Miehittämättömän meriliikenteen ekosysteemi

- tiekartta merien digitalisaatioon – 22.11. 2016

Trusted to deliver excellence

Rolls-Royce

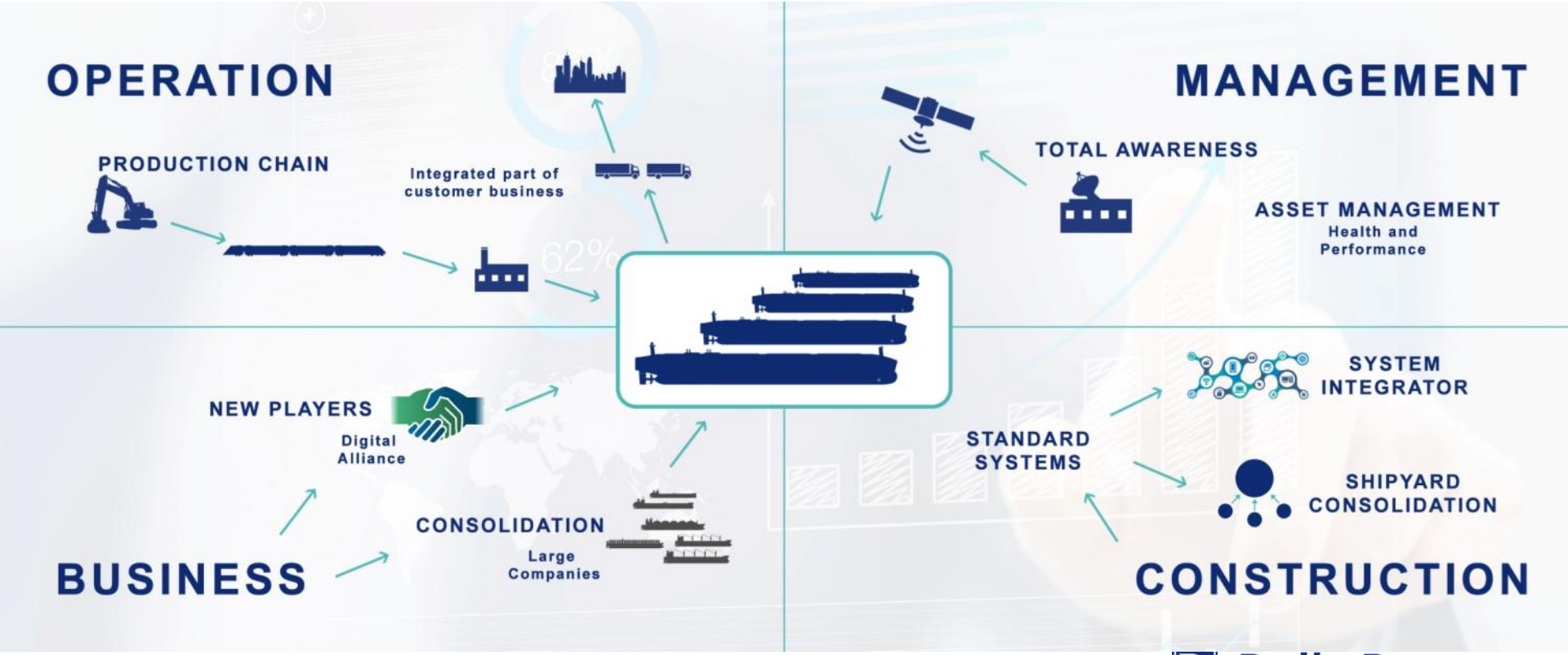
Digitalization – Disruptive change

Internet of Things

Industry 4.0

Big Data

Shipping trends



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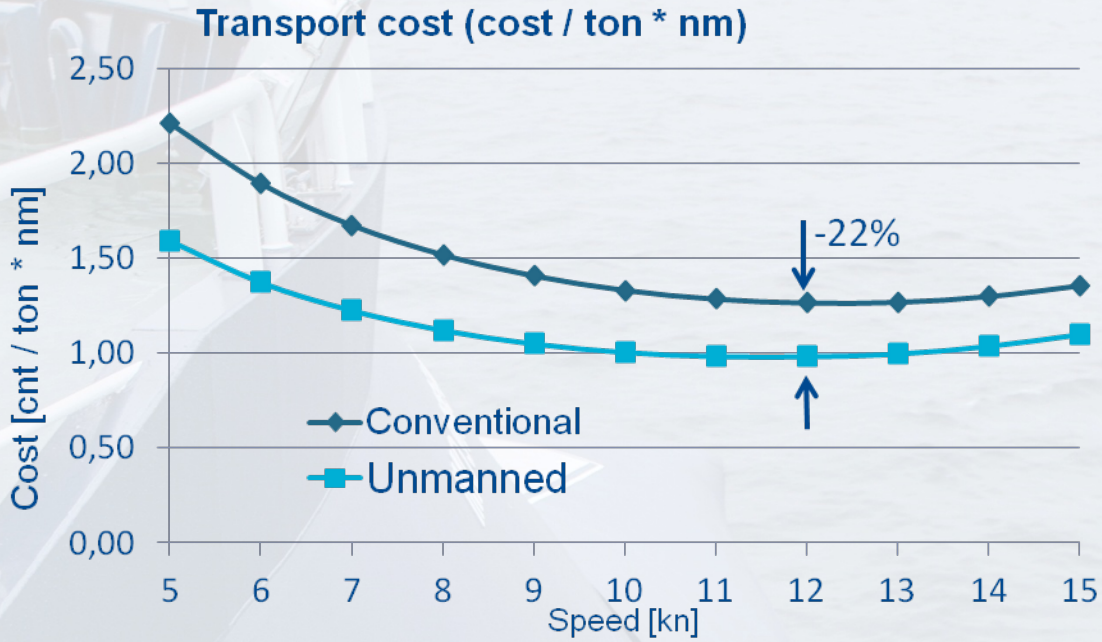
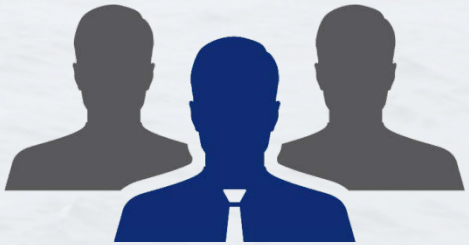
Cost - Transport

