

European Nuclear Society (ENS)
in co-operation with IAEA

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The Euratom Framework Programme and European Nuclear Research Infrastructures

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Nuclear issues in the European Commission

DG Research - Support to collaborative research between laboratories in the Member States.
Support to the east (ISTC, STCU)

Joint Research Center (JRC)
Research Facilities, separate research programme

DG Transport and energy
Energy policy, Indicative nuclear power programme,
Nuclear safety, Transports, Waste management,
Radiation Protection Basic Safety Standards
Safeguards and Euratom Supply Agency

DGs External Relations and Enlargement
Support for the east PHARE, TACIS, KEDO



Euratom 6th Framework Programme (FP-6) 2002-2006

- Main objective

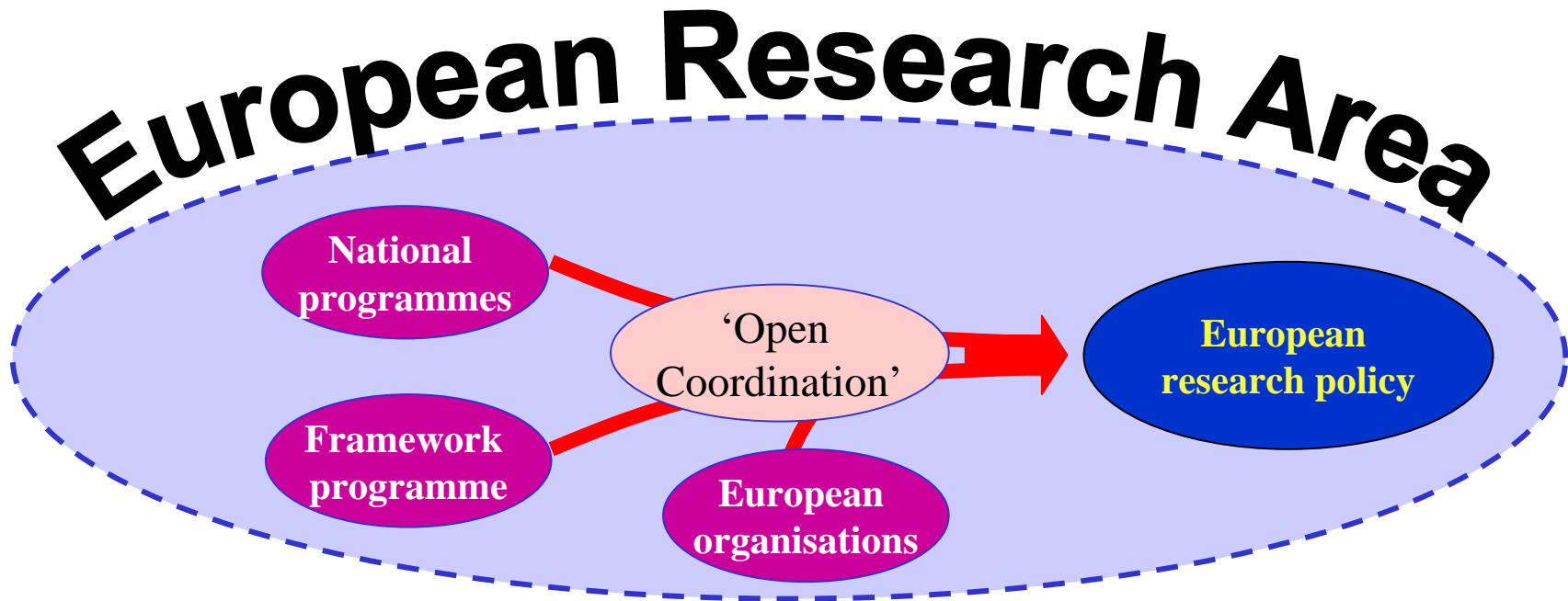
- ➔ Contribute to the creation of the European Research Area (ERA) in the field of nuclear energy by improving integration and co-ordination on nuclear research in the EU

- FP-6 aimed at intensifying and deepening the well established co-operation at European level

- ➔ Striving towards greater integration by promoting research in key priority areas and international co-operation with partners from third countries



The European Research Area



Euratom 6th Framework Programme (FP-6) 2002-2006

<http://www.cordis.lu/fp6-euratom/home.html>

- Fusion Energy Research
- Management of Radioactive Waste
- Radiation Protection
- Other Activities in the Field of Nuclear Technologies and Safety (3 areas):
 - ➔ Innovative Concepts
 - ➔ Education and Training
 - ➔ Safety of Existing Installations



