



# TINA

## Techniques for Interactive Nautical AIS data analyses

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### INTRODUCTION

With the introduction of the Automatic Identification System (AIS), efficiency and safety of the maritime transport could be increased by the automated exchange of position, speed, course and other data. Hence, in the past years a **treasury of data of unexpcted dimensions and possibilities** has been accumulated.

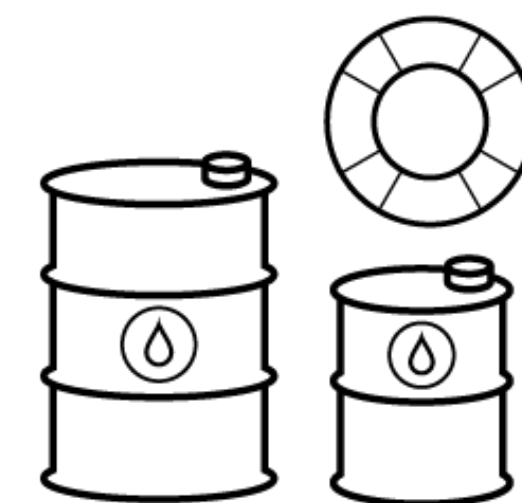
### OBJECTIVE

The objective of **TINA** is to **identify potential interactive applications** of the data registered in the course of the digitalization of shipping. Key aspects are the analysis of maritime traffic areas and the correlation of AIS and environmental data. After completion of the project, the identified potentials were validated for their feasibility.

### CONTENT

#### Environment

- Influence of environment on ship movements
- Determination of CO<sub>2</sub>-emissions depending on travel time, speed and fuel consumption
- Influence of ship movements on living beings

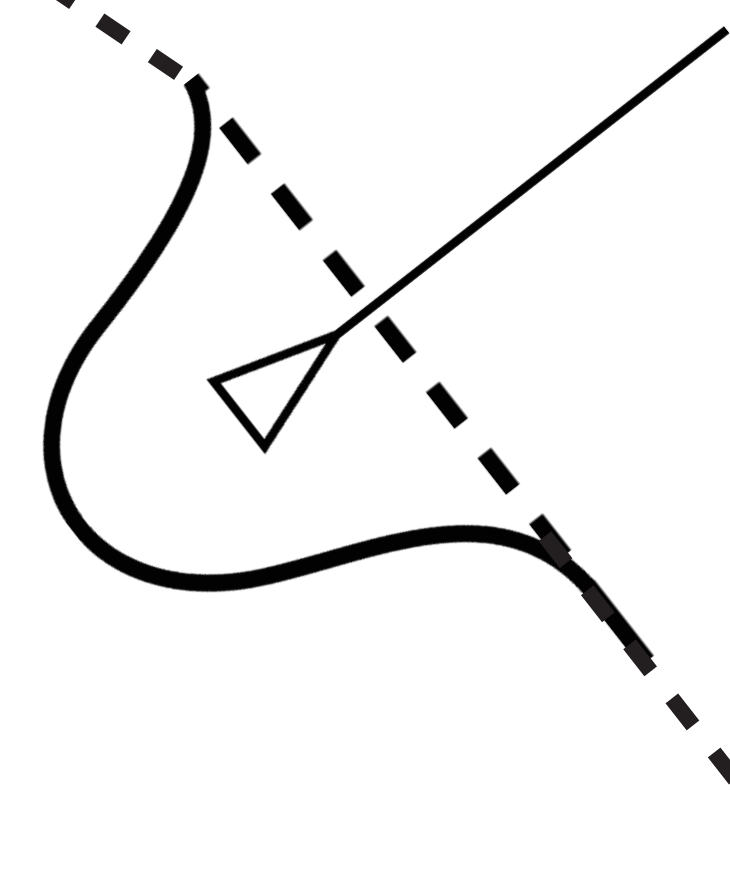
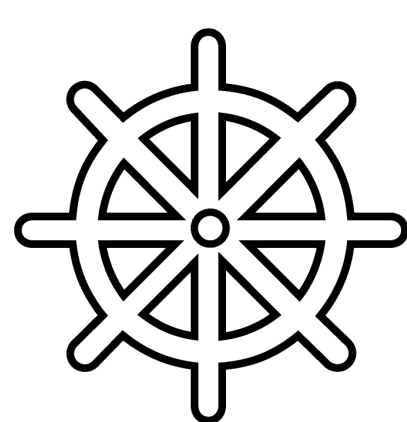


#### Anomaly Detection

- Leaving fairways, main shipping lines or traffic separation schemes
- Early detection of anomalies for collision and grounding avoidance

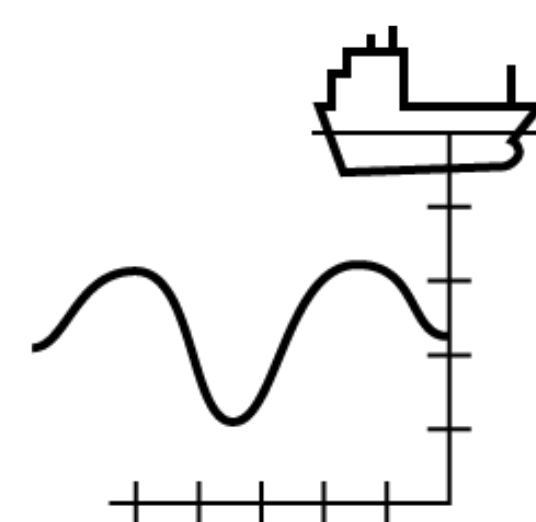
#### Motion Patterns

- Automatized visualization of ship movements
- Motion and route patterns
- Traffic densities and frequency analyses
- Influence of infrastructural changes



#### Human Interaction

- Selection of appropriate traffic situations
- Manual adjustments / regulations of course and speed
- Example: Comparison of traffic in the Elbe delta with and without ferries between Cuxhaven / Brunsbüttel



#### Risk Assessment

- Passing distances and boundary angles in fairways
- Assessment of encounter situations according to COLREG
- Determination of a safety level of fairways

### BASIC CONDITIONS

- Funded by: Federal Ministry of Transport and Digital Infrastructure
- Project size: 89.674,00 €
- Project management: TÜV Rheinland
- Project duration: 05/2018 - 10/2018