# SOOP -
## Safe Offshore Operations

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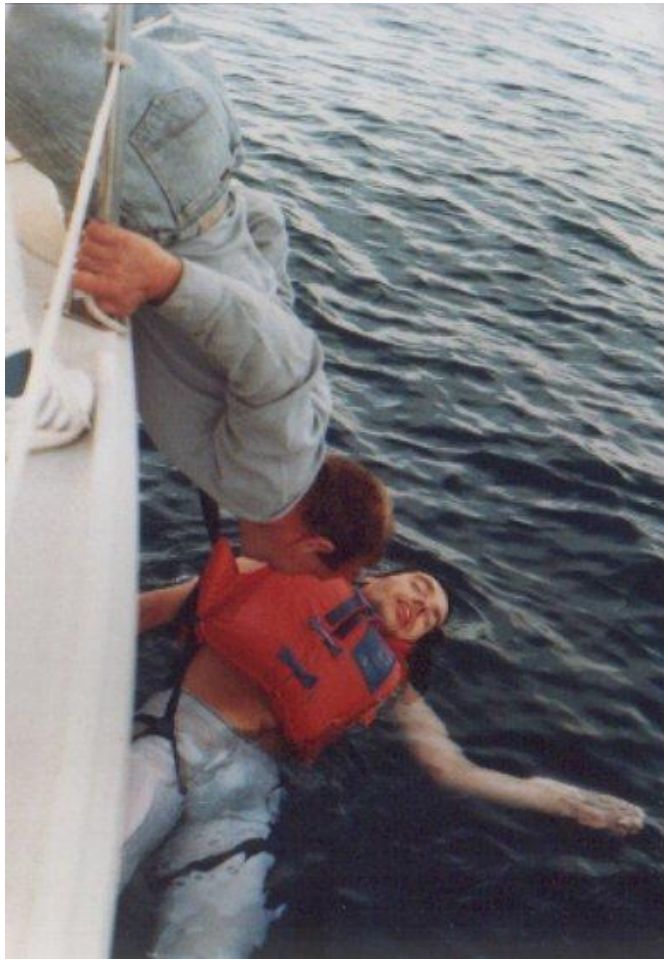
# Outline



Person-over-board (Source: Wikipedia)

# 1. Introduction to SOOP

## ERDF Innovation network of research institutes

*joint partner*: OFFIS Institute Oldenburg (Co-ordinator/mission planning),
C.v.O. Univ. Oldenburg (operator modelling/assistance system),
Univ. of Appl. Sc. Emden/Leer (mobile sensor network)

*project*: Dept. of Maritime Studies Elsfleth (mission description / validation / simulation and training)

