

Moving e-Infrastructure into a new era **the FP7 challenge**



Mário
Campolargo

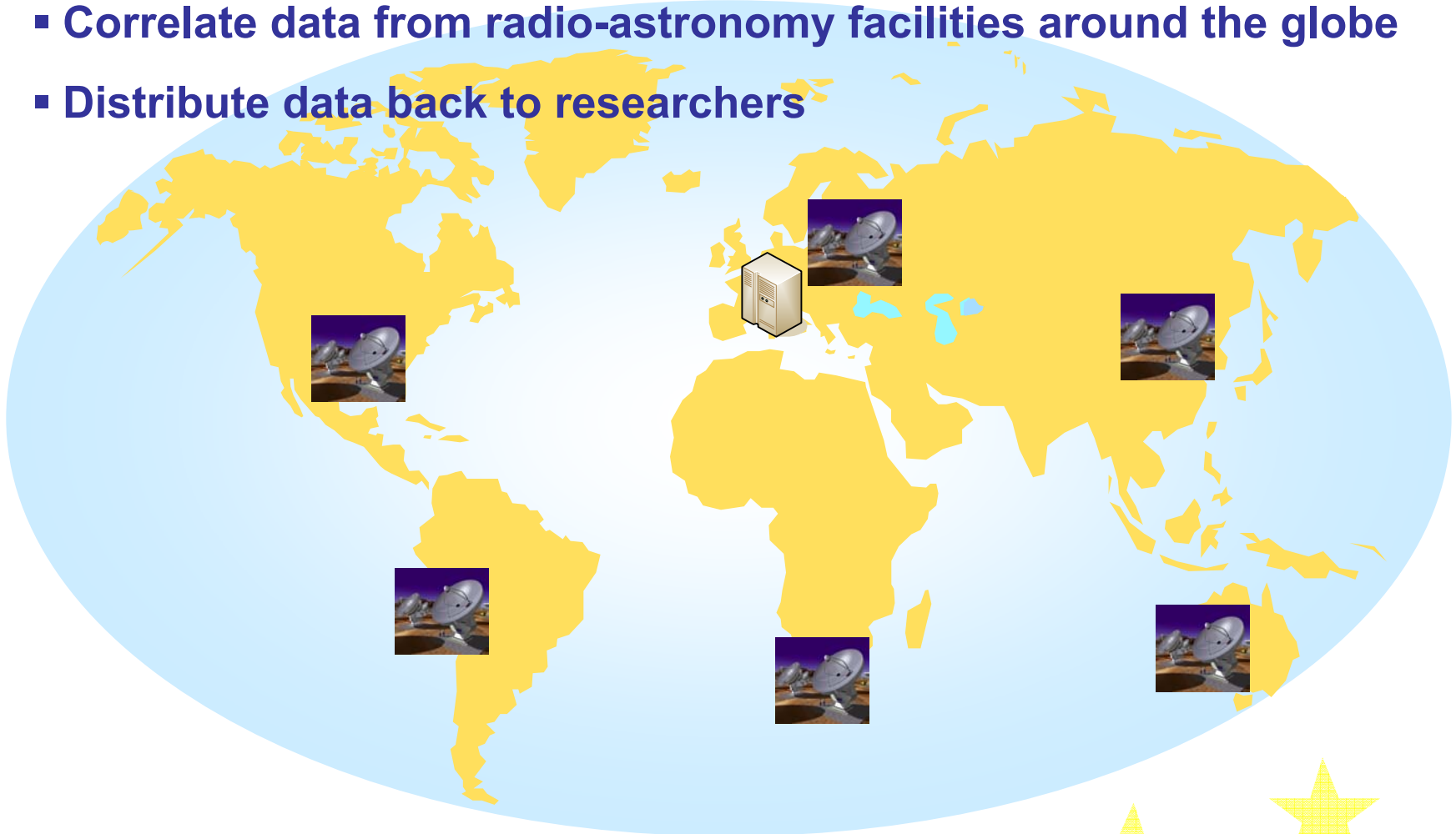


European Commission - DG INFSO
Head of Unit Research Infrastructures



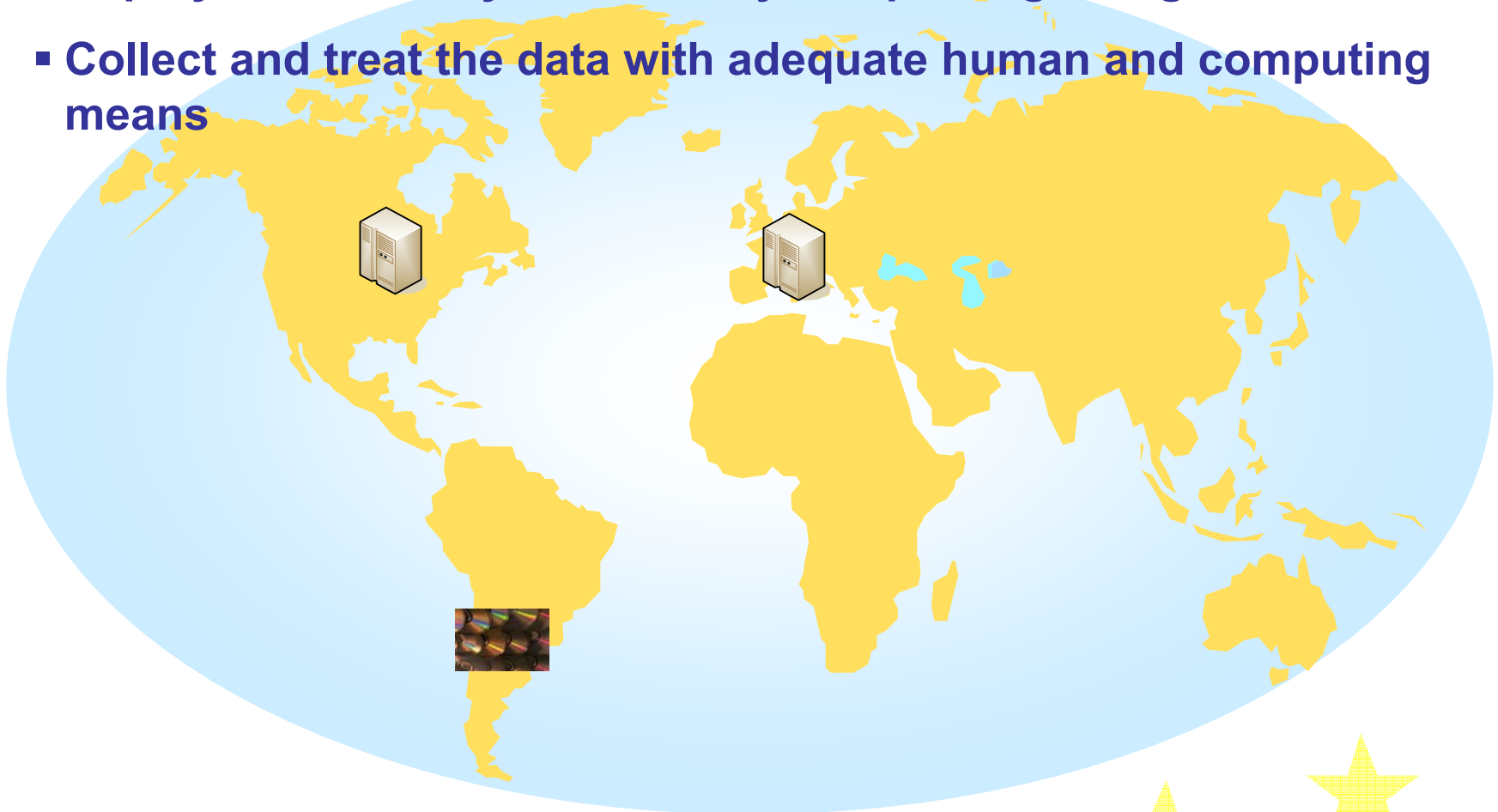
Example of e-Science challenges – radio astronomy

- Correlate data from radio-astronomy facilities around the globe
- Distribute data back to researchers



