



KONGSBERG

MERIVERKOSTOT

Autonomisten laivojen kehitys Suomessa

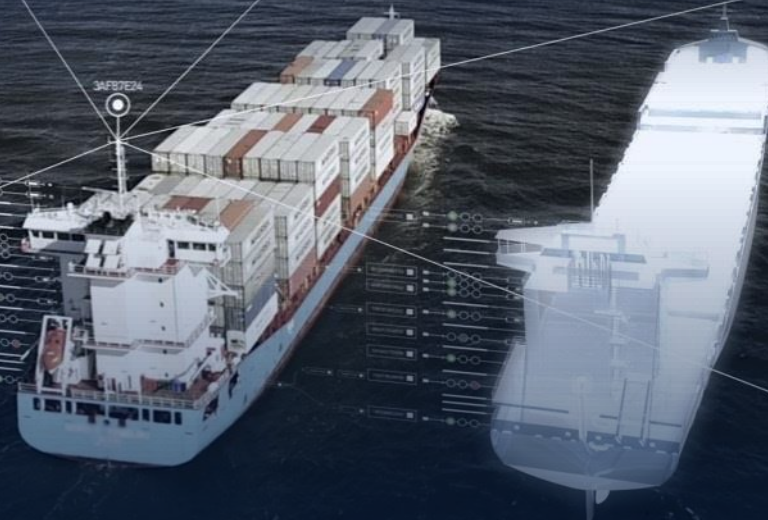
02/04/2019

Esa Jokioinen



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KONGSBERG DIGITAL

Maritime simulation
Industrial digitalization



KONGSBERG MARITIME

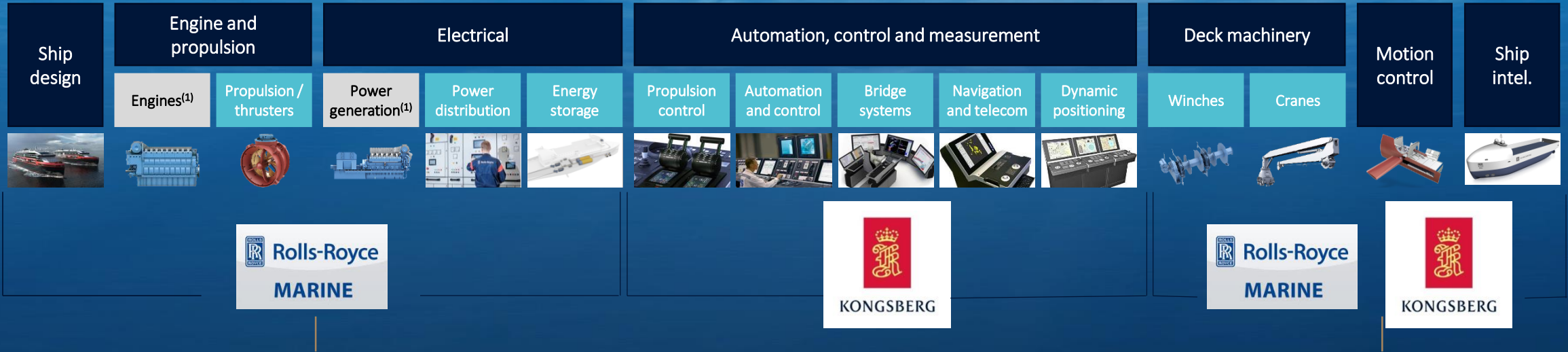
Seaborn transportation
Robotics and Sensors
Offshore, Oil & Gas



KONGSBERG DEFENCE & AEROSPACE

Defence
Space & Surveillance

KONGSBERG MARITIME



The combined company has a “full picture” offering across mission critical marine systems



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**WE ARE CREATING A WORLD LEADING
TECHNOLOGY PROVIDER**

**- by combining two companies that are highly complementary in terms of
products, solutions and competence**



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KONGSBERG MARITIME IN FIGURES

