



FP7 Euratom

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DG Research
Directorate Energy (Euratom)
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Launching FP7 – Conference for Information Multipliers – Brussels, 7-8 February 2007





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Contents

- **R&D under the Euratom Treaty**
- **FP7 Specific Programme of indirect actions in:**
 - Nuclear fission and radiation protection
 - Fusion energy
- **Work programme for 2007**



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R&D under the Euratom Treaty

- **Title II, Chapter 1: Promotion of Research**
- **Article 7:**
 - “Community research and training programmes shall be determined by the Council, acting unanimously on a proposal from the Commission, ...”
- **Euratom research programmes:**
 - no co-decision
 - adoption requires unanimity amongst MS
 - run in parallel with EC programmes
 - Specific Programme of “indirect actions” covers both “nuclear fission & radiation protection” & “fusion energy”
 - “fission & RP” uses same funding schemes as EC, but specific rules exist for fusion



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Energy R&D in FP7 – objectives

- **To transform the current fossil-fuel based energy system into a more sustainable one based on a diverse portfolio of energy sources and carriers combined with enhanced energy efficiency, to address the pressing challenges of security of supply and climate change, whilst increasing the competitiveness of Europe's energy industries**



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Euratom FP7 fission & RP – *objectives*

- **Establish a sound scientific & technical basis for the safe long-term management of hazardous radioactive waste**
- **Promote safer, more resource-efficient and competitive exploitation of nuclear energy**
- **Ensure a robust and socially acceptable system of protection of man & the environment against the effects of ionising radiation.**



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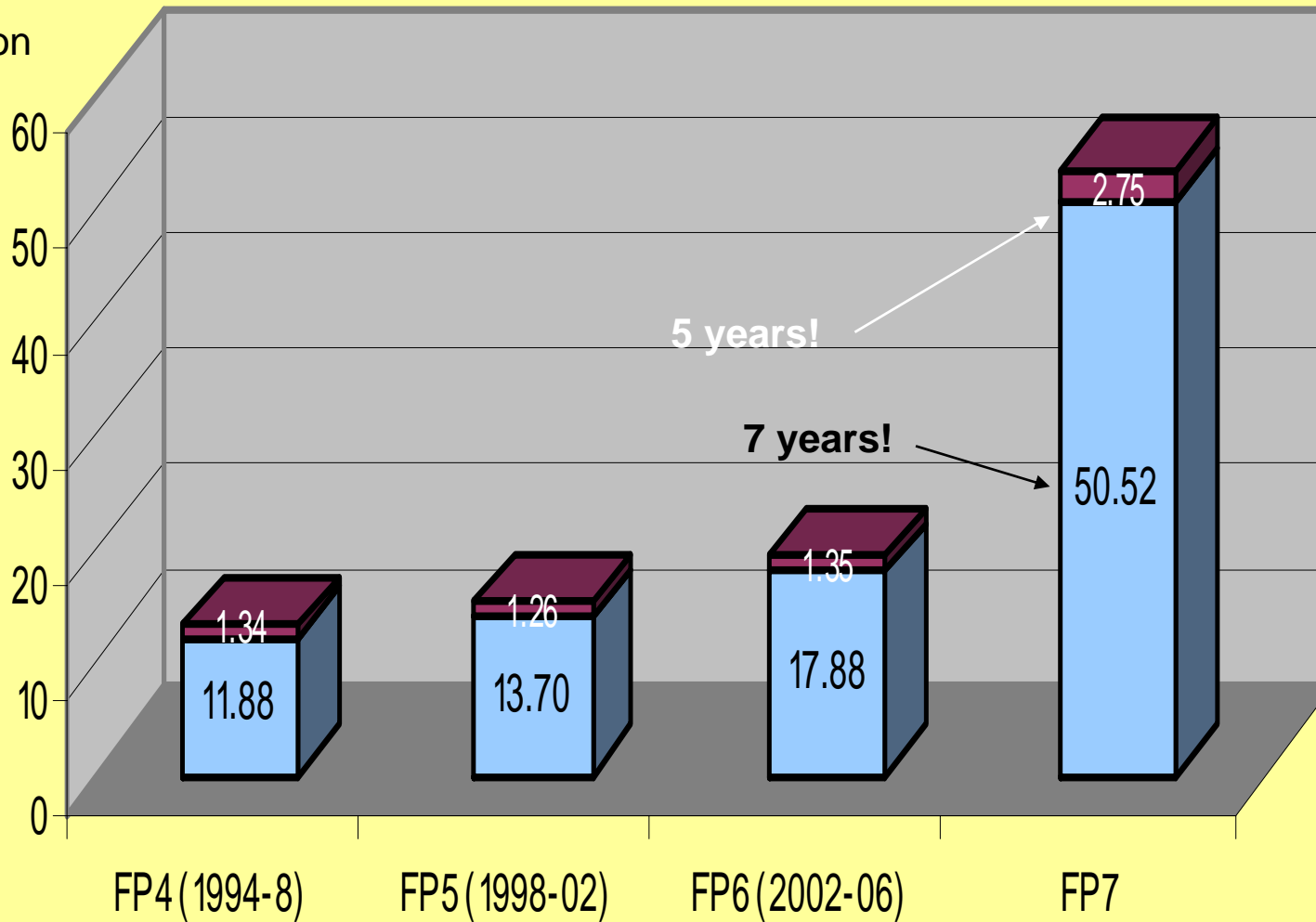
Euratom FP7 fusion – *objectives*