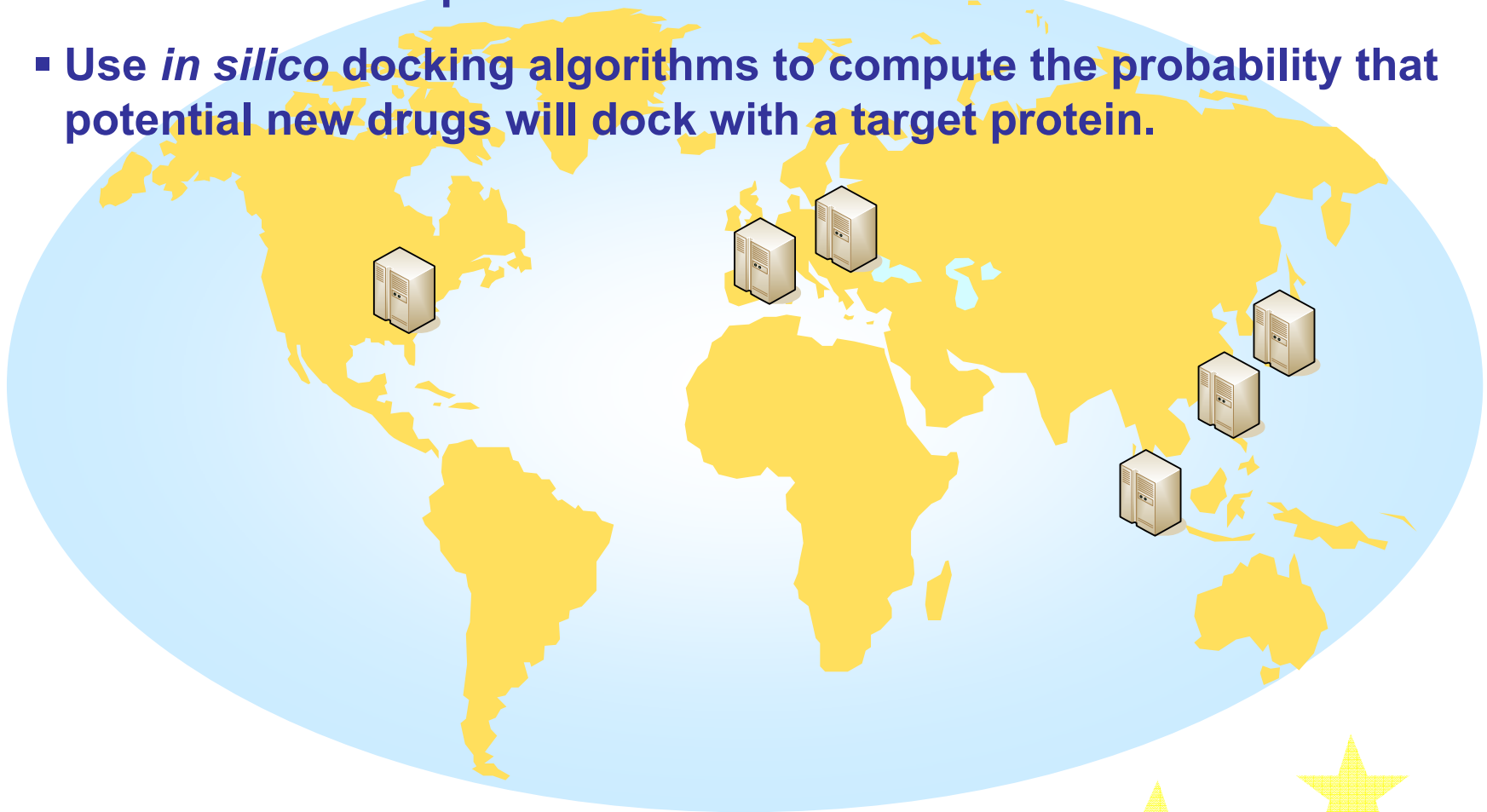
Example of e-Science challenges – Auger observatory

- Deploy a cosmic ray observatory in a privileged region
- Collect and treat the data with adequate human and computing means

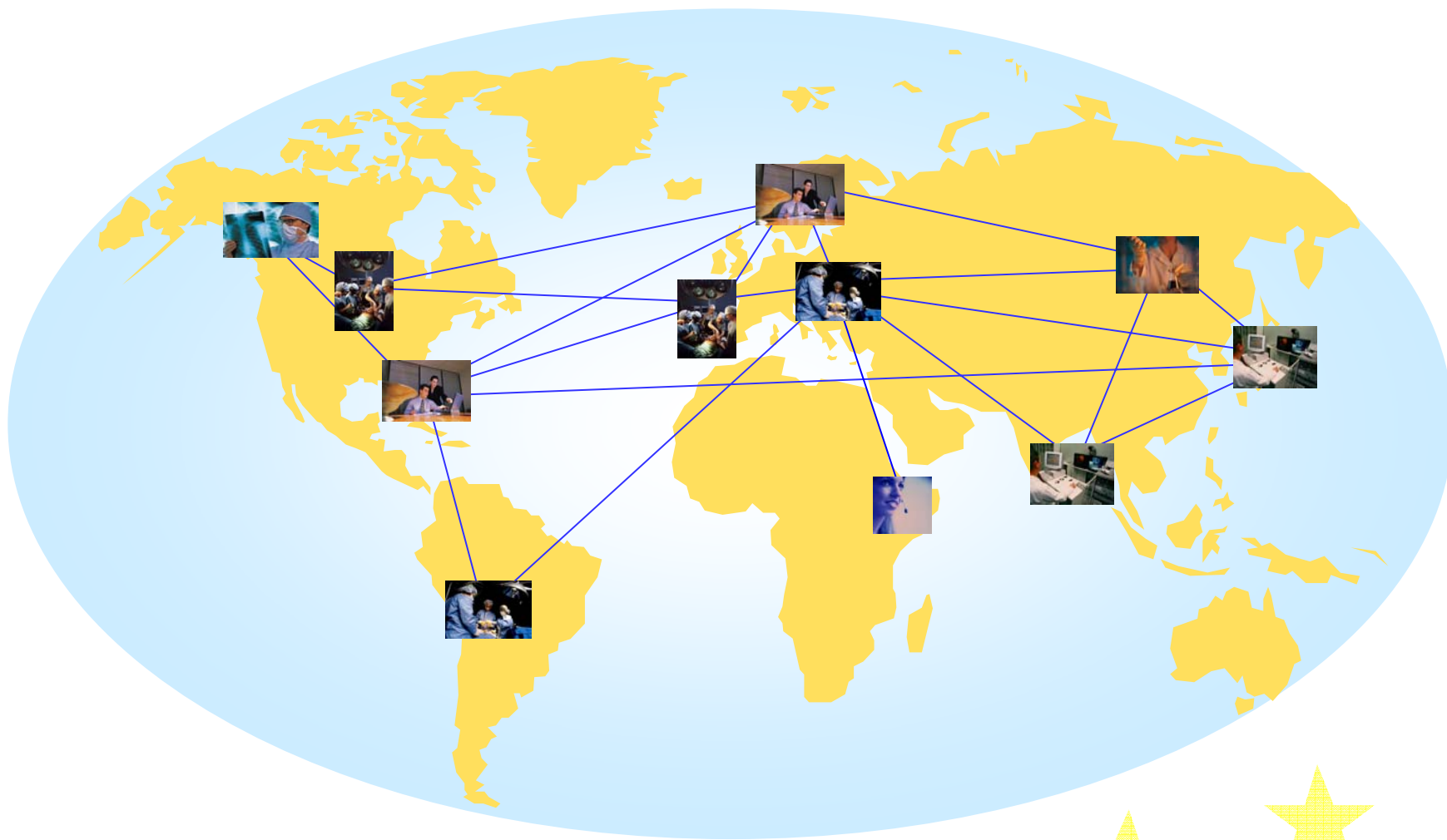


Example of e-Science challenges - avian flu drug screening

- Reduce cost and production time of inhibitors for H5N1 virus
- Use *in silico* docking algorithms to compute the probability that potential new drugs will dock with a target protein.



Global communities of scientific users



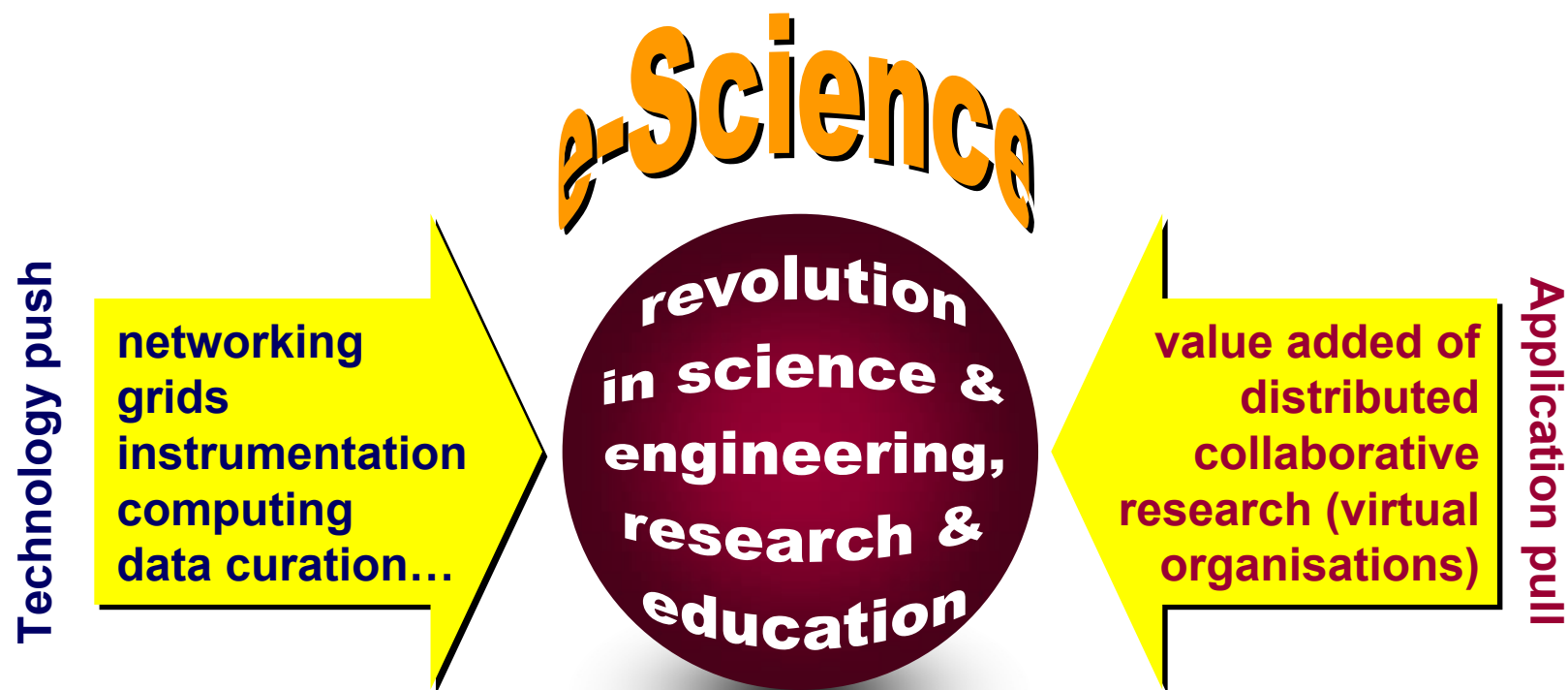
Worldwide ICT based resources



Resources (physical, virtual, single or multiple sited) of any information type - storage, library, computing, networking, instrumentation, etc.



