One Sea

Ecosystemic Cooperation – a Corner Stone of Test Platform

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One Sea drives for an operational autonomous maritime system by 2025

DIMECC is a co-creation ecosystem that combines digitalization, internet, materials and engineering.

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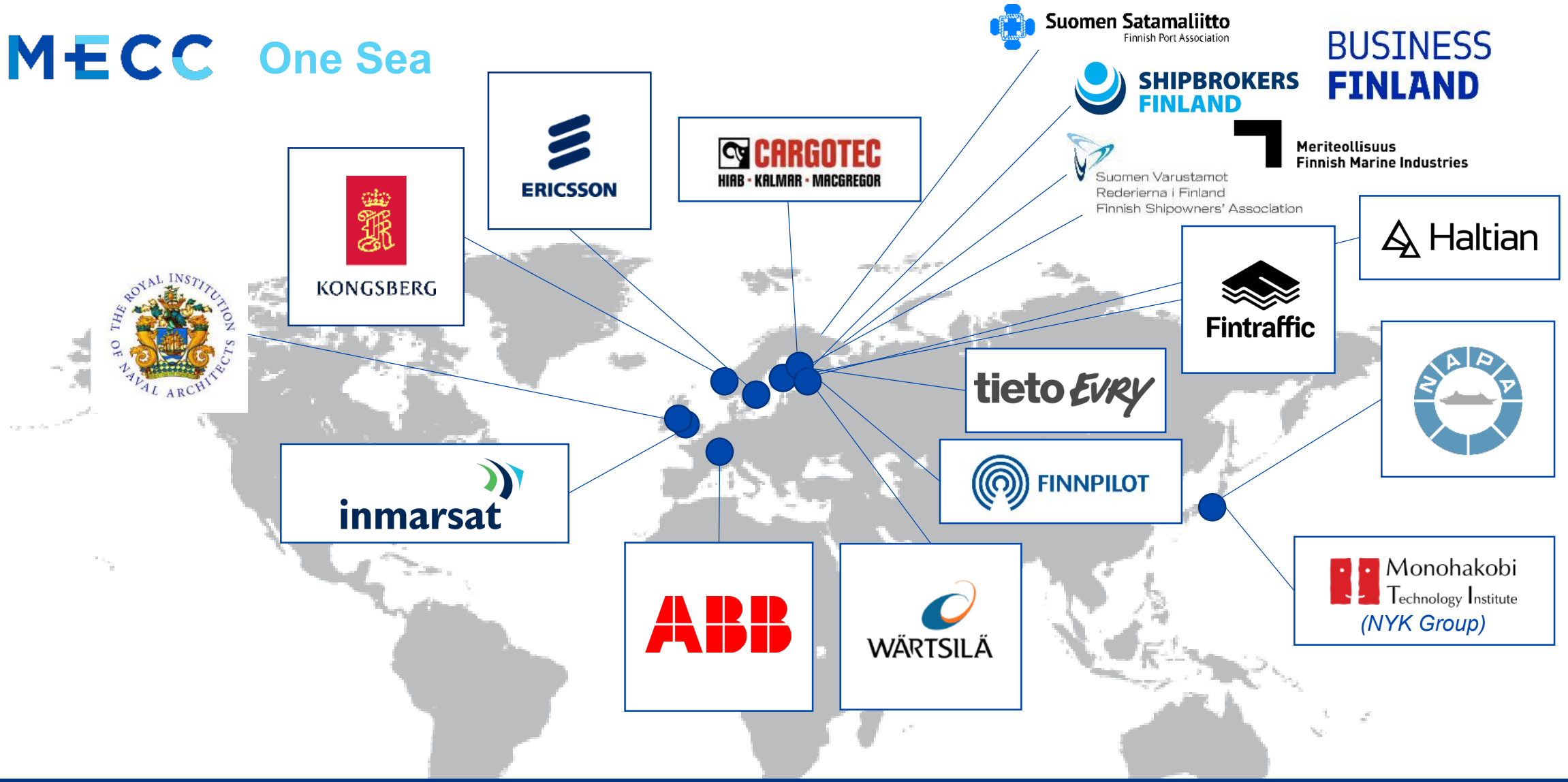