- **Develop the knowledge base for, and realise ITER as the major step towards, the creation of prototype reactors for power stations which are safe, sustainable, environmentally responsible, and economically viable**



EC vs. Euratom

€ Billion



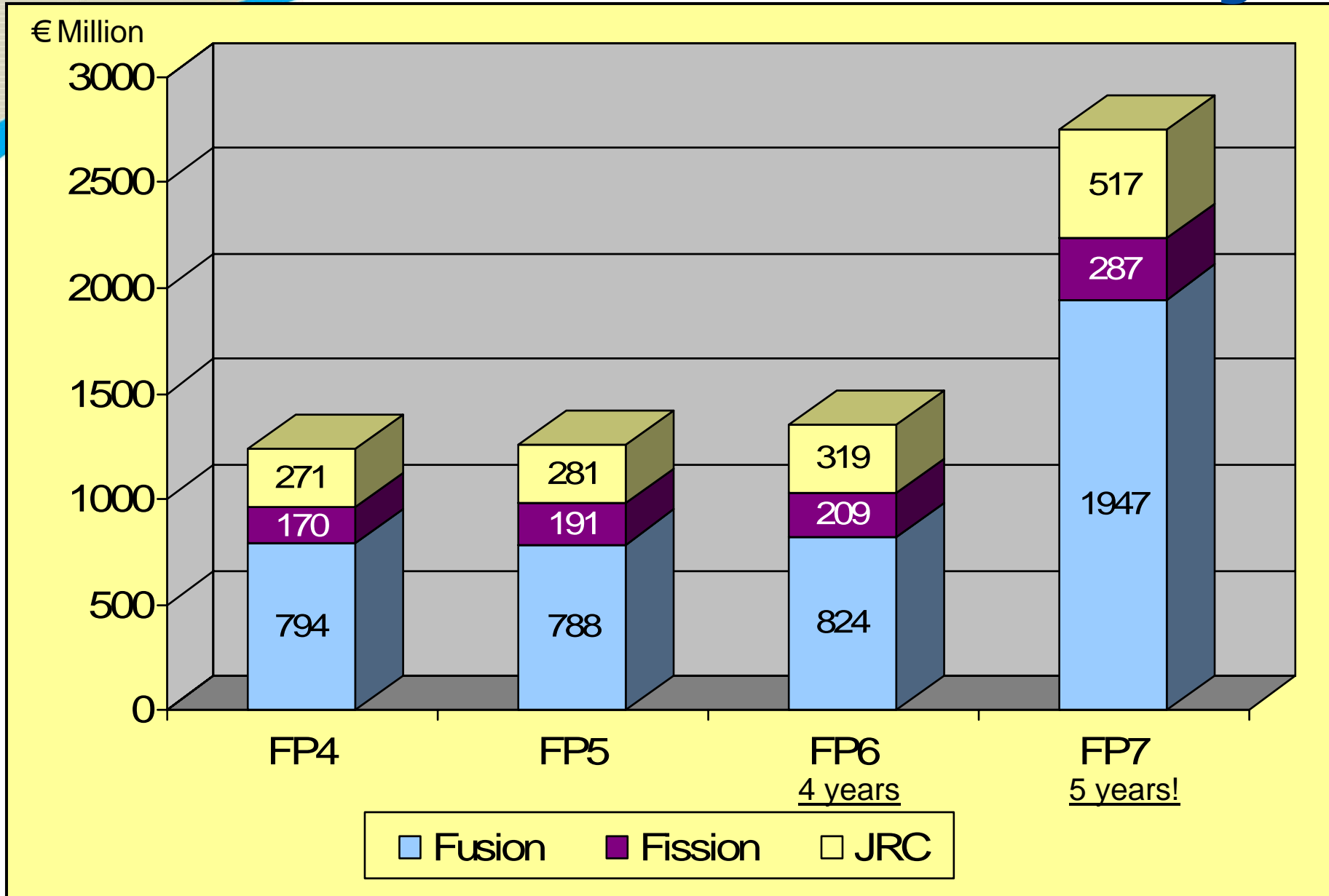
■ EC ■ EURATOM



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Euratom research budget





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Fission & RP – *key issues for implementation*

- **Programme must remain flexible to respond effectively to results of on-going research, emerging issues and political priorities**
- **Similar instruments to FP6 allow important continuity**
- **Enhanced coordination with national & industrial programmes essential:**
 - “Technology Platforms” can build on the structuring effect of FP6 instruments & enable more effective use of FP funds
- **International cooperation a key overall policy objective**



Fission & RP – *areas of activity*

C
A
R
D

Management of radioactive waste:

- Geological disposal
- Partitioning & Transmutation

S
N

Reactor systems:

- Nuclear installation safety
- Sustainable nuclear systems

F
I
T

P

Radiation protection:

- Risk from low doses
- Medical uses of radiation
- Emergency management

Key cross-cutting activities:

- Research infrastructures
- Human resources, mobility & training



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Topics in 2007 “fission” work programme

