



# A European Roadmap for new, large -scale Research Infrastructures and for a common e-Infrastructure

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ESFRI chair

# Role of ESFRI

fostering, incubation and stimulation

- bring projects to a point where decisions by ministers are possible
- discussions and decisions at national level in particular as regards the lead role one country or several countries
- development of national roadmaps
- earmarking of dedicated national budgets for the construction of Research Infrastructures with a European/international dimension

# Mandate for the Roadmap

- ESFRI was asked to develop a truly long term European view on the development of Research Infrastructures of pan-European interest and thus contribute to achieving the knowledge growth as set out in the Lisbon strategy.



# The Roadmap report 2006

- The European Roadmap is the result of two years of intensive work at European Level;
- Wide stakeholder consultation;
- It is the intention of ESFRI to update the document next year to allow it to be improved and to integrate new ideas where and when appropriate.

# Large participation of Experts

- Almost 1000 high-level experts from all fields of research were involved and consulted in the process of preparing the roadmap.
- Their input was of key importance to give the end product credibility and quality.

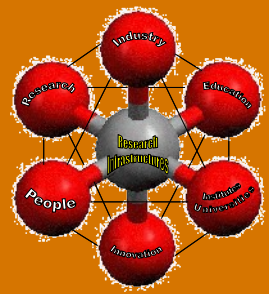






# The Challenges of Future

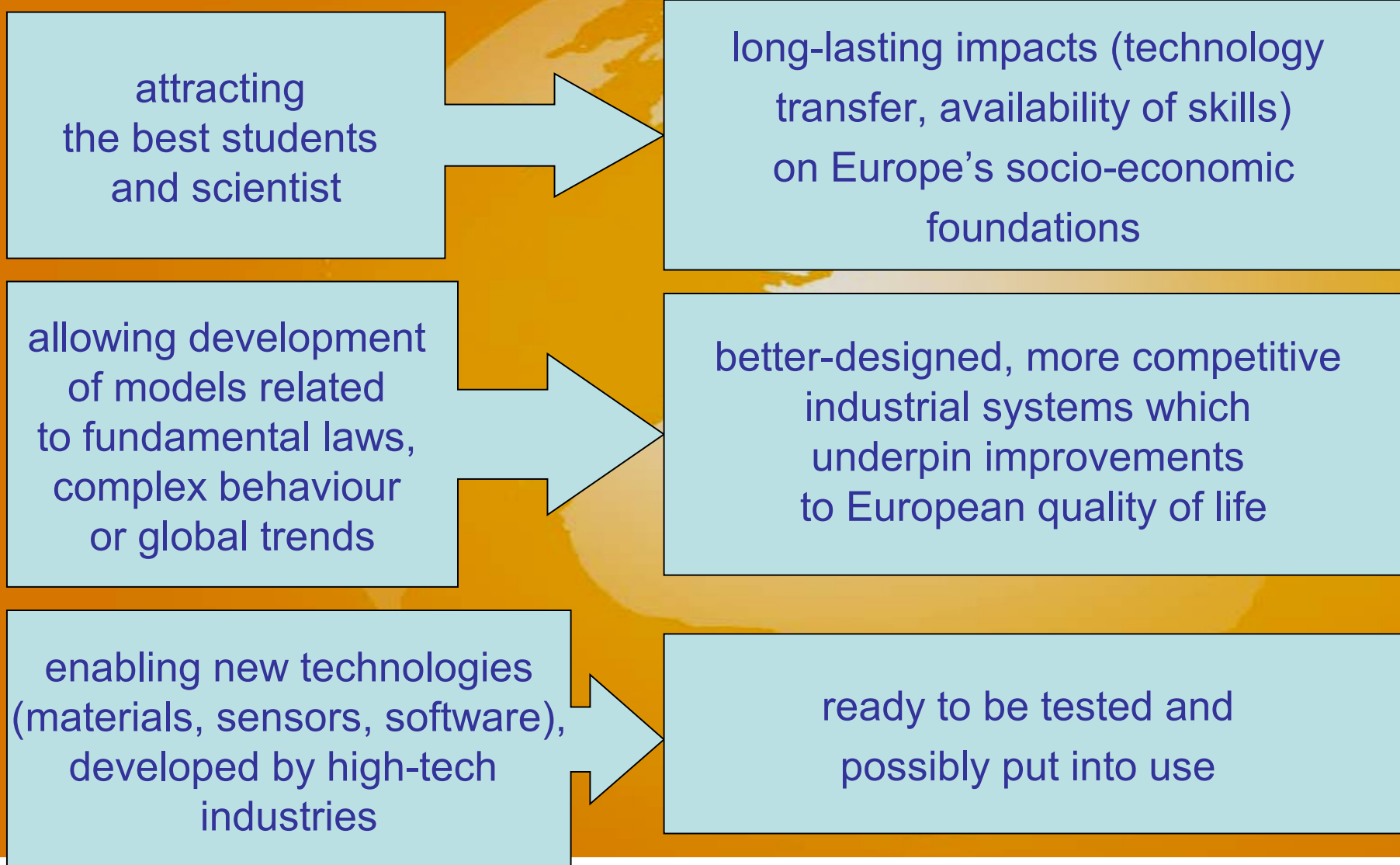
- Research Infrastructures of pan-European relevance provide unique opportunities for world-level research and training as well as for stimulating knowledge and technology transfer, in brief for **European Capacity Building**.



