



KONGSBERG



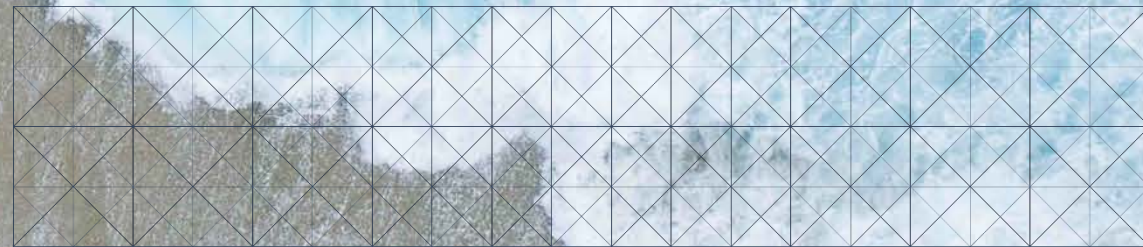
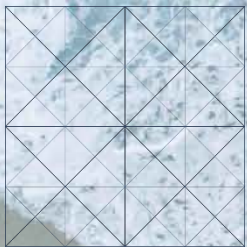
KYSTVERKET

IMO

YARA BIRKELAND

A GLOBAL GAME CHANGER

21/5/2018





Sjøfartsdirektoratet
Norwegian Maritime Authority

Norwegian Maritime Authority

Olav Akselsen