- **Radwaste management**

- operational safety of geological repositories
- phenomenology & PA
- partitioning processes

- **Nuclear systems**

- numerical simulation tools
- innovative fuel / cladding for Gen.IV systems

- **Radiation protection**

- non-cancer low dose effects
- medical uses of radiation
- optimal approaches to emergency monitoring

- **Infrastructures**

- support to ESFRI roadmap projects

- **Human resources**

- training schemes planned for 2008 work programme

- **Cross-cutting**

- materials for Gen.IV & transmutation technologies

**One call of
c. €50M**

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Fusion – *areas of activity*

Realisation of ITER

**R&D in preparation
of ITER operation**

**Technology activities in
preparation of DEMO**

**R&D activities for
the longer term**

**Human resources,
education and training**

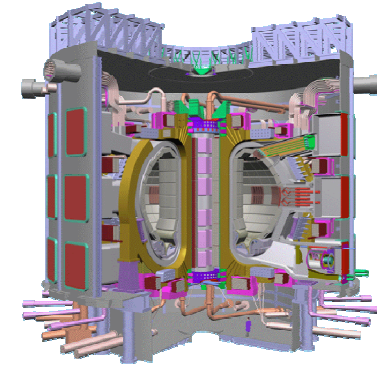
Infrastructures



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ITER



- **Essential next step to demonstrate scientific & technical feasibility of fusion power**
- **Joint international project hosted by Europe (in Cadarache, FR) with partners: *China, India, Japan, Russia, South Korea, USA***
- **International Agreement has been signed:**
 - ➔ an international organisation is being established
 - ➔ procurement of components to begin this year
- **Each partner has a “Domestic Agency” responsible for, i.a., the provision of components in-kind**