# Excellence and Research Infrastructures

- Europe has a long-standing tradition of excellence in research and innovation;
- European teams continue to lead progress in many fields of science and technology;
- However our centres of excellence often fail to reach critical mass in the absence of adequate networking and cooperation;
- Need to bring resources together and build a research and innovation equivalent of the "common market".

# *Pan-European flair*





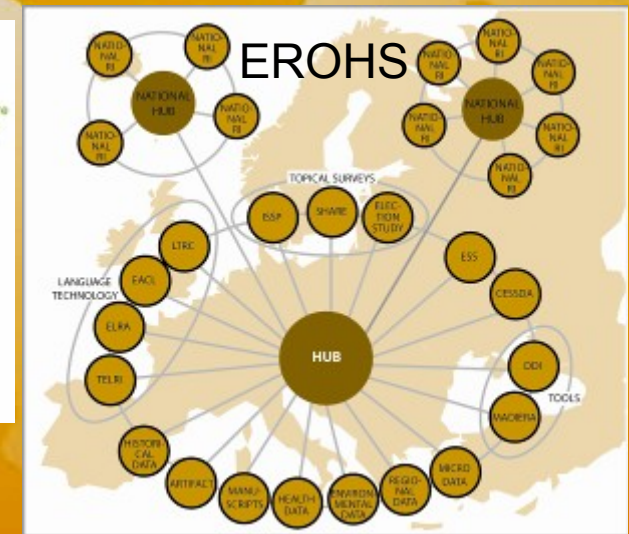
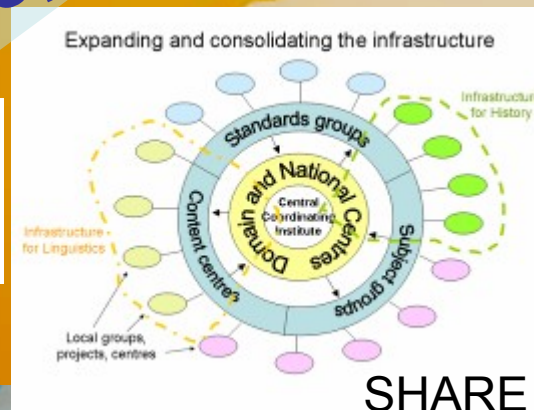
# Social Science and Humanities



