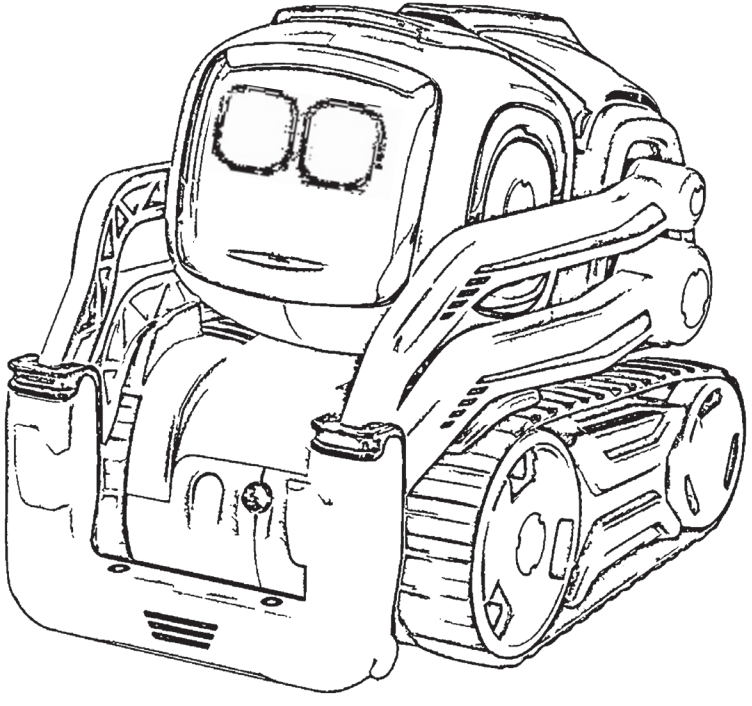
ORCA HUB

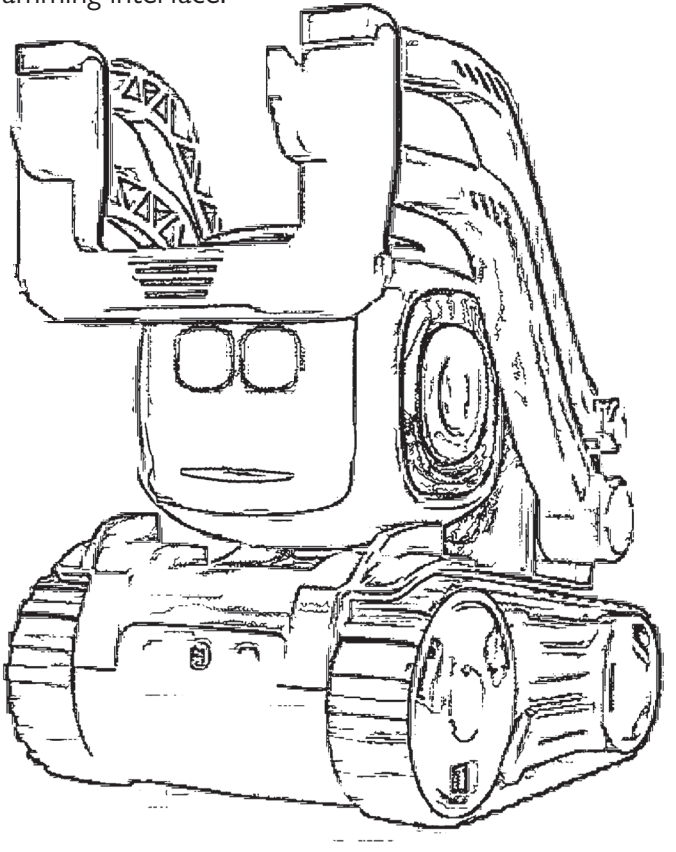
Offshore Robotics for Certification of Assets


OceanServer
Sonar Imaging by KLEIN

ORCA Hub researchers are working to develop robots that can carry out important missions in dangerous offshore environments for the energy industry. We are demonstrating how these missions will be carried out using a Cozmo robot in place of the real robots, such as ANYmal and Husky who also feature in this book.

Cozmo is a small robot which has a large robotic brain. It has simple sensing and movement capabilities and an easy drag and drop programming interface.

