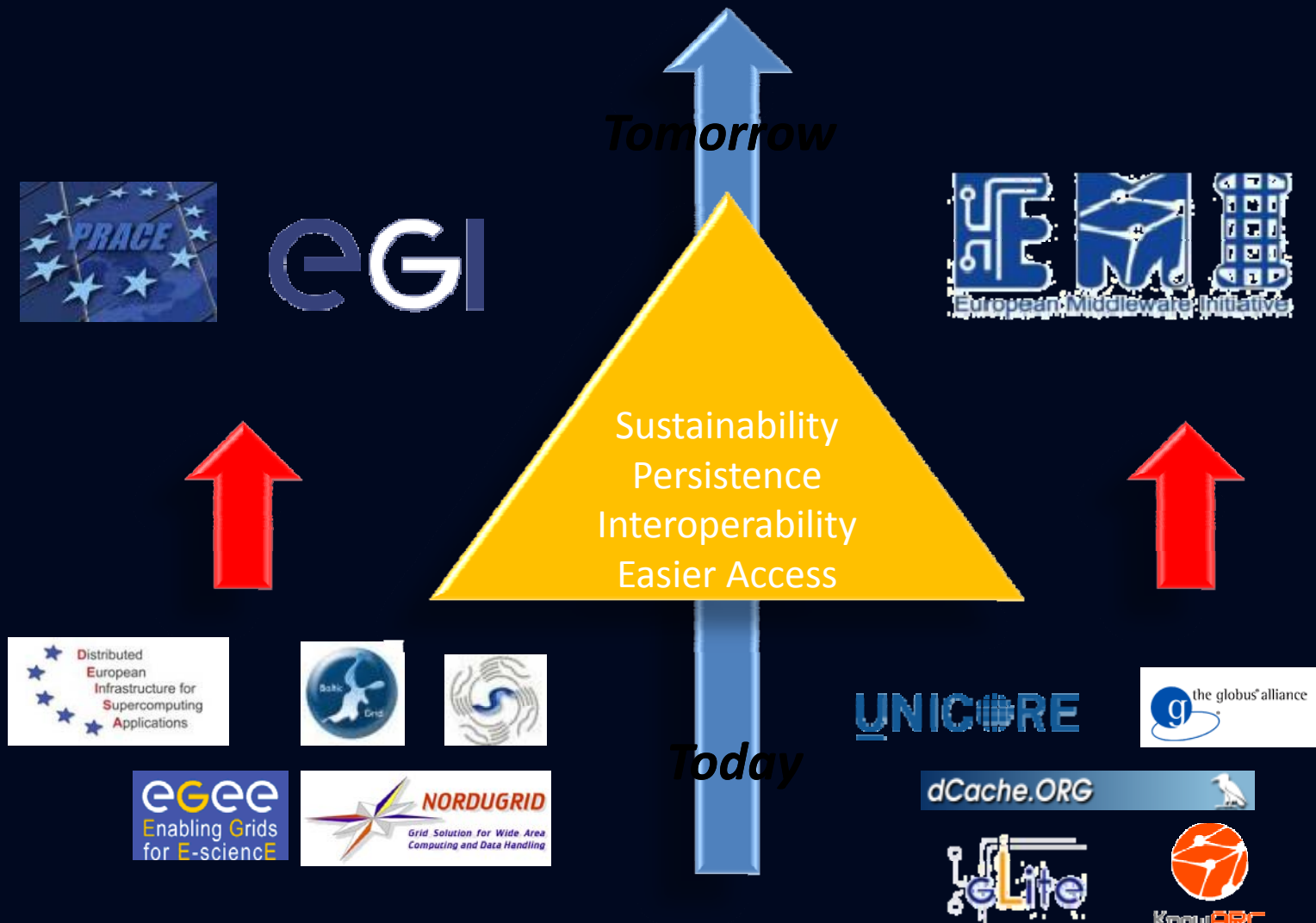
- A European Vision & End-users
- EMI Project Info & Vision
- Collaborations
- AOB



A European Vision & End-users



A European Vision



European Vision

- One of the major complaints of research users about the middleware is about its **limited “userfriendliness”**
 - Deployment, configuration, service management, interoperability, security mechanisms, flexibility, etc.
- **Unnecessary duplication of services and libraries**
- **User requirements (ESFRI, VRCs)**
 - EMI is requirement driven and will actively participate to the definition of user requirements with the major user communities and infrastructures
 - European Strategy Forum on Research Infrastructures (ESFRI)
 - Virtual Research Communities (VRCs) – upcoming EU calls...

