



### **AEGIS: The new sustainable and highly competitive waterborne logistics system for Europe.**

The Advanced, Efficient and Green Intermodal Systems (AEGIS) project leverages a multidisciplinary team to integrate new innovations from the area of Connected and Automated Transport (CAT) to design the next generation sustainable and highly competitive waterborne transport system in Europe. This includes more diverse sizes of ships and more flexible ship systems, automated cargo handling, ports and short sea shuttles, standardized cargo units and new solutions for digital connectivity.

The main objective of AEGIS is to develop a new waterborne logistics system for Europe that leverages the benefits of ships and barges while overcoming the conventional problems like dependence on terminals, high transshipment costs, low speed and frequency and low automation in information processing. AEGIS intends to use new innovations from the area of CAT, including smaller and more flexible vessel types, automated cargo handling, autonomous ships, new cargo units and new solutions for digital connectivity to regain the position that waterborne traditionally had in freight transport. Ships are most efficient when the cargo holds are full. AEGIS will look for ways to attract new cargo, inbound as outbound, to waterborne transport. This requires new types of services, new business models and better logistics systems.

The project is now in Month 31 and goes until May 2023.





## Recent events.

### Implementing *Fit for 55* – The right Logistics and Transport Infrastructure for a Net Zero-Carbon Future – The Nordics at the Helm?

Nelson F. Coelho (Aalborg University) has participated in the conference [‘Implementing “Fit for 55” – The right Logistics and Transport Infrastructure for a Net Zero-Carbon Future – The Nordics at the Helm?’](#). This event was organized by the INTERTRAN Research Group (interdisciplinary research group for sustainable law and business), in collaboration with the Finnish Swedish Chamber of Commerce (FINSVE) and took place at the central campus of University of Helsinki on the 24<sup>th</sup> and 25<sup>th</sup> of August 2022. Nelson introduced the audience the policy support research prepared under the AEGIS project, in a presentation entitled: *Governing waterborne transport via the ‘fit for 55’ package: thinking global, going local?*



The project has received funding from the European Union's Horizon 2020 Research and innovation program under Grant Agreement N°859992.





## The future of the Maritime Digital Landscape How to get Maritime Single Window implemented before Jan 1<sup>st</sup> 2024?



IMO, during the Facilitation Committee meeting 46 in May 2022, decided that the amendments to the IMO Facilitation (FAL) Convention should enter into force from January 1<sup>st</sup> 2024. These amendments require signatories to the Convention to implement an

electronic maritime single window (MSW) for all mandatory declarations made by a ship in conjunction with international port calls. This deadline is approaching fast, and there is an increasing worry that different approaches to MSW in different countries may cause interoperability problems for the maritime community, and in particular for the ships that call on the different ports.

As digitalization and automation of ship-port processes are central themes in AEGIS, AEGIS cooperated with the Norwegian Research Council project "Intelligent Ship Transport Systems" (ISTS) to arrange an international workshop in Oslo October 3<sup>rd</sup>. The purpose was to present and discuss different approaches to the MSW around the world. Presentations were made by the DG MOVE in the EU, MPA in Singapore, International Port Community Association (IPSCA), Ministry of Ocean and Fisheries in Korea, ISO TC8 (Ships and marine technologies), and IALA. Based on the discussions during the workshop, ISO TC8, BIMCO and IPCSA compiled eight recommendations for making the MSW as useful as possible. The most important of these is to also allow the ship to participate in the clearance process and in communication with the MSW. This in turn implies a high focus on automated machine-to-machine communication, the use of internationally accepted protocols and standards and the use of digital signatures to implement authenticity, integrity and confidentiality in message exchanges.

Information about the ISTS project: <http://ists.mits-forum.org/>

Workshop information: <http://ists.mits-forum.org/events/221003-msw/program.html>

