SAPIERR II
regional repositories

Overview of SAPIERR Projects

Ewoud Verhoef

SAPIERR II
Implementation of European Regional Repositories, Closing Seminar, Brussels, 27 January

International co-operation

- **Uranium mining**
- **Enrichment**
- **Fuel fabrication**
- **Electricity production**
- **Reprocessing**

why not for storage and disposal?

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Geological disposal

In some countries it is difficult or impossible to develop national solutions for the radioactive waste:

- financial and technical resources,
- research capacity,
- suitable geological formations

Others are interested in economic optimisation:

- economies of scale
- more productive uses for public funds

CATT and SAPIERR

SIXTH FRAMEWORK PROGRAMME

- CATT:
  - Co-operation And Technology Transfer on long-term radioactive waste management for Member States with small nuclear programmes 2006-2007
- SAPIERR I:
  - Support Action on a Pilot Initiative for European Regional Repositories 2003-2005
- SAPIERR II:
  - Strategic Action Plan for Implementation of European Regional Repositories 2006-2008

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SAPIERR II regional repositories

Content

- Background
- SAPIERR I
- SAPIERR II
- Seminar Programme

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SAPIERR I

SAPIERR I

SAPIERR I/NPP

Overview of SAPIERR Projects

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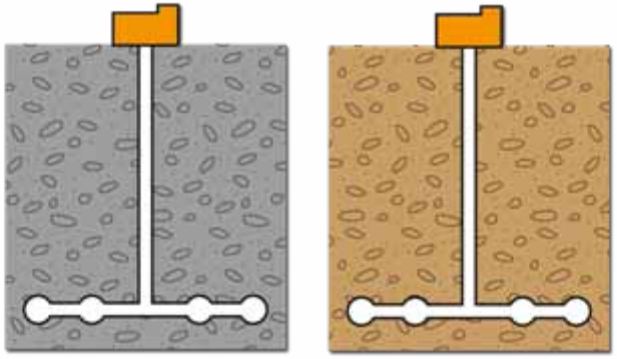
SAPIERR I Concepts

- Well developed concepts:
  - Granite (KBS-3H/NAGRA) & clay (NAGRA)
  - Most important directions in European geological disposal programmes
- Horizontal disposition
  - Chosen because of length of spent fuel elements (4.6 m)

SAPIERR I Scenarios



1 repository for all spent fuel and HLW

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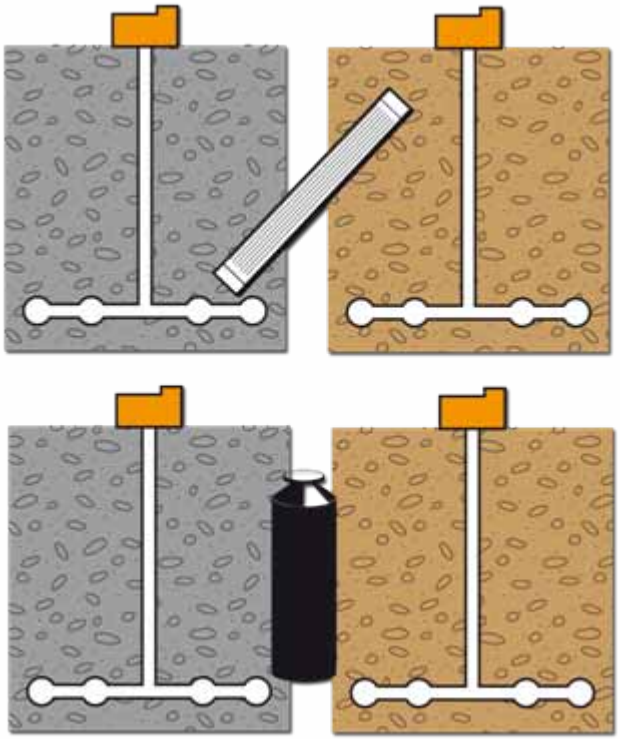
SAPIERR I Scenarios



