Fraunhofer
CML

SeaML:SeaLion

Providing unmanned robotic services

A modular Autonomous Surface Vehicle to digitize maritime tasks

Similar to their natural namesake being adapted to live in a large range of habitats across the world, having tremendous sensory and cognitive capabilities, Fraunhofer CML's SeaLion is a highly modular robotic platform that can carry a large set of sensors and robotic devices to perform specific and complex service tasks.

The in-house developed Autonomous Surface Vehicles (ASV) SeaML:SeaLion was originally conceptualized to demonstrate that interconnected robotic vessels can provide on-demand robotic assistance services for the near-shore and port environment such as ship inspections (RoboVaaS project).

Further research revealed the need for a highly modular systems research platform and led to the development of a 2.2 m long catamaran as an anchor point for any type of maritime equipment, robots and sensors. Dependent on the use case, the platform can for example be equipped with a Launch and Recovery System (LARS) for Remotely Operated Vehicles (ROVs) and other towed equipment or with a landing platform for unmanned aerial vehicles (UAVs) including a hot-swap battery system.

To complete the package, SeaLions ROS-based control software allows for precise autonomous or remote navigation and it's scalable and web-based user interface (webUI) enables for robust and secure job allocation, data processing, sensor monitoring and vessel operation from any device and location.

SeaLion's Key Features

Vehicle Properties
· Compact size of 1,5 x 2,2m
· Up to 24h battery lifetime
· ROS – Robot Operating System
· Electrically Powered
· Onboard AI-Computer
· Over 250km range at 11 knots

Modularity
· Reconfigurable deck
· Adjustable payload of up to 120kg
· Modular Power grid
(5/12/24/48V Output power
up to 1750 Watts)

Sensors
· LIDAR
· Stereo Cameras
· Echosounder (Multibeam ready)
· Doppler Velocity Log
· AIS
· Environmental gas sensors

Robotic Integration
· Aerial drones (UAVs)
   · Landing Platform
   · Battery Hot Swap
· Underwater drones (UUVs)
   · ROV
   · Crawler
   · LARS
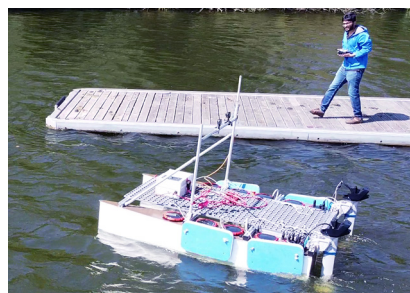
More than just a Vehicle
SeaLion is hydrodynamically optimised to achieve maximum speed and high stability for port and near-shore environments.
It is designed to be customizable on-deck and underwater (moon poll) with all electronics stored in the hull and an on-board electric power network of autonomous industry standards. The LARS system consisting of an A-frame and winch that can autonomously launch and recover towed payload of 25 kg.

Your benefit
No matter if you want to digitalise a so far man-controlled maritime operation or you want to demonstrate your sensor equipment in a stable test platform or you want to validate a novel robotic solution within your work area, the SeaML:SeaLion is ready for you. Fraunhofer CML can support in designing, developing and deploying the robotic solutions and services that fit your company's needs. Tailored to your specific needs we support you in finding and realising innovation potential. Work with us to use the vast pool of solutions and push your ideas to the next level.

The services of SeaLion: surface and underwater inspections of infrastructures, data acquisition, image recognition and cloud-based data exchange.
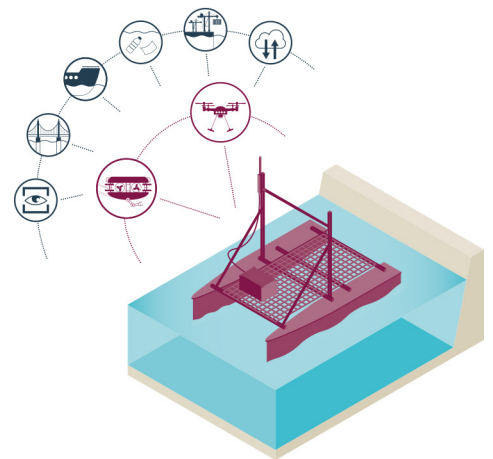
© Fraunhofer CML

SeaML:Robotic Assistance Services
Our on-demand Robotic Assistance Services for the maritime sector are enabled through SeaML:SeaLion, SeaML:UXV and SeaML:WebUI. To learn more, see:
www. platzhalter.de