One Sea is an open alliance for global commercial organizations committed to leading maritime autonomy

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Ecosystem activities

Ecosystem Core Activities	**Vision & Strategy**	**Roadmaps**
Ecosystem Program Activities ***Open to all parties***	Product & service creation	
	Startup ecosystem	
	Pilots, PoC's	
	R&D Programs	
	Rules & regulations	
	Test areas, Labs	

Rules and regulations

IMO INTERNATIONAL MARITIME ORGANIZATION

IACS INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES LTD.

EMSA

TRAFICOM

Automation terminology, general principles

- The definitions are for the ship and can be applied to parts of it
  - We are automating operations not ships
- Automation/Autonomous ~= Uncrewed
- Generally automation has nothing to do with manning principles and these should not be mixed
  - It causes too much confusion and they are different things
- Remote monitoring/operation
  - Location of where the human operator is in the loop (workstation) is not relevant for the taxonomy of automation and autonomy

What is actually essential?

The automation level should refer to ”level of human attention” or ”level of attendance from human” required for safe operation

What defines the level of human attention / attendance needed?

1. **Conditions**: The lower the level, the more continuous human attendance is required even in ”easy” conditions
2. **Situation**: The lower the level, the more continuous human attendance is required even in ”simple” situations
3. **Time**: In lower automation levels the system can work safely only very short time or no time without continuous human attention / attendance

”Time is relative to operational margins”

- At open sea and calm weather, margins are large and there is more time
- Maneuvering in tight fairway has small tolerances and time requirement is much higher

Levels of automation (modified from SAE-levels)

0	**Basic operation**	Human controls the vessel manually or with the help of simple unit-automation (e.g. autopilot).	Human controls the vessel.
1	**Assisted operations**	The system assists in operations by automation of observations or controls but does not make the connection of these two by the system. (e.g. DP systems)	Hands-on, eyes-on, mind-on
2	**Partial automation**	Automatic operation of at least one full function/operational mode/operation. System monitors the actual situation and possibly executes actions to mitigate risks while keeping the operator informed. Operator may approve of action.	Hands-off (sometimes), eyes-on, mind-on
3	**Conditional automation**	Automatic operation of at least one full function/operational mode/operation. System suggestions are executed automatically. In good conditions human tasks could be replaced by a machine for a short (relative to the situation) period.	Hands-off, eyes-off (sometimes), mind-on
4	**High automation**	Automatic operation of at least one full function/operational mode/operation. System suggestions are executed automatically. Human tasks (those automated) are executed by a machine to high extent. Machine alerts human if situation is unclear.	Hands-off, eyes-off, mind-off (sometimes)
5	**Autonomous**	Fully autonomous operation of at least one full function/operational mode/operation. Human operator is not needed in those functions/operational models/operations which are automated.	Hands-off, eyes-off, mind-off = human-off

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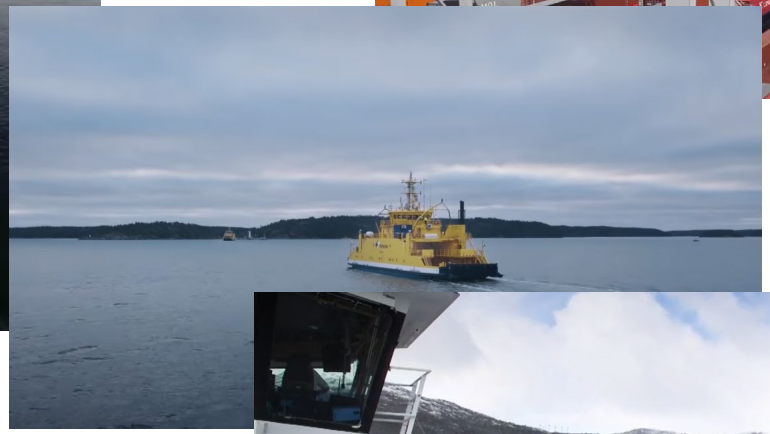

