European Research Area Board (ERAB)

Research Infrastructures in the Czech Republic

European Research Area Board

Imperial College, London

John Wood

European Research Area

European Research Area Board (ERAB)

A Great Opportunity for the Czech Republic!

- The first Member State to use Structural funds for the support of large research infrastructures.
- As such there are many lessons to be learnt and developed as time goes on.
- Large proportion of the funding is coming from a Bank (not a grant!)
- The DG Regions has little experience in supporting world class large research infrastructures

European Research Area

European Research Area Board (ERAB)

Context

- Globalisation of research
- The real impact of e-research
- Increasing requirement to deliver "whole" solutions
- Impact of large research infrastructures
- Remote access
- Virtual Research Environments
- Linking research to innovation

European Research Area

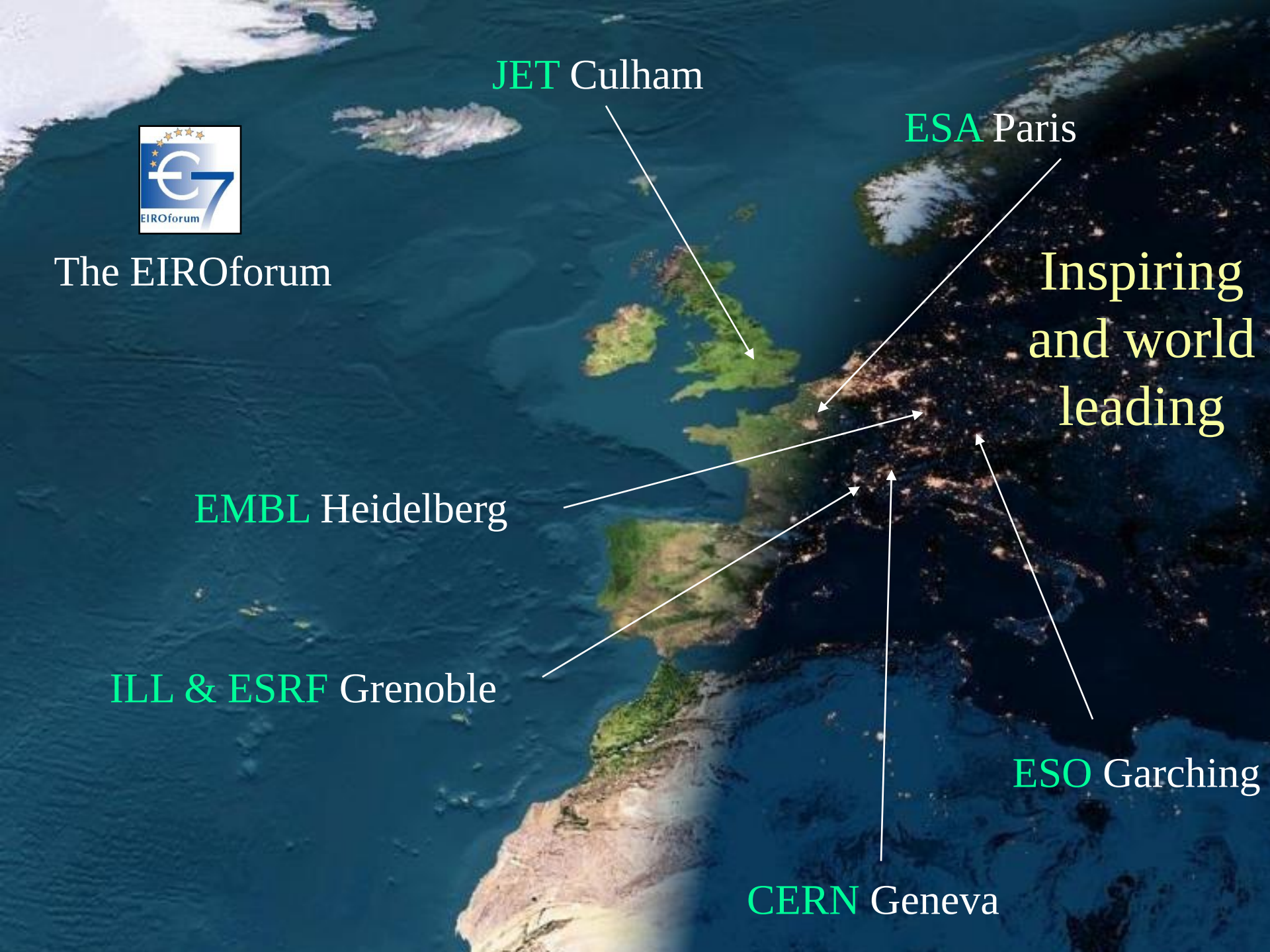
From Green Field to?