*total amount*: approx. 576 k€

*duration*: 3 ½ years

*team*: B. Brucke, H.-J. Nafzger, C. Wand, A. Härting, P. Wengelowski, H. Korte

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# 1. Introduction to SOOP

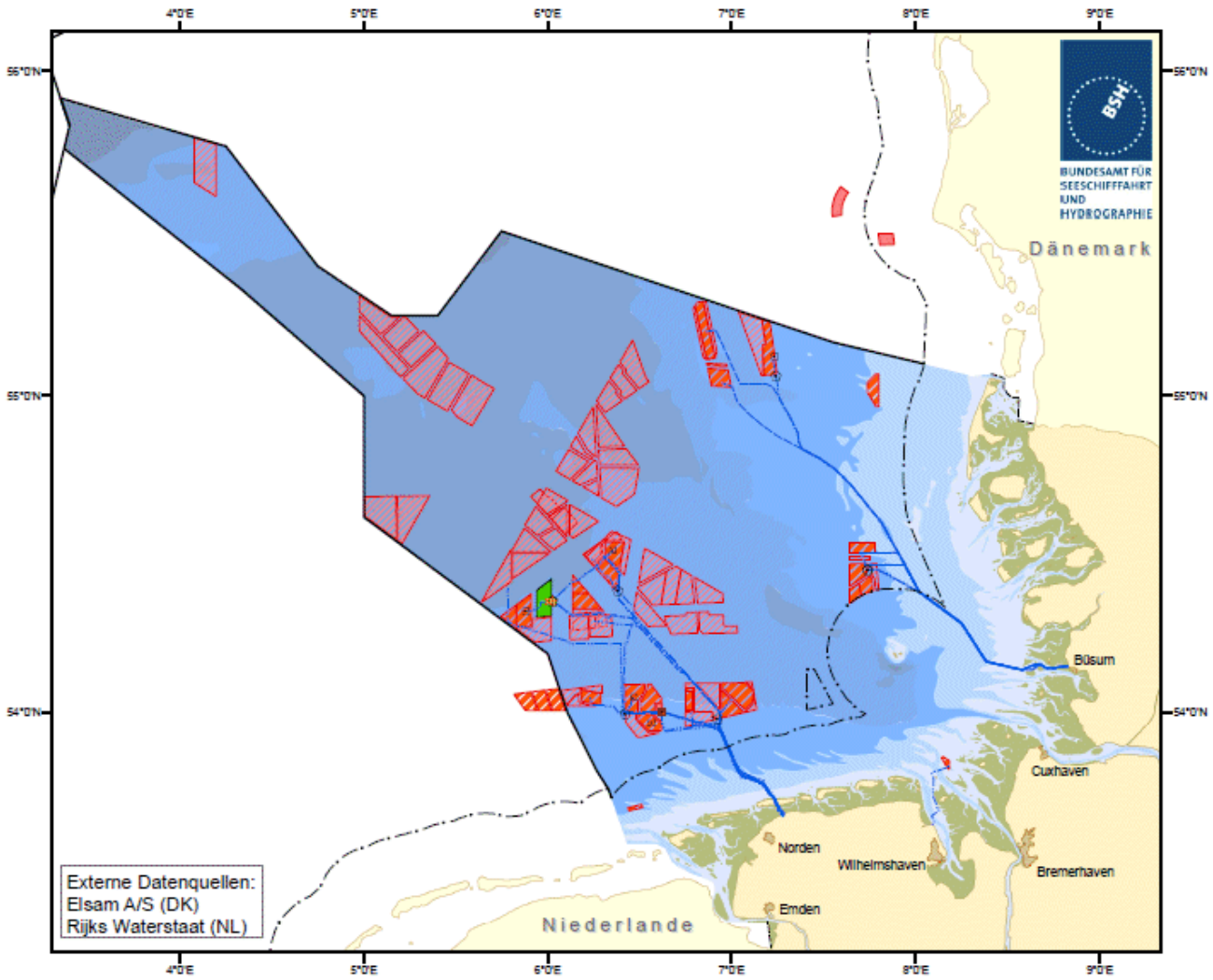
## Motivation

A rescue team pulled a man from the four degrees cold North Sea on Friday in front of Cuxhaven. The participants of an offshore training, who practiced at sea a roping from a 26 meters high platform at the time of the accident, called the DGzRS by radio.

NWZ 25.03.2011

Rescue boat „Herrmann Helms“ (source: dpa)

# 2. Offshore conditions (German Bight)




Legend:

- planned
- under construction
- advised
- working

Offshore wind farms within the German Exclusive Economic Zone in the North Sea.

# 2. Offshore conditions (German Bight)

JADE UNIVERSITY OF APPLIED SCIENCES
Wilhelmshaven Oldenburg Elsfleth

## Motivation II

Realisation of wind farming offshore construction is strongly delayed

- planned in 2011:
  14 Wind farms
- present working:
  - Alpha Ventus
  - BARD Offshore I

Jackup vessel loaded with wind mills.
(source: earthandindustries.com)

