



AISS 21

Autonomous Inland
& Short Sea Shipping

Autonomous Inland and Short Sea Shipping Conference

AISS 2021

2nd and 3rd November 2021

Conference Program

Competence Centre for Autonomous Inland and Short Sea
Shipping

Supported by
Chambers of Commerce in the Ruhr Region



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Tuesday, 2nd November 2021

- 13:00 **Welcome and Registration**
- 14:00 **Opening**
- 14:20 **Keynote Lecture:** Prof. Dr.-Ing. Dr. h.c. Dieter Schramm
Assisted and Automated Driving on Land and Waterways
University of Duisburg-Essen, Chair of Mechatronics, Duisburg, Germany
- 15:00 Stefan Krause¹, Lisa Wurzler¹, Ørnulf Jan Rødseth², Odd Erik Mørkrid², Kay Fjørtoft², Harilaos N. Psaraffis³
Development of an Advanced, Efficient and Green Intermodal System with Autonomous Inland and Short Sea Shipping – AEGIS
¹Institut für Strukturleichtbau und Energieeffizienz, Germany; ²SINTEF Ocean, Trondheim, Norway; ³Technical University of Denmark
- 15:25 Cyril Alias¹; Frédéric Etienne Kracht², Markus Nieradzki², Jonas zum Felde¹, Bettar Ould El Moctar¹, Dieter Schramm²
HaFoLa – Addressing the Research Needs in Port Logistics with Appropriate Research Infrastructure
¹DST – Development Centre for Ship Technology and Transport Systems, Department of Logistics and Transportation, Duisburg, Germany; ²University of Duisburg-Essen, Chair of Mechatronics, Duisburg, Germany
- 15:50 **Coffee break**
- 16:20 Victor Bolbot¹, Gerasimos Theotokatos¹, Lars Andreas Wennersberg², Dag Atle Nesheim², Jérôme Faivre³
Novel Assurance Framework for Autonomous Ships
¹Maritime Safety Research Centre, Department of Naval Architecture, Ocean and Marine Engineering, University of Strathclyde, Glasgow, UK; ²SINTEF Ocean, Trondheim, Norway; ³BUREAU VERITAS Marine & Offshore, Paris, France
- 16:45 Ørnulf Jan Rødseth, Lars Andreas Lien Wennersberg, Håvard Nordahl
Defining Levels of Autonomy for Ships and Inland Vessels
SINTEF Ocean, Trondheim, Norway
- 17:10 Patrick Potgraven
Economical Aspects of Introducing Smart Shipping in Inland Shipping
Rijkswaterstraat, Ministry of Infrastructure and Water Management, The Netherlands
- 19:00 Conference Dinner
Webster-Brauhaus
Dellplatz 14 – 47051 Duisburg
<https://goo.gl/maps/da6UcAXothVKBJMMA>

Wednesday, 3rd November 2021

08:00 **Registration**

08:30 **Opening**

08:35 Maximilian Jarofka, Philipp Maximilian Sieberg, Christian Hürten, Tim Benedens, Ricarda Peters, Frédéric Etienne Kracht, Dieter Schramm

From Real to Virtual Environment – Integration of Publicly Available Geodata into a Simulation Environment

University of Duisburg-Essen, Chair of Mechatronics, Duisburg, Germany

09:00 Jonas Mahler, Jan Oberhagemann

Software Architecture for Real and Virtual Sensors in GNC Systems

DST – Development Centre for Ship Technology and Transport Systems, Duisburg, Germany

09:25 Marvin Huang, Martin Kosch, Jan-Jöran Gehrt, René Zweigel, Dirk Abel

Application of Recent GNC Approaches for Automation in Shipping

Institute of Automatic Control at RWTH Aachen University, Aachen, Germany

09:50 Maximilian Kaster, Jens Neugebauer, Bettar el Moctar

Traffic Analysis in the Rhine-Ruhr Metropolitan Area

University of Duisburg-Essen

10:15 **Coffee break**

10:45 Aparna Nagarajan, Jan Mentjes, Sebastian Feuerstack

SmartKai: LIDAR Based Real-Time Detection and Tracking of Moving Objects in Maritime Environments

