Creating Hope Beyond Decommissioning
My Journey to Break New Ground with Robots

November 14, 2026

Japan Atomic Energy Agency (JAEA)
Fukushima Research Institute for Decommissioning and Safety
Naraha Center for Remote Control Technology Development (NARREC)

Self-Introduction



Akihiro Tagawa

Master's Degree in Nuclear Engineering
Ph.D. in Information and Intelligence Science

2001 — Joined the Japan Atomic Energy Agency (JAEA)*
Developed inspection systems for the Monju prototype fast breeder reactor.
*At the time: Japan Nuclear Cycle Development Institute (JNC).

"I want to help solve Japan's energy challenges!"

2011 — Transferred to the Fukushima Support Headquarters following the Great East Japan Earthquake
Developed decontamination technologies for environmental recovery and technologies for nuclear decommissioning.

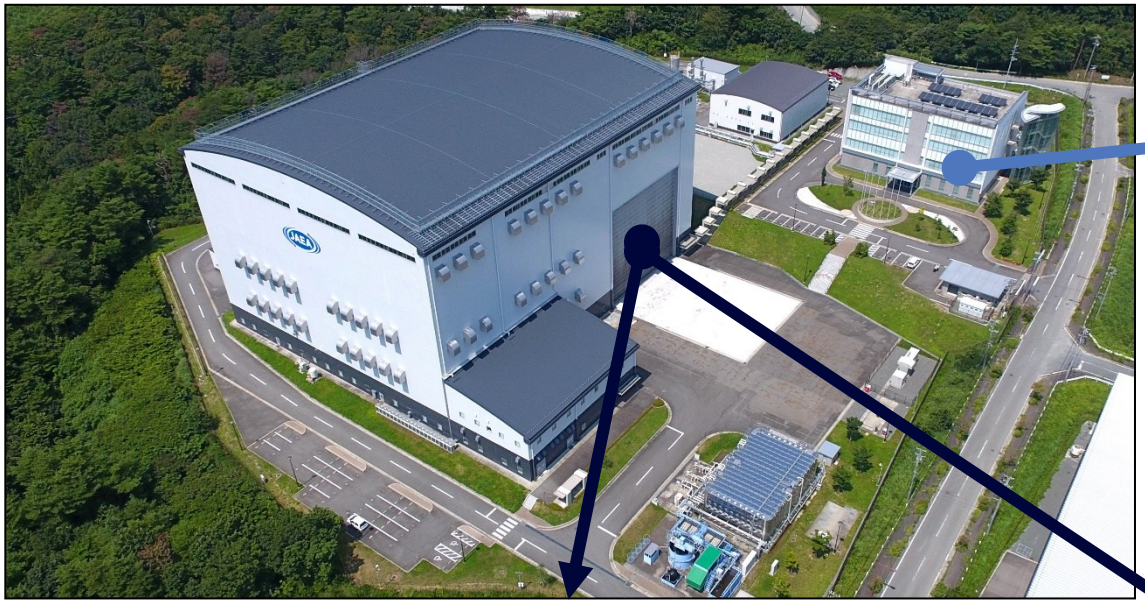
"Helping Fukushima recover and rebuild as soon as possible!"

2025 — Director, Naraha Center for Remote Control Technology Development (NARREC)

"Putting our experience in decommissioning Fukushima Daiichi to work for society!"

Home: Tsuruga, Fukui Prefecture, Japan

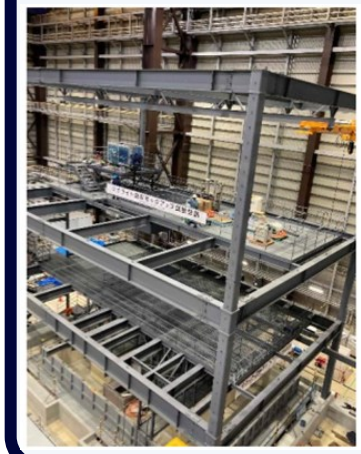
Contribution to 1F decommissioning

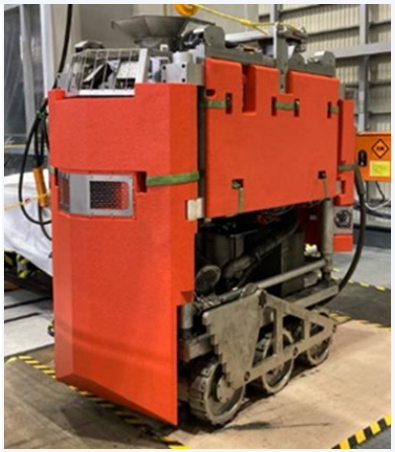


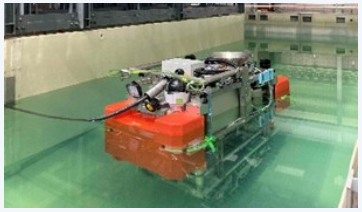
Virtual Reality (VR) to reduce exposure



Demonstration of decommissioning work (Zeolite sandbag recovery system)