2 different repositories for spent fuel and for HLW

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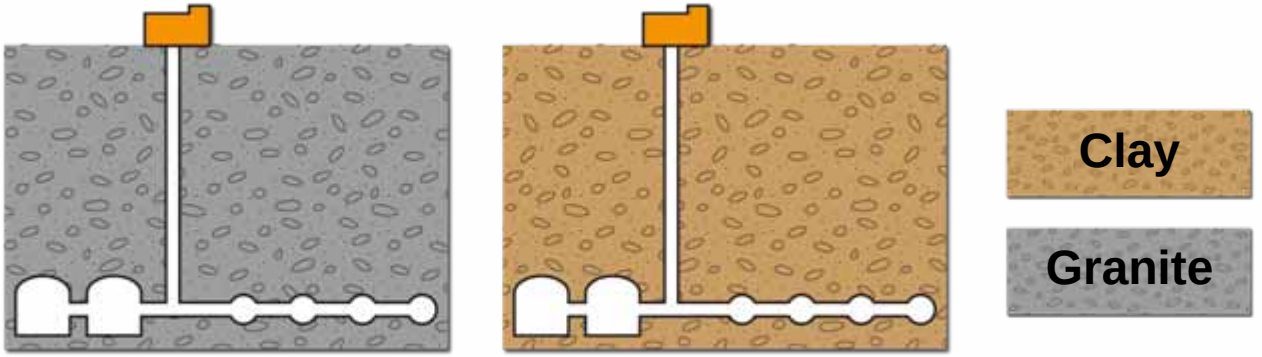
SAPIERR I Scenarios



1 repository for all spent fuel, HLW and long-lived ILW

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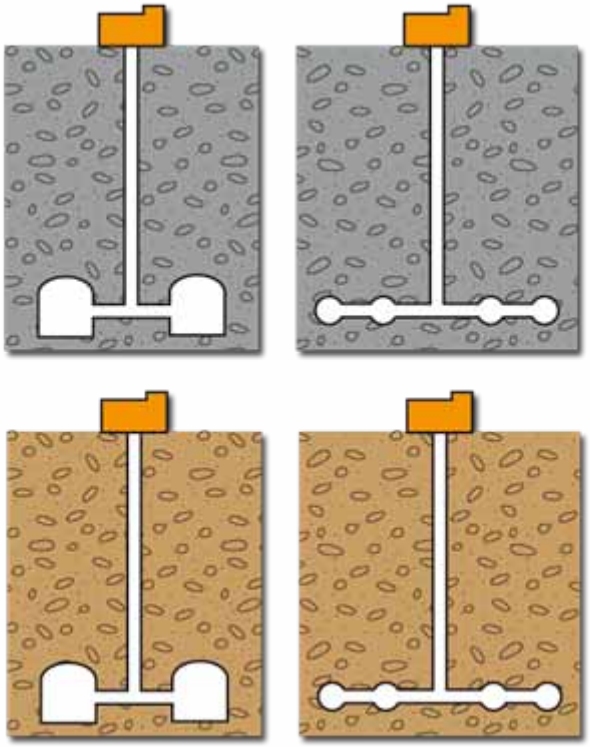
SAPIERR I Scenarios



Clay

Granite

1 repository for all spent fuel and HLW and 1 repository for long-lived ILW

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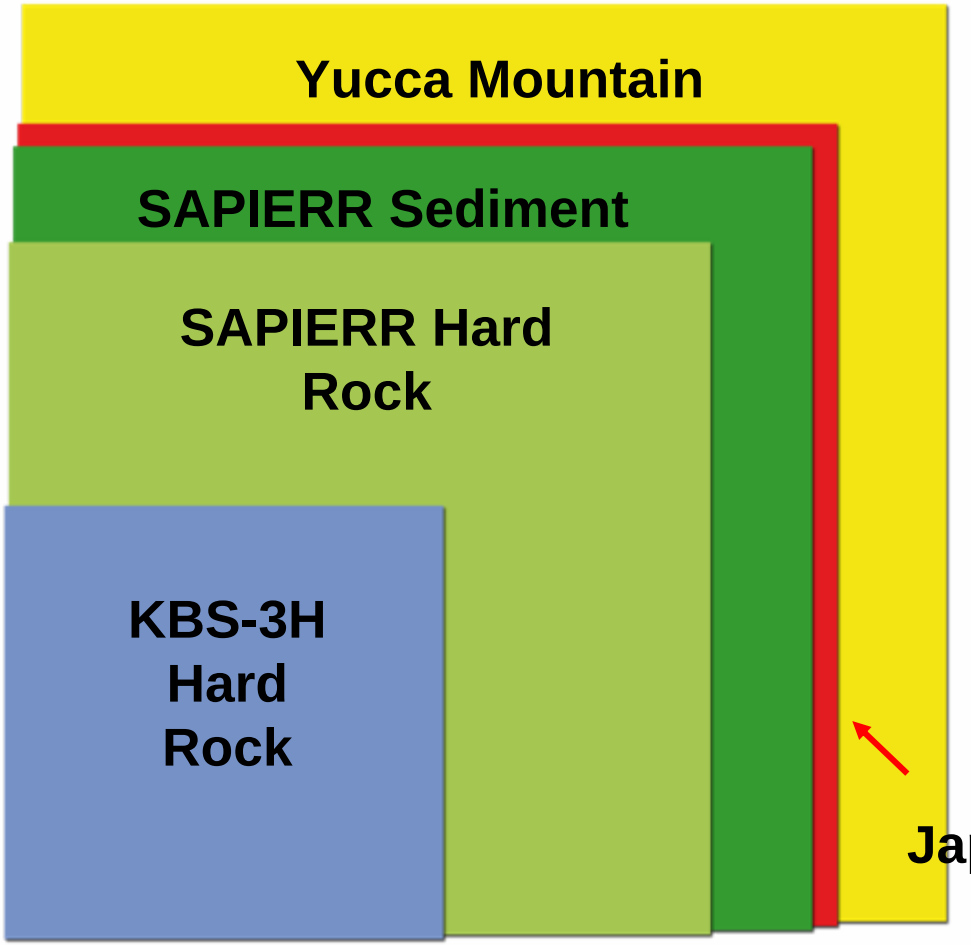
regional repositories