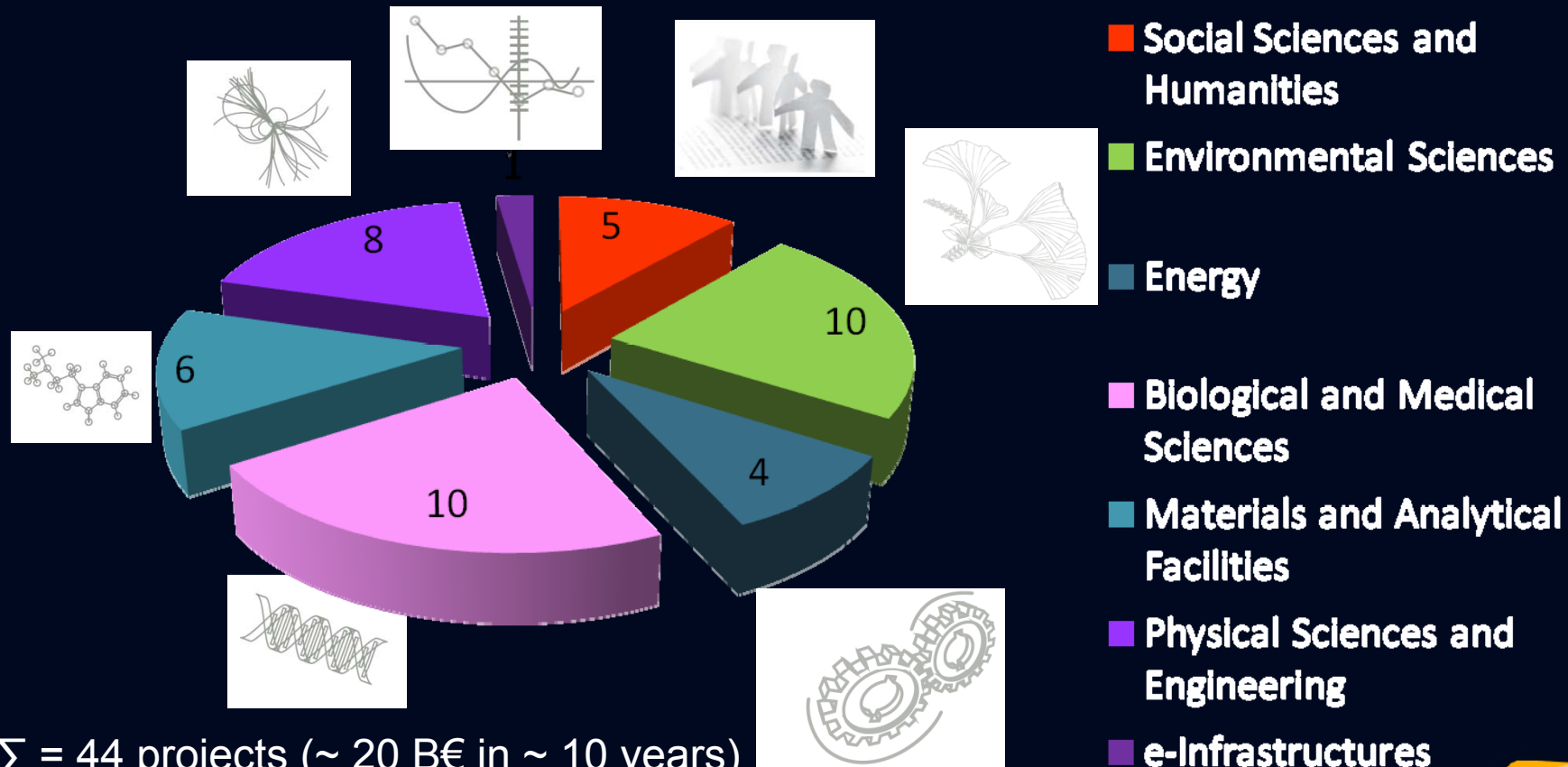


ESFRI List of Projects & Roadmap

- ESFRI = European Strategy Forum on Research Infrastructures
- A huge set of potential customers of infrastructures (and technologies)
- Costly resources for geographically dispersed user communities



