

SmartKai

– Assistance system to prevent damage to ships and port infrastructure –



Coordinator

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Project SmartKai

<https://www.emaritime.de/SmartKai>

MOTIVATION

When entering or leaving ports or locks and during berthing and unberthing operations, ships maneuver in areas that are difficult to see. In addition, hydrodynamic and meteorological circumstances, i. e. strong tidal currents and rapidly changing weather conditions, prevent nautical personnel from assessing a maneuvering situation in an efficient and safe manner. Even local pilots who are familiar with the area have to adapt to constantly and sometimes quickly changing environmental conditions and make the right navigational decisions with confidence.

Particularly in tide depending ports, the respective water depth must be considered, as these ports can only be approached and left at appropriate water levels. In narrow time windows, this results in increased traffic volume which is one of the root causes of damage to ships and port infrastructure. In the best case, it only means damage to property and loss of use for ship owners or port operators, but it can also have worse consequences with personal injury or environmental damage.

OBJECTIVES

The aim of the “SmartKai” project is to develop a ship-independent assistance system installed at port infrastructure to prevent and minimize damage to ships and in ports. On the basis of an innovative, locally distributed and laser-based digital sensor technology, the assistance system will be used to establish a consistent and standardized situation picture for different target groups. A prototype will avoid ship accidents and damage to the port infrastructure. Furthermore, the causes of occurring damages can directly be identified, and it will be a big step ahead to also trace, counteract, and eliminate their causes.

APPROACH

As part of this digitization project, SICK AG is developing a new sensor system that will be sensibly installed at landside locations in Wilhelmshaven and Cuxhaven (NPorts) that have an increased risk of accidents, e. g. port basins, quay walls, and lock gates.

Enabling pilots, nautical ship and shore-based port personnel to use the information provided efficiently for safe navigation, human-machine interaction, and the design of a convenient user interface also poses a challenge. The partner Humatects GmbH investigates how the user interface has to be designed to minimize the cognitive load of all users and thus make safe navigation possible.

The consolidation of the locally distributed sensor sources as well as the validation and evaluation of the system will be carried out by the R&D department Transportation of OFFIS by means of its technology development platform eMIR (eMaritime Integrated Reference Platform).

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PARTNERS



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