20 000 dwt general cargo vessel





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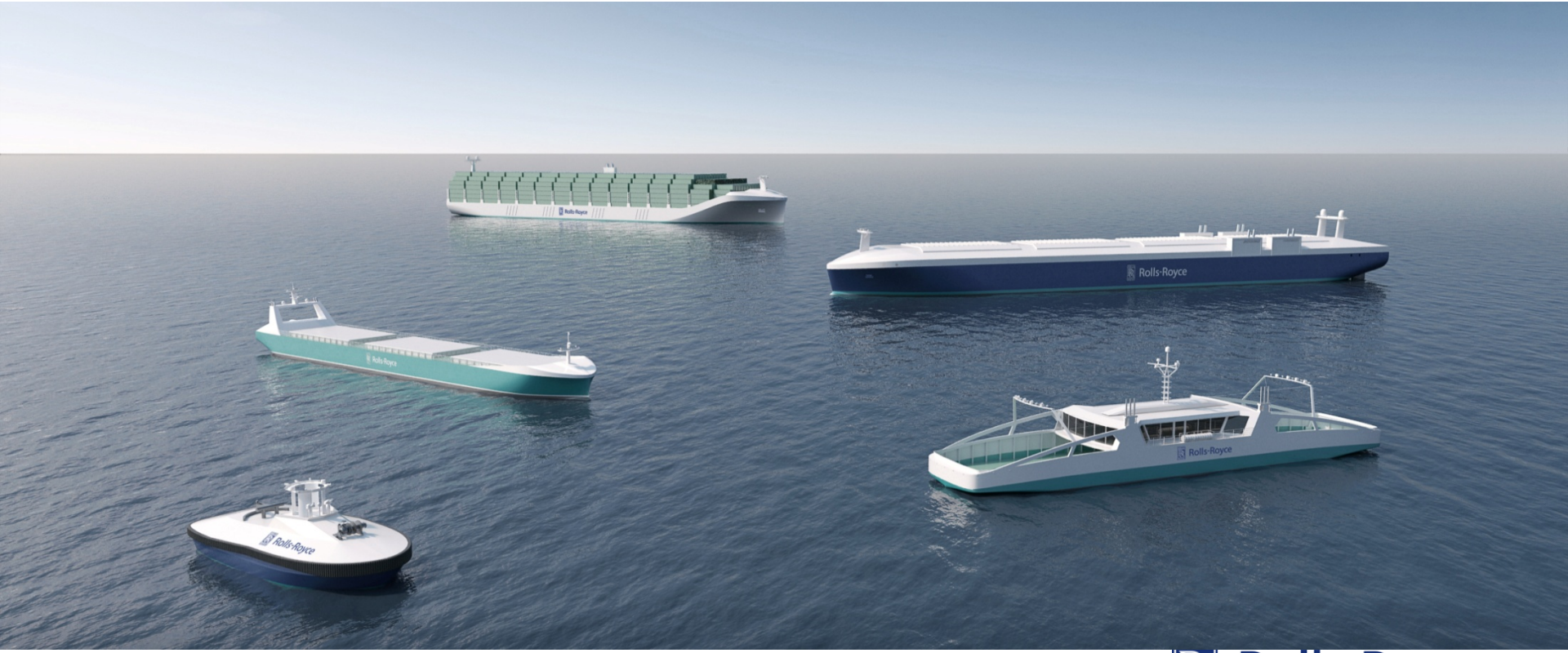
Leading the development



