



Modelling of a coherent State action at sea for the Kingdom of Spain: Enhancement of maritime competencies in crisis situations

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ABSTRACT

The dissemination of maritime safety information (MSI) and the effective control and monitoring of ship traffic in maritime areas over which the Kingdom of Spain exercises sovereignty, jurisdiction or national interest is crucial to guarantee the freedom of navigation (FON), at the maximum, for the geostrategic position it occupies between the Mediterranean and the Atlantic.

The objective of this study is, to analyse whether the national legal and competency framework is consistent with international regulations and whether the distribution of competencies at the national level is coherent and effective. Spain's current management model of State action at sea, is characterized by the fragmentation of competencies among various civil, law enforcement and military public authorities and agencies. The results of the analysis carried out, show possible gaps in crisis situations, for an effective control of traffic in Spanish waters, by the competent civil authorities: State Ports and Spanish maritime authority and maritime search and rescue service. Similarly, gaps may appear in the dissemination of MSI, due to disruption of infrastructure and/or communication and reception systems. It has been identified the need to develop the legal framework, between civil and military State entities, to improve the effectiveness and coherence of the Spanish model of coastguard maritime service in crisis situations. This will require greater coordination, establishing a joint situation, as well as protocols addressing the temporary transfer of competencies, between State entities concerned and the implementation of doctrines NAGCS and AWNIS, if appropriate, to guarantee the accuracy of information as well as the functioning of electronic reporting and satellite navigation systems. Kingdom of Spain is coordinator of NAVAREA III where currently there are several armed conflicts and illegal migration problems.

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1. Introduction.

Today, the European Union (EU) is facing complex new threats, including Russia's military aggression against Ukraine,

illegal migration, hybrid threats related to maritime dominance and the energy crisis and maritime piracy in Somalia and Guinea. These have significant consequences for individual Member States (MSs) and the EU as a whole. It is of vital importance for any coastal State to maintain the safety of navigation, order and law enforcement in maritime spaces, the protection of marine resources and the marine environment, and to safeguard the safety of human life at sea. Maritime trade, essential to economic activity, can be affected due safety risks and security threats, as well as during military operations in conflict areas. Cooperation between civil and military maritime authorities facilitates commercial shipping, offering guidance through various channels on naval exercises, maritime accidents, medical assistance, etc., strengthening safety and collaboration in

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the maritime community. Kingdom of Spain is coordinator of NAVAREA III and this global service requires high specialization and control of the maritime safety information.

The main objective of this study is: to consider the risks to the freedom of navigation (FON), in crisis situations, in Spanish waters of sovereignty, jurisdiction or national interest, and to identify improvements to the Spanish model of State action at sea with a coastguard maritime service effective and that brings together skills.

1.1. Background, legal and political context.

The International Maritime Organization (IMO), dependent on the United Nations Organization (UN), is the maritime authority for setting standards for safety, regulating the use of maritime spaces, and protecting and performing internationally in maritime transport. The traditional approach to managing it is based on state sovereignty over national territorial waters, where authorities exercise their responsibilities within the specific defined area. Lately, however, new issues with a transboundary dimension, such as piracy, overfishing or marine pollution, are changing the high seas from an open space, governed by the rule of FON, to a common domain that requires a new approach to governance to manage its complex international problems. As Chintoan-Uta comments: *"Still, based on a traditional model of nation-state-centric governance, maritime domain awareness seems incapable of meeting the new security challenges of the highly dynamic progress of recent decades."* (Chintoan-Uta and Silva, 2017).

Outside the civilian sphere, the "San Remo Manual on the International Law Applicable to Armed Conflicts at Sea" (International Institute of Humanitarian Law, 1996), is a guide developed by experts in international and maritime law, which is a valuable tool for armed forces, scholars of international law and those involved in maritime security and security issues, as it provides detailed guidance on how to apply international laws and regulations in the context of armed conflict at sea.

