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## MARITIME NAVIGATION. ITS SAFETY AND SECURITY MANAGEMENT

### ABSTRACT

In this paper, an attempt has been made to present and discuss the subjects and contents of the considerably new areas of maritime navigation's interest, i.e. 'the maritime safety and security management of the maritime navigation'. There are also discussed the maritime safety and security systems. The tasks and structures of these systems have been also presented.

### Keywords:

maritime navigation, management of the maritime safety and security, maritime safety and security systems.

### INTRODUCTION

The maritime navigation is defined by the International Maritime Organization (IMO) as 'process of planning, recording and controlling the movement of the craft from one place to another'. However, the maritime navigation is considered also as the kind of human activity performed at sea.

The term 'management' is understood in this paper as 'the act, activity or process whose aim is achieving the intended objective through the proper planning, organizing, coordinating and controlling the degree of achievement of the intended objective'.

The maritime safety means the safety of life and property at sea, and safety of marine environment from pollution.

The maritime security means in this paper the antiterrorist security of all human activities being realized at sea but especially, the antiterrorist security of the shipping industries, i.e. ships and port facilities from terrorist activities.

The term 'management of the maritime safety and security' means the process of management performed permanently by the Maritime Safety and Security System whose main objective is to ensure the proper level of maritime safety and security of all human maritime activities performed at sea.

**MARITIME NAVIGATION AS COMPONENT PROCESS OF SAFE AND SECURE REALIZATION OF HUMAN ACTIVITIES AT SEA**

Human activities realized at sea, i.e. the human maritime activities, are divided usually into the two main groups; these are:

- maritime navigational activities;
- maritime non-navigational activities.

In table 1, there are shown the main kinds of human maritime activities, both navigational and non-navigational.

Table 1. Main kinds of the maritime human activities

MAIN KINDS OF THE HUMAN ACTIVITIES AT SEA	
Maritime Navigational Activities	Maritime Non-navigational Activities
<ul style="list-style-type: none"> <li>– transportation of goods and people</li> <li>– port-handling and servicing the goods and people</li> <li>– sea tourism</li> <li>– sea sports</li> <li>– all activities at sea for ensuring and maintaining the necessary level of the maritime safety and security, etc.</li> </ul>	<ul style="list-style-type: none"> <li>– exploration and exploitation of sea resources</li> <li>– activities of the naval forces, etc.</li> </ul>

Maritime navigation considered as the kind of human activities at sea has two main aspects; these are:

- ensuring the maritime safety and security of the human activities at sea;
- achieving as high as possible operational and economic efficiency of realized activities.

According to the subject of this paper, the efficiency aspects of maritime navigation will not be presented and discussed. Therefore, the term ‘maritime navigation’ will be understood below, as process of ensuring the safe and secure realization of all human activities at sea.

## MANAGEMENT OF THE MARITIME SAFETY AND SECURITY

The maritime safety and security, as was already mentioned, is the safety of people and property at sea from all kinds of hazards existing at sea, and safety of the marine environment from pollution. The maritime security is the security of ships and port facilities from terrorist activities, as well as prevention of ships and transported goods from being used by terrorists for spreading the terrorist assets (means and tools for terrorist activities).

The main objective of the maritime safety and security management is maintaining the acceptable level of risk at sea.

The term 'risk' means the value of the level of hazard at sea. The value of the Risk is given by the following expression:

$$\text{Risk} = (\text{probability of accident}) \times (\text{losses per an accident})$$

The process of the maritime safety and security management comprises the following steps:

- monitoring and evaluating the level of risk;
- determining the options of risk control measures;
- implementing the proper risk control measures;
- coordinating the process of implementation of risk control measures;
- controlling the efficiency of implemented risk control measures.

However, it should be remembered that maritime safety and security has the international character. It means that the maritime safety and security must be ensured and maintained in the following way:

- in the world-ocean scale;
- at all levels of the management of the maritime safety and security.

There exist the following main levels of the maritime-safety and security management:

- international;
- regional;
- national.

In the figure 1, there are shown the main levels of the maritime-safety and security managements.