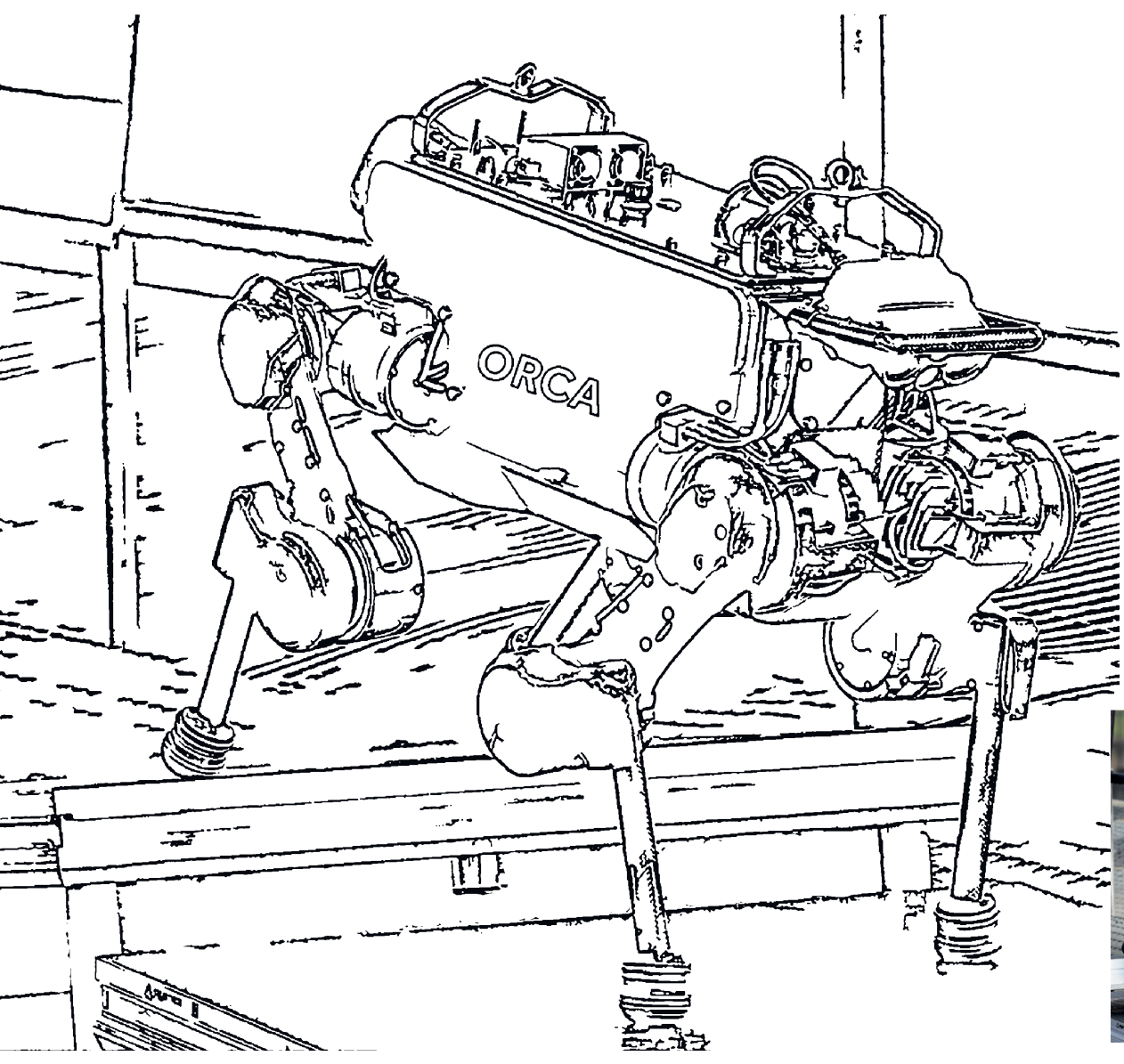




Here, two cameras work just like human eyes and allow for accurate inspection of the underwater environment.

Collaboration is essential to deliver what we aim for. When working offshore, safety is always the top priority.

The ANYmal robot crosses complicated terrain using a sense of touch to detect the ground.

