Slik bidrar standarder til robuste og sikre ITS-systemer til sjøs

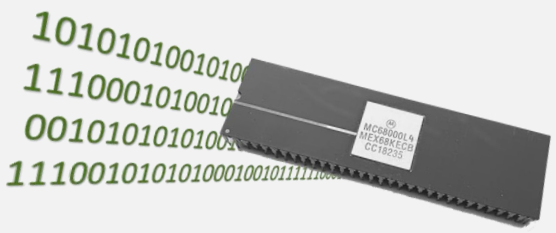
Ørnulf Jan Rødseth, Direktør Maritim ITS - ITS Norway, Daglig leder - NFAS

Standard Morgen: Automatisert transport på norske fjorder, 25. november 2025, Webinar

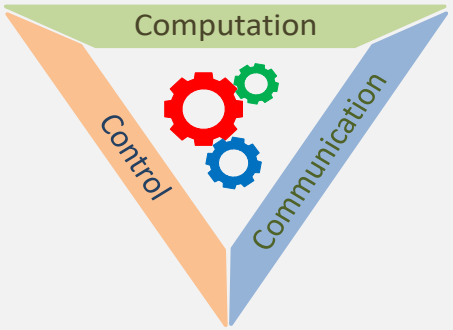
Maritime ITS

intelligent transport system
system comprised of information, communication, sensor and control technologies and that is designed to benefit a surface transport system