EMPLOYEES

7 600

COUNTRIES OF OPERATIONS

34

REVENUES

16 200 MNOK

#VESSELS

30 000+

WORLD CLASS – Through people, technology and dedication

KONGSBERG PROPRIETARY - See Statement of Proprietary information



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Digital disruption

a global megatrend

Internet of Things

Industry 4.0

Big Data



U B E R



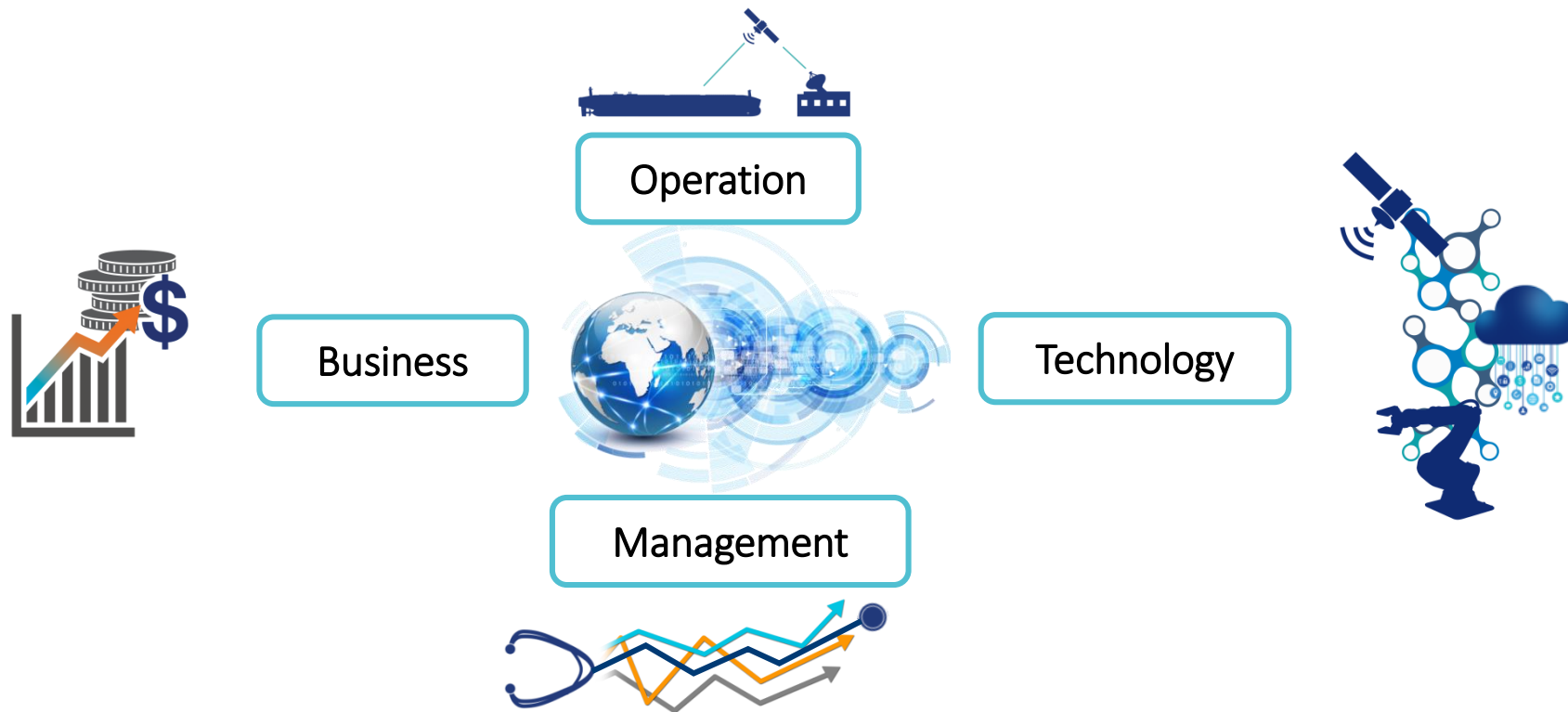
amazon.com





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Maritime changes driven by digitalization