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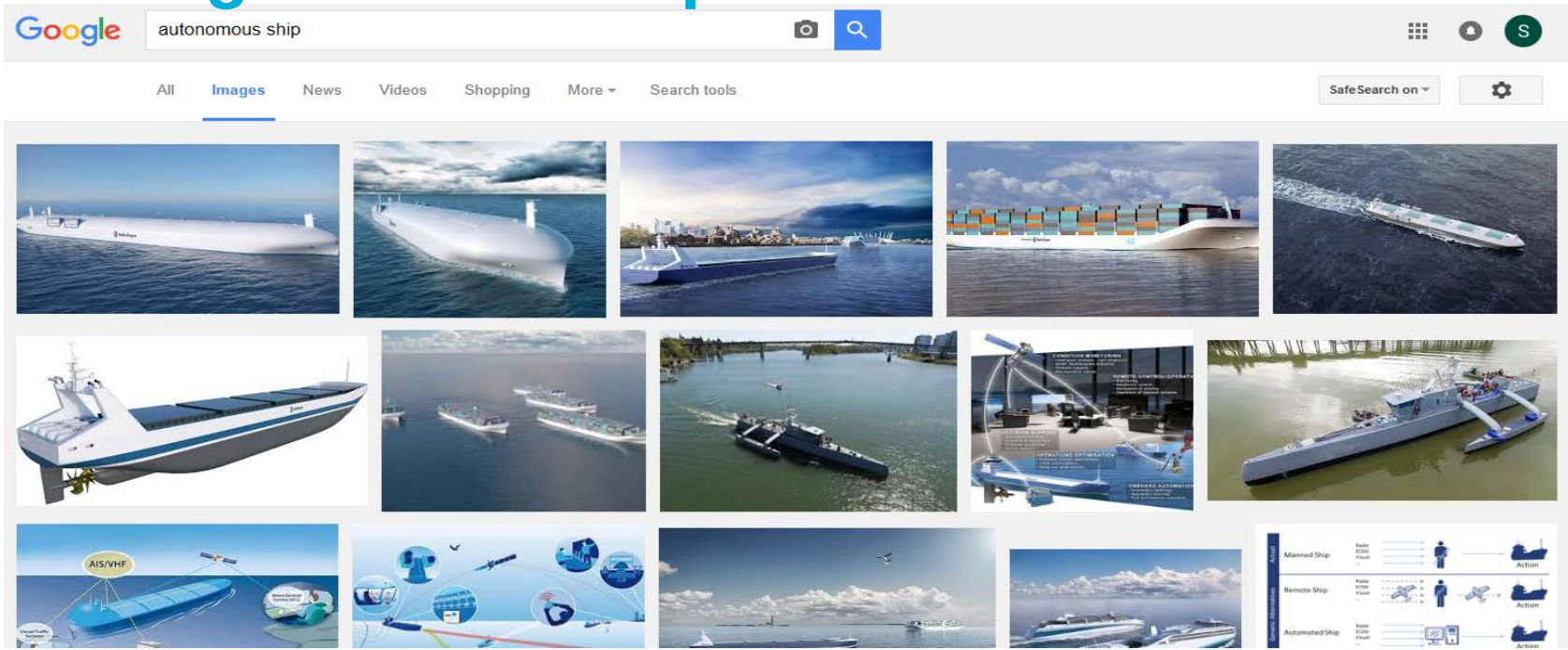
Thought Leadership



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Finland to take the lead in automation experiments in the maritime sector

Press release 26.09.2016 15.38 fi sv en

A comprehensive project to promote unmanned maritime systems is being launched in Finland. Its aim is to create the world's first unmanned maritime systems and services as well as an efficient autonomous maritime ecosystem by 2025.

The Ministry of Transport and Communications supports the project by examining possible test areas for unmanned vessels and by providing a suitable environment for flexible testing operations. The project involves nearly 60 companies and is included in the Arctic Seas programme of the Finnish Funding Agency for Innovation Tekes.

Rolls-Royce

Autonomous maritime ecosystem starts in Finland

9/23/2016

New business ecosystem brings together global forerunners and agile ICT start-ups to develop first autonomous shipping solutions in the world.

Empowering the digitalization and harvesting effectively its benefits is priority area in the Governmental Program of Finland. Digitalization has also a strong role in the development of the competitiveness of the Finnish maritime cluster. Autonomous maritime ecosystem is a concrete action of Finnish digitalization strategy and Finnish Marine Industries envisioning.

The aim is to provide world's first unmanned maritime products, services and vivid ecosystem by 2025. As a part of the ecosystem,the Ministry of Transport and Communications is committed to enable testing of autonomous vessels in Finland in a flexible manner.

The players in the business ecosystem include global leaders like Rolls Royce as well as numerous innovative ICT companies.

Free for media and publishing September the 23rd 8:00 EET

World's first system of autonomous ships kicks off at the Baltic Sea – DIMECC's innovation ecosystem brings forerunners and investments to Finland

Finnish maritime industries will create an ecosystem for autonomous marine transport. The objective of the ecosystem is to create the world's first autonomous marine transport system to the Baltic Sea. Ships will be fully autonomous in 2025. The first pilots and applications in months to come are cargo ships and freight.

There are almost 80 companies in the ecosystem through Finnish Marine Industries Association. The largest investors are Cargotec, Ericsson, Meyer Turku, Rolls-Royce, Tieto, and Wärtsilä. About half of the ecosystem's funding comes from Tekes – the Finnish Funding Agency for Innovation. *"The industry created this idea and objective. There is increasing global competition on autonomy. We have to be quick. This is why we selected DIMECC to run and implement the ecosystem"*, says Rolls-Royce Marine SVP **Sauli Eloranta**.