European Research Area Board (ERAB)

Rutherford-Appleton Laboratory

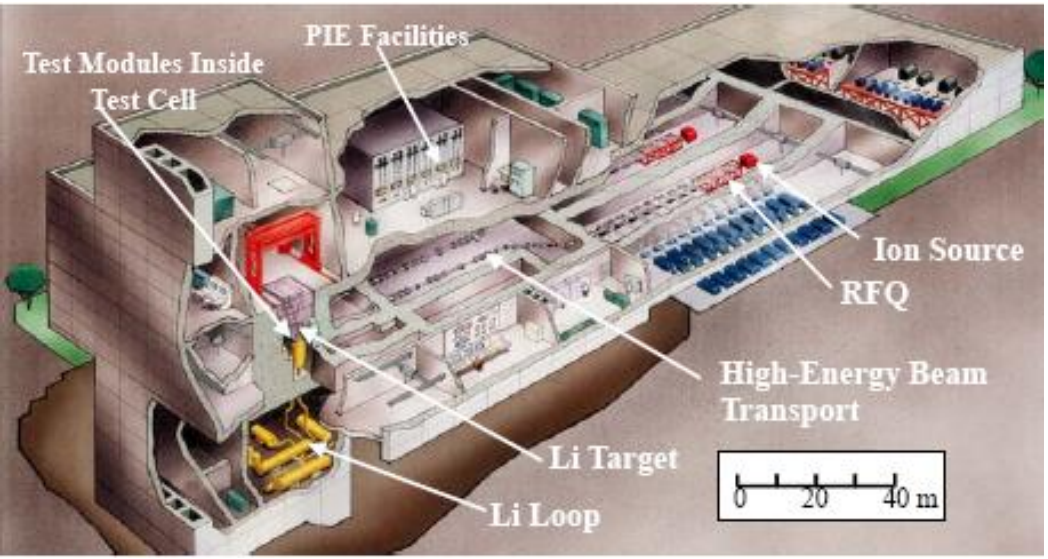
European Research Area Board (ERAB)

European Research Area

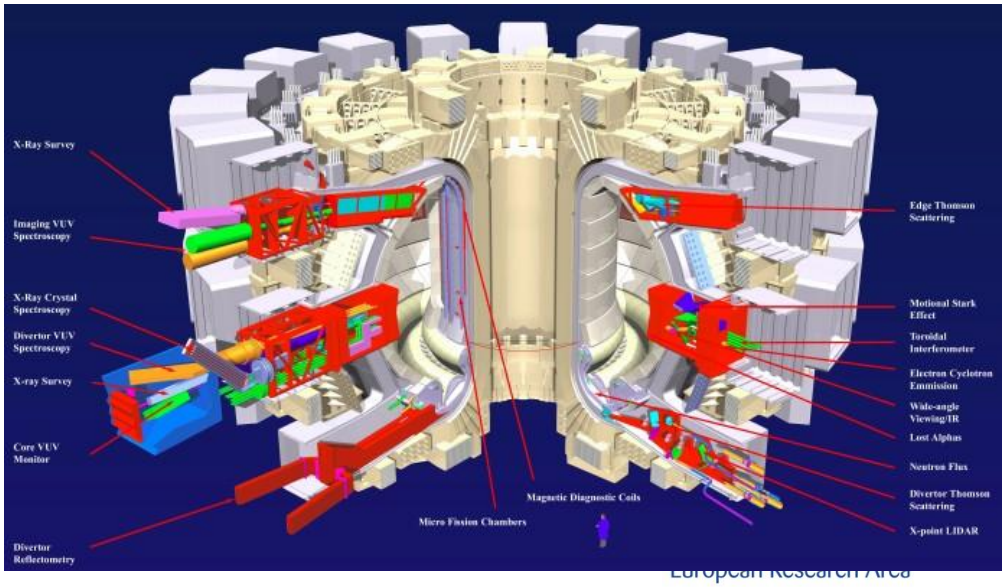

JET Culham
ESA Paris
The EIROforum
Inspiring and world leading
EMBL Heidelberg
ILL & ESRF Grenoble
ESO Garching
CERN Geneva