Director General of Shipping and Navigation



Norway's commitment to green shipping





Yara Birkeland – a global game changer





Yara International

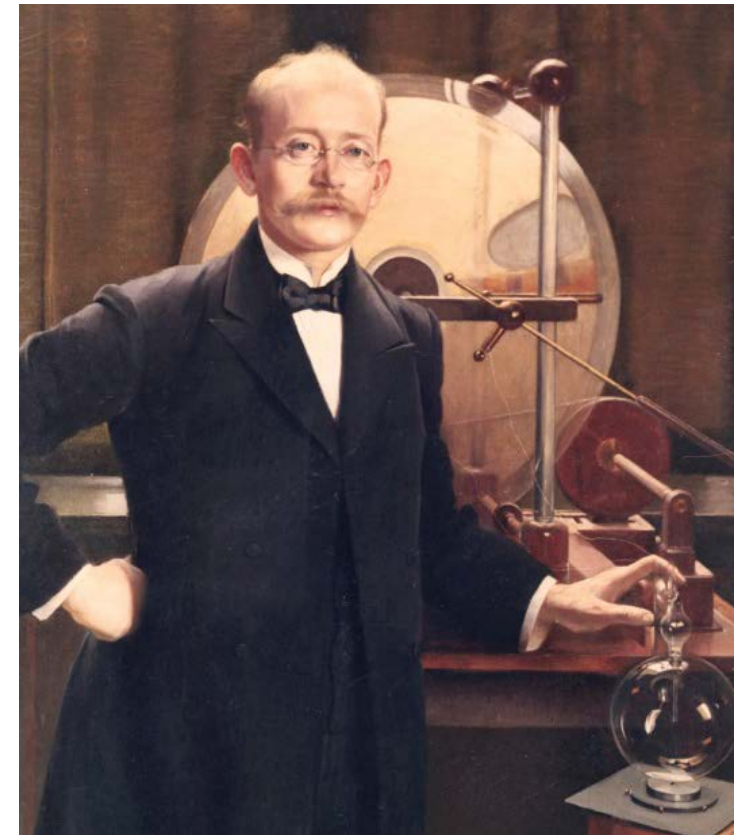
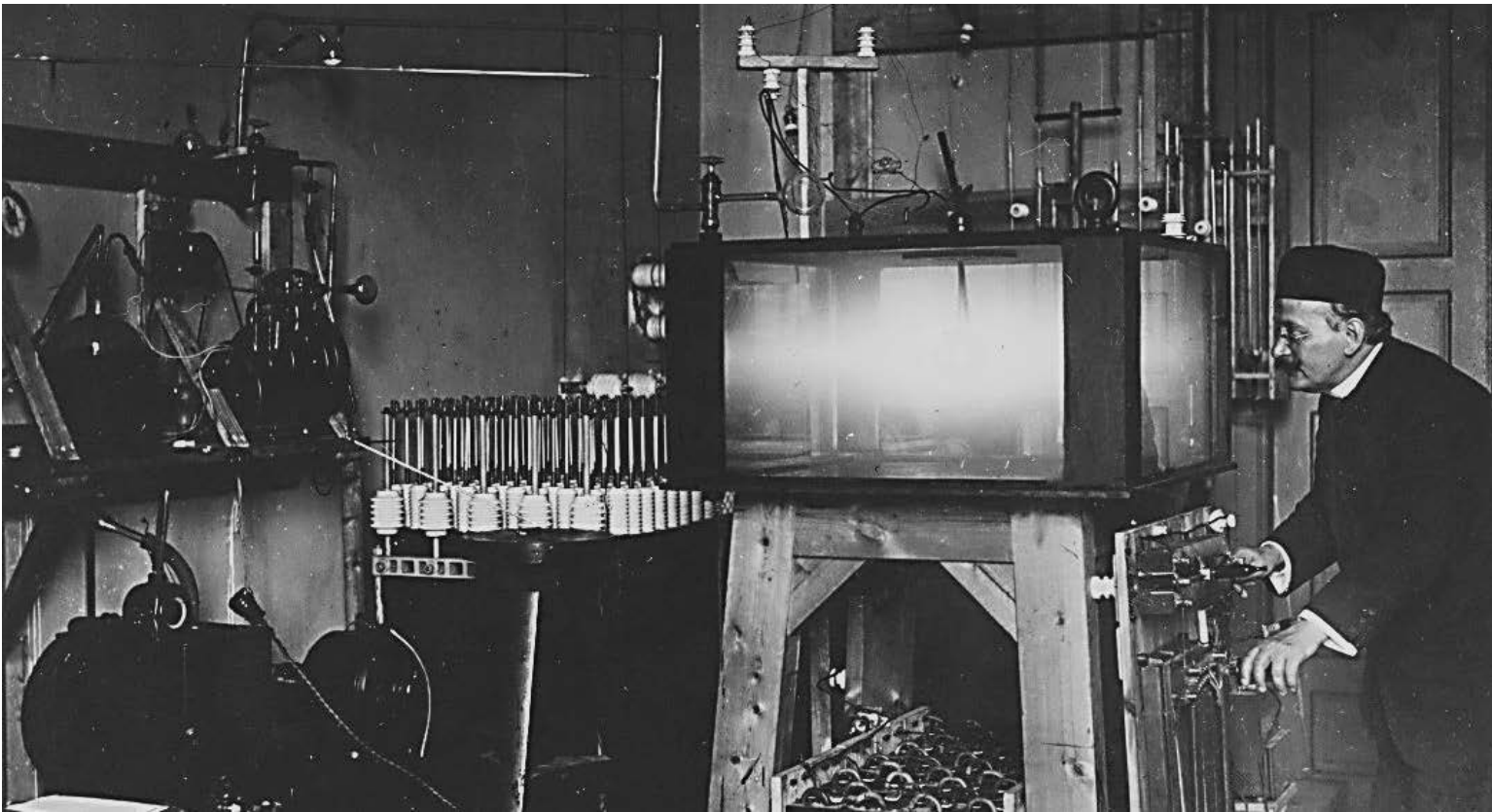
Bjørn Tore Orvik

