

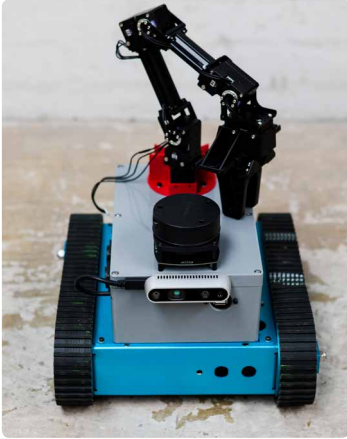
VEGA

Tracked ground ROV

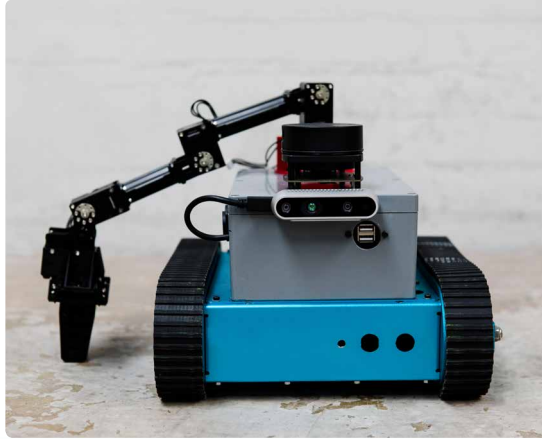
Exploration platform capable of mounting sensors and manipulators



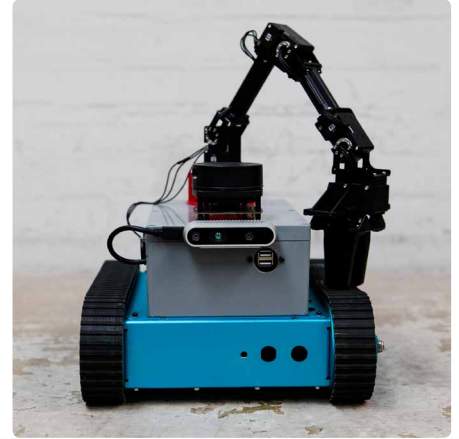
LIDAR



Manipulator arm



Modular configuration



TRL 1-2
basic
research

TRL 2-3
research to
feasibility

TRL 3-5
technology
development

TRL 5-6
technology
demonstration

TRL 6-8
system/
subsystem
development

TRL 8-9
system test,
launch and
operations

The VEGA is a low cost platform for exploration, offering:-

- Full physical and radiological characterisation of open spaces, including areas that have unknowns or are unmapped.
- Geomaps/local area maps, providing visual or spatial information.
- Flexible solutions, use your choice of sensor, adapts to your task requirements.
- Rapid deployment in seconds to minutes if required during an emergency or test drill.

APPLICATIONS

The VEGA is small, adaptable and able to fit into smaller areas than currently available robotic platforms.

Despite its size, the VEGA can carry a large payload if required.

The modular payload section on-top of the VEGA enables integration of almost any sensor payload, making it easy to configure for a variety of tasks.

The VEGA has been successfully demonstrated at inactive sites with a variety of sensor technologies including Lidar, RGB-D cameras, stereo cameras, gamma detectors, neutron detectors and, in development, a small manipulator.

The VEGA can rotate on the spot and move forwards and backwards using the tracked actuation.

KEY BENEFITS

- Low cost exploratory platform
- Accelerated inspection times to aid decision making and mission planning
- Capable of self-localisation to within $\pm 5\text{mm}$.
- Adaptable payload space suited for a variety of tasks.
- 1 x person deployable if required.
- Tethered or untethered operation possible (: High-speed ethernet or Wi-Fi enabled communication).



TECHNICAL SPECIFICATION

Parameter	Value
External dimensions	31 x 28 x 25 cm L,W,H
Weight	6 kg
Payload weight	5 kg (possibly increase to 8 kg, but this would limit battery life).
Communication interface	Tethered Ethernet or Wi-Fi
On-board computing?	Intel UP board - 1.5ghz atom single core, 4GB RAM, 64GB eMMC, running Ubuntu 16.04 and ROS Kinetic.
Battery/run-time	8 hours continuous, 120 hours standby, (tether indefinite)
Tether/tether management	Optional auto retracting tether system: 60 m, can go up to 100 m - 50 watt power delivery at 100 m
Drive system	Differential tracked drive
Built in sensors	LiDAR (rplidar A1), 3D camera (intel real sense d430)
Velocity	0.5 m/s with a payload of 5 kg (decreasing to 0.2 m/s with larger payloads)
Operation mode (teleoperated or autonomous)	Tele-operation is default mode. Can be made semi-autonomous on request.
Additional remarks	Can travel over obstacles <5cm tall

COMMERCIAL OPPORTUNITIES

Offering

- Demonstration of the technology on site or at a The University of Manchester facility.
- Partnering opportunity to commercialise the technology.
- In the near future, a CE-marked, build-to-order commercial product.

Needs

- Demonstrations in-front of key purchasing stakeholders.
- Collaboration opportunity:
 - Deployment in all relevant environments.
 - Guidance on the regulatory paperwork for commercial deployments on a nuclear site.