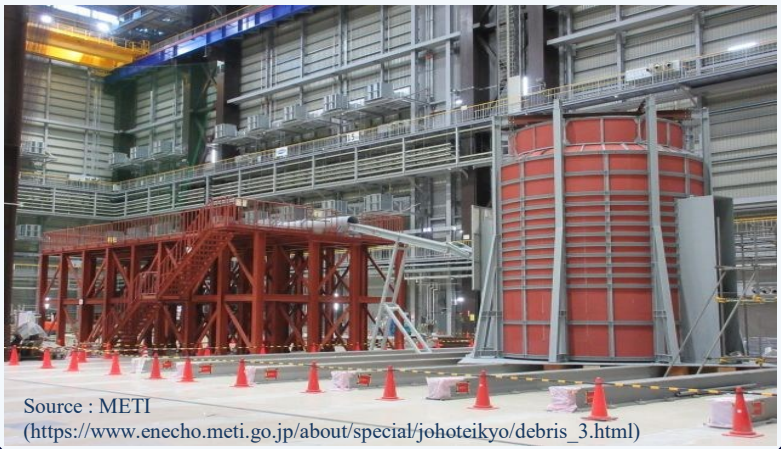






March 19, 2025 Start of work

Decommissioning Demonstration Test (Fuel Debris Removal System)



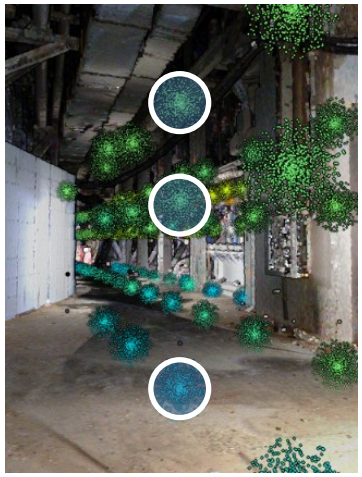
Source : METI
(https://www.enecho.meti.go.jp/about/special/johoteikyo/debris_3.html)

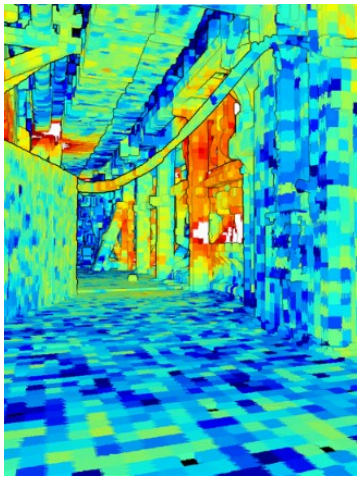
Inverse Source Estimation System

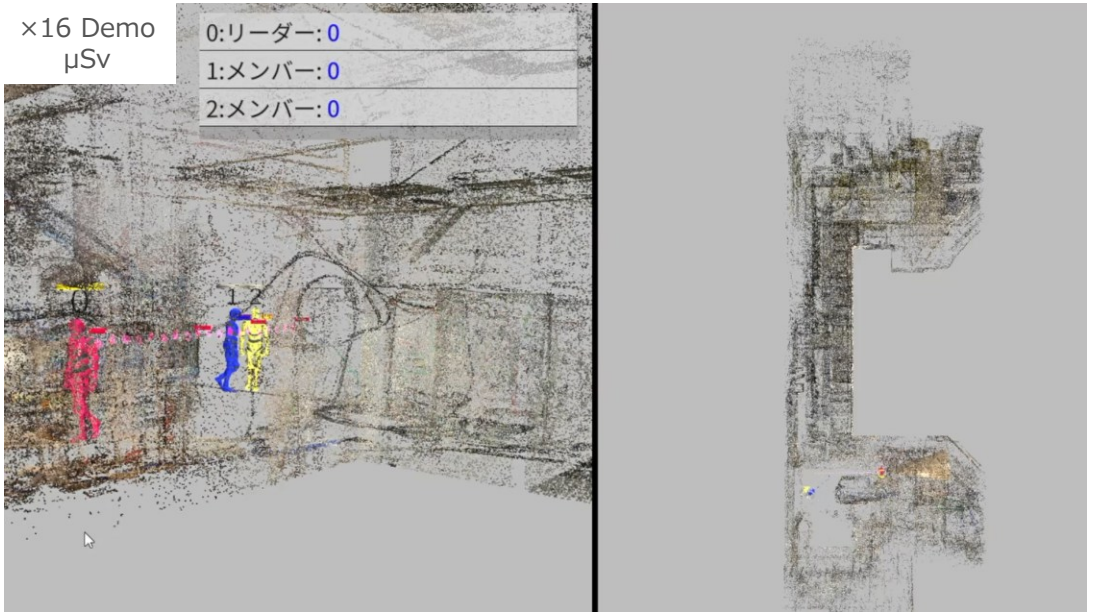
Pre-Work Contamination Mapping and Radiation Dose Assessment