Finance and Logistic Manager



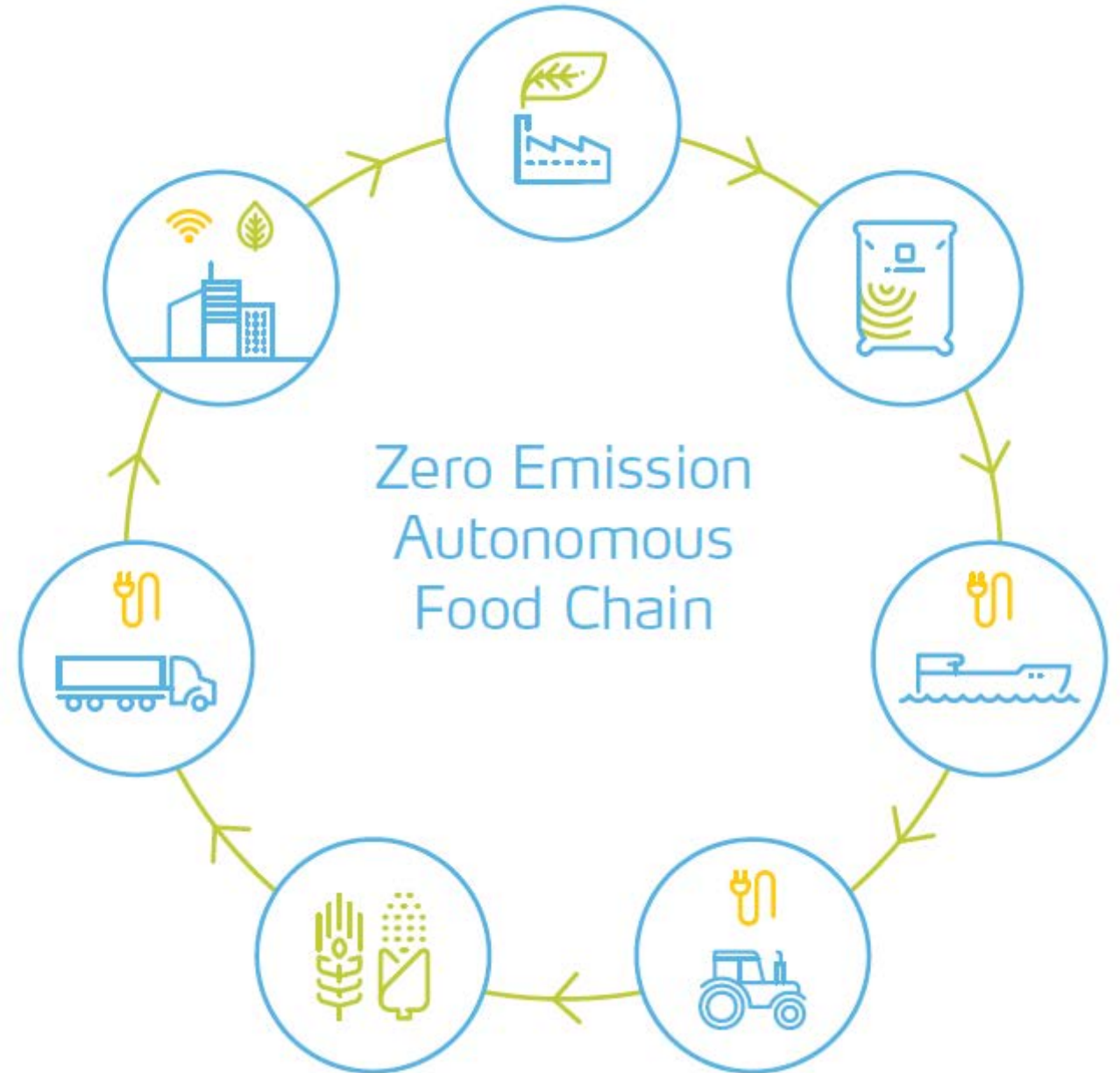
Kristian Birkeland

- A visionary & a bold scientist



Our mission

Responsibly feed the world and
protect the planet



The goal is to move the goods from land to sea in an environmental friendly way



Achievement through collaboration







KONGSBERG

Kongsberg Maritime

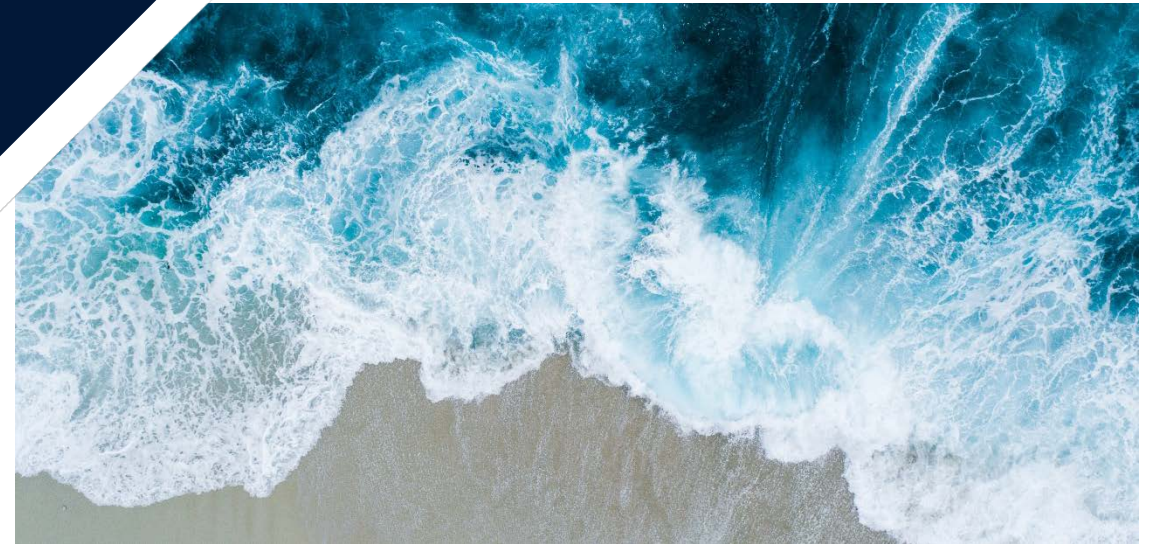
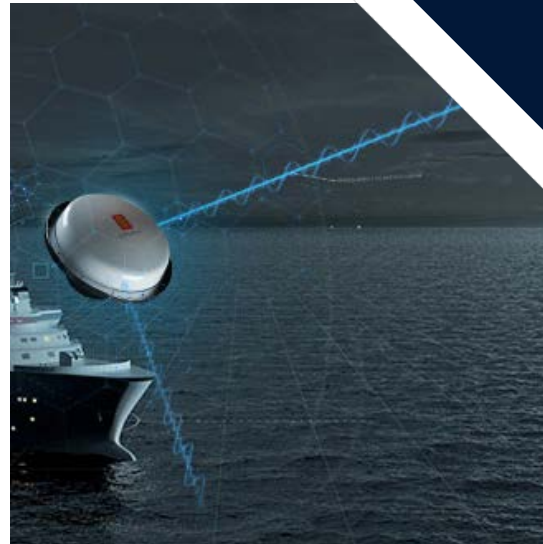
Carl Magne Rustand

