

Why the IRUVX Consortium? ESFRI and the Roadmap

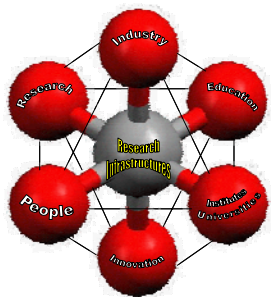
Carlo Rizzuto
ESFRI Chair

Outline

- ESFRI and EU policy
- The FEL projects and the Roadmap

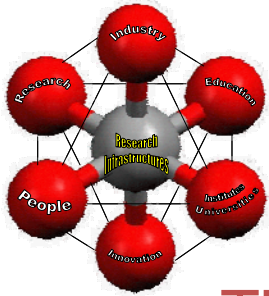
Pan EU Research Infrastructures

- Attractive to international users, open on peer reviewed quality of proposals only (Open Access)
- Unique or rare at EU/world level: needing rare/costly resources, multidisciplinary, service oriented
- Impacts on training & technological development activities, and on the local economies
- Various types: single-multiple sites, physical to virtual; e.g: data banks , ships, synchrotrons....
- All fields of R&D use RIs, EU focussing on those attractive and strategic at EU/international level



Overcoming limits

- Availability of RIs has been instrumental for EU's long-standing tradition of excellence in Research
- However, increase in requirements + limits in Research budgets = limits in investments, if fragmented policies developed only at State level
- To keep competitive, EU needs to overcome these limits, integrating resources and increasing the cost effectiveness of RI investments
- This is part of a larger trend in integration (Higher agenda for Research)



Role of ESFRI

- The EU Governments have set-up the European Forum on Research Infrastructures (ESFRI) in 2002, to help overcome limits in RIs availability
- ESFRI is a mix of Researchers and State Officers, representing the Research Ministers of the Member States
- The mission of ESFRI is:
 - **to support a coherent and strategy-led approach to policy-making on RIs in EU**
 - **to facilitate multilateral initiatives leading to a better use and development of research infrastructures.**
- ESFRI develops suggestions for a common EU policy , e.g. : a Roadmap for new RIs; best practices in their management and use; new financial approaches etc.



The Roadmap

- The Roadmap is a major instrument for integrating the efforts by EC and EU Countries
- Mandate by Council of Ministers, Nov. 2004
- 35 RIs selected from about 300, covering all fields of Research, in 7 areas
- Evaluation involving about 1000 high-level experts
- The EC has taken the indication in full for FP7
- A first update is now in progress