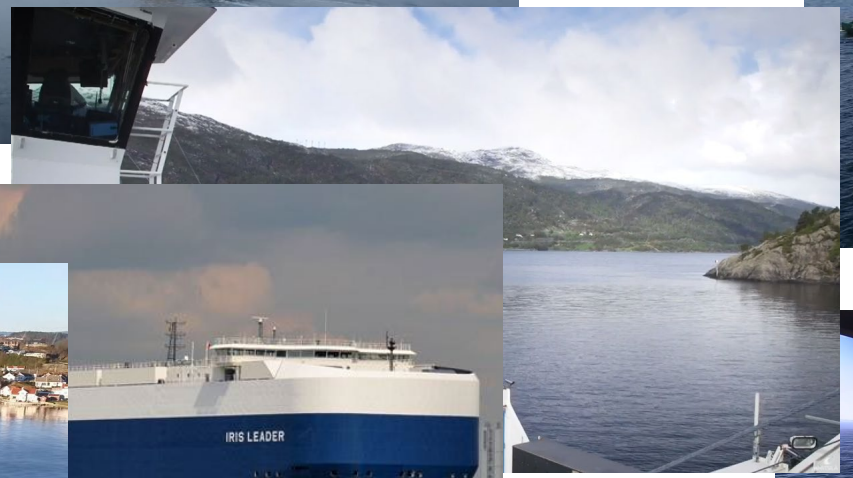

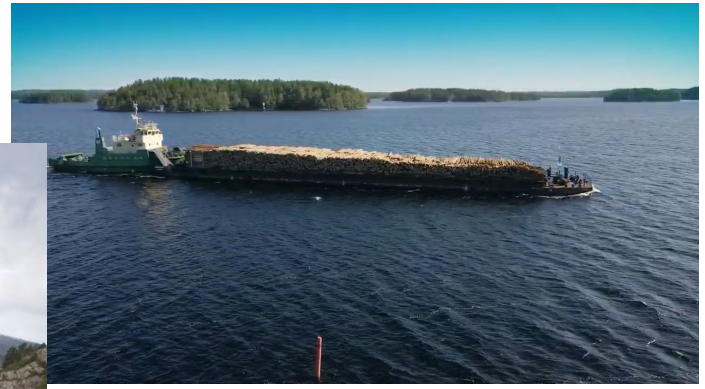

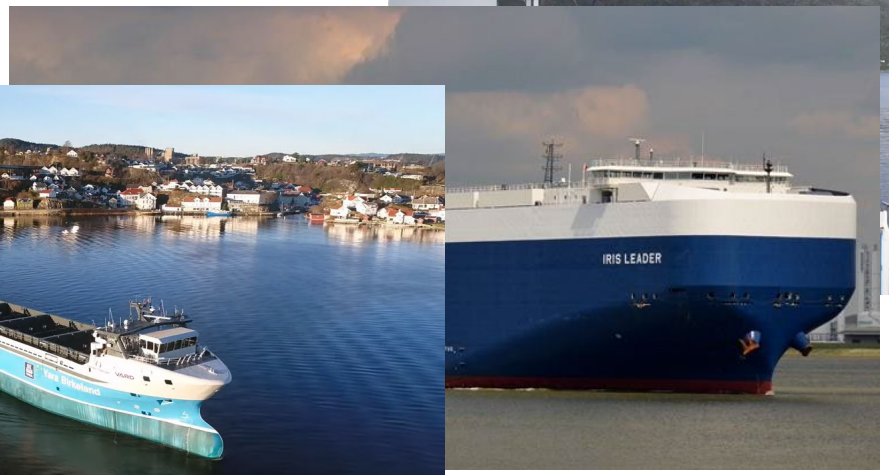

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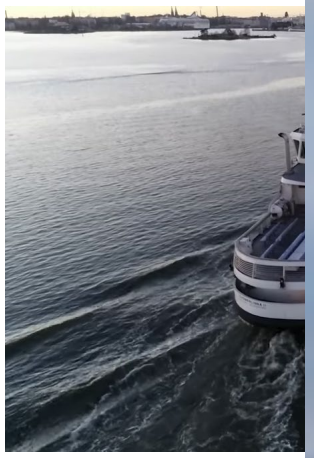