e-Science: a community of practice driving innovation



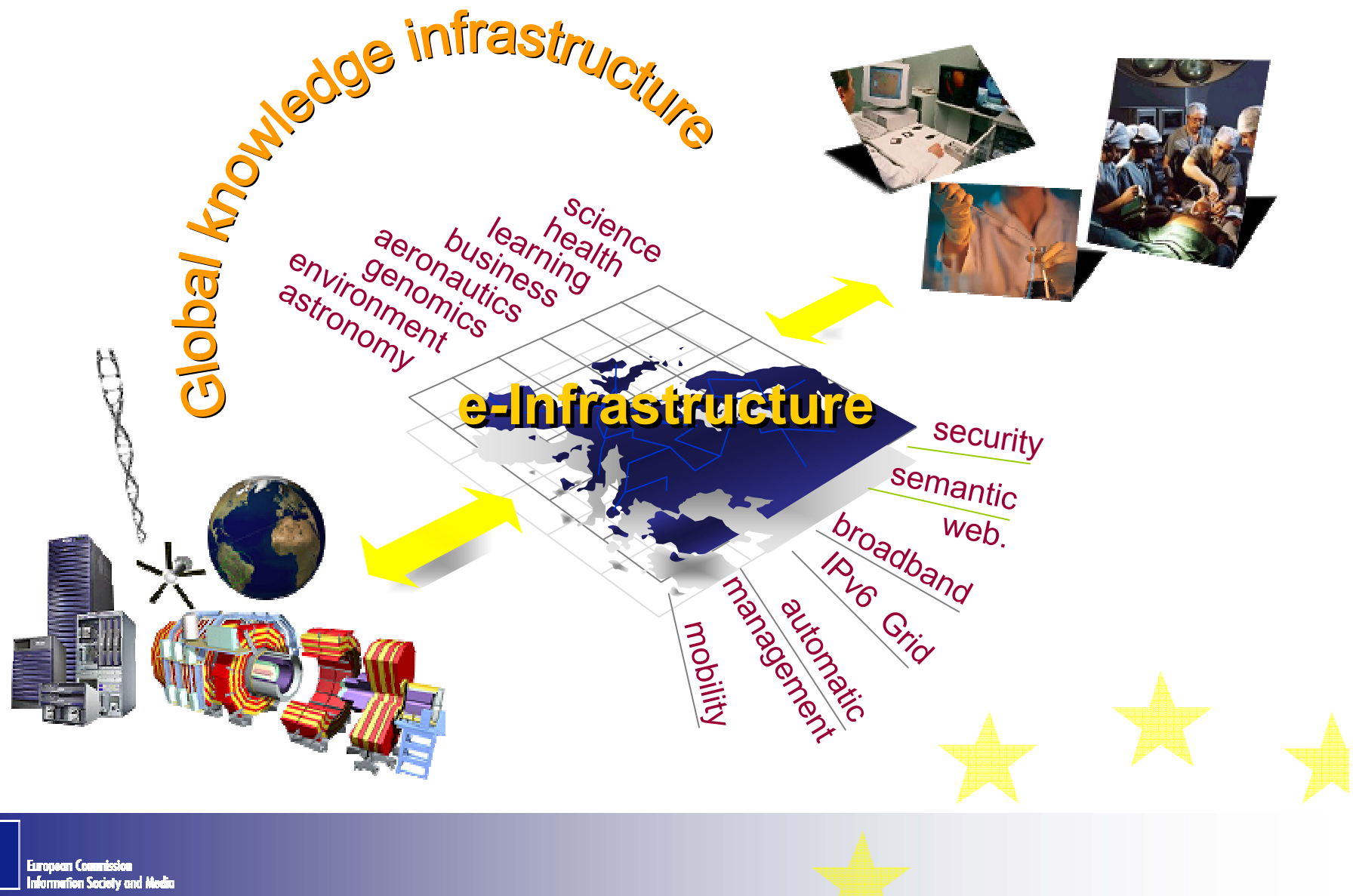
a new way for all scientists to work on research challenges that would otherwise be difficult to address



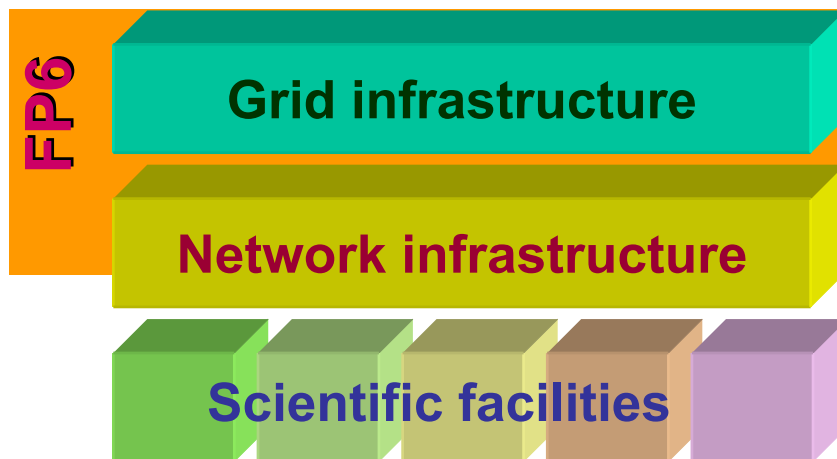
The role of ICT infrastructures



EU vision - creating an e-Infrastructure...



