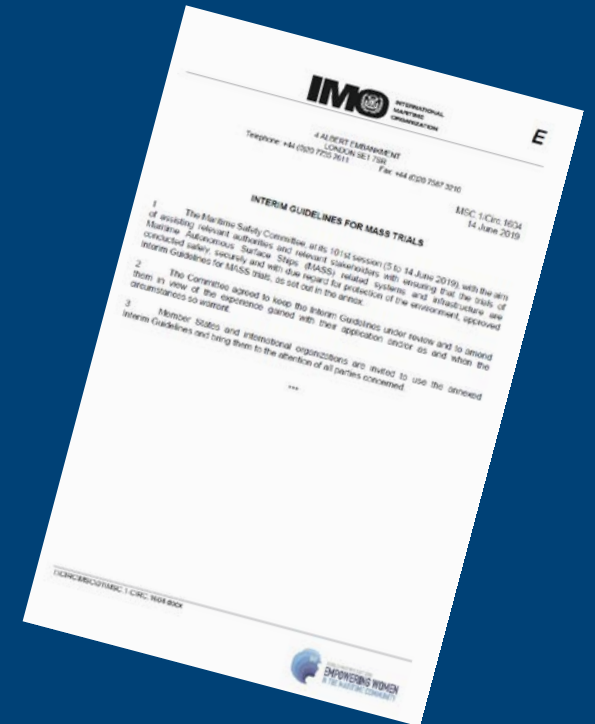
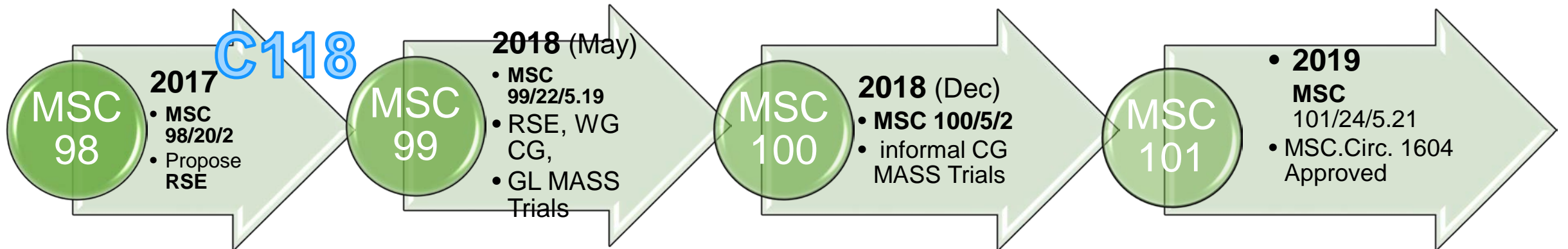


# MSC.1/Circ.1604 on "INTERIM GUIDELINES FOR MASS TRIALS"

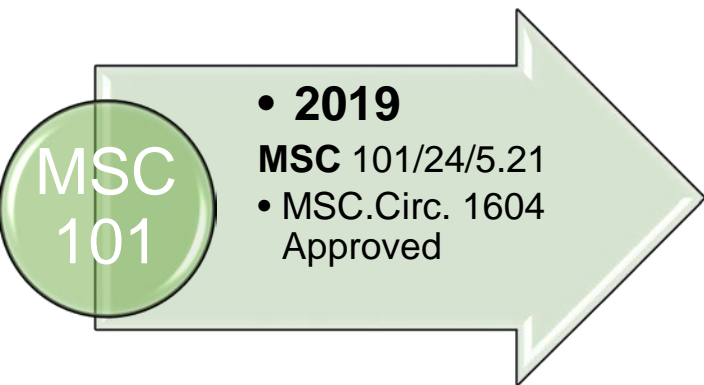


# History



# MSC 101

## MSC.1/Circ.1604 on "Interim Guidelines for MASS trials"



### MSC 101;

- **overruled the informal CG suggestion in plenary.**
- **the WG created a new GL within 3 working days.**
- **Approved the MSC 101**

## Aim

- Assist Authorities and relevant stakeholders

## Scope & Application

- One Single Guideline
- "Trial"



# Principles

**Safety, security and protection of the environment should be obtained at all time, by;**

- 1. Risk management**
- 2. Comply with existing rules and regulations**
- 3. Safe Manning**
- 4. Human element and HMI**
- 5. Infrastructure**
- 6. Trial awareness**
- 7. Communication**
- 8. Information sharing**