# 2. Offshore conditions (German Bight)

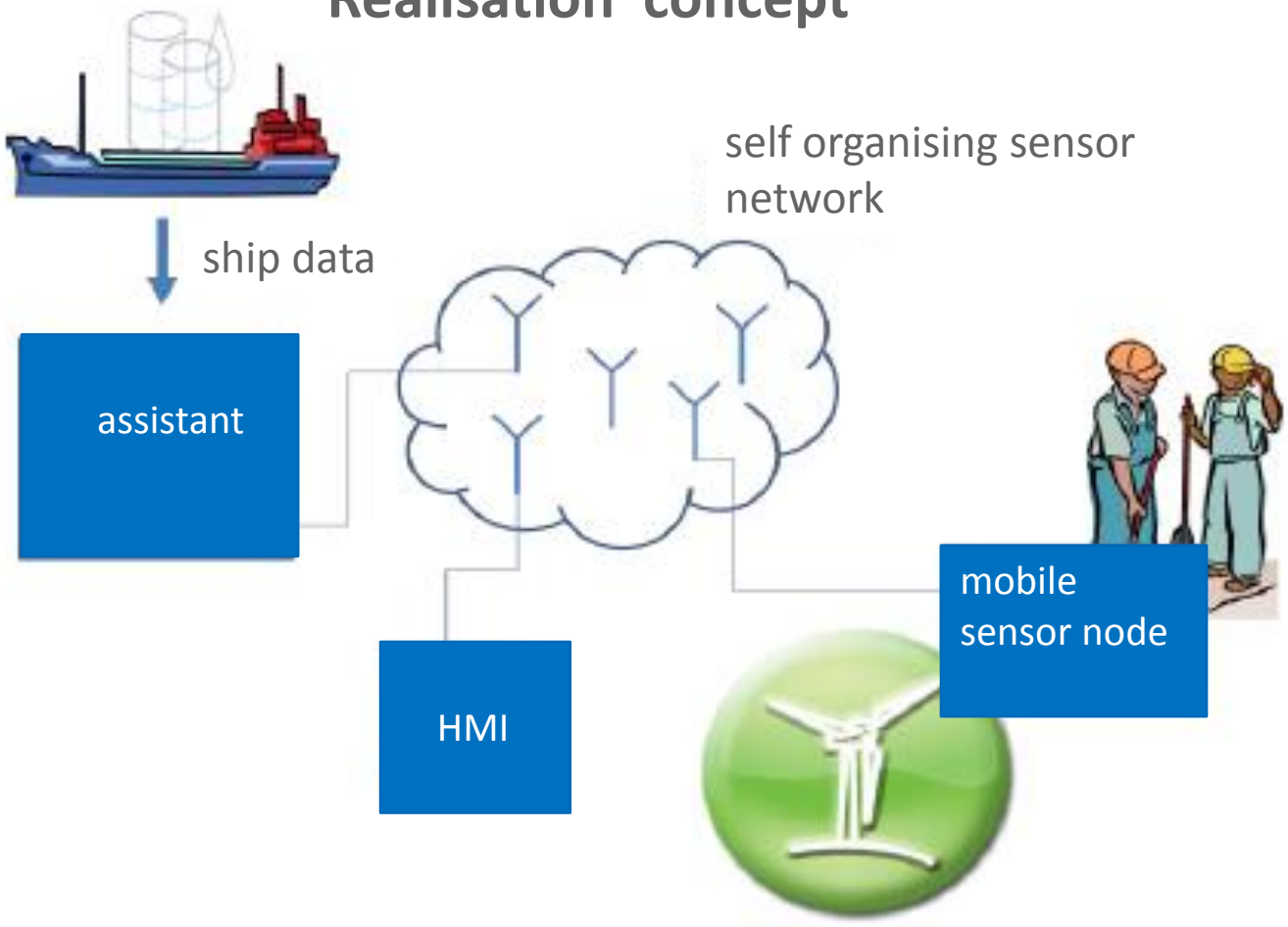
- difficult and complex maritime operations
  - high demands on human, machinery and procedures
- missing standardisation of procedures
- planned massive installation of offshore wind farms contain increase of:
  - efficiency of production
  - safety of human and technique relating to environment condition