Social Science and Humanities



CESSDA

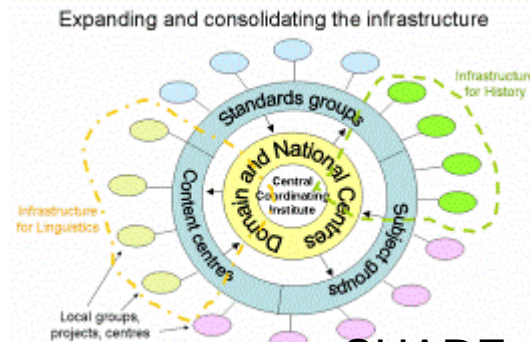


CLARIN

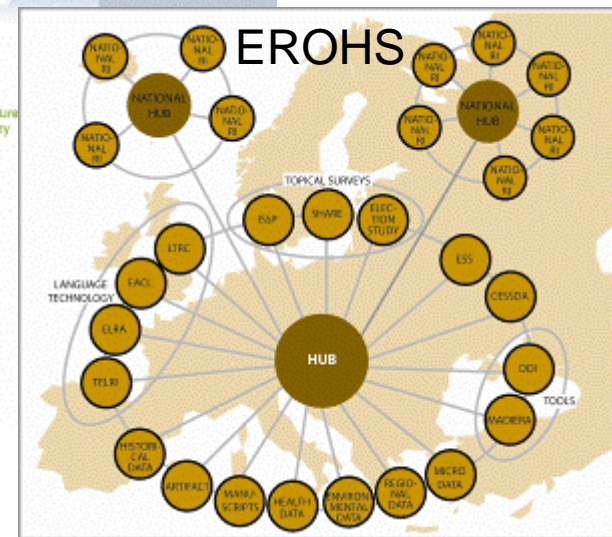
6 Projects



ESS



SHARE



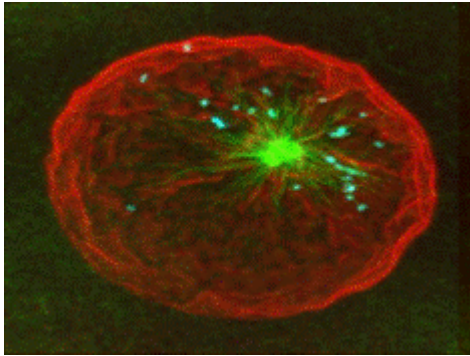
EROHS



DARIAH

dariah.eu

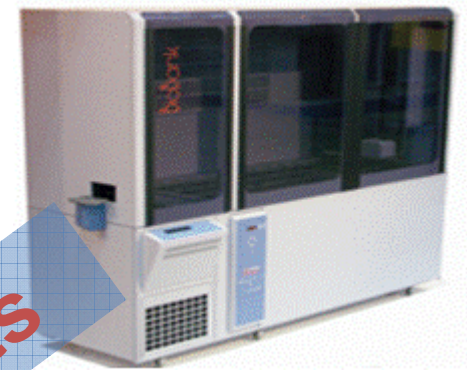
Biomedical and Life Sciences



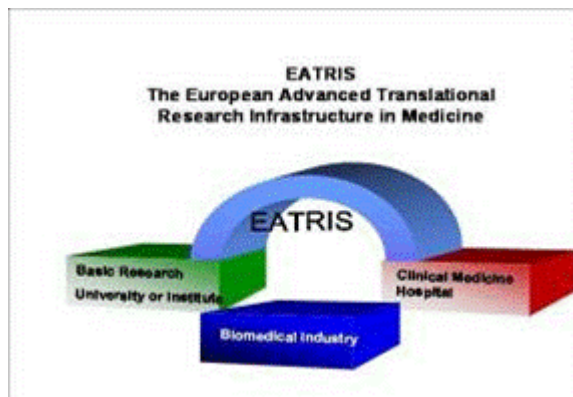
STRUCTURAL BIOLOGY



