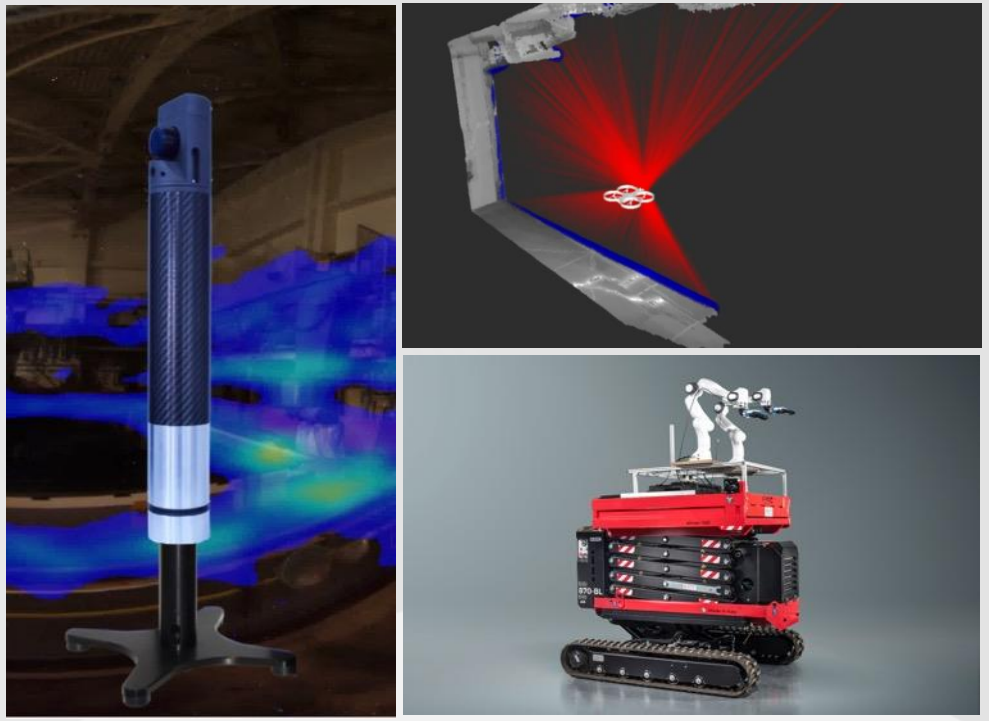
Radwaste Innovation
Optimise Waste Management with Sensing & Robotics

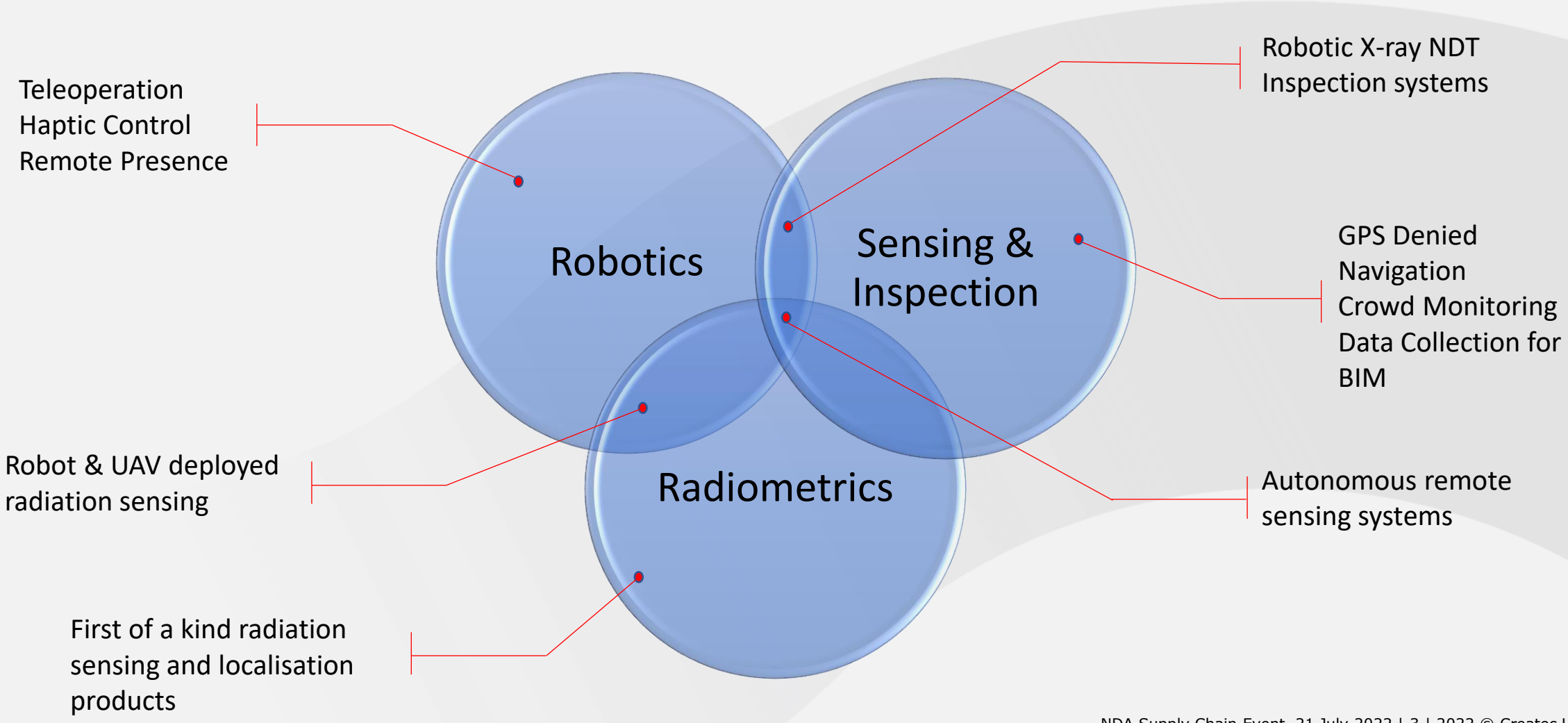
Neil Owen – Business Development Manager

Introduction to Createc

- Thought Leaders for Innovation in Nuclear
  - Bridging university research and industry
- Track record of ‘industry firsts’
  - N-Visage – high dose gamma imaging
  - RISER – On-site autonomous drone flight
  - Open platform robotics – E2A
- Successful ‘take to market’ capability
  - “Doing a Job, Not a Demo”
  - Collaboration for seamless on-site integration