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The European Joint Undertaking

- **European Domestic Agency for ITER, Barcelona**
 - established as a Joint Undertaking (JU) under the Euratom Treaty, largely financed through the FP
 - to provide all the European contributions to ITER, including the in-kind procurements
- **... also responsible for:**
 - EU contributions to “Broader Approach” projects with Japan:
 - validation and design of a materials test facility (IFMIF)
 - superconducting upgrade of the JT-60U tokamak
 - an International Fusion Energy Research Centre
 - activities to prepare construction of a demo fusion reactor



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EFDA and the Fusion Associations

- **Contracts of Association**

- bilateral contracts between Euratom and research orgs in MS
- Associations carry out R&D in preparation of ITER operation & the longer term
- Associates participate in ITER procurement under JU contracts

- **European Fusion Development Agreement**

- an agreement between Euratom and all the Associates
- coordination of activities in the Associations
- responsible for the scientific exploitation of JET
- international agreements (other than ITER)

- **Other actions**

- training and mobility of researchers
- call, May 2007: CSA on education, materials, d-base access



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Conclusions

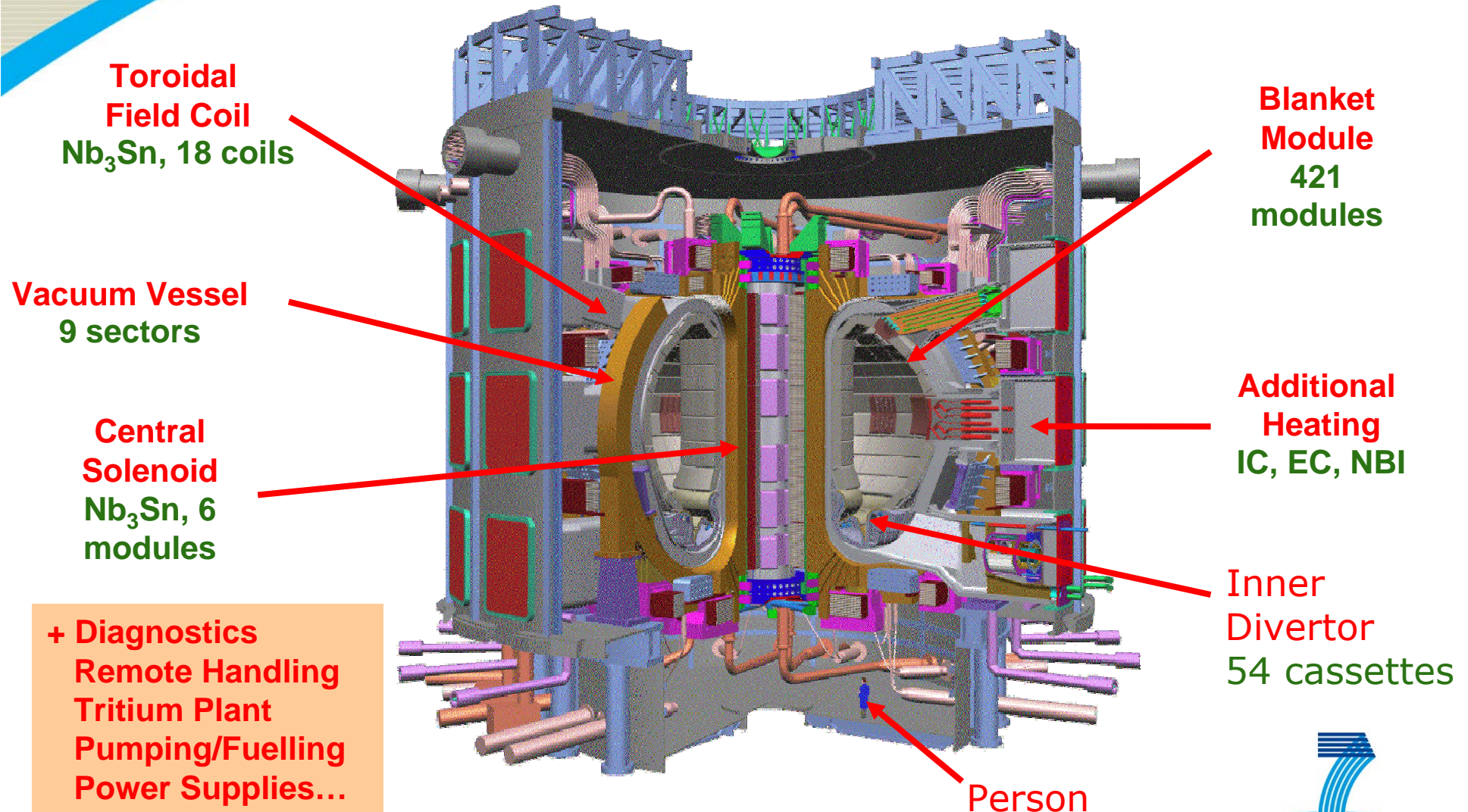
- **Community R&D under Euratom Treaty is well established**
- **Fusion research is an ERA success story**
- **Fission & RP research in Europe is being restructured thanks to FP6**
- **Next phase...**
 - Fusion: construction of ITER
 - Fission: setting-up of Technology Platforms
- **The continuing Community research effort is instrumental in this process**