Construction barge with tripod basement. (source: welt.de)

# 3. Operator assistant tool

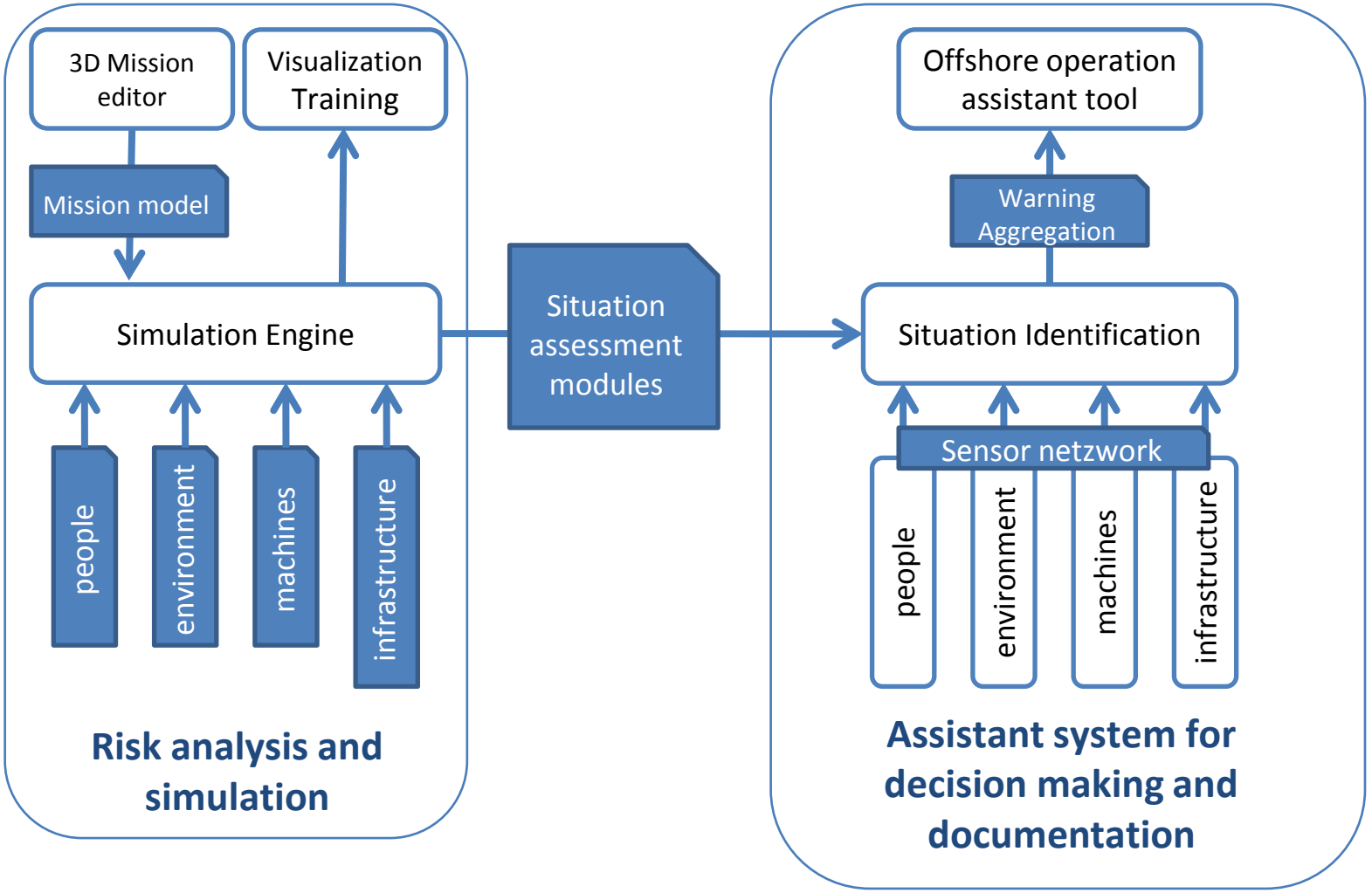


## Realisation concept




source: appl. paper, fig. 7

# 3. Operator assistant tool



# 3. Operator assistant tool

First initial scenario: personal transfer to an offshore platform


Helicopter (source: Alpha ventus)

Tender boat. (source: Frisia)

Basket. (source: bourbon-online)

Worker at the tower
© Paul Langrock

# 3. Operator assistant tool

Second initial scenario: construction of an offshore wind mill.