Recognising the vital importance of maritime transport for the existence and functioning of the EU, the sector was included in its remit in the early 1990s. This, together with the publication, of the 1993, Common Policy on Maritime Security (Council of the European Communities, 1993), created the legal basis for the adoption and development of EU legislation on the matter. One of the pillars of the Integrated Maritime Policy (IMP) is the establishment of integrated maritime surveillance, for the development of a Common Information Sharing Environment (CISE). This is a voluntary EU initiative, which aims to make EU MSs surveillance systems interoperable, giving all relevant authorities from the Defence, Security and Maritime Security sectors, access to additional classified and unclassified information needed to carry out missions at sea (EMSA, 2023).

At political level, the EU Strategic Compass for Security and Defence, it is an essential document (Council of the European Union, 2022), which seeks to strengthen the EU's geopolitical position, by setting out the principles and strategic priorities in this area. In the field of Maritime Security, the 2022 Strategic Compass, envisages expanding coordinated maritime presences in strategic areas, as well as the formulation of a new

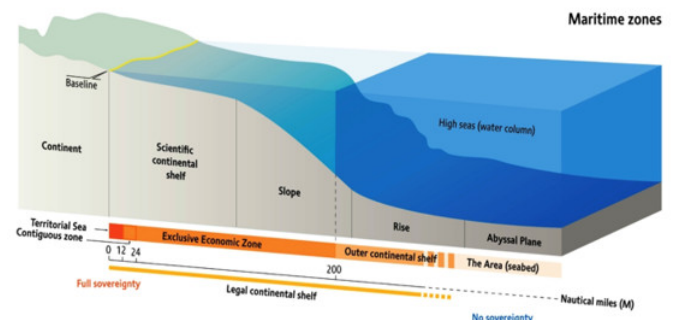
European Union Maritime Security Strategy (EUMSS), which became effective, on 24 October 2023, with the approval of its Action Plan by the General Affairs Council (European Commission, 2023). According to the EUMSS, Maritime Security is defined as *"a state of affairs of the global maritime sector, in which international law and national laws apply, freedom of navigation is guaranteed, and citizens, infrastructure, transport, the environment and marine resources are protected."*

At the national level, apart from the IMO and EU legal framework, coastal States establish legislation in waters of sovereignty, sovereign rights or jurisdiction. The National Security Strategy of 2021 "ESN" (Presidency of the Spanish Government, 2021) sets out a number of goals in the field of maritime security, including: *"the promotion of a maritime space security policy to preserve freedom of navigation and protect traffic and critical maritime infrastructure, as well as ensuring the protection of human life at sea."* It also seeks to prevent and address criminal activities and terrorist acts in this environment, safeguard the coastline, marine resources, the environment and submerged archaeological heritage, and be prepared to respond to disasters or maritime accidents. In addition, the newly adopted National Maritime Security Strategy 2024 "ENSM", reflects *"... changes in the landscape of interests, risks and threats; the growing interrelationship between the physical and virtual realms; as well as the proliferation of hybrid strategies"* (Presidency of the Spanish Government, 2024), in a context where, significant nations are strengthening their military capacities and geopolitical competition is intensifying, the FON and compliance with international maritime laws encounter difficulties, across diverse geographical regions and along numerous maritime routes.

1.2. International framework of uses of maritime spaces.

The United Nations Convention on the Law of the Seas (UNCLOS), is the umbrella convention that establishes the spatial and legal framework for State action at sea (entered into force on 16 November 1994). All EU MSs, including Spain (Spanish Head of State, 1997), as well as the EU itself, by Council Decision 98/392/EC, have ratified and are Contracting Parties to the Convention.

Figure 1: Division of maritime spaces according to UNCLOS.



Source: European Commission.

UNCLOS establishes the geographical scope and legal framework for navigation and uses of maritime spaces, in relation to

the sovereignty, jurisdiction or rights of coastal states, delimited by the following maritime areas. Figure 1, shows the division of maritime spaces, according to UNCLOS (European Commission, 2023).