Introduction to Createc
Core Technology Capabilities



Radwaste Innovation

- **Planning**
  - Remote radiation mapping and inspection
  - N-Visage Fusion source term 3D modelling
  - D:EEP Estimating Entrained Product
- **Retrieval**
  - Robotics toolbox with Iris - single virtual reality user interface
  - COTS tele-presence for remote operations
  - Automated clearance measurement
- **Sorting**
  - Remote and automated decontamination
  - ISOSort - mobile sort and segregate solution

Planning
Remote radiation mapping and inspection

Step 1:
Collecting the data using a range of instruments & sensor configurations. Combined with point cloud data using reality capture tools

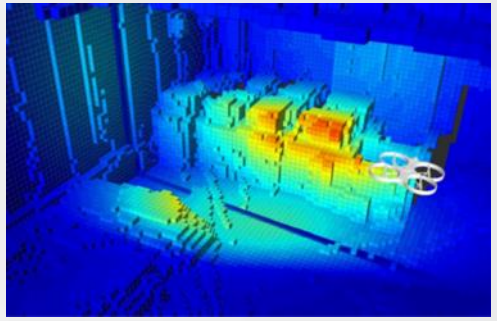
N-Visage® Scanner

N-Visage® Recon

N-Visage® sensors mounted on robotics

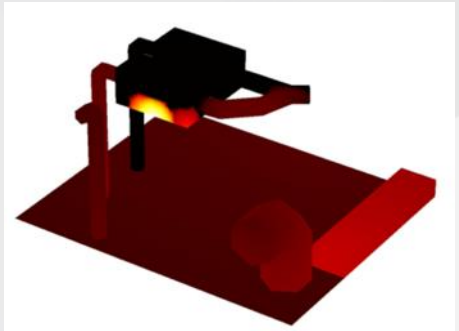
N-Visage® UAV sensor payload

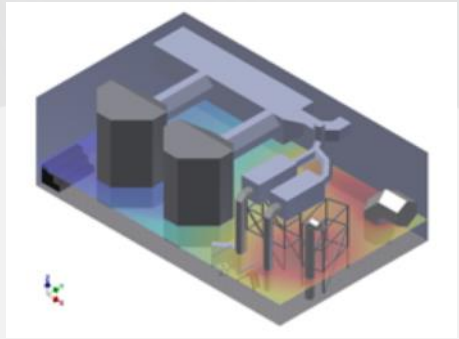
Step 2:
Analyse the data to produce a 3D map for radiation source distribution
N-Visage® Fusion can then model interventions



Realtime 3D heat map of sources

N-Visage® Fusion activity map

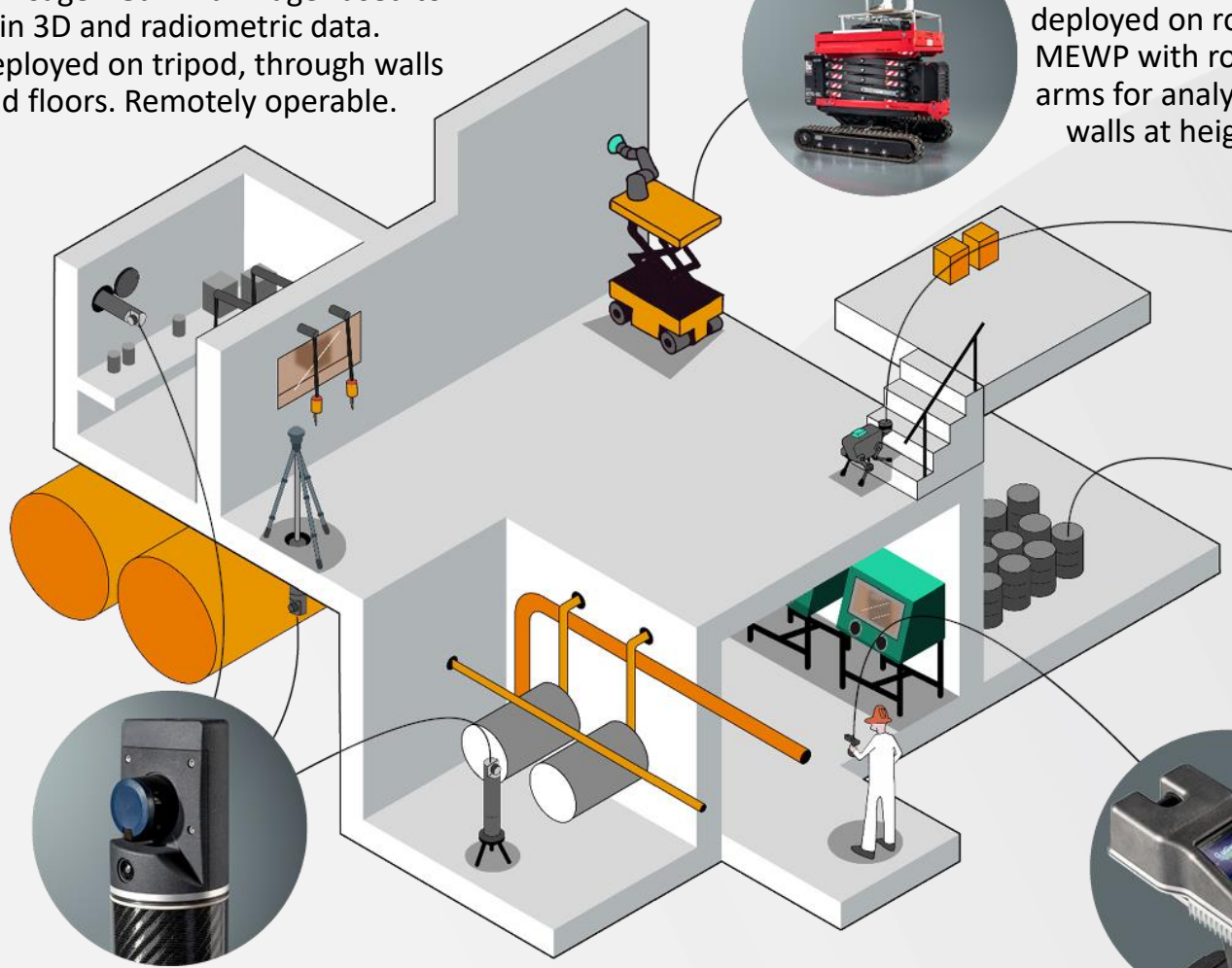




N-Visage® Fusion Dose Planes

Planning
Manual and Remote Data Collection

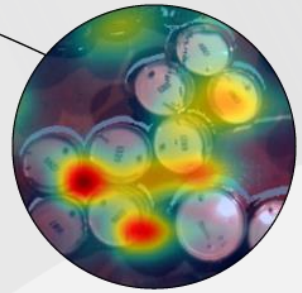
N-Visage® Gamma Imager used to gain 3D and radiometric data. Deployed on tripod, through walls and floors. Remotely operable.



