

CATAPULT

Comprehensive Assessment And Preparedness for emerging nUcLear Technologies

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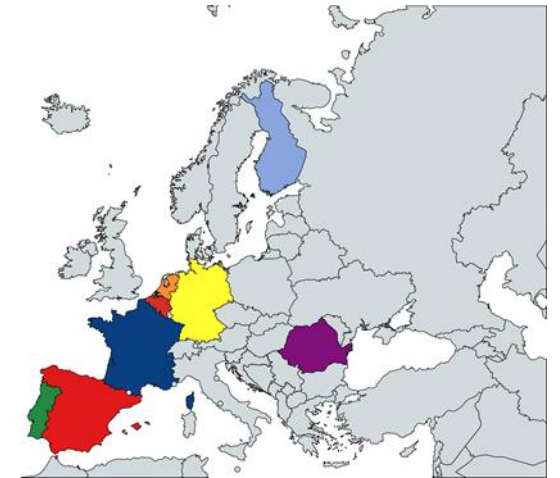
on behalf of the CATAPULT community

Background

- Current knowledge supporting EIA and EP&R, regulators' approaches, and risk communication mainly based on the use of large water-cooled reactors
- CATAPULT aims addressing key lacks and challenges posed by the deployment of Modular Reactors (SMRs and AMRs), e.g.:
 - **Vulnerable regions and specific physical/chemical characteristics** → **Lack in the state-of-art modelling** for EIA and EP&R
 - **Euratom Basic Safety Standards needs for modular reactors' deployment?**
 - **Public concerns** on new nuclear technologies → **communication and engagement** based on **principles of trust and transparency**
- **EIA not independent from the public concerns and wider risks at stake, and vice versa**
- Further isolated research in the modelling, compliance, and communication areas will not deliver on practical solutions to the existing challenges

The CATAPULT Project

- CATAPULT aims at building a comprehensive guidance for EIA and EP&R applied to Small (water-cooled) and Advanced Modular Reactors (Gas- and Lead-cooled) with tight cross-links between technical and social aspects
- Highly interdisciplinary team: 8 organizations (research centers, TSO, universities) from 8 EU countries
- PIANOFORTE Call 2, Topic 2, duration: 3 years (01.02.2025-31.01.2028)



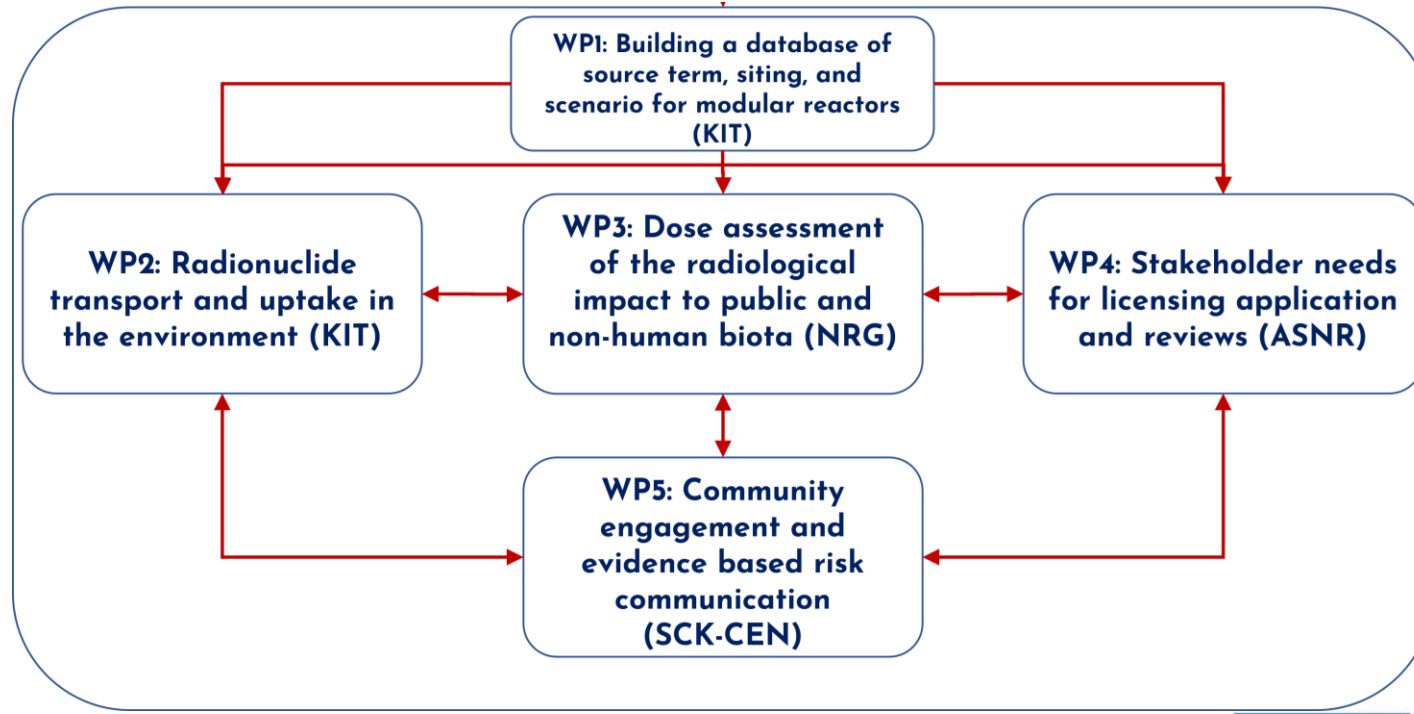
12th NERIS Workshop, 2026, April 28-30,
Fontenay-aux-Roses, France



