Robotics Technology for Inspection of Ships

(ROBINS)

Call: H2020-ICT-25-2016-2017 Single Stage
Topic ICT-25-2016-2017
Horizon 2020 EU Research and Innovation programme

Participant organisation name	Country
RINA Services S.p.A. (Coordinator)	IT
Lloyd's Register	UK
Flyability SA	CH
GE Inspection Robotics AG	CH
Open Cascade SA	FR
Universitat de les Illes Balears	ES
Università di Genova	IT
Fayard A/S	DK
Ships Surveys and Services s.r.l.	IT
Glafcos Marine Ltd.	GR

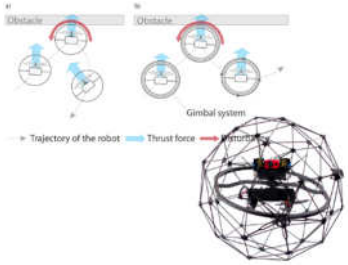
Project Objectives

The ROBINS project aims at filling the technology and regulatory gaps that today still represent a barrier to the adoption of Robotics and Autonomous Systems (RAS) in activities related to inspection of ships, starting from understanding end user's actual needs and expectations and analyzing how existing or near-future technology can meet them.

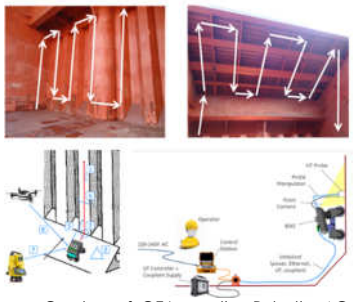
The expected advances are:

❖ **For Robotics technology:**

- Improve the ability of RAS in sensing and probing;
- Improve capabilities in navigation and localization in confined spaces, access to and mobility within the environment;
- Improve safety and dependability of RAS in hazardous, harsh and dirty environments;



Courtesy of: Flyability SA

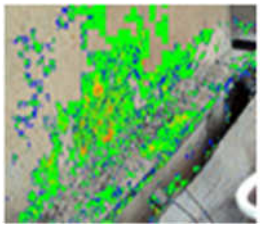


Courtesy of: GE Inspection Robotics AG, Universitat de les Illes Balears

- Provide new tools, or improve existing tools for image and data processing, with special focus on production of 3D models or virtual/augmented reality environments;
- Provide to the surveyor the same level of information as obtained by direct human observation for the assessment of inspected structures.

❖ **For Rules and Regulations:**

- Provide a framework for the assessment of the equivalence between the outcomes of RAS-assisted inspections and traditional inspection procedures;
- Define criteria, testing procedures and metrics for the evaluation of RAS performances;
- Design, implement and assess a testing environment where repeatable tests and measurements can be performed for the evaluation of compliance of RAS to the requirements;
- Improve confidence in the technology capabilities by means of testing campaigns to be performed both in the testing facilities and onboard. The assessment will involve the platforms improved within the project but the testing facility will be open to other platforms.



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Expected Project Impact

- **Wide scale adoption of RAS technology in marine industry**
  The development of robust technical solutions and a regulatory framework for RAS-assisted ship inspection, based on the understanding of the challenges being faced by asset owners, is expected to streamline wide scale adoption of RAS technology in marine industry.

- **Remove existing barriers that still prevent the adoption of robotics technology**
  The quality of the outcomes of inspection activities carried out by means of RAS, in terms of equivalence to direct human observation, is expected to remove, or significantly reduce, existing barriers that still prevent the adoption of robotics technology in this domain.

- **Improved safety**
  The expected impact on safety of RAS-assisted ship inspection, as far as hazardous, harsh, inaccessible or dirty environments are involved, can be easily understood. Benefits have already been witnessed in other similar industrial domains such as Energy and Oil and Gas industry.

- **Economic advantages**
  For equipment suppliers and robot industry: development of a new supply chain and new potential markets, that could be particularly beneficial for SMEs;
  For ICT industry: development of new services and products for data processing and knowledge management specific to ships and marine industry;
  For asset owners and operators: reduction of costs related to inspection activities due to survey duration and system downtime; reduction of costs due to preparation of items to be inspected; improved capabilities for asset condition monitoring and tracking;
  For service suppliers: improvement in the quality and variety of services offered; reduction of costs due to more efficient inspection process;
  For certification bodies: development and implementation of new certification schemes for equipment, operators and procedures.