The recommendations: <http://ists.mits-forum.org/resources/msw-rec.pdf>



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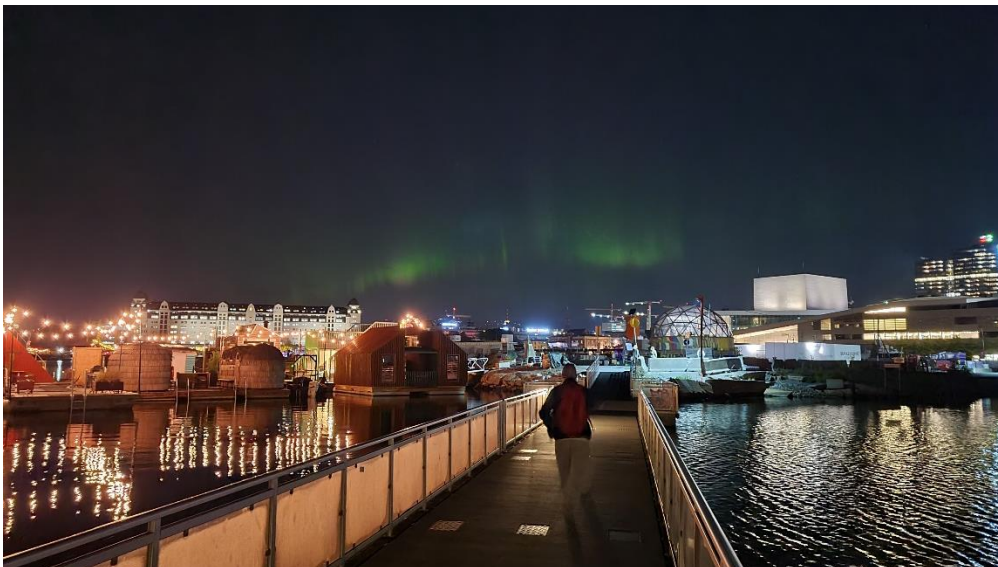
## Design Review 2 in Oslo, October 2022.

The AEGIS partners were gathered in Oslo on October 4<sup>th</sup>. The agenda for the workshop was to discuss the technical direction of the project, whether we were on track or had to do changes to prioritization and focus.



The main outcome from the gathering was that we are well aligned on the objectives of the project. However, we agreed to address user-centered services and to intensify dissemination. There are a lot of great ideas and concepts in the project, that should be presented to the public and relevant stakeholders.

The day before we went for dinner and were so lucky to even experience the northern lights in Oslo!





## SMM in Hamburg, September 2022.

AEGIS joined forces with AUTOSHIP and MOSES and arranged a seminar on autonomy in ships and ports.



**AUTOSHIP**  
Autonomous Shipping Initiative for European Waters

**MOSES**



**alice** | Alliance for  
Logistics Innovation  
through Collaboration  
in Europe

Our seminar *Reduced transportation cost and lower environmental impact by autonomy in ships and ports* was conducted at [SMM](#) on September 7<sup>th</sup>. The seminar was divided into two sessions:

### Session 1: *Effects of autonomy on society, businesses, and logistics*

The session was moderated by Ørnulf Rødseth (SINTEF Ocean) and the presenters in this session were:

- **Marco Colella (PNO):** [Why autonomy in waterborne transport? – A systematic review](#)
- **Kristoffer Kloch (DFDS):** [Leveraging autonomy to create cost effective and sustainable businesses for intra-European transport](#)
- **Antoon van Coillie (Zulu Associates):** [A broader perspective on logistical and supply chain opportunities created by autonomy](#)
- **Janne Suominen (MacGregor):** [Reducing cost of transshipments by automation in ports and terminals.](#)



### Session 2: *Technical status, drivers, and barriers*

The session was moderated by Odd Erik Mørkrid (SINTEF Ocean) and the presenters in this session were:

- **Ørnulf Rødseth (SINTEF Ocean):** [Who will be first – autonomous car or autonomous ship?](#)
- **Jorge Miguel Lara Lopez (Fundación Valenciaport):** [Adaptation of port call process for autonomous ship in a big port](#)
- **Benjamin Boyer (CCNR):** [Automation of inland waterway vessels](#)



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## TRA 2022 in Lisbon, November 2022.

AEGIS had a booth and was presented twice at the [Transport Research Arena 2022](#) in Lisbon, through a project presentation and as part of an invited session.

### Advanced, Efficient and Green Intermodal Systems is what we need!

AEGIS was present with a booth at the [ALICE](#) (Alliance for Logistics Innovation through Collaboration in Europe) Innovation Theatre from November 14<sup>th</sup> until 17<sup>th</sup>. We got quite a few visitors at the stand and it was a great way of being visible at TRA. In addition to the booth, a project presentation was held on Wednesday 16<sup>th</sup> at the Innovation Theatre. Title was [The next generation maritime transport system](#) and the presentation was held by the AEGIS coordinator **Odd Erik Mørkrid (SINTEF Ocean)**.



### Invited session with MOSES and AUTOSHIP projects.

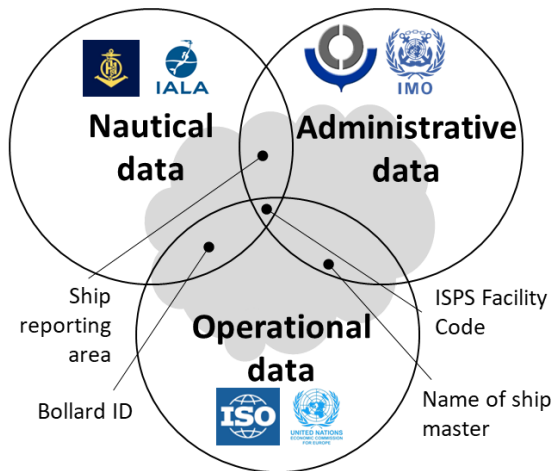
AEGIS participated in the invited session 51: *Safe and efficient modal shift from roads to waterways: Automated technologies and processes, human-autonomy interactions.*