Number / Research Area Statistics



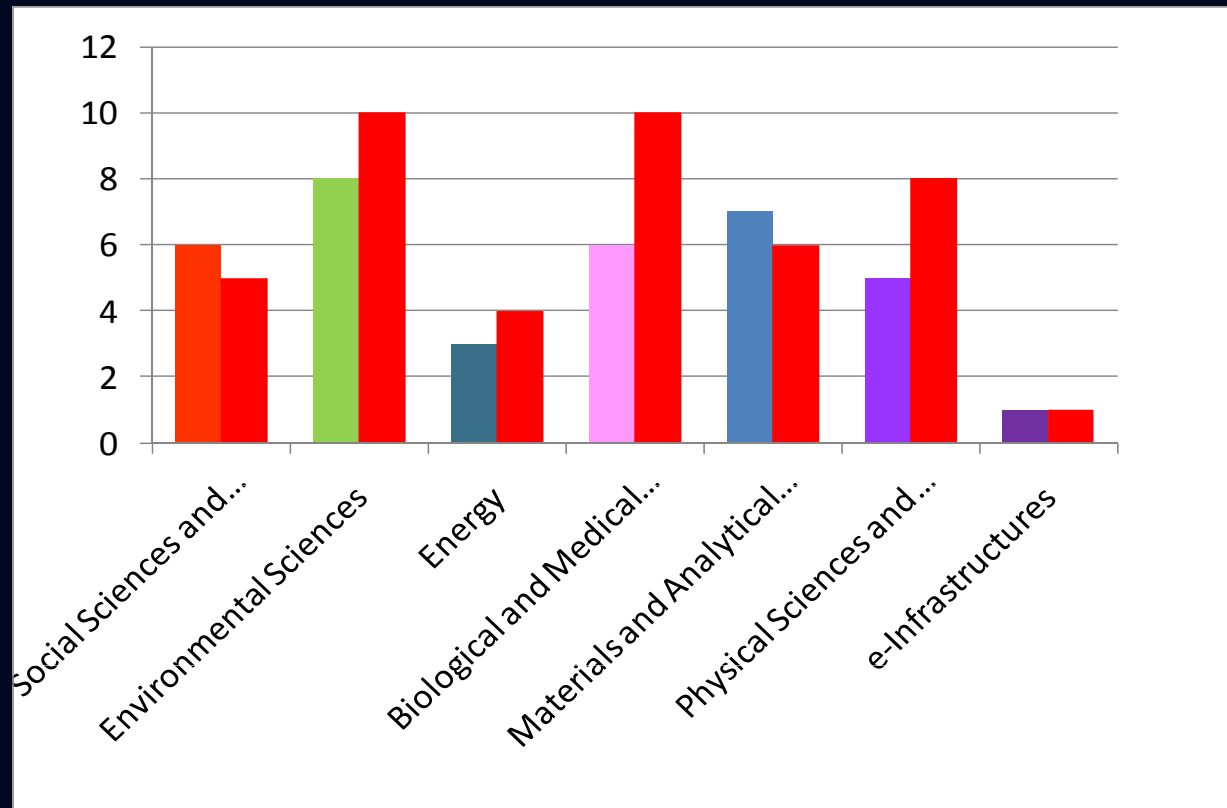
$\Sigma = 44$ projects (~ 20 B€ in ~ 10 years)




out of ~ 240 proposals



Evolution / Research Area Statistics



 Update: 10 more projects





ESFRI List Projects (1)

