

## ABSTRACT

STORMWINDS contributes to operational and strategic management of ecological risks to the Northern Baltic Sea, emerging from maritime transportation incidents and accidents. Focus is on wintertime conditions as most accidents in the area occur in the ice season. To achieve these aims, advances are made to support operational risk management in two ways.

First, a holistic cross-border and cross-sector analysis of the vessel traffic control and emergency response services is performed, using a systems-theoretic approach. This analysis is further placed in context with maritime spatial planning, leading to policy-relevant recommendations. The systems-theoretic approach is furthermore applied to probabilistic, indicator-based safety management modelling for vessel traffic services operation and training.

Second, specific tools for operational risk management are developed. Accident prevention is enhanced through the development of e-navigation services related to ship routing and ship performance in ice. Accident response is enhanced through the development of smart response services for shipping accidents.

STORMWINDS addresses strategic risk management through the development of a risk management model for spill response effectiveness in wintertime conditions, resulting in recommendations regarding fleet organization. Both the operational and strategic risk management work require scientific advances in various fields, which are used in parallel to achieve the overall aims.



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## ONLINE

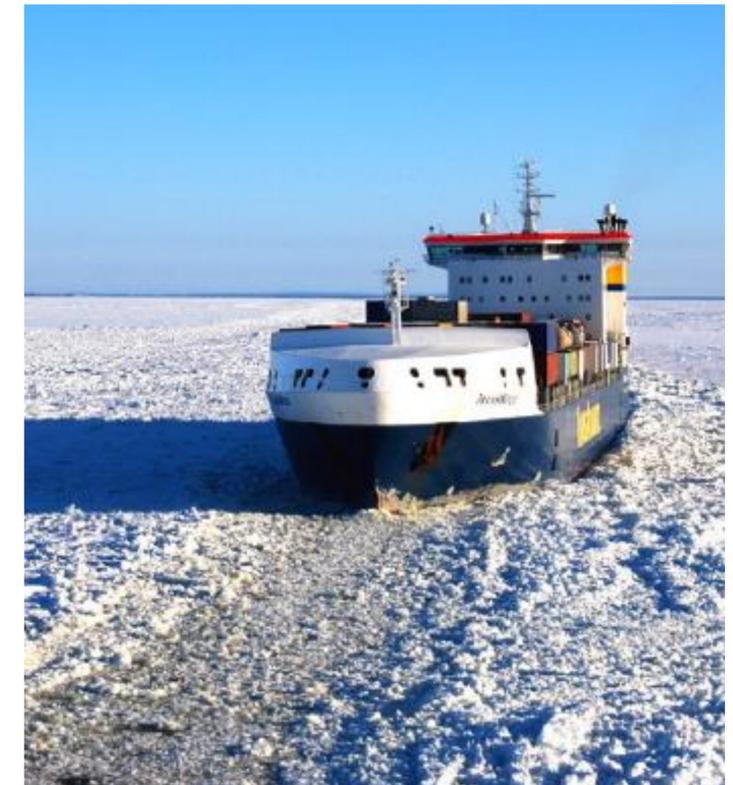
[www.stormwinds.aalto.fi](http://www.stormwinds.aalto.fi)  
[www.bonusportal.org](http://www.bonusportal.org)

## FUNDING

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# STORMWINDS



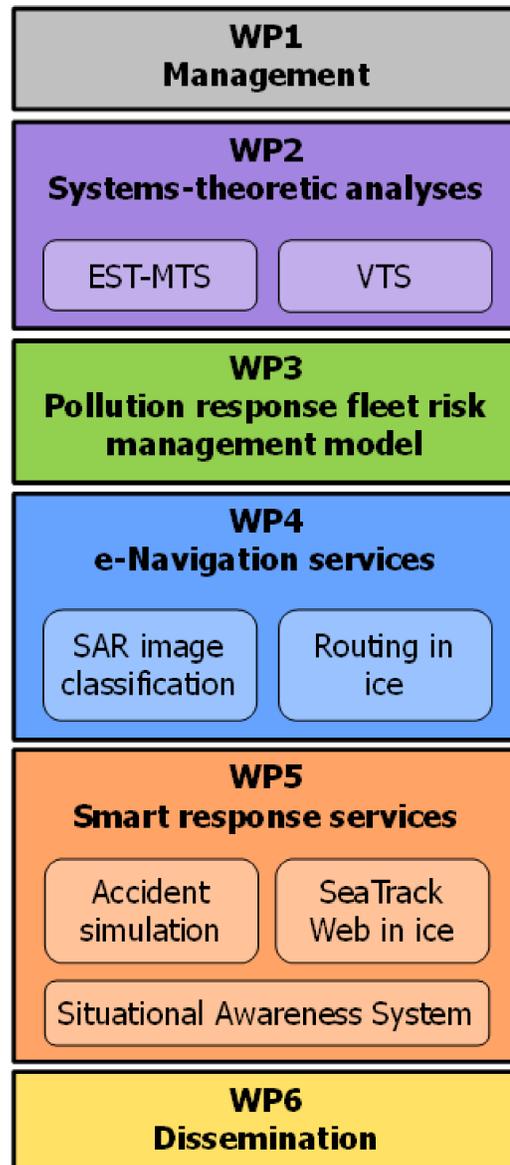
Strategic and  
operational risk  
management  
for wintertime  
maritime  
transportation system



## FACTS

- > 20 researchers involved
- 9 organizations in 4 countries around the Northern Baltic Sea
- 1.8 Mio Euro total budget
- additional 100k EUR in kind infrastructure committed
- 36 months project lifetime

## STRUCTURE



## CONSORTIUM

### Finland

Aalto University, Espoo  
 Finnish Meteorological Institute, Helsinki  
 Finnish Geospatial Research Institute, Masala  
 Novia University of Applied Sciences, Turku  
 Finnish Environment Institute, Helsinki

### Estonia

University of Tartu, Tartu  
 Tallinn University of Technology, Tallinn

### Russia

Institute of Numerical Mathematics, Russian Academy of Sciences, Moscow

### Sweden

Swedish Meteorological and Hydrological Institute, Norrköping



## GOALS

### Safer maritime traffic without accidental pollution

- Analyze vessel traffic control and response using systems-theoretic accident models and maritime planning tools and processes
- Develop safety management model for Vessel Traffic Services (VTS) operations

### Enhance environmental response capabilities

- Develop novel/improved situational awareness tools for emergency response
- Develop pollution response fleet risk management model for winter conditions

### Advance state-of-art in e-Navigation technologies

- Develop a tool to classify SAR images in terms of ship performance in ice
- Develop methods for ship routing in ice



**STORMWINDS**

Strategic and operational risk management for wintertime maritime transportation system