Deploying e-Infrastructure - structuring projects



eGEE
Enabling Grids
for E-science

EGEE

GÉANT

GEANT2

**Distributed
European
Infrastructure for
Supercomputing
Applications**

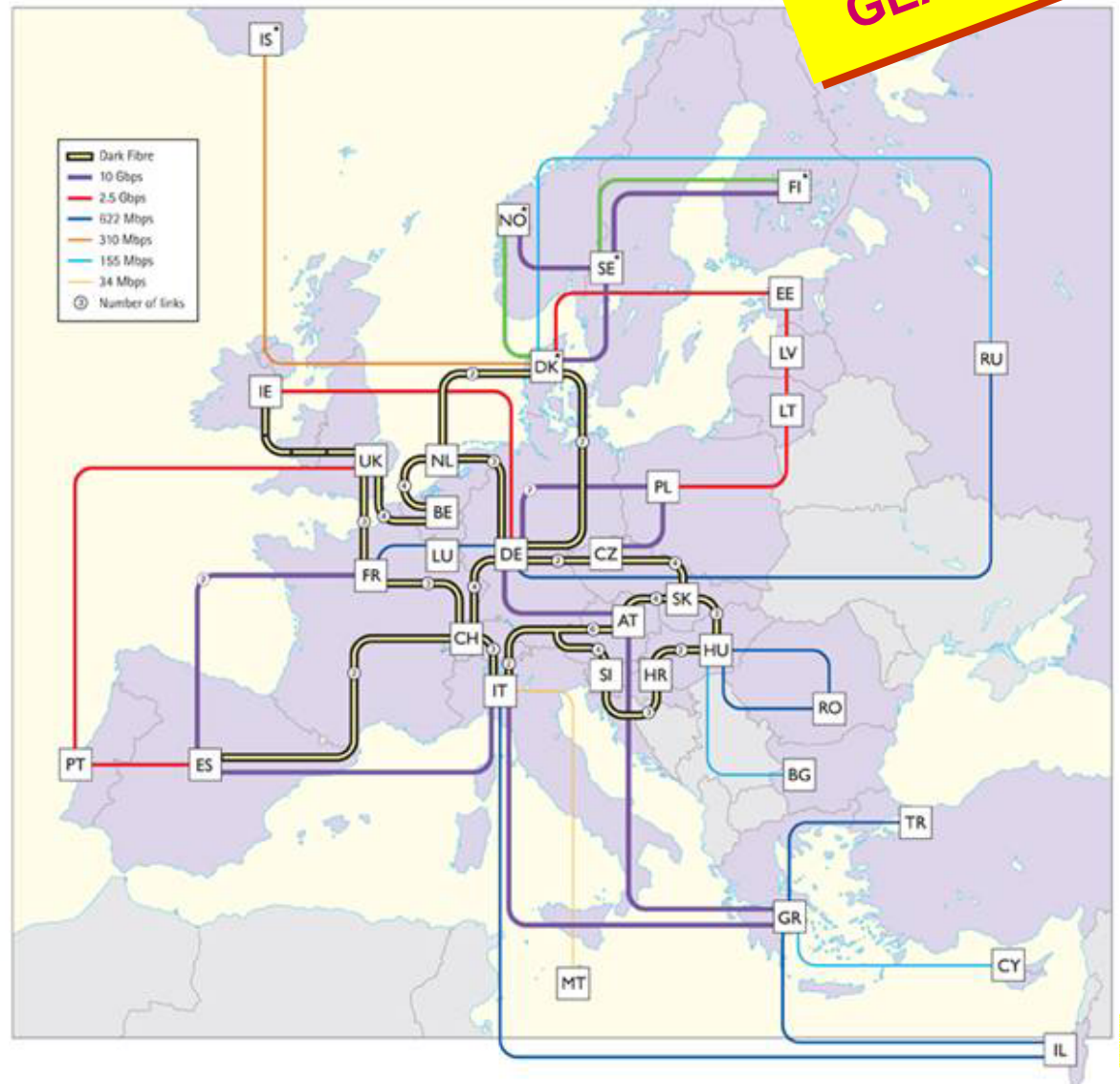
DEISA



GÉANT, world leading research network

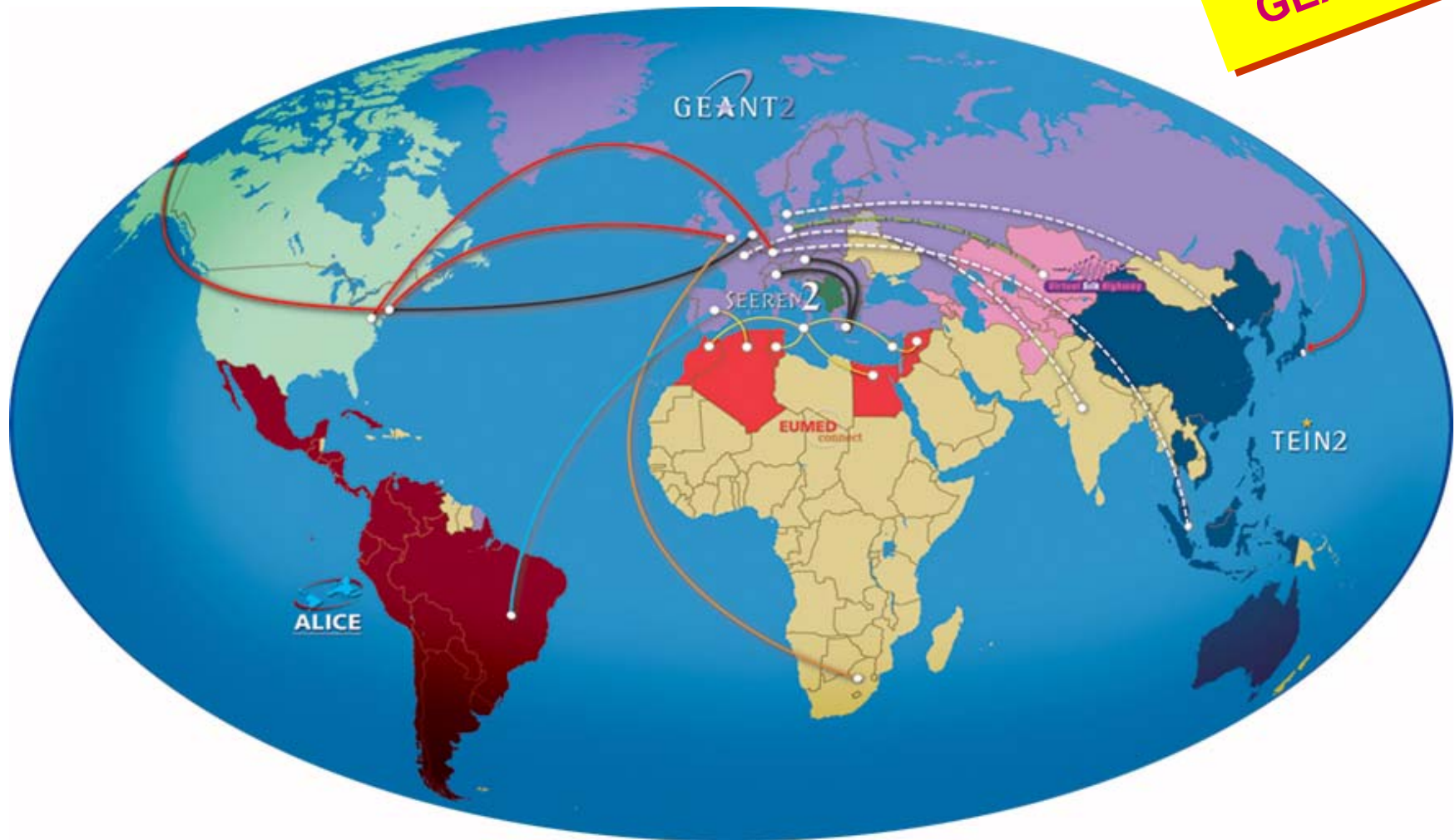
GÉANT

- Pan-European Research Network
- Access to 12 000 km of dark fiber/ unlimited capacity
- IPv6 enabled
- 400+ active elements
- Hybrid Network: Photonics + IP
- 3700 institutes
- Global dimension

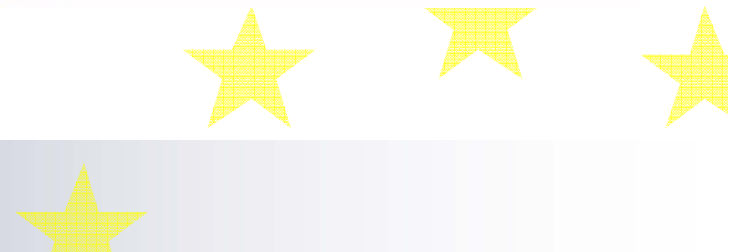


Global dimension of GÉANT

GÉANT



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EGEE, world leading grid infrastructure

EGEE

- Stable and reliable production Grid infrastructure for ERA
- Own middleware stack, gLite
- Scientific communities
 - High Energy Physics
 - Astrophysics
 - Computational Chemistry
 - Fusion
 - Life Sciences
- Industrial policy
- Standardisation, training and education

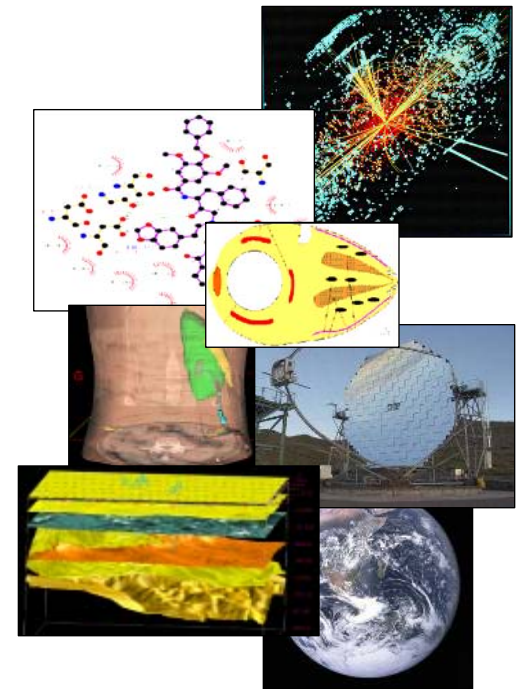
Biomedics

Earth Sciences

Finance

Geophysics

Multimedia ...