# 3. Safe Manning of MASS Trials

- Minimum safe manning and qualified operators should at all times



# 4. Human Element incl. infrastructure and human-system interface

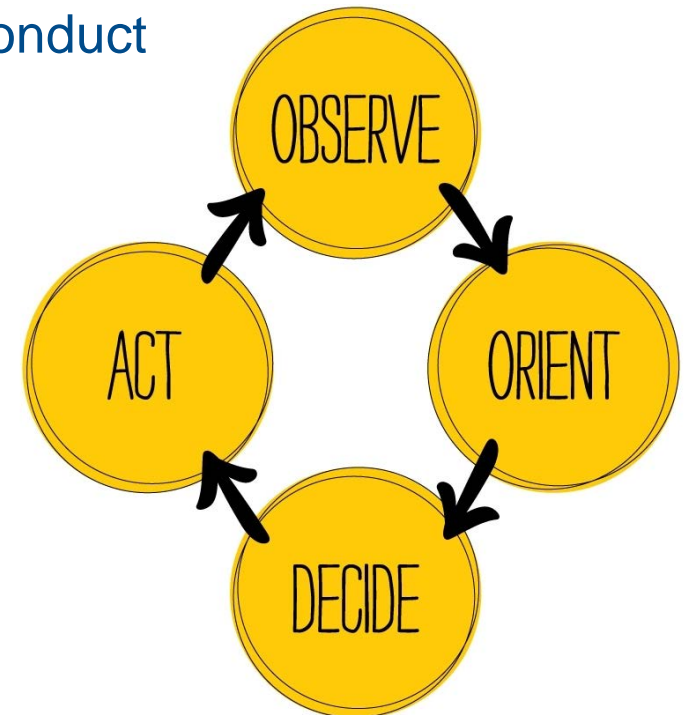
- The HMI must be appropriately addressed



# Infrastructure for safe conduct of trials and awareness

- Infrastructure:

- provide for the safe, secure and environmentally sound conduct of MASS trials
- Determent emergency response and contingency plans
- Information availability and transparency to relevant stakeholders



MSC.1/Circ.1604 on "INTERIM GUIDELINES FOR MASS TRIALS"

## Communications and data exchange

- Reliable data and Communication means

## Reporting mechanism

- Relevant information and reporting to relevant stake holders in the area of trail

## Cyber Risk Management

- Proper secured cyber management must be in place!

