



RAICo
ROBOTICS AND
AI COLLABORATION

RAICo – Past, Present, and Future

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Reader in Robotics

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RAICo Interim Academic Lead

Precursor to RAICo (2017 - 2022)



Prof. Barry Lennox
RAIN director



RESEARCH

DEPLOYMENTS

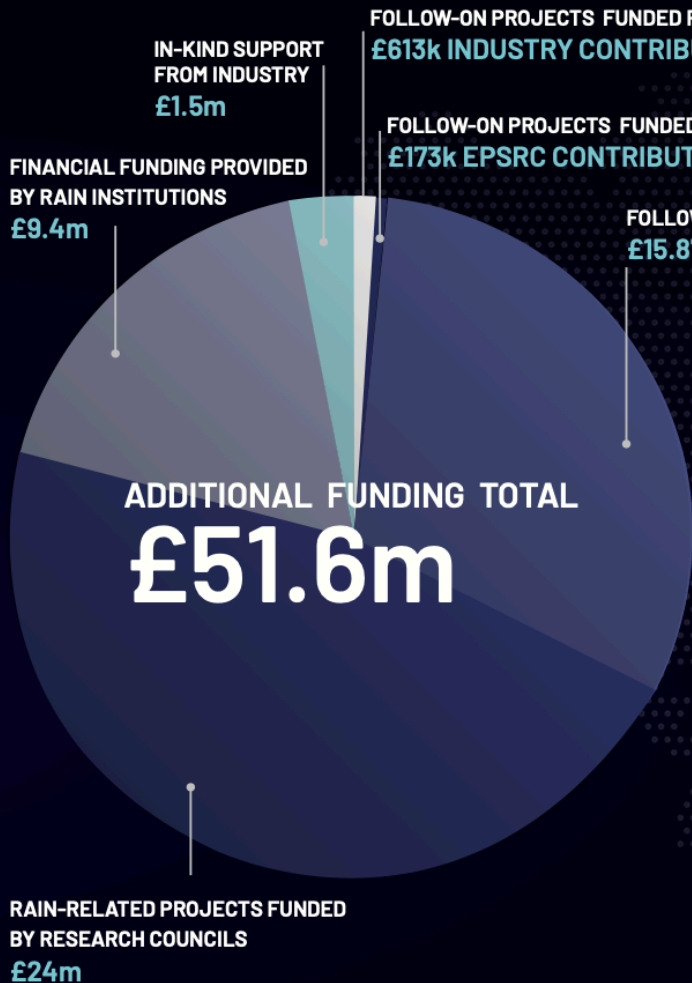
COLLABORATIONS

COMMUNITY

COMMERCIALISE

"RAIN HAS BEEN A HUGELY VALUABLE PROGRAMME WHICH HAS GIVEN THE OPPORTUNITY FOR THE OPERATOR ORGANISATIONS AND THE REGULATOR TO ACCELERATE THEIR UNDERSTANDING OF ROBOTICS."