European Research Area Board (ERAB)

Infrastructures for Fusion Energy



International Fusion Materials Irradiation Facility (IFMIF)



European Research Area Board (ERAB)

LIFEWATCH

Large-scale e-Infrastructures for Biodiversity Research

European Research Area Board (ERAB)

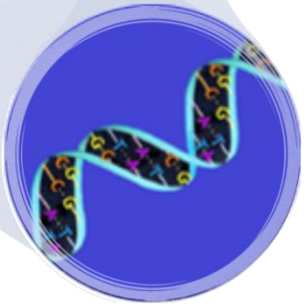
Big questions in biodiversity research

Ecosystems

Species

Time and evolution

Scale

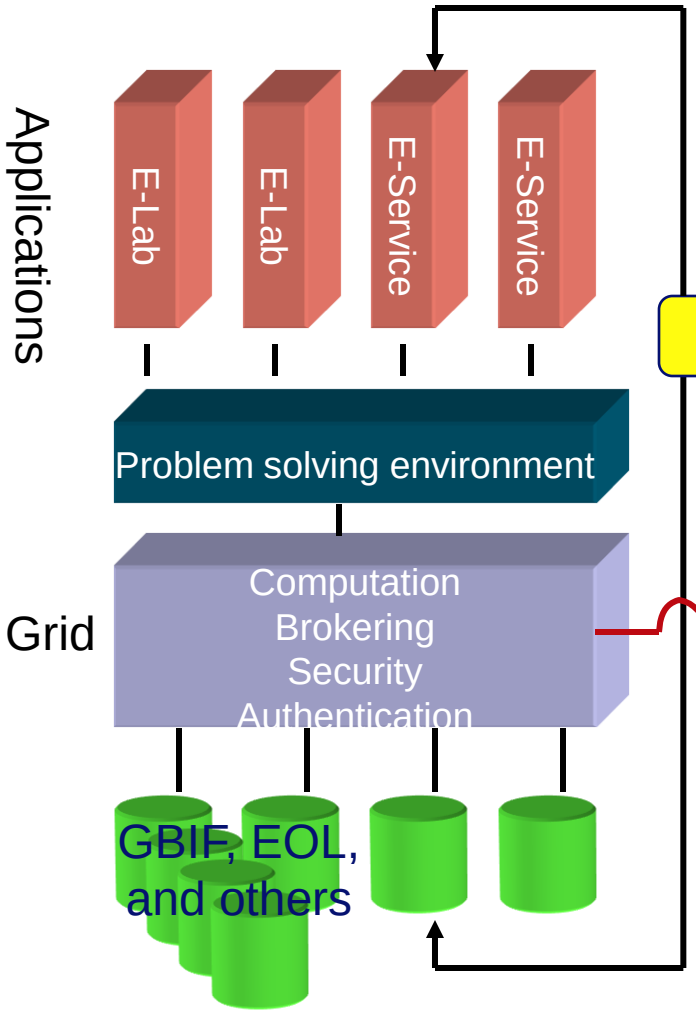


DNA, proteins and genes

European Research Area

European Research Area Board (ERAB)

A cyber community of infrastructures



Validation of satellite Earth observation data with ground level biodiversity data