| | PROJECTS | construction costs (M€) | Operations costs (M€/year) | first possible operations or upgrade |
|--------------------------------|--------------------------|-------------------------|----------------------------|--------------------------------------|
| Social Sciences and Humanities | CESSDA | 30 | 3 | 2013 |
| | CLARIN | 104 | 7.6 | 2014 |
| | DARIAH | 12 | 4 | 2013 |
| | European Social Survey | 54** | 9** | 2008 |
| | SHARE | 11.6 | 0.3 | 2008 |
| Environmental Sciences | AURORA BOREALIS | 635 | 32.5 | 2014 |
| | COPAL (ex EUFAR) | 50 | 3 (+6000€/hour) | 2012 |
| | <i>EISCAT_3D Upgrade</i> | 60-250 | 4-10 | 2015 |
| | EMSO | 160 | 32 | 2013 |
| | <i>EPOS</i> | 500 | 80 | 2018 |
| | EURO-ARGO (GLOBAL) | 80 | 7.3 | 2011 |
| | IAGOS | 15 | 0.5-1 | 2012 |
| | ICOS | 128 | 14 | 2012 |
| | LIFEWATCH | 370 | 71 | 2019 |
| | <i>SIAEOS</i> | 50 | 9.5 | 2012 |
| Energy | <i>ECCSEL</i> | 81 | 6 | 2011 |
| | HiPER | 800 | under discussion | 2020+ |
| | IFMIF (GLOBAL) | 1000 | 150-80 | 2020 |
| | JHR | 500 | 24-33 | 2014 |



ESFRI List Projects (2)

| | | | | |
|-------------------------------------|-------------------------------|-----------|---------|-----------|
| Biological and Medical Sciences | BBMRI | 170 | 15 | 2013 |
| | EATRIS | 255 | 50 | 2013 |
| | ECRIN | 50 | 5 | 2014 |
| | ELIXIR (GLOBAL) | 470 | 100 | 2012 |
| | EMBRC | 100 | 60 | 2018 |
| | EU-OPENSCREEN | 40 | 40 | 2012 |
| | EuroBioImaging | 370 | 160 | 2012 |
| | High Security BLS4 Laboratory | 174 | 24 | 2018 |
| | Infrafrontier | 270 | 36 | 2010 |
| | INSTRUCT | 300 | 25 | 2012 |
| Materials and Analytical Facilities | EMFL | 120 | 8*** | 2015 |
| | ESRF Upgrade | 238 | 83 | 2009-2014 |
| | EuroFel (ex-IRUV-FEL) | 1200-1600 | 120-160 | 2007-2020 |
| | European Spallation Source | 1300 | 110 | 2019-2020 |
| | European XFEL | 1043 | 84 | 2014 |
| | ILL20/20 Upgrade | 171 | 5*** | 2007-2017 |
| Physical Sciences and Engineering | CTA | 150 | 10 | 2013 |
| | E-ELT | 950 | 30 | 2018 |
| | ELI | 400 | 50 | 2015 |
| | FAIR | 1187 | 120 | 2016 |
| | KM3NeT | 200 | 5 | 2016 |
| | PRINS | 1400 | 300 | 2009-2015 |
| | SKA (GLOBAL) | 1500 | 100-150 | 2016 |
| | SPIRAL2 | 196 | 6.6 | 2014 |
| e-Infrastructures | PRACE (ex EU-HPC) | 200-400* | 50-100 | 2009-2010 |

Environmental Sciences



Aurora Borealis



COPAL (ex EUFAR)