ISO/TS 14812 Intelligent transport systems — Vocabulary



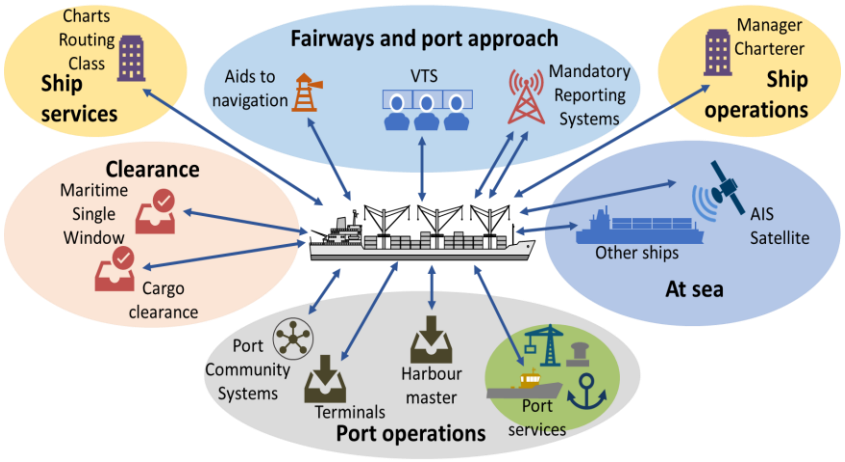
Digitalization



Automation

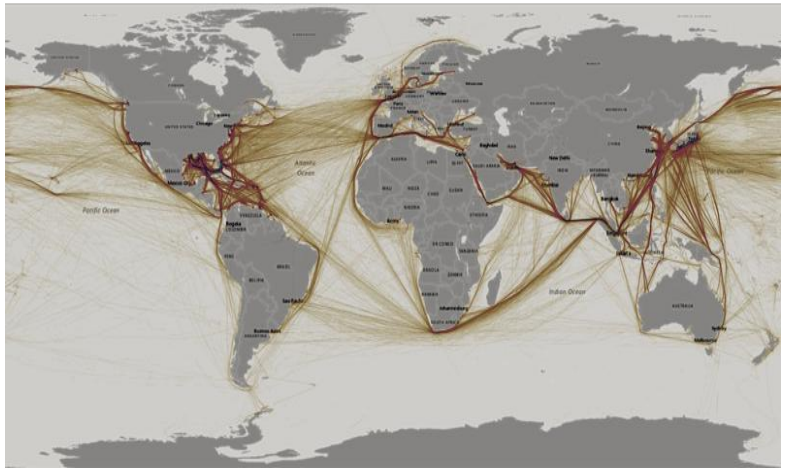
Autonomy

Dependent on digitalization and standards



Communication and digitalization

Standards



International consensus

ITS Norway NFAS

Smarter, Safer and Sustainable Transport

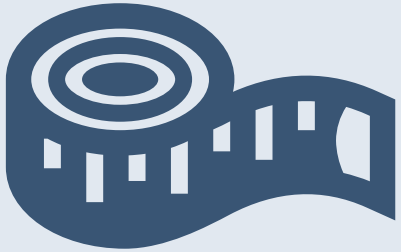
Different types of standards

Automation and autonomy

Conformance

Conformant to specifications or regulations.

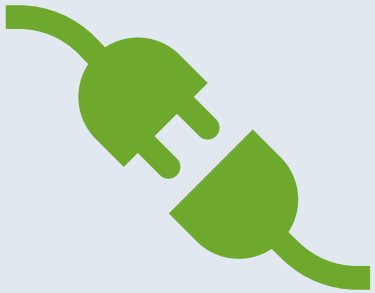
Performance



Guarantee that a system has a certain performance.