N-Visage® sensors deployed on robotic MEWP with robotic arms for analysis of walls at height.

Ground robot deployed with N-Visage® Sensors for challenging terrain applications.

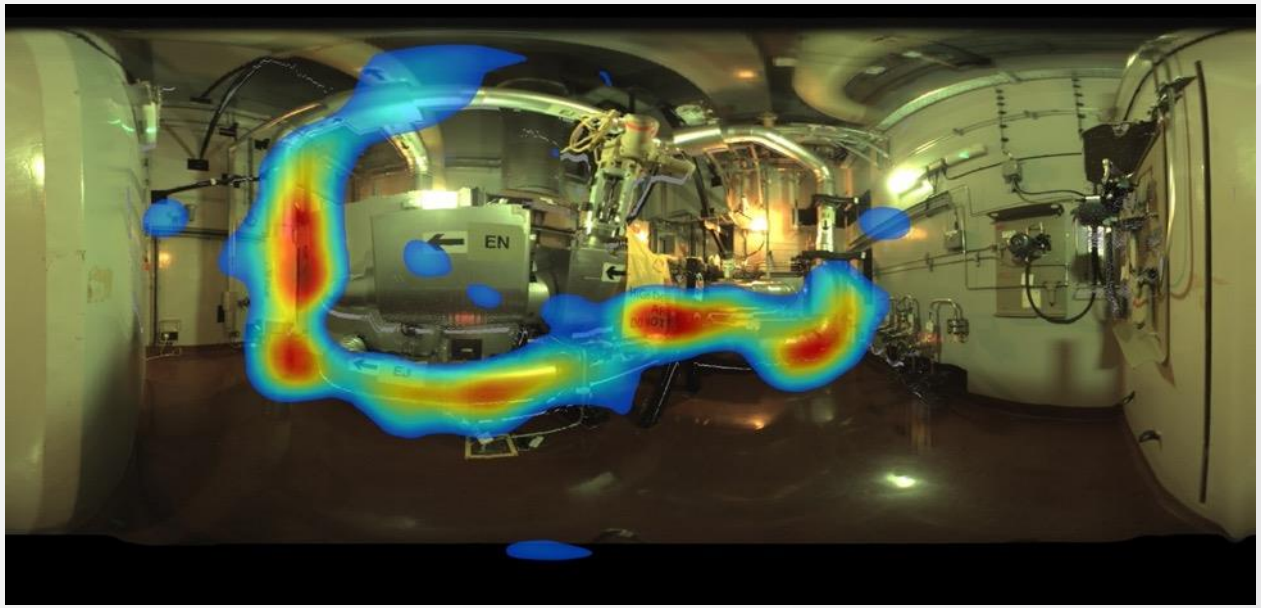
Createc is an authorized reseller for Boston Dynamics in nuclear



Data output from N-Visage® scan of waste storage area.

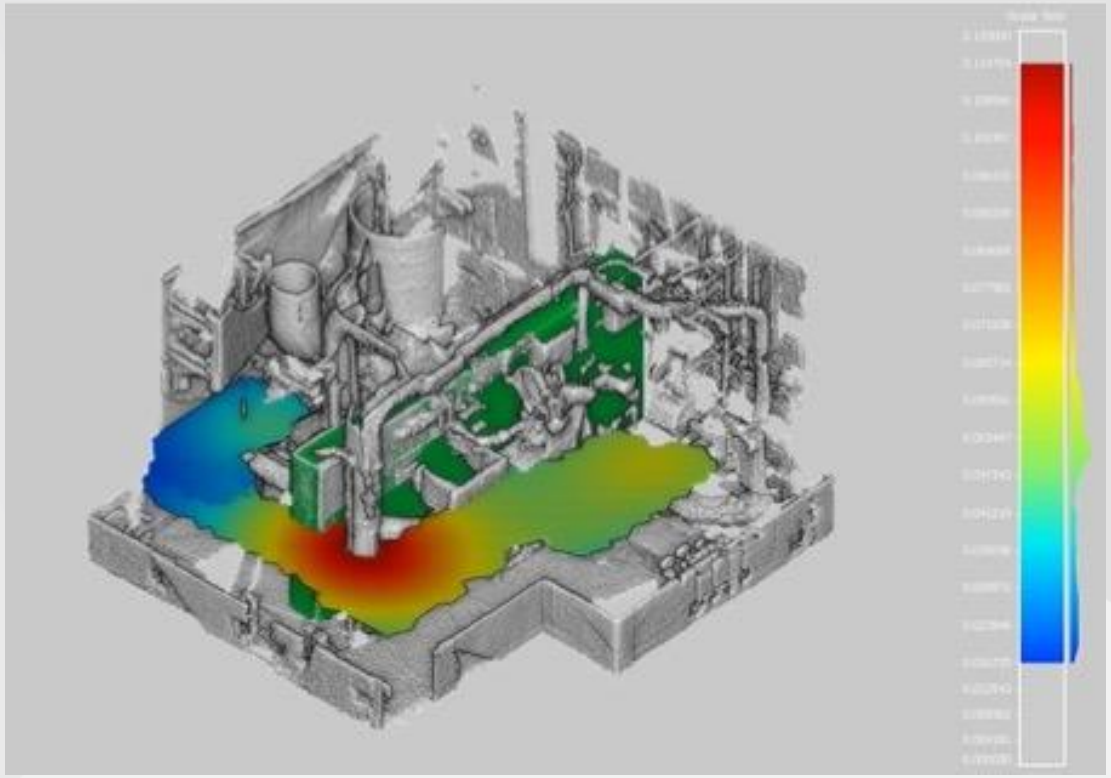
Handheld N-Visage® Recon used to assess glovebox area by site inspector.