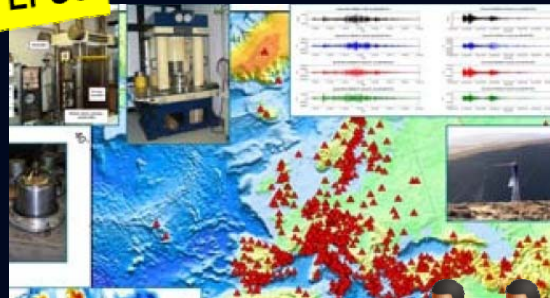
EISCAT_3D



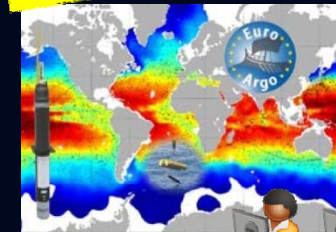
EMSO



EPOS



EURO ARGO



IAGOS



LIFEWATCH



ICOS

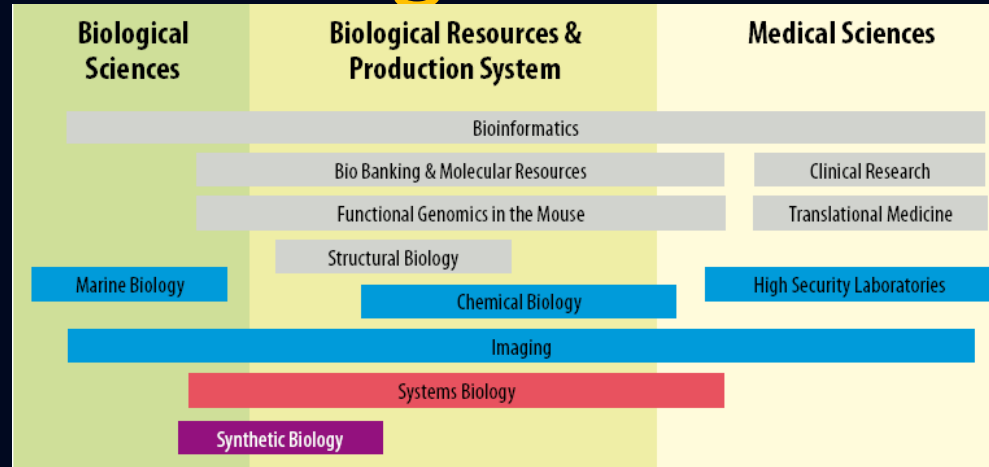


SIAEOS

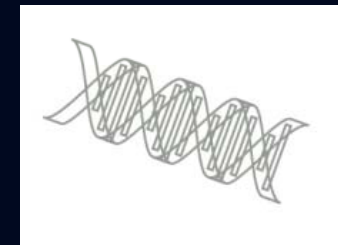


EMI 1611

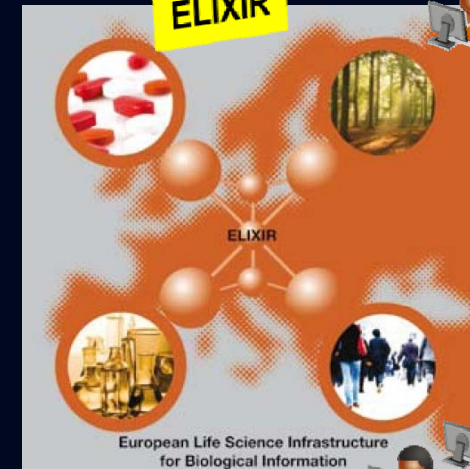
Biological and Medical Sciences



BBMRI



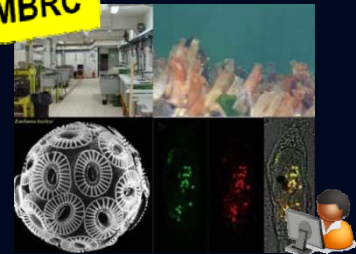
ELIXIR



ECRIN



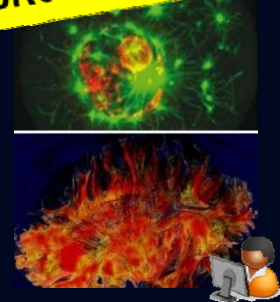
EMBRIC



EU-OPENSOURCE



EURO-BioImaging



BSL4 Laboratories



INFRAFRONTIER



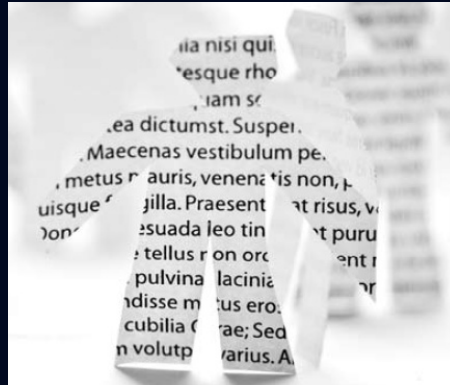
INSTRUCT



EATRIS



Social Sciences and Humanities



CLARIN

Towards an integrated and interoperable research infrastructure of language resources without the current fragmentation and boundaries that is stable persistent, accessible and extendable and therefore enabling eHumanities