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Work Plan and Methodology

- **Cross-fertilization of research disciplines** tailored to develop a fit-for purpose framework on EIA modelling, regulatory compliance, and engagement with the community



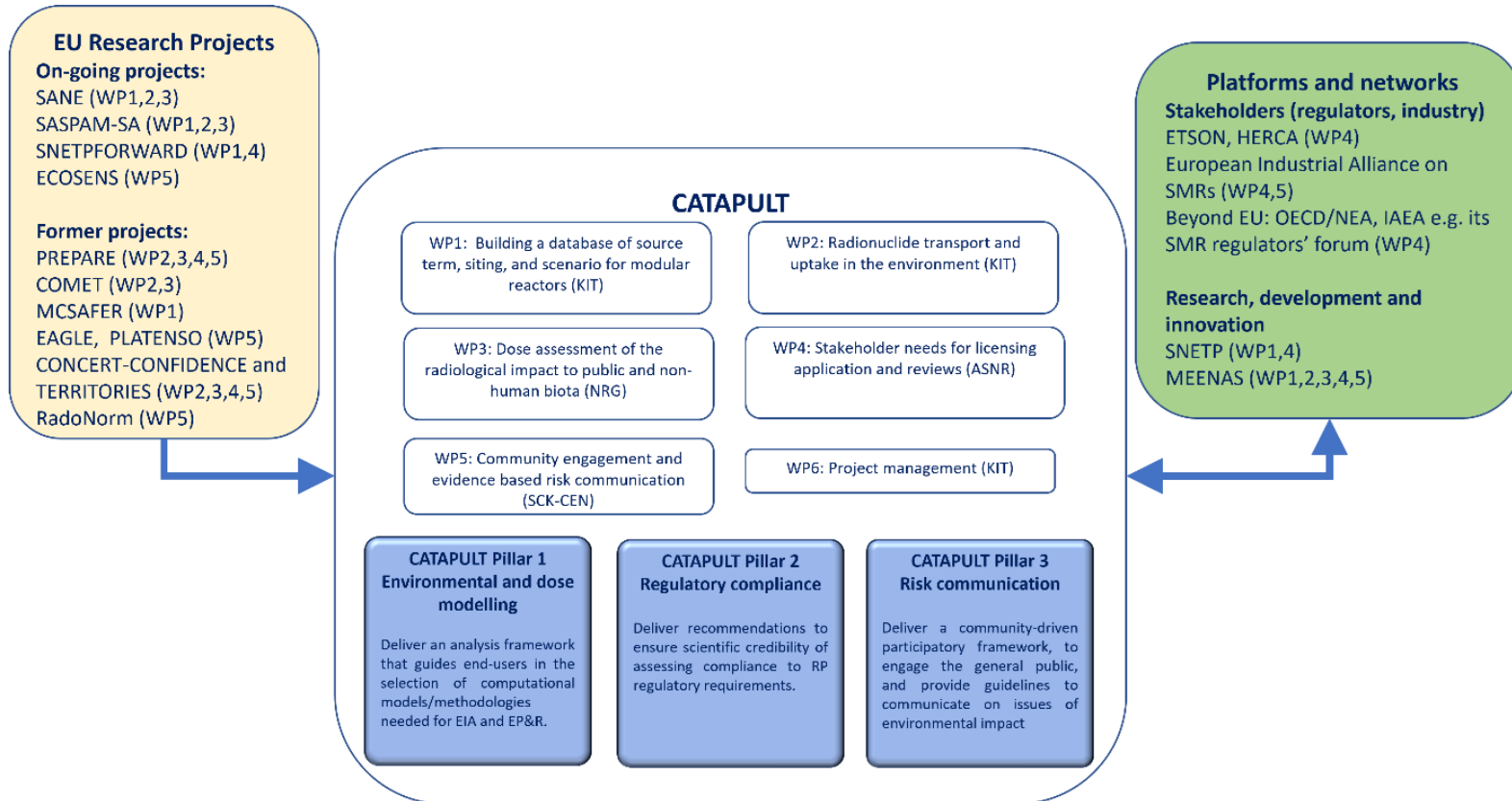
Pillars, Scope, and Main Goals (1/2)