Ship Intelligence



Intelligent Asset Management



Energy Management



Health Management



Remote & Autonomous Operations



Intelligent Awareness



Intelligent Navigation



KONGSBERG

R&D Centre for Autonomous Ships

Officially in Turku since 2018





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Ship Intelligence journey



2017
World's first automatic crossing system



2017
SISU – world's first remote controlled commercial vessel demonstration

2018
Rolls-Royce Intelligent Awareness solution launch



Coming soon
Rolls-Royce Intelligent Navigation launch



2018
World's first R&D centre for autonomous ships opens



2018
SVAN – world's first remote and autonomous vessel demonstration



2017 - PROJECT SISU

- Project for Maersk / Switzer
- Remote control capability for harbour tug
- Demonstrated in Copenhagen 02/2017
- Further development 2017-2018



2018 – INTELLIGENT AWARENESS

- Advisory system for detecting, classifying and tracking of objects
- Based on sensor fusion of radar, day and thermal cameras, LiDAR and AIS
- Neural networks teached with more than 2 million maritime objects
- Platform for Intelligent Navigation and it's automated functions such as automatic docking and collision avoidance, etc.



COG: 114° IM
HDG: 156° MM
SOG: 1 kn Ca

2018 – PROJECT SVAN

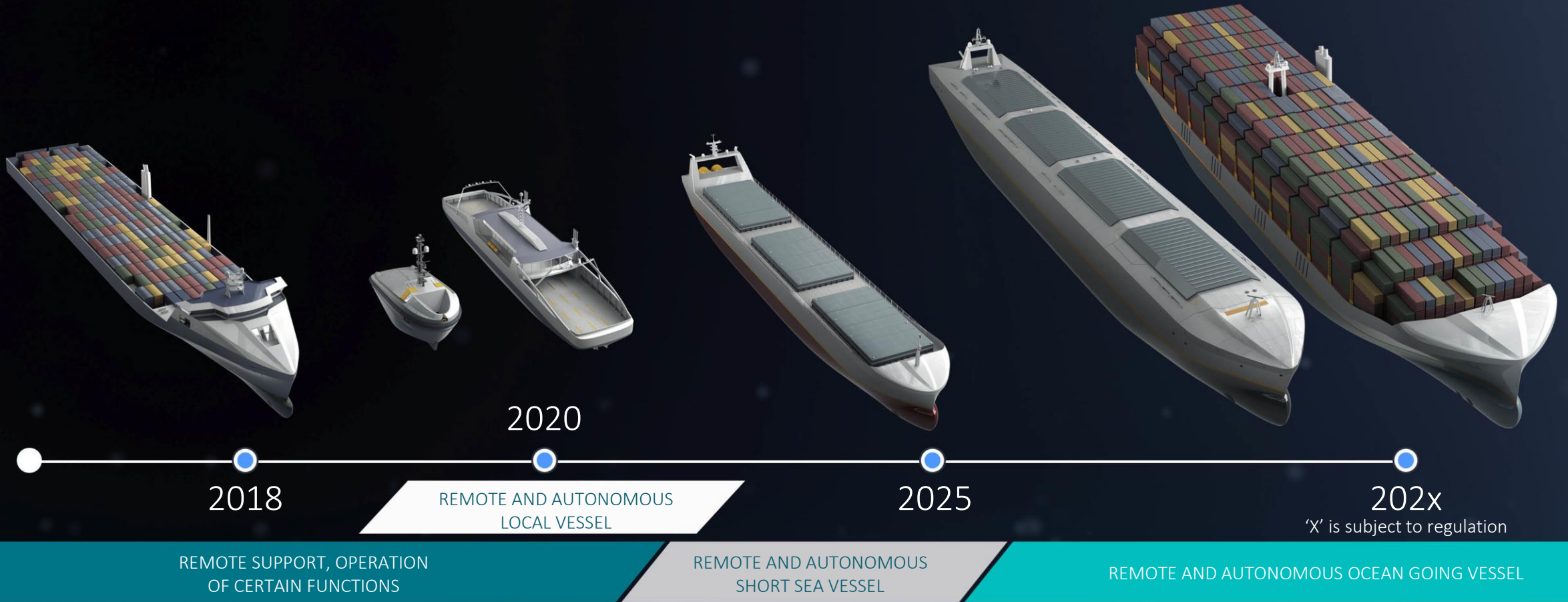
- Collaboration with Finferries
- Fully autonomous berth-to-berth operation including automatic docking and collision avoidance
- Remote control capability from shore-based remote control station in Turku, Finland
- Retrofit onboard LA Falco based on containerised installation of systems
- Operation successfully demonstrated December 2018 with more than 100 guests onboard