SAPIERR I Inventory

- 13.246 spent fuel containers
  - Swiss (Nagra) steal container (6061 of 5,0 m length, 2341 of 4,3 m length and 4844 of 3,7 m length)
- 2.021 HLW containers
  - With a length of 2,0 m (steal container ~COGEMA BNFL)
- 31,000 m^3 LL-ILW
- NB: this is a relatively large repository
  - Compare Sweden: ~6000 containers;
  - Finland ~2500 containers

SAPIERR I Relative sizes



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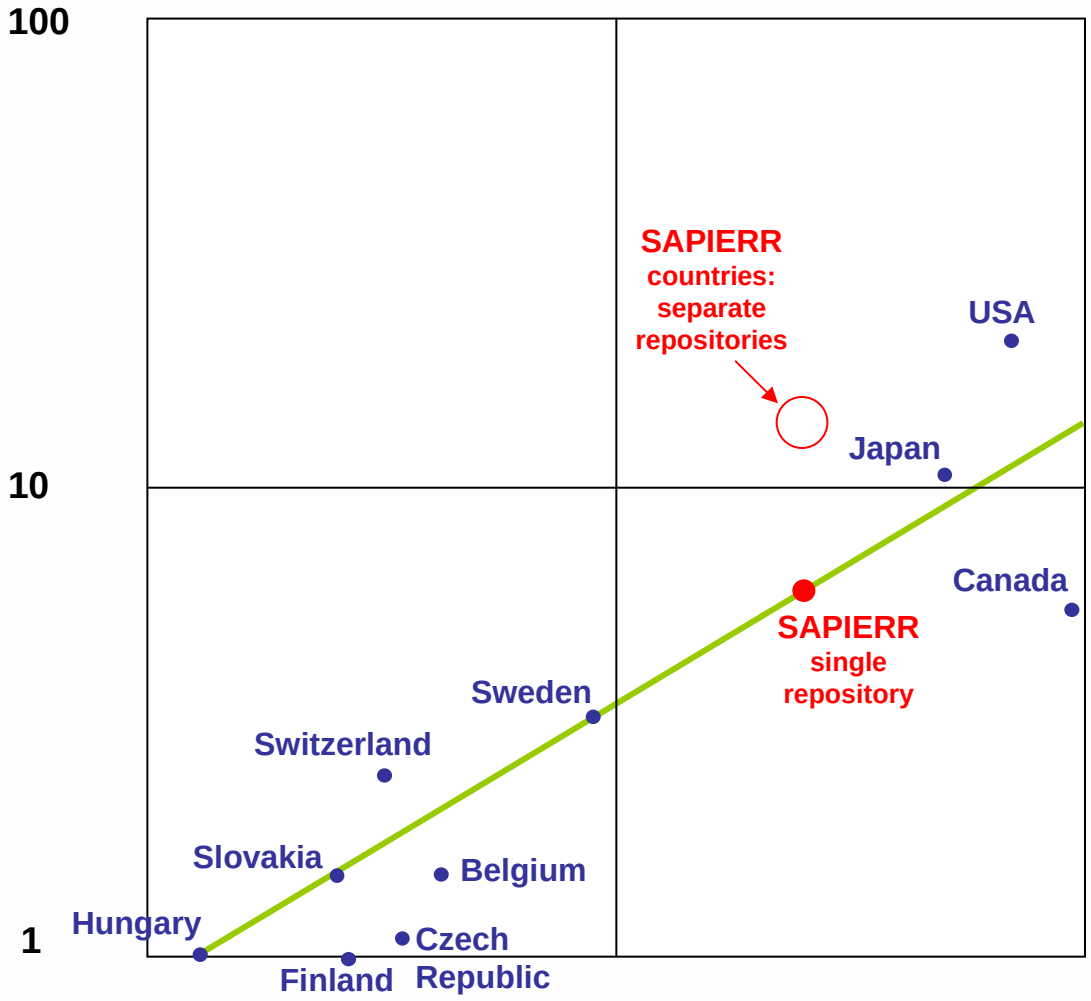
SAPIERR II regional repositories

SAPIERR I Economy



Apart

€ 14 10^9

Together

€ 6 10^9

Please note these are SAPIERR I data and don't reflect some of more recent cost estimates.