Testing of intelligent fairways, scheduled to begin next year

- The Finnish Transport Agency will start testing intelligent fairways at the beginning of 2017.
- Intelligent fairways are able to inform mariners about the prevailing conditions and vessel movements in the fairway. Several fairways along the Finnish coast will be used as test platforms.
- Finland's main objective is to make navigation safer and more efficient. In order to reach this goal, the Finnish Transport Agency will start testing intelligent fairways at the beginning of next year.
- "Finland is a forerunner of digital vessel services", says Ms Anne Berner, Minister of Transport and Communications of Finland. "We will do our best to stay at the forefront of the digitalisation development", she continues.
- "Testing of intelligent fairways is a great leap towards autonomous vessel traffic, based on intelligent automation. In my view, intelligent automation is the key to enhancing maritime safety, reducing emissions and improving productivity", says Minister Berner.
- The testing of the intelligent fairways starts at the beginning of 2017 and takes two years. The tests will include testing and piloting of the digital services and real-time situational pictures in both the vessel's own systems and in the systems used by the Vessel Traffic Services.

Ecosystem for Autonomous Ships

Finland aims to operate world's first autonomous ship system in 2025

Image © Rolls-Royce

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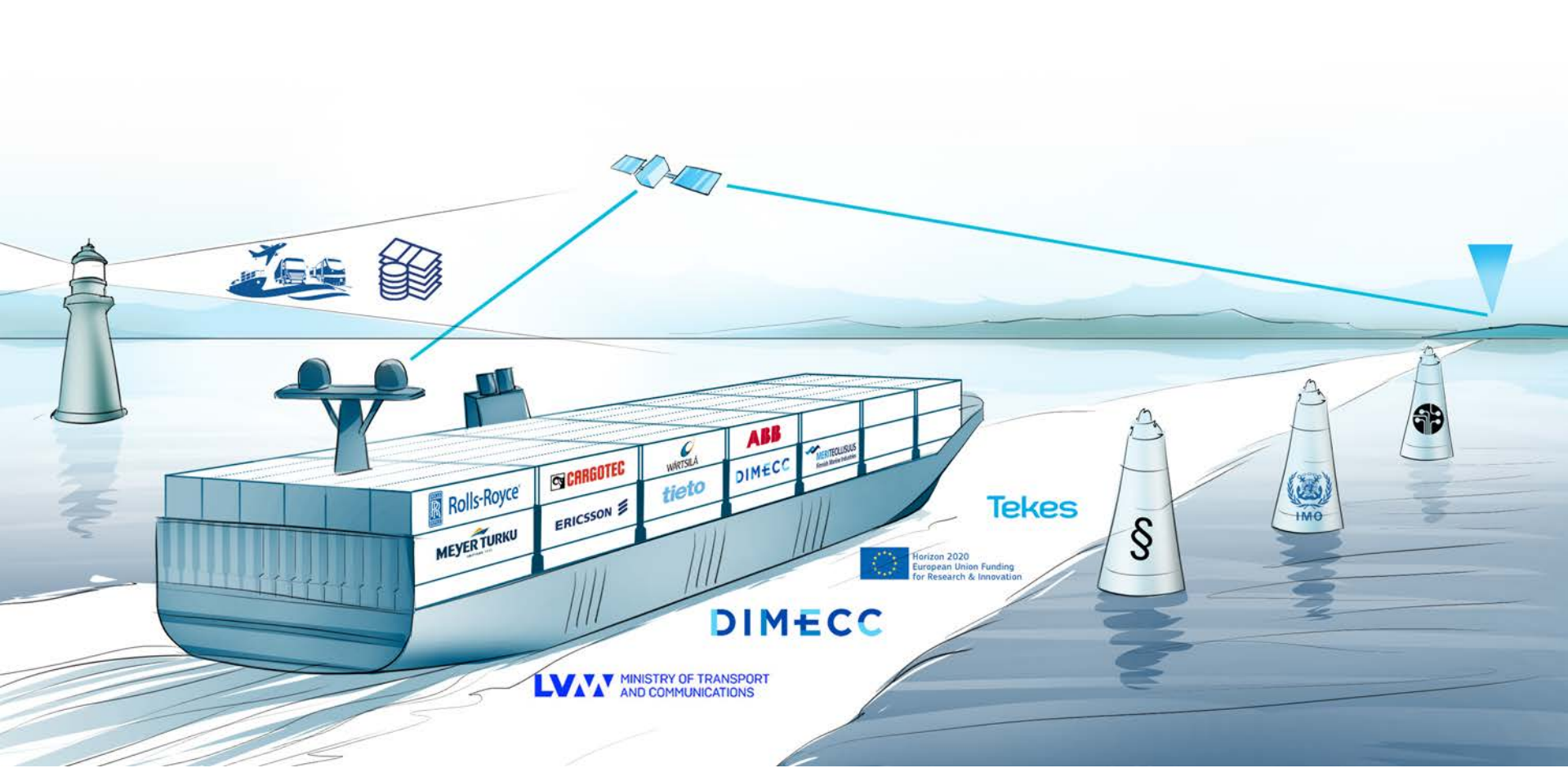