EGEE, providing key e-Science services

EGEE

- Stable and reliable production Grid infrastructure
- Own middleware stack, gLite

- ~ 200 sites in 39 countries
- > 60 Virtual Organisations
- ~ 20 000 CPUs
- > 5 PB storage
- > 10 000 concurrent jobs per day



Global dimension of EGEE

EGEE

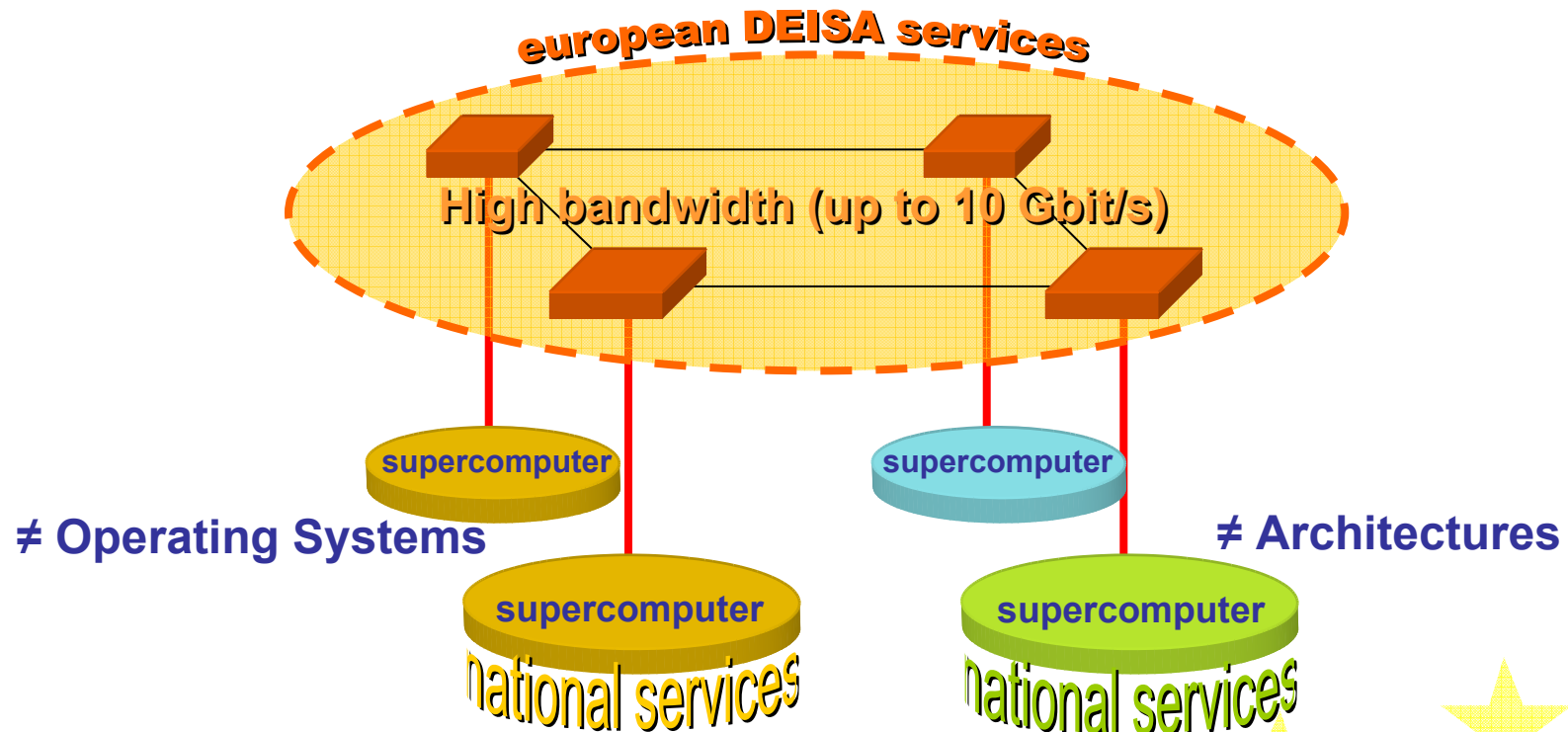


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DEISA, the supercomputing grid infrastructure

DEISA

- Integrates Europe's most powerful supercomputers
- Multiple application areas + DEISA Extreme Computing Initiative



DEISA, bringing together major EU supercomputers

DEISA

AIX IBM domain



RZG (DE)

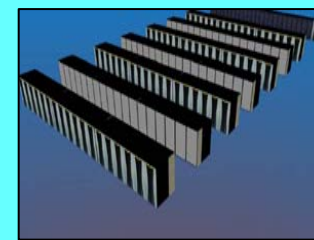


IDRIS (FR)

LINUX SGI



SARA (NL)



LRZ (DE)



ECMWF (UK)

High Performance
Common Global File
System



CSC (FI)



CINECA (IT)



FZJ (DE)

LINUX Power-PC

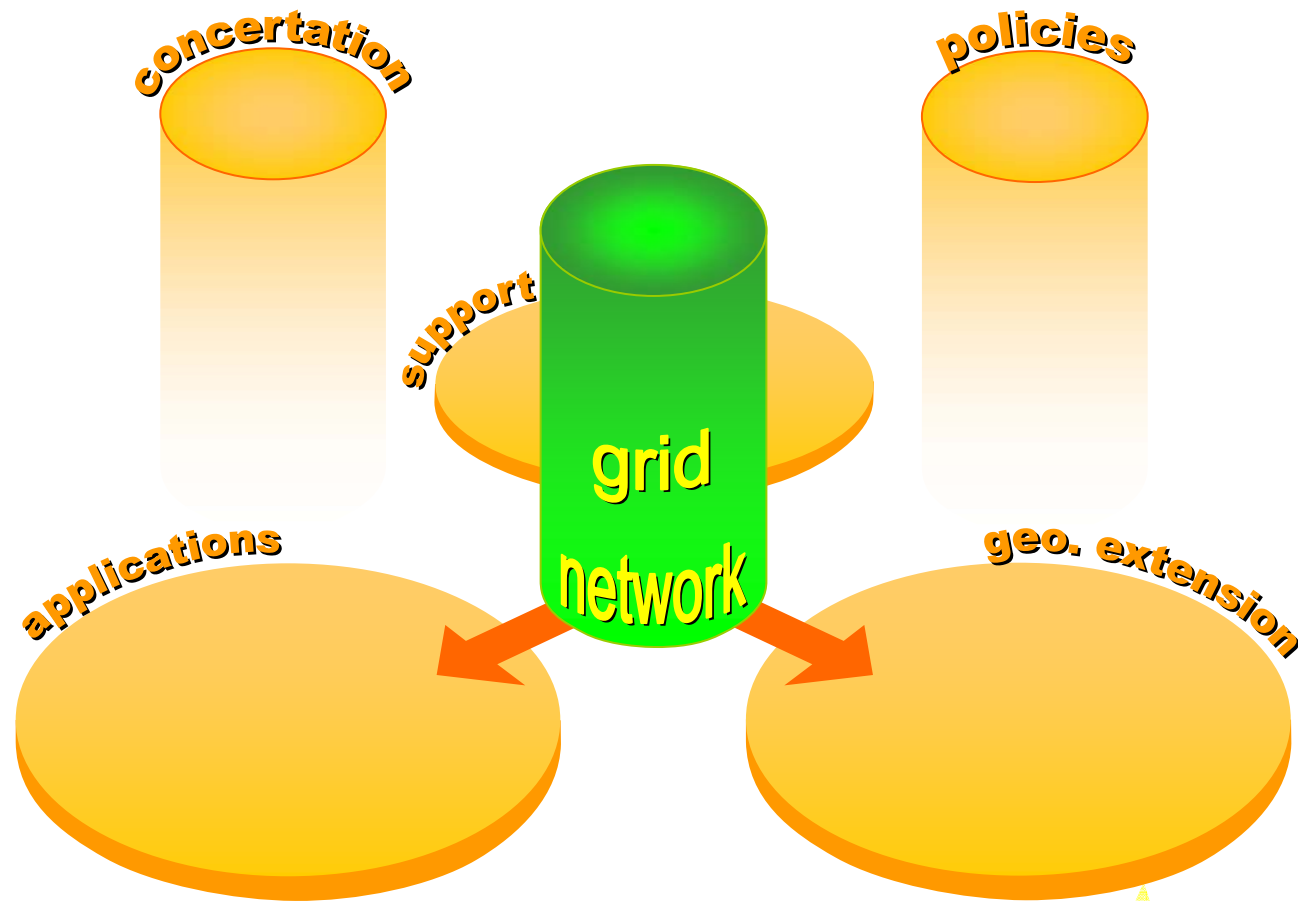


BSC (ES)