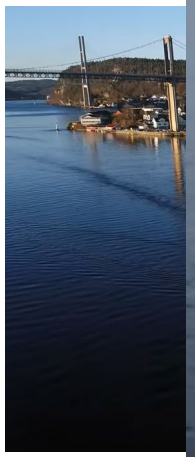

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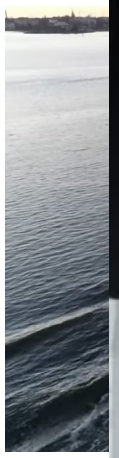

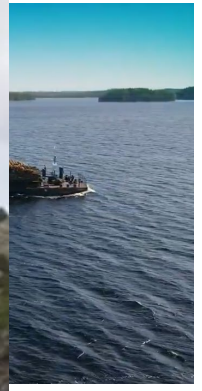

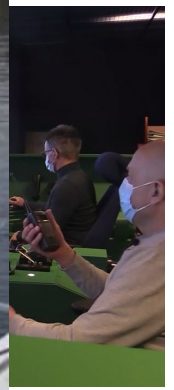

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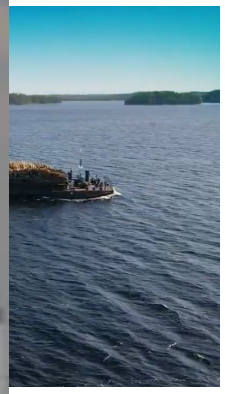

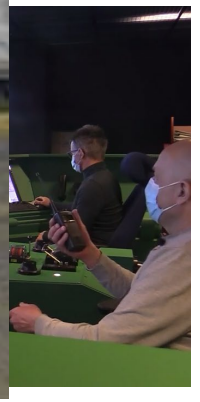

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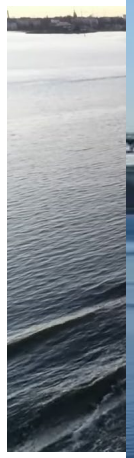

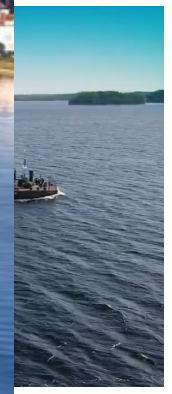

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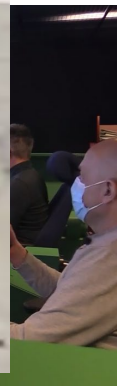

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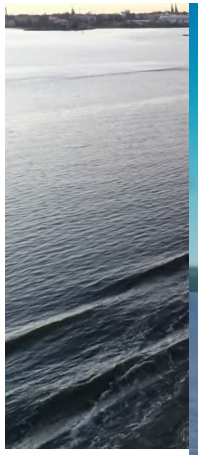