23/07/2009, first German offshore wind mill. (source: marinelog.com)

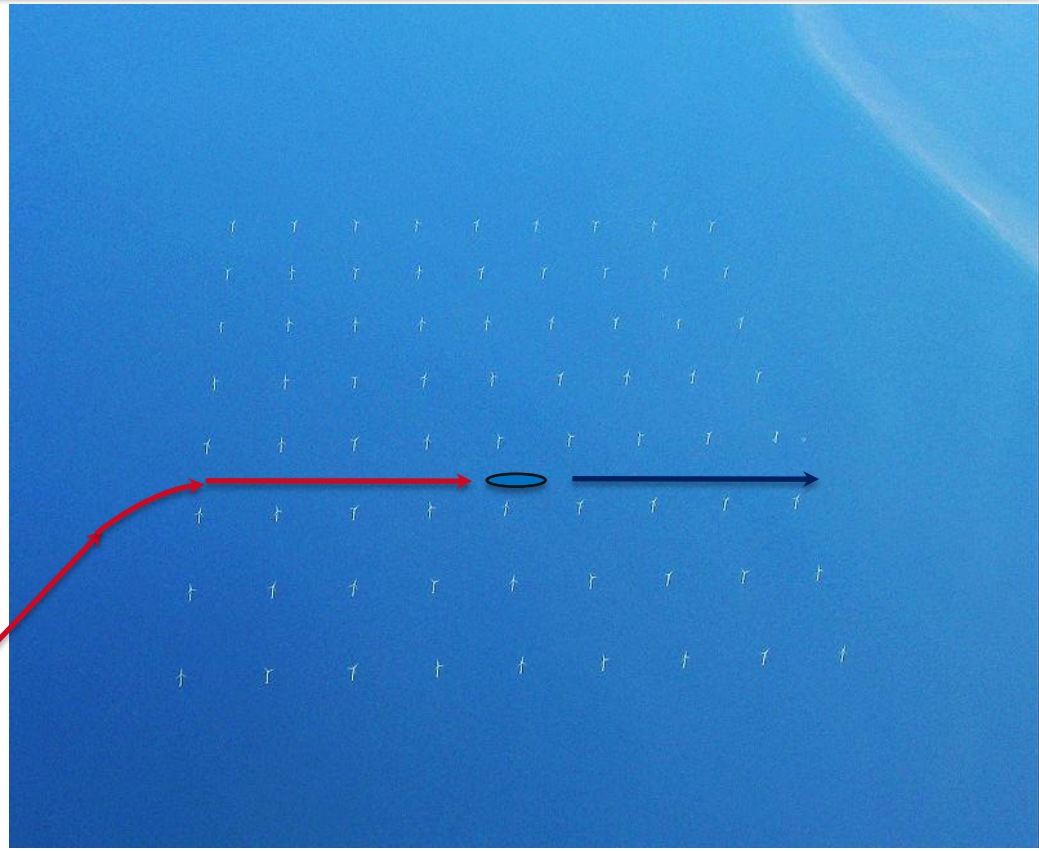
Jackup vessel installation. (source: pesn.com)

Barge heavy crane installation. (source: gcaptain.com)