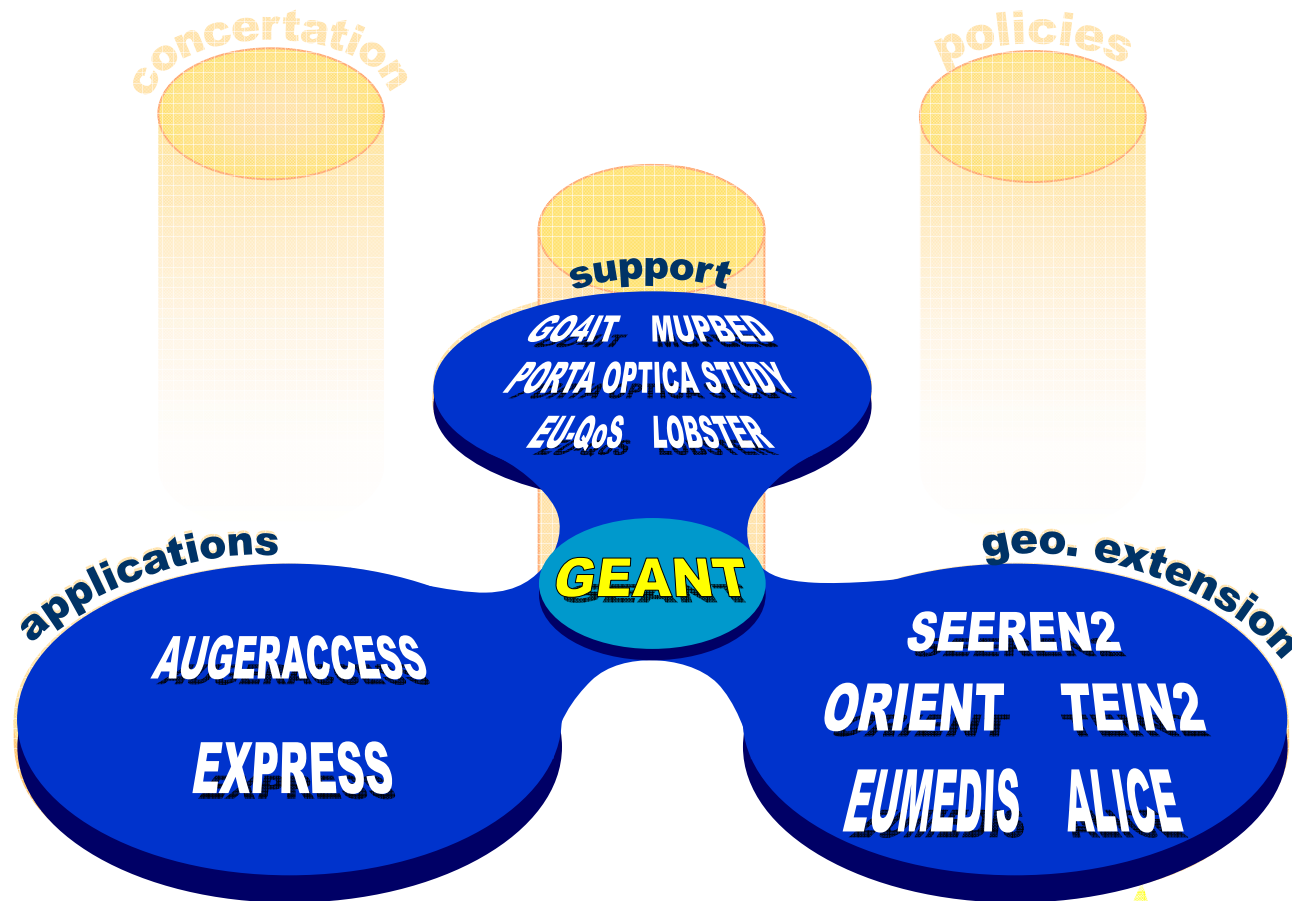


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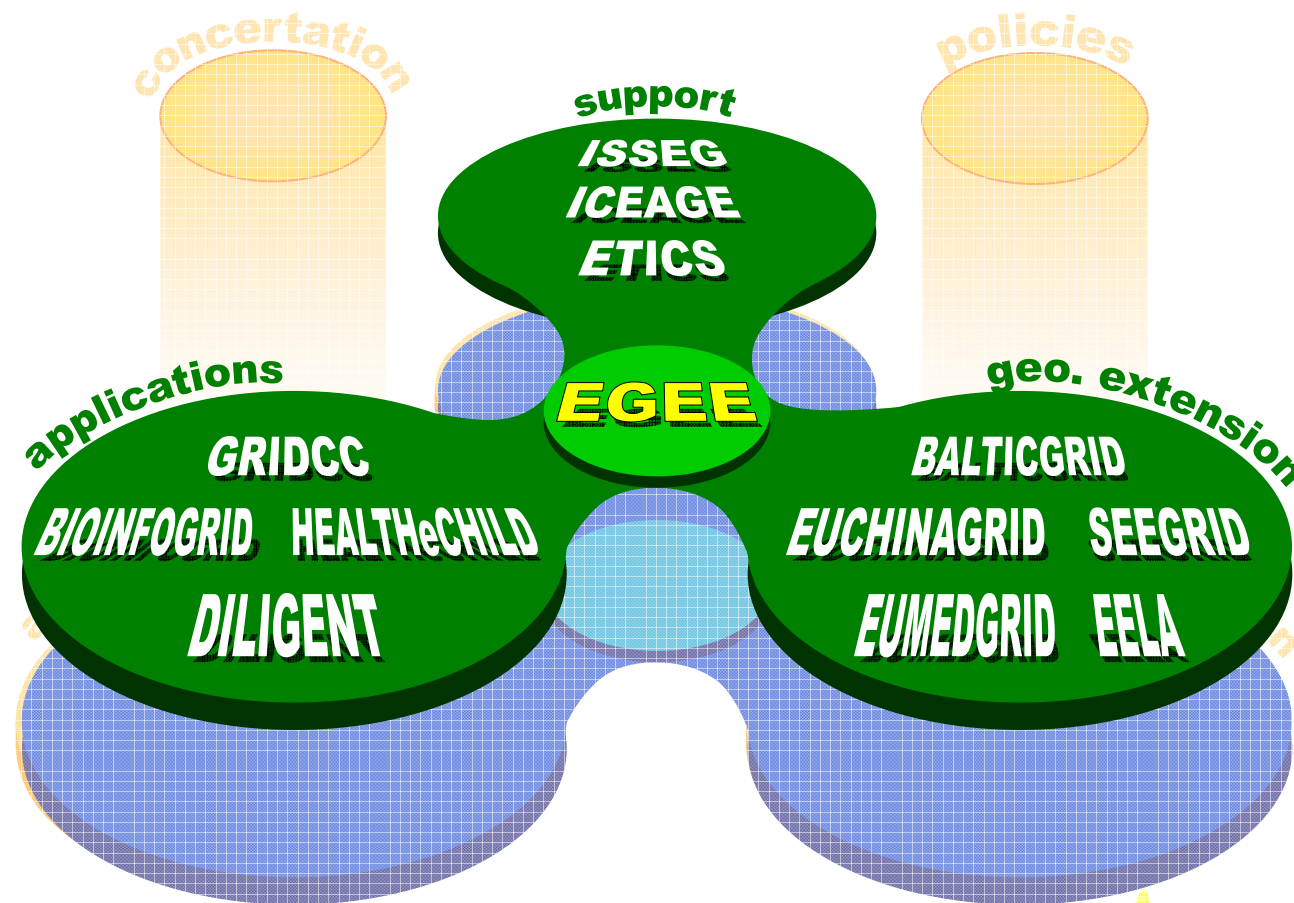
Horizontal and vertical integration: reference model



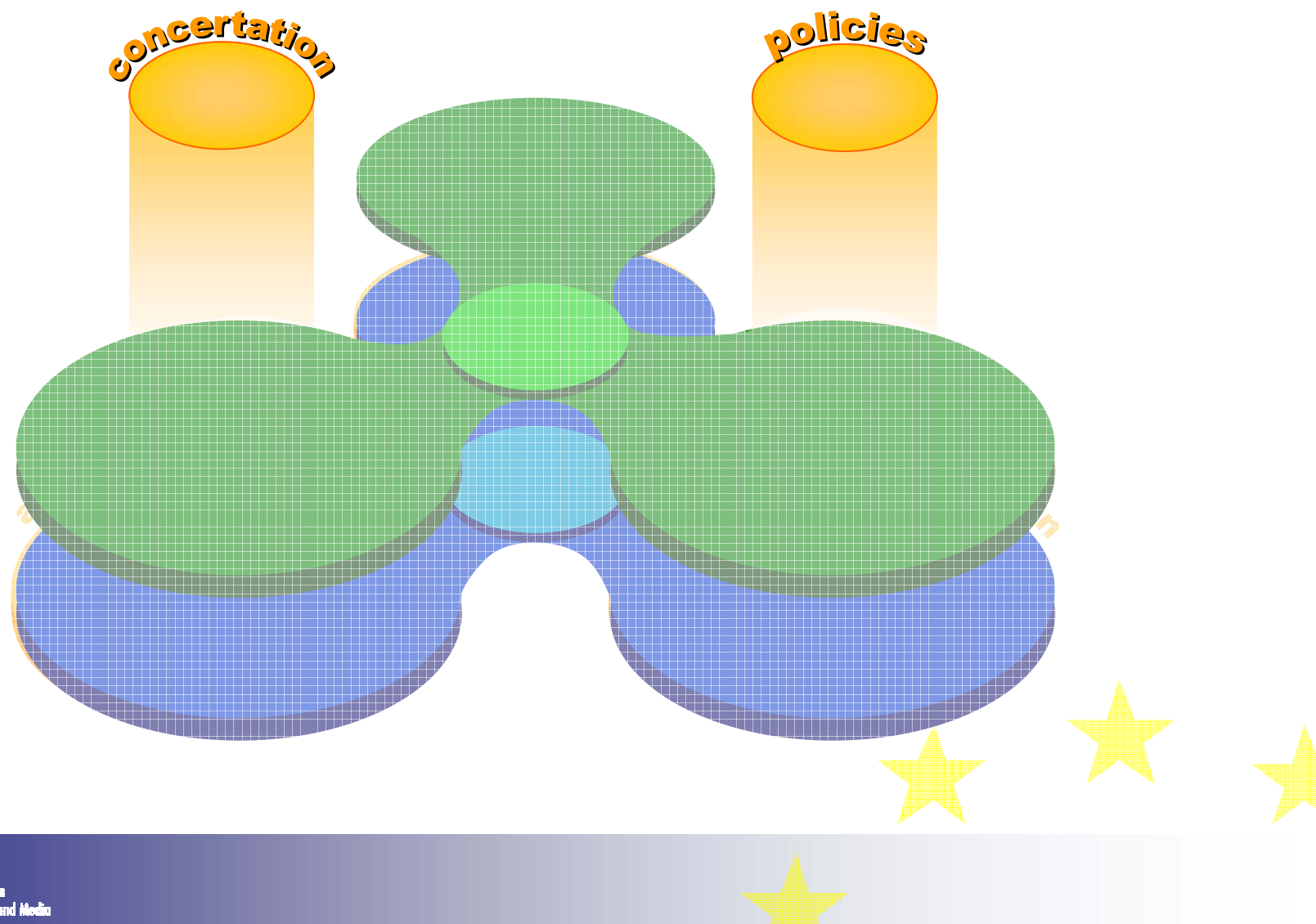
Horizontal and vertical integration: network layer