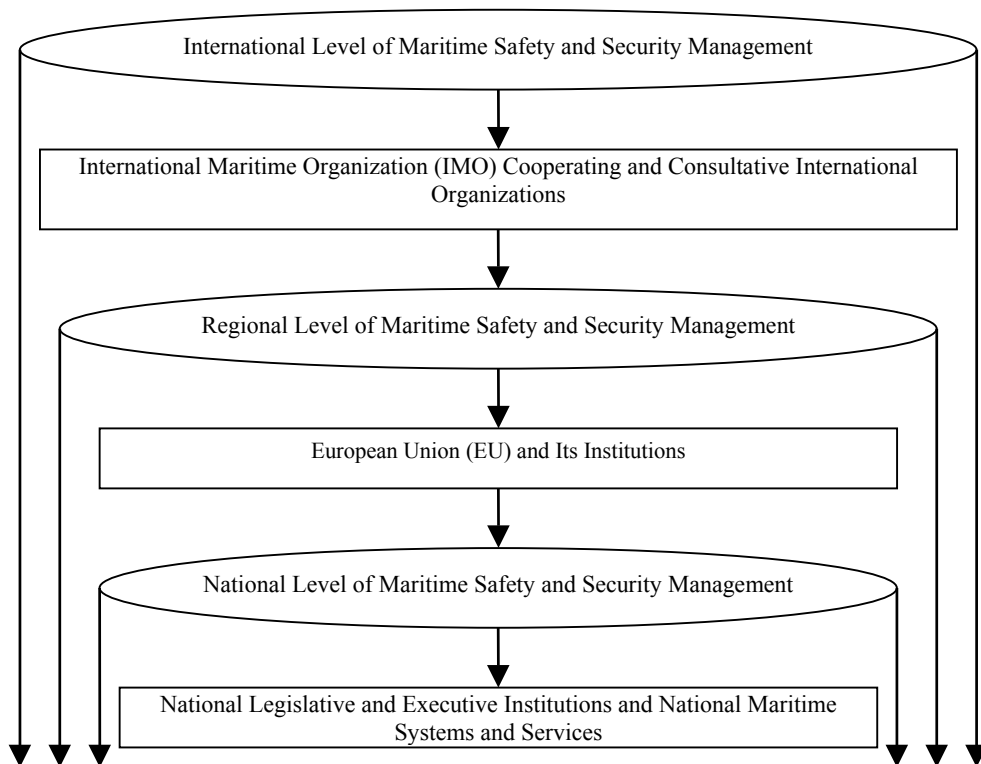


Fig. 1. Levels, institutions and scopes of the maritime safety and security management

In the following section of this paper, there are given the very short characteristics of all main levels of the maritime-safety and security management. These characteristics comprise the following issues:

- basic legislative and executive institutions;
- basic management’s instruments;
- institutions assisting the management process;
- the most distinctive features of that level of management.

### **INTERNATIONAL LEVEL OF MARITIME SAFETY AND SECURITY MANAGEMENT**

The International Maritime Organization (IMO), being the UNO’s specialized agency, is responsible for the management of the maritime safety and security. The main objective of this organization expresses its motto: *Safe, secure and efficient shipping on clean oceans.*

The general organizational structure of the International (World) Maritime and Security System is shown in figure 2.