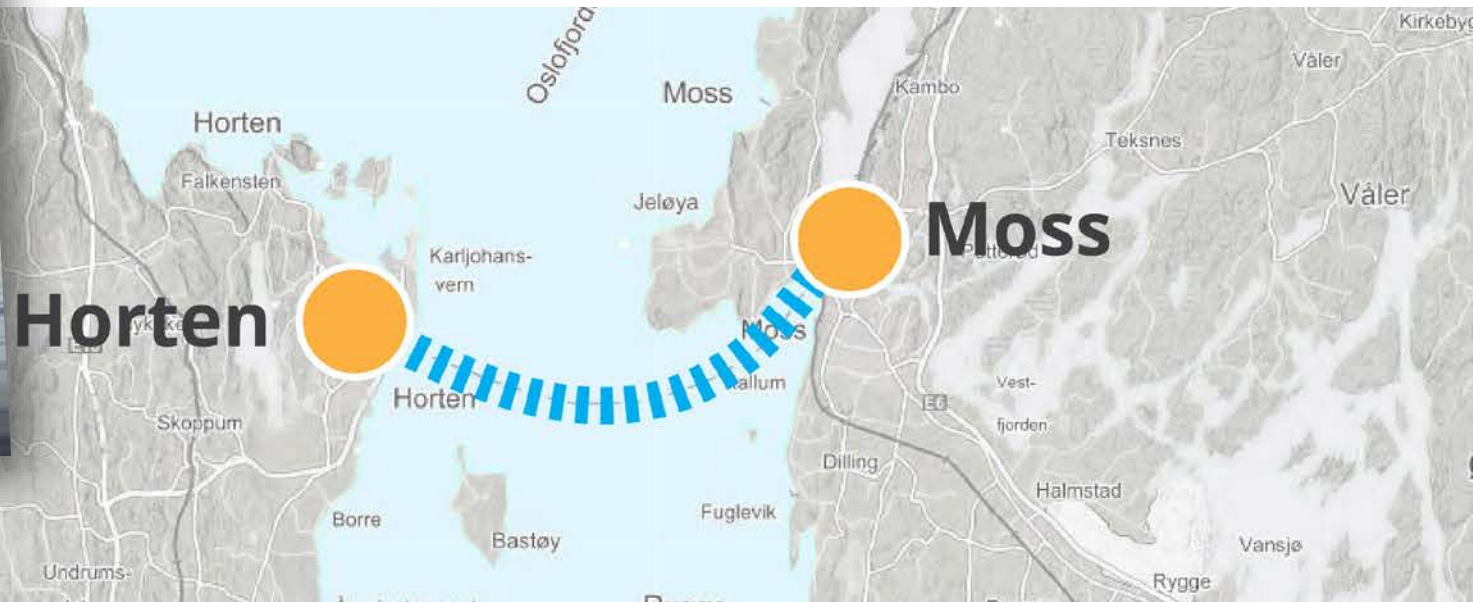
# Summing up the Guidelines

- The Guidelines are generic
- Adds no new value and doesn't challenge existing legislation
- Misses out on the intention and potential
- Opens for new standards and more detailed guidelines.
- Gives no prescriptions other than a holistic attention of risk management, with regard to;
  - Safety, security, environment, data-exchange, HMI, safe-manning and cyber management.

## Concerns

# The future of MASS trials

- Extended domestic trails and tests areas will progress
- International “MASS” trials will be conducted with highly automated integrated support systems.
- Safely manned ships with advanced support systems for optimization and safeguard will escalate in these areas and during the trial exercise.



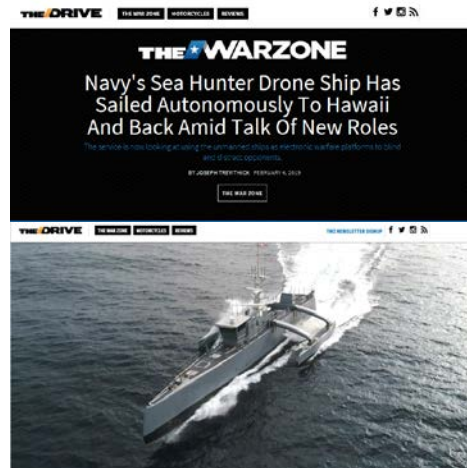
Concerns

# Areas of operation

## MSC.1/Circ.1604 on "Interim Guidelines for MASS trials"

### Fem utenlandske testområder for autonome skip er etablert. Det synes norske aktører er positivt

Rolls-Royce Marine: – En klar fordel med testområder flere steder i verden.



The U.S. Navy's *Sea Hunter* unmanned surface vessel has become the first ship of any description to ever sail from San Diego, California to Pearl Harbor, Hawaii and back without the need of a crew for navigation and steering. It's a significant milestone for this particular vessel and its future cousins, which the service has primarily been developing as **anti-submarine warfare platforms**, but could also provide **electronic warfare** support and acting as decoys to help shield friendly forces.

Defense contractor **Leidos**, which is leading the *Sea Hunter* project for the Navy, announced the achievement in a press release on **Jan. 31, 2019**. The *Sea Hunter* did not require the presence of a crew to complete the mission.



NYK conducts maritime autonomous surface ships (MASS) trial with pure car truck carrier

NYK has conducted what it says is the world's first maritime autonomous surface ships (MASS) trial performed in accordance with the IMO's Interim Guidelines for MASS trials.

### NYK trials autonomous claimed world first

Japanese ship operator NYK has conducted what it claims is the world's first maritime autonomous surface ships (MASS) trial performed in accordance with the IMO's Interim Guidelines for MASS trials as the company begins tests to a autonomous ships that will make use of advanced technology to support ship operation and enhance safety.

During the trial, the ship's performance in actual sea conditions was recorded, and collected information on environmental conditions around the ship, from weather, navigation, and other data, was used to improve the ship's performance and safety.



*Iris Leader*, a large NYK-operated pure car truck carrier (PCTC) having a gross tonnage of 70,826 tons, was navigated day and night using the Sherpa System for Real ship (SR) navigation system during the period from 14 to 17 September from Xinhua, China to Nagoya, Japan.



# Tanks for your attention!



**Svein David Medhaug**  
Project Manager Autonomy  
Innovation and New Technology  
[sdm@sdir.no](mailto:sdm@sdir.no)

WHERE INDUSTRY MEETS ACADEMIA - MTEC 2019 & ICMASS 2019

## MTEC 2019

International Maritime and  
Port Technology and  
Development Conference



The 2nd International  
Conference on  
Maritime Autonomous  
Surface Ship - ICMASS



Trondheim, Norway - November 13<sup>th</sup> and 14<sup>th</sup> 2019