

Regulatory Framework for Autonomous Shipping

CISMART Workshop on Autonomous Surface Ships
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Today's presentation

- Regulating smart ships* – can it be done?
 - Challenges for regulators
 - Policy labs as a solution long term and into the interim
- IMO Regulatory Scoping Exercise on MASS**
 - Background, objective, method
 - Status and possible future work of the IMO
 - Possible common gaps themes and identified
- Tests and trials (int'll and national perspectives)

Regulating smart ships – can it be done?

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Regulating smart ships – can it be done?

Challenges...

- Rules for domestic and international intermingling – can you separate national and international shipping?
- Different segments, different needs...
- Structure of legal framework: do you separate and disrupt or incorporate new systems?
- Quick fixes possible?
- Resources...
- Presence of Master *contra* functions.



YES, WE CAN-ADA!

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- National and international : keep 'em separated
- Different segments, different needs... keep 'em separated.
- Keep the structure – incorporate 'new' systems
- Quick fixes are possible – sometimes
- Resources: policy labs helpful tool?
- *Presence of Master key barrier – but functions can take you a long way*
- Lex Specialis recommended.

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Regulating smart ships – the interim...

Policy labs

- Definition
- Why?
- How do you do it?
- Examples..

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Regulating smart ships – the interim...

Policy labs - definition

- A group of stakeholders, with different competencies, gathering to develop a set of regulations with user centric methods and competences are used to test, experiment and enhance understanding of policy making.

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Regulating smart ships – the interim...

Policy labs – why?

- Swift societal and technical development demands innovative solutions, societies more complex - and public and industry's demands increases while Governments budgets decreases.
- You have to establish separate processes, which are faster and less expensive. The regular legislative processes are time consuming and expensive.

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Regulating smart ships – the interim...

Policy labs – how do you do it?

- How do you do it? Develop an agile working method which stimulates, rather than, smothers innovations. One important foundation of a policy lab is the ability to dare exploring and experiment with the user at center.
- Policy labs can be temporarily applied or be a more long term (permanent). Methods may also vary depending on the case, its orientation and adaptation.

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Regulating smart ships – the interim...

Policy labs – examples

- UKs MarLab underway. Two main routes, regulations and data needed by industry.
- Norway? For Yara Birkeland and Asko, probably!
- Sweden planning stages..

IMO Regulatory Scoping Exercise on MASS

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Background to MASS – where in the IMO

International Maritime Organization

- 1948 Inter-Governmental Maritime Consultative Organization (IMCO), changed to IMO in 1982
- Governance and organization structure:
 - Assembly
 - Council
 - Main Committees (**MSC**, MEPC, LEG, FAL)
 - Sub-Committees
- Member States and International Organizations (IGOs, NGOs etc.)

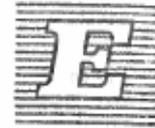
Autonomous shipping Background to MASS – “swinging sixties”

MSC VIII (March 1964)...

INTER-GOVERNMENTAL MARITIME
CONSULTATIVE ORGANIZATION



I M C O



MSC VIII/11
9 March 1964

Original: ENGLISH/FRENCH

MARITIME SAFETY COMMITTEE - 8th session
Agenda item 11

AUTOMATION IN SHIPS

Note by the Secretariat

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IMO's regulatory scoping exercise on MASS

The ninety-eighth session of the Maritime Safety Committee (MSC 98), agreed to work on a "**Regulatory scoping exercise for the use of Maritime Autonomous Surface Ships (MASS)**", with a target completion year of 2020.



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IMO's regulatory scoping exercise on MASS

Framework – definition

For the purpose of the regulatory scoping exercise, MASS is defined as:

“a ship which, to a varying degree, can operate independent of
human interaction”

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IMO's regulatory scoping exercise on MASS

Framework – degrees of autonomy

1. Ship with automated processes and decision support: Seafarers on board but some operations may be automated and at times be unsupervised.
2. Remotely controlled ship with seafarers on board: The ship is controlled and operated from another location. Seafarers are available on board to take control.
3. Remotely controlled ship without seafarers on board: The ship is controlled and operated from another location. There are no seafarers on board.
4. Fully autonomous ship: The operating system of the ship is able to make decisions and determine actions by itself.