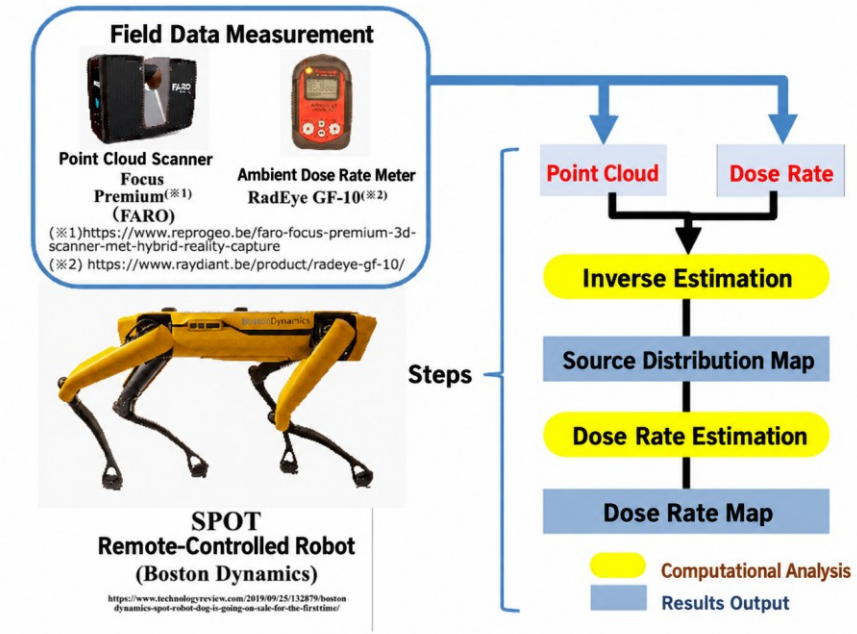
Challenge: Identify obstacles before starting work.
Solution: Map contamination through inverse source estimation and assess radiation doses by simulating worker routes.





