



## MARITIME

# SAFEPEC

## Innovative risk-based tools for ship safety inspection

All stakeholders involved in shipping seek approaches allowing for economically optimized inspection that does not jeopardize the ship's safety. Optimizing inspection means applying the latest technologies for setting the scope and interval of inspection.

### Background

The three-year, EU-funded research project SAFEPEC was started in October 2014 as the last 7th Framework Programme for Research and Technological Development project. The aim of SAFEPEC is to develop a risk-based approach and related tools necessary for optimizing inspection, also considering the inspection methodology, either continuous monitoring or inspection interval. Continuous monitoring of the ship system, with regular access to the derived information, enables intra-interval inspections. Moreover, stakeholders have access without ship production or operations having to be interrupted.

### DNV GL contribution

Risk-based approach means using quantitative risk analysis for identifying the elements of a ship that influence the risk level. For quite some time, DNV GL has been developing the methodology for risk-based inspection, initially for the offshore industry, but also for the maritime industry. Therefore, SAFEPEC is a consequent continuation of the development towards consideration of additional external information of various sources, for instance port state control. It is expected that the results of SAFEPEC will support our services related to the development and approval of in-service inspection plans and the optimization of inspection (scope and interval). Furthermore, the developed approaches will also be applicable to specifying the scope and schedule of class surveys.



## Project results

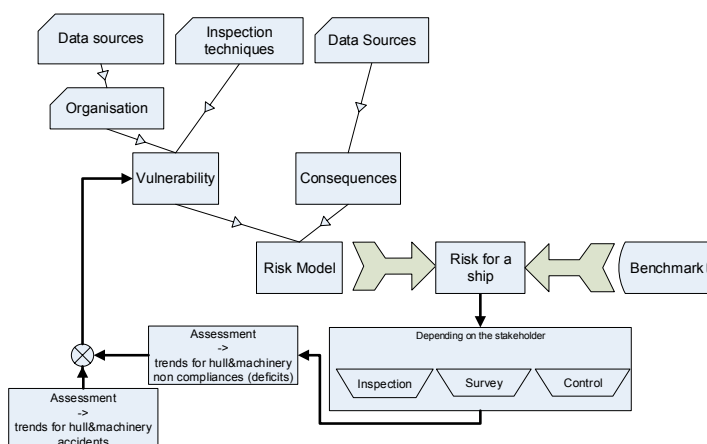
### Unified risk-based framework

The unified risk-based framework will be formed based on the analysis of historical data of casualties, near miss cases, deficiencies and non-conformities that are detected by various types of inspections. The vulnerability of structural, machinery or electrical components to deficiencies will be estimated based on historical data, but also on the performed inspection approach. The risk-based approach will allow for an identification of both ships with an increased risk as well as the elements causing the increased risk. By considering different inspection techniques and their effectiveness, the risk models will be a key step in finding the optimal inspection strategies. This includes answering questions such as:

- What inspection coverage and frequency is optimal?
- Which parts of the ship should inspectors focus on?
- Are novel sensors economically efficient?

### Software prototype

The software prototype aims to enable the interoperability and coherent interpretation of data sources and can contribute to the early detection of failure.



### SAFEPEC PARTNERS

SAFEPEC is a consortium of the eight partners Glintt, IHS Fairplay, Marintek, National Technical University Athens (NTUA), Netherlands Organisation for Applied Scientific Research (TNO), Technical University Munich (TUM), World Maritime University (WMU) and DNV GL. The partners cover a wide range of expertise related to risk-based methods and evaluation of ship safety performance related data as well as novel inspection and monitoring technologies.

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