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ITER showing the EU components



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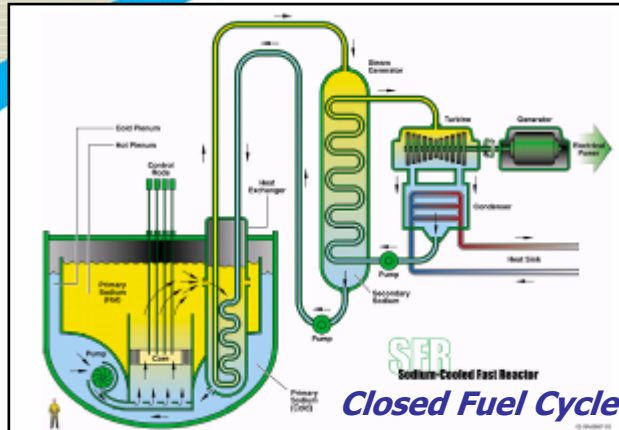




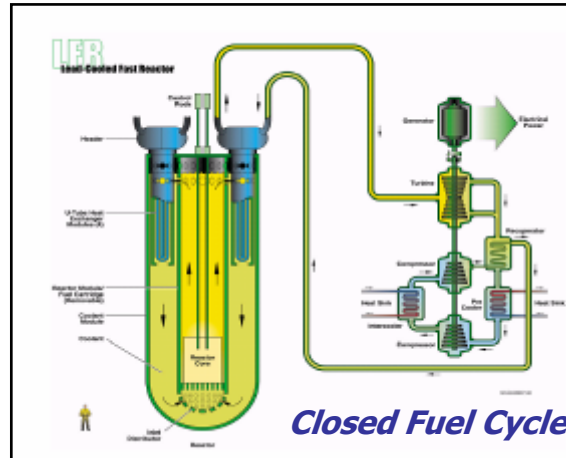
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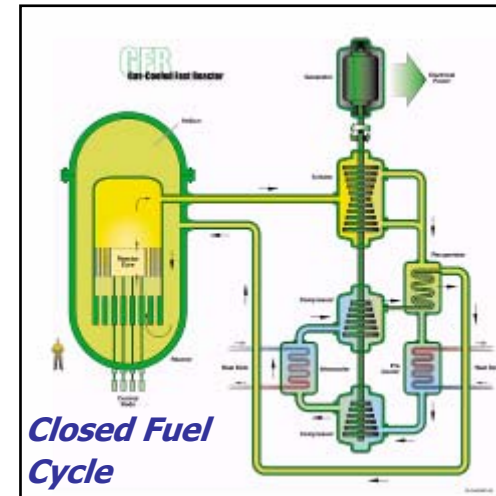
Six innovative concepts



