Achievements in the Adjustment of International and National Legal Regulations to the Usage of Autonomous Ships

IUC International Maritime and Transport Law Course (Dubrovnik, 7-12 September 2020)

The purpose of the presentations:

- demonstrate the scope of international and national legal regulations concerning the use of autonomous ships

- what has been done so far towards the goal of ensuring unimpeded use of autonomous ships?

CONTENTS

Part 1: Introduction

„Autonomous shipping is the future of the maritime industry.

[…], the smart ship will revolutionise the landscape of ship design and operations."

- said **Mikael Mäkinen,** President of *Rolls-Royce's* marine division,

white paper published by company

[June 21, 2016].

Autonomous ships are attracting attention within the global maritime industry.

- unmanne
  transport se
- driverless cars

It is the turn on maritime transport to raise the degree of autonomy.

- ***Are there already autonomous ships in operation?***

  - Autonomous ships are being trialled in some sea areas.
  - Most predictions are that autonomous operation will be limited to short voyages.
  - We are still waiting for the first commercial transport across the ocean.

Regulations need to be regulated to allow the use of autonomous ships.

More and more companies/governments/ organizations are considering possible changes to adapt autonomous systems.

Part 2: The results of the research projects: MUNIN and AAWA

- What caused attention when it comes to the topic of autonomous ships are certainly research projects:

  - *Maritime Unmanned Navigation through Intelligence in Networks* (MUNIN)

  - *Advanced Autonomous Waterborne Applications Initiative* (AAWA).

- *Maritime Unmanned Navigation through Intelligence in Networks* (MUNIN)

- collaborative research project, co-funded by the EC

- The aim: to develop a concept for an autonomous unmanned ship, which is defined as „a vessel primarily guided by on-board decision systems but controlled by a remote operator in a shore side control station".

- The use case investigated in project: a dry bulk carrier operating in intercontinental tramp trades.

Advanced Autonomous Waterborne Applications (AAWA) partners

- *Advanced Autonomous Waterborne Applications Initiative* (AAWA)

- leaded by *Rolls-Royce*

The aim: to produce the specification and preliminary designs for the next generation of ship solutions.

The project brings together universities, ship designers, equipment manufacturers and classification societies to explore the economic, social, legal and technological factors which need to be addressed to make autonomous ships a reality.

➢ Both of these projects have been identified that the advantages of autonomous ships are plentiful:

- they eliminate human error,
- reduce crewing costs,
- increase the safety of life,
- allow for more efficient use of space in ship design
- efficient use of fuel.

potential to reduce human error, but at the same time **may modify some existing risks** as well as **create new types of risk**.

MUNIN

- According to the MUNIN final brochure,

„There is no reason to think that

the legal framework cannot be adapted to

allow autonomous vessels in maritime transport".

- According to the AAWA brochure,

„For autonomous shipping […], to become a reality, we need efforts at all regulatory levels".

international **national**

Part 3: International legal regulation

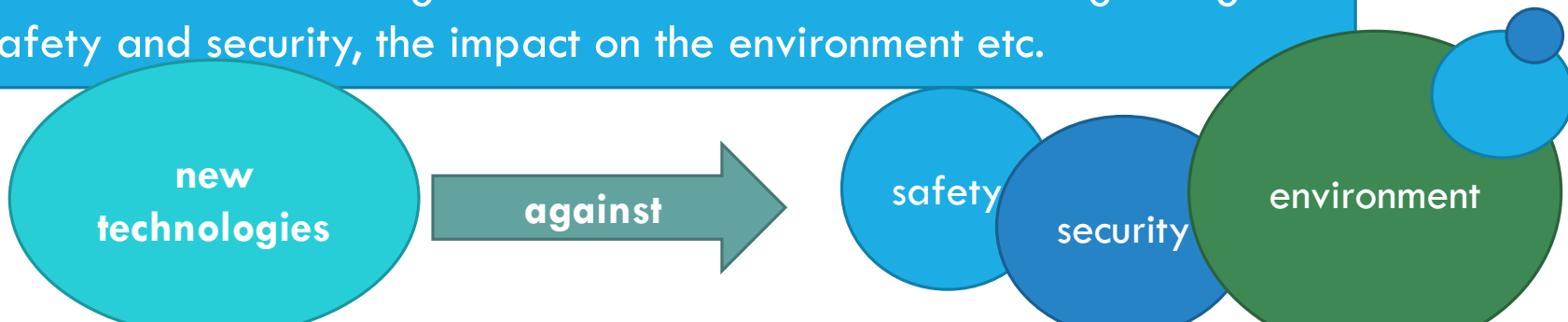
- The international debate on autonomous ships has reached the main international regulatory body for shipping –

International Maritime Organization (IMO)

- For the international legal regulation of the use of autonomous ships, the work of the IMO is especially important

- IMO's Strategic Plan (2018-2023) has a key Strategic Direction to "Integrate new and advancing technologies in the regulatory framework".