Business Developer



Yara Birkeland

Length	80 m
Width	15 m
Draught	6 m
Service speed	8 knots
Cargo	120TEU
Deadweight	3.200 mt
Propulsion system	Electric
Battery pack	7 MWh



Sailing Area

Ports

Herøya-Brevik 7nm

Herøya-Larvik 30nm

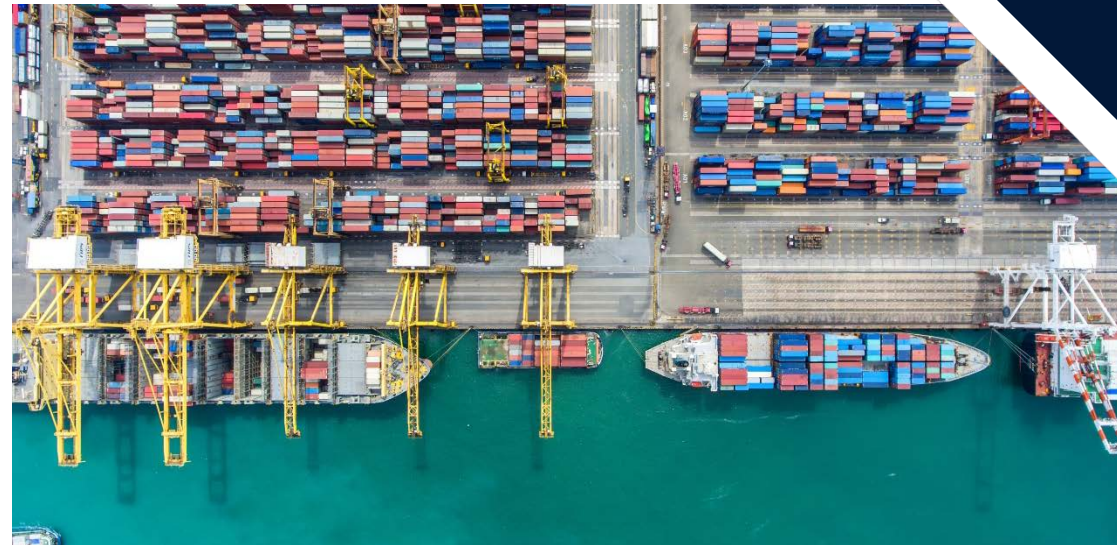
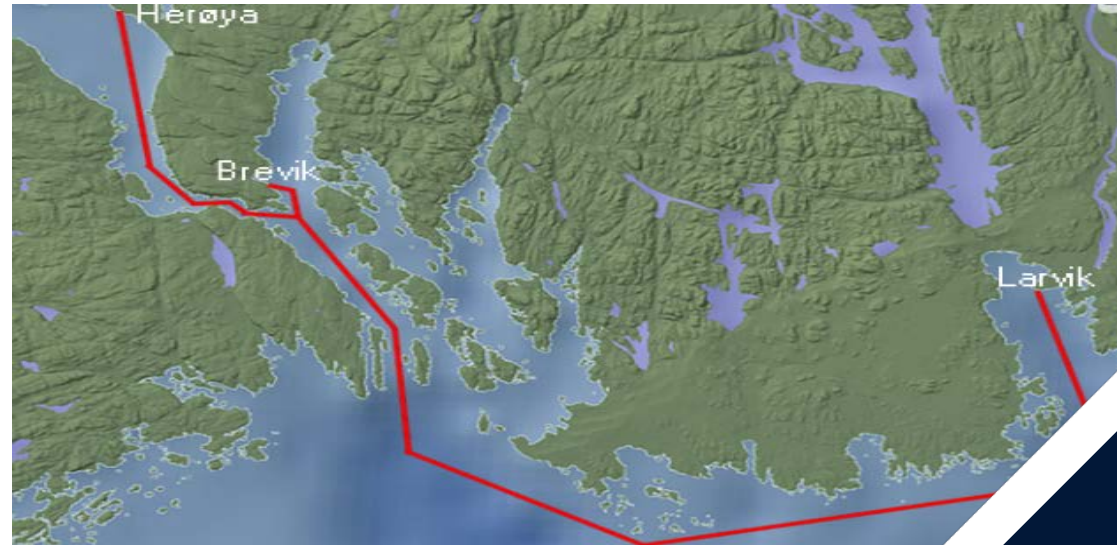
Infrastructure