DARIAH

Digital Research Infrastructure for the Arts and Humanities



ESS

European Social Survey
Monitoring attitude change
in over 30 countries



SHARE

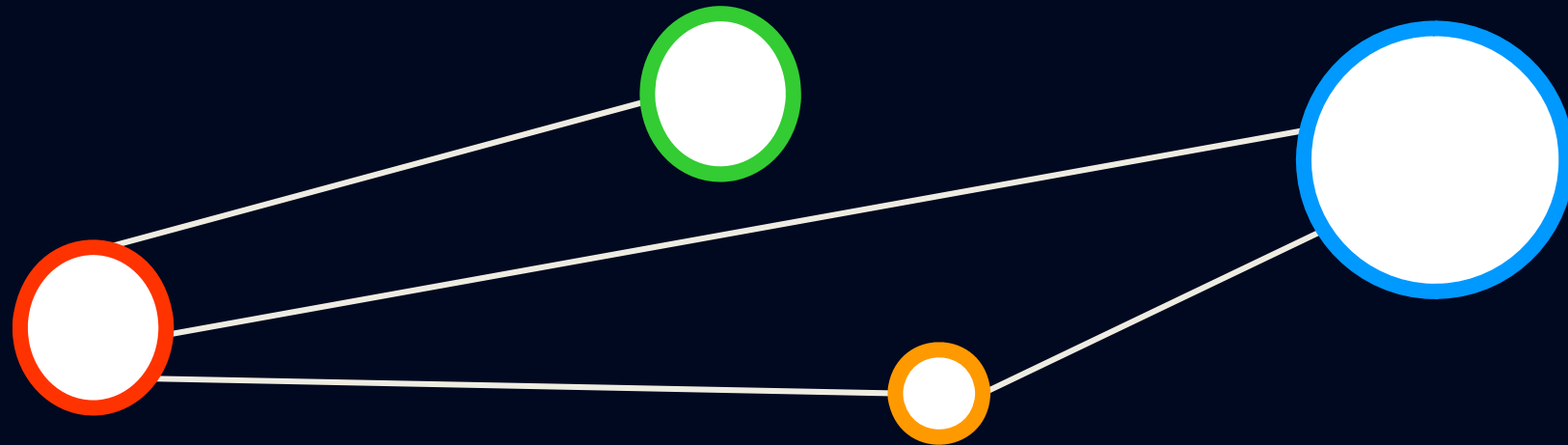


CESSDA

finding data data catalogue
portal accessing data
metadata social science data
data harmonisation data management
expert seminar data management
ethics confidentiality



EMI Project Info & 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 establish a sustainable model to support, harmonise and evolve the grid middleware for deployment in EGI and other distributed e-Infrastructures



FP7 Program

FP7 Capacities Work Programme 2010: Infrastructures

Call **FP7-INFRASTRUCTURES-2010-2**

Sub-topic: 1.2.1.3 – Middleware and repositories

Develop middleware that strengthens European presence by consolidating or even going beyond existing DCIs (e.g. exploiting emerging developments like virtualisation), while improving their stability, reliability, usability, functionality, interoperability, security, management, monitoring and accounting, measurable quality of service, and energy efficiency

Starting date: May 1st

Duration: 3 years

Total budget: 23M € (12M € from EC + 11M € from partners)

Effort: 64 FTEs/year (88% for technical activities)

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 requirement of infrastructure and communities, mainly focusing on operational, standardization and interoperability aspects

