



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

The Advanced, Efficient and Green Intermodal Systems (AEGIS) project will leverage a multidisciplinary team to integrate new innovations from the area of Connected and Automated Transport (CAT) to design the next generation of 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 transportation 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 well as outbound, to waterborne transport. This requires new types of services, new business models and better logistics systems.

The project is now in month 9 and goes until May 2023. The next upcoming event is a stakeholder workshop on automation and autonomy in inland waterways, planned for April, 2021. For more information, please find contact information on the webpage.





## Recent events.

### **AEGIS arranged a joint stakeholder workshop with AUTOSHIP and MOSES.**

The EU projects AUTOSHIP, MOSES and AEGIS joined forces and successfully arranged an online workshop on automation and autonomy in short sea logistics on January 28th. About 100 people registered and participated in the event, which looked at the questions:

- *How will automation and autonomy contribute to efficient and sustainable short-sea cargo transport in Europe?*
- *What are the challenges and what are the solutions that these three projects propose?*

The projects were presented and there was a very fruitful panel debate following the presentations. The panel consisted of moderator Ørnulf Jan Rødseth (SINTEF Ocean) and the four participants:

- EU DG Move: Jacob Terling
- EU DG RTD: Peter Crawley
- SeaEurope: Benoît Loicq
- ALICE Logistics Platform: Fernando Liesa

Thank you to the presenters, the moderator and last but not least, the panel participants! A recording of the workshop follows under:

<https://youtu.be/rks5E7hyed8>

And link to the presentations:

[AEGIS](#), [AUTOSHIP](#), [MOSES](#)

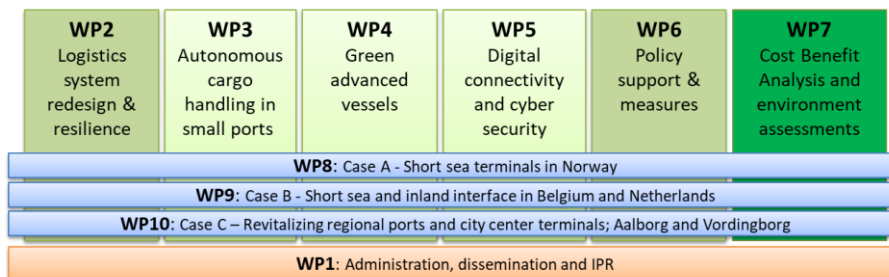


## The Project.

The AEGIS project can be presented as shown in the figure below, where technology-specific work packages are combined in a multidisciplinary total solution to provide some of the next generation waterborne logistics systems. The main technical components are:

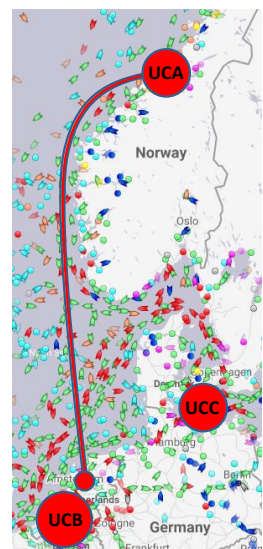
- WP2: Updated logistics systems with combined ship sizes and new terminal concepts; distribution further into the supply chains using smaller vessels
- WP3: Full automation of cargo transshipments, removing one of the main cost drivers in waterborne transport
- WP4: New ship designs and autonomous solutions to make more and smaller ships with electric propulsion
- WP5: Digital standards and connectivity to reduce paperwork and administrative hassle

In addition, WP6 will investigate the effects of policy measures that may be necessary to overcome certain operational bottlenecks, e.g. in standardization of unit cargoes, coordination of sea freight operations, more logical port localizations and establishment of new small urban and rural terminals. WP7 will do an economic cost-benefit analysis on all use-cases. It will also do a societal analysis, including environmental effects and impact on society due to the technological and organizational changes proposed in AEGIS.



AEGIS has selected three baseline use-cases which make it possible to evaluate quantified benefits of the proposed new logistics systems being developed as shown in the figure to the right:

- UCA: Short sea terminals in Norway
- UCB: Short sea and inland interface in Belgium and the Netherlands,
- UCC: Revitalizing regional ports and city centre terminals; Aalborg and Vordingborg





## AEGIS Partners.

The AEGIS consortium is comprised of 12 highly qualified partners from four countries: Norway, Denmark, Finland and Germany.



The former Norwegian Marine Technology Research Institute (MARINTEK), SINTEF Fisheries and Aquaculture and the department for environmental technology in SINTEF Materials and Chemistry merged in 2017 into a new company named SINTEF Ocean AS. The company has 340 employees and is an integrated part of SINTEF, but also minority owned by strong and motivated industry players. Many of the challenges of modern society can be solved through sustainable use of the ocean. For a long time, SINTEF has been a distinct and important partner for trade and industry and the authorities, aiming to be on the leading edge in developing future-oriented solutions.



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



DFDS is a shipping and logistics company with Headquarters in Copenhagen and transport networks throughout Europe. DFDS runs short sea freight and passenger routes in the North Sea, Baltic Sea, The English Channel and Mediterranean. With more than 40.000 voyages per year, DFDS is the busiest shipping company of its kind in Northern Europe and one of the busiest in Europe. The company's name is an abbreviation of Det Forenede Dampskibs-Selskab (literally The United Steamship Company). DFDS was founded in 1866, when C.F. Tietgen merged the three biggest Danish steamship companies of that day.