CLINICAL TRIALS



BIOBANKS



EATRIS



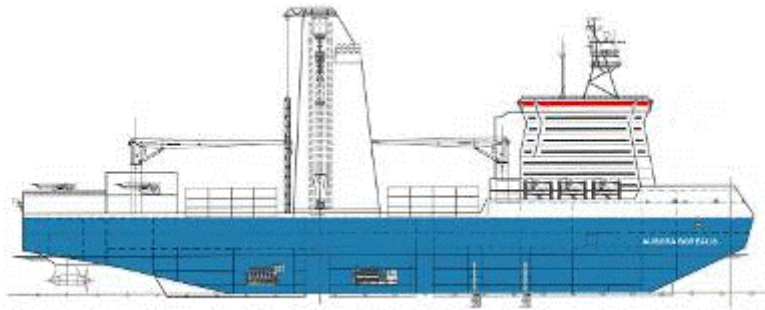
INFRAFRONTIER



Upgrade of EBI

6 Projects

Environmental Sciences



AURORA BOREALIS



IAGOS-ERI



EUFAR



EURO-ARGO

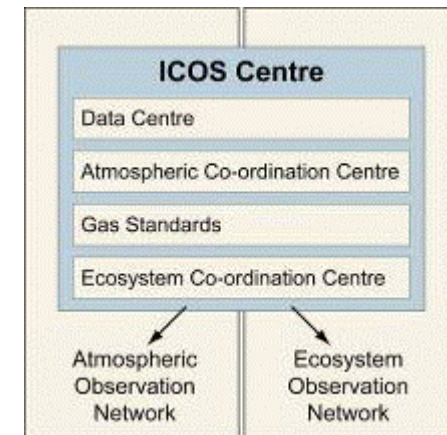


EMSO



LIFEWATCH

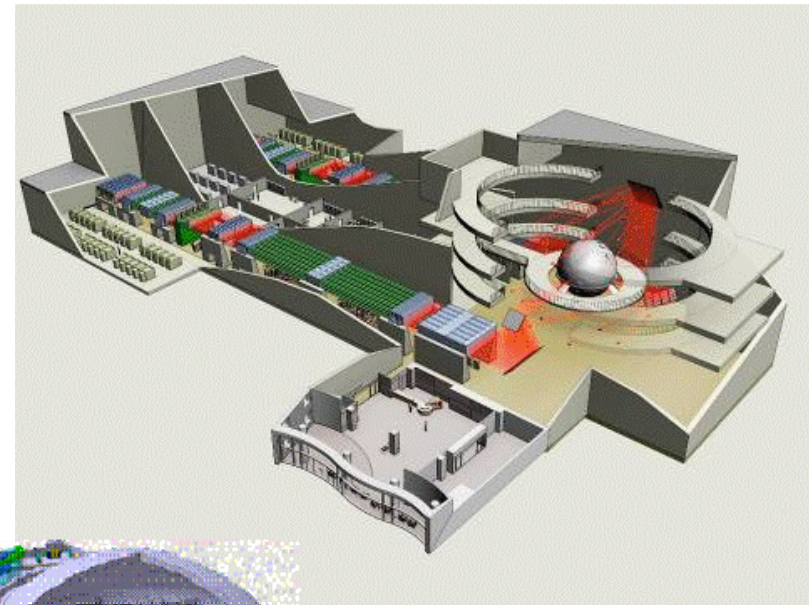
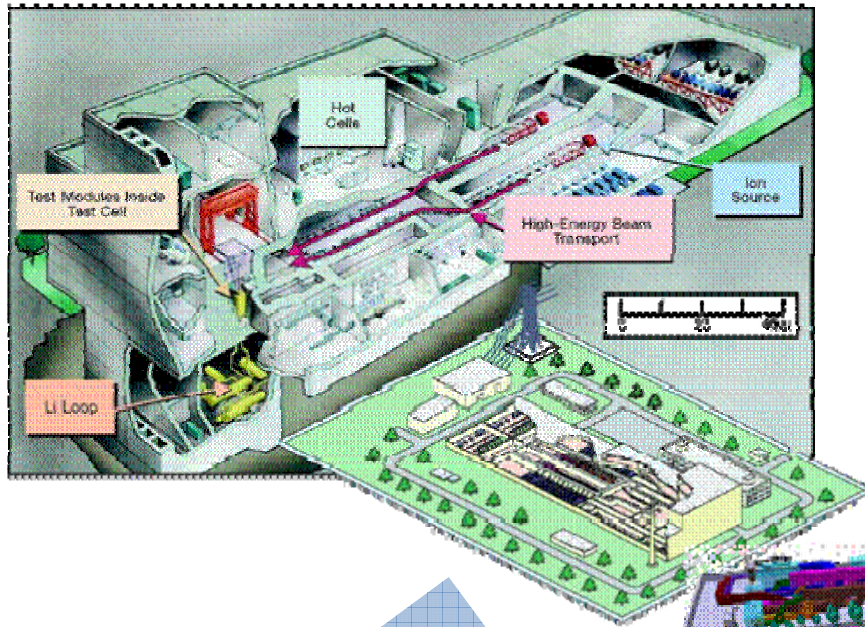
7 Projects