Planning
N-Visage Fusion source term 3D modelling

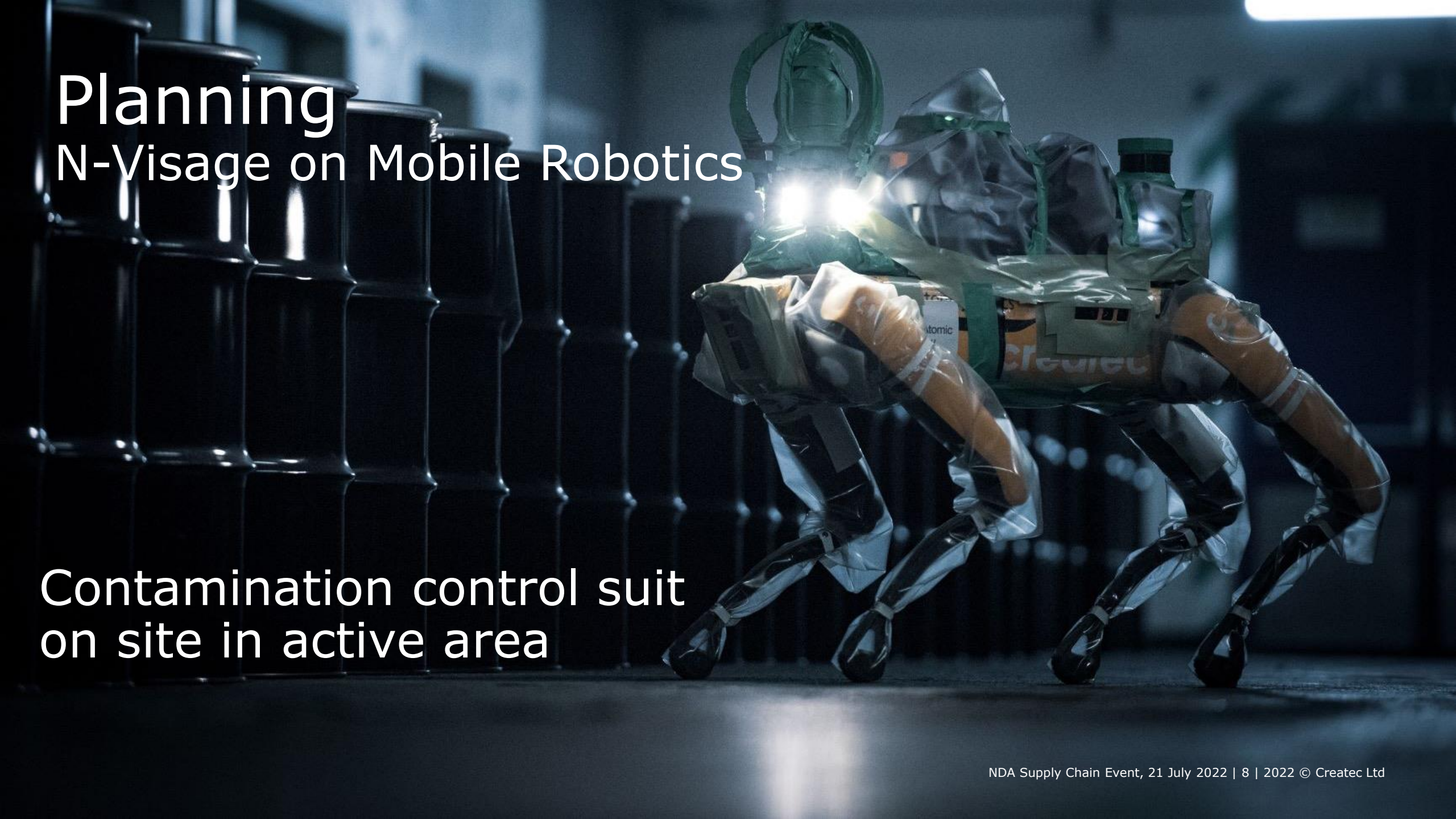


Panoramic image from N-Visage with gamma overlay showing sources from the pipework