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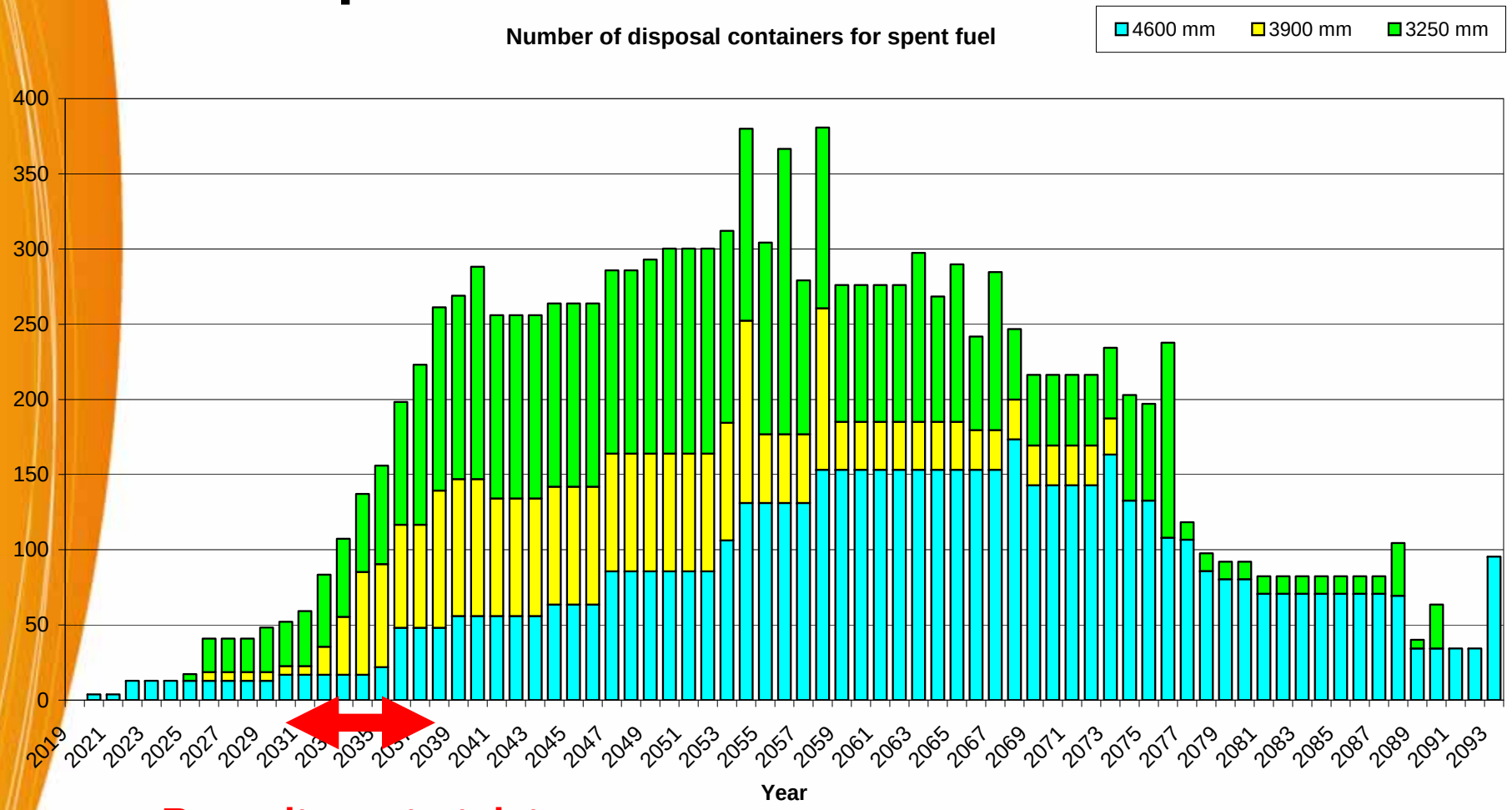
regional repositories

Operational Timescale



Repository start date

Production Rate: max 250-350 pa (c.f. SKB 200 pa emplacement rate)