European Space Agency

CERN

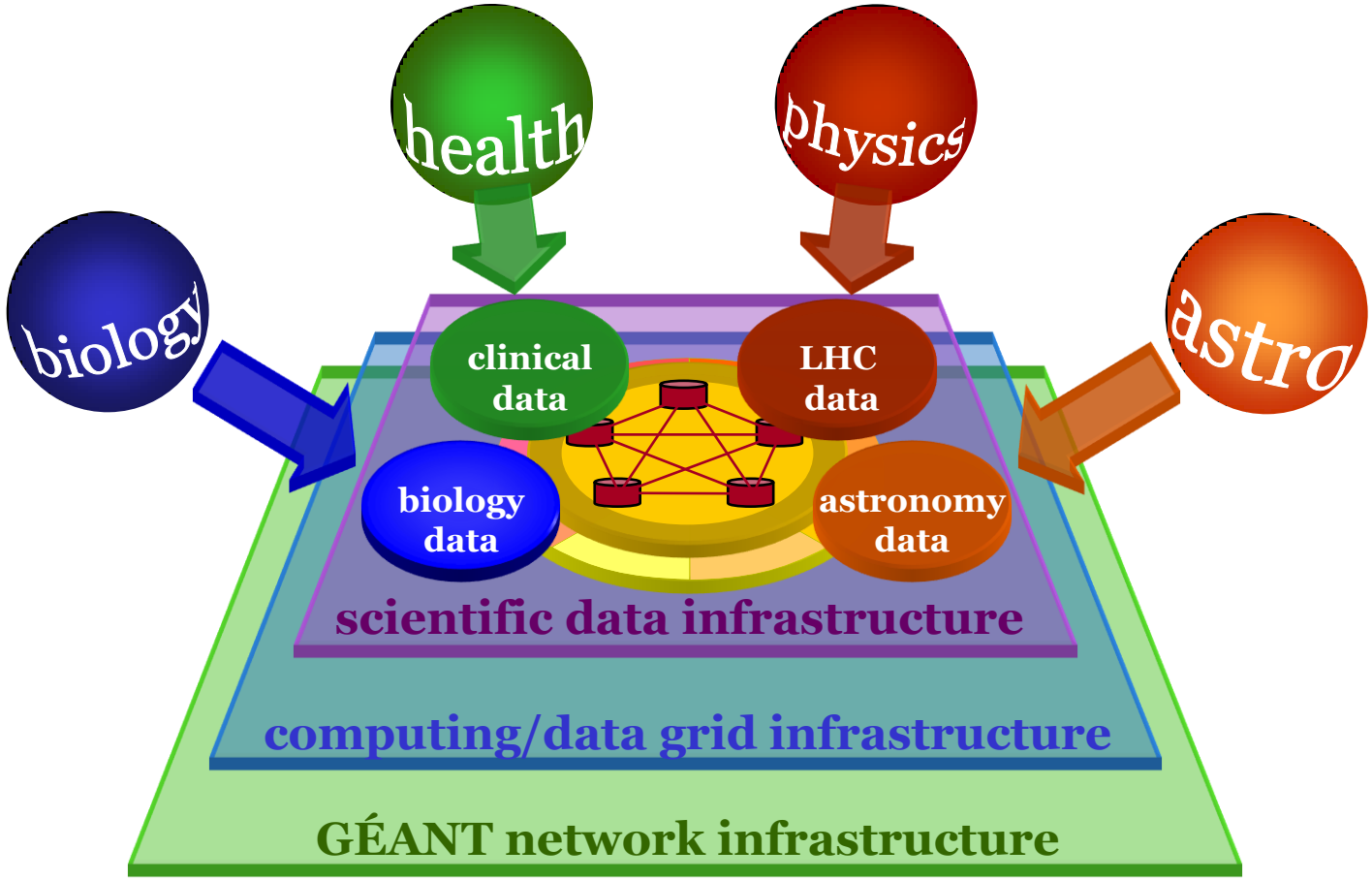
Enabling Grids for e-Science

European Research Area

European Research Area Board (ERAB)