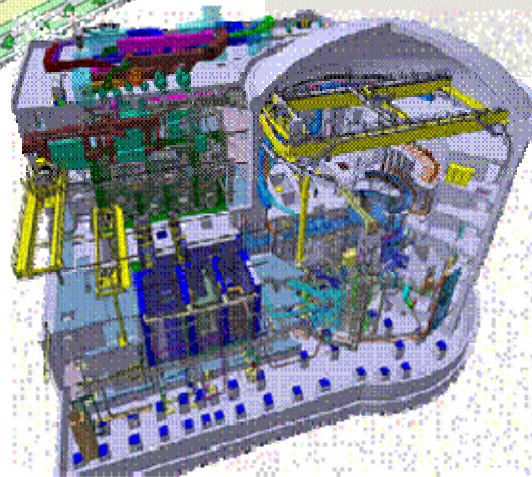
ICOS

Energy

IFMIF



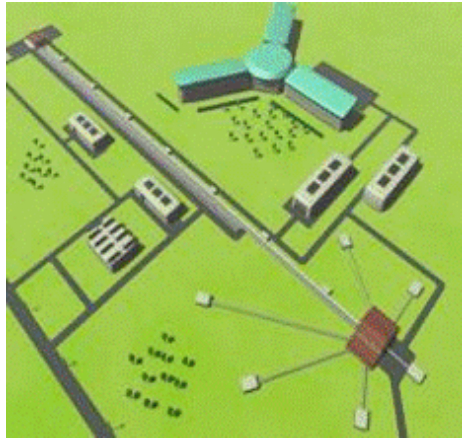
HiPER



JHR

3 Projects

Materials Sciences



ESS



XFEL



IRUVX



ILL



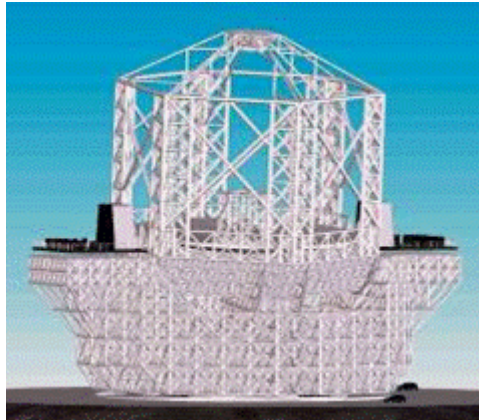
PRINS



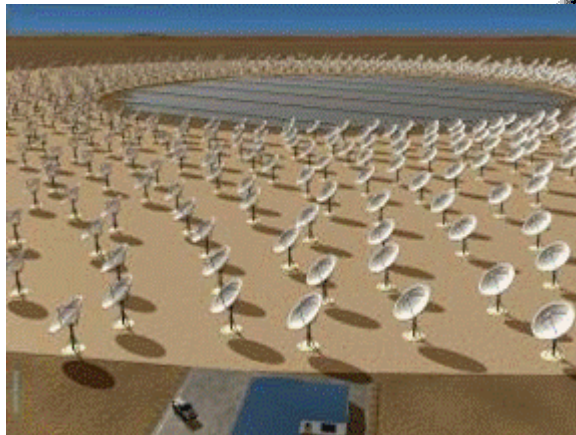
ESRF

Astronomy, Astrophysics and Nuclear Physics