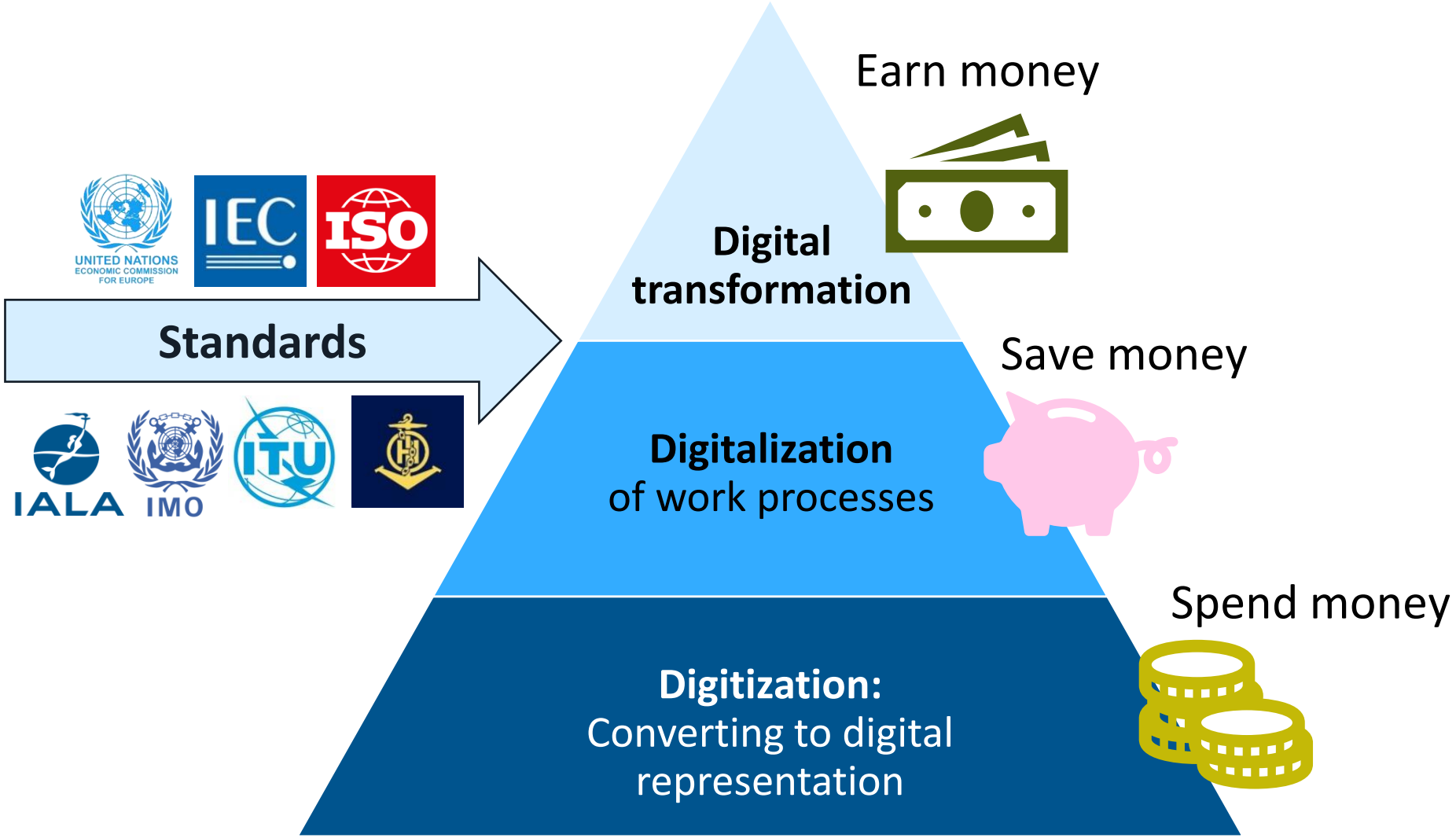
Digitalization

Interoperability

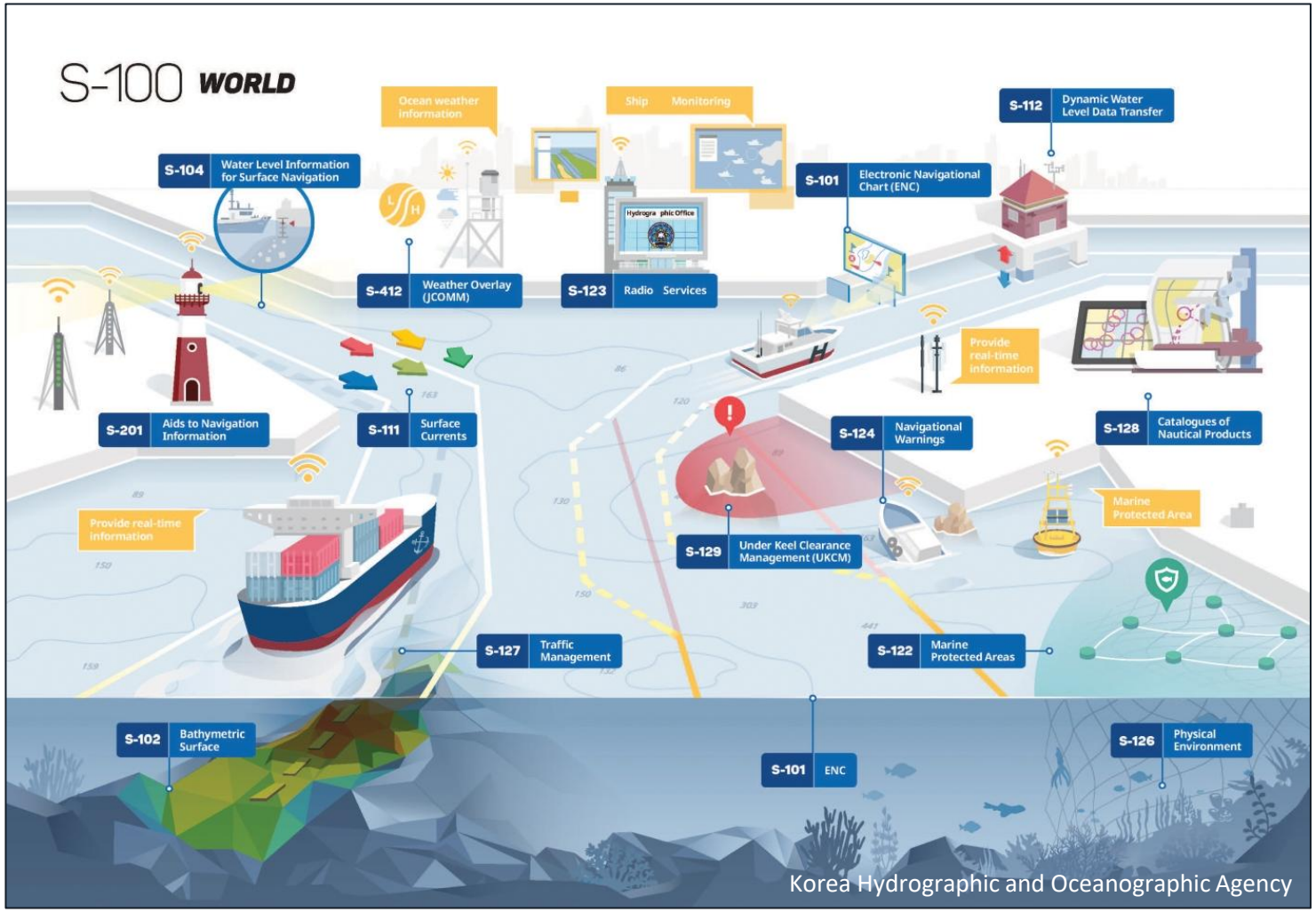


Guarantee that systems can operate or work together.

Standards: From digitalization to digital transformation



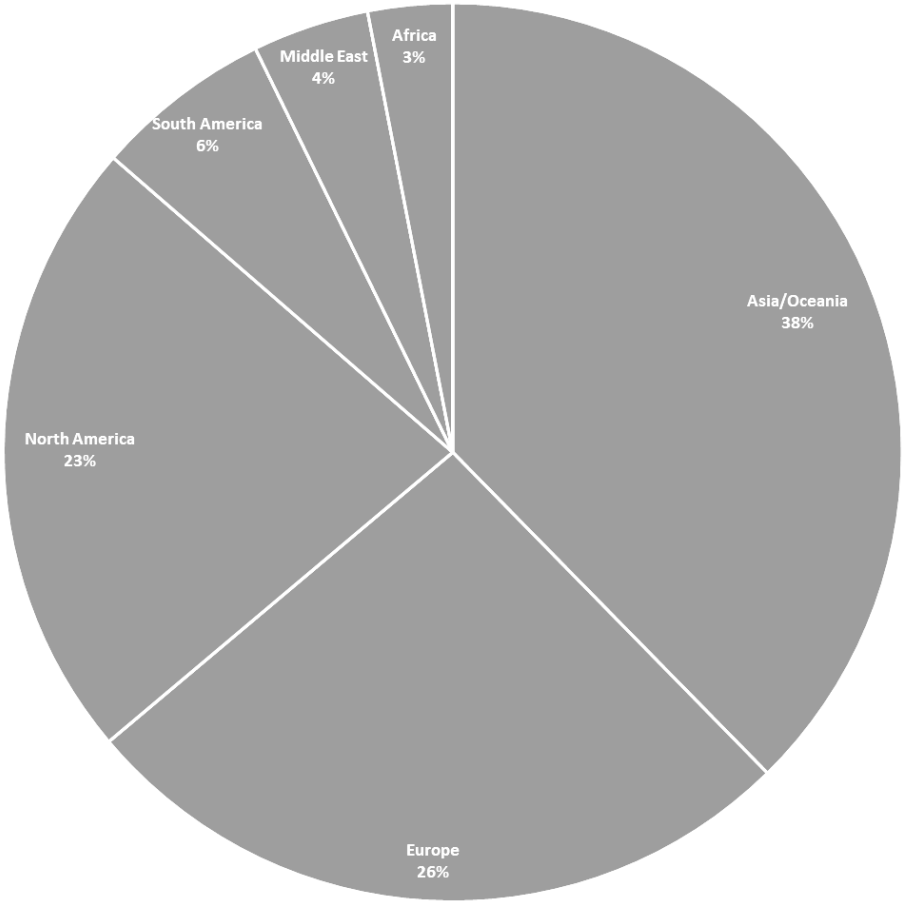
Safety: Better and up-to-date information to the ship



e-navigation is the harmonized collection, integration, exchange, presentation and analysis of marine information on board and ashore by electronic means to enhance berth to berth navigation and related services for safety and security at sea and protection of the marine environment.