- Environmental and dose modelling
 - **Improving/adapting** the **dose** impact modelling and the environmental **transport models**
 - Delivering an **analysis framework tailored to the needs of modular reactors and their typical site locations** to guide end-users in the selection of computational models/methodologies needed for EIA and EP&R
- *The Source term and Siting CATAPULT database* (Fabrizio Gabrielli)
- *Radionuclide Transport and Dose Assessment for EIA and EP&R Frameworks for Modular Reactors* (Johan Camps, SCK CEN)

Pillars, Scope, and Main Goals (2/2)

- Science-based regulatory compliance
 - **Delivering a comprehensive set of recommendations to authorities, operators, and licensees** to ensure the scientific credibility of the demonstration of radiation protection of the public and the environment
- Community Engagement & Risk communication
 - **Delivering a community-driven participatory framework** → engagement of general public, relevant stakeholders, and communities → towards a more holistic EIA
 - **Delivering guidelines to communicate EIA results and inform the public** about modular reactor development and implementation → evidence-based co-design of risk communication strategy and materials
- *Adapting European Licensing, EIA, and EP&R Frameworks for Modular Reactors* (Marie Simon Cornu and N.S. Abdul Rashid, ASNR)

CATAPULT in the EU Projects' and Platforms' Context



- E.g., the activities on '*Community engagement and evidence based risk communication*' will build on the framework analysed and data collected in the ENGAGE and ECOSENS projects

Sinergies with the GIROSCOPE Project

- CATAPULT tightly connected with the GIROSCOPE project (see next session)
- **Several synergies already identified, e.g.:**
 - Modelling approaches for environmental transport of radionuclides, similar approaches and sometimes same codes employed, e.g., JRODOS
 - Recommendations for EP&R and safety cases - checking for the consistency of the outcomes
 - Stakeholders feedback and Public perception - PIANOFORTE WP3
- Common projects' review meetings as well as on specific topics/task planned

CATAPULT in Summary

- **CATAPULT** is tailored at the specific needs of **modular reactors** (nuclear technology and site location) in assessing their **radiological risks** to the environment during routine and accidental operation
- The framework is **evidence based, builds on state-of-the-art science in environmental and dose modelling**, contributes to **new communication science**, and is driven by an **extensive stakeholder and community engagement programme**
- Through a **multi-disciplinary team**, CATAPULT has the **potential to deliver on a valuable outcome** that provides essential **guidance to all stakeholders** (e.g. authorities, TSOs, operators, licensees) involved in the licensing of modular reactors, and **develops a first step towards a standardised and fit-for-purpose approach in EIA and EP&R**

The CATAPULT Community

- M. Simon-Cornu, N. S. Abdul Rashid, M. Roulier, N. Didelot, G. Mathieu, A. Mathieu (ASNR)
- R. Gaspar, S. Luís, S. Domingos, A. R. Farias, J. Reese (COFAC-UL)
- F. Gabrielli, M. E. Cazado, O. Murat, S. S. Ottenburger, D. Trybushnyi, W. Raskob (KIT)
- M. Martell Lamolla (Merience SCP)
- G. De With, B. Mayer, A. Tacu, T. Van Dijk (NRG Pallas)
- D. Diaconu, M. Nitoi, M. Constantin, C. Dulama, M. Apostol (RATEN)
- T. Perko, J. Camps, J. Vives i Battle, T. Al Malhaini, A. Nagy, P. De Meutter (SCK CEN)
- P. Roivainen, T. Routamo, T. Peltonen, M. Voutilainen, E. Hiittenkivi, J. Mannonen (STUK)