XS-ABILITY

NEWSLETTER 02

FEBRUARY 2026

XS-ABILITY: ADVANCING INNOVATION IN NUCLEAR DECOMMISSIONING

GET TO KNOW

Funded by the European Commission's Horizon Europe Programme, XS-ABILITY is a 36-month project that tackles key challenges in Dismantling & Decommissioning (D&D) operations. One of the main issues in this field is the accurate assessment and continuous monitoring of the radiological status of nuclear sites, a critical factor throughout the entire D&D process.

To address this, the project focuses on developing state-of-the-art robotic solutions. Equipped with cutting-edge sensors, these robotic platforms are designed to access hard-to-reach areas and precisely detect difficult to measure radionuclides.

Funded by the European Union

info@xs-ability.eu
www.xs-ability.eu
XS-ABILITY project

XS-ABILITY

COORDINATOR'S MESSAGE

MAUGAN MICHEL

> **XS-ABILITY systems will help achieve safer, better, faster, and cheaper assessment of the radiological status of nuclear facilities.**

As a technical and scientific manager, my primary goal is to coordinate with the seven partners across Europe to ensure we achieve our ambitious goals and make a real difference in the dismantling and decommissioning industry.

We aim to do this with a fleet of drones and robots capable of autonomously measuring radioactivity, even in dangerous or hard-to-reach places.

Another key goal is to demonstrate these technologies in real conditions, to build trust, and encourage wider industry adoption.

This is why we will showcase our developments by the end of summer 2027, which should take place at the G2 reactor, on the CEA site of Marcoule.