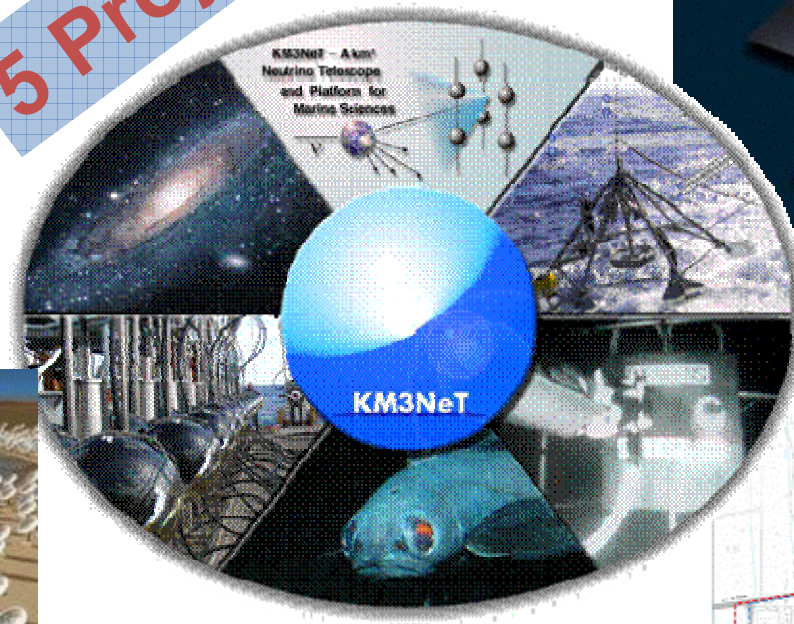
5 Projects



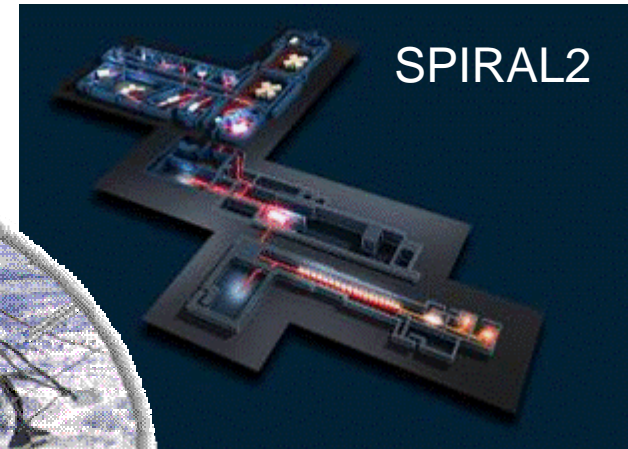
European ELT



SKA



KM3NeT



SPIRAL2



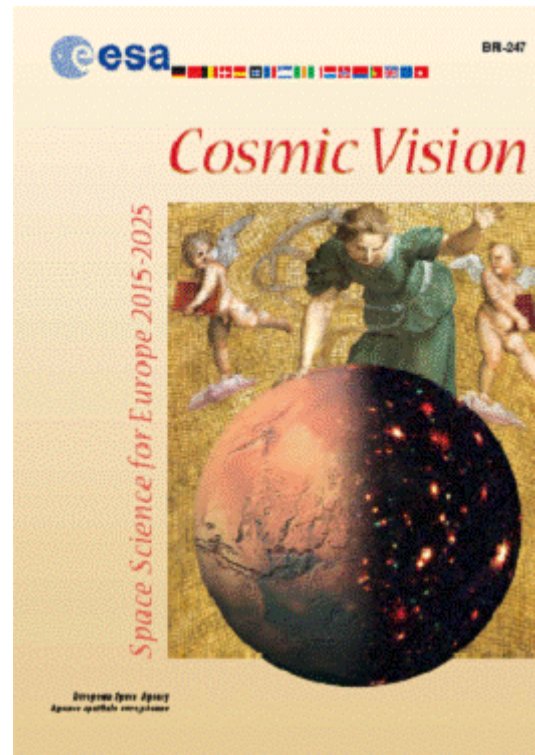
FAIR

Computer Data Treatment, Particle and Space Physics

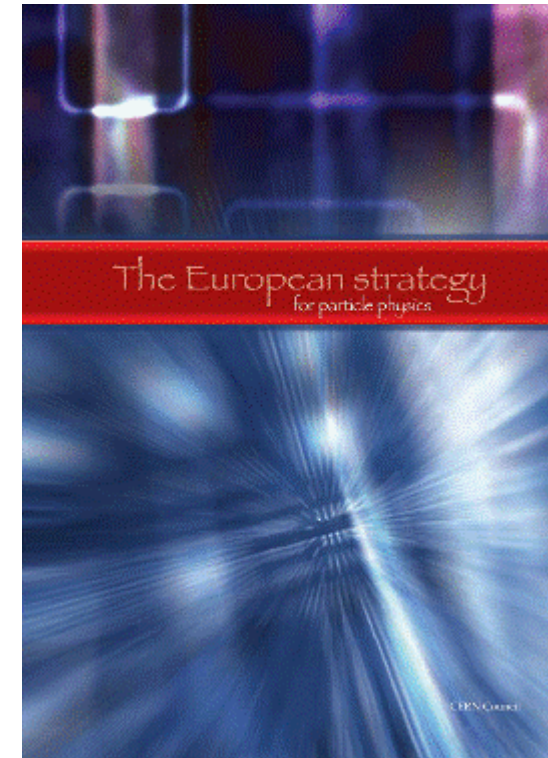
Inputs from e-IRG, ESA, CERN



EUHPC (e-IRG)



