

## Vacancy PhD researcher on development of a methodology to assess ports and waterways on capacity and safety

**Vacancy:** PhD position

**Topic:** Development of a methodology to assess ports and waterways on capacity and safety

**Affiliation:** Department of Transport & Planning and department of Hydraulic Engineering, Faculty of Civil Engineering and Geosciences, Delft University of Technology

**Supervisors:** prof.ir. H. Ligteringen (Hydraulic Engineering), prof.dr.ir. Serge Hoogendoorn, dr.ir. Winnie Daamen (Transport & Planning)

### Job description

The need for a reliable simulation-based methodology for the design and the assessment of ports and waterways is rapidly growing due to larger vessels, higher vessel speeds and higher shipping densities in ports. In addition, the awareness and concern for shipping safety as well as public safety increases.

The existent methodologies to assess capacity and safety in the design and management of port areas do not correctly include the interaction between vessels and the course variation of individual vessels due to human factors and varying external conditions. With respect to safety, it is even more important to include the human response in case of a dangerous encounter of two vessels.

Within a joint Chinese/Dutch research project, such a new methodology will be developed. In related PhD studies within the project, a simulation tool will be developed predicting behaviour of individual vessels under various ambient conditions (wind, waves, current, visibility, etc.) depending on the vessel characteristics as well as their manoeuvring behaviour during encounters, taking into account human responses. The Chinese partner (Jiaotong University) will focus on research into the hydrodynamic forces between vessels during an encounter as well as the corresponding risk assessment, including the development of dynamic risk profiles for individual vessels. The PhD candidate on the Dutch side (this vacancy) will focus on the development of the overall methodology to assess the capacity and safety of ports and waterways. This methodology should not only be applied during the design phase of a port, but also during the operational phase, for example as the underlying information layer for a traffic management system.

The joint research makes it possible to identify the general applicability of the methodology by studying vessel behaviour and calibrating and validating the simulation model both in the Netherlands (Rotterdam) and China (Yangtze River or Shanghai Port).

## Tasks of the PhD candidate

The PhD candidate will perform the following tasks:

- Analyse behaviour of individual vessels in ports and waterways using AIS (automatic identification system) data.
- Develop a methodology to assess capacity and safety of ports and waterways.
- Apply the methodology to existing ports in both the Netherlands (Rotterdam) and China (Shanghai, Yangtze river).
- Participate in the collaboration with the Chinese partner by bilateral visits.
- Publish on the research work in conferences and scientific journals.

## Requirements

Candidates should hold an MSc degree in hydraulic engineering, transportation or maritime engineering. Experience with simulation models and knowledge of ports and waterways are of advantage.

## Conditions of employment

The successful candidate will be employed full-time by TU Delft for a fixed period of 4 years within which he or she is expected to write a dissertation leading to a doctoral degree (PhD thesis). The starting salary for a PhD is €2042 gross per month increasing to a maximum of €2612 gross per month in the fourth year. TU Delft offers an attractive benefits package, including a flexible work week, free high-speed Internet access from home, and the option of assembling a customised compensation and benefits package (the 'IKA'). Salary and benefits are in accordance with the Collective Labour Agreement for Dutch Universities.

## Contract type

Temporary

## Additional information

Information about this position can be obtained from Dr. Winnie Daamen ([w.daamen@tudelft.nl](mailto:w.daamen@tudelft.nl)). For more information about the department of Transport & Planning, please visit <http://www.citg.tudelft.nl/en/about-the-faculty/departments/transport-and-planning/>. Information on the department of Hydraulic Engineering can be found at <http://www.waterbouw.tudelft.nl/>.

## Sending your applications

Please send your application including a letter of motivation and curriculum vitae before 1 October 2011 to email: [w.daamen@tudelft.nl](mailto:w.daamen@tudelft.nl).