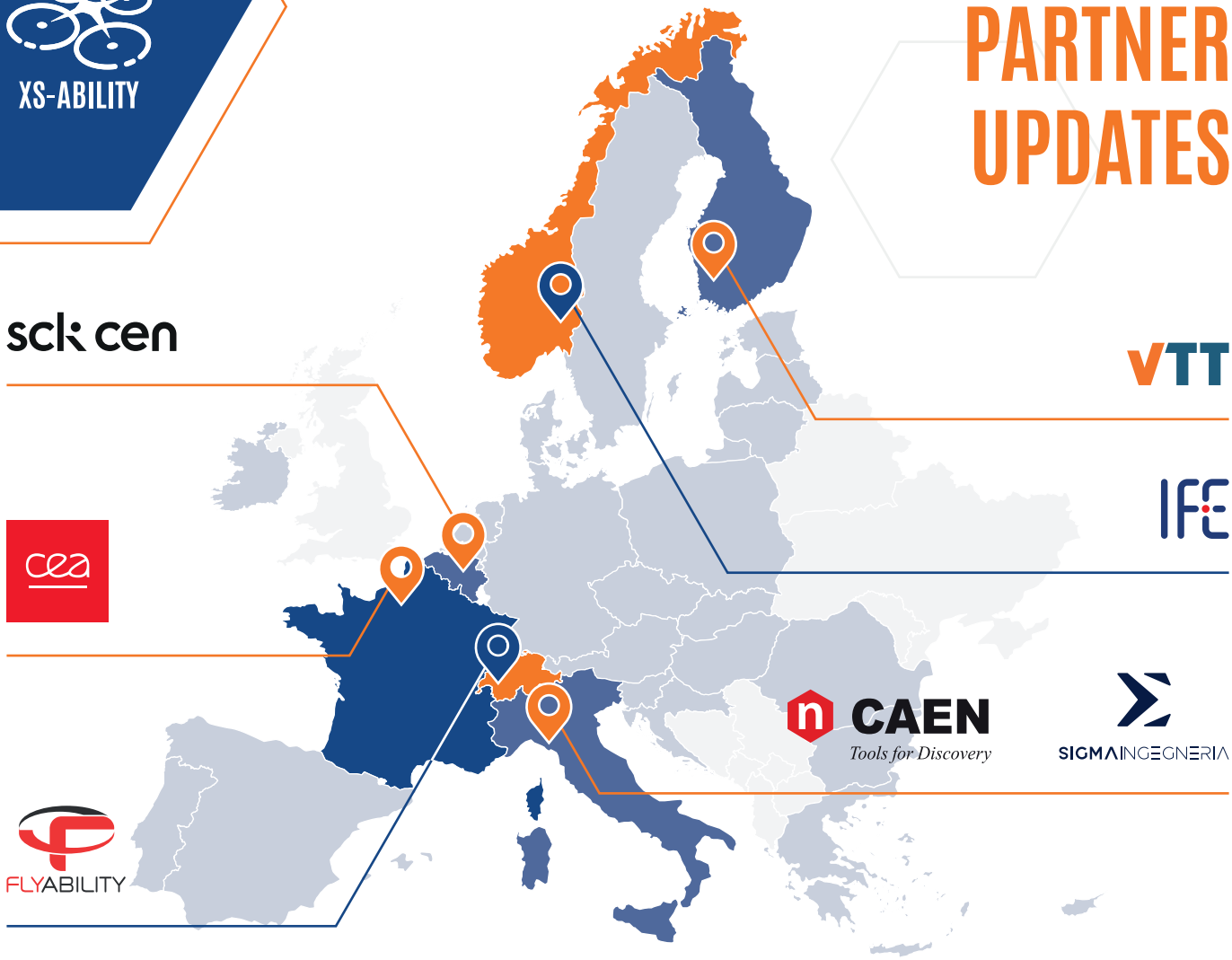
Maugan Michel - CEA

Funded by
the European Union

info@xs-ability.eu
www.xs-ability.eu
XS-ABILITY project

XS-ABILITY

PARTNER UPDATES



Collaboration is central to XS-ABILITY. The consortium brings together expertise in nuclear instrumentation, robotics, and artificial intelligence, ensuring a comprehensive approach across the value chain to advance next-generation solutions for nuclear decommissioning.

Partners' highlights 2025:

CEA (Commissariat à l'énergie atomique et aux énergies alternatives)

"In 2025, as coordinator, CEA ensured seamless collaboration both within the Consortium and with the DORADO project, with which we share strong synergies. Our WP3 efforts focused on improving the Nanopix3 gamma camera, the beta/gamma and small gamma/neutron detector algorithms for enhanced detection, and embeddability. We also contributed to multi-robot integration (WP4), collaborating on ROS2 sensor integration and SLAM algorithms. In WP5, we advanced Gazebo simulations and NeRF algorithms for radiological mapping. Finally, we started preparing the 2027 final demonstration at the G2 facility."

Funded by the European Union

info@xs-ability.eu
www.xs-ability.eu
XS-ABILITY project

XS-ABILITY

PARTNER UPDATES

IFE (Institutt for Energiteknikk)

"During 2025, IFE coordinated the efforts of the different WP4 participants focusing on the adaptation of robotic platforms, including 3D modelling and system integration. In close collaboration with the leaders of WP2 and WP3, we coordinated the integration of project-developed sensors onto the robotic platforms. In addition, we worked closely with Flyability on the integration of the Tether Power Unit for the Elios 3, developed by Flyability, onto the Jackal robot. Furthermore, IFE coordinated its activities with the VTT team to explore ROS 2–based SLAM solutions, contributing to the evaluation and comparison of suitable approaches for the project."

VTT
(Technical Research Centre of Finland)

"VTT has been testing a few different Simultaneous Localization and Mapping (SLAM) algorithms with our Warthog mobile robot and 3D lidar. These techniques will allow remote human operators to visualize and understand the current status of the nuclear decommissioning environments."

CAEN
(Costruzioni apparecchiature elettroniche nucleari)

"2025 has been a productive year for CAEN, with important achievements. In WP2 we defined the technological specifications of all radiologic sensors and autonomous navigation systems. In parallel, the upgrade of the Gamon Probe and the Large Surface Detector as well as mechanical and software integration with the UxVs is very close for first tests."

Funded by the European Union

info@xs-ability.eu
www.xs-ability.eu
XS-ABILITY project

XS-ABILITY

PARTNER UPDATES

SCK CEN
(Belgian Nuclear Research Centre)

"In 2025, SCK CEN made significant progress within WP6 by clarifying a large part of the technical, radiological, and logistical requirements for the visit to the G2 facility in Marcoule. This work allows us to define the boundary conditions for on-site activities and to identify the necessary preparations on both the SCK CEN and host-site sides. In parallel, preparations were initiated for the physical SCK CEN visit planned in 2026. Building on this groundwork, we are currently aligning with the DORADO project to enable joint participation in that visit."

FLYABILITY SA

"During 2025, Flyability focused on developing a tethered power solution for the Elios 3, collaborating with IFE to ensure operational integration with their Jackal ground robot. Additionally, we worked with CAEN on the integration of the NanoPix Gamma Camera, showcasing a prototype at WNE '25."

SIGMA INGEGNERIA SRL

"Project activities progressed with the completion of the Rover motor prototypes, along with the development of hardware and software for autonomous navigation and data visualization. Technical work continues on the larger Rover prototype, including steering encoder optimization, new battery integration with custom BMS, and preparation for the first SLAM data acquisition campaign. The first Sentinel prototype was demonstrated at WNE 2025 and is now undergoing mechanical and software revisions to improve portability, scanning range, and motion and scan control."

Funded by
the European Union

info@xs-ability.eu
www.xs-ability.eu
XS-ABILITY project

XS-ABILITY

REAL-WORLD VALIDATION

The XS-ABILITY project is moving from testing to real-world validation through the launch of three operational use cases in complex nuclear environments. These scenarios have been carefully selected to demonstrate practical deployment of the developed technologies by the end of the project, reflecting the variety of challenges encountered in Dismantling & Decommissioning (D&D) operations across Europe.