# 3. Operator assistant tool

Further possible Scenarios …

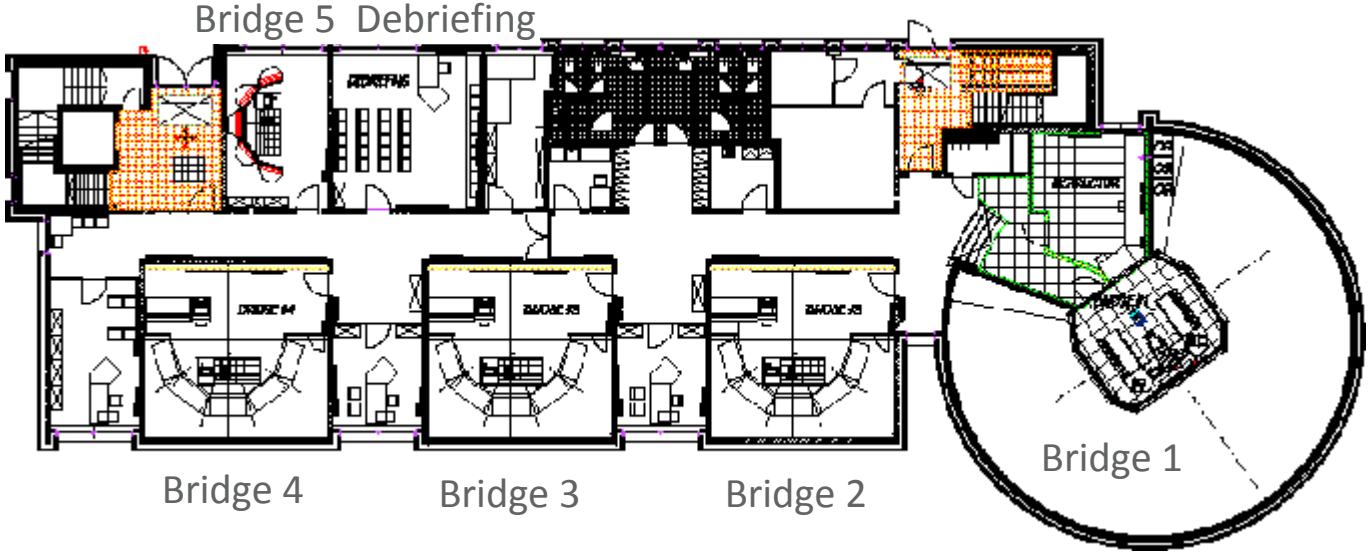
Arrival of tripods in Whv 2.8.08
(source: Offshore Wind Energy)



Manoeuvring within wind farm , e.g. Nysted.
(photo: Wikipedia)