Sodium Fast reactor

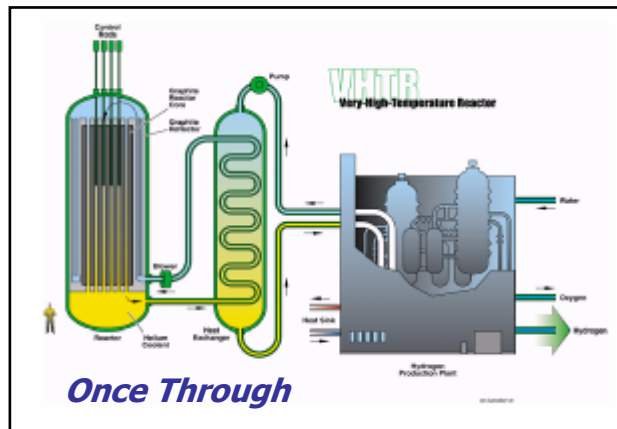


Lead Fast Reactor



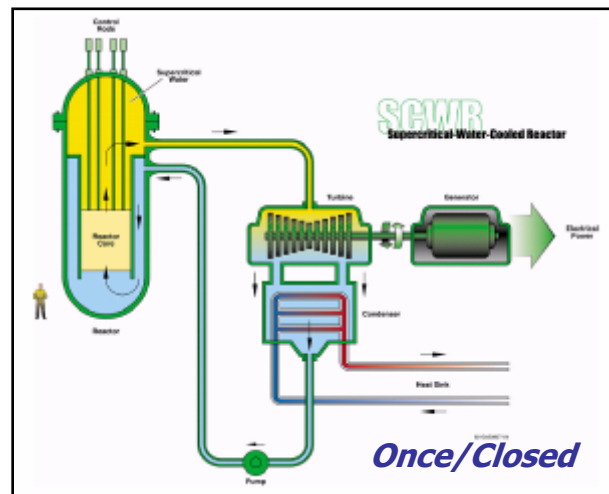
Closed Fuel Cycle

Gas Fast Reactor



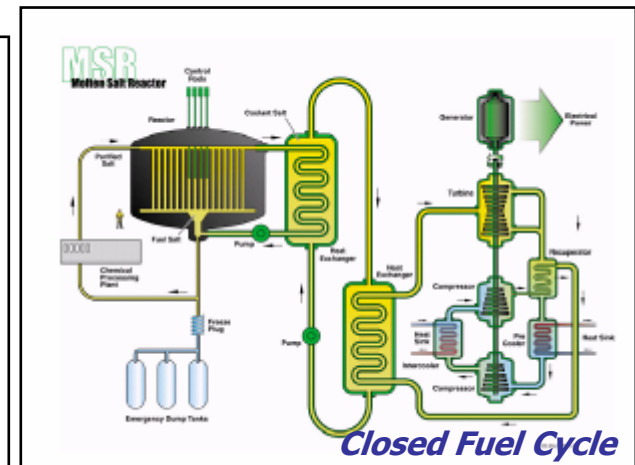
Once Through

Very High Temperature Reactor



Once/Closed

Supercritical Water Reactor



Closed Fuel Cycle

Molten Salt Reactor

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Thank you for your attention!

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