

# e-Infrastructure

*enhancing scientific collaborations,  
bringing regions closer*

## Research Infrastructures and the regional dimension of ERA

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e-infrastructure



European Commission  
Information Society and Media

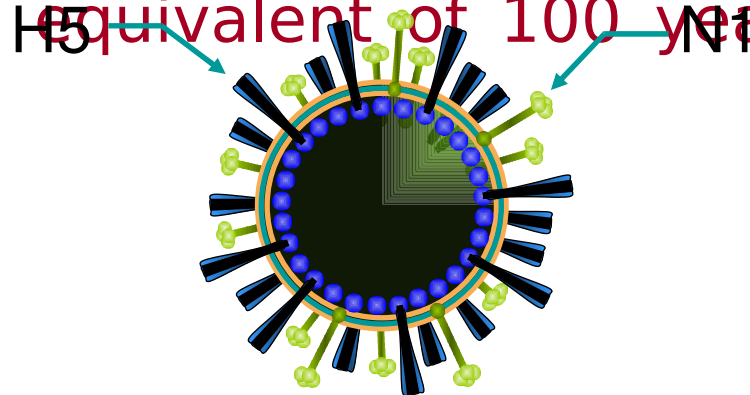


"The views expressed in this presentation are those of the author and do not necessarily reflect the views of the European

# press article

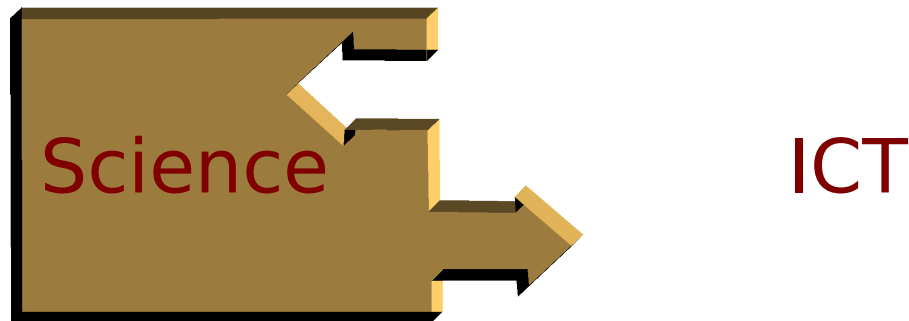
A collaboration of Asian and EU laboratories has analysed 300,000 possible drug components against the avian flu virus H5N1 using the EGEE Grid infrastructure.

For the docking of 300,000 compounds against 8 different target structures of Influenza A neuraminidases, 2000 computers were used during 4 weeks – the equivalent of 100 years on a single computer.



# scientific discovery process

new research methods that exploit advanced computational resources, data collections and scientific instruments in an unprecedented way