3D radiation mapping using N-Visage Fusion to generate a dose plane



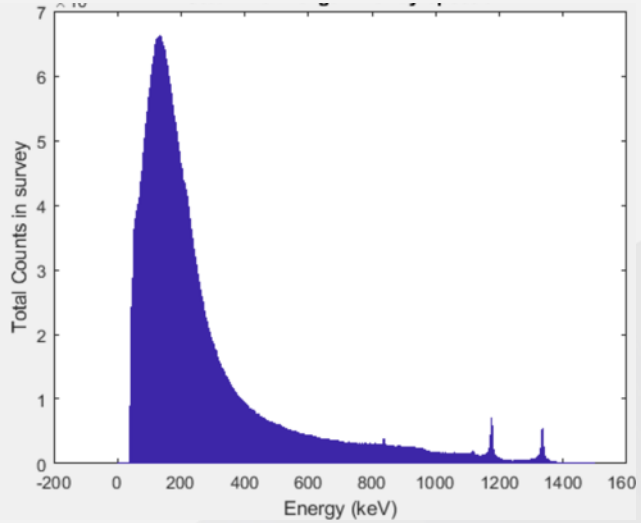
Planning
N-Visage on Mobile Robotics

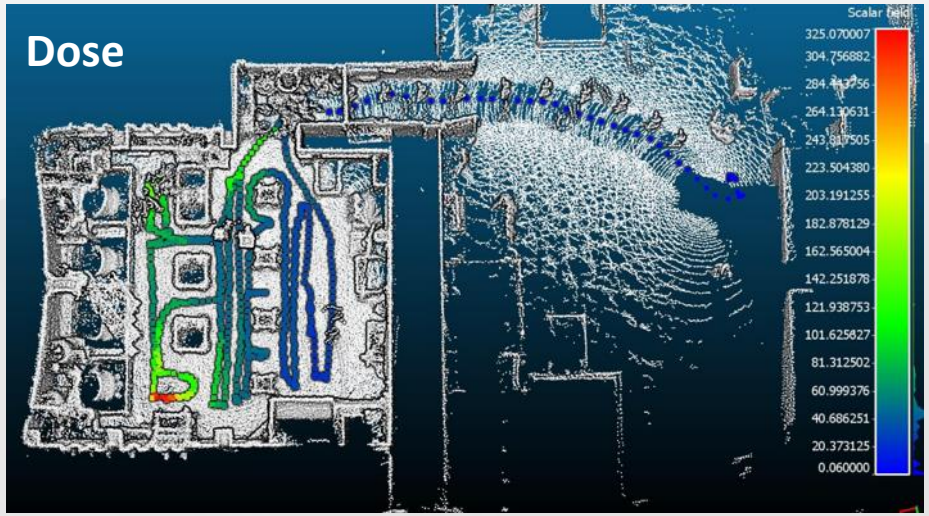


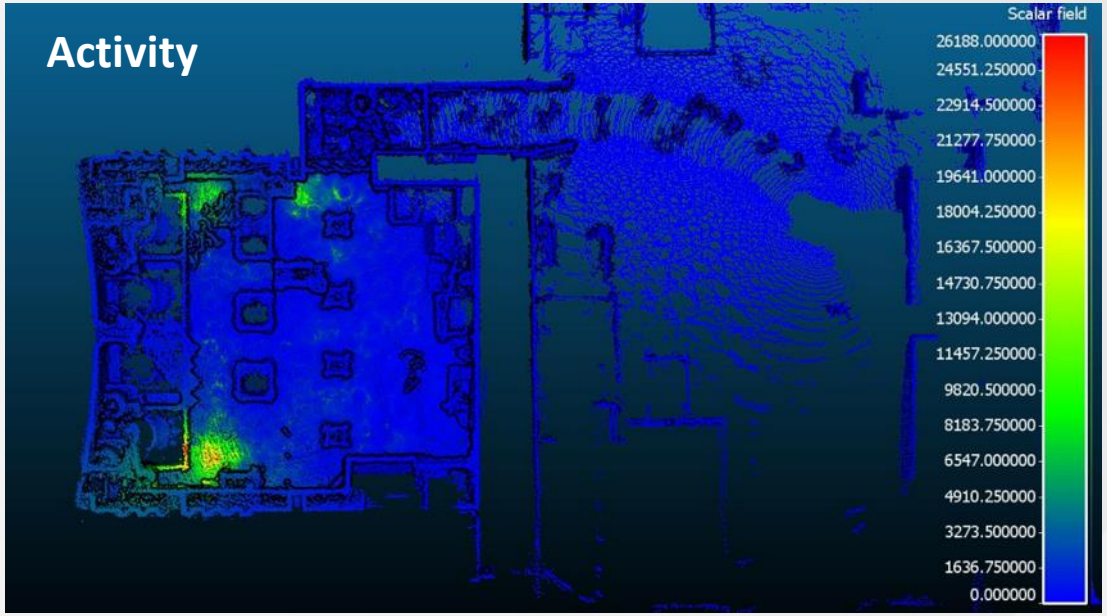
Contamination control suit
on site in active area