This involves balancing the benefits from new technologies against safety and security, the impact on the environment etc.



3.1 IMO steps on autonomous ships

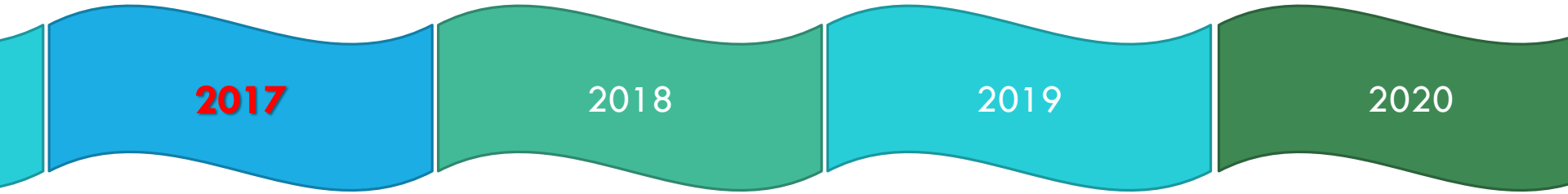
- The starting point was the decision taken by the IMO in 2017 to carry out a

"REGULATORY SCOPING EXERCISE"

of the challenges linked to the introduction of

"Maritime Autonomous Surface Ships" (MASS)

- emphasizes: that these are surface vessels



From a regulatory point of view, initial work by way of a „**REGULATORY SCOPING EXERCISE**" is underway within the

Maritime Safety Committee (MSC)

MSC has established a **Working Group** as well as a **Correspondent Group** on MASS at MSC99 in 2018.

The MSC recognized that IMO should take a proactive and leading role.

2017 | **2018** | 2019 | 2019

Legal Committee (LEG) of the IMO

is carrying out a gap analysis in relation to **liability** and **compensation** for MASS operations under existing **IMO instruments**.

Facilitation Committee (FAL) of the IMO

have also included the **„REGULATORY SCOPING EXERCISE"** on their agendas.

2017 **2018** 2019 2020

„REGULATORY SCOPING EXERCISE", as work in progress, includes:

A) preliminary definitions of MASS,

B) degrees of autonomy,

C) a methodology/plan for conducting the exercise

MASS is defined as „a ship which, to a varying degree, can operate independently of human interaction".

Final definitions need to be established as part of the future regulatory framework for MASS

B) MASS could be operating at one or more **degrees of autonomy** for the duration of a single voyage:

1. Ship with automated processes and decision support: Seafarers are on board to operate and control shipboard systems. Some operations may be automated.

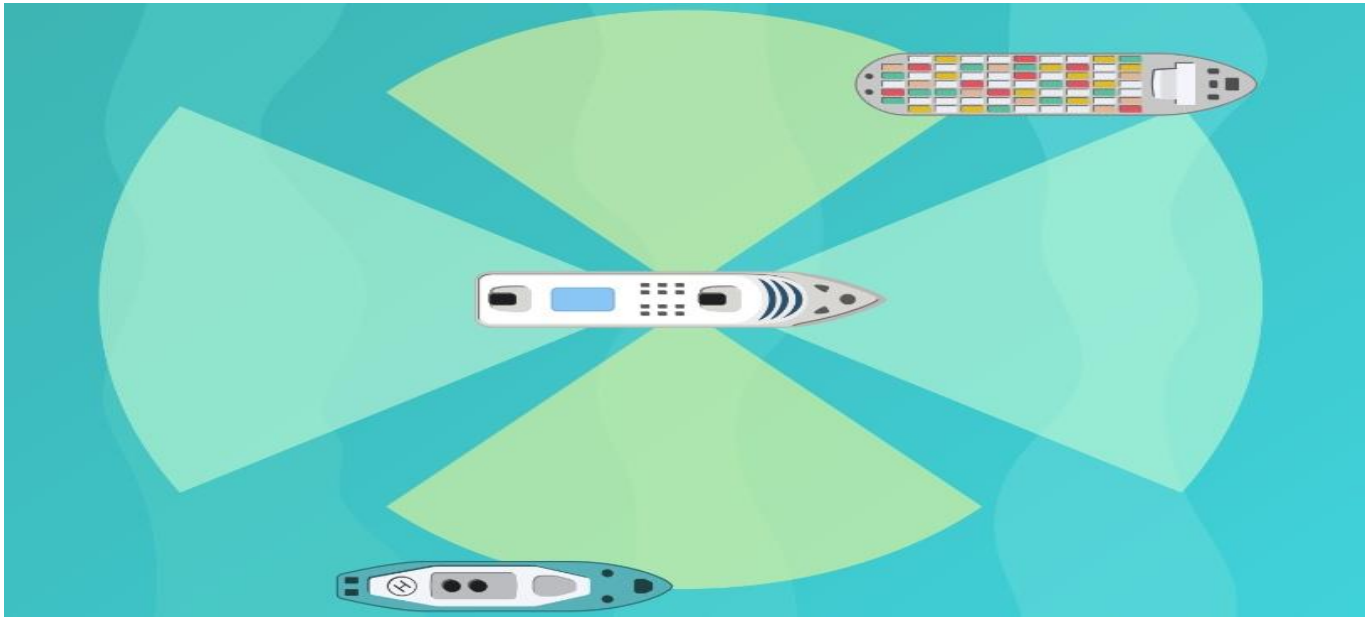
2. Remotely controlled ship with seafarers on board: The ship is controlled and operated from another location, but seafarers are on board.

