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UNIVERSITY OF LJUBLJANA
Faculty of Maritime Studies and Transport

Solving Maritime Communication Challenges with DigiMar: A Practical Approach

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Roadmap

- EMSA findings
- DigiMar background, main objective, and WPs
- Focus on (WP2): detailed analysis of selected marine accidents
- Key findings
- DigiMar Educational Tools
- Conclusion



European Maritime Safety Agency's Findings

- Over last 10 years, 9 leading **safety issues** identified, with "**working methods**" being critical.
- **Problem Areas:** Bridge resource management and external communication.
 - Communication between **bridge team members** and **ship-to-ship** or **ship-to-shore** communication issues can lead to collisions and groundings
 - Language barriers, misunderstandings, and ambiguities can contribute to **communication failures** with pilots, tugboats, and VTS

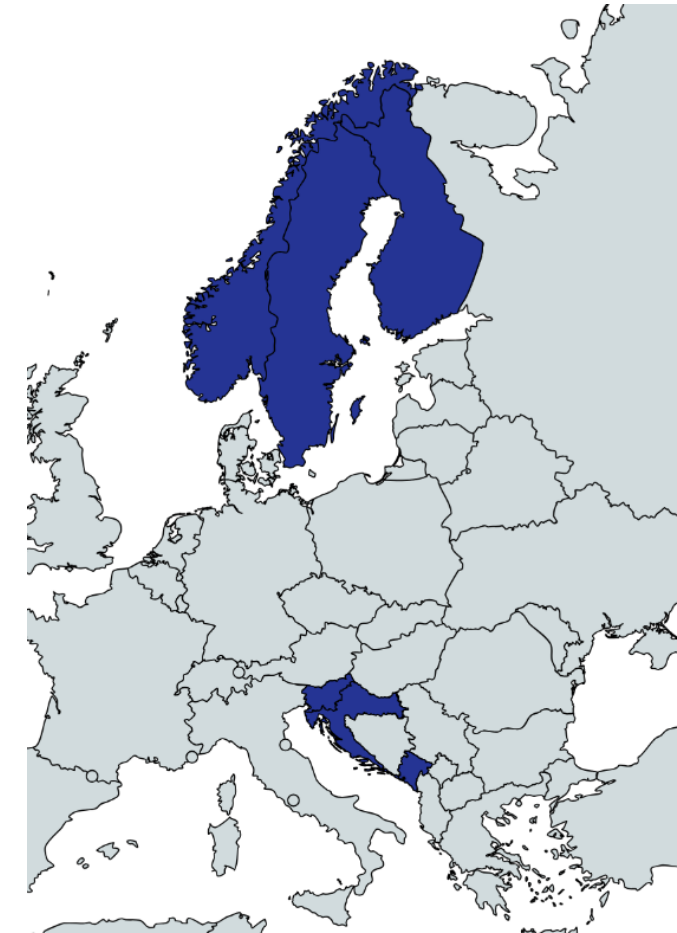
Recently in the Gulf of Trieste

- **Routine** communication between two vessels

Vessel 1	On this position, correct, you won't cross ahead of me?
Vessel 2	Yes, sir, affirmative, I want to cross ahead of you.
Vessel 1	Okay.

Erasmus+ DigiMar Background

- Duration: 2023-2026
- Objective: To **improve** maritime **communication skills** through **digital tools**.
- Consortium: 10 partners, including five **higher education institutions** (HEIs) and five **maritime safety authorities** (MSAs) from the Adriatic Sea area and Scandinavia.
- Main Focus: **Development of a digital teaching tool** for routine communication at sea.





Work Packages

WP1: Project Management

WP2: Maritime Communication Standard- and Data-based Content Development

WP3: Digital Educational Tool Development, Deployment and Evaluation

WP4: Maritime Communication Standard- and Data-based Benchmarking

WP5: Exploitation and Dissemination



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Focus

In order to understand the extent and manner in which inadequate communication may play a role in the occurrence of marine accidents, a **detailed analysis of selected marine accidents** was produced as part of **WP2**.