The basic legal concept of sovereignty extends to the internal waters and territorial sea of each State, but also to the airspace over its territory (OACI, 1944).

1.3. International and EU framework of shipping monitoring and information systems.

At the international level, Chapter V of Annex to the International Convention for the Safety of Life at Sea (SOLAS), introduced mandatory automatic identification systems “Automatic Identification System – AIS” (Rule 19.2.4), long-range identification and tracking “Long Range Identification and Tracking – LRIT” (Rule 19.1), and systems for the organization of maritime traffic (Rule 10), notification services for ships (Rule 11) and maritime traffic services (Rule 12). IMO Resolution A.851(20), provides the general principles for ship reporting systems and ship reporting requirements (IMO, 1997). The establishment of a community maritime traffic monitoring and information system was introduced by Directive 2002/59/EC of the European Parliament and of the Council, as amended by Directive 2009/17/EC, on the implementation of a maritime information exchange system “SafeSeaNet - SSN” (EU, 2002). The SSN is the EU’s maritime information and maritime traffic monitoring system. It consists of a network of national systems in the Member States (MSs) and a central SSN system, managed by the European Maritime Safety Agency (EMSA), which acts as a nodal point interacting with the national systems. The SSN allows the MSs, Norway and Iceland, to provide and receive information on ships, ship movements, dangerous cargo, waste, safety and number of people on board, to share accurate data on ships and cargoes in Community waters. Directive 2002/59/EC was designed to implement a more comprehensive maritime traffic monitoring system, incorporating technological advances such as AIS systems and voyage data recording (RDT or “black boxes”). It also addressed assistance to ships in distress according to IMO guidelines - Resolution A.949(23), establishing requirements for plans to host ships at risk in waters under state jurisdiction. The amendments introduced by Directive 2009/17/EC extended the mandatory nature of the AIS system to fishing vessels larger than 15 metres, made the use of the LRIT system mandatory and adjusted the requirements for assistance to vessels and ports of refuge.

At the national level, Royal Decree 210/2004, amended by Royal Decree 1593/2010, establishing a system for monitoring and informing maritime traffic, transposed those EU Directives to the Spanish legislation (Ministry of Development, 2004).

2. Methodology.

The methodological journey has been divided into two phases: a first phase of an exploratory nature and a second phase of an

analytical and conclusive nature. To this end, the legal framework, bodies and competences at the international, EU and national levels have been considered. Finally, the theoretical framework has been completed by including the systems of the North Atlantic Treaty Organization (NATO), which become relevant in crisis situations in the maritime domain.

The main purpose of this study is to propose improvements to the Spanish State’s management model at sea to ensure safety of navigation in crisis situations. To that end, there have been considered the risks to maritime safety and threats to maritime security, in order to elaborate a proposal to enhance the national capacities, minimising the vulnerabilities, for the transmission of MSI and for an effective control of maritime traffic.

In this study, the State’s action at sea is considered as a “wicked problem” (Rittel and Webber, 1973). These problems, lack clear definitions and cannot be solved by linear methods, following a quantitative process. Therefore, the method implemented for the improvement of the Spanish model of coast-guard will follow a qualitative approach.

3. Kingdom of Spain’s: maritime model.

The Spanish system, since 1992, the date on which the new legislation on ports and the merchant marine came into effect, has presented its own characteristics that are distinct from neighbouring European countries. From the control of the ports to the jurisdiction on the waters where Spain exercises authority, the Spanish model is comprised of a broad range of different public entities and administrations with powers in the maritime sector, both in safety and security areas. Generally, the Spanish model could be categorised as a function-based model, where each agency’s resources and staff are dedicated to acting in a particular function.