The ESA Cosmic Vision



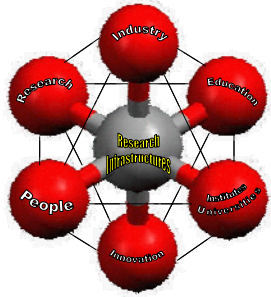
The CERN Council
strategy for
particle physics



Using the Roadmap

- Policy Makers, States and the EC
- Researchers
- Funders
- Industries

are now using the Roadmap as a reference. Some projects are started. Strong consensus on the approach , extending its outreach to outside EU. The EU is increasingly involved at all levels



Evolving Issues

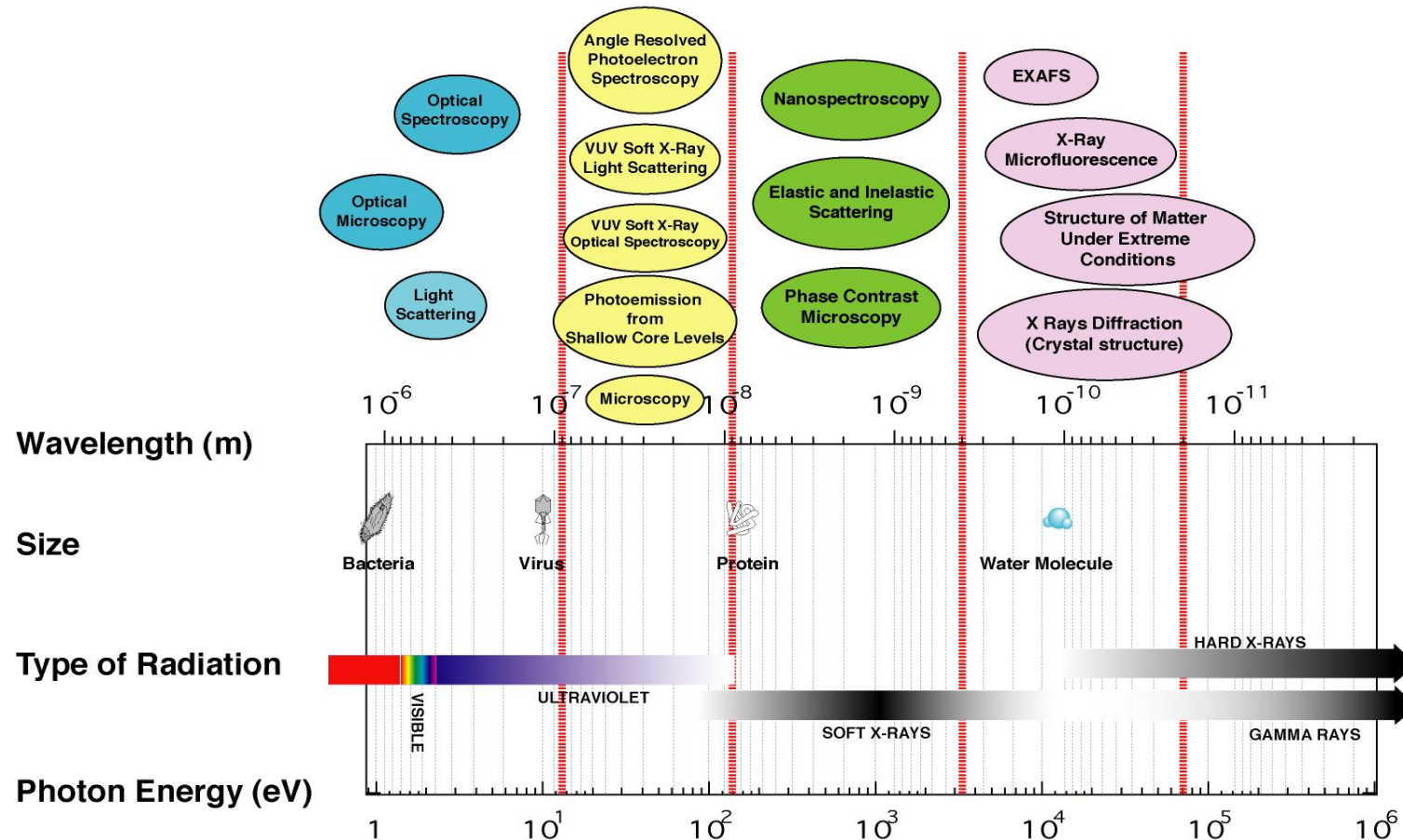
- Develop financial and legal instruments for Research Infrastructures at EU level: e.g.: should there be a “European RI Council”, or some Agency?
- Develop sustainability by joining EU, national, regional and public/private resources
- Attract young people and allow mobility in Europe
- Strengthen connection between Research, Development, Training and Innovation