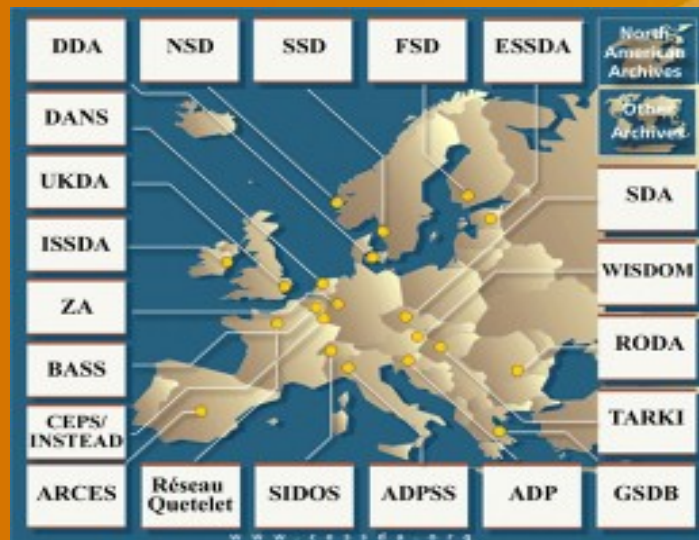
CESSDA



6 Projects



# CESSDA



<b>Estimated construction cost</b>	<b>30 M€</b>
<b>First open access foreseen</b>	<b>2008</b>

## ***Council of European Social Science Data Archives***

- Distributed infrastructure providing and facilitating access of researchers to high quality data and supporting their use
- Currently extends across 21 countries in Europe
- Holds some 15,000 data collections
- Provides access to over 20,000 researchers
- Agreements in place with other organisations worldwide

[www.nsd.uib.no/cessda](http://www.nsd.uib.no/cessda)

# CLARIN



**Estimated  
construction cost**

**106 M€**

**First open access  
foreseen**

**2008**

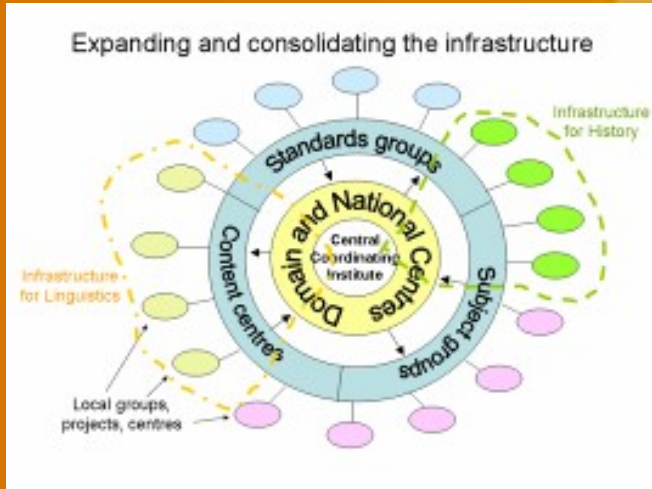
## ***Common Language Resources and Technology Infrastructure***

- **Distributed infrastructure making available language resources and technology to researchers and scholars of all disciplines, in particular the humanities and social sciences**
- **Harmonises structural and terminological differences**
- **Based on a Grid-type infrastructure and using Semantic Web technology**

[www.mpi.nl/clarin](http://www.mpi.nl/clarin)



# SHARE



**Estimated  
construction cost**

**50 M€**

**First open access  
foreseen**

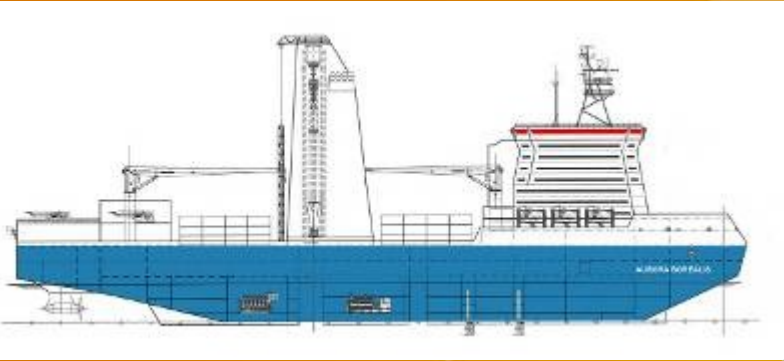
**2007**

## ***Survey of Health, Ageing and Retirement in Europe***

- **Data infrastructure of fact based economic and social science analyses of the on-going changes in Europe due to population ageing**
- **The original 8-country survey will be expanded to all 25 Member States of the EU.**