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.

4 different levels of autonomy

The legal questions and challenges linked to autonomous shipping, as well as the solutions needed to resolve them, will differ depending on what choices are made in relation to autonomy level.



C) Methodology for the regulatory scoping exercise

For each instrument related to maritime safety, security, liability and compensation, and for each degree of autonomy, **provisions will be identified which:**

- **apply to MASS and prevent MASS operations; or**
- **apply to MASS and do not prevent MASS operations and require no actions; or**
- **apply to MASS and do not prevent MASS operations but may need to be amended or clarified, and/or may contain gaps; or**
- **have no application to MASS operations.**

The most important step is to analyse and determine the most appropriate way of addressing MASS operations.

The analysis will identify the need for:

- **Equivalences as provided for by the instruments and/or**
- **Amending existing instruments; and/or**
- **Developing new instruments; or**
- **None of the above as a result of the analysis.**

The aim is to complete the „REGULATORY SCOPING EXERCISE" in 2020.

3.2 The list of instruments to be covered in the IMO's „REGULATORY SCOPING EXERCISE" for autonomous ships

1) Maritime Safety Committee (MSC)

The list of instruments to be covered in the MSC's „REGULATORY SCOPING EXERCISE" for MASS includes those covering:

- safety (SOLAS);
- collision regulations (COLREG);
- loading and stability (Load Lines);
- training of seafarers and fishers (STCW, STCW-F);
- search and rescue (SAR);
- tonnage measurement (Tonnage Convention);
- special trade passenger ship instruments (SPACE STP, STP).

2) Legal Committee

The list of instruments to be covered in the Legal Committee's scoping exercise for MASS include:

BUNKERS 2001 – International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001.

CLC 1969 – International Convention on Civil Liability for Oil Pollution Damage, 1969.

CLC PROT 1976 – Protocol of 1976 to amend the International Convention on Civil Liability for Oil Pollution Damage, 1969.

CLC PROT 1992 – Protocol of 1992 to amend the International Convention on Civil Liability for Oil Pollution Damage, 1969.

FUND PROT 1992 – Protocol of 1992 to amend the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971.

FUND PROT 2003 – Protocol of 2003 to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992.

NUCLEAR 1971 – Convention relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material, 1971.

PAL 1974 – Athens Convention relating to the Carriage of Passengers and Their Luggage by Sea, 1974.

PAL PROT 1976 – Protocol of 1976 to the Athens Convention relating to the Carriage of Passengers and Their Luggage by Sea, 1974.

PAL PROT 2002 – Protocol of 2002 to the Athens Convention relating to the Carriage of Passengers and Their Luggage by Sea, 1974.

LLMC 1976 – Convention on Limitation of Liability for Maritime Claims, 1976.

LLMC PROT 1996 – Protocol of 1996 to amend the Convention on Limitation of Liability for Maritime Claims, 1976.

SUA 1988 – Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation, 1988.

SUA PROT 1988 – Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf, 1988.

SUA 2005 – Protocol of 2005 to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation.

SUA PROT 2005 – Protocol of 2005 to the Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf.

SALVAGE 1989 – International Convention on Salvage, 1989.

NAIROBI WRC 2007 – Nairobi International Convention on the Removal of Wrecks, 2007.