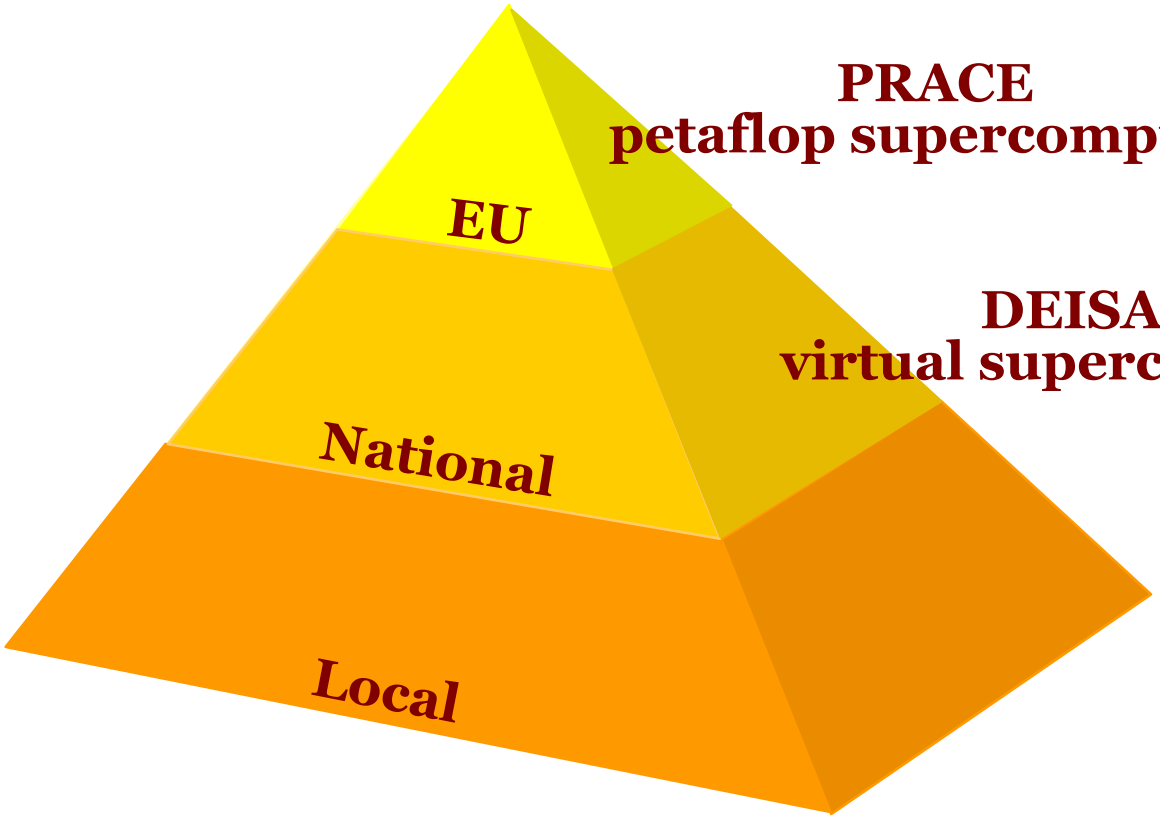
CLARIN

scientific data as an infrastructure



European Research Area Board (ERAB)