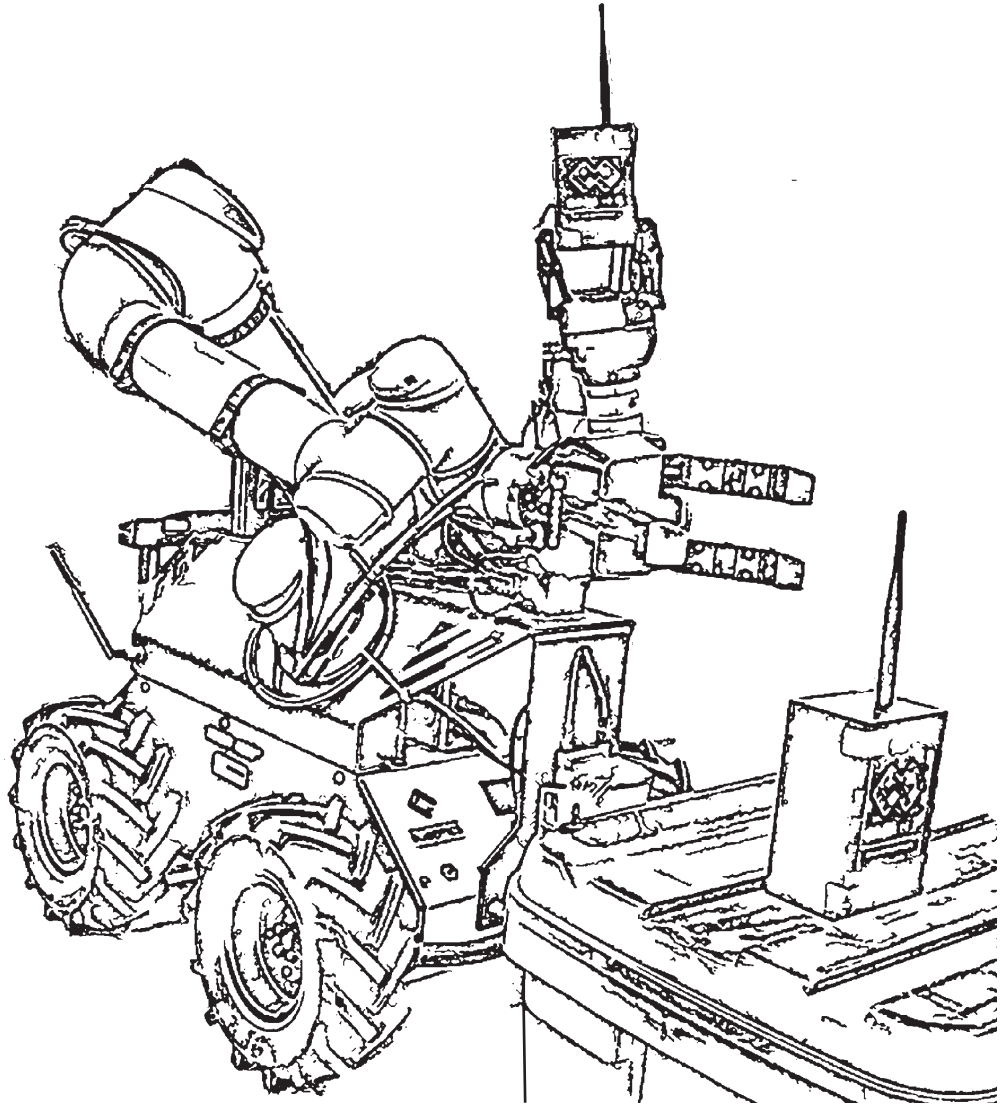


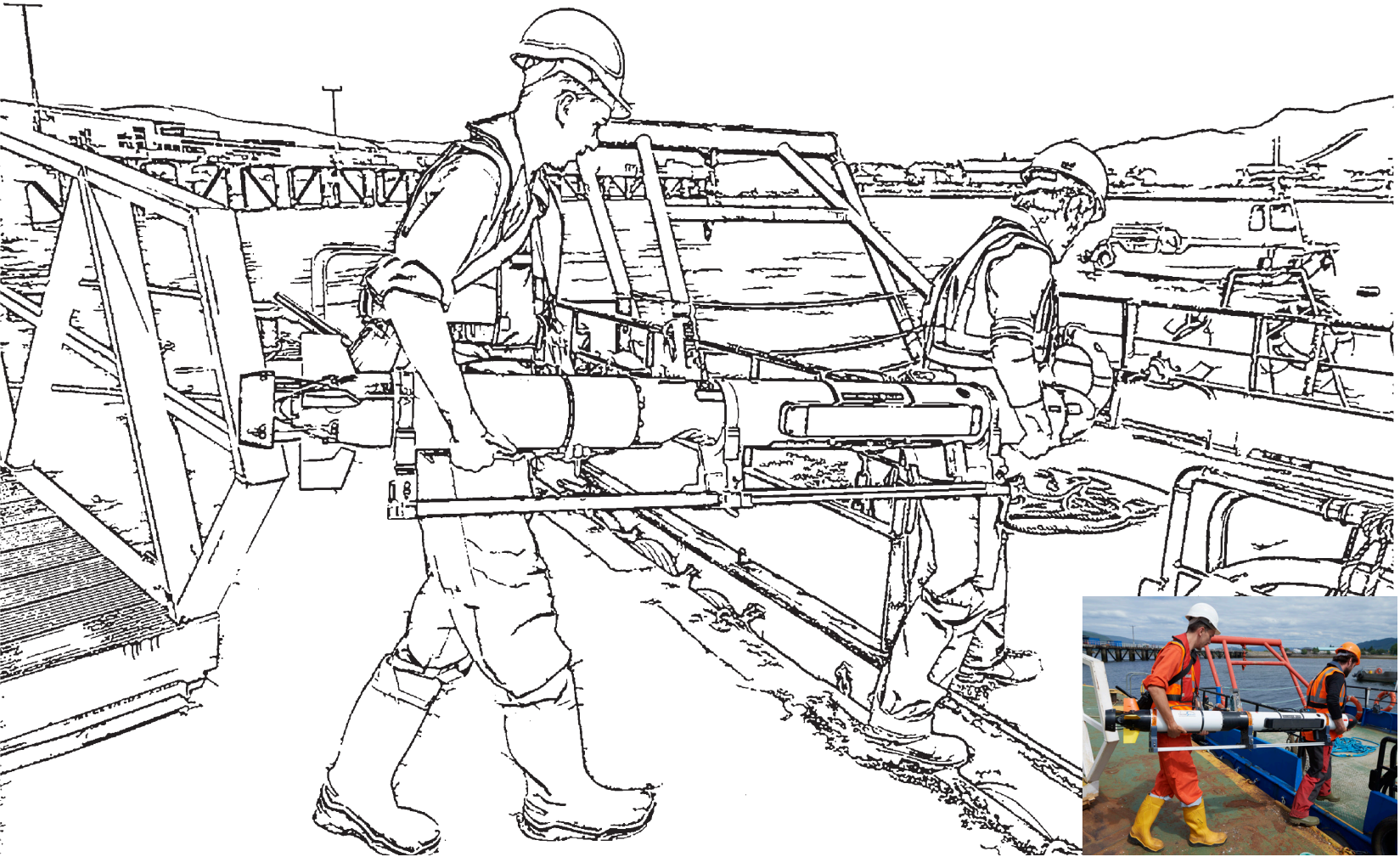
ORCA Hub researchers sit in a boat on Loch Linnhe with a laptop to monitor the Autonomous Underwater Vehicle (AUV) and ensure it carries out its survey and inspection mission safely on its own. Once the mission is complete the AUV will come to the water's surface where the researchers will pick it up and take it back to land.

Robots collaborating is key to ORCA. Here a Husky Robot uses one arm to place a Limpet robot onto a suitable surface and a second arm to carry an extra Limpet for later placement.

The Husky is a wheeled all-terrain robot. Mounted on it are a set of arms and a visual system allowing it to navigate.