The case of FELs in ESFRI

- One of the first cases discussed in ESFRI: why several FELs (adding to several Synchrotrons)?
- Two ad hoc WG's: FEL sources, and Science Drivers (July 2002)
- Twin workshop, Daresbury Feb 2003 (73 partic) (link to several Science cases: Rome 2002, Paris, Bessy,.....)
- Reports to ESFRI, April 2003 + Dec. 2005
- Proposal for Rmap 2004-2006, MOU Nov. 06
- XFEL and IRUVX included in Rmap, end 2006.
- 2008.....The trend to build new sources is still there....., and Materials+Biomaterials S&T

Main arguments: comparison between wavelengths, potential n. of users, EUROFEL coord., complementarity

Use of the Electromagnetic Radiation as a Probe of Matter



Some strategy indications for FELS

- FELs have less beamlines and are more diverse
- Develop a two-tier program: IR to UV and hard X: 5 and 10 yrs time/frame
- Stimulate chemists and biologists to develop (now!) scientific cases (with Lasers/SR)
- Consider few (3-5!!) national IR to UV initiatives+ instruments and components, complementary and EU user oriented. Define critical components
- Support one user-oriented hardX initiative
- Valorize excellent laser expertise of smaller Ctries (A, Gr, Cz...) + network them from the beginning

Other indications for a cost effective, concerted, Photon sources initiative

- **Continue present support of SR and Laser user-oriented Laboratories, + FELs in a general two-tier initiative (+background networks), find complementarities**
- **Focus support for ultrafast Laser and high peak intensity (brilliance) developments+users**
- **...and all instruments-related developments (diagnostics, detectors, automation, wave form measurements, data handling, remote access,.....)**
- **Clear user orientation and support (training)**
- **Strong involvement of component-instrument industries (specialized SMEs)**
- **Strong synergy with laser+SR laboratories**
- **Development along a EU integration roadmap**
- **Complementarity 1 hardX+3-4 UV-softX**

In brief: the proposal of IRUVX_{FEL}

- The region between the Infrared (IR) and the soft X-rays covers the requirements of ~ 80% of the potential users
- This explains why so many IR-SoftX Synchrotrons in EU: 10000 present users, and more potential
- The development of the present network of ~ 10 SR in EU has been only mildly coordinated through scientific exchange, and has overlaps, useful for growth but costly
- The technological breakthrough allowing development of FELs (technology push) and large potential number of users triggered 7-8 projects, which, left alone, will follow pattern of SR, in 10-15 years.
- Technology, user requirements, and financial constraints, indicate a better way to move: coordinated development & enhanced complementarity in design and use
- If this is implemented, there will be a much more effective return from national facilities serving European users in S&T.
- And this would establish a long term leadership of EU also attracting non EU scientists, in development and use