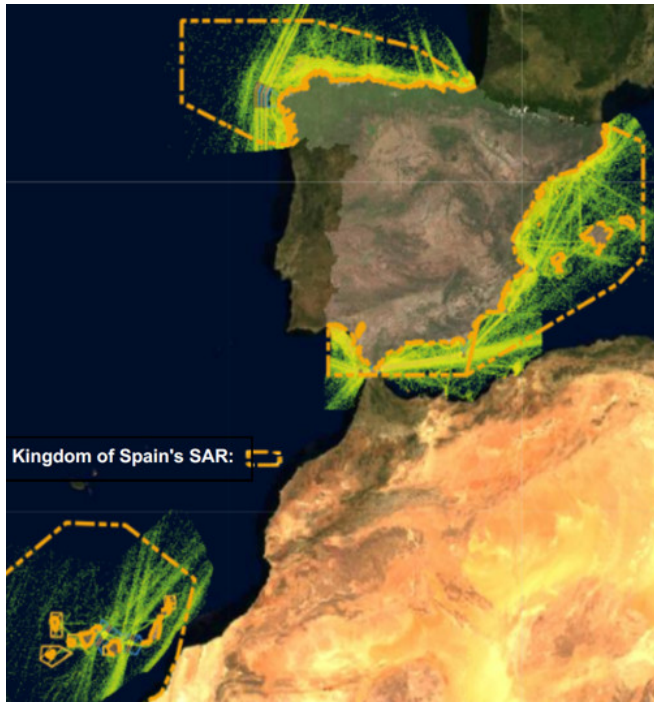
3.1. Maritime navigation regime in Kingdom of Spain.

Law 14/2014, of Maritime Navigation “LNM” (Spanish Head of State, 2014), regulates the general regime of navigation in Spanish maritime areas, taking as a base frame of reference (Article 19), of the UNCLOS regime: “*Navigation through Spanish maritime spaces, either to cross them in a lateral passage or to enter or leave the ports or terminals of the national coast, shall be in accordance with the provisions of the United Nations Convention on the Law of the Sea (UNCLOS 1982), respecting in all cases the restrictions and requirements established in this law and what is appropriate in accordance with the legislation on security, defence, customs, health, aliens and immigration.*” Figure 2, shows the density of maritime traffic in Spanish Search and Rescue (SAR) areas, based on AIS data from Maritime Safety and Rescue Spanish Society “SASEMAR” (Ministry for the Ecological Transition (MITECO), 2023).

3.2. Control, monitoring and management of maritime traffic in Spanish waters.

The competences in the organisation and control of maritime traffic in the Spanish maritime areas are regulated by Law

Figure 2: Density of shipping through the South of Europe.



Source: CEDEX Geographic Information Viewer.

of State Ports and Merchant Marine, as amended by Royal Legislative Decree 2/2011 “TRLPEMM” (Ministry of Development, 2011). These can be divided into two scenarios, ports and waters located in areas in which Spain exercises sovereignty or jurisdiction:

3.2.1. Ports.

The competences of State Ports in Kingdom of Spain, are regulated by TRLPEMM, Article 25 of Book I, Chapter II, Section 2: *“The Port Authorities shall have the following powers: [...] The management and coordination of port traffic, both maritime and land.”* Likewise, in its Title VI, provision of services, Chapter II General services, Article 106: *“The Port Authorities shall provide in the service area of the port, among others, the following general services: a) The service of planning, coordination and control of port traffic, both maritime and land.”*