VTS

Test area

Loading/Discharging

Charging



Shore Control Centre SCC

Captain role
Chief Engineer role

Monitor operation
Monitor equipment
Approve voyage plan
Approve loading
Initiate voyage
Voice communication
Safe state
Remote Control



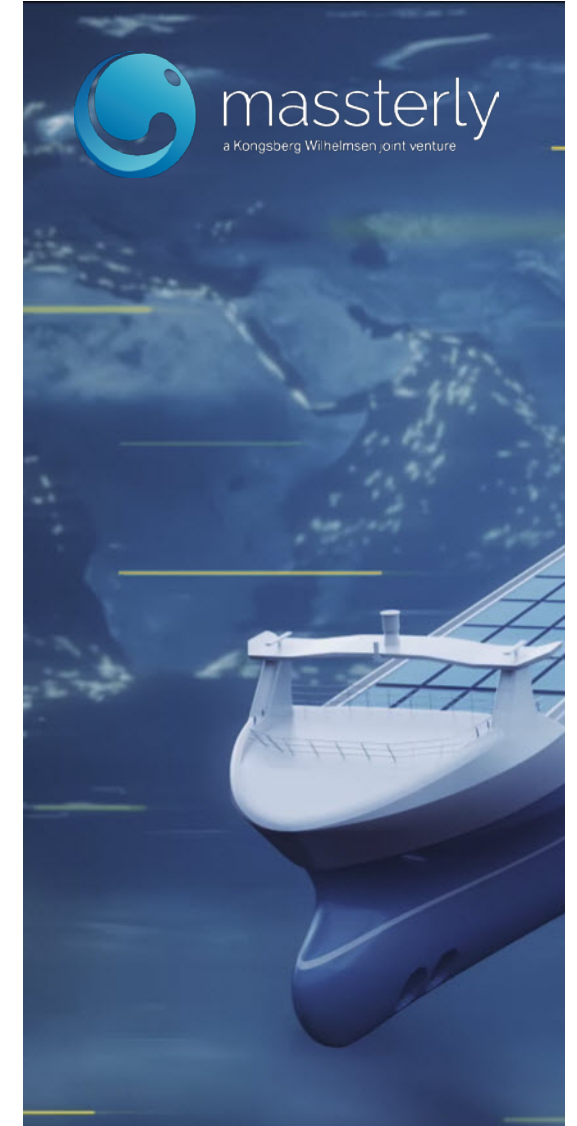
Partnership for the operational challenge