OFFIS Institute for Information Technology, Oldenburg, Germany

11:10 Waldemar Boschmann, Dirk Söffker

Increasing Detection Performance using Redundant Object Detection Approaches

University of Duisburg-Essen, Chair of Dynamics and Control, Duisburg, Germany

11:35 R. Raulefs, M. Ulmschneider, M. Wirsing

Terrestrial VDE on the German Inland Waterways

Institute of Communications and Navigation, German Aerospace Center (DLR), Oberpfaffenhofen, Germany

12:00 Ralf Ziebold, Xiangdong An, Christoph Lass

Current Status of Precise Point Positioning Algorithm Development for Highly Automated Inland Vessel Navigation

DLR, Institute of Communications and Navigation, Neustrelitz, Germany

12:25 **Lunch break**

Wednesday, 3rd November 2021 (cont.)

- 13:25 Daniel Laufs¹, Hendrik Dankowski², Hauke Schramm³, Olaf Landsiedel⁴, Dirk Nowotka⁵, Daniel Sommerstedt⁶
CAPTN Förde Areal – A Smart and Clean Technology Platform for the Testing and Development of Future Autonomous Passenger Ferries
¹Wissenschaftszentrum Kiel GmbH, Kiel, Germany; ²Fachhochschule Kiel, Institut für Schiffbau und Maritime Technik, Kiel, Germany; ³Kiel University, Institute of Computer Science, Kiel, Germany; ⁴Kiel University, Institute of Computer Science, Distributed Systems Group, Kiel, Germany; ⁵Kiel University, Institute of Computer Science, Dependable Systems Group, Kiel, Germany; ⁶Raytheon Anschütz GmbH, Kiel, Germany;
- 13:50 Alexander Lutz¹, Axel Lachmeyer¹, Sebastian Wagner²
NOVIMAR Vessel Train Full-Scale Trial: Results and Conclusions
¹Argonics GmbH, Stuttgart, Germany; ²in – innovative navigation GmbH, Kornwestheim, Germany
- 14:15 Peter Regier, Matthias Waßenberg, Jan Oberhagemann
ELLA – A Platform for Automation of Harbor Maneuvers
DST – Development Centre for Ship Technology and Transport Systems, Duisburg, Germany
- 14:40 Guillermo Chillce, Jens Neugebauer, Bettar el Moctar
An Indirect Method for the Identification of Ship Manoeuvring Characteristics
University of Duisburg-Essen
- 15:05 **Coffee break**
- 15:35 Abderahman Bejaoui, Fateme Bakhshande, Dirk Söffker
Modeling and Formalization of Human Operator Behavior for Mobile Systems and Inland Vessels Using the Situation-Operator-Modeling Approach
University of Duisburg-Essen, Chair of Dynamics and Control, Duisburg, Germany
- 16:00 Tim Feierfeil, Christian Schanz, Klemens Kauppert
Management of Autonomous and Mixed Waterborne Traffic by Cascading Microscopic Traffic Simulation – The Project “mikroVon”
ingenieurbüro kauppert, Nebeniusstraße 34, Karlsruhe, Germany
- 16:25 Navreet Singh-Thind, Mark Spiller, Dirk Söffker
Data-Driven Prediction of Inland Vessel Trajectories
University of Duisburg-Essen, Chair of Dynamics and Control, Duisburg, Germany
- 16:50 Kathrin Donandt^{1,2}, Dirk Söffker²
Deep Learning-Based Vessels Driving Behavior Prediction in Inland Navigation
¹German Federal Waterways Engineering and Research Institute, Karlsruhe, Germany; ²University of Duisburg-Essen, Chair of Dynamics and Control, Duisburg, Germany
- 17:15 **Closing**