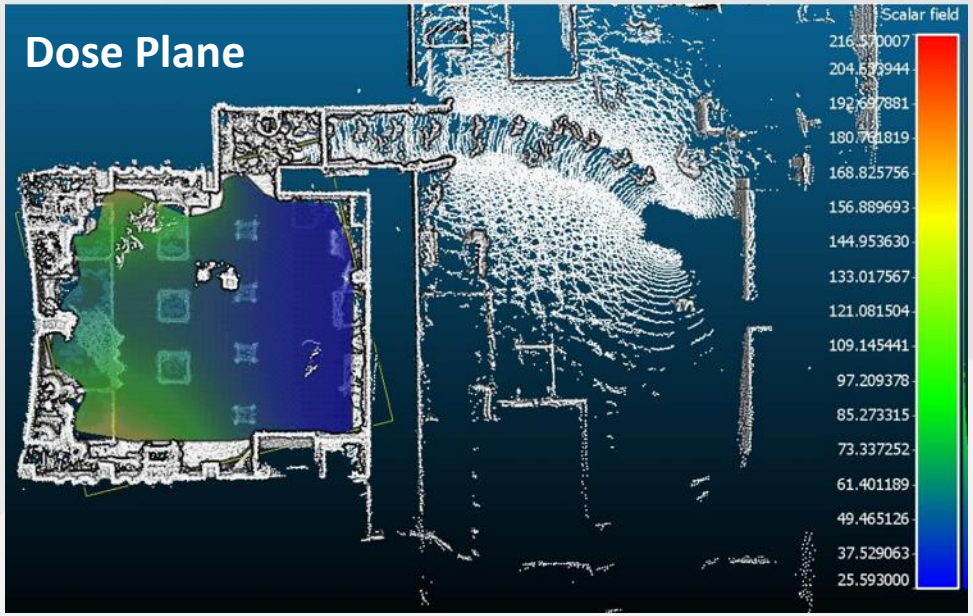
Planning
Outputs

Spectra

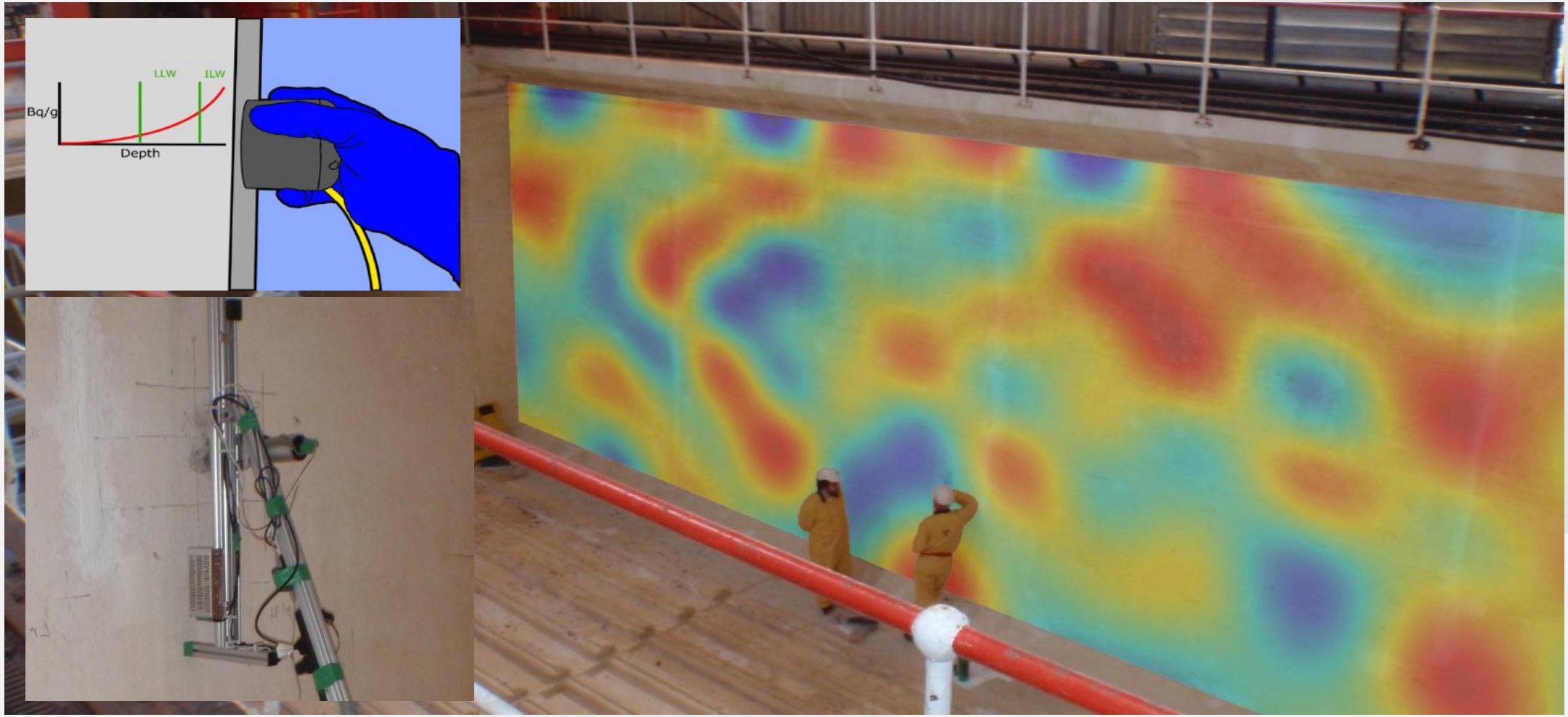






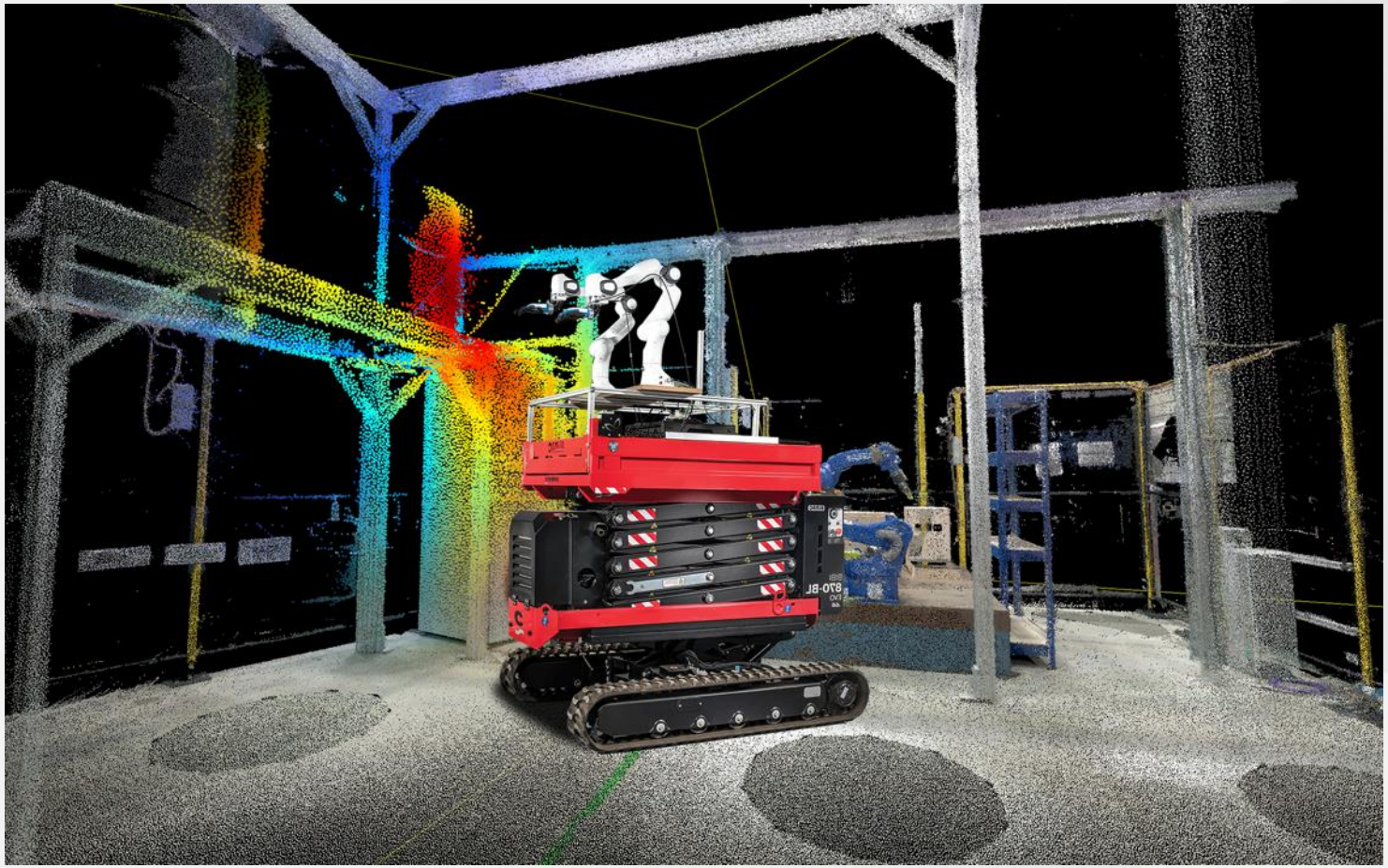


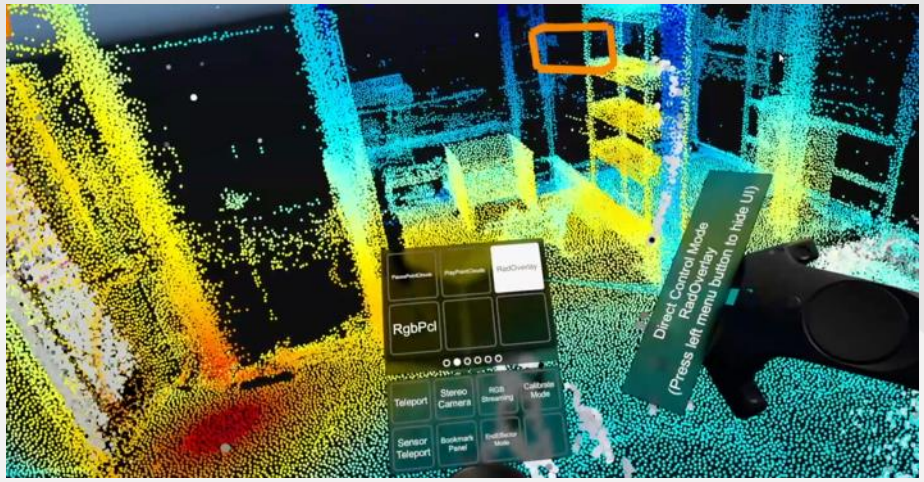
Planning
D:EEP Estimating Entrained Product