Overview of SAPIERR Projects

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SAPIERR I Conclusions

- Potential advantages widely acknowledged in the EU
- Clearest advantages in the field of economy
- Most of the problems comparable with that of national programmes (in particular siting)
- Increased efforts needed now
- For further work a structured framework must be established

SAPIERR I Conclusions

- 2035 target repository operational date (2030 for encapsulation plant)
- 20 – 25 years typical siting, SI work
- 2010 – 2015 start the process
- So, start NOW on assessing how to set legal and organisational structures in place:

SAPIERR II

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SAPIERR I

SAPIERR I

SAPIERR I/NPP

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regional repositories

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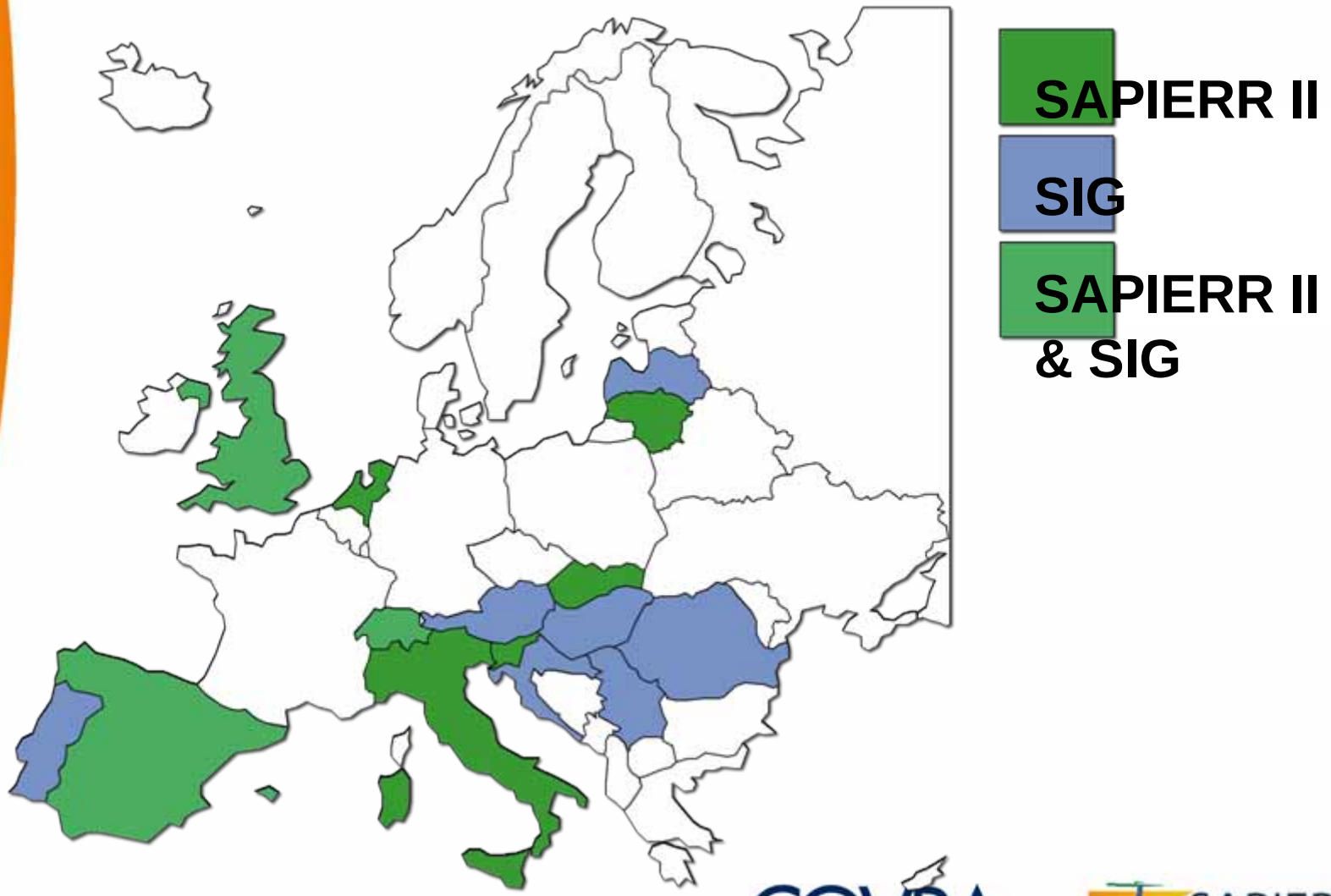