MSC.1/Circ.1595 - E-NAVIGATION STRATEGY IMPLEMENTATION PLAN – UPDATE 1, 25 May 2018

Maritime is a small sector in number of vessels



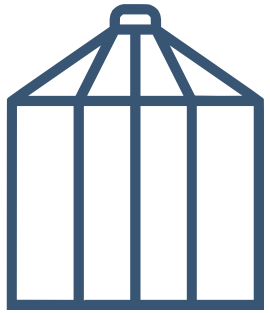
1.65 billion cars in the world, January 2025

110 000 ships (> 100 GT), 2024

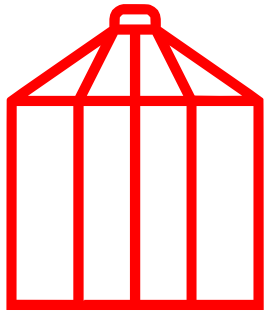
UNCTAD Review of Maritime Transport, 2025
Hedges & Company, January, 2025

Three silos in maritime digitalization

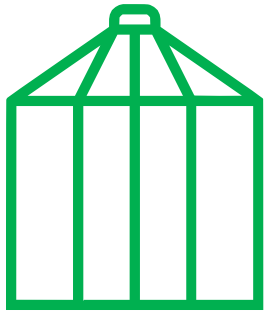
Nautical
IMO MSC



Administrative
IMO FAL



Operative
Commercial



Norsk Elektroteknisk Komite

Standard Norge

Maritime ITS contributes to bridge digital gaps

- Member of and from January 2025, chair of ISO TC8/SC11. Developing e.g. ISO 28005 for MSW and JIT arrival. Contributes to S-421 work.
- Contributors to IMO Compendium through IMO observer status of ISO. Alignment of ISO 28005 to IMO reference data model.
- Member of EU's DTLF.
- Active international networks for digitalization and autonomous ships, also through ISO TC8.
- International conference on MASS
- International ship autonomy and sustainability summit.

Maritime needs ITS and ITS needs maritime!

https://youtu.be/pbQcwQin7cU

https://itsnordicplus.com/event/nordic-webinar-maritime-its-next-steps/

ITS ESTONIA

ITS Norway

ITS Finland

KYSTVERKET

Fintraffic

RI. SE

ARUP

Join us!

Maritime ITS

ITS Norway NFAS

Smarter, Safer and Sustainable Transport

Regulatoriske rammer

Structure of regulations and standards

Bridge and safety equipment

Other systems and equipment

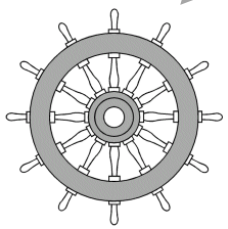
Performance standards

Test standards

Verified by RO

Ship is certified by flag state

Maritime Equipment Directive (MED)



Conformance	Performance
Conformant to specifications or regulations.	Guarantee that a system has a certain performance.

ITS Norway NFAS

Smarter, Safer and Sustainable Transport

Alternative designs - autonomy

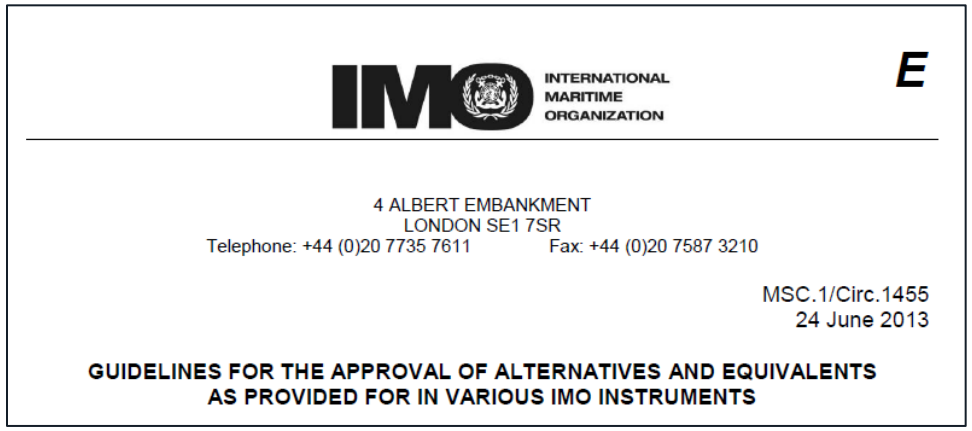
Sjøfartsdirektoratet
Norwegian Maritime Authority