Retrieval

Robotics toolbox with Iris - single virtual reality user interface

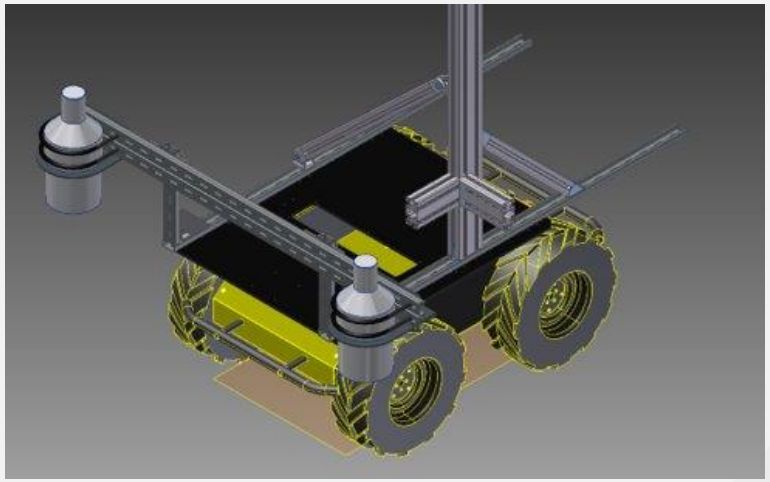


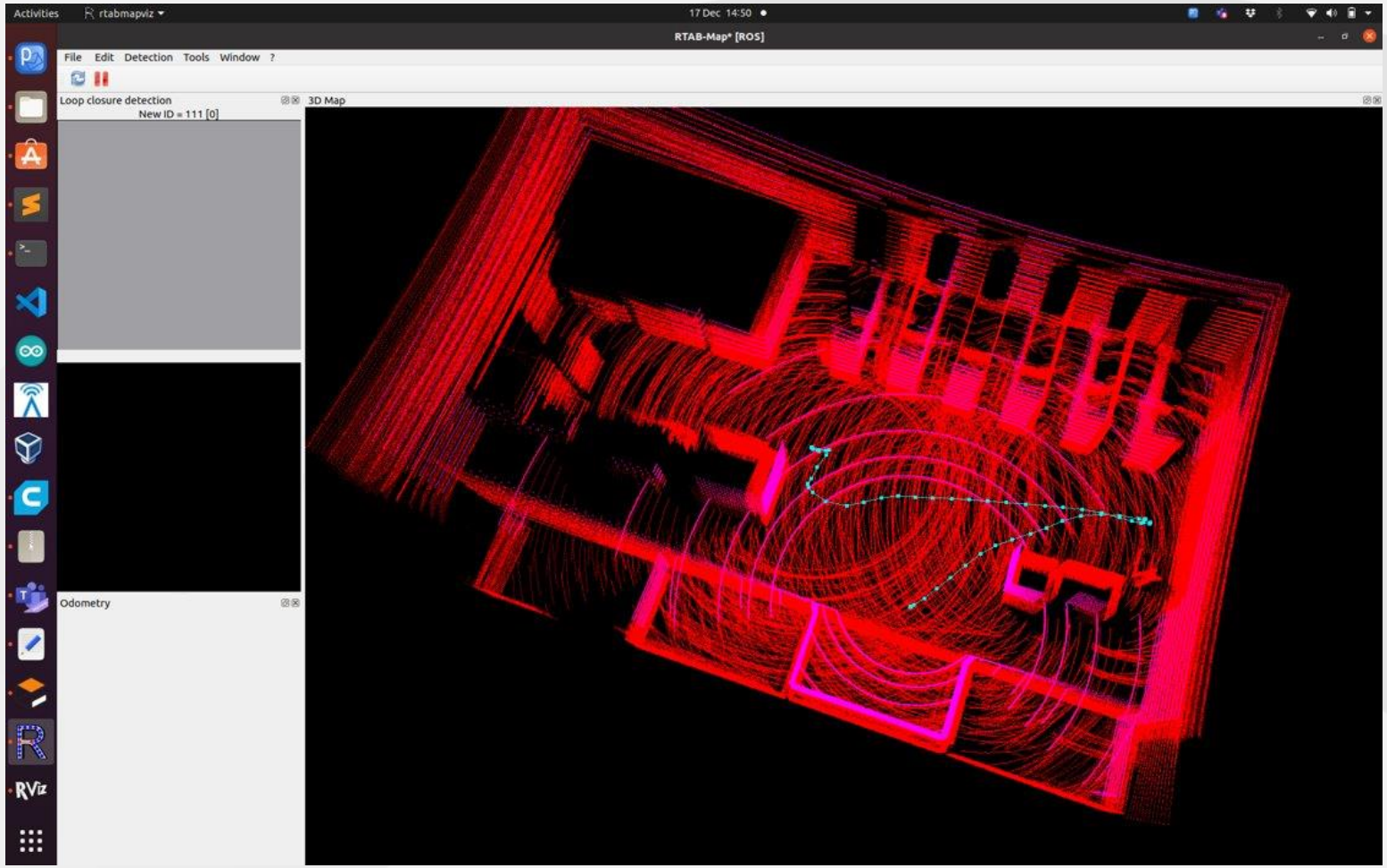


Retrieval

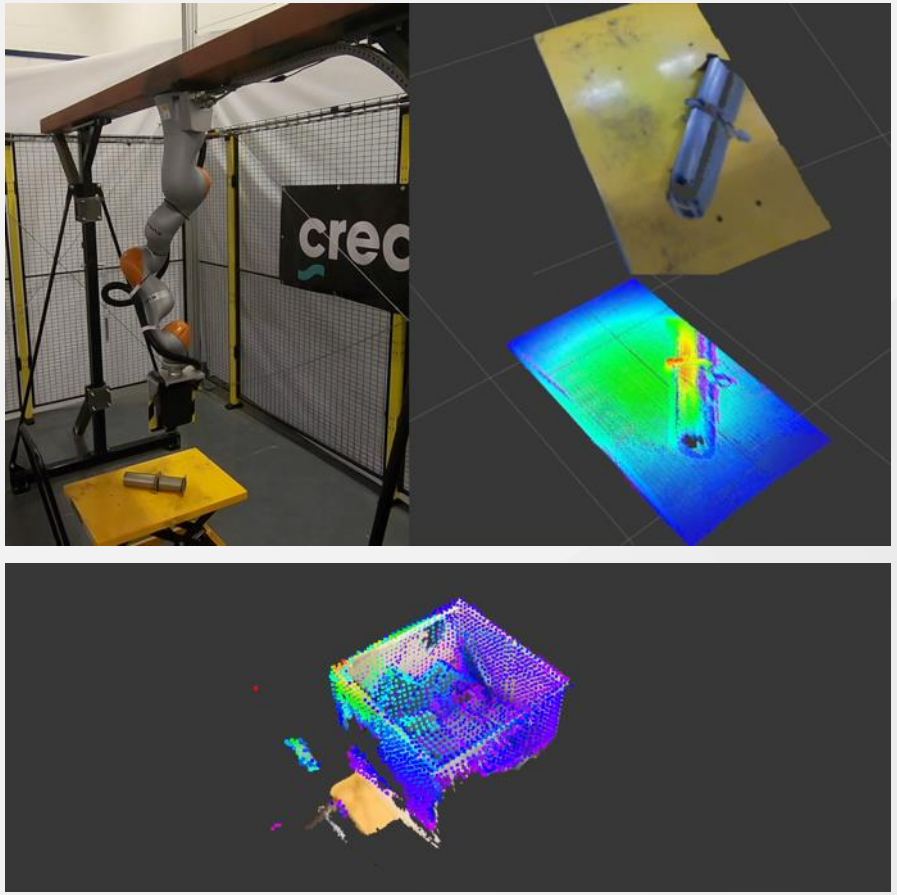
COTS tele-presence for remote operations

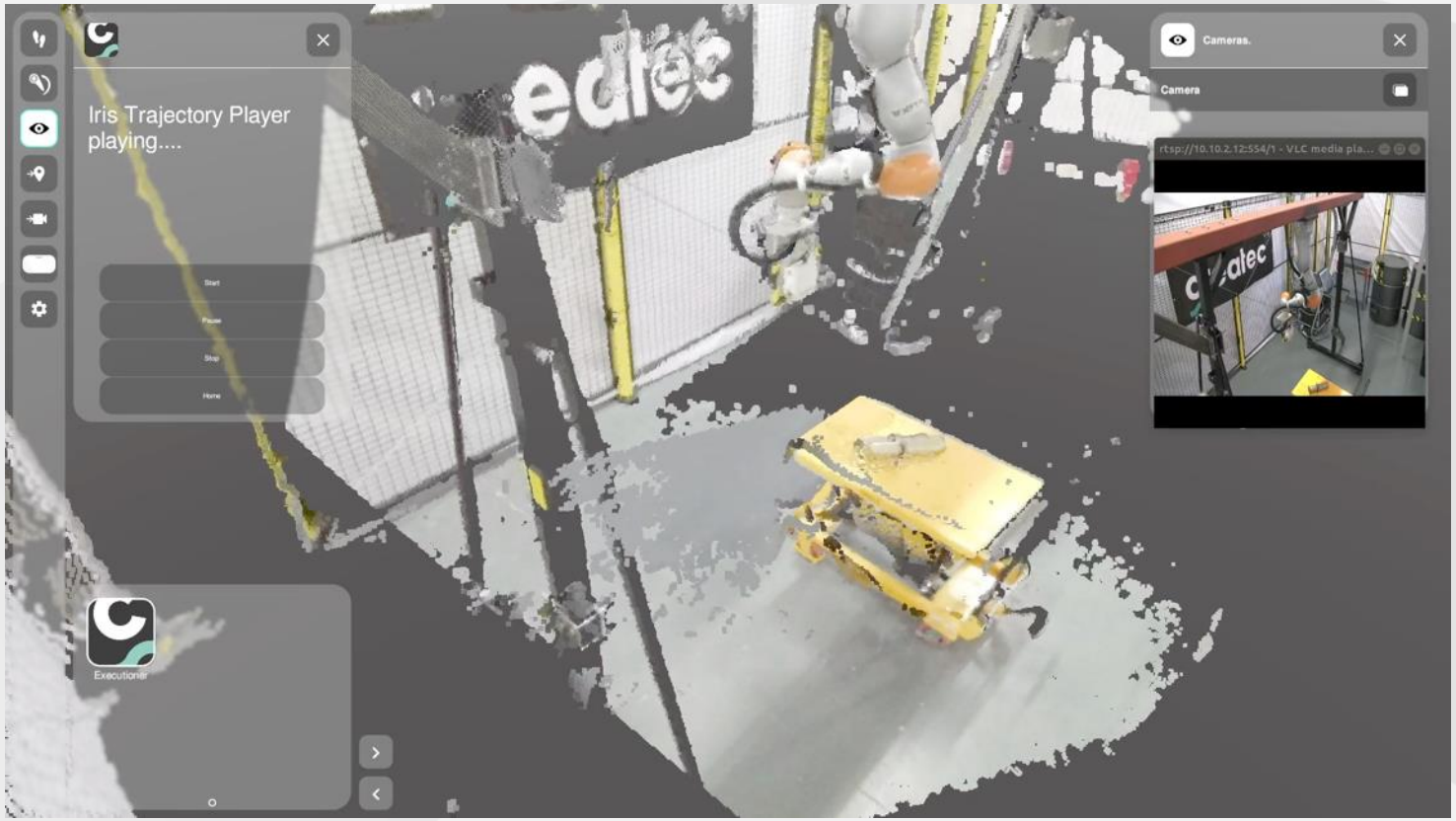
Retrieval
Automated clearance measurement





Sorting
Remote and automated decontamination





Sorting
ISOSort - mobile sort and segregate solution

- Waste material picked from a pile using an AI robotic system
- Heterogenous waste placed on conveyor system
- Data gathering / characterisation:
  - Spatially located radiometric info
  - Isotope identification
  - Material identification
  - Mass
  - Object shape & volume
- Material efficiently packed into separated waste streams


Thank you
Questions?