RAIN ADVISORY BOARD



ORIGINAL RAIN FUNDING TOTAL £15.2m

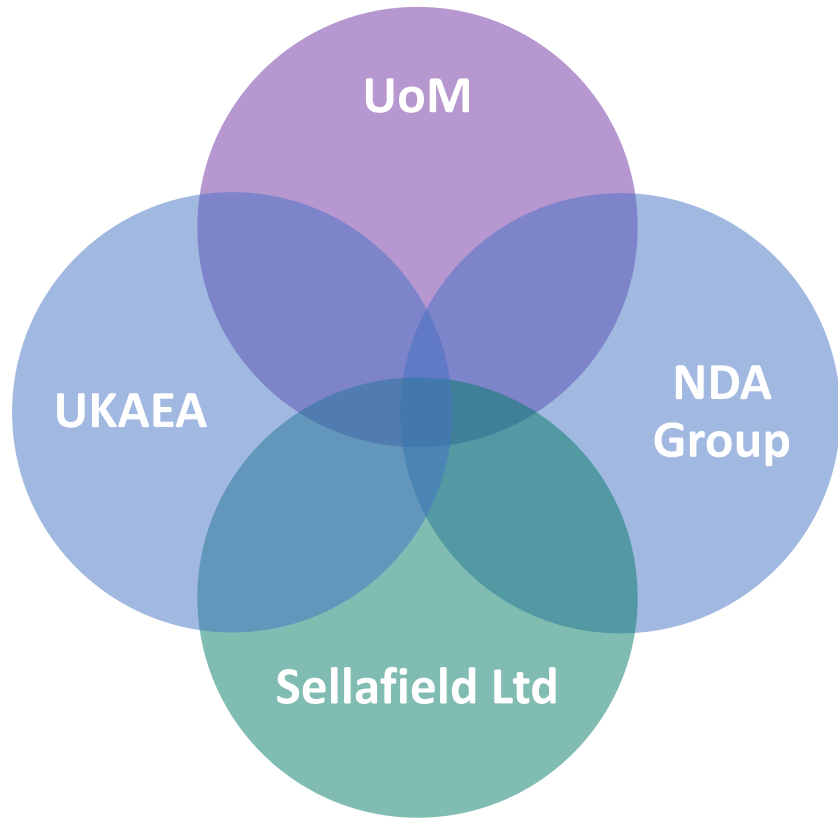
ACADEMIC INSTITUTIONS (£3M) | EPSRC GOVT FUNDING (£12.2M)



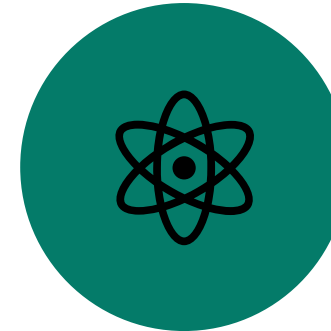
- AWARDS & RECOGNITION — **17**
- COLLABORATIONS & PARTNERSHIPS — **19**
- FURTHER FUNDING — **24**
- 8** — INFLUENCE ON POLICY, PRACTICE, PATIENTS & THE PUBLIC
- 6** — APPOINTMENTS INTO THE INDUSTRY
- 3** — RESEARCH DATABASES & MODELS
- 3** — USE OF FACILITIES & RESOURCES
- 2** — SOFTWARE & TECHNICAL PRODUCTS
- 1** — RESEARCH TOOLS & METHODS
- 1** — SPIN OUTS