# 4. Simulation and test facilities at Maritime Campus Elsfleth

Bridge 5 Debriefing




Ship handling simulator from Kongsberg / Norway

KONGSBERG

# 4. Simulation and test facilities at Maritime Campus Elsfleth

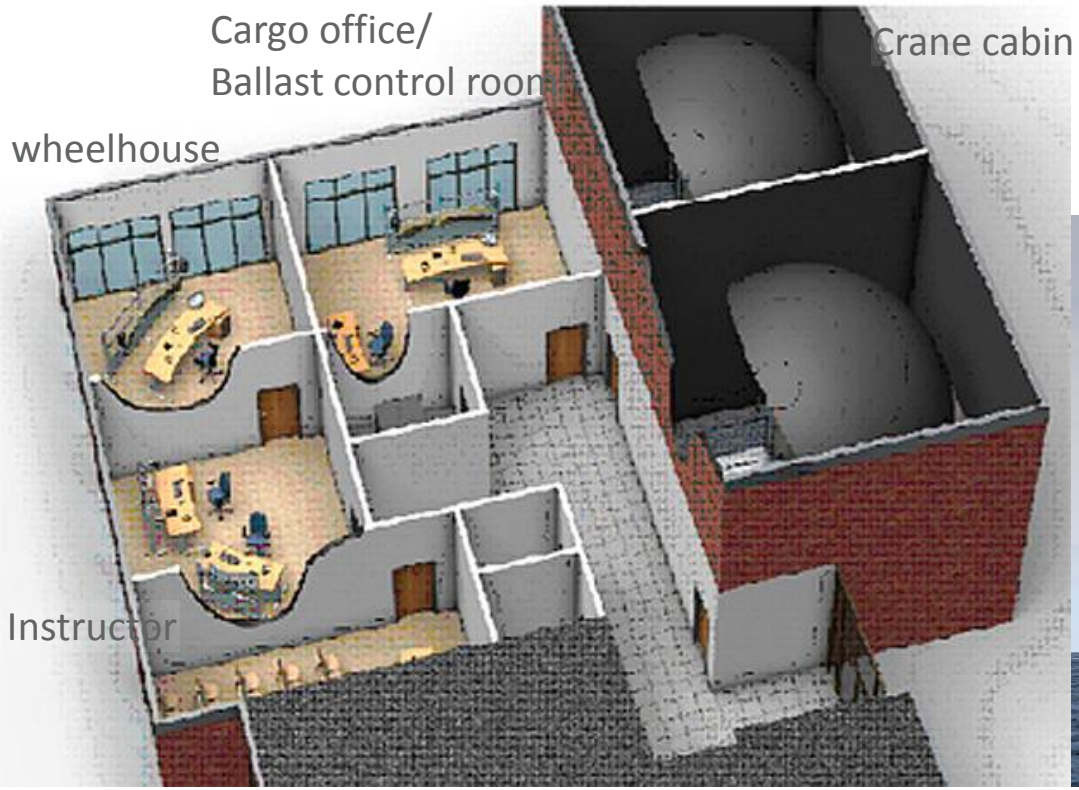
## Offshore training centre Elsfleth

Safety training for offshore personnel. (source: deutsche Windguard.de)

Training basin with helicopter cabin. (source: weser-kurier.de)

# 4. Simulation and test facilities at Maritime Campus Elsfleth

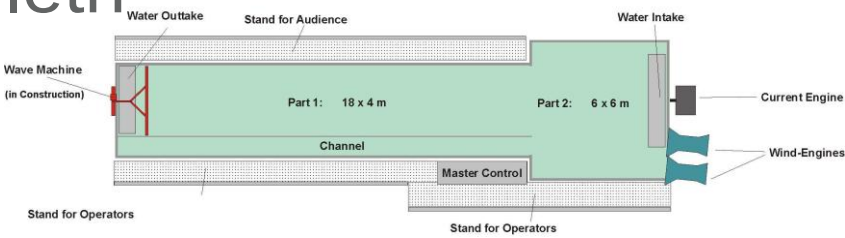
## Heavy Lift Crane Simulator




Heavy lift simulator and simulation scenario. (source: Rheinmetall and Hochtief-Offshore)

# 4. Simulation and test facilities at Maritime Campus Elsfleth

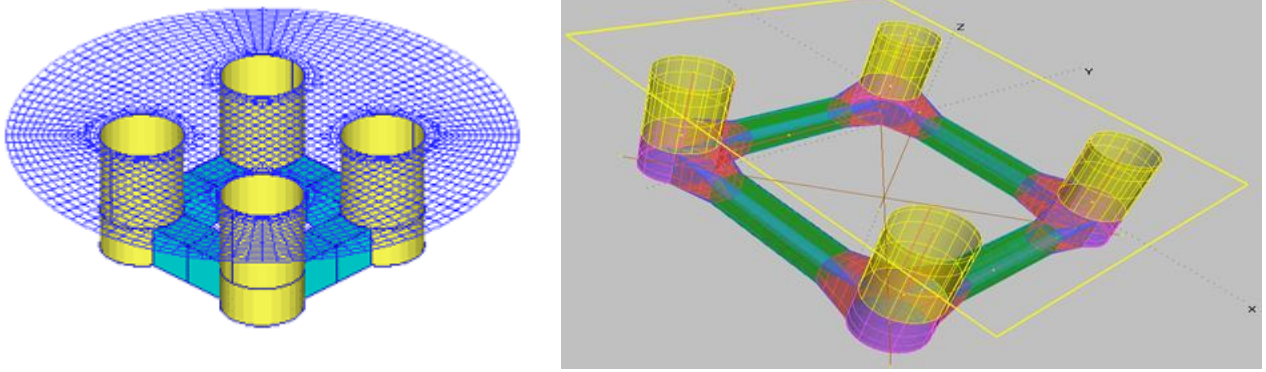
## Manoeuvring basin




Running test of container vessel (left) and berthing of a tanker (right) (source: D. Birnschein)