[www.share-project.org](http://www.share-project.org)

# Environmental Sciences



AURORA BOREALIS



IAGOS-ERI



EUFAR



EURO-ARGO

7 Projects



LIFEWATCH



ICOS



EMSO

19-20/04/2006 - Heidelberg



# LIFEWATCH



<b>Estimated construction cost</b>	<b>370 M€</b>
<b>First open access foreseen</b>	<b>2014</b>

## *Life watch for Biodiversity*

- **Network of observatories and facilities for data integration in the field of biodiversity (protection, management, sustainable use)**
- **Virtual laboratories offering a range of analytical and modelling tools**
- **Service Centre providing services for scientific and policy users, including training and research opportunities for young scientists**

[www.lifewatch.eu/](http://www.lifewatch.eu/)

# Energy

IFMIF

Test Modules Inside  
Test Cell

Hot  
Cells

High-Energy Beam  
Transport

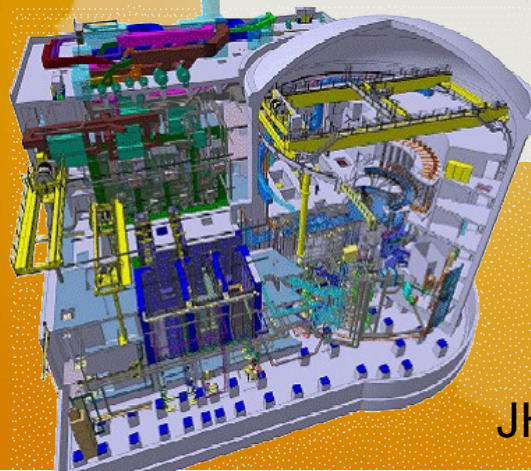
Ion  
Source

Li Loop

0 20 40m



HiPER

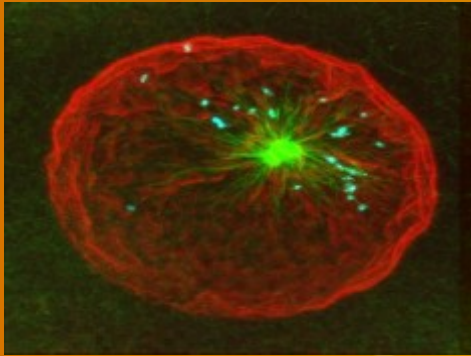


JHR

3 Projects



# Biomedical and Life Sciences



STRUCTURAL BIOLOGY



CLINICAL TRIALS



BIOBANKS



EATRIS



INFRAFRONTIER



Upgrade of EBI

6 Projects

# Upgrade of European Bioinformatics Infrastructure



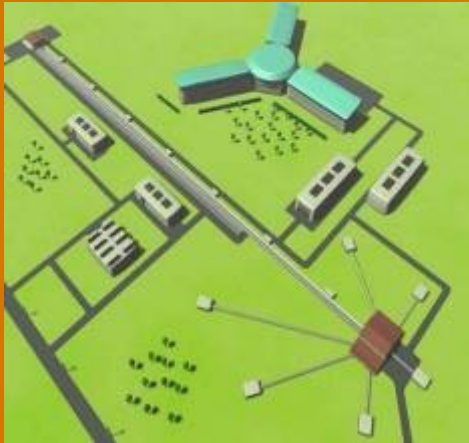
<b>Estimated construction cost</b>	<b>550 M€</b>
<b>First open access foreseen</b>	<b>2007</b>