KPIs

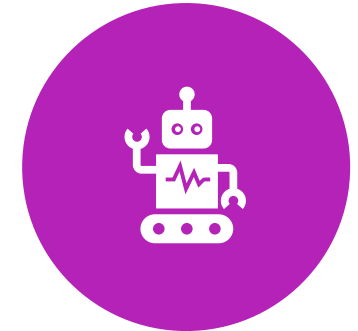
RAICo overview



End-user-led collaboration



Fission decommissioning and fusion engineering



Operationalization of robotics into the nuclear sector



Remotely operated solutions

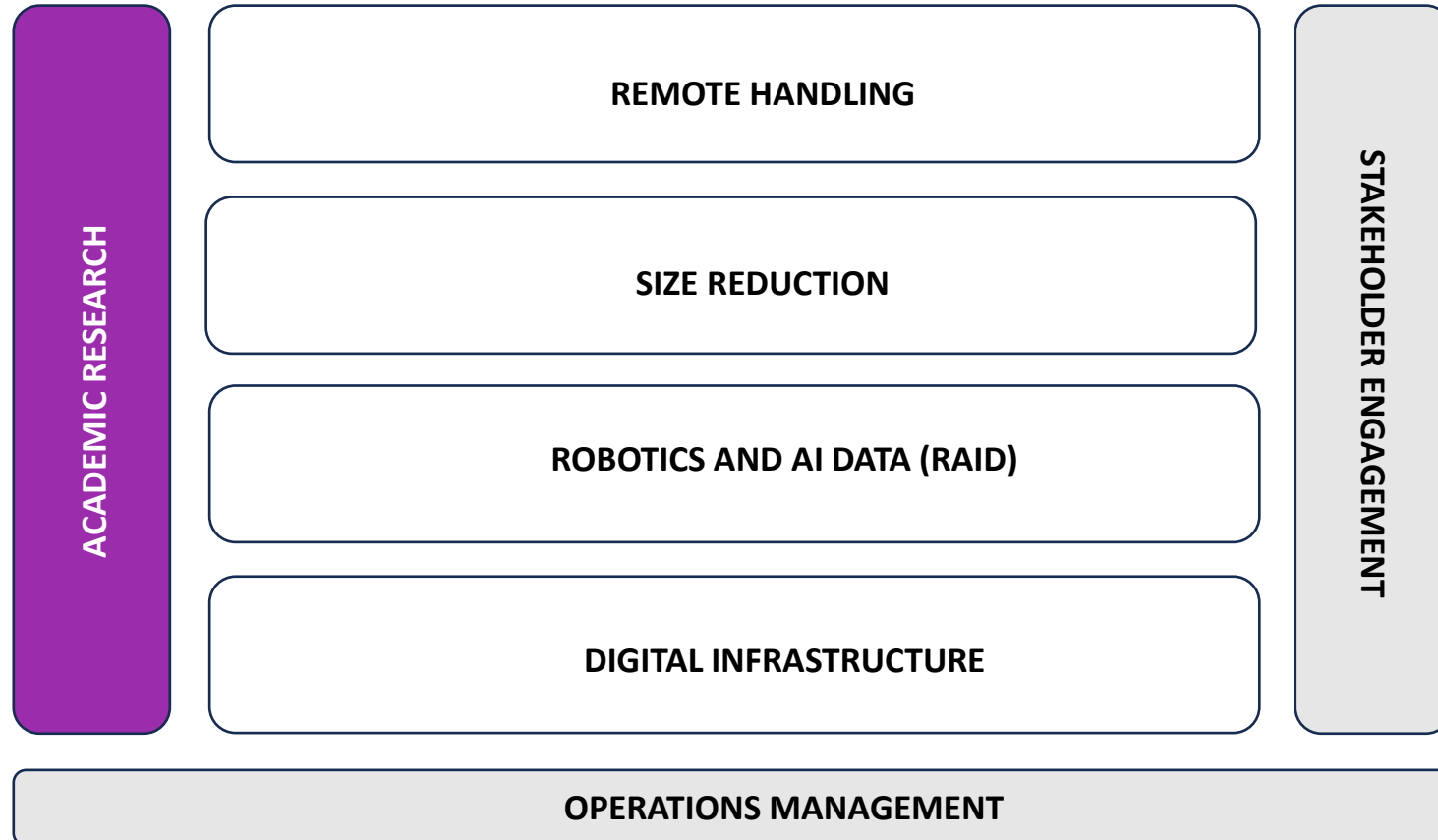


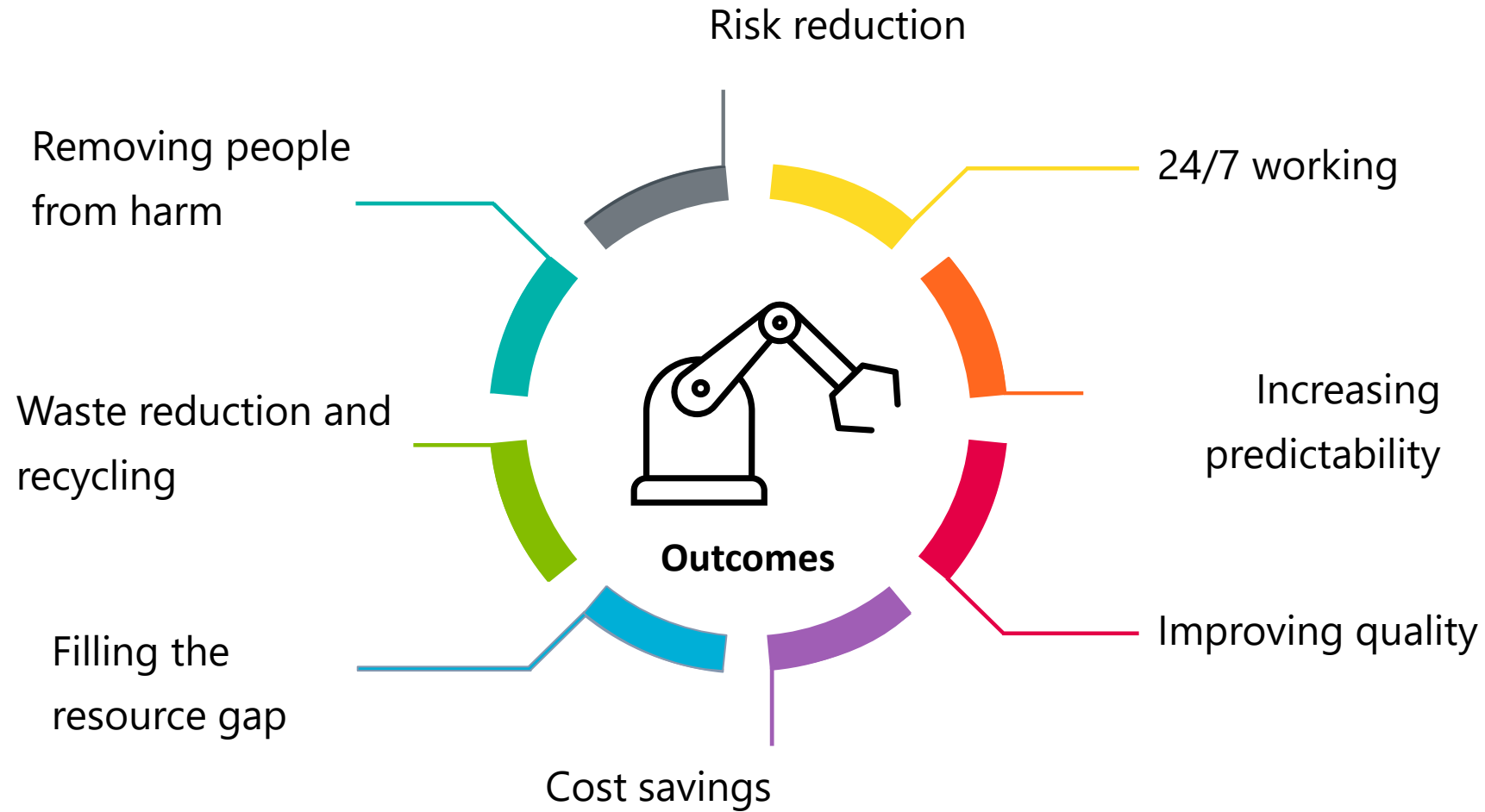
Intelligent customer and supply chain capability and capacity



Socio-economic impact in Cumbria (leveling up)

RAICo Themes







Academic involvement in RAICo



- A **focal point** for the UK robotics academic community.
- **Collaborative** space for academics to work with the nuclear industry and **demonstrate technology**.
- **Funding** to enable UK universities to get involved.
- A route from technology development to deployment.



Facility where SL, UKAEA and UK academia can work together to develop robotic solutions.





HOT ROBOTICS

A National Nuclear User Facility



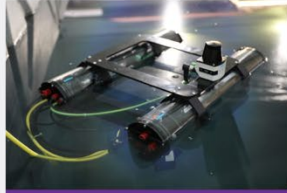
Remotely Operated Vehicles (ROVs)