# 5. Scientific requirements

- different directions of wind, waves and current due to the tide and stormy winter season;
- limited water depth in the tank and offshore;
- Simulator qualities depends on time constraints, like real-time;
- For the verification, simulations with potential flow based calculations are preferred parallel to practical tests on board or offshore .

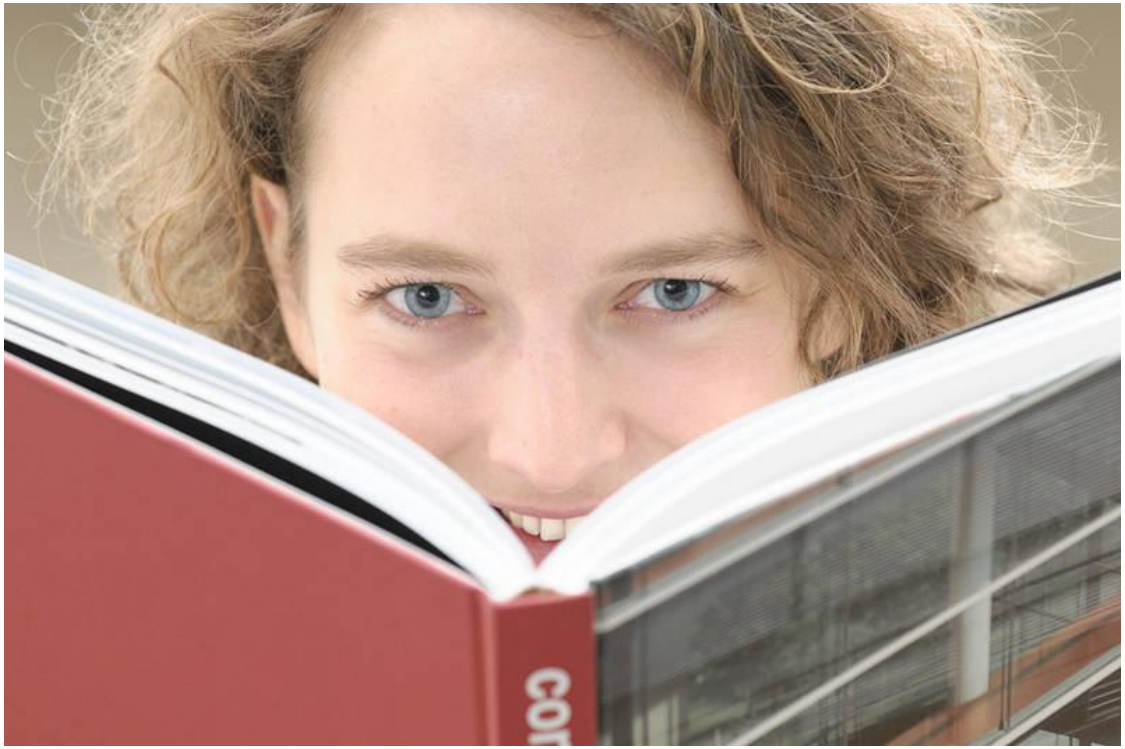


Wamit simulation scenarios (source: wamit.com)

# 6. Summary

- large maritime educational facilities → good basis for successfully research,
- structure forming project SOOP → opens a new market for the local information technology business,
- narrow cooperation and discussion → good quality and usability of the assistance system,
- increase of process information onshore → better handling of complex and intermodal acting logistic chains.
- the quality of our test and simulation scenarios affects the results of the technology developments.

# Many thanks for your interest!



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