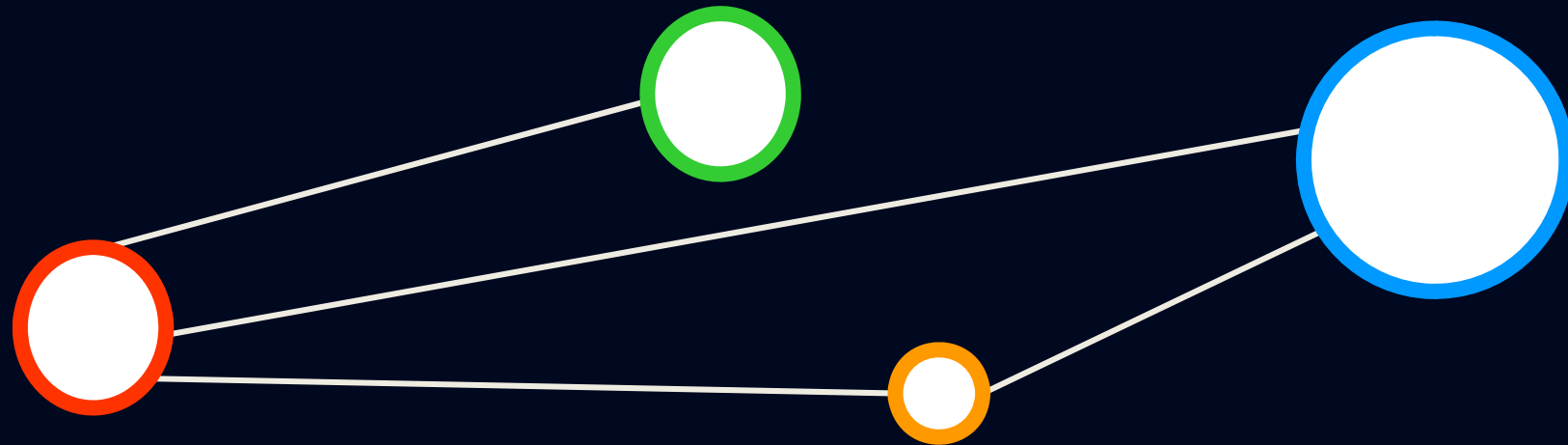
Support

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

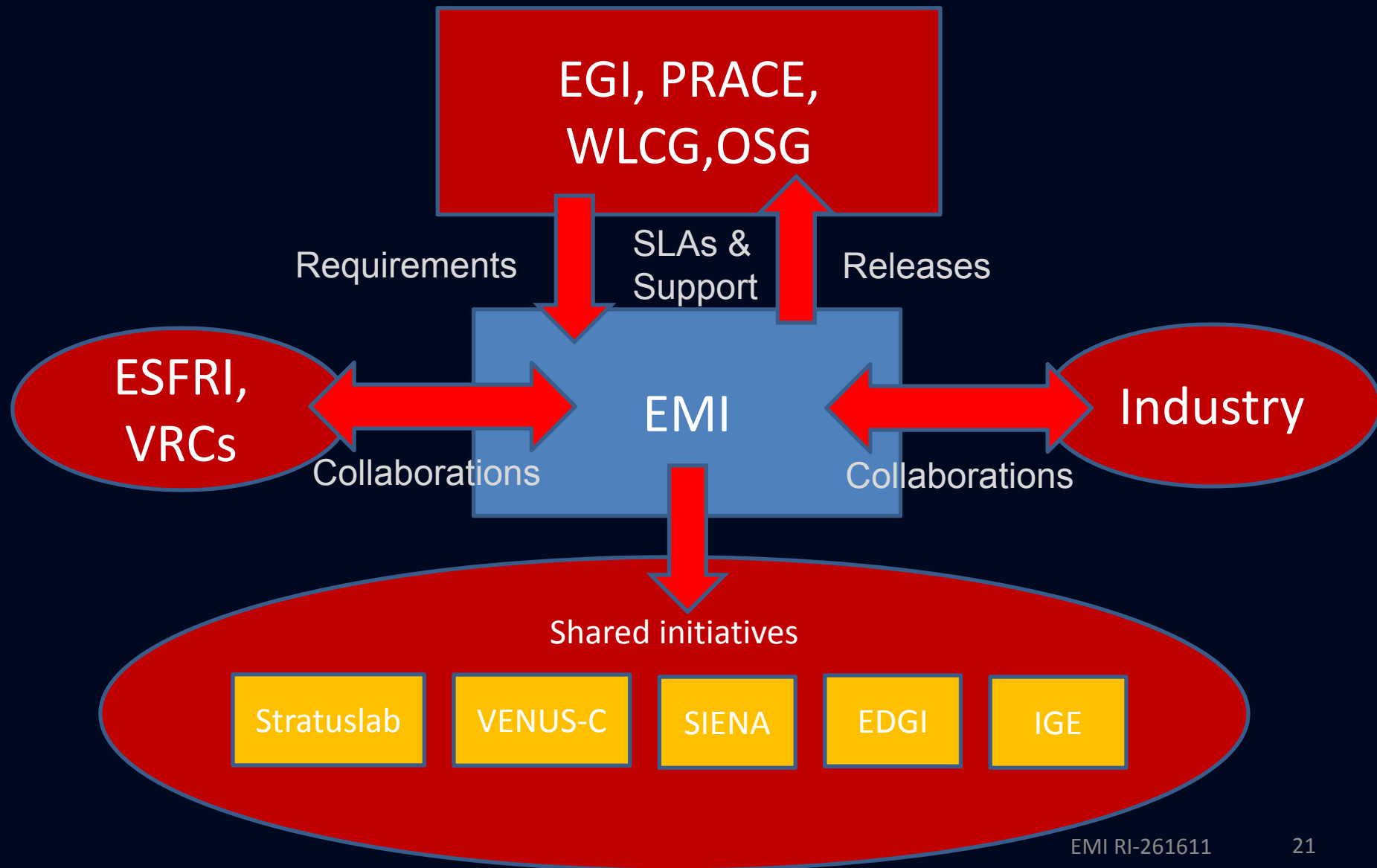
Partners (24)