Research Infrastructures important in FP6

- Lack of research infrastructures critical issue for future research.
- European Strategy Forum on Research Infrastructures (ESFRI) created by Member States in 2002.
- In 2003 ESFRI dealt with:
 - ➔ neutron sources
 - ➔ infrastructures for marine sciences
 - ➔ free electron lasers
 - ➔ nuclear physics facilities
 - ➔ astronomy
 - ➔ etc
- No Euratom issues



Needs for Nuclear Research Infrastructures

- Specific actions on nuclear research infrastructures are needed to contribute to the creation of the European Research Area, as well as to keep capacity of preserving nuclear knowledge and to maintain nuclear energy as open option for the future
- Earlier studies on nuclear research infrastructures
 - ➔ Report 'Nuclear Safety Research in OECD Countries – Major Facilities and Programmes at Risk'. OECD 2001
 - ➔ CSNI 'Senior Group of Experts on Nuclear Safety Research – Support Facilities for Existing and Advanced Reactors (SESAR/SFEAR)'. First meeting: Paris, 18-19 March 2004



FEUNMARR (FP-5) –

“Future EU Needs in Materials Research Reactors”

Co-ordination: CEA / DTAP, Cadarache (France)

9 partners from 5 EU countries + 2 Int. Organisations

[Nov. 2001 - Oct. 2002] (Thematic network)

- ▶ **Main objective:** *Determination of European needs in material test reactors ‘MTR’ on medium and long-term (beyond ten years)*
- ▶ Four areas of assessment covered: research on material and fuel for current and future reactors, medical applications and productions, neutron beams for research, and other applications as isotope production, neutron radiography, etc
- ▶ Conclusions: there is a strategic need to renew MTR in EU; and an international programme around JHR seen as relevant contribution to joint development to a European MTR



FP-5 Nuclear Research Infrastructures

◆ Trans-national access to large infrastructures

TALI: Intended to sponsor new opportunities for research teams **to obtain access to major research infrastructures** (key element for European Research Area)

- Launching of “Call for proposals” by the infrastructures’ owners with evaluations performed by international panels
- Financed covering user fees or additional costs.

- ➔ PLINIUS
- ➔ LACOMERA
- ➔ RENION



PLINIUS (FP-5) –

“Platform for Improvements in Nuclear Industry and Utility Safety”

**Co-ordination: CEA / DTP / SMET, Cadarache (France)
Dec. 2001 - Nov. 2004]**

Trans-national access to major research infrastructures)

- ▶ **Main objective:** *Providing support for European research to conduct experiments with **prototypic corium** in an experimental platform composed of the facilities VULCANO, COLIMA and KROTOS*
- ▶ Access to that platform offered to external research teams
- ▶ Organisation of three ‘call for proposals’ on the access offered
- ▶ Establishment of an international panel for selection of user groups
- ▶ Selection criteria mainly based on scientific merits of the proposals
- ▶ Up to now, research teams from Bulgaria and Germany were selected



LACOMERA (FP-5) –

“Large Scale Experiments on Core Degradation, Melt Retention and Coolability”

Co-ordination: FZK, Karlsruhe (Germany)

[Sep. 2002 - Aug. 2005]

Trans-national access to major research infrastructures)

- ▶ ***Main objective: Providing a focus on **core quenching** and on possible **core melt sequences** in the reactor pressure vessel and reactor cavity***
- ▶ Access to perform experimental activities at the facilities QUENCH, LIVE, DISCO and COMET offered to external research teams, by means of the organisation of various ‘call for proposals’
- ▶ Establishment of an international panel for selection of user groups
- ▶ Up to now, research teams from Hungary, Bulgaria, France and Austria were selected



RENION (FP-5) – “Reactor Neutronic Investigations on LR-0 Reactor”

**Co-ordination: NRI - ÚJV, Řež (Czech Republic)
[Feb. 2003 - Jan. 2005]**

Trans-national access to major research infrastructures)

- ▶ ***Main objective: Providing support for European research to conduct reactor physics experiments at the LR-0 reactor***
- ▶ Access to that reactor offered to external research teams
- ▶ Potential projects related to PWR reactor physics towards extension of experimental databases and validation of codes
- ▶ Organisation of ‘call for proposals’ on the access offered
- ▶ Establishment of a panel for selection of proposals
- ▶ Up to now, research teams from Germany, Portugal and Bulgaria were selected