Agile X Scout 2.0 >



Husarion ROSbot 2.0 Pro >



MallARD >



Vega >

Submersible ROVs



BlueROV2 >



Deeptrekker DTG 3 >



Testing & Demonstration Spaces



Water tank/pond >



Sensors & Detectors



FLIR Benchtop Thermal Camera >



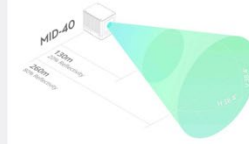
Hydromea LUMA 500 >



Inertial Navigation System >



Intel Realsense L-515 >



Livox Mid 40 >



Modified DP6 paddle >



Olympus Handheld XRF >



Ouster OSO-128 >



Ouster OS1-64 >



Pupil Invisible >



SICK 2D LIDAR TIM5xx >



STS Safe-miniSource >

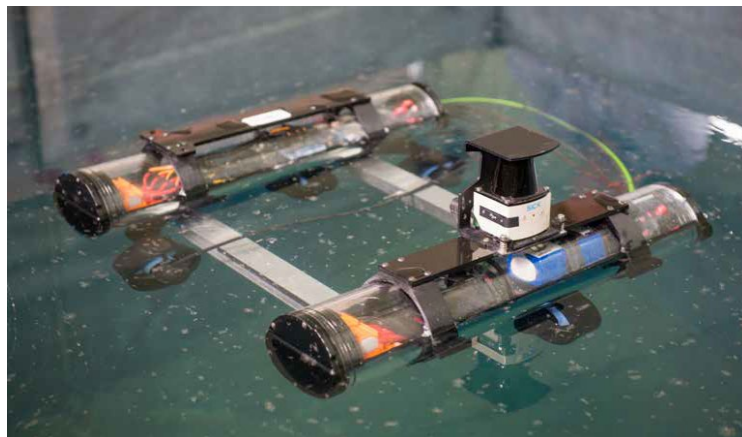
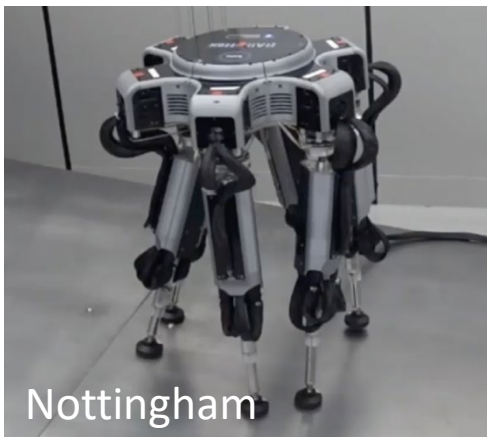
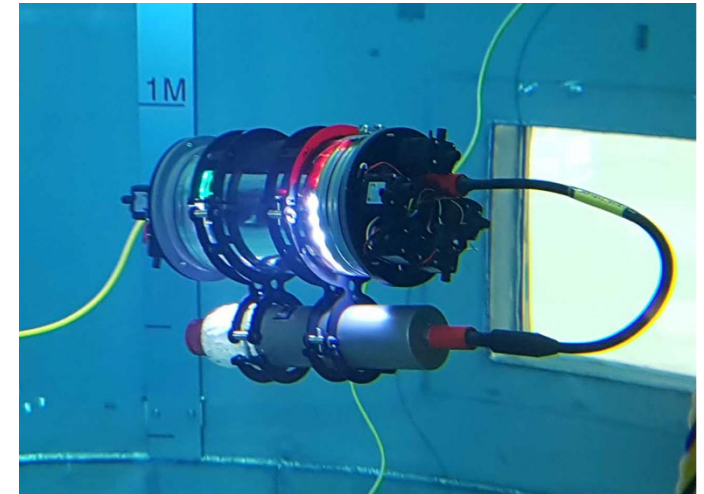
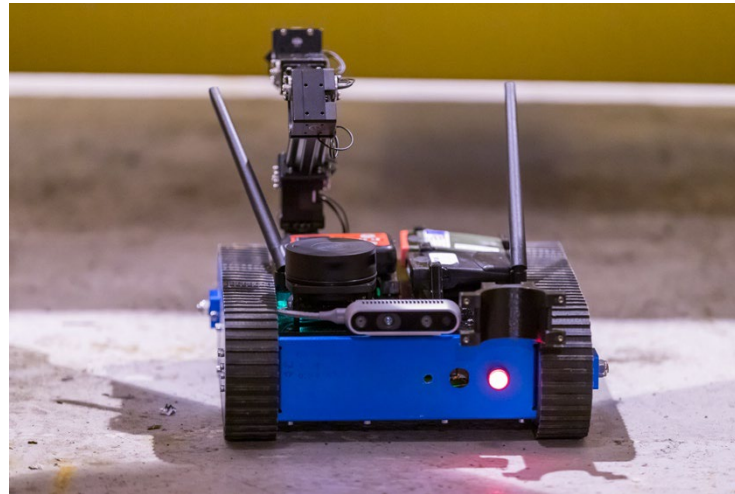
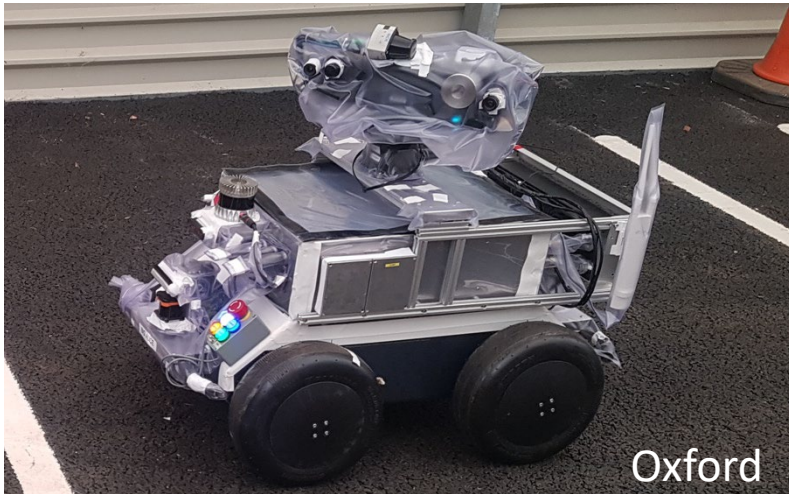