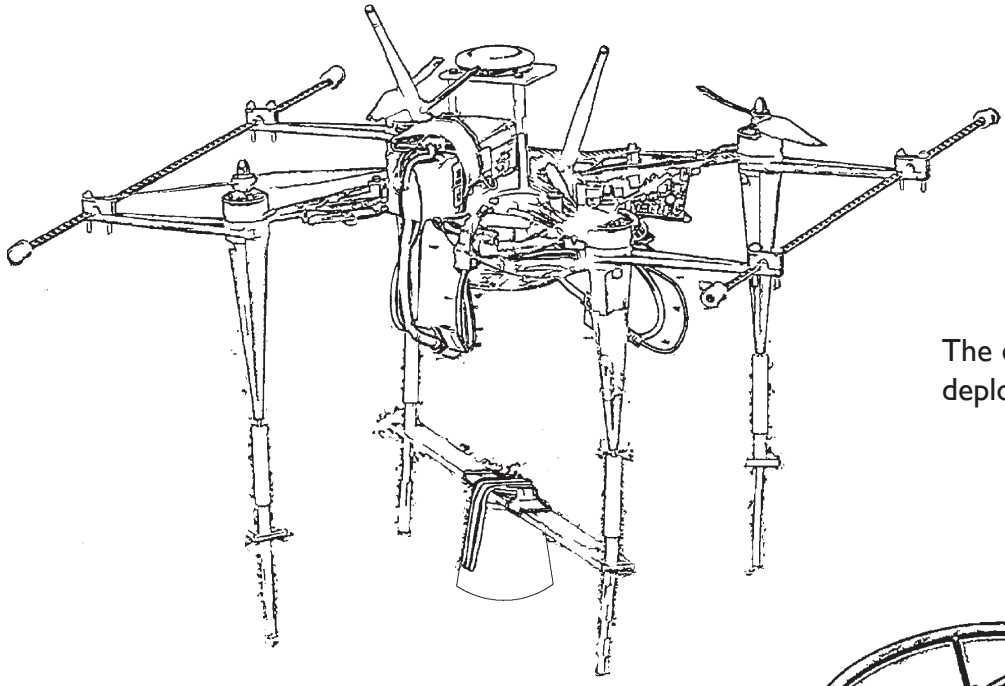
The Limpet robot is a small multisensor system used for environmental and structural monitoring.



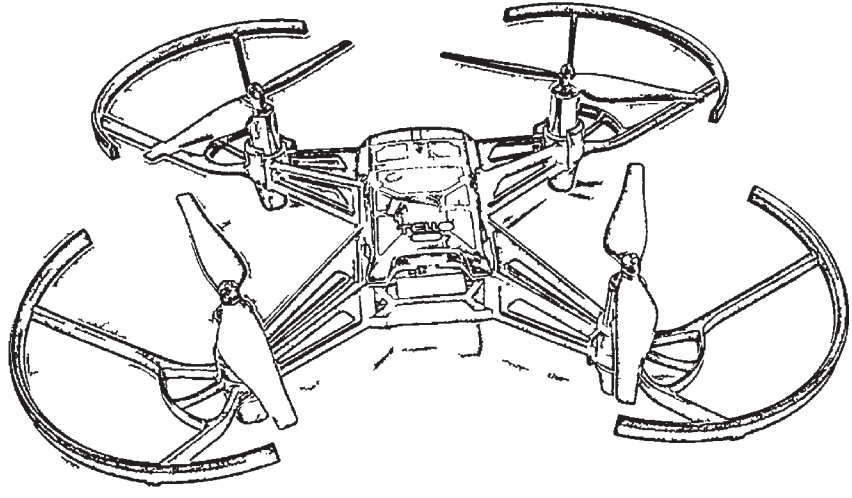


ORCA Hub researchers move an Autonomous Underwater Vehicle (AUV) from land to a boat so it can be launched into the water to carry out a survey and inspection of the loch bed. Once the AUV has been placed into the water it will carry out its survey and inspection mission like a mini submarine but without being controlled by a person.

In an industrial setting being able to place robots on surfaces of different types and shapes is necessary in order to monitor the structure. Here we can see a robotic arm placing the Limpet robot onto a worn and cylindrical pressure vessel ready for long-term monitoring.



The drone on the left carries a sensor ready for deployment.



The Autonomous Hydrographic Survey Vehicle, Sonobot, is used by ORCA researchers in conjunction with the Autonomous Underwater Vehicle (AUV) to carry out surveying and inspection missions.
Image courtesy of Edinburgh Centre for Robotics.

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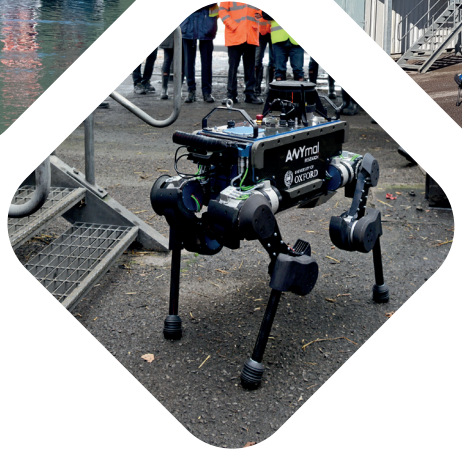

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