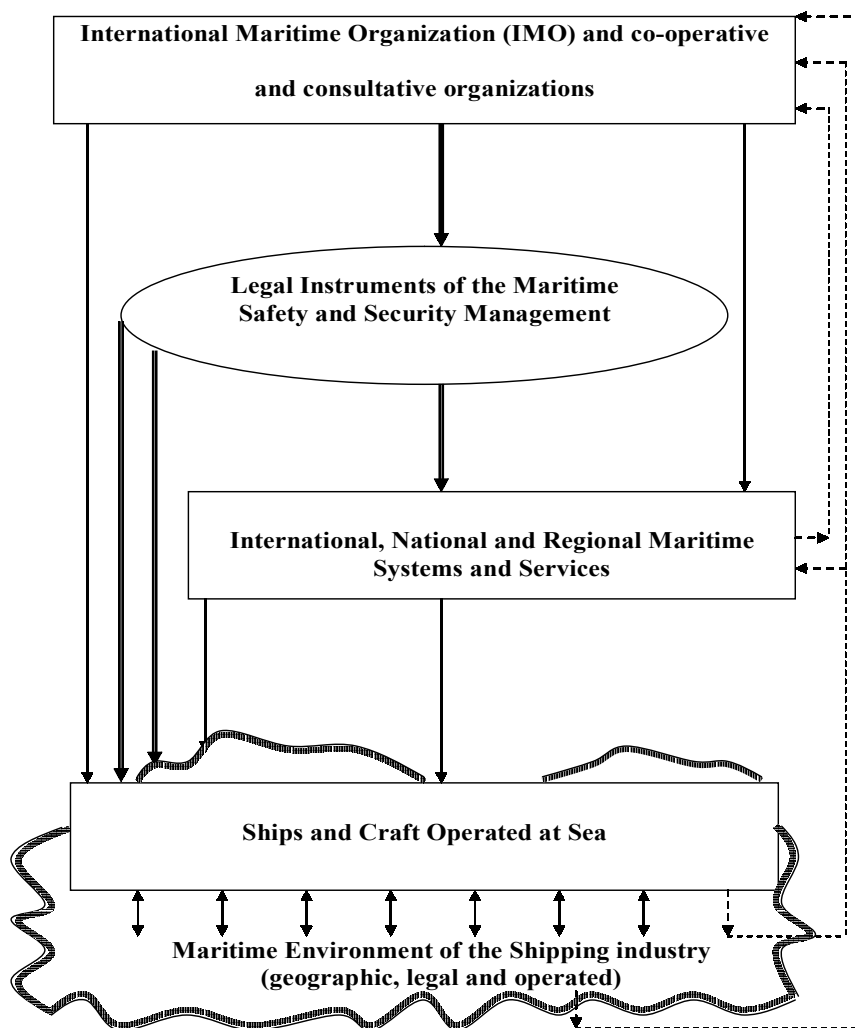


Fig. 2. The Organizational Structure of the International Maritime Safety and Security System

The following are the basic international maritime conventions:

- International Convention for Safety Life at Sea (SOLAS 74);
- International Convention on International Regulation for Preventing Collision at Sea (COLREG 72);

- International Convention on Prevention of Pollution from Ships (MARPOL 73/78);
- International Convention on Maritime Search and Rescue (SAR 79);
- International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW 78/95);
- International Convention on Load Lines (LL 66);
- International Convention on Tonnage Measurement of Ships (TONNAGE 69);
- International Convention for Safe Containers (CSC 72);
- Convention on the International Maritime Satellite Organization (INMARSAT 76) etc.

However, the basic international convention on all the Sea matters constitutes the ‘United Nation Convention on Law of Sea’ (UNCLOS III).

1. The main legislative and executive institutions of the IMO constitute the following:

- General Assembly,
- Council,
- IMO’s Committees,
- Secretary – General and Secretariat.

For maritime safety and security affairs, i.e. for the most important issues of IMO, are responsible two following Committees:

- Maritime Safety Committee (MSC),
- Marine Environment Protection Committee (MEPC).

On the initiative of IMO, there are organized the international conferences on maritime safety and security matters.

2. The main IMO’s instruments of maritime safety and security management constitute its legal instruments; these are:

- international maritime conventions,
- General Assembly, and MSC and MEPC Resolutions,
- Circular Letters,
- Guidelines, etc.

3. To the IMO’s co-operative and consultative international organizations belong mainly the following:

- International Labor Organization (ILO),
- International Telecommunication Union-Radio (ITU-R),

- World Meteorological Organization (WMO),
- International Hydrographic Organization (IHO),
- International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA),
- International Mobile Satellite Organization (IMSO),
- International Organization for Standardization (ISO)
- International Electrotechnical Commission (IEC), and others.

The IMO's maritime safety and security management process comprises mainly the following issues:

- adopting of the new international maritime conventions,
- amending the existing conventions,
- passing the resolutions, circular letters, guidelines, etc.

The existing conventions are being amended in the following ways:

- adding the new regulations to the proper chapters,
- changing the contents of the proper chapters,
- adding the new chapters, etc.

The times of preparation of the new legal acts and the amendments are relatively short. Also the times between the adoption of the new legal acts and times of their entering into force are comparatively very short. It is possible thanks to applying the procedure called 'tacit agreement'.

## **THE REGIONAL LEVEL OF MARITIME SAFETY AND SECURITY MANAGEMENT – LEVEL OF EUROPEAN UNION**

1. The main legislative institutions of the European Union are the following:

- European Parliament,
- Council of the European Union,
- Commission of the European Union.