Operational Use Cases:

G2 Reactor & Foundation, Marcoule (France): A historic, large-scale facility providing realistic radiological and architectural complexity. Missions focus on autonomous hotspot detection, 3D gamma mapping, and coordination of autonomous robots fleet in unknown or partially mapped areas.

BR1 Ventilation Building, SCK CEN (Belgium): An operational facility with confined spaces and residual radiation, ideal for testing robotic mobility, navigation, and sensor data acquisition under real working conditions.

BR3 Decommissioned PWR, SCK CEN (Belgium): A pilot site for clearance validation and wall scanning using a rail-guided autonomous trolley and UAVs, addressing challenges of inaccessible surfaces and the need for precise, low-level contamination measurements.

Funded by
the European Union

info@xs-ability.eu
www.xs-ability.eu
XS-ABILITY project

XS-ABILITY

NEWS & EVENTS

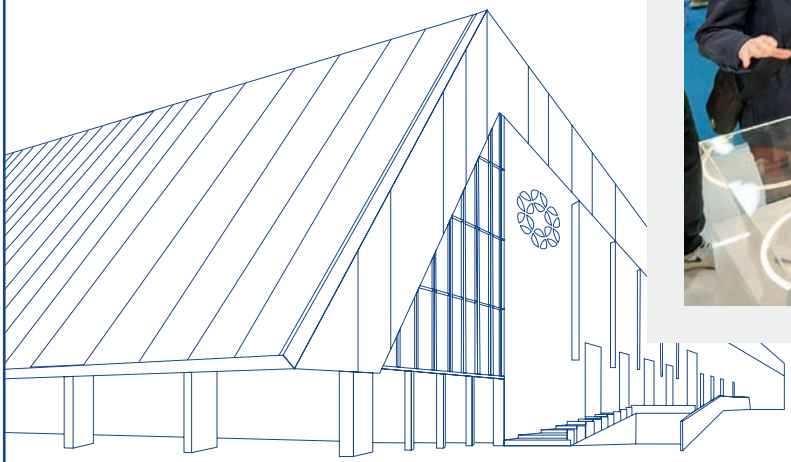
WNE 2025

SHOWCASING INNOVATION IN NUCLEAR DECOMMISSIONING

XS-ABILITY successfully participated in WNE 2025 - one of the leading international events for the civil nuclear sector - in Paris, held from November 4 to 6, 2025.

All project partners attended the exhibition, engaging with stakeholders, industry experts, and international peers. Several partners showcased XS-ABILITY technologies and prototypes, demonstrating how robotics, advanced radiation sensing, and integrated monitoring solutions contribute to safer and more efficient nuclear decommissioning.

The event was a valuable opportunity to share project progress, exchange ideas, and explore potential collaborations with key actors across the nuclear industry.



Funded by the European Union

info@xs-ability.eu
www.xs-ability.eu
XS-ABILITY project

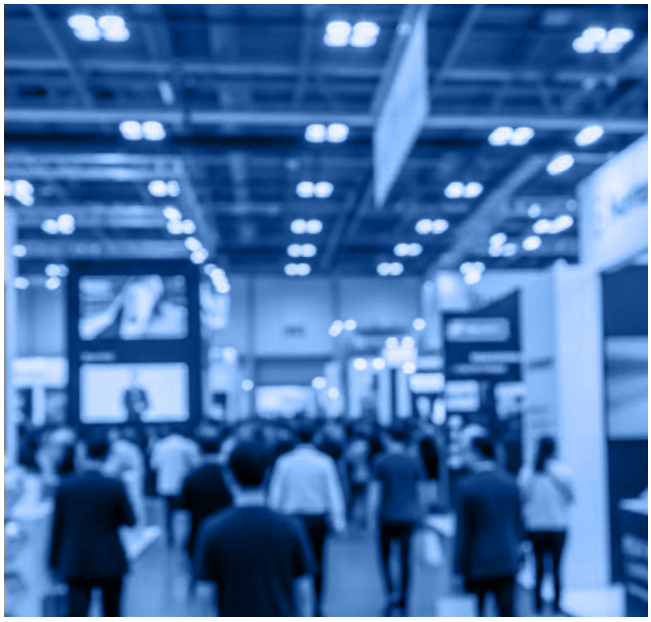
XS-ABILITY

NEWS & EVENTS

A key international forum on nuclear decommissioning, waste management, and radiation protection, providing an ideal setting to present the progress of the XS-ABILITY project. Our partner CAEN presented a contribution on radiological sensors for D&D operations, offering an important opportunity to share XS-ABILITY's mission and engage with stakeholders across Europe and beyond.