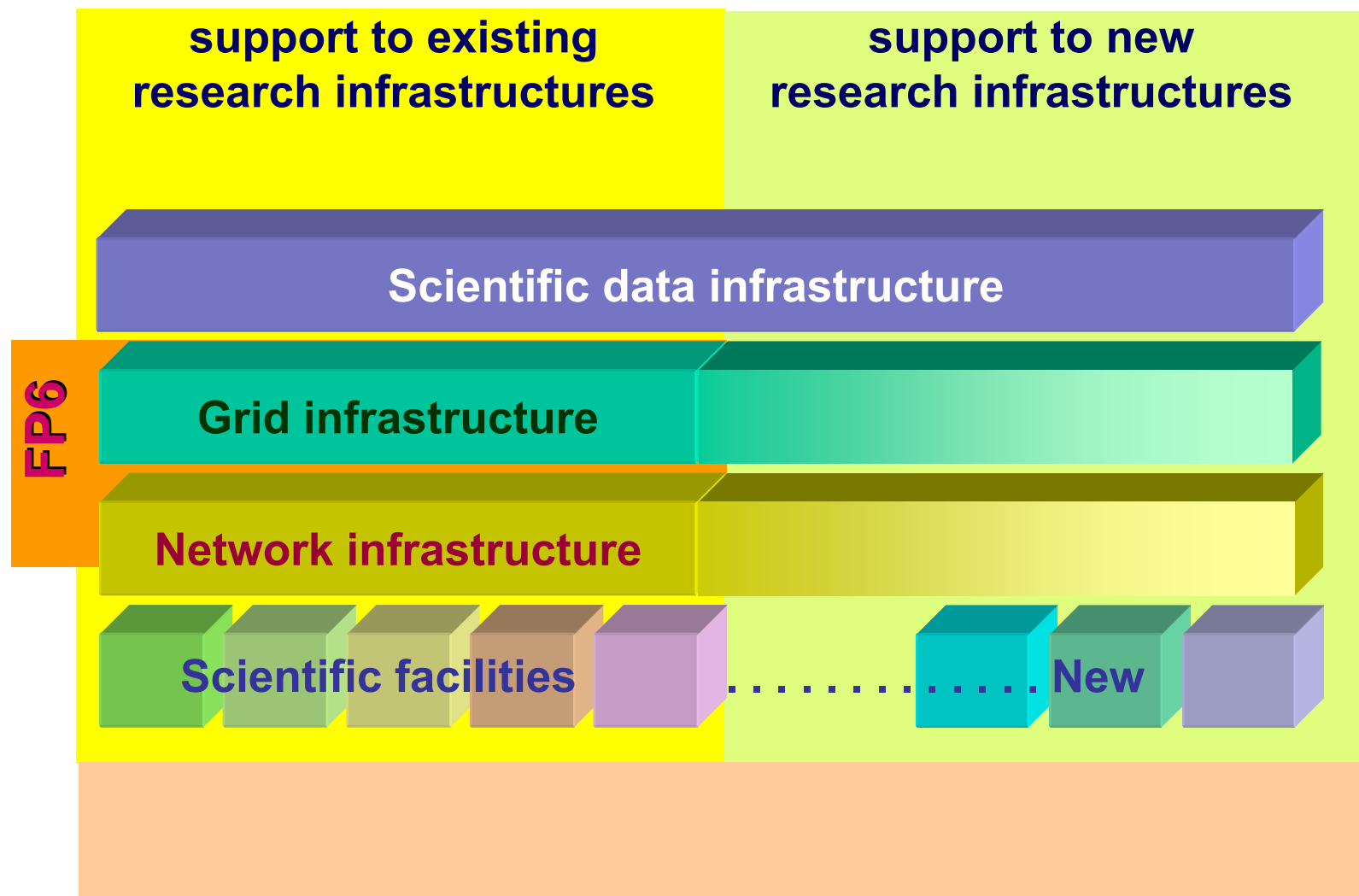
Horizontal and vertical integration: grid layer