Varjo XR-3 >

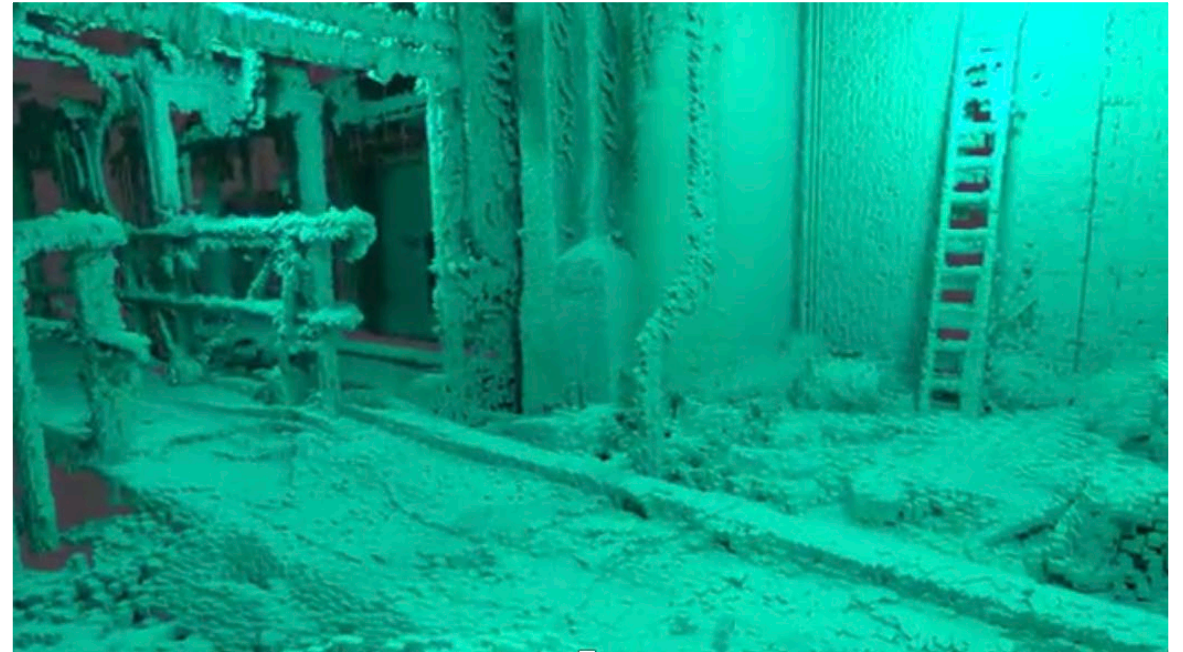


Waterlinked DVL >

Academic Engagement: Remote Inspection

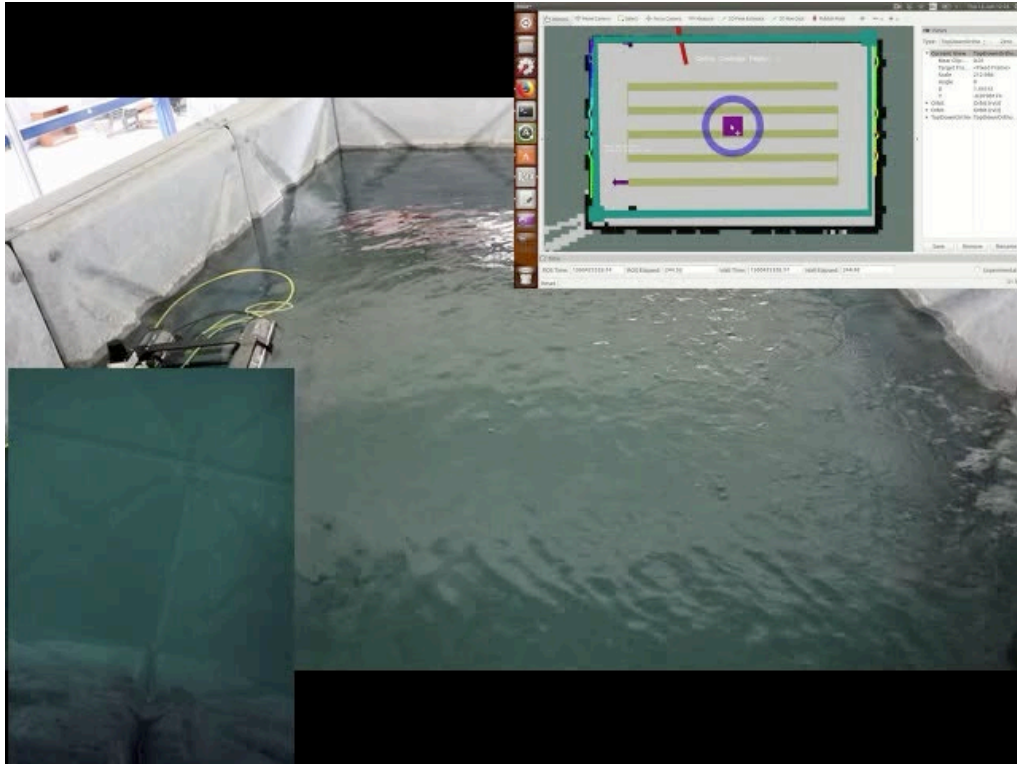


Remote Inspection: Sellafield



3D map created inside Magnox reprocessing facility

Aquatic Inspection: Sellafield



Inspection of ponds...



and silos...

Transferring technology from other sectors



Folding drone developed for the inspection of mines beneath railway lines (involved Headlight AI, Thales, Callen-Lenz, Bristol, Royal Holloway)

UoM's robotics research group in RAICo1



- Three academic staff
- 10 PDRAs, PhD students, Experimental Officers, Project Managers, Administrators
- RAICo1 building hosting demonstration and development spaces, significant investment into RAICo program by Sellafield Ltd



Concluding remarks

- RAICo2
- Next technological challenges
- Opportunities