The decisions of the European Council (European Summit) have the legal force. The main executive institution of the European Union is the Commission of the European Union.

The main executive institutions of the Commission of the European Union, responsible for the maritime safety and security matters, are the following:

- Directorate-General for the Fisheries and Maritime Affairs,
- Directorate-General for Energy and Trade.

To the competence of the Directorate for the Trade belong among many others, the following issues:

- maritime transport and its safety,
- development of the global satellite system GALILEO.

2. The basic instruments of the maritime safety and security management are the following:

- Regulations of the European Union,
- Directives of the European Parliament and of the Council,
- Decisions of the Commission of the European Union,
- Recommendations and Opinions of the Directorates-General and other institutions.

However, the recommendations and opinions do not have the legal force. On the ground of the Directive 2002/59/EC of European Parliament and of the Council of 27 June 2002 the Vessel Traffic Monitoring and Information System (VTMIS) is being developed.

The main component systems constituting the Vessel Traffic Monitoring and Information System (VTMIS) of the European Union are the following:

- Vessel Traffic Services (VTS) systems,
- Automatic Identification System (AIS),
- Ship Reporting Systems (SRS),
- Maritime Assistance Services (MAS) systems (including the places of refuge, and Emergency Towing Vessels),
- Long Range Identification and Tracking (LRIT) systems,
- Computerized Data Exchange Centre, i.e. SafeSeaNet System.

These component systems of VTMIS must be assisted by two global systems; these are:

- Global Navigation Satellite System (GNSS),
- Global Maritime Distress and Safety System (GMDSS).

3. The main advisory institution of the European Union on the maritime safety and security matters is the European Maritime Safety Agency (EMSA). The main objective of EMSA is to increase the maritime safety and decrease the risk of environment pollution by ships.



To the main tasks of EMSA belong the following:

- advising the Commission of the European Union and its institutions on the maritime safety issues,
  - initiating and preparing the drafts of the new legal acts regarding maritime safety,
  - supervising the development of the Vessel Traffic Monitoring and Information System (VTMIS) and SafeSeaNet Information System.
4. Accordingly to the figure 1, on the maritime areas of European Union there are binding all the legal acts regarding the maritime and security having been adopted by the proper IMO's legislative institutions. Therefore, the European Union does not create the new legal acts that would not be in accordance with the IMO's legal order. European Union ensures only that, being in force the IMO's laws and regulations, are accurately obeyed on EU's maritime areas and, therefore, on these areas might be ensured higher level of the maritime safety and security than on other maritime areas. It regards mainly the antiterrorist security and protection of marine environment from pollution. It should be stressed that the EU's level of management of maritime safety and security is very effective and very efficient.

#### **NATIONAL LEVEL OF THE MARITIME SAFETY AND SECURITY MANAGEMENT**

The organizational structures of the national levels of maritime safety and security differ considerable in particular countries are not similar. There are not two maritime countries in Europe whose organizational structure of the national level of maritime safety and security are identical. Therefore, below, there has been characterized the 'average' national level of maritime safety and security management.

1. The main legislative institutions responsible for maritime safety and security affairs are the following:
- president,
  - parliament,
  - government.

The main executive institutions responsible the maritime safety and security are the following:

- proper government's minister (usually, minister of Transport),
- Maritime Operational Services (MOS).

In table 2 there are given the basic functions that should be performed by the national Maritime Operational Services (MOS).

Table 2. Basic Functions of the National Maritime Services

No	Names of Basic Functions of the National Maritime Services
1	Establishing and maintaining the Aids to Navigation
2	Rendering the hydrographic services
3	Ships classification
4	Ships survey and certification
5	Seafarers licencing
6	Ships inspection (Flag State Control, Port State Control, etc.)
7	Maritime accidents investigation
8	Search and Rescue (SAR) Service
9	Marine Environment protection
10	Combating the marine environment pollution
11	Vessel Traffic Servicing and Navigation Assistance
12	Vessel Traffic Monitoring and Information services
13	Ensuring the antiterrorist security of ports facilities
14	Realization of marine security tasks by Coast Guard

The national Maritime Operational Services (MOS) comprises the institutions being the component parts of the Vessel Traffic Monitoring and Information Service (VTMIS), as well as component parts of the National SafeSeaNet (SSN) Information System.