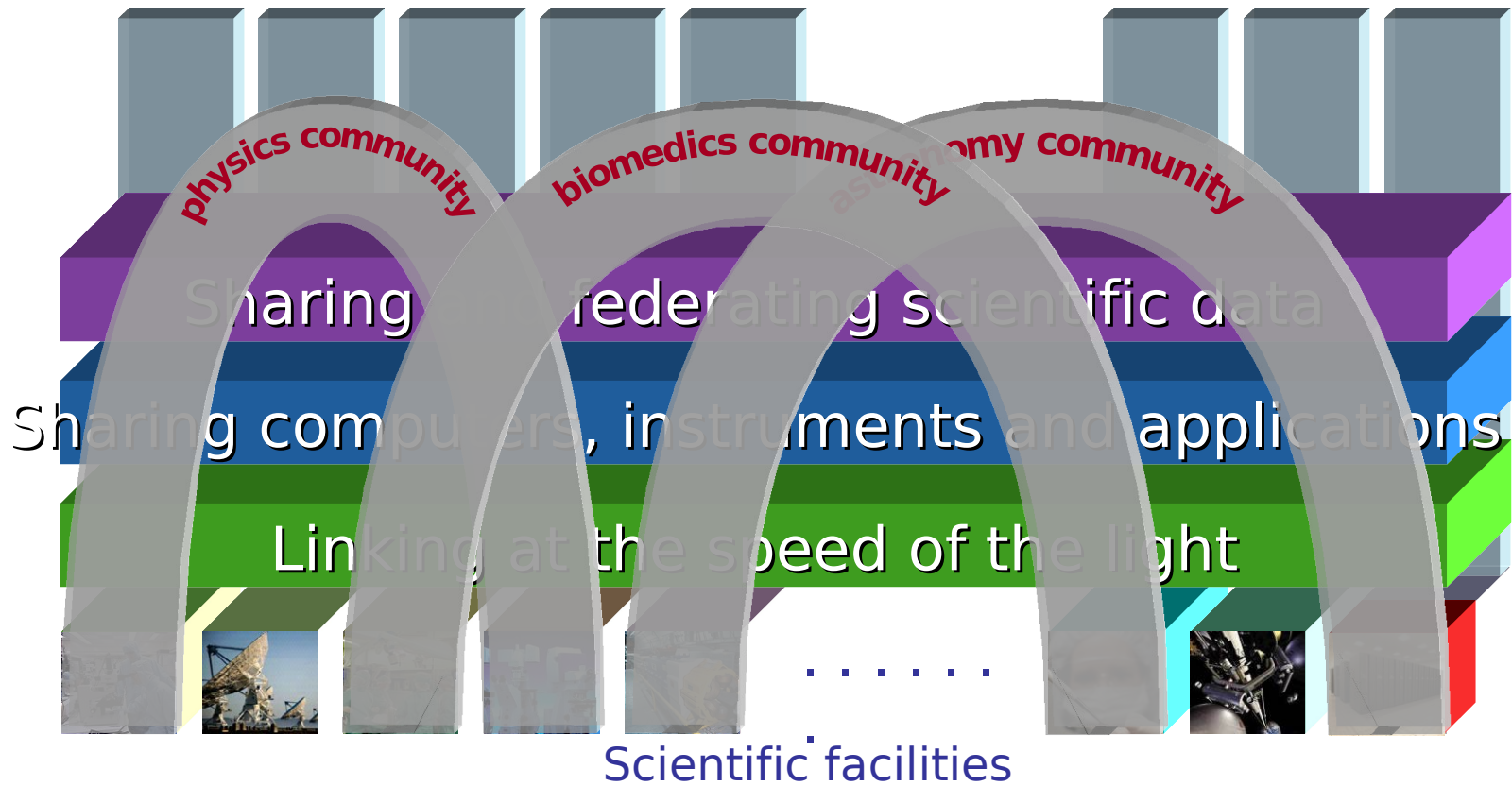
# integrating role of ICTs

- Deploying a dense network of communications highways between all universities, research centers and advanced scientific infrastructures
- Sharing and federating highly distributed computing and data resources
- Giving access to tightly coupled networks of supercomputers (creating virtual supercomputers)
- Creating virtual research communities
- Promoting the global dimension of the scientific collaboration

# regional integration

- e-Infrastructures provide a real European added value; they strike a balance between being cutting edge and support cohesion (fighting digital divide)
- e-Infrastructure consolidate regional expertise (fighting brain drain)
- e-Infrastructures in “Meta regions” reinforce their ecosystem of scientific infrastructures, exploiting synergies and specificities (Baltigrid, SEEREN, SEEGrid, BSI)
- e-Infrastructures paved the way to integration, ahead of the political process.

# e-Infrastructures for science



# e-Infrastructures domains



Innovating the scientific process:  
global virtual research communities



Accessing knowledge:  
scientific data



Sharing the best resources:  
e-Science grid



Linking the ideas at the speed of the light:  
GÉANT



Designing future facilities:  
novel e-Infrastructures



# achieving world leadership

- GÉANT: biggest and fastest research and education network in the globe
- EGEE: world leading grid-infrastructure
- DEISA: virtualising the access to the 11 most powerful supercomputers in Europe
- Data infrastructures: focussing on open access and preservation strategies, laying down the foundations of multi-disciplinary repositories of scientific information with a global footprint