Overview of SAPIERR Projects

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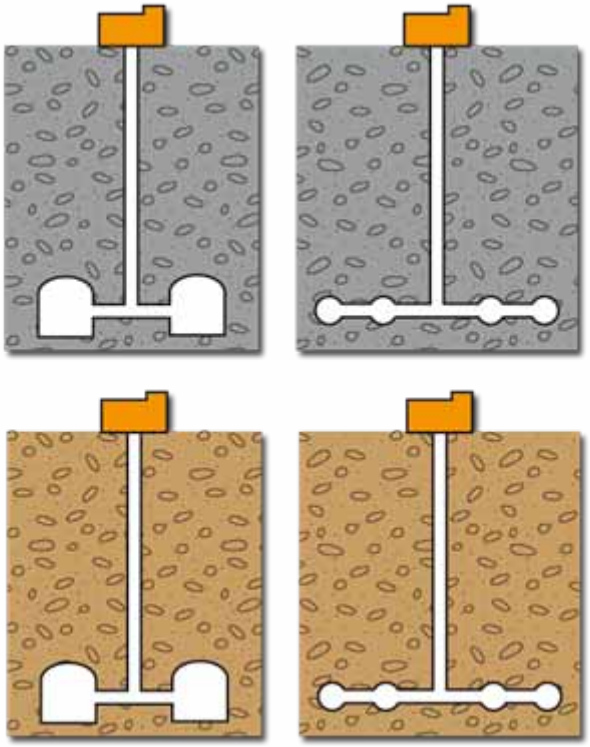
SAPIERR II Objectives

- Define options for organisational frameworks and project plans for a modestly sized, self-sufficient European Repository Development Organisation (ERDO)
- Clarify legal, economic, safety and security, and societal aspects of shared regional solutions
- Present the results and recommendations at a seminar for interested countries

SAPIERR II Scenarios



Clay

Granite

1 repository for all spent fuel and HLW and 1 repository for long-lived ILW

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SAPIERR II
regional repositories

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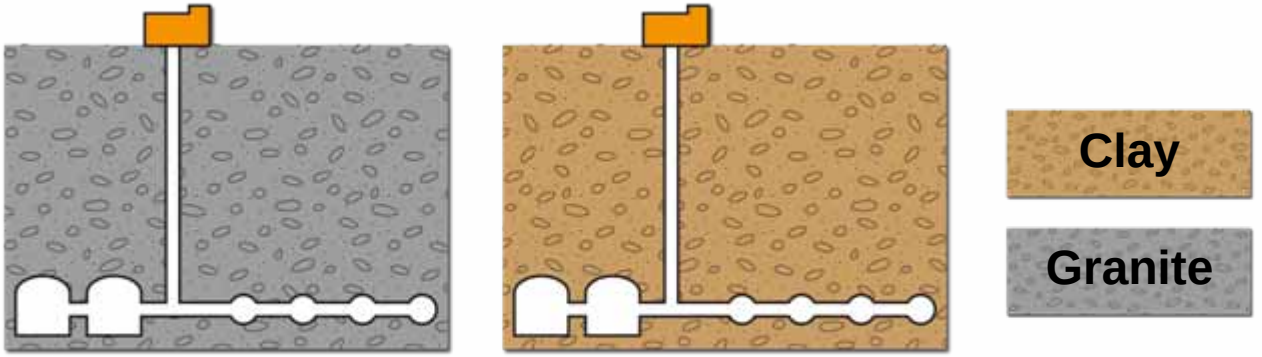

1 repository for all spent fuel, HLW and long-lived ILW

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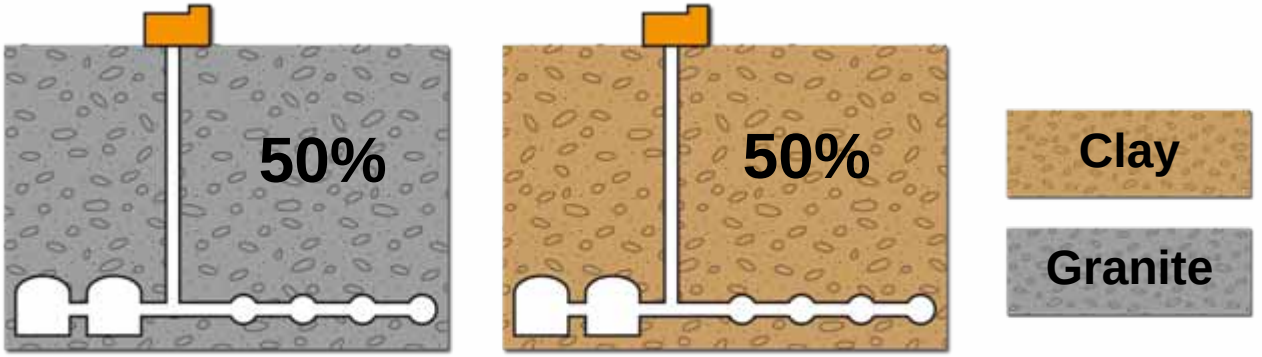
SAPIERR II regional repositories