new “petaflop” supercomputers



PRACE
petaflop supercomputers

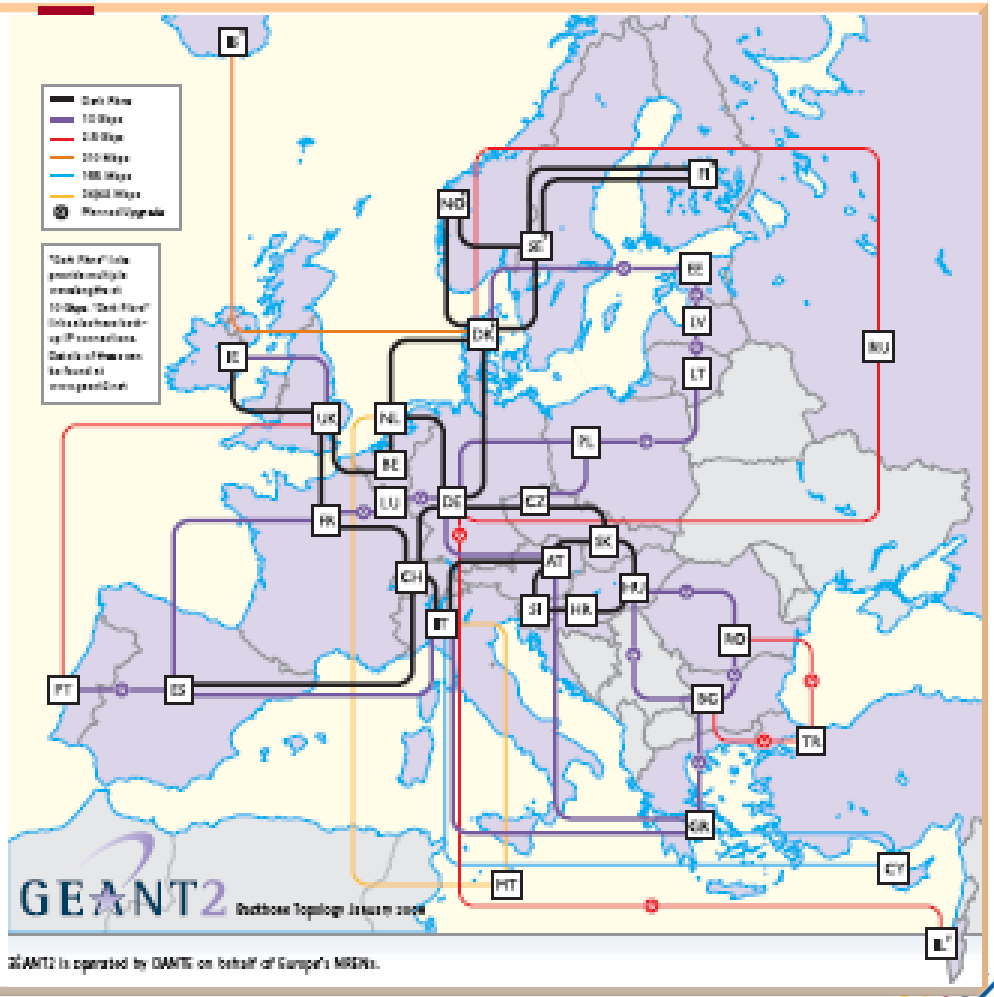
DEISA
virtual supercomputer

European Research Area

European Research Area Board (ERAB)