Rundskriv - Serie V

Mottakere av rundskrivet: (sett kryss)

- ☐ Sdir : A: Sjøfartsdirektoratet
- ☐ U: 16 spesielt bemyndigete arbeidskontorer
- ☐ P: Utvalgte utenriksstasjoner
- ☐ OFF: Produsenter av utstyr ev. undergrupper
- ☐ Hov: Offshorerederier / plattformsjefer / operatører
- ☐ Andre: Hovedorganisasjoner
- ☐

Nr.:	**RSV 12-2020**
Dato:	2020-06-04
Saksnr.:	2020/37328-1 SDM/JKS
Gjelder til:	Maksimum 31.12. + 5 år
Opphever:	N/A
Referanse til:	Lov 16. februar 2007 nr. 9 om skipssikkerhet (skipssikkerhetsloven), forskrift 1. juli 2014 nr. 1072 om bygging av skip, forskrift 19. desember 2014 nr. 1853 om bygging og tilsyn av mindre lasteskip, MSC.1/Circ. 1455, forskrift 27. april 1999 nr. 537 om vakthold på passasjer- og lasteskip, forskrift 18. juni 2009 nr. 666 om bemanning av norske skip, m.fl.



IMO INTERNATIONAL MARITIME ORGANIZATION

E

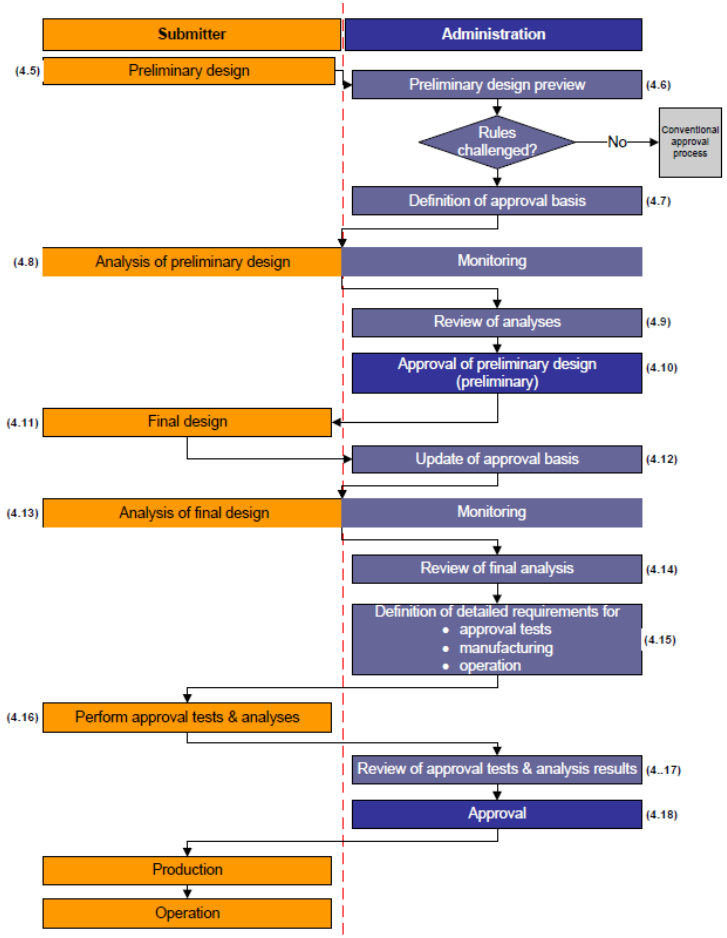
4 ALBERT EMBANKMENT
LONDON SE1 7SR
Telephone: +44 (0)20 7735 7611 Fax: +44 (0)20 7587 3210

