



University of Rijeka, Faculty of Maritime studies

PROJECT ACRONYM AND TITLE: 3D WRECK - IMPROVING NAVIGATION SAFETY AND MARINE ENVIRONMENT PROTECTION BY 3D MODELING OF WRECKS

FUNDING PROGRAMME: Scientific-Research Project Initiatives of The University of Rijeka (ZIP UNIRI)

PERSON RESPONSIBLE: Lovro Maglić, Ph.D., Associate Professor

FINANCIAL DATA

| Project total cost | Overall funding assigned to PFRI |
|--------------------|----------------------------------|
| 13.086,47 € | 13.086,47 € |

SUMMARY

Shipwrecks may cause problems to the coastal states or shipping in general. Two main problems include hazards to navigation and damage to the marine and coastal environments mainly due to remaining fuel or cargo. According to Nairobi Convention, it should be determined whether a wreck poses a hazard, considering many criteria related to the vessel itself, its cargo, location and submarine topography, surrounding traffic and others. Apart from stated reasons, wrecks are usually inspected to assist in marine accident investigation. The traditional approach of wreck inspection and analysis, necessary for further mitigation plans and actions, is based on photographs and video recordings collected by scuba divers. In some circumstances, 2D images alone may be inadequate or insufficient to gain insight into the overall wreck condition. This is emphasized if in the decision-making chain are involved key persons who have difficulties in building a real situation awareness from 2D presentations.

This project aims to test a novel approach to inspecting and analysing the condition of a shipwreck by creating its digital 3D model using underwater photogrammetry. Based on recording, measuring and processing of images and recorded videos of a wreck and its surrounding, a reliable 3D model will be built offering a digital representation of the wreck as a whole. A model will allow a detailed visual inspection and measurements from different distances and angles. A model will be used to estimate the hazard it possibly poses to the safety of navigation and the environment. The methods for image acquisition necessary to build a model will include taking photographs while scuba diving using professional underwater photo camera sets and a novel approach using a remotely operated vehicle (ROV).

| Start date | End date |
|-------------|-------------|
| 01.06.2023. | 31.05.2026. |

WEBSITE: -

ADDITIONAL INFORMATION:

Members of the project team:

- Lovro Maglić, *Faculty of Maritime Studies, University of Rijeka*
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