

# SIMREC

Simulators for improving  
**CROSS-BORDER OIL SPILL RESPONSE**  
in Extreme Conditions



Developing a new generation of training  
simulations for better oil spill response  
operations through transnational cooperation





# THE GULF OF FINLAND AS A WATERWAY

The Gulf of Finland (GoF) is not only an important route for passenger and cargo ferries travelling between the most important ports of the region, Tallinn, Helsinki and St. Petersburg, but also the regional bottleneck for crude oil vessel traffic. Connecting St. Petersburg, Russia's industrial centre and main sea hub, with the West, the GoF has a highly sensitive ecosystem that is particularly vulnerable to environmental catastrophes such as oil-spills. Due to an increase in the number of super tankers traversing the GoF, the risk for such incidents is on the rise, posing a severe threat to the unique marine habitats of the region. Particular sea conditions, such as freezing, add to the challenges of oil-spills, demanding a comprehensive approach to response operations.

SIMREC aims at mitigating the risks oil-spills pose on the environment of the Gulf of Finland by fostering cooperation between Finland and Russia and jointly developing a new generation of training simulations. By combining the know-how and expertise of authorities as well as research institutions of both countries, the project's objective is to develop tailored training programs and optimize the preparedness of response teams.

## Fostering a new generation of simulation environments

The centrepiece of SIMREC is the development of an innovative and cost-efficient simulation environment that capacitates response teams to maximize the efficiency of their operations. These simulations will be elaborated based on a set of scenarios reflecting potential oil-spills. Scenarios will take into account data and predictions on maritime traffic as well as data on the impact of extreme weather and sea conditions on certain areas. Based on this data, hot spots for accidents can be located and all information converted into scenarios that are used for simulation training.

In order to guarantee the success of simulation training, it is crucial to secure the connectivity of maritime simulators across borders. The Russian and Finnish authorities can develop joint response operations for large-scale oil incidents in the most cost-effective and resource efficient way. Integral parts of this process are personnel training and investments in network infrastructure.

## Developing transnational training programs

In order to guarantee the success of simulation systems, a well-elaborated training model for oil-spill response simulations is essential. Therefore, one of the main tasks of SIMREC is to compile a training model for response authorities in Finland and Russia that comprises both practical simulation trainings and lectures on the topic. With technical expertise and practical know-how, a unique training environment that offers the opportunity to train a variety of controllable scenarios in a realistic, cost-efficient and risk-free way will be developed. Transnational training programs will not only facilitate the cooperation between specialists responsible for the safety of navigation in the GoF but also provide professionals the best possible training for cases of emergency.

## Enhancing preparedness and optimizing operations

A fundamental pillar of a successful oil-spill response operation is well-considered, responsible and efficient decision-making. In order to optimize operations, SIMREC aims to elaborate protocols and tools that facilitate persons responsible to enhance their decision-making and communication. Therefore, existing patterns of communication and decision-making will be analyzed and converted into a roadmap providing recommendations for best national and cross-border practices. To broaden their horizon, researchers will meet with international government agencies, researchers, industry representatives, and other stakeholders to exchange ideas and learn from best practices. A key factor in the process of fully understanding the nature of successful decision-making and information sharing during operations is to consider the different settings in Finland and Russia and the country-specific factors affecting operations.

Another fundamental task of operation optimizing is the analysis of the current preparedness level of the different actors. All factors impacting preparedness, such as lack of infrastructure in operational situations, lack of availability of recovery ships, changes in maritime transport chains or environmental changes, need to be assessed to bring preparedness to the highest level and ensure the best possible oil-spill reaction operation.





The main sponsor of SIMREC is the cross-border cooperation programme South-East Finland-Russia CBC 2014-2020. Initiated in September, the duration of the project is 3 years, with a budget of €1.5 million. The project is coordinated by **the Kotka Maritime Research Centre** and project partners are **the Aalto University, the University of Helsinki, the South-Eastern Finland University of Applied Sciences, the Finnish Environment Institute, the Admiral Makarov State University of Maritime and Inland Shipping, and the State Marine Technical University of Saint-Petersburg.**

## [merikotka.fi/simrec](http://merikotka.fi/simrec)

Founded in 2005, Kotka Maritime Research Centre is an international maritime research centre based in Kotka, Finland. Its main objective is to improve maritime safety, prevent accidents and protect the marine environment in the context of maritime transport. Being a pioneer in the field of multidisciplinary maritime research, its work is based on the principles of sustainability, innovation, collaboration and responsibility towards society. In cooperation with various partners, including universities, it has developed multiple projects of maritime safety based on scientific evidence and research.



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