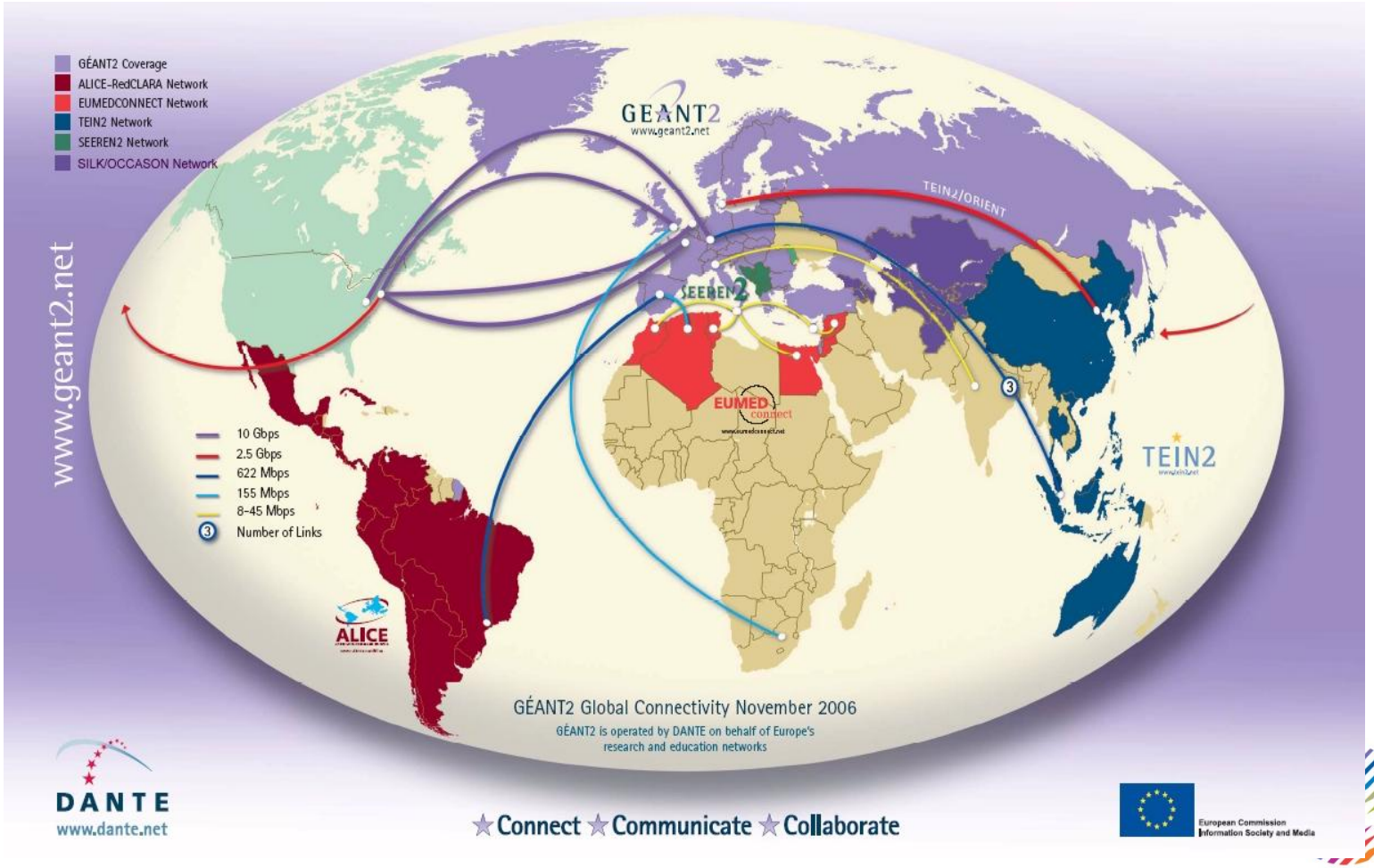
GÉANT: connecting

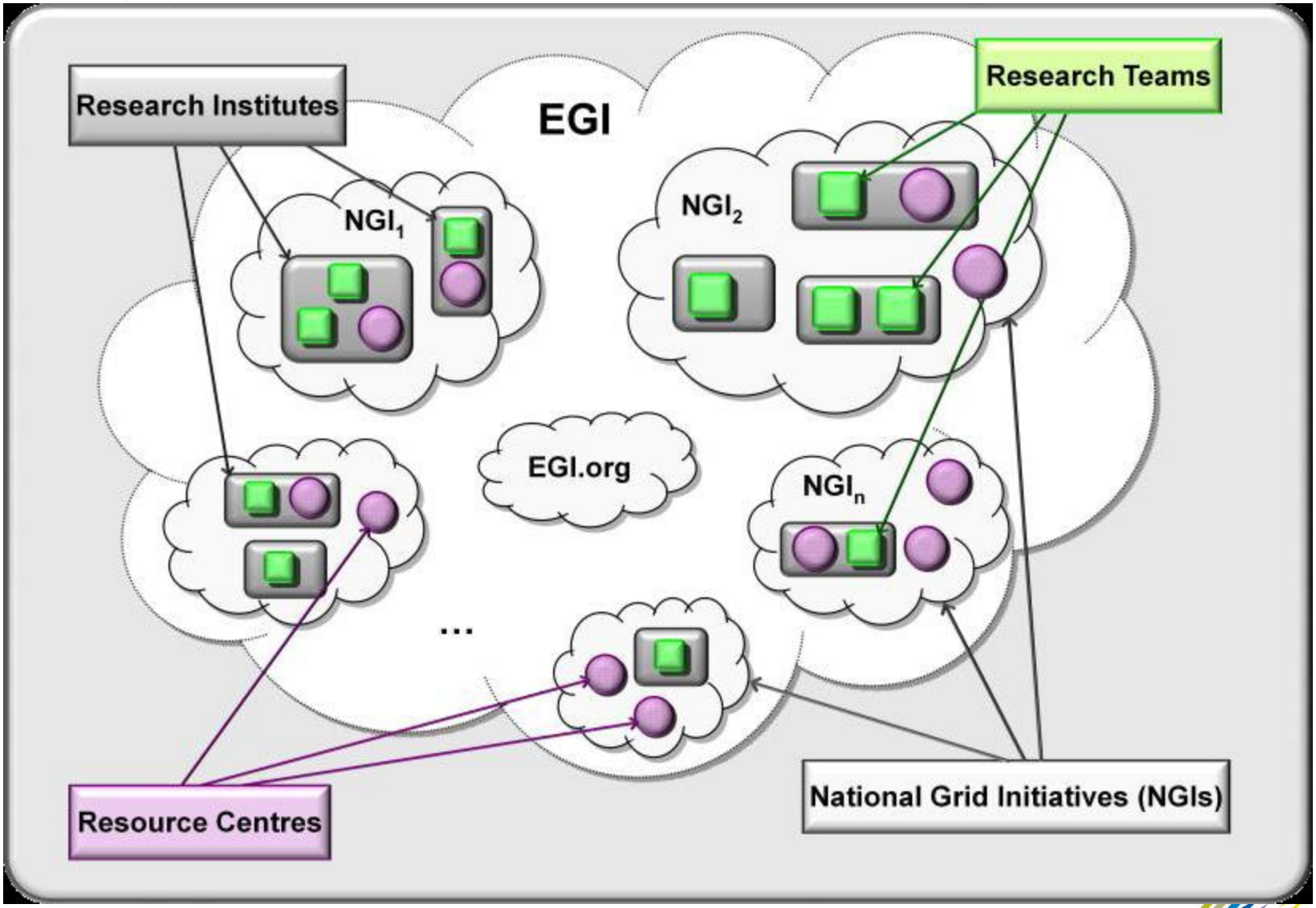
- Pan-European coverage (40+ countries /3900 universities / 30+ million students)
- Hybrid architecture:
  - connectivity at 10 Gb/s (aggregated traffic)
  - dark fiber wavelengths (demanding communities)