Kongsberg

Automation
Dynamic
Positioning
Hugin AUV

Wilhelmsen

Vessel Operation
Logistic Solutions
Global Network

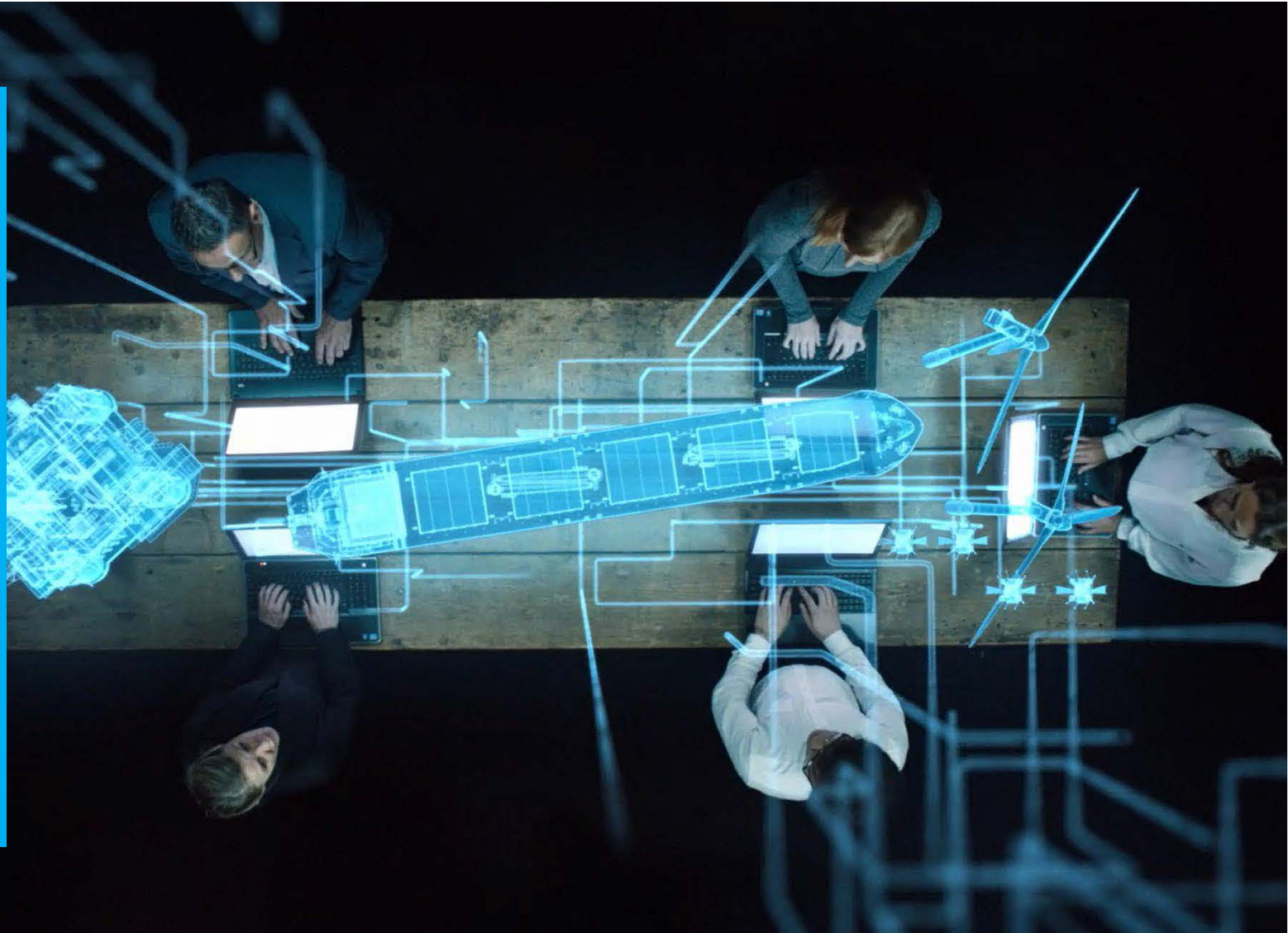




DNV GL

Geir Dugstad

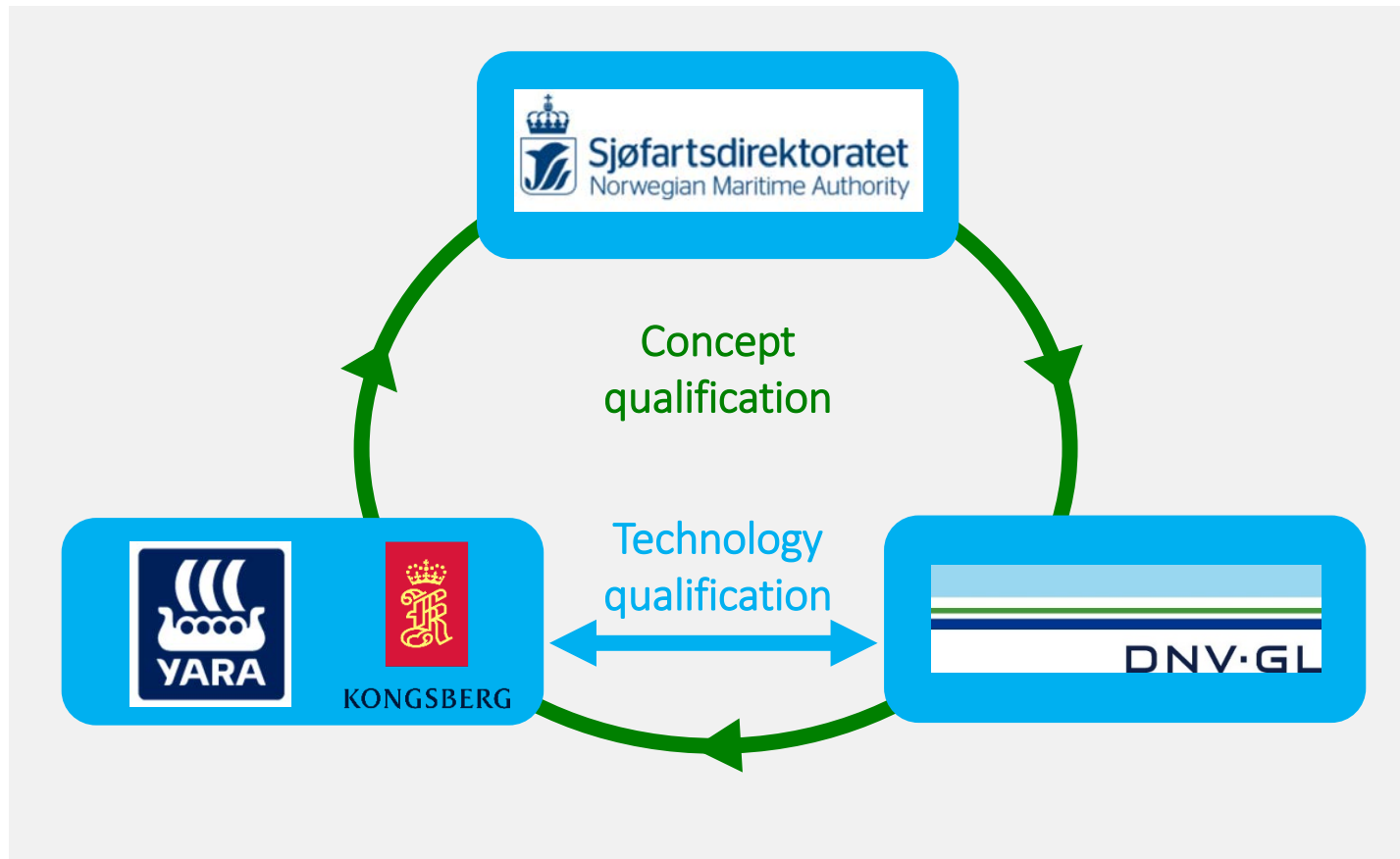
Director of Ship Classification



ReVolt – an inspiration for safe and sustainable solutions



The process for approval of a novel design shall verify safety equivalence

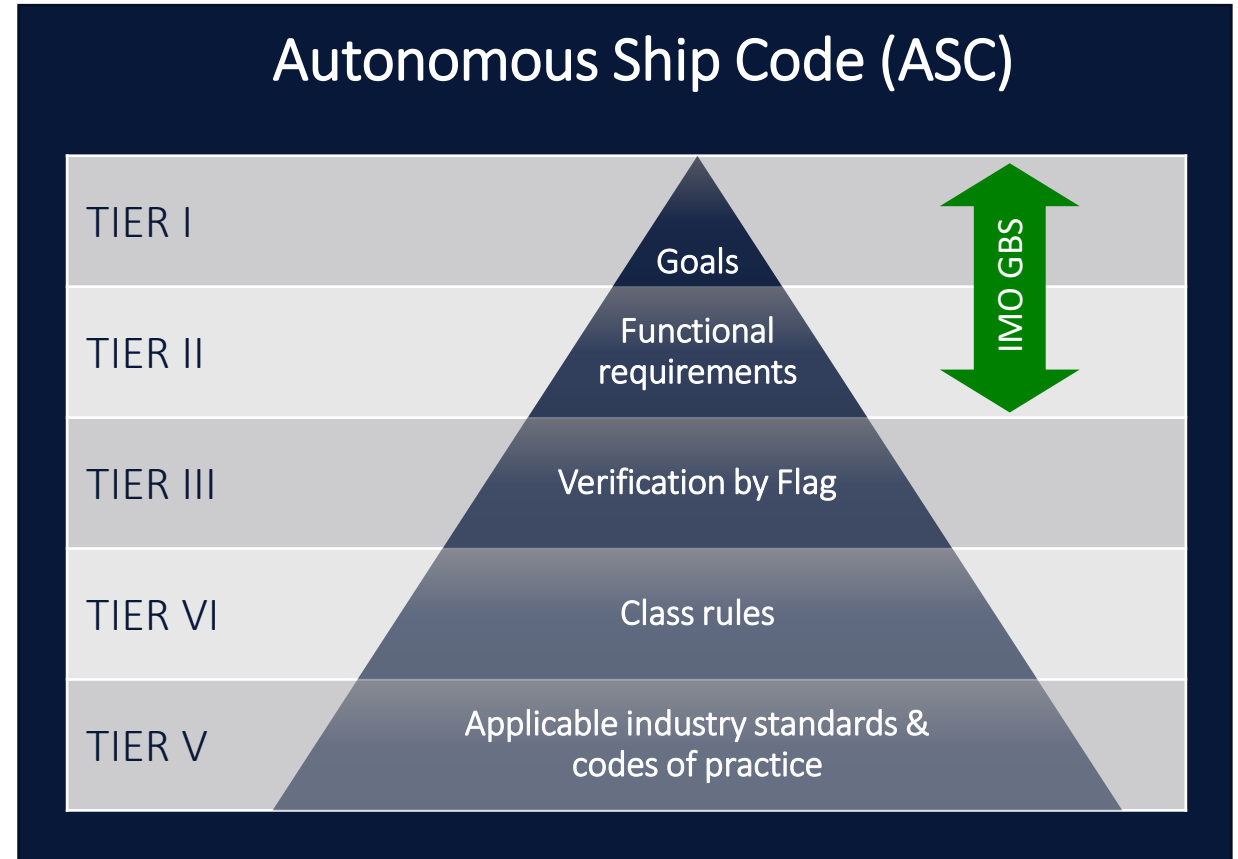


This process is described in DNV GL's Class Guideline for Autonomous and Remote controlled ships.

DNV GL's position on the way forward

DNV GL believes a **new code addressing autonomy** should be developed, rather than amending existing instruments.

- Anchored and mandated in SOLAS
- Goal based
- Generic functional requirements





KYSTVERKET

Maritime Autonomous Surface Ships

– Coastal state perspective

Arve Dimmen

Director Maritime Safety



Why Maritime Autonomous Surface Ships?