- **Substantial upgrade to the existing European Bioinformatics Institute (EBI)**
- **Platform for data collection, storage, annotation, validation, dissemination and utilisation**
- **Will integrate secondary data resources distributed across Europe and make the most of the diverse expertise of its scientists.**

[www.ebi.ac.uk](http://www.ebi.ac.uk)



# Material Sciences



ESS



XFEL



IRUVX



ILL



PRINS



ELI



ESRF

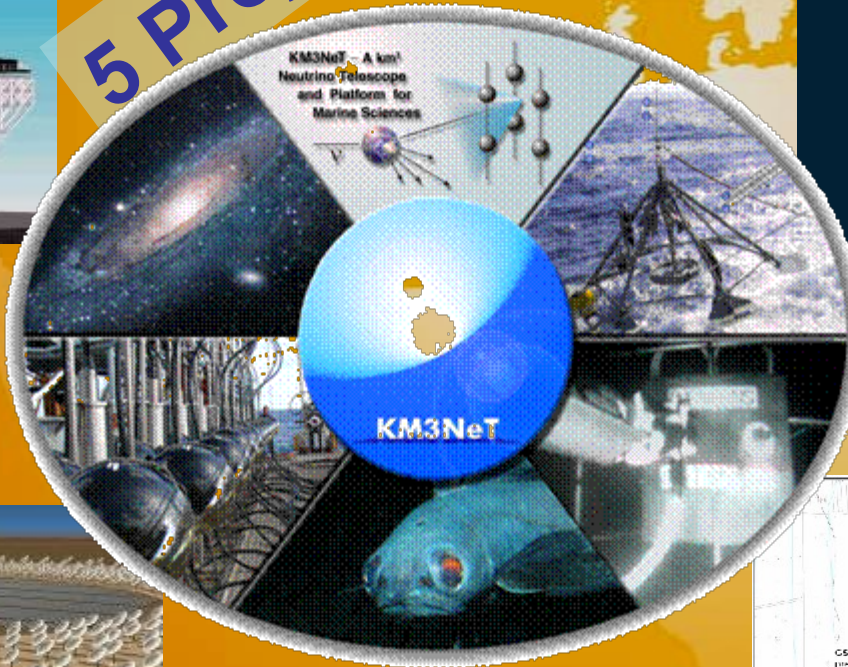


# Astronomy, Astrophysics and Nuclear Physics

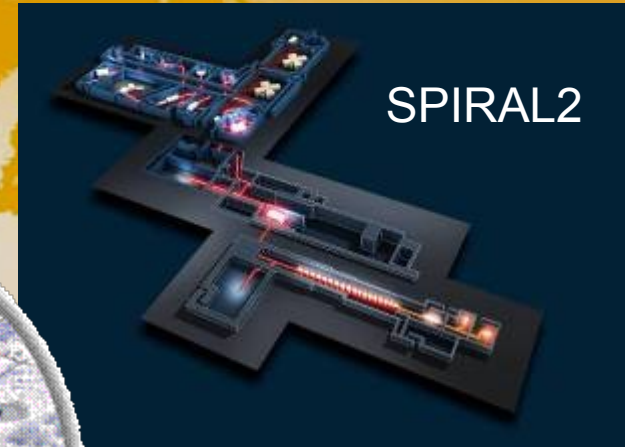
5 Projects



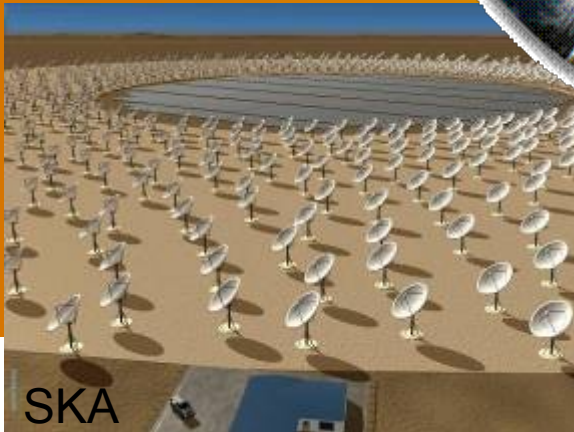
European ELT



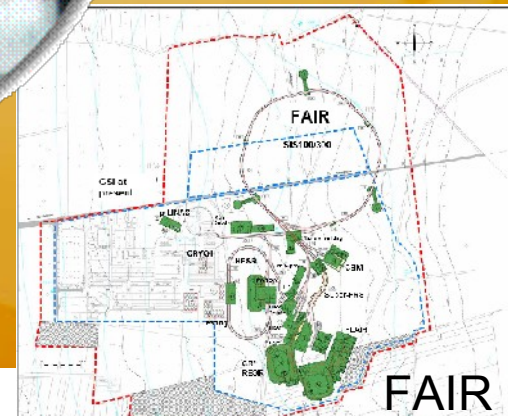
KM3NeT



SPIRAL2

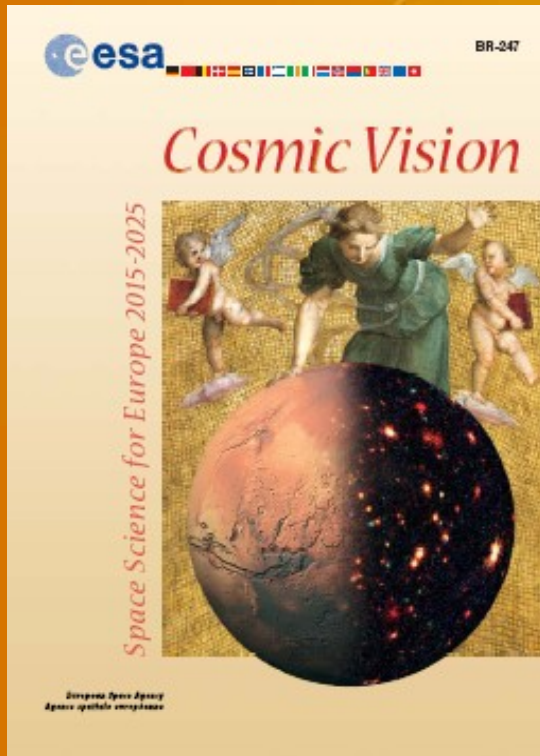


SKA



FAIR

# ESFRI and ESA, CERN: Particles and Space Physics



The ESA Cosmic Vision



The CERN Council  
strategy for  
particle physics

# ESFRI and e-IRG: EU-HPC



<b>Estimated construction cost</b>	<b>550 M€</b>
<b>First open access foreseen</b>	<b>2007</b>

***New generation of Capability (high-performance) and Capacity Computing (high throughput) top-level machines***

- **Scientific computing network to be set-up at European level associated with national, regional and local centres**
- **Different machine architectures will fulfil the requirements of different scientific domains and applications**

[www.hpcineuropetaskforce.eu](http://www.hpcineuropetaskforce.eu)





# Global Dimension

- Several of the projects on the Roadmap are of a scale and scope that they require a global approach.
- ESFRI will enter into a dialogue with the OECD Global Science Forum, to allow for the identification, planning, discussion and monitoring of such projects.
- Major player are Australia, Japan, Russia, South Africa, USA



# Experience Gained

- Research community produced ideas that will open up new and unexpected areas of knowledge.
- Some fields of research should be stimulated for further integration and be more proactive at European Level so that they can become more effective in the future.
- Team work and Communication





# Target Audience

- Policy Makers
  - Researchers
  - Funders
  - Industry
- 
- ESFRI welcomes the active role which the European Commission plays under the 7th Framework Programme



# More is to come

- Implementation of the Roadmap
- Today already some of the projects are on their way
- Increased role of the Research Infrastructures as a major cornerstone in the European Research Area
- ESFRI encourages constructive debate