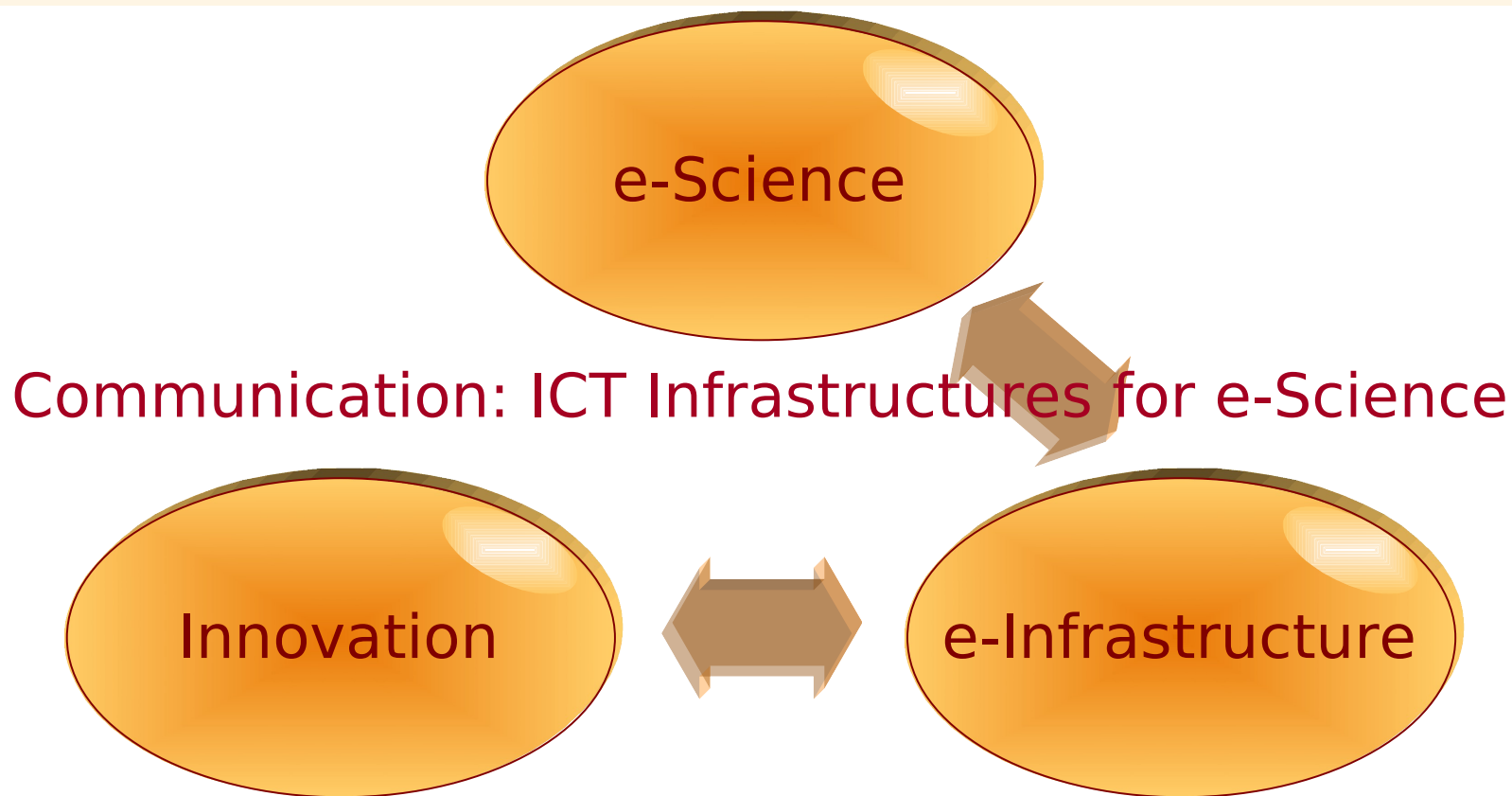


# continuous challenges

- Keeping world leadership requires continuous efforts
- Hardware performance rapidly increasing...doubling every:
  - 18 months computation
  - 12 months storage
  - 9 months networking
- Scientific demands: data deluge, scientific challenges more ambitious, simulations ever more complex
- Striving for leadership... step up investments, further coordinate... articulate further research and capacity building (e.g. reaching exascale)



# reinforcing the strategy

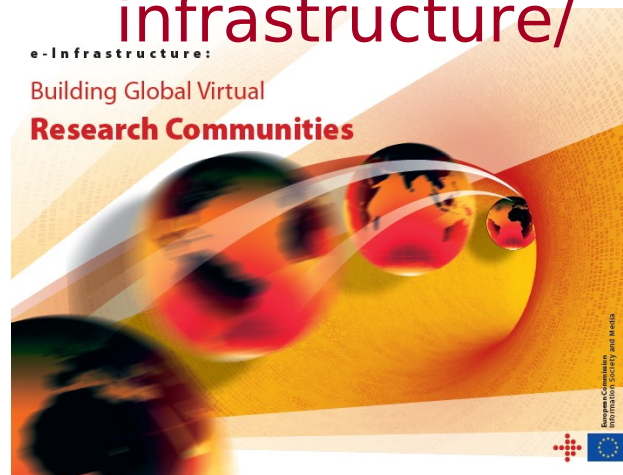


# call for action

- GÉANT: reinforce policy coordination, use/support as platform to lead to Internet of the Future
- Grids: long-term sustainability (governance model based on European Grid Initiative and National Grid Initiatives)
- Scientific data infrastructures: step up investment, share best practices, support accessibility & preservation
- Supercomputing facilities: scale up and pool investments (PRACE), set up broader strategic agenda (from components and systems to software and services)
- Global Virtual Research Communities: support model, promote emergence, best practices

# further information

[www.cordis.europa.eu/fp7/ict/e-infrastructure/](http://www.cordis.europa.eu/fp7/ict/e-infrastructure/)



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