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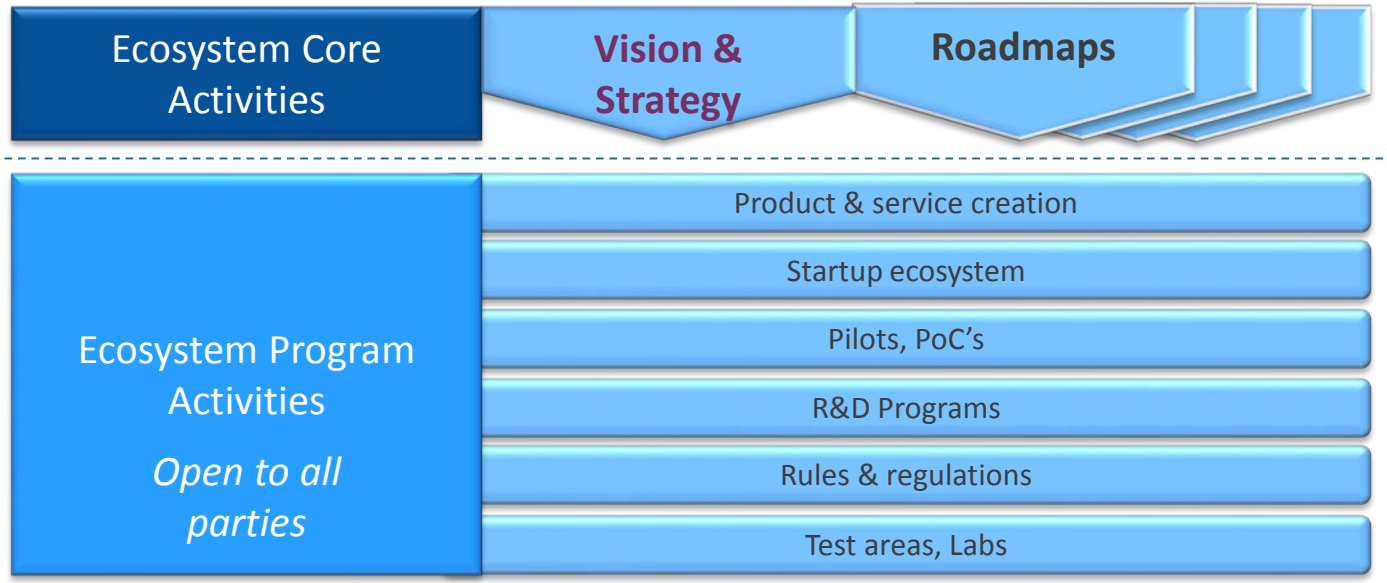
Ecosystem activities



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Main themes for development (currently)

Autonomous vessels
- Remote control
- Sensor technology & fusion
- Situation awareness
- Autonomous operation & navigation

Infrastructure
- Test area, Smart fairways
- Autonomous port
- Connectivity, Interoperability, Security
- Remote operation centers

Rules & regulation, Value chain evolution, Service design

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How to get involved?

Ecosystem Program Activities are open to all relevant companies, start-ups and researchers all over the world.

For more information, contact:

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DIMECC Ltd
jaakko.talvitie@dimecc.com
www.dimecc.com

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Marine Industries SRA 2025

Objective	COMPETITIVENESS AND COMPETENCE	CRUISE AND FERRIES	ARCTIC TECHNOLOGY	OFFSHORE TECHNOLOGY
New product or concept 0.5–2 years	• End-user -driven solution for Customer • Increased level of internal digital capability (merged ICT-data & tools) • Increasing shared data between companies • Full-scale demonstrator of autonomous systems • Increased capability to derive customer value from data through a cross-disciplinary approach (techno-economical, etc.) • Increased IoT-capability to improve shipbuilding related processes over	• Monitoring and demand-based control of different systems • Managing the production and maintenance networks over lifetime with shared information • Fleet and asset management	• Utilization of ice conditions in route and operations optimization • Autonomous operations of specific systems • Fleet and asset management • IT-technologies for Emergency and rescue	• Remote controlled and unmanned operations • Integrated lifecycle models (e.g. shipbuilding material database) • Visualization and simulation techniques improving efficiency of operation, service, maintenance and training

Marine Industries SRA 2025

Objective	COMPETITIVENESS AND COMPETENCE	CRUISE AND FERRIES	ARCTIC TECHNOLOGY	OFFSHORE TECHNOLOGY
Integration of innovation 1–3 years	• Step change opportunity in process efficiency (from within a yard or factory to the entire ecosystem) • Crew training of remotely operated ships • Cybersecurity • Marine open cloud data platform (convergence of big data) that is used by all	• Development of tools for managing the production and maintenance networks • Ship design, operation and life-cycle data in one, complete and up-to-date product model	• Data ownership & sharing • Remote operations	• Systems and procedures with enhanced safety and reduced environmental risk • Maintenance robots

Rolls-Royce

Marine Industries SRA 2025

Objective	COMPETITIVENESS AND COMPETENCE	CRUISE AND FERRIES	ARCTIC TECHNOLOGY	OFFSHORE TECHNOLOGY
Innovation and application 3–5 years	• End-user -driven development approach • Unmanned ship designs	• Tools for vessel design and operational optimisation	• Software for optimizing operations in the Arctic based on observed conditions • Communications in the Arctic to enable emergency and rescue operations • Remote support, control, maintenance, optimization (IoT)	• Software to optimize operations in the Arctic based on observed conditions • IT for energy efficiency of operations and equipment • Safety-driven automation and remote control • Safety-driven simulation of operations