NCL is provider of logistical services connecting the hubs in Europe with the West, Mid and North of Norway. NCL is based in Haugesund Norway and cooperate with a broad network of agents in Norway, the Netherlands, Germany and the UK. To offer the best transport solutions in the industry, NCL leverages innovative technologies combined with over 20 years of local, national and international transport experience. NCL picks up and delivers containers in Europe and Norway. The Door-to-Door service is an efficient and cost-effective transport solution. NCL is searching for new solutions to reduce costs and become more competitive.



The Institut für Strukturleichtbau und Energieeffizienz gGmbH (ISE) (Institute for Structural Lightweight Construction and Energy Efficiency GmbH) is a research institute focusing on basic and applied research in the fields of structural lightweight construction and energy efficiency aiming for the development of innovative, multifunctional components and systems. ISE focuses on the research and development of innovative materials, technologies and products as well as test methods for applications e.g. in civil engineering, shipbuilding, mechanical engineering and plant construction. Due to its research associates ISE offers competences and know-how in the field of developing innovative lightweight ship types for selected use cases.





Cargotec provides cargo handling solutions and services to ports, terminals, distribution centres and heavy industry. We are the industry forerunner in terminal automation and energy-efficient container handling, with one in four container moves around the globe being handled by a Kalmar solution. We improve the efficiency of your every move through our extensive product portfolio, global service network and solutions for seamless integration of terminal processes.



MacGregor has unique offerings to the container shipping business ranging from individual equipment required for cargo stowage and securing, to complete solution packages including customers' business and operation development services. In addition, MacGregor has extensive offerings for handling bulk cargoes on ports and vessels. We understand the maritime industry and our customers' business needs, with a proven track record in the delivery of innovative, value-adding solutions. Our expertise is also often sought by industry bodies when developing new standards and regulations. Shipbuilders, owners and operators are able to optimise the profitability, safety, reliability and environmental sustainability of their operations by working in close cooperation with MacGregor.



Grieg Connect is a result of a merge between the software companies Seamless and Shiplog in November 2018. We are leading in Norway with a number of established products for port authorities, logistics bases, industry stakeholders, public authorities and shipping companies. Our solutions improve operation efficiency, minimizing manual data entries and providing a high level of data quality and operation control and management. Our clients' high demand for good IT solutions combined with our practical operational knowledge are our core focuses.



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## Trondheim Havn

Trondheim Port Authority is owned by 13 municipalities in the county of Trøndelag. The company owns and operates all public ports in Trøndelag and the mid-Norway region, i.e. the ports at Orkanger, Trondheim, Stjørdal, Steinkjer, Verdal and Namsos. There are 55 employees at the locations Orkanger, Trondheim, Verdal and Namsos. Most of the goods transported are in dry bulk, e.g. limestone out from Verdal port, and other bulk products. We also transport cargo like break bulk cargo and containers. Currently there are nearly 100 calls of cruise ships each year, and this number is expected to increase in the coming years. Trondheim Port Authority is working with several projects regarding shore power and other green solutions. We are also involved in Trondheimsfjorden as a test area for autonomous ships.



Port of Aalborg is "Denmark's best-planned port area" located outside the city centre on the open plains, with room for long-term development. In addition to the quaint facilities, the Port of Aalborg owns 4.2 million sqm of commercial land in the hinterland, where the infrastructure is closely linked to the E45 motorway. Almost 100 companies have already established themselves in the attractive area, about half of which are in the quay areas.



Vordingborg Port is a Danish small-medium-sized entrepreneurial port situated on the island of Masedø south of Zealand. The port has been growing rapidly and has undergone a substantial expansion. The harbour area has since 2015 quadrupled in size. Today, the port is amongst one of Zealand's biggest ports. The huge expansion project has included an enlargement of the harbour area and a dredging of the fairway down to a depth of 10.4 meters with a width of 70 meters. The area of the harbour has gone from 45.000 m<sup>2</sup> in 2015 to 170.000 m<sup>2</sup> by 2019. The expansion of the port was performed with a unique focus on sustainability. Using recycled products such as contaminated soil and slag to build a new quay is unique in building port facilities.





For almost two centuries, the Technical University of Denmark (DTU), has been dedicated to fulfilling the vision of H.C. Ørsted - the father of electromagnetism - who founded the university in 1829 to develop and create value using the natural sciences and the technical sciences to benefit society. Today, DTU is ranked as one of the foremost technical universities in Europe. It continues to set new records in the number of publications, and persistently increases and develops partnerships with their industry, whose assignments are accomplished by DTU's scientific advice.



AALBORG UNIVERSITET

Aalborg University (AAU) offers education and research within the fields of natural sciences, social sciences, humanities, technical and health sciences and is a dynamic and innovative research and educational institution oriented towards the surrounding world. AAU is characterised by combining a keen engagement in local, regional, and national issues with an active commitment to international collaboration.

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

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

[LinkedIn](#)



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