- Potential to achieving political goals earlier and less expensive than by the use of current measures
 - Maritime Safety goals
 - Environmental goals
 - Transportation goals (modal shift)
 - Economic goals (value creation)
 - Efficiency goals



Maritime Autonomous Surface Ships – NCA issues

Technology – Operation - Legislation



Pilotage



VTS vs.



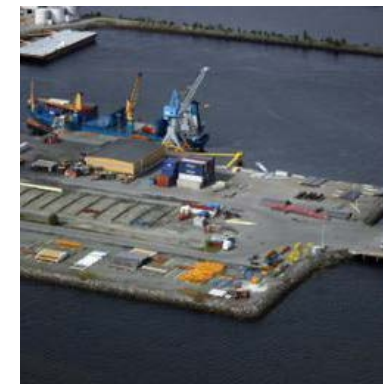
Towing



Aids to navigation



AIS/SAFESEANET



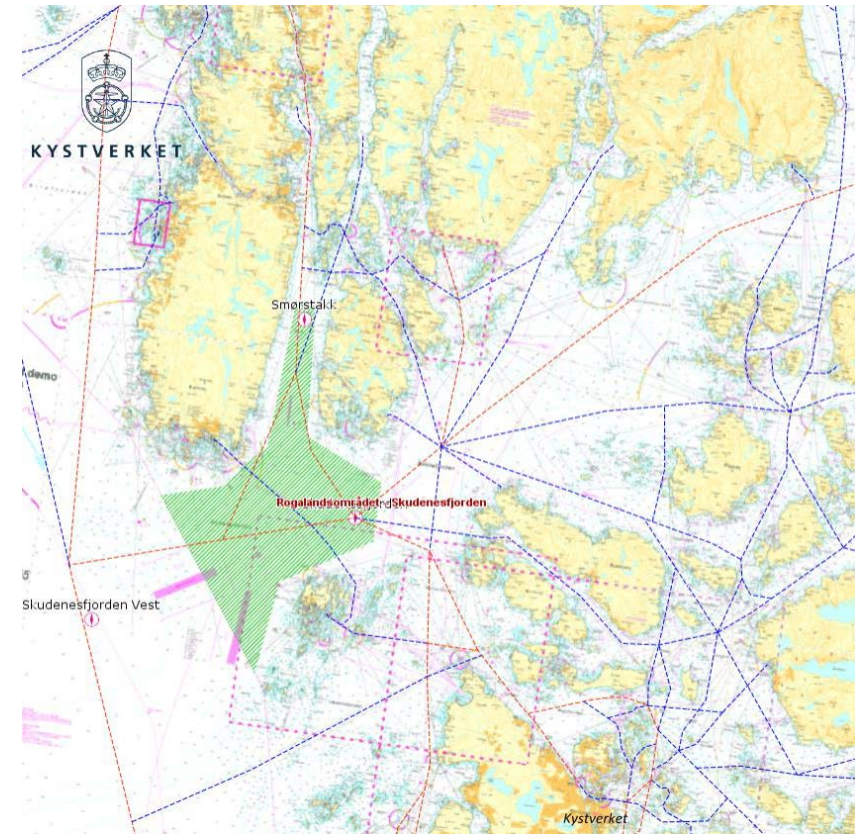
Efficient Ports



Legislation

Proposed amendments to the Pilotage Act

- Act will apply to autonomous vessels of sizes normally subject to compulsory pilotage
- The ship operator can apply for a permit which will be limited to the specific vessel and its area of operation giving a risk-based ops analysis
- NCA will be given the authority to evaluate and grant/reject the permit. Concept to be called: “Autonomous Coastal Navigation”
- Proposed amendments now on public review



The main goal for the transport system in Norway

National Transport Plan 2018-2029:

A transport system that is safe, enhances value creation and contributes to a low-carbon society.





KYSTVERKET

NORWEGIAN COASTAL ADMINISTRATION



Q&A session

Turid Stemre Delegation Leader



SAVE THE DATE

THE INTERNATIONAL AUTONOMOUS SHIPPING SUMMIT

03 June 2019 | 10:00 - 18:00 | Clarion Hotel | The Hub | Oslo, Norway

The International Summit on Autonomous Shipping is an essential event for C-level executives, industry experts and leading voices within political and legislative domains – all gathered to shape the future of autonomous shipping.

The day before Nor-Shipping 2019!



www.autonomysummit.com

NFAS Norwegian Forum for
Autonomous Ships



KYSTVERKET
NORWEGIAN COASTAL ADMINISTRATION



Sjøfartsdirektoratet
Norwegian Maritime Authority



KONGSBERG



KYSTVERKET

**Good luck with the
MASS scope exercise**

Welcome to the reception!