Marine Industries SRA 2025

Objective	COMPETITIVENESS AND COMPETENCE	CRUISE AND FERRIES	ARCTIC TECHNOLOGY	OFFSHORE TECHNOLOGY
Basic research 4–10 years	• ICT-competence, data analytics & algorithms, cybernetics, artificial intelligence	• Basic research to be directed to support changes in maritime law and regulatory framework • Utilization of ship operational data and end-user experiences in design of new con	• Tools for vessel design and operational optimisation • Modelling of ice and met ocean conditions • Basic research to be directed to support changes in maritime law and regulatory framework	• Safety management systems • Modelling of ice and met ocean conditi ons

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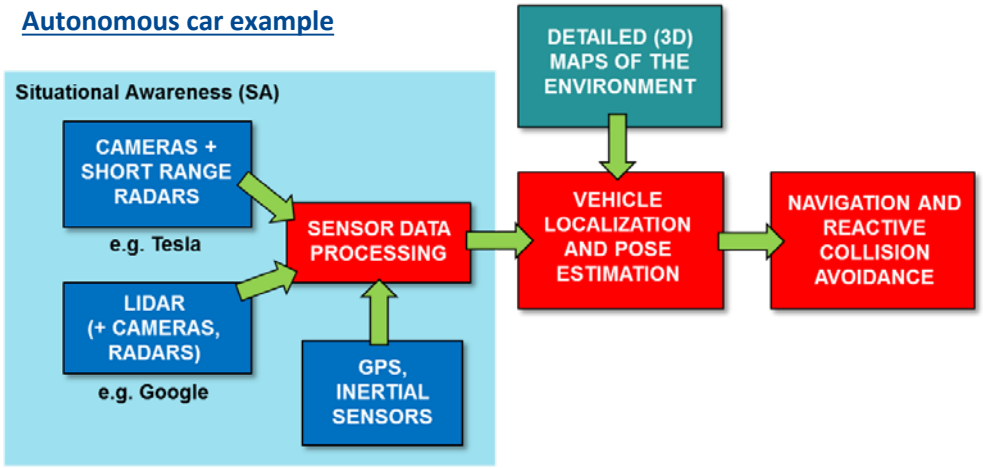
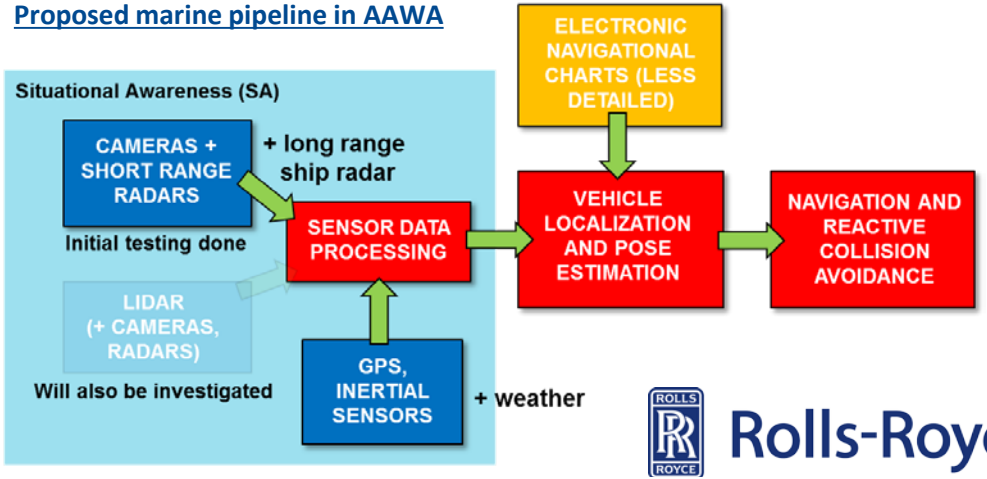
Autonomy

Autonomous car example



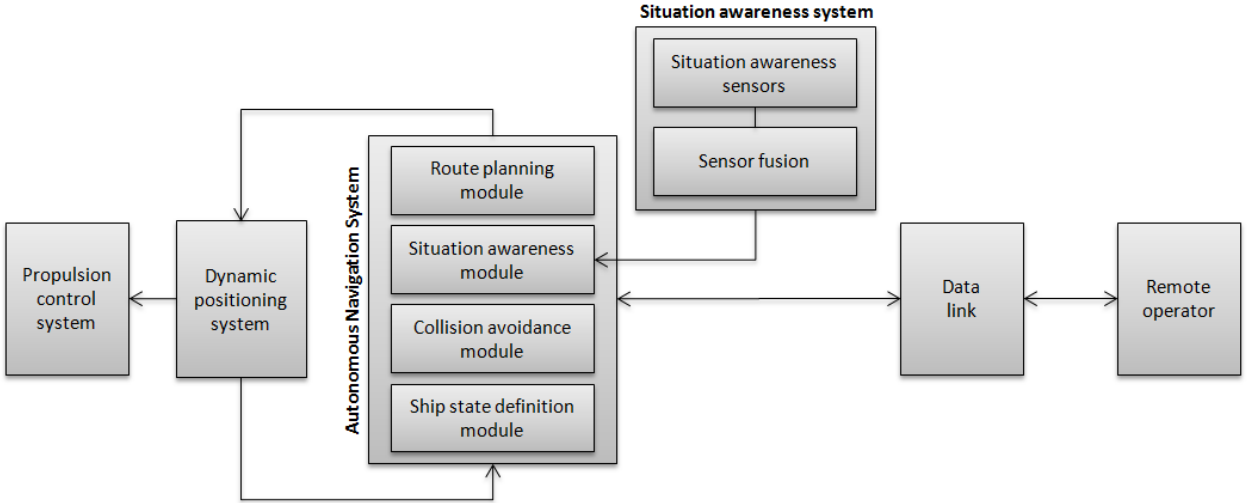
Proposed marine pipeline in AAWA



Source: AAWA

Figure 1. Comparison between automotive and marine navigation pipelines.