The session was moderated by Professor Nikolaos P. Ventikos and the following speakers presented:

- **Odd Erik Mørkrid (SINTEF Ocean):** *Improved waterborne logistics with small uncrewed feeder vessels*
- **Kristoffer Kloch (DFDS):** *Leveraging autonomy to create effective and sustainable businesses for intra-European transport*
- **Janne Suominen (MacGregor):** *Automated cargo handling to reduce transshipment costs*
- **Konstantinos Louzis (NTUA):** *The necessity of digital as well as physical automation for sustainable modal shifts*



## IMO becomes a focus point for maritime digitalization and standardization.



Digital connectivity and standardization of communication between ship and shore is important in AEGIS as this is a prerequisite for efficient use of autonomous ships. While digitalization rapidly increases in the maritime sector, standardization is still lagging. To improve the situation, AEGIS puts significant resources into ISO standardization work. Through the ISO work we are also a central contributor to activities in the IMO

Facilitation Committee (FAL) to promote digital standards in the maritime sector. Central in the FAL activities is the new IMO Compendium, which is a reference model for three groups of international standards:

- In the nautical data domain, where standards are developed by the International Hydrographic Office (IHO) and IALA.
- In the administrative data domain, where standards are developed by World Customs Organization (WCO) and IMO itself.
- In the operational data domain, where ISO TC8 and UNECE are important contributors to standards.

The figure shows examples of data element that are in overlapping domains, and, hence, covered by the reference model (shaded area). This is where harmonization of standards is needed. Harmonization is the purpose of the IMO Compendium and its reference model. AEGIS, through our participation in ISO TC8 is one of the main contributors to this work. IMO maintains a web page with more information about the IMO Compendium. IMO has also made a short video explaining the role of IMO in digitalization of the maritime sector and the importance of digitalization in reaching the international sustainable development goals.



IMO webinar on digitalization: <https://www.imo.org/en/About/Events/Pages/Window-of-opportunities-for-shipping-webinar.aspx>

IMO Compendium: <https://imo.org/en/OurWork/Facilitation/Pages/IMOCompendium.aspx>



## Recent publications.

### Resilience in automated transport systems:

The report was written and produced by SINTEF Ocean and DTU and presents a methodology for assessing resilience in transport systems, with particular focus on automation and autonomy. The objective with this AEGIS resilience methodology is to identify possible top events in the transport system, to prepare preventive and reactive barriers to the event with the purpose of reducing consequences.

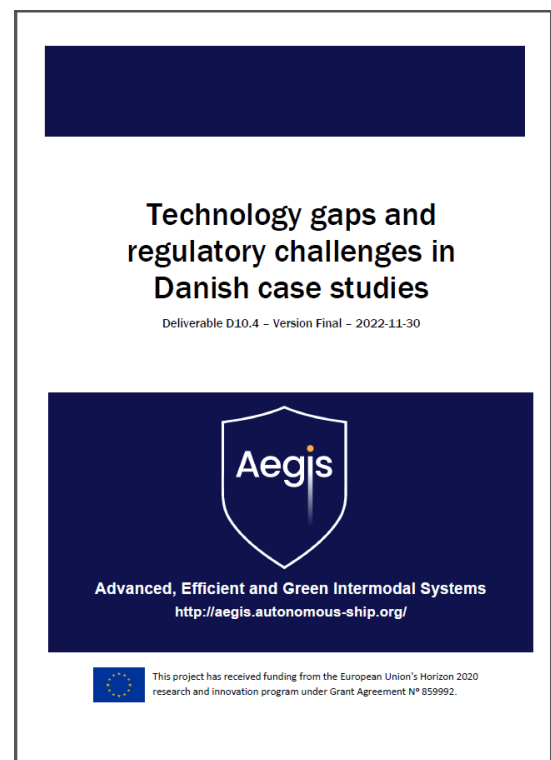
The methodology can be applied to the use cases in the project.



### Technology gaps and regulatory challenges in Danish case studies:

The report was written and produced by Aalborg University, Port of Aalborg, and Port of Vordingborg, and shows how port terminal infrastructure development plays a key role in the development of a new waterborne transport system for Europe. This report highlighted the impact of the AEGIS concept as experienced by Port of Aalborg and by Port of Vordingborg, as small and medium enterprise ports.

On the side of technological gaps, the report analyses gaps related to digitalisation in communication and standardisation, cargo handling and infrastructural support for new autonomous vessels, namely the capabilities of small and medium enterprise ports.







## Consortium.



AALBORG UNIVERSITET



If you want to learn more about AEGIS, please visit our webpage or LinkedIn page:

[aegis.autonomous-ship.org](http://aegis.autonomous-ship.org)

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