MSC.1/Circ.1455
24 June 2013

GUIDELINES FOR THE APPROVAL OF ALTERNATIVES AND EQUIVALENTS AS PROVIDED FOR IN VARIOUS IMO INSTRUMENTS

- No legal obstacles for national uncrewed shipping in Norway
- Guidelines for design are available from flag state

Goal based standards



MSC.1/Circ.1455

		MSC.1/Circ. 14552020.	*RSV*
1. Preliminary Design		4.5	
	1.1 Concept of operation - CONOPS	4.5	7.1
	1.2 Pre-HAZID		7.2
	1.3 Safety philosophy		7.3
	1.4 Design philosophy		7.4
	1.5 Operation and maintenance philosophy		7.5
2. Analysis of preliminary design		4.8	
	2.1 Updated Pre-HAZID with associated		7.2
	2.2 Risk analyses/assessments		7.2
	2.2 Gap analysis		7.6
	2.3 HAZID and risk assessments		7.9
3. Analysis of final design		4.1	
	3.1 HAZID and risk assessments		7.9
4. Performance approval tests & analyses		4.1	
	4.1 Failure Mode and Effect Analysis (FMEA)		7.10
	Test requirements		9

RSV 12-2020

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UNCLOS versus IMO

United Nations
Convention on the
Law of the Seas

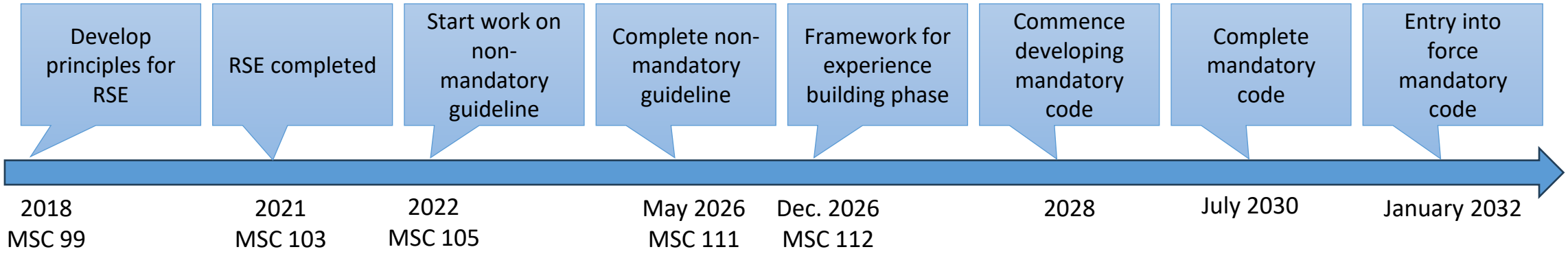
Freedom of the seas.
Requirements to flag and coastal states
Also applies in “international waters”.

SOLAS
MARPOL
COLREG
…

Minimum safety requirements.
Technical and operational regulation
Satisfies UNCLOS requirements.

IMO and MASS

For the purposes of the regulatory scoping exercise, a MASS is defined as a ship, which, to a varying degree, can operate independently of human interaction.



MASS will always have a human in the loop

CHAPTER 8 OPERATIONAL CONTEXT

8.7 Human Control and Supervision

Humans should be able to exercise control, if the situation requires it.

[There should be a human master responsible for a MASS, regardless of mode of operation [and the master of the MASS should have the means to intervene when necessary].]

CHAPTER 15 HUMAN ELEMENT

15.2.2 Safe operation of a MASS is, at all times, the responsibility of the designated master regardless of the mode of operation, and they hold ultimate responsibility and authority over any operational decisions within a clear chain of command.

15.2.3 The master who is responsible for a MASS may be onboard the ship or at a ROC but should have the means to intervene when necessary.

We always will have a ROC – why not make use of it?

Thank you for your attention

https://its-norway.no/en/maritime-its/

https://nfas.autonomous-ship.org/

Ørnulf Jan Rødseth
Director Maritime ITS, ITS Norway
General manager, NFAS
ornulfjan.rodseth@its-norway.no
+47 9309 4401

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