Autonomous Navigating System (ANS)



Source: AAWA

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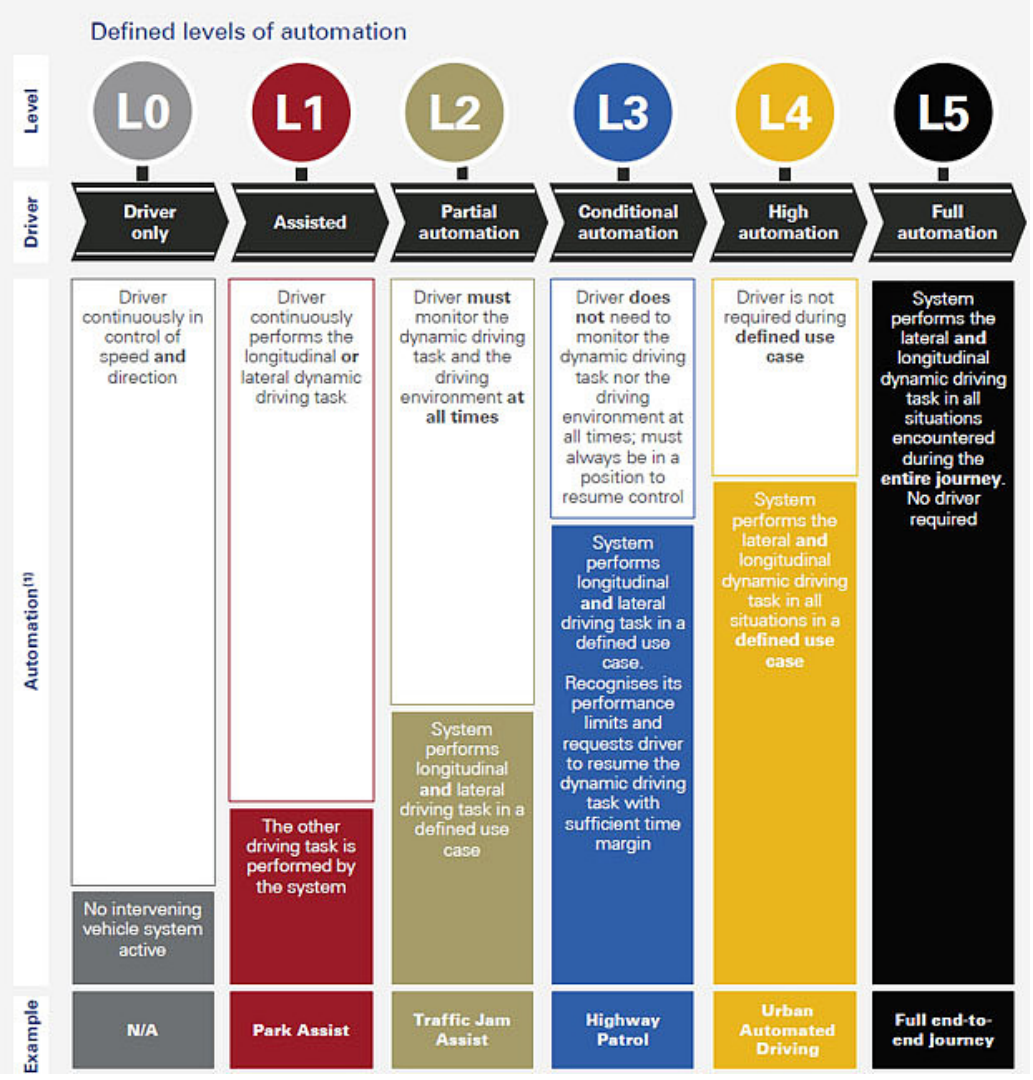
Levels of Autonomy