Horizontal and vertical integration: policy and synergies

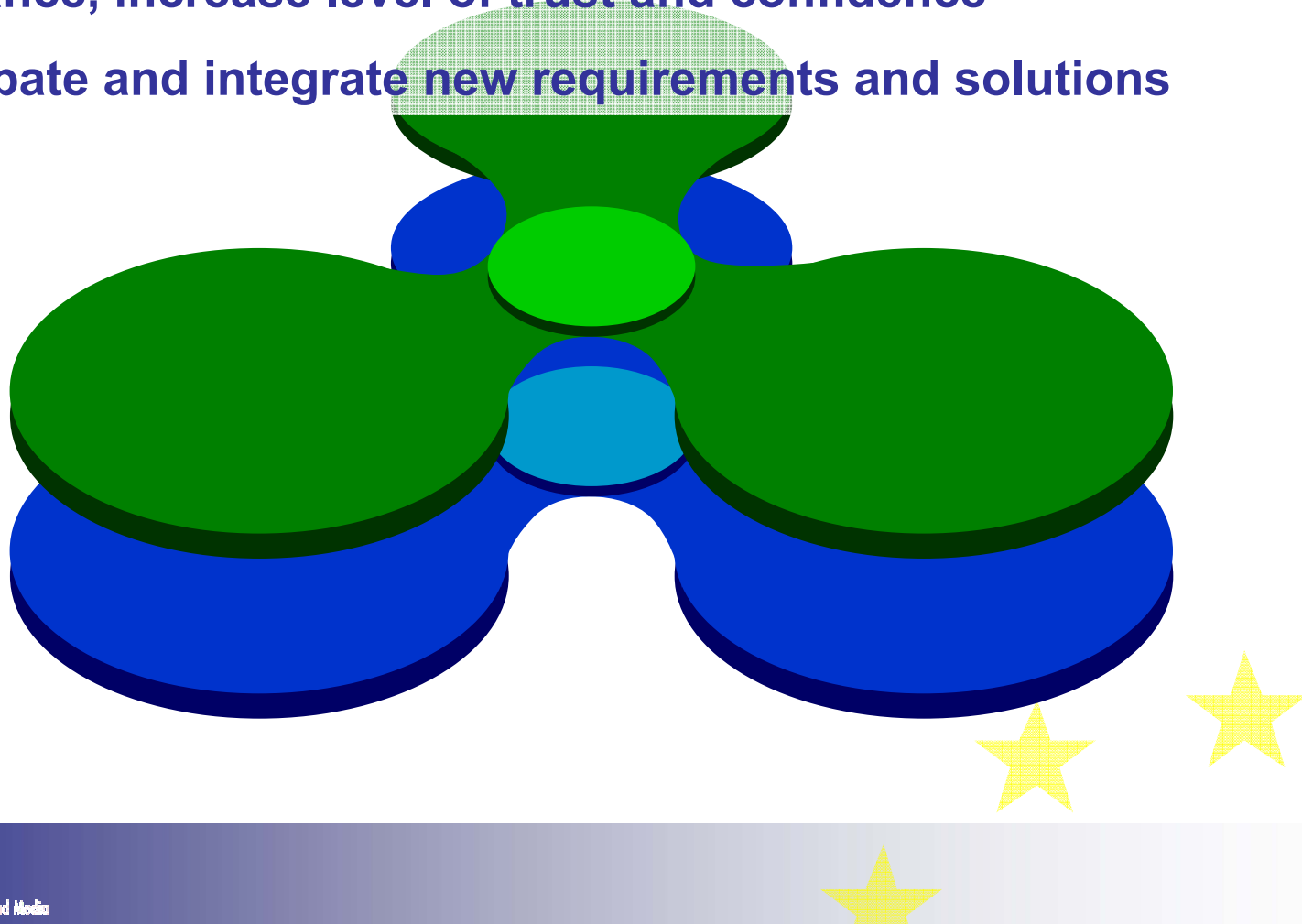


FP7 e-Infrastructures - new layers, new infrastructures

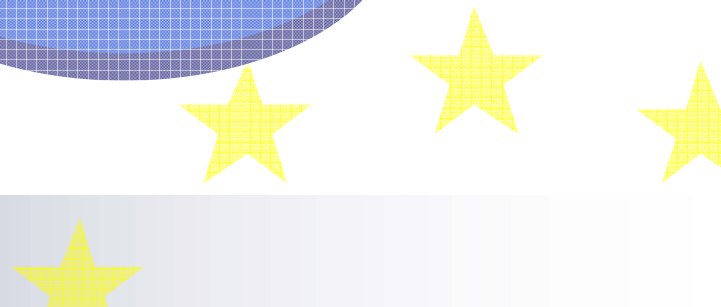
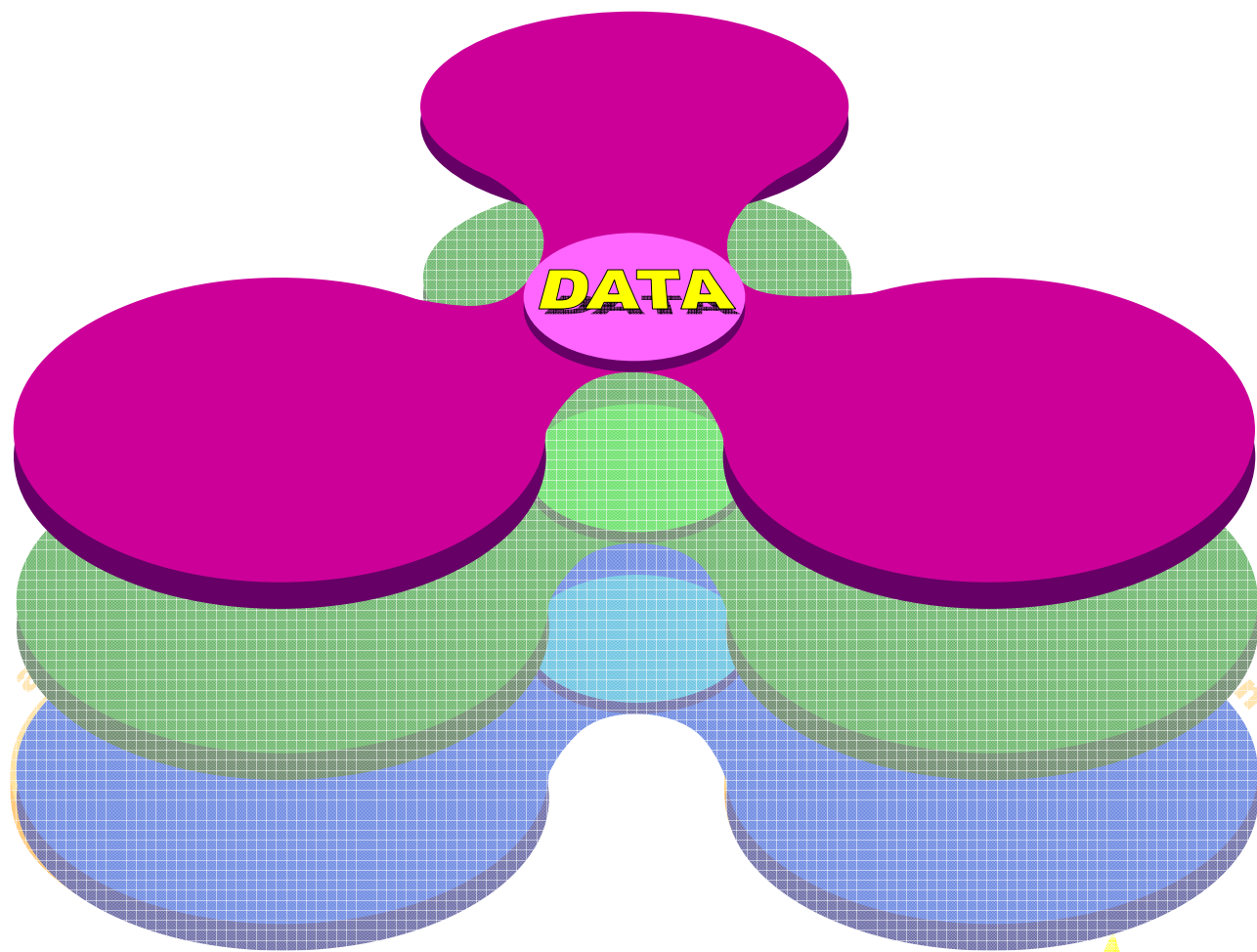


FP7 – reinforcing leadership in network and grid layers

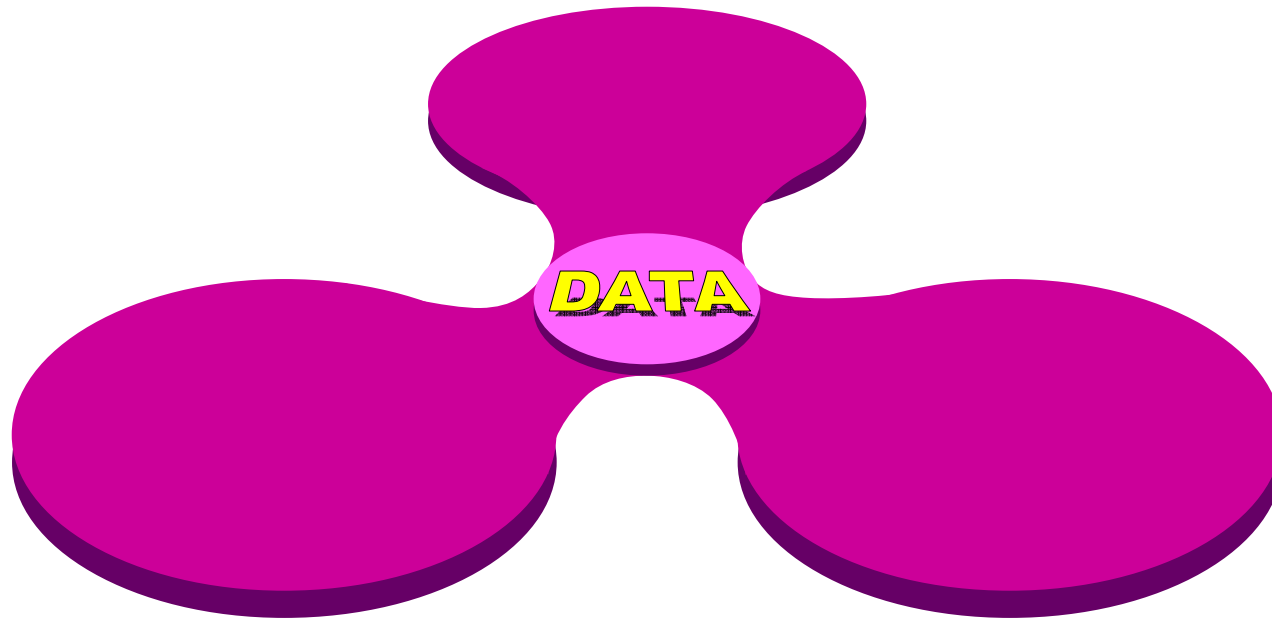
- Further development and evolution of GÉANT and grids
- Foster adoption by new user communities, enhance global relevance, increase level of trust and confidence
- anticipate and integrate new requirements and solutions



FP7 – addressing the new scientific data layer



FP7 – addressing the new scientific data layer



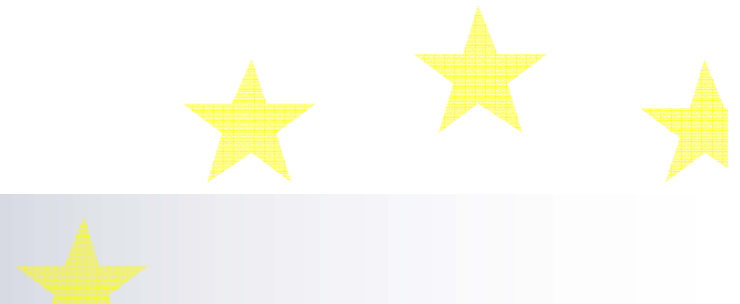
- Foster the emergence of Europe as a world scientific data hub.
- Deploy data repositories for the scientific community and future generations of scientists supporting, in a coordinated way, digital libraries, archives, data storage, data curation, access to information and the necessary pooling of resources.



FP7 – ICT based new infrastructures

HPC infrastructure for Europe, recommended by ESFRI

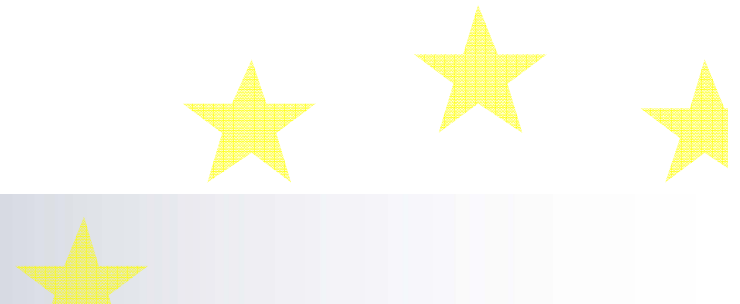
- key component Science infrastructure
- sustainable eco-system, pyramid shaped, requiring European expertise and services infrastructure
- reaching petaflop level
- supporting different algorithmic processes rather than different scientific disciplines
- continuously investment and upgrade on top of the national infrastructures
- building on a DEISA-like model



eIRG, a policy driven reflection group



- ... support on the political, advisory and monitoring level, the creation of a policy and administrative framework for the easy and cost-effective shared use of electronic resources in Europe
- ... develop a roadmap for the e-Infrastructures for FP7 and beyond and support the ESFRI in the process of the development of a priority list and a roadmap for new Research Infrastructures



Further information



Further info on e-Infrastructures: www.cordis.europa.eu/ist/rn/



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