Collaborations



Collaborations



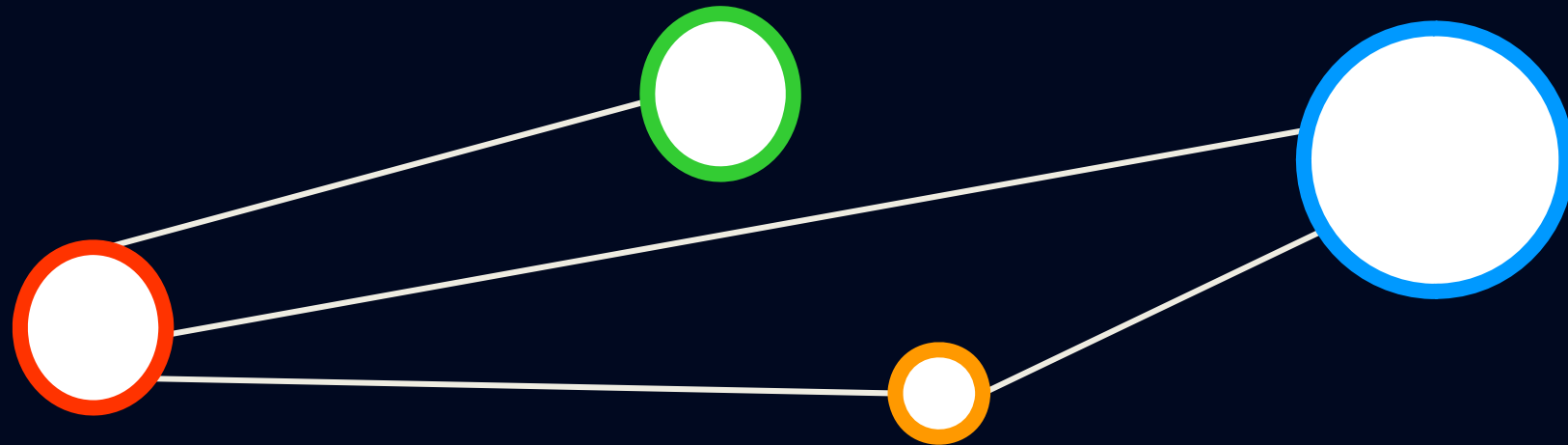
Shared Initiatives

- Many projects will deliver technologies
 - European Middleware Initiative (EMI)
 - Initiative for Globus in Europe (IGE)
 - Enabling Desktop Grid Initiative (EDGI)
 - SIENA → Cross-project work & standardization
 - StratusLab → Cloud project around OpenNebula
 - VENUS-C → Cloud project around MS Azure
 - ...
 - Communities will have their own software as well

Infrastructures & Communities

- Many Infrastructures exist
 - European Grid Initiative (EGI)
 - World-wide LHC Computing Grid (WLCG)
 - Partnership for Advanced Computing in Europe (PRACE)
 - Open Science Grid (OSG)
- Research communities
 - ESFRI
 - VRCs

AOB



Questions & Answers

- ?



Thank you

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