1. The legal instruments of the maritime safety and security management constitute the following:
  - ratified international maritime conventions,
  - national maritime laws,
  - IMO's resolutions, and others,
  - EU's resolutions, directives and decisions,
  - Orders, dispositions, regulations of the national executive institutions.
2. In each maritime country there are some research institutions dealing with investigation of the maritime affairs, especially with the marine environment and its protection from pollution.
3. The characteristic features of the national level of maritime safety and security management depend mainly upon the organizational structure of this level of management in each maritime country. Decisive in this respect is the organizational structure of the maritime administration and coast guard's institutions, as well as the organizational structure of the National Competence Authorities (NCAs), and their Maritime Operational Services (MOSs).

In the figure 3, there is shown the Functional Structure of the National Maritime Safety and Security System.

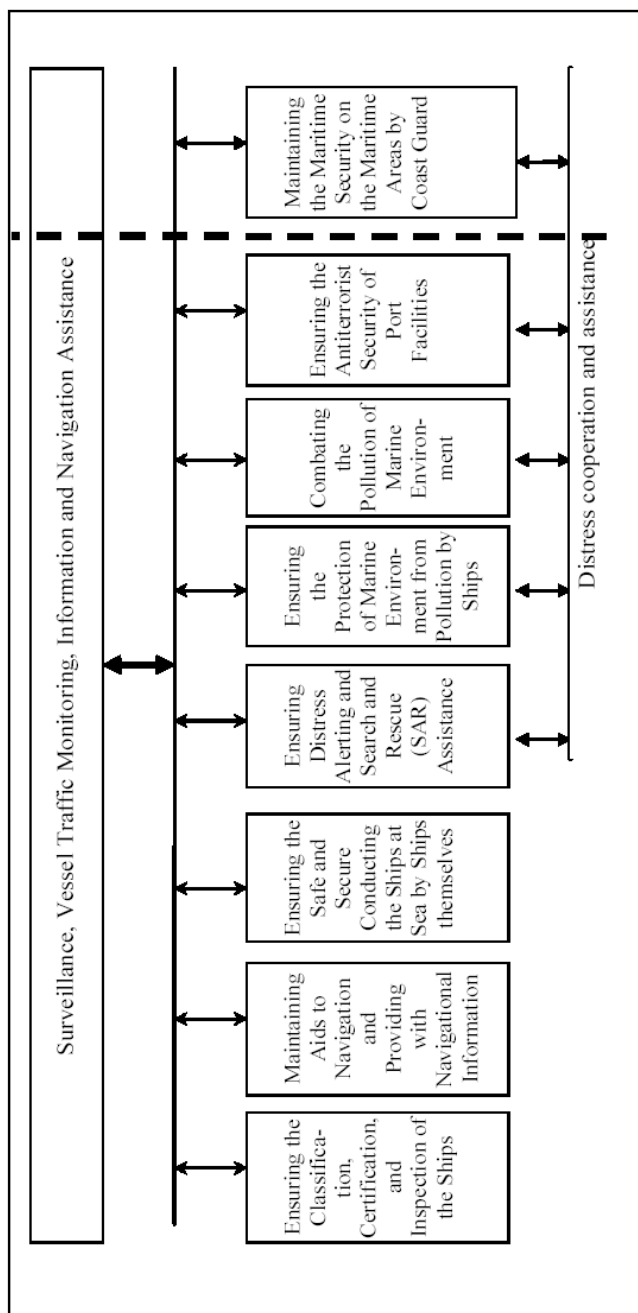


Fig. 3. The Functions Structure of the National Maritime Safety and Security System

## CONCLUSIONS

In this paper, the authors presented and discussed the subject and content of the considerably new maritime navigation issues, i.e. ‘management of safety and security of maritime navigation’.

Above there have been presented and discussed, according to the authors’ opinion, the most important issues of main levels of safety and security management, including the structures of these systems. It means that authors tried to prepare a short synthesis of the current issues expressed by the title of this paper.

The authors’ belief is that this paper, in spite of its imperfections, can be useful for the educational purposes and as the basis for the further investigations regarding the ‘management of the safety and security of the maritime navigation’.

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