PROJECT ACRONYM AND TITLE: Multimedia interactive simulation systems in the maritime sector (MISS)

FUNDING PROGRAMME: Call for funding of Institutional research projects of the University of Rijeka financed from source 581 – Recovery and Resilience Mechanism (University of Rijeka, Institutional Research Projects)

PERSON RESPONSIBLE: prof Ana Perić Hadžić, PhD

Project total cost	55.543,75 EUR

SUMMARY AND OBJECTIVE: Multimedia interactive simulation systems (MISS) in the maritime sector are a key component in the development of safe, efficient and sustainable maritime operations in maintaining ship systems and improving operations to transport cargo and passengers safely and efficiently. By applying virtual (VR), augmented (AR), mixed (MR) and extended (XR) reality, they enable the creation of an interactive fully immersive computer-generated digital environment in which various types of interactions with virtual and real objects in the virtual and physical world are possible.

The proposed project contributes to scientific excellence and cooperation with the maritime industry, establishes a unique interdisciplinary research laboratory, and the innovativeness of the project is reflected in the development of two pilots :

- ✓ 3D VR/MR/XR model of the system for monitoring the location and condition of refrigerated container parameters with M2M communication enabled to improve maintenance processes and procedures as well as additional training of technical staff. Remote support for ship system maintenance using mixed reality and large language models (LLM) allows technicians to be guided through specific tasks, increasing their speed and efficiency, improving system response time and extending the lifecycle of equipment. The use of artificial intelligence (AI) and 3D modeling (VR), ensures even better condition-based or predictive maintenance.
- ✓ 3D VR/AR model of a computer-generated ship ballast system that provides the ability to examine the performance of the system as a whole and individual system segments by monitoring the state of parameters with constant monitoring and preventive and corrective maintenance. VR provides the opportunity to compare and analyze the application of conventional and modern methods of measuring tank liquid levels under controlled conditions, which allows for better evaluation and improvement of the measurement process itself.

Start date	End date
1 October 2025	30 September 2029

PROJECT TEAM

No.	Member	Affiliation	Role
1.	Ana Perić Hadžić, PhD	University or Rijeka, Faculty of Maritime Studies	Head
2.	Dario Ogrizović, PhD	University or Rijeka, Faculty of Maritime Studies	Researcher
3.	Irena Jurdana, PhD	University or Rijeka, Faculty of Maritime Studies	Researcher
4.	Renato Ivče, PhD	University or Rijeka, Faculty of Maritime Studies	Researcher
5.	Jasmin Ćelić, PhD	University or Rijeka, Faculty of Maritime Studies	Researcher

6.	Joseph S. Valacich, PhD	University of Arizona, USA	Researcher
7.	Dinko Bacic, PhD	Loyola University Chicago, USA	Researcher
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9.	Marko Vukšić, mag. ing. el.	University or Rijeka, Faculty of Maritime Studies	PhD student
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