European Research Area

GÉANT: global reach




Research Institutes
EGI
Research Teams
NGI1
NGI2
EGI.org
NGIn
...
Resource Centres
National Grid Initiatives (NGIs)

European Research Area Board (ERAB)

Various types of Infrastructures require differing approaches

- Large one off international projects
- Large dispersed yet physical international/European facilities
- Large European facilities
- Large National facilities
- Large dispersed groups, centrally managed, using e-infrastructure
- All require integrated data management

European Research Area

European Research Area Board (ERAB)

Some definitions

- A Research Infrastructure is a complex project that has to be delivered on budget and on time.
- It must be based on **excellence** if it is to be world class
- A RI project is not the same as a research programme.
- There is a need for both scientific leadership and project management leadership. Balancing the two is not easy and the necessary talents are seldom found in one person

European Research Area

European Research Area Board (ERAB)

Pitfalls in Building Large RIs

- Lead scientist wants to run everything – leads to project drift
- Project manager is insensitive to the research programmes.
- Contingency/inflation is not included in the budget
- Operating/decommissioning costs are forgotten. Operating costs are normally about 10% of initial capital
- Provision for upgrading and refreshing should be included otherwise RI will cease to be world class quickly.
- Not taking procurement seriously
- Not planning the innovation chain from the start

European Research Area

European Research Area Board (ERAB)

Innovation and Exploitation

- **Three essentials:**
  - Attract the best scientists and allow freedom to explore new ideas.
  - Professional management
  - Healthy throughput of staff year by year

  - Bank of Boston analysis of MIT showed it was the alumni that were the innovation drivers of much of the US economy, not the institution itself

European Research Area

European Research Area Board (ERAB)

Cost Benefit Analysis

- This is part of the business case
- It assumes that there is a good science case that has passed review
- Need to convince investors and politicians that it is good value for money and will give some type of economic return
- Economic return is not just spin outs etc. Output of trained people is the most important
- The management aspects and control are the main concern of investors at this stage

European Research Area

European Research Area Board (ERAB)

Who are the Stakeholders?

- In a gateway process the Senior Responsible Owner (the lead person in the proposal) is the chief stakeholder
- The SRO takes the findings of the review (of which CBA is part) as evidence that the project is feasible.
- The SRO gives assurance to funders and other stakeholders. The SRO's reputation is at stake and must not put the case forward if it is not viable
- The funders want to know the outcomes, true costs and risks involved

European Research Area

European Research Area Board (ERAB)

Other Stakeholders

- Scientists who will work on the RI and help define the specification
- MEYS and other ministries
- Investors – EIB and other countries
- Industry
- Local population
- General public – especially school students

European Research Area

European Research Area Board (ERAB)

Good luck!

European Research Area