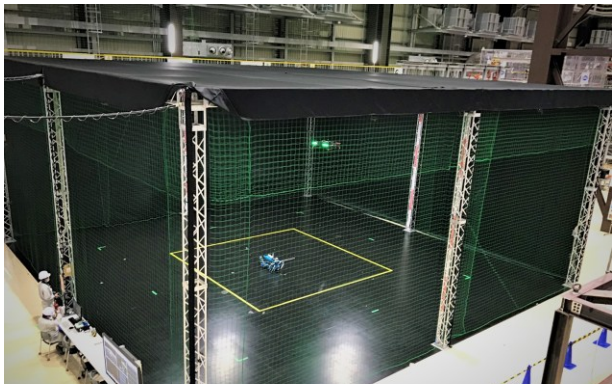






Physical AI

Imitation Learning



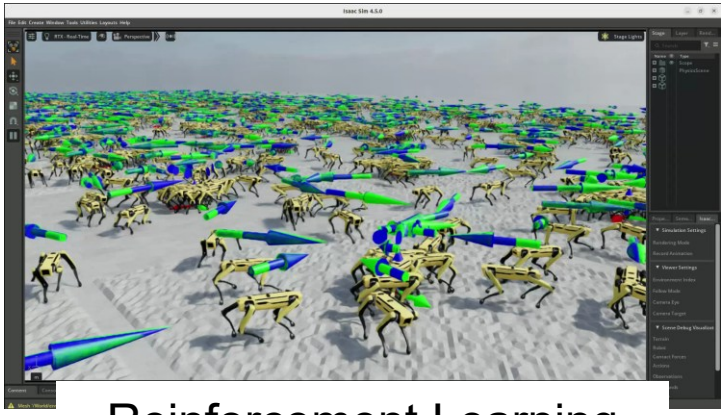
Motion Capture

Teleoperation

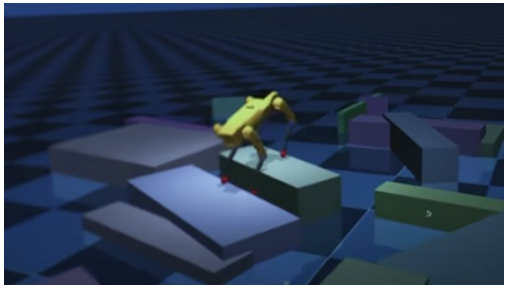


Imitation Learning

Reinforcement Learning



Reinforcement Learning



Spot RL Researcher Kit



Sim to Real

Automated Robotic Inspection

Non-Destructive Testing through Automated Robotic Inspection

Challenge: Inspection with a single robot leaves blind spots.
Solution: Combine two or more types of robots to address blind spots (currently under testing).



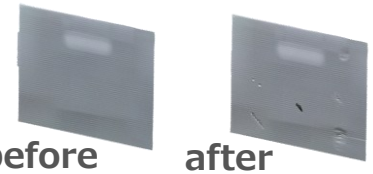


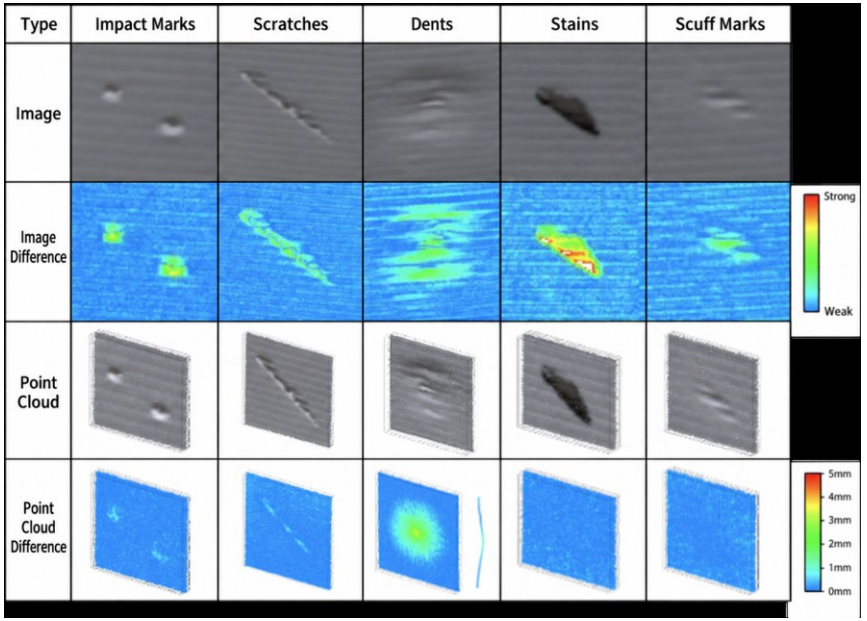


Deterioration Assessment through Change Detection

Challenge: Daily data updates are needed, but 3D modeling from point clouds is time-consuming.
Solution: Accelerate processing by reconstructing only the changed areas in 3D, enabling detection of subtle changes.







Detection and Sizing through Combined Methods

Highly Realistic Simulator



Interactive VR





- Training and work planning with realistic virtual workers and robots in a 3D environment.
- Education and training for workers and new employees
- Hands-on work experiences for visitors and site tour participants, etc.

Summary

Building a brighter future beyond Fukushima Daiichi decommissioning!

- **Accelerating Decommissioning with Digital Technologies and AI-Powered Robots**

  ・Alleviate labor shortages and reduce the need for people to perform hazardous tasks.

- **Expanding NARREC Use by Local Businesses and Other Partners**

  ・Grow together by supporting local startups and developing skilled personnel.

- **Preparing for Future Disasters through Dual Use**

  ・Enable robots to switch between industrial operations and disaster response.





Expo 2025 Osaka, Kansai, Japan　Government Public Relations