



ASTRA FOR ICS WS (3+1)

ASTRA (Alternative RWM STRategies) introduction

Ljubljana May 27-29, 2026

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Co-funded by the European Union under Grant Agreement n° 101166718



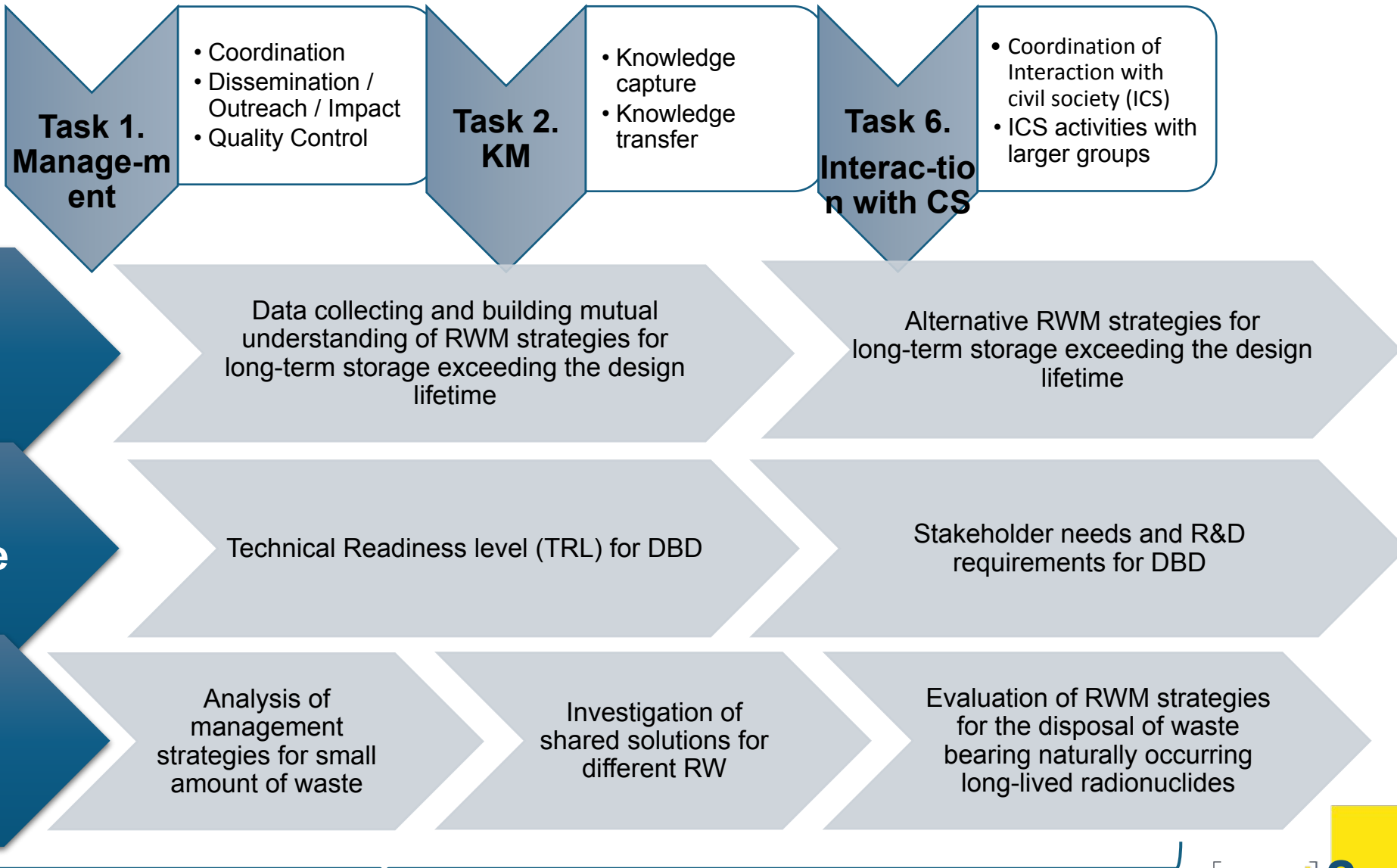
A BRIEF INTRODUCTION TO ASTRA

- ASTRA introduction
- Organization
- Results and where you can find them
- Way forward