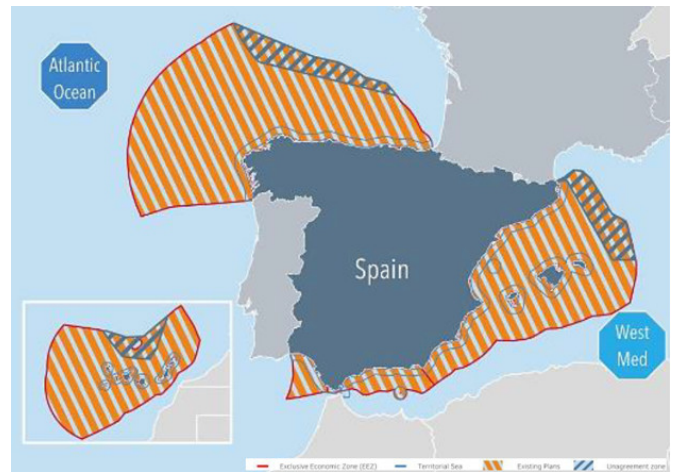
For the execution of maritime traffic control in port waters, the Public Administrations have established Port Control services, managed by the Ports on their own or through Collaboration Agreements with SASEMAR, based on the Framework Collaboration Agreement of the Ministry of Transport, between SASEMAR and the Public Entity of State Ports (Ministry of Transport (MITMA), 2022). In this context, it is worth mentioning the Agreement between the Port Authority of Huelva and SASEMAR (Diario de Huelva, 2021), as well as Almeria Port Control, managed by SASEMAR (Ministry of Transport (MITMA), 2023).

3.2.2. Waters located in areas in which Spain exercises sovereignty or jurisdiction.

The TRLPEMM, in its Book II, TITLE II Maritime Administration, Chapter I, Article 263.g), attributes to the Ministry of Public Works (currently Ministry of Transport), through the Merchant Marine General Directorate “DGMM” and SASEMAR, the competences in: *“The management and control of maritime traffic in the waters located in areas in which Spain exercises sovereignty, sovereign rights or jurisdiction, without prejudice to the powers attributed to other authorities, and specifically those that correspond to the Ministry of Defence for the safeguarding of national sovereignty.”*

The Figure 3 below, shows the Spanish marine boundaries under sovereignty, sovereign rights or jurisdiction, according to the European Maritime Spatial Plans (MSP) Platform (European Commission, 2023).

Figure 3: Spanish Territorial Sea and Economic Exclusive Zone (EEZ).



Source: European MSP Platform - Spain.

Conversely, point two of Article 264, of the Public Rescue Service, urges the Government, at the proposal of the Minister of Public Works (currently of Transport), to approve a National Plan for Special Services for the Rescue of Human Life at Sea and the Fight against Pollution of the Marine Environment (Council of Ministers of Spain, 2021). Among the basic objectives of this Plan are: *“To implement a maritime traffic control system covering the whole of our coasts, through the establishment of regional and local coordinating centres.”*

The Figure 4, shows the international SAR areas under responsibility of Kingdom of Spain, according to IMO’s SAR regions and the 1979 SAR Convention, as amended (Presidency of the Spanish Government, 2024).

In Chapter III, Maritime Safety and Rescue Spanish Society, Article 268 sets out the objectives of SASEMAR, which include: *“... the provision of maritime traffic monitoring and assistance services, maritime safety and navigation services....”* Likewise, Article 275 details the affiliation to SASEMAR, for the fulfilment of its purpose, among others, the Maritime Traffic Control Centres.

Figure 4: Kingdom of Spain's SAR Areas.



Source: ENSM, 2024.

SASEMAR as user and National Competent Authority, through the DGMM, of EMSA's integrated maritime services (IMS) (EMSA, 2023), has an integrated real-time maritime situation image, based on:

- Vessel position information, including AIS (Terrestrial: T-AIS and Satellite: S-AIS) messages LRIT, Vessel Monitoring System (VMS), from fishing vessels, provided by the European Fisheries Control Agency (EFCA), as well as other data sources.
- A cross-check and correlation between the vessel's position reports and other events ("incidents"), tools for Abnormal Behaviour Monitoring (ABM) and risk assessment.
- Satellite earth observation data, acquired through the European Clean seas system CleanSeaNet and the Copernicus Maritime Surveillance Service.
- Access to the Databases managed as a Maritime Centre in EMSA, including profiles of vessels, organizations, etc.