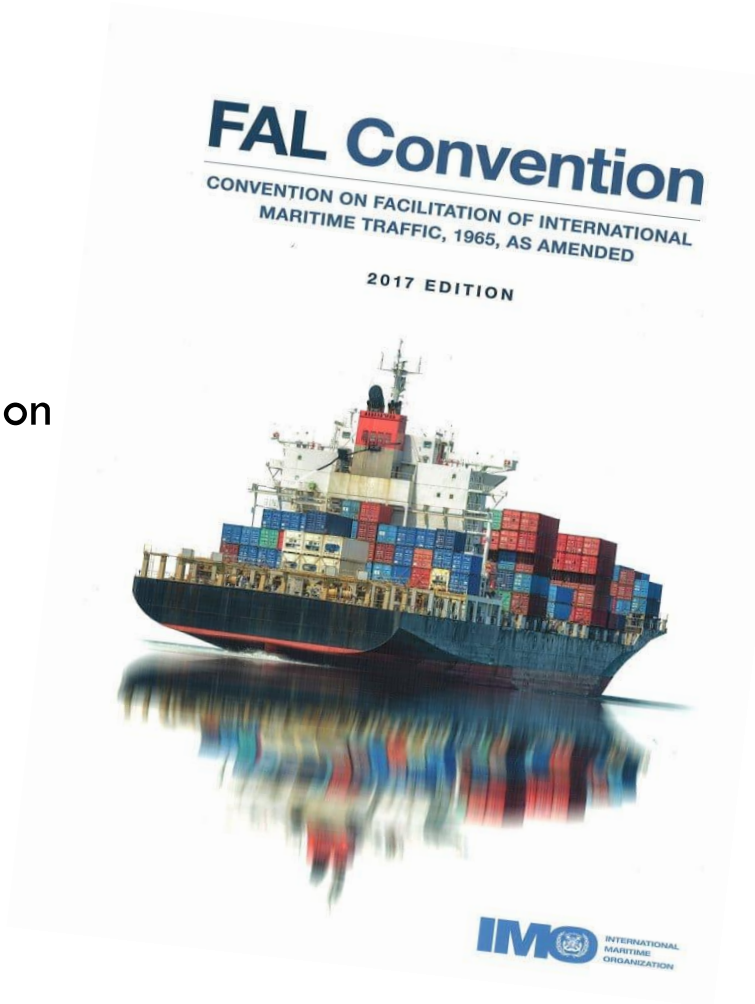
HNS PROT 2010 – Protocol of 2010 to the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996.

3) Facilitation Committee

The Facilitation Committee is considering

the **FAL Convention -** Convention on Facilitation

of International Maritime Traffic



- Supporting the discussions at the IMO, **Comité Maritime International** (CMI) through its **International Working Group (IWG) on Unmanned Ships** is also engaged within the autonomy space.

4) *Conventions emanating from the Legal C*

with other IMO committees

INTERVENTION 1969 – International Conventi[illegible]e High Seas in Cases of Oil Pollution Casualties, 1969.

INTERVENTION PROT 1973 – Protocol relating to Intervention on the High Seas in Cases of Pollution by Substances other than Oil, 1973.

5) Joint treaties with IMO and other UN bodies

International Convention on Maritime Liens and Mortgages, 1993.

International Convention on Arrest of Ships, 1999.

3.3 List of other international conventions to be taken into account for the purpose of usa of autonomous ships

↓

the law of the sea that

regulate UNCLOS

-> was prompted by the desire to settle all issues relating to the law of the sea; does not have provisions referring to autonomous ships.

Part 4: Examples of national legal regulation

4.1 Changes in national legislation for autonomous shipping in Finland

- An Amendment to Finnish *Act on ships' crews and the safety management of ships* entered into force on 1 July 2018

- Possible to grant exemptions to minimum vessel manning requirements and watchkeeping for testing purposes

- The manning of ships can be reduced in automatization tests

- The legislative amendment promotes testing of new technology

4.2 Changes in national legislation for autonomous shipping in Norway

- Norway is already a world leader in maritime autonomy
- Norway has already adapted maritime law to the use of autonomous ships and has made changes to the maritime code
- In Norway it is already possible to conduct autonomous trials in test areas established by the Norwegian maritime authorities

SUMMARY

- In a last years autonomous ship has turned to one of the main regulatory topics -> but the discussion is still on.
- **IMO's conventions** and **the law of the sea** are crucial for autonomy.
- For international autonomous trade, IMO and the law of the sea play a the most important role.
- Some states have made the first adjustments in their national regulations to use a new generation of ships.

- Therefore, we will continue to follow the achievements (international and national) in the subject of **legal regulation of the use of autonomous ships** - it is a complex process and a huge legal challenge.

THANK YOU FOR YOUR ATTENTION!

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