



EU-MICADO PROJECT OVERVIEW

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MICADO at a glance

- Title: "MICADO: Measurement and Instrumentation for Cleaning and Decommissioning Operations"
- Participants: Consortium of 9 partners from 5 countries (IT, FR, BE, DE, CZ); mix of universities, research centers, one large company ad SMEs



- Duration: 3 years, started June 2019 through May 2022
- Budget: 5 M€ total, of which EC contribution of 4.4 M€
- Reply to: Euratom call <u>NFRP-2018-10</u>, Research and Innovation Action (RI)
- Support/endorsement from: ANDRA, INFN, SwissNuclear, Nucleco, JRC, CEA
- Project web page: <u>https://www.micado-project.eu/</u>





2nd slide is overview of WPs/structure of project



Development of an expert system platform integrating hardware (HW) and software (SW) technologies to offer the opportunity to enhance the ALARA concept reducing the operational exposure during D&D operations.

The RCMS DigiWaste platform performs non-destructive analysis capable to define the characterization procedure for the supplied waste package, determining the best measurement geometry and waste category, providing a complete integrated waste management solution for the full traceability of the waste.



The challenges

- Missing of a comprehensive procedure able to address different type of waste packages providing a unique and digital information easily accessible within the Nuclear Waste Characterization field
- The D&D process of nuclear infrastructures increasingly demands methods for a full traceability of waste material to improve quality management and operational safety
- The absence of a consistent, straightforward solution for fully characterize all types of materials, with the absence of an integrated solution for digitizing the enormous amount of data produced, is a critical issue. One challenge lies in the operator's ability to maintain high operational skills and quality assurance with precision measurements
- Better address the waste characterization, reducing operational and storage costs, obtained combining measurement results from different technologies and use the uncertainty optimization module to ensure their reduction. Everything based on MonteCarlo simulations.





The aim



- Measurement of legacy waste/ bitumized and concrete RWP (Radiological Waste Packages)
- Declassification of RWP (geological → surface disposal)
- How to do
 - By combining measurements
 - By decrease
- Technologies
 - Assessment and management software
 - Hotspot locations
 - Low resolution gamma spectroscopy
 - High resolution gamma spectrometry
 - Active and passive neutron measurements
 - Photofission measurement and imaging
 - Monitoring Grid (SciFi and SiLiF)
 - Al (choice of scenario and processing)
 - Uncertainties assessment



RCMS DigiWaste platform

- Database on a cloud
- Communication with each technology
- Possibility to add new measurement technics
- Use RFID tags
- Use AI and uncertainty assessment by Monte Carlo simulation
- Waste monitoring in real time
- Relocatable characterization stations







Our first half of the project

- Website established with news and list of publications available for downloading @ <u>https://www.micado-project.eu/</u>
- List of requirements & CONOPS reports ready
- Simulation of the new design technologies available
- Hardware design phase almost at the end and construction phase at the early stage (COVID-19 slight delay)
- Location for the test and demo phase already identified
- External Advisory Board and Experts group at work
- Connection with other EU projects or WP: CHANCE, PREDIS, CLEANDEM, ERDO WP, NEA, IAEA





Stay in touch with MICADO





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Thanks for your attention