Recall of FP-6 Instruments

<http://www.cordis.lu/fp6/workprogrammes>

- ◆ **Integrated projects (IP)** - new
- ◆ **Networks of excellence (NoE)** - new
- ◆ Specific targeted research projects (STREP)
- ◆ Co-ordination actions (CA)
- ◆ Specific support actions (SSA)
- ◆ **Integrating infrastructure initiatives (I3)** - new
- ◆ Actions to promote and develop human resources and mobility (HR&M): fellowships, training courses, grants and trans-national access to large infrastructures (TALI)



Integrating Infrastructure Initiative (I3)

► Objectives

- Support the integrated provision of infrastructure related services to research community at European level
- Promote coherent use and development of infrastructures

► Capacity to mobilise large number of stakeholders

- Infrastructure operators, equipment manufactures, research teams, etc

► Combination of three elements

- Networking activities (mandatory)
- Trans-national access to large infrastructures (optional)
- Joint research activities (optional)



Commencement of FP-6 with nuclear research infrastructures

- ◆ Two co-ordination actions (CA) designed to **promote and support the networking and co-ordination** of research and innovation activities at national, regional and European level
 - JHR - CA
 - HOTLAB

- ◆ Expressions of Interest for Integrated Infrastructure Initiatives (I3) in later calls



JHR-CA (FP-6) – “Jules Horowitz Reactor CA”

Co-ordination: CEA / DEN / DSOE, Saclay (France)
12 partners from 7 EU countries + CH
[Jan. 2004 - Dec. 2005] (Co-ordination Action)

- ▶ **Main objective:** *contribution to the joint development of a new Material Testing Reactor in Europe by means of:*
 - *promoting the establishment of an end-user consortium incl. utilities and vendors willing to secure their long term access to the irradiation facility*
 - *structuring a European collaboration on definition of experimental device in interaction with the reactor design, with a high service added value*
- ▶ User-group's report on recommendations and requirements based on operating experience and strategy as basis for long-term common view of European end-users versus on-going JHR developments
- ▶ Mobility of staff (from utilities, research centres) into the JHR-P



HOTLAB (FP-6) – “European Network on Hot Laboratories”

Co-ordination: CSK-CEN, Mol (Belgium)

9 partners from 10 EU countries + CH, NO, RO, RU, 1 Int.Org

Jan. 2004 – June 2005] (Co-ordination Action)

• Main objectives:

- *to assess, together with end-users, the present and future needs concerning radiotoxic materials research, experimental techniques operational in hot laboratories and how to cope with them*
- *to elaborate an European transport cask inventory for inter-laboratory material exchange*
- *to establish by operators a catalogue of hot laboratory facilities*



Next Calls of FP-6

[www.cordis.lu/fp6/calls.htm]

-Fixed Calls 2004 /5 /6, deadlines:

- 14.04.2004
- spring 2005 and 2006

(Instruments: NoE, IP, STREP, CA and I3)

-Call Open, continuous deadline (twice a year):

- 14.04.2004 and 12.10.2004
- 12.04.2005 and 11.10.2005
- 11.04.2006

(Instruments: SSA, Fellowships, TALI)



Euratom 7th Framework Programme (FP-7) 2006 - 2010

- Preparations started
- Financial perspective for 2007 - 2013 proposed by the Commission on 10 February COM(2004)101
- Research important component to increase economic performance
- Strongly increased funding proposed
- Five axes of research policy proposed



Financial perspectives 2007 -2013

- ◆ **Five axes for the future:**
 - Basic research support - European Research Council
 - Research capacities - Infrastructures, data bases and human resources
 - Public/private partnerships - technological platforms
 - Networks of excellence and Integrated projects
 - Co-ordination of national and regional research programmes and policies
- ◆ **FP7 preparatory work in STC, AGE and CCE-Fission**



Conclusions

- ◆ Euratom Framework Programmes create a co-operative environment in European research as means for the development of the *European Research Area (ERA)*, main objective of the Euratom 6th Framework Programme
- ◆ *Nuclear research infrastructures* are needed to contribute to the creation of the European Research Area in nuclear research, as well as to keep the capacity of preserving existing nuclear knowledge
- ◆ Co-operation pursued with international (ENS, IAEA, OECD/NEA, etc) and within the framework of bilateral Euratom agreements (DOE, NRC, Russia, Canada, etc)
- ◆ Interaction with other EC nuclear programmes (ISTC, STCU, TACIS, PHARE ...) is also strongly advised
- ◆ Time to think about FP7