3.3. Summary navigation and traffic monitoring and management regime.

Table 1, summarises the framework of the navigation and traffic management regime in Spanish maritime areas.

Table 1: Navigation and maritime traffic management regime in Spanish waters.

NAVIGATION REGIME			
General Regime	Maritime Zone	Restrictions	
LNM 2014.	Territorial Sea.	Passage of "non-innocent" foreign vessels.	Stopping or anchoring outside the service areas of the ports.
	Contiguous Zone.	Control to prevent infringements of customs, tax, health, aliens and immigration laws and regulations that may be committed in the national territory and in the territorial sea.	Legislation on Security, Defence, Customs, Health, Aliens and Immigration.
UNCLOS 1982.	EEZ		Operations, Navy exercises.
			Maritime traffic organization and mandatory reporting systems.
			Right of persecution and visitation.
MARITIME TRAFFIC MONITORING, MANAGEMENT AND CONTROL			
General Regime	Maritime Zone	Competences	Exceptions
TRLPEMM 2011.	Ports, Harbours.	Port Authorities: Planning, Coordination and Control of Port Traffic in Port Control Centres - Agreements with SASEMAR.	National Defense Law 2005 (Spanish Head of State, 2005) "LDN". Safeguard of national sovereignty.
Directive 2002/59/EC, as amended by Directive 2009/17/EC.		DGMM – SASEMAR: Maritime Traffic Management and Control, Maritime Traffic Control System.	
Royal Decree 210/2004, as amended by Royal Decree 1593/2010.	Waters in which Spain exercises sovereignty.		National Security Law 2015 (Spanish Head of State, 2015) "LSN". Crisis situations.
	Sovereign rights or jurisdiction.	Regional and local Coordinating Centres.	

Source: Authors.

3.4. Maritime safety information.

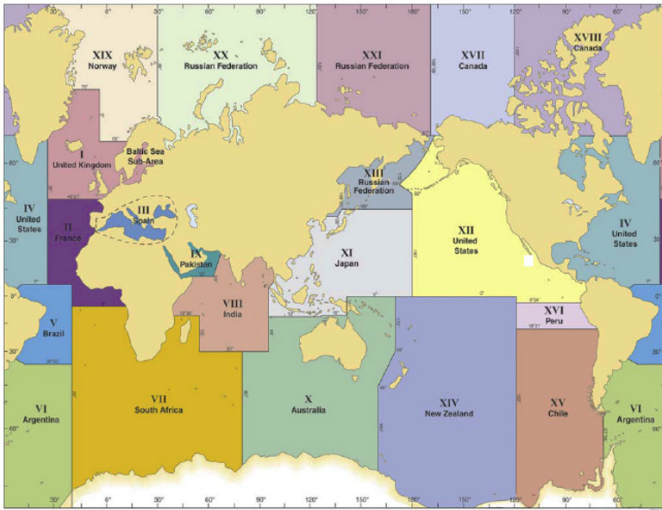
The Maritime Safety Information (MSI) service constitutes a coordinated international and national network of transmissions essential to ensure the safety and FON. MSI comprise radio navigational warnings, weather information, search and rescue (SAR) information and other safety-related urgent messages transmitted to ships.

The World-Wide Navigational Warning Service (WWNWS), is the internationally and nationally coordinated service for the dissemination of radio navigational warnings. The management, content and structure of navigational warnings are regulated by Special Publication No. 53 (S53) of the International Hydrographic Organization (International Hydrographic Organization, 2016), as well as IMO Resolutions A.705(17): Promulgation of Maritime Safety Information, as amended, and A.706(17): Global Navigation Warning Service, as amended. Depending on the area they cover, we can find three types of navigation warnings issued by the WWNWS: NAVAREA, coastal and local. Within the WWNWS, Spain fulfils the role of national coordinator for the following maritime areas under its responsibility:

- **NAVAREA:** Spain is included in two NAVAREA zones, II and III. Spain, through the Navy's Hydrographic