Source: GROM

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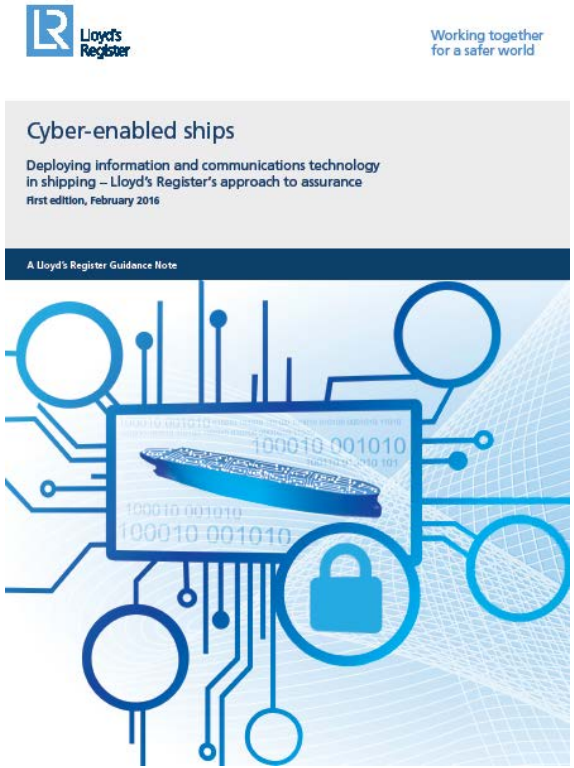
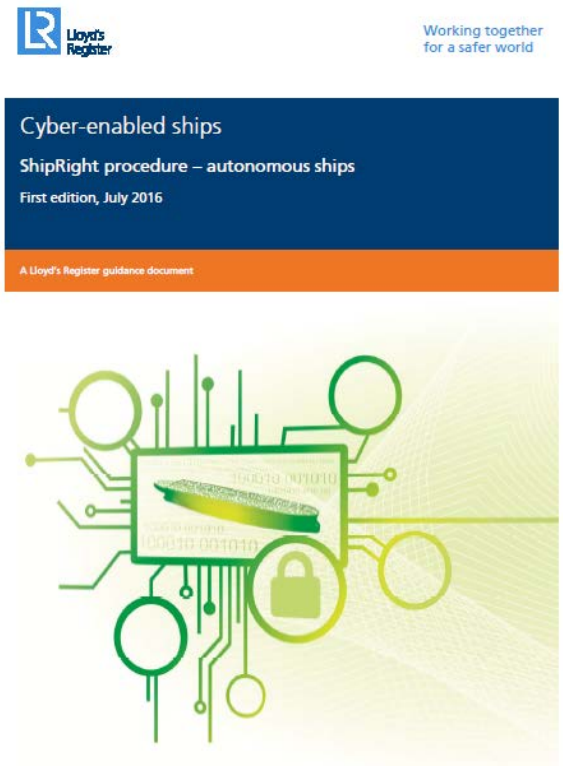
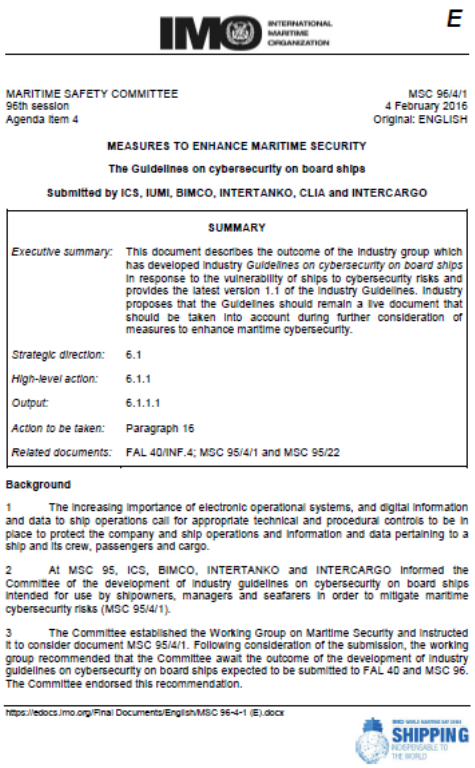
Rules & Regulations







IMO INTERNATIONAL MARITIME ORGANIZATION

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MARITIME SAFETY COMMITTEE
96th session
Agenda item 4

MSC 96/4/1
4 February 2016
Original: ENGLISH

MEASURES TO ENHANCE MARITIME SECURITY

The Guidelines on cybersecurity on board ships

Submitted by ICS, IUMI, BIMCO, INTERTANKO, CLIA and INTERCARGO

SUMMARY

Executive summary:	This document describes the outcome of the industry group which has developed industry *Guidelines on cybersecurity on board ships* in response to the vulnerability of ships to cybersecurity risks and provides the latest version 1.1 of the industry Guidelines. Industry proposes that the Guidelines should remain a live document that should be taken into account during further consideration of measures to enhance maritime cybersecurity.
Strategic direction:	6.1
High-level action:	6.1.1
Output:	6.1.1.1
Action to be taken:	Paragraph 16
Related documents:	FAL 40/INF.4; MSC 95/4/1 and MSC 95/22

Background

1 The increasing importance of electronic operational systems, and digital information and data to ship operations call for appropriate technical and procedural controls to be in place to protect the company and ship operations and information and data pertaining to a ship and its crew, passengers and cargo.

2 At MSC 95, ICS, BIMCO, INTERTANKO and INTERCARGO informed the Committee of the development of industry guidelines on cybersecurity on board ships intended for use by shipowners, managers and seafarers in order to mitigate maritime cybersecurity risks (MSC 95/4/1).

3 The Committee established the Working Group on Maritime Security and instructed it to consider document MSC 95/4/1. Following consideration of the submission, the working group recommended that the Committee await the outcome of the development of industry guidelines on cybersecurity on board ships expected to be submitted to FAL 40 and MSC 96. The Committee endorsed this recommendation.

https://edocs.imo.org/Final Documents/English/MSC 96-4-1 (E).docx

SHIPPING

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