SAPIERR II Scenarios



2 smaller repositories,

each containing 50% of all spent fuel,

HLW and long-lived ILW

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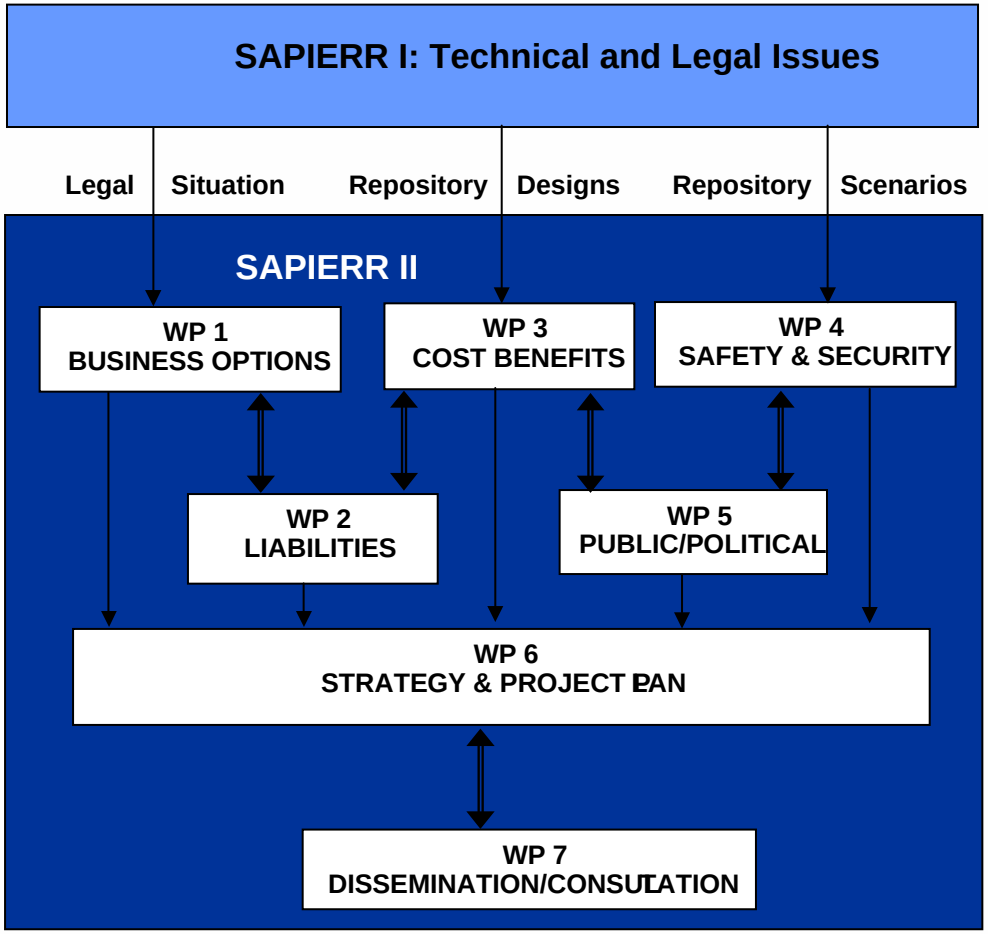
regional repositories

SAPIERR II



Strong interactions

Input Data

Overview of SAPIERR Projects

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SAPIERR II
regional repositories

Who is doing what

WP1	Legal & Business Options for ERDO	ENEA
WP2	Legal Liability Issues	DECOM
WP3	Economic Issues	Arius
WP4	Safety & Security Implications	SAM
WP5	Public & Political Attitudes	Enviros
WP6	Strategy and Project Plan for the ERDO	Arius
WP7	Project Management & Info Dissemination	COVRA/Arius

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SAPIERR II regional repositories

Results

- Proposal: staged, adaptive implementation strategy
  - W.G. of interested countries (ERDO-WG)
  - W.G. task: preparing set up ERDO
- The seminar
  - overview current developments concerning multinational repository initiatives
  - results of the SAPIERR-II Project.
- ERDO WG: 12 countries and int. organisations

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Seminar Programme

09:00–09:30	Overview of SAPIERR Projects
09:30–09:50	EC support for Member State collaboration (policy, CATT, etc.)
09:50–10:10	IAEA work on multilateral backend initiatives
10:10–10:30	Other relevant global developments
10.30–11:00	Coffee pause