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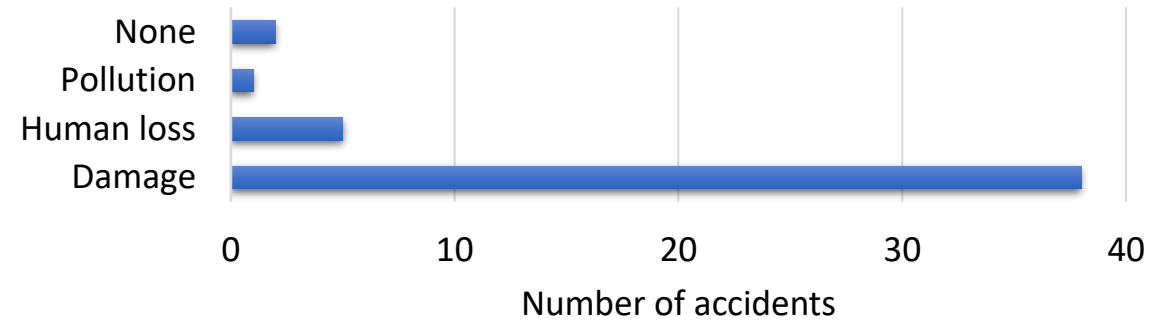
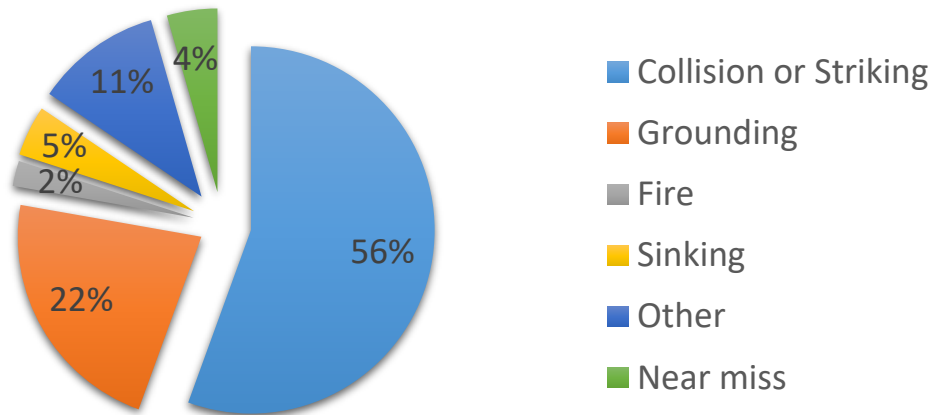
Data Collection and Analysis

The survey of cases in marine accident reports was conducted in two steps as part of WP2.2.:

- Step 1: The HEIs **analyzed marine casualties and incidents** by examining published reports in available databases to identify cases where maritime communication played a direct or an indirect role in casualties or incidents at sea.
- Step 2: The MSAs **checked the consistency of the findings** and conclusions of the reports using checklists to ensure 100% accuracy.

Key Findings of Analyzed Accidents

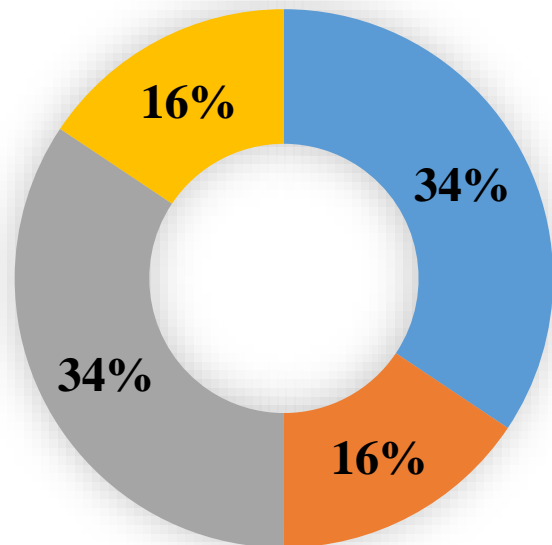
- 1034 accidents analyzed, 44 with communication problems as primary or secondary causes.
- Types of Accidents: collisions, groundings, near misses.
- Consequences: structural damage, human loss, marine pollution.



Communication Issues Identified

- **Unsafe Acts** in 88% of cases: Errors by frontline operators due to poor BRM implementation (insufficient communication between pilot, master, OOW, helmsman etc.)
- Lack of **Shared Mental Model**: Detected in 40% of cases.
- **Language Barriers**: Significant in over 60% of cases, affecting communication on the bridge and with shore services.

Communication Issues Identified



- Insufficient proficiency or insufficient understanding of the English language
- Use of local language not understood by the pilot
- Use of local language not understood by the master or OOW
- Use of a working language on the ship not understood by another crew member

Communication Issues Identified

- In 11 cases, VTS was involved in the communication,
- in 3 cases the communication between the vessel and the VTS was considered inadequate, which influenced the course of the accident, and
- in 8 cases the VTS did not intervene in the communication although it could or should have done so.



DigiMar's Digital Educational Tools

Communication problems can be addressed through **further training** and **professional development** through **self-directed** digital education.

WP3 - Digital Educational Tool Development, Deployment, and Evaluation (August 2024 – May 2025) in the context of maritime routine communication is **intended to make an important contribution** to the overarching goal of **improving navigational safety**.



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Expected Outcomes

- The creation of freely accessible **instructional videos** focused on routine maritime communication protocols.
- The development of freely accessible **speech recognition chatbots** for routine maritime communication scenarios.
- **Implementation and evaluation of a pilot study** on digital education using the educational videos and chatbots.

Conclusion

- Effective Communication is a key to successful bridge resource management.
- Continuous Training is essential for maintaining high standards in maritime communication.
- DigiMar Project's Contribution: Significant improvement in communication skills through innovative digital tools.



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<https://digimar.si/>

Thank you for your attention. Questions?



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