AEGIS Newsletter N$_o$ 6, June 2023.

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 transhipment 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.

AEGIS has been granted an extension, which means we will keep going until Novembe 2023!

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

Recent events.

Inland Navigation Week in Brussels March 21st

AEGIS coordinator Odd Erik Mørkrid presented (online) the project at the Inland Navigation Week, under the overall umbrella *Autonomous sailing and Resilience clusters*.

Focus of the presentation was on how AEGIS addresses inland waterways transport (use case B).

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

Consortium meeting in Trondheim, March 2023.

The AEGIS partners were gathered in Trondheim on March 2nd and 3rd. We had some interesting presentations and enjoyable discussions related to the way forward. It was clear after this day that AEGIS is on its right way and will make a difference!

One central part of the gathering was to discuss the AEGIS roadmap, which will be published this fall. Stay tuned!

We also had the opportunity to enjoy an excellent dinner together!

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

Seminars on Port of Aalborg and Port of Vordingborg, April 2023.

Seminar on Intermodal Autonomous Green Terminal in medium ports, April 18th, 2023.

The seminar in Aalborg was attended by 60 participants including 16 from the AEGIS consortium and summarized the general findings from the AEGIS logistical system and those related directly to WP10 and the Port of Aalborg use case.

Seminar on multipurpose terminals in small ports, April 19th, 2023.

The seminar in Vordingborg summarized the general findings from the AEGIS logistical systems and those related directly to WP10 and the Port of Vordingborg use case. The seminar also included a tour at the port. Furthermore can Port of Vordingborg announce that the board of Municipality of Vordingborg has approved the start of the zone planning for the AEGIS Multi Pier.

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

Maritime Autonomous Surface Ships Experience Update.

Lars Andreas Wennersberg (SINTEF Ocean) presented AEGIS as part of a presentation with the title "*Redesign of waterborne logistics with a view to future technology developments for MASS*" at the Maritime Autonomous Surface Ships Experience Update webinar (https://ingenierosnavales.com/webbinar-maritime-autonomous-surface-ships-experiences-update/) on April 19th.

Ocean Week, Trondheim.

Odd Erik Mørkrid presented AEGIS as part of an innovation projects overview at the parallel session on autonomous ships during NTNU's Ocean Week (https://www.ntnu.edu/web/ocean-week/tuesday-2-may-2023) in Trondheim on May 2nd.

International Exhibition for logistics, mobility, IT and supply chain management fair, Munich.

Stefan Krause (ISE) presented AEGIS at the Transport Logistics fair in Munich (https://transportlogistic.de/en/) on May 10th. The presentation was concerning intermodal systems for inland shipping based on use case B concepts.

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

ITS Congress 2023 in Lisbon, May 2023.

AEGIS was presented twice at the ITS Congress 2023 in Lisbon, through a project presentation at the EC stand and as part of a special session.

AEGIS and Maritime ITS.

AEGIS was presented at the EC stand on Monday May 22nd, by Marianne Hagaseth (SINTEF Ocean).

Special session with MOSES, AUTOSHIP and SEAMLESS projects.

AEGIS participated in the special session SIS 25: *Improved and innovative cargo logistics with small autonomous ships.*

The session was moderated by the AEGIS coordinator Odd Erik Mørkrid (SINTEF Ocean) and the following speakers presented:

- **Anastasiya Azarko (PNO):** *Comparison of external costs between trucks and autonomous ships*
- **Dr. Evangelia Portouli (NTUA):** *Automated cargo handling for autonomous ships*
- **Alexandros Rammos (NTUA):** *Small vessel transport from port to city centre and small rural destinations*
- **Marianne Hagaseth (SINTEF Ocean):** *"Small feeder shuttles' impact on the short sea network*

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

IMO symposium "Making headway on the IMO MASS Code", May 2023.

During the symposium **Making headway on the IMO MASS Code** held jointly by IMO and the Republic of Korea on 30th of May 2023, Marianne Hagaseth (SINTEF Ocean) made a presentation on **How to use the IMO Compendium for Operational Data during Port Calls**.

The focus was on the IMO Compendium and how this has lately been extended to cover operational data that is relevant for port calls, especially to support the Just-In-Time arrival and departure processes.
Link to IMO Compendium:
https://www.imo.org/en/OurWork/Facilitation/Pages/IMOCompendium.aspx
Link to the symposium here:
https://www.imo.org/en/About/Events/Pages/IMO-MASS-Code-Symposium.aspx

<Session 3> Port: Digitalization of ports, link between MASS and ports (Moderator: Dr. Keiko Miyazaki, Director, Centre for International Cooperation National Maritime Research Institute, National Institute of Maritime, Port and Aviation Technology)			
16:30~16:50	20′	The digitalization of Incheon Port	Incheon Port Authority Jaehoon Lee
16:50~17:10	20′	How to use the IMO Compendium for operational data during port calls / AEGIS	SINTEF Ocean Marianne Hagaseth
17:10~17:30	20′	Innovation and technology in Busan Port	Busan Port Authority Jeonghum Yeon
17:30~17:50	20′	Q&A session • How should multiple infrastructures, including ports, be linked when operating MASS?	Moderator and presenters
17:50~17:55	5′	Closing remarks	Director, IMO Maritime Safety Division Heike Deggim
17:55~18:00	5'	Commemorative photo	-
18:00~19:00	60'	Evening reception (Delegates Lounge)	Sponsored by Republic of Korea

Figure 1 – Snapshot of the programme – source: IMO

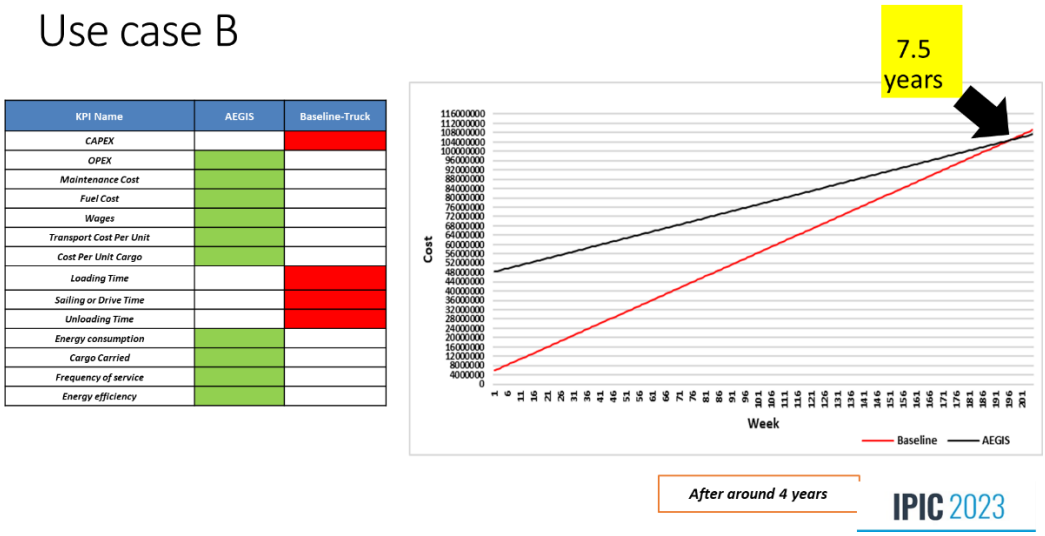
The project has received funding from the European Union's Horizon 2020 Research and innovation program under Grant Agreement N°859992.

IPIC Conference 2023 in Athens, June 2023.

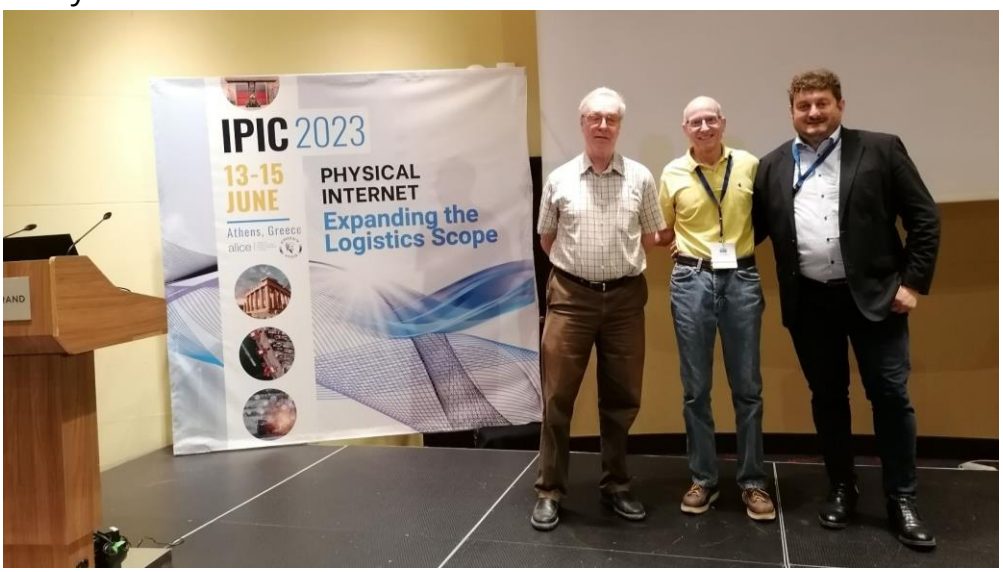
AEGIS was presented at the IPIC 2023 in Athens on June 15th, by Professor Harilaos N. Psaraftis.

Small and medium automated ports - the future of intermodal logistics and the AEGIS project.

The presentation was part of the session *6.C 5G in ports and vessel automation*. The project overall and results from economic, environmental and social analysis based on AEGIS KPIs were presented. A little snapshot from the presentation, the overall results for use case B below:



Below is a picture taken at the conference, with Professor Psaraftis to the left, and the AEGIS Advisory Board member Rod Franklin in the middle.



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

Some snapshots of results from the project.

Mother and daughter ships for the Norwegian use case A, created by ISE:

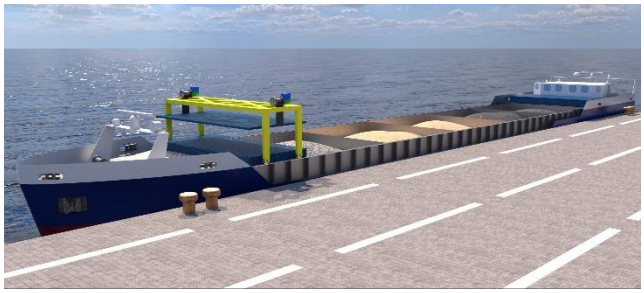
Different CEMT class barges for the Belgium/Dutch use case B, created by ISE:

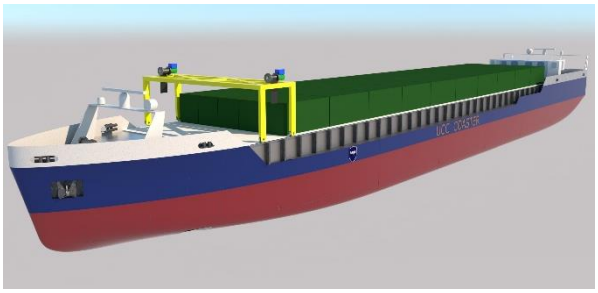
CEMT II and CEMT VI:

CEMT VI:

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

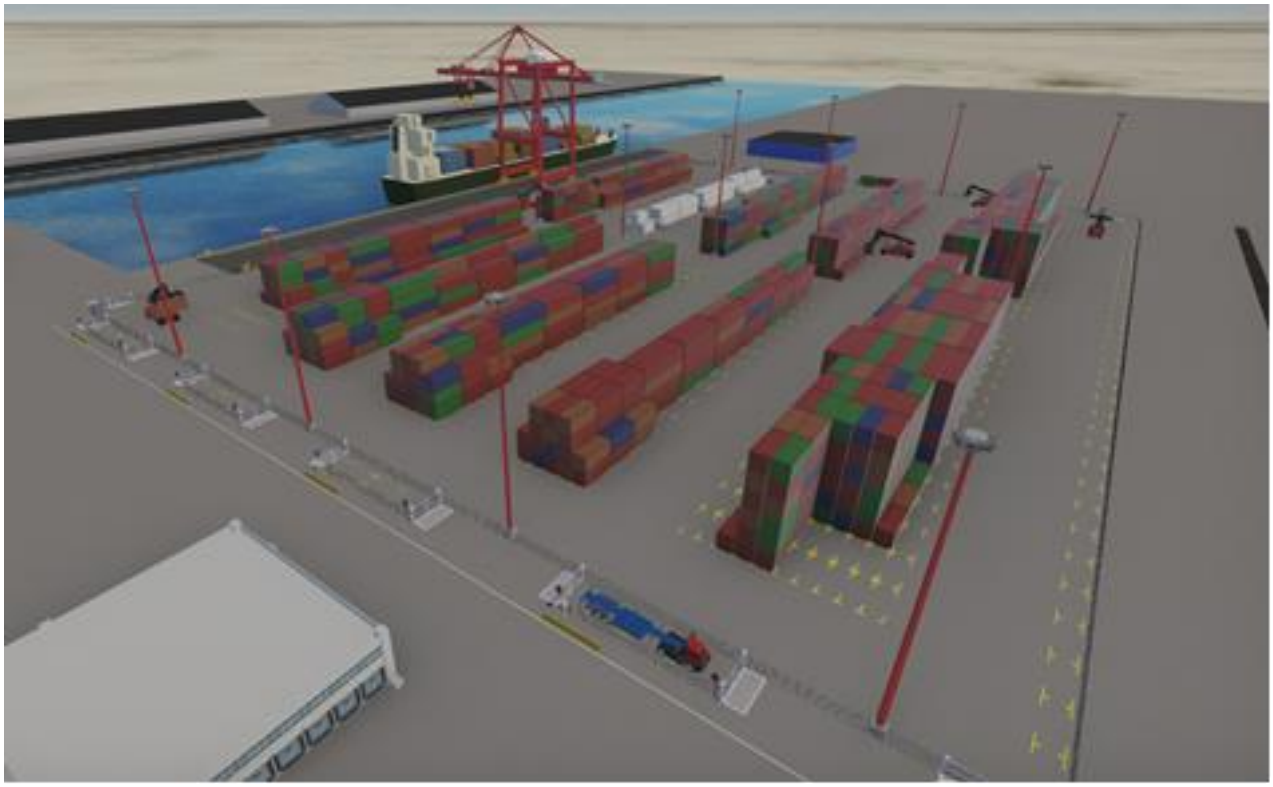
Coaster vessel for the Danish use case C, created by ISE:





Suggested terminal layout for Port of Aalborg, created by Kalmar:

The terminal is an intermodal hub connecting sea, rail, and road. The sea connection is shown in the top with an STS (Shipt-to-Shore) crane for loading and discharging of containers. The middle of the images shows the container stacking area with autonomous or remotely controlled reach stackers. The rail connection is to the right, and road is connected in the bottom with smart gates and so-called fenced kiosks for the trucks. The reach stackers are used for loading and discharging of both the trucks and the trains, as well as internal movement of the containers, including to/from the quayside.



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

Recent publications.

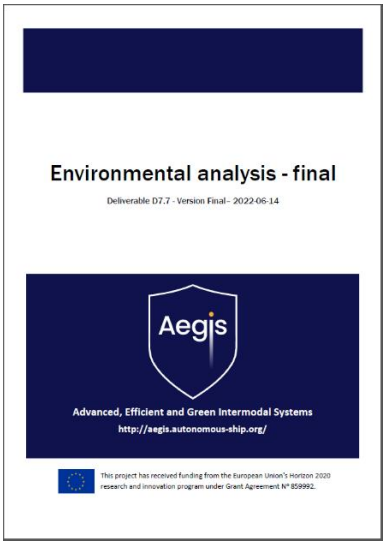
All the reports mentioned in this newsletter are public and will be made available on the AEGIS webpage.

Economic analysis:

The report was written and produced by DTU and presents where the project stands regarding the main economic KPIs (cost and time) for the three use cases, and particularly on how the AEGIS concepts compare to the baseline (conventional) scenario.

Environmental analysis:

The report was written and produced by DTU and presents where the project stands regarding the main environmental KPIs. These are linked to the sailing route (sea distance, voyage duration, ports of call) and the deployed vessels (energy consumption at service speed, operating costs, etc). The methodological framework and set of equations developed to calculate the environmental KPIs are described.



Social analysis:

The report was written and produced by DTU and presents where the project stands regarding the main social KPIs. It has turned out to be hard to perform quantification analysis for many of the KPIs, since they are linked to a new transport system which is not yet implemented. However, for some KPIs there are estimates provided. And KPIs such as road accidents and facilities are included to show the effects of moving away from trucks.

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

Seminar on multipurpose terminals in small ports:

The report was written and produced by Port of Vordingborg and is summing up the seminar "Multipurpose terminals in small ports" which was held on April 19th, 2023, in Vordingborg, Denmark, as presented above.

Seminar on Intermodal Autonomous Green Terminal in medium ports:

The report was written and produced by Aalborg University, Port of Aalborg, and is summing up the seminar "Intermodal Autonomous Green terminal in medium ports" which was held on April 18th, 2023, in Aalborg, Denmark, as presented above.

Methodology for safety and security analysis:

The report was written and produced by SINTEF Ocean and describes a safety and security analysis method based on the work done in the Seatonomy[1] project, the AUTOSHIP[2] project, and previous work done in AEGIS WP5. The work is documented in the modelling tool Enterprise Architect[3].

[1] https://www.sintef.no/en/projects/2013/seatonomy/
[2] https://www.autoship-project.eu/
[3] https://en.wikipedia.org/wiki/Enterprise_Architect_(software)

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

AEGIS Policy Support

AEGIS partner Aalborg University (AAU) has delivered **three** reports on policy support. These reports complement each other, but they are rather independent as they focus on separate issues.

The first deliverable analyses public policy of EU institutions that may enable or constrain the transition towards the proposed new waterborne transport system, mapping out the relevant initiatives currently designed to achieve EU targets for shifting cargo from road to sea.

The second deliverable highlights some of the key legal and regulatory challenges that the introduction of the AEGIS concept may face, in particular on the new advanced technologies proposed such as autonomous navigation systems and ecologic propulsion systems.

The final deliverable is rather more critical, as it provides a roadmap for designing measures to implement the proposed technical solutions for waterborne transport systems, namely by tackling the limited approach followed by policymakers in the past. The main conclusion is that there is great division between EU environmental policy and EU transport policy, with targets and objectives not being fully aligned and often running in opposite directions. The digitalization of waterborne transportation systems presents a new opportunity to move cargo from road to sea and also fulfil the decarbonization agenda of the European Commission, but there are traps that policymakers might fall into, such as the disruption of existing business models which may lead to resistance from relevant stakeholders. AAU will now seek to adapt and abridge those reports into publications that will contribute to the literature o n waterborne transport governance, thus disseminating these socio-technical findings of the AEGIS project to an academic audience. AAU will also support the preparation of the remaining AEGIS deliverables, translating these findings into public recommendations associated with the AEGIS use-cases.

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

Consortium.

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

aegis.autonomous-ship.org

LinkedIn

Click here to subscribe to our newsletter

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