Seminar Programme

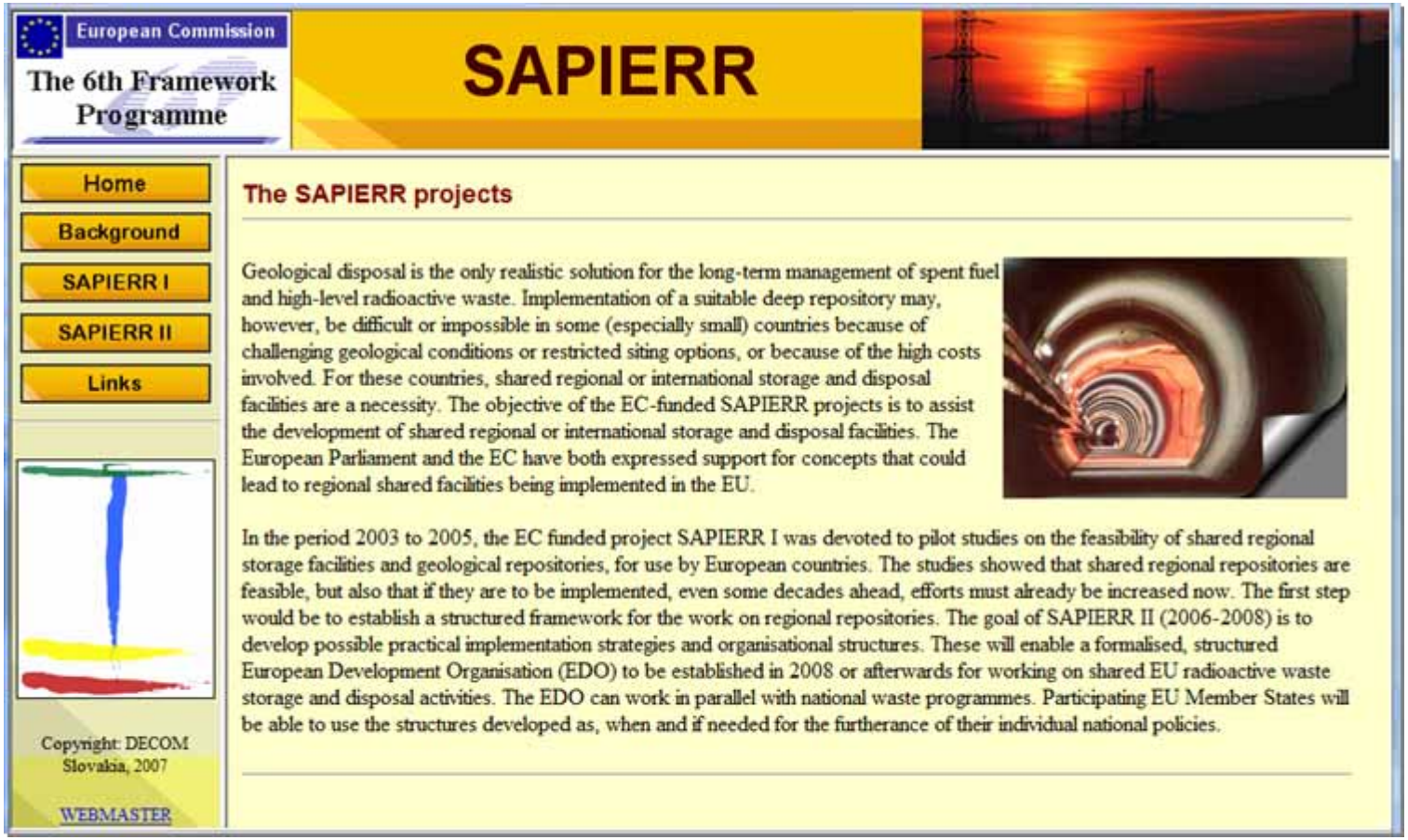
11:00 – 11:15	Business Options for Developing a Multinational/Regional Repository
11:15 – 11:30	Responsibilities and Legal and Financial Liabilities
11:30 – 12:00	Q&A and Discussion
12:00 – 13:30	Lunch break

Seminar Programme

13:30 – 14:10	Economic Aspects of Regional Repositories
14:10 – 14:50	Safety and Security Impacts of Regional Stores and Repositories
14:50 – 15:20	Public and political attitudes
15:20 – 15:50	Moving ahead: ERDO Working group
15:50 – 16:15	Discussion/Comments
16:30	End

SAPIERR II website

www.SAPIERR.net



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