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IMO's regulatory scoping exercise on MASS

Framework – methodology – the 2 steps

- **First step:** to identify provisions in IMO instruments which, as currently drafted preclude MASS...
 - First step “regulation by regulation”
 - Identify gaps and themes (common issues throughout)
- **Second step:** to analyse and determine the most appropriate way of addressing MASS operations, taking into account, inter alia, human element, technology and operational factors...
 - Second step “high level”.

Instruments to be considered

COLREGs 1972

CSC 1972

LL 1966

LL PROT 1988

SAR 1979

SOLAS 1974

SOLAS AGR 1996

SOLAS PROT 1978

STCW 1978

STCW-F 1995

STP 1971

SPACE STP 1973

TONNAGE 1969

...and 18 Codes.

MARPOL 73/78

FAL 1972

SUA 2005

SALVAGE 1989

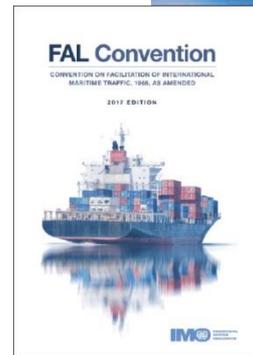
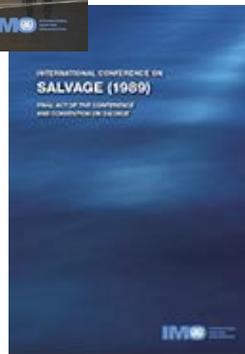
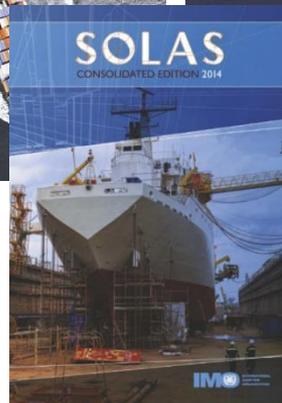
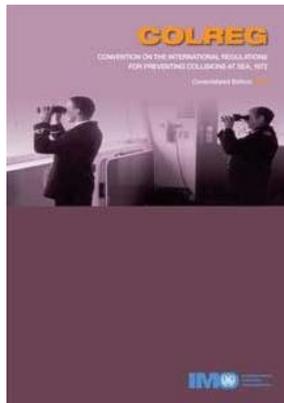
OPRC 1990

CLC 1969

NUCLEAR 1971

HNS 1996

...



NSPORT
RELSEN

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IMOs Regulatory Scoping Exercise

Preliminary common gaps and themes

- Remote Control Station
- Remote Operator as a seafarer
- Provisions containing manual operations,
- alarms to the bridge
- Meaning of Master, crew or responsible person
- Certificates and manuals onboard
- Provisions requiring actions by personnel (Fire, Spillage Cargo Management, onboard maintenance etc.)
- Watchkeeping
- Connectivity, Cyber security



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IMO's Interim Guidelines for MASS trials

In general...

- High-level, generic: scope/application, principles and main objectives
- Applicability determined by respective mandatory instrument
- Roles and responsibilities: relevant authorities and stakeholders
- Compliance with mandatory instruments should be ensured
- Case-by-case: every trial is unique
- Keep it under review.

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IMO's Interim Guidelines for MASS trials

Principles and main objectives...

- Risk management
- Compliance with mandatory instruments
- Manning and qualifications of personnel involved in MASS trials
- Human element (including monitoring infrastructure and system-human interface)
- Infrastructure for safe conduct of trials
- Communications and data exchange
- Reporting requirements and information sharing
- Trial awareness
- Cyber risk management
- Scopes and objectives for each individual trial.



Autonomous shipping Trials and operation from a national perspective

In the interim...

- Also EU...
- Jurisdiction – applicable laws
- Existing legal tools
- Finnish example
- Are we beyond testing?
- Bi-laterals, multi-laterals?



Summing up and **final** remarks

- Being a regulator is challenging, being an industry proponent even more so
- Yes we can regulate, but.. interim
- Regulatory scoping exercise on Maritime Autonomous Surface Ships (MASS) is **ongoing**, but only first step
- Deadlines 2020
- Participation of **all stakeholders** is required: IMO, ship owners, industry, Administrations, shore services, other international organizations, amongst others
- Interim guidelines for MASS trials in effect.

Thank you for your attention!

Questions?

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