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TIMELINE

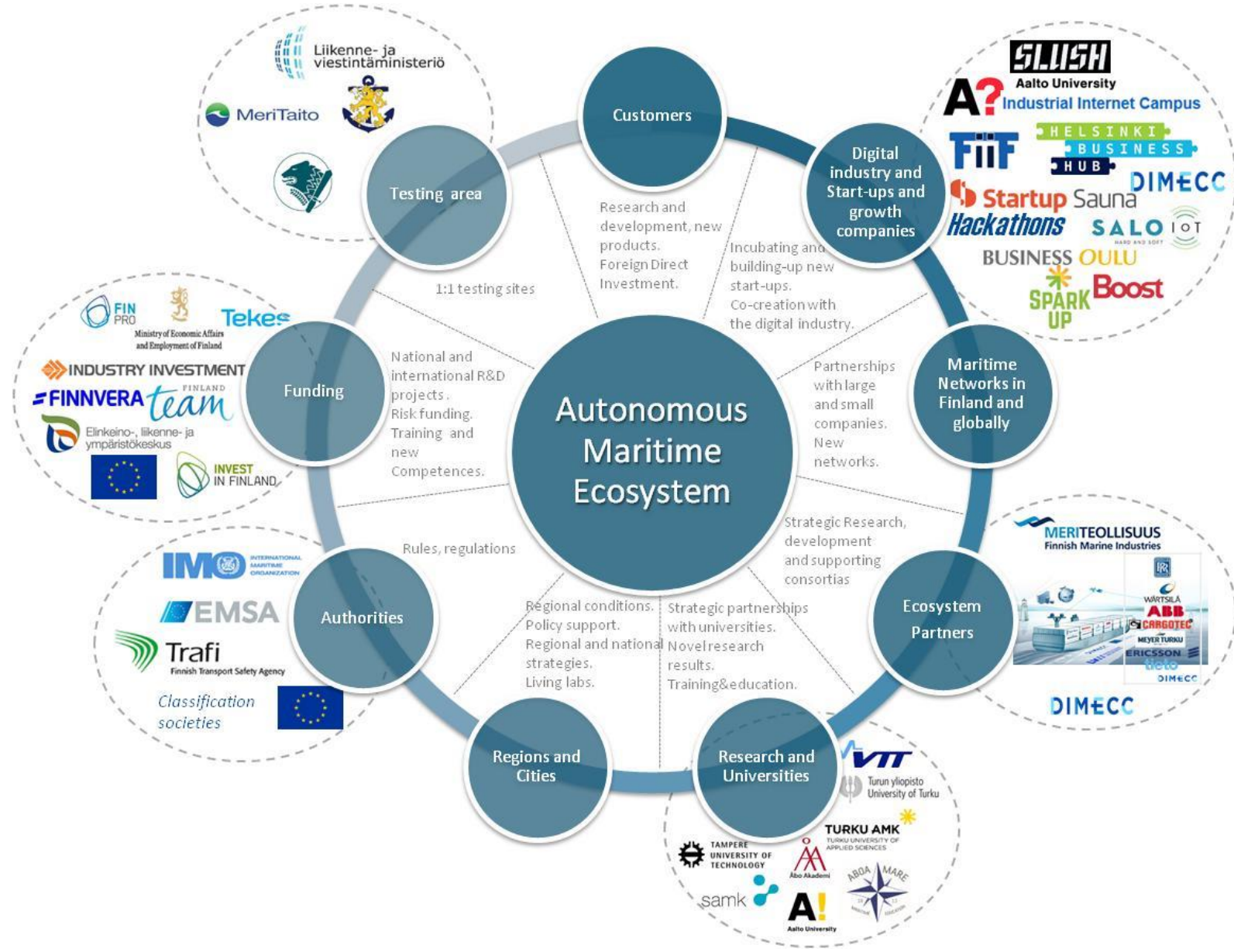


'X' is subject to regulation





ONE SEA Autonomous maritime ecosystem





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THE OCEAN INDUSTRY IS CHANGING



COST OPTIMIZATION

DIGITALIZATION

SUSTAINABILITY

SIZE MATTERS