

High Performance Computing in Europe

A view from the European Commission

PRACE Petascale Computing Winter School
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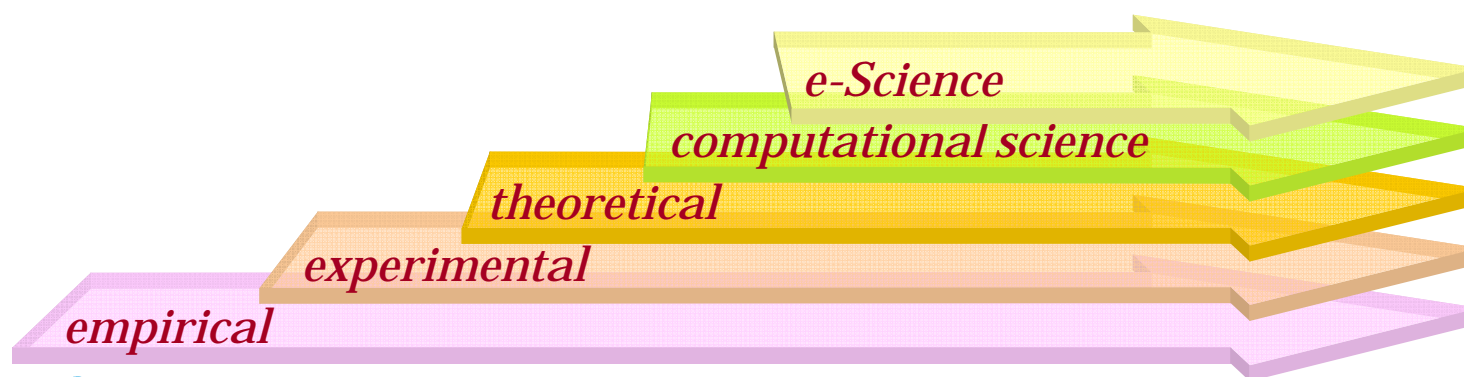


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"The views expressed in this presentation are those of the author and do not necessarily reflect the views of the European Commission"

A New Vision for Science

- Global challenges with high societal impact
- Big Science and the role of “empowered” citizens
- Data deluge... born digital material... virtual-labs
- Cross-disciplinarity
- Spread of skills and competences



Well Founded



Innovating the scientific process:
global virtual research communities



Accessing knowledge:
scientific data



Sharing the best resources:
e-Science grid: EUIndiaGrid + EGEE



Linking the ideas at the speed of the light:
ERNET + GÉANT



Designing future facilities:
novel e-Infrastructures: PRACE



ICT Infrastructures for e-Science

Connecting the finest minds
Sharing the best scientific resources
Building global virtual communities

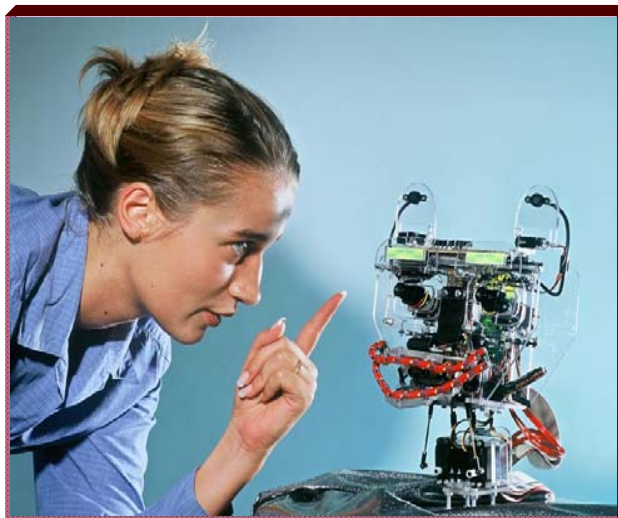


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A New Vision for Science

**What if your peer Scientist is ...
a Computer?**



Staying Competitive in Science

- Through collaboration of European and worldwide distributed research teams – global virtual research communities
- Use and manage exponentially growing sets of data
- **Use of high-performance computing** environments for simulation and experimentation
- Exploit advanced information and communication technologies (ICTs)



Challenges

- Investments in infrastructures require a long term perspective
- Operation continuity and long-term sustainability
- Reinforce, combine and coordinate the efforts of national and EU funding authorities to ensure the most efficient and effective use of resources
- Develop a new strategy for industrial involvement and coordination among funding authorities for HPC
- Address strategic, policy, technical, financial and governance issues related to supercomputing
- Exploit the innovative aspects of e-Infrastructures and the accumulated expertise beyond science (e.g. e-Health, e-Government)



Priorities

- Support international collaborations that are strategic for European scientific partnerships, thus reinforcing Global Virtual Research Communities
- Consolidate e-Infrastructures as a multi-disciplinary platform for global collaborations
- Reinforce European research capacity in the domain of high performance computing (HPC)
- Adopt adequate organisational and governance models
- Use e-Infrastructures as platforms for technology experimentation at large scale (e.g. Future Internet)



Actions

- Define and support an ambitious European strategic agenda for supercomputing, ranging from components and systems to the required software and services
- Scale up and pool investment in support of PRACE as well as in related research areas
- Ensure that future investments in HPC facilities are fully interoperable across the e-Infrastructure
- Ensure that scientific disciplines are structured and organized to fully benefit from HPC services



Objectives for an HPC Infrastructure

- **Serve** the (entire) R&D community
- **Pilot** technology, services and applications
- **Disseminate** best practice, knowledge, aptitude
- **Generate** expertise, workforce



Conclusions

- e-Infrastructures provide the underlying platforms for computationally intensive applications that enable collaboration combining knowledge from different fields of science
- e-Infrastructures implement a key EU policy and strategy
- New forms of organisations – Global Virtual Research Organisations – emerge using high performance computing environments



Further Information

www.cordis.europa.eu/fp7/ict/e-infrastructure/



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... Linking ideas at
the speed of light

Sharing the
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... Harnessing
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Building virtual
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e-infrastructure



géant | grids | scientific data | supercomputing



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