Cross cutting Tasks

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Green and White papers, Outcome/impacts report

eurad²



LONG-TERM STORAGE MAIN RESULTS

- ASTRA studied the challenges that can arise when radioactive waste is stored for periods exceeding the design lifetime of storage containers and/or storage facilities. When storage lasts longer than originally planned, the challenge is rarely a single technical flaw.
- In the near term, RD&D efforts should prioritise creating a reliable technical basis for decision-making and closing information gaps. These include:
 - Defining operational thresholds. RD&D should focus on creating practical operational thresholds, methods to determine design life, remaining life, and end-of-use for both facilities and packages, and to translate these into clear decision gates within periodic safety reviews, inspections and monitoring.
 - Predictive tool development. RD&D should focus on development of validated predictive tools and “inventory look-up tables” for assessing packages and barriers ageing, degradation and related risk assessment.
 - Digitalisation and information recovery. This line of work should focus on recovering lost or paper-based historical data into digital formats to improve risk assessments and transparency with civil society.

DEEP BOREHOLE DISPOSAL MAIN RESULTS

- The most critical technical uncertainties around DBD implementation were identified as:
 - Demonstrating deep drilling operations at the required depths and diameters envisioned for DBD.
 - Exploring the long-term performance of borehole seals and plugs.
 - Corrosion processes and their control under in-situ conditions.
 - Demonstrating reliable monitoring at relevant depths.

ALTERNATIVES FOR SIMS MAIN RESULTS

- Progressing waste management approaches and strengthening the resilience in waste management of SIMS, a dual-focus approach is proposed:
- RD&D on management solutions, supported by shared KM activities.
- To address the challenge of identifying credible alternatives for SIMS, RD&D should concentrate on enabling proportionate, disposal-oriented management routes that remain technically feasible at small scale, whilst reducing uncertainty and reliance on prolonged interim arrangements.
- NORM and DU waste management would profit a coordinated European approach.
 - A first priority is the harmonisation of waste classification approaches and decision-support tools for NORM and DU. Developing common guidance on when such materials should be considered waste, alongside shared criteria for selecting between near-surface and geological disposal options, would help establish consistent regulatory expectations and enable more transparent national decision-making.
 - In parallel, targeted efforts to accelerate technical solutions are required, including joint studies on conditioning options for Radium-bearing and Uranium-bearing materials, as well as pilot projects exploring reuse, recycling and circular-economy approaches that could reduce disposal volumes and optimise resource efficiency.



RESULTS

- D3.3 Policy paper on mutual understanding of alternative radioactive waste management strategies
- EURAD-2 - D3.2 Towards a Generic Deep Borehole Disposal Concept
- EURAD-2 - Milestone 70 - Management strategies for small amounts of waste in SIMS
- EURAD-2 - Milestone 61 - Evaluation of RWM strategies for the disposal of waste bearing naturally occurring longlived radionuclides
- EURAD-2 - D3.1 ASTRA Green Paper on mutual understanding on alternative RWM strategies
- EURAD-2 - Milestone 38 - Workshop on building mutual understanding about RWM strategies for long-term storage exceeding the design lifetime

A WAY FORWARD

- ASTRA-GEN RD WP is being prepared (3 MEUR budget)
- Continues work on long-term storage, DBD and NORM waste
- Live Discussion Forums are going to be under EURAD-2 KM WP, but the team organizing them is the same as in ASTRA
- SIMS-LIMS demonstrator is under ASTRA-GEN KM, Portugal is considered for the first case
- Civil society has their own task, as in ASTRA