Leading experts, research institutions, and industries exchanged best practices and R&D progress in nuclear decommissioning. As part of the "International Collaboration" panel, the project has been presented by the Coordinator (CEA), highlighting how integrated robotics and radiation-sensing technologies can contribute to safer and more efficient decommissioning operations.

Global experts exchanged knowledge, shared experiences, and explored innovations to strengthen preparedness and response to nuclear and radiological emergencies. XS-ABILITY partners were present, underscoring the importance of unmanned robotic fleets embedded with nuclear sensors in discussions on safety and innovation in the nuclear sector.



Funded by
the European Union

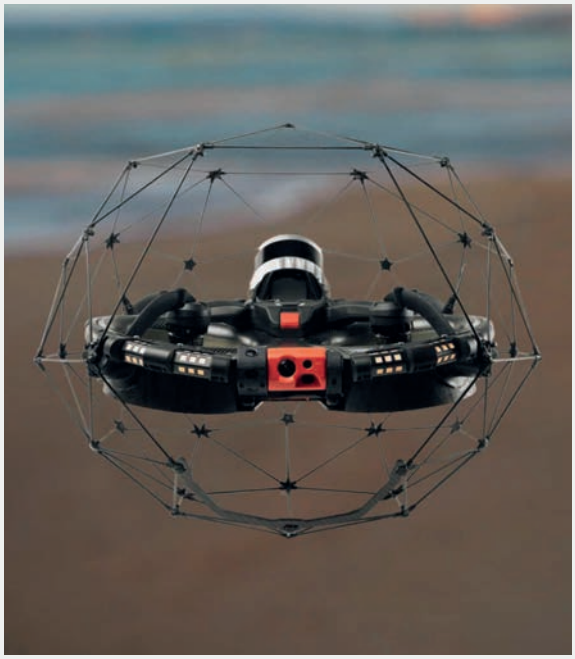
info@xs-ability.eu
www.xs-ability.eu
XS-ABILITY project

XS-ABILITY

TECHNOLOGY SPOTLIGHT

ELIOS 3

A NEW ERA OF INTERNAL INSPECTION AND MAPPING



Designed for GPS-denied and hard-to-reach environments, Flyability's Elios 3 Drone combines a collision-resistant cage, advanced stabilization and navigation capabilities, high-quality visual inspection tools, and a modular payload architecture that enables the integration of additional sensors.

The Elios 3 platform can be **integrated** with **advanced radiation sensors** developed by the XS-ABILITY team, enabling its use for radiological monitoring tasks.

A dedicated tether system has also been developed, enabling unlimited flight time - a crucial capability for acquiring radiation measurements over large areas during nuclear D&D activities.

The tethered Elios, combined with its autonomous flight capabilities, operates in coordination with **advanced ground robotic systems** developed by other partners.

This approach supports **multi-robot collaboration** and combines confined-space operation, extended endurance, and state-of-the-art radiation sensing into a single, coordinated solution.

Funded by the European Union

info@xs-ability.eu
www.xs-ability.eu
XS-ABILITY project

XS-ABILITY

UPCOMING IN 2026

Field tests during reactor visit at BR1 - BR3 and project General Assembly

From April 21 to 23, 2026 XS-ABILITY and DORADO partners will visit the BR1 and BR3 reactors at SCK CEN in Belgium. The visit will include **field tests with sensors**, **drones**, **and robots** to validate technologies in real operational scenarios, and will also host the **2026 General Assembly** of the project.

Events of interests for the Project

ERF European Robotics Forum	23 - 27 March, 2026 Stavanger (NO)
IEEE ICRA International Conference on Robotics and Automation	1 - 6 June, 2026 Vienna (AT)
CRET International Conference on Control, Robotics Engineering and Technology	24 - 26 June, 2026 Kristiansand (NO)
IROS IEEE/RSJ Intelligent Robots & Systems	27 September - 1 October, 2026 Pittsburgh (USA)
ICINCO 23rd International Conference on Informatics in Control, Automation and Robotics	26 - 28 October, 2026 Angers (FR)
ICCMA 14th International Conference on Control, Mechatronics and Automation	3 - 5 November, 2026 Bari (IT)
ICCR 8th International Conference on Control and Robotics	3 - 5 December, 2026 Tokyo (JP)

Funded by the European Union

info@xs-ability.eu
www.xs-ability.eu
XS-ABILITY project

XS-ABILITY

JOIN OUR COMMUNITY

Are you in the nuclear industry or thinking about stepping into it? Join the XS-ABILITY community and become a driving force in shaping the future of nuclear safety and innovation.

SCAN ME

SUBSCRIBE NOW

XS-ABILITY has received funding from the European Union's Horizon Europe EURATOM Research & Innovation program under agreement #101166392. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Commission. Neither the European Union nor the granting authority can be held responsible for them.

Funded by the European Union

info@xs-ability.eu
www.xs-ability.eu
XS-ABILITY project