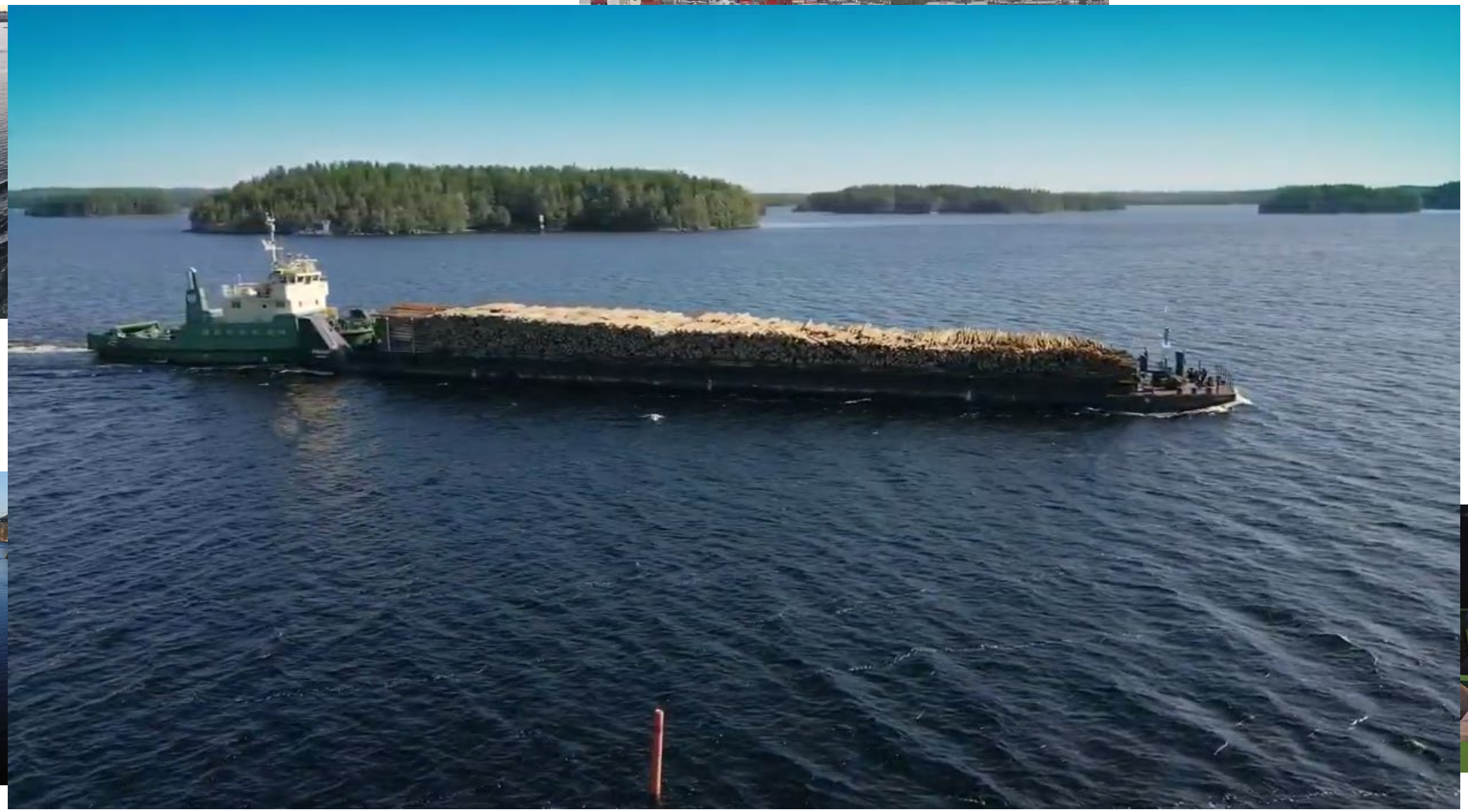

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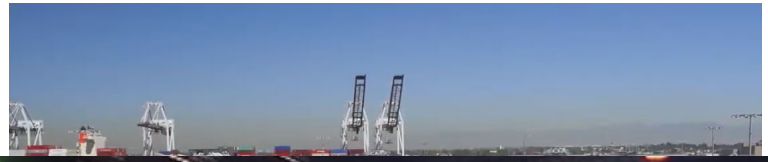

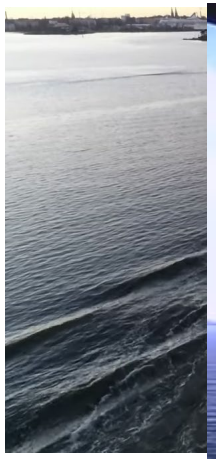

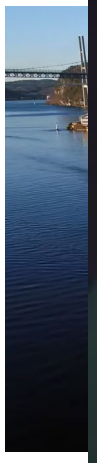

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DIMECC's co-creation ecosystem One Sea seeks global partners to join the leading co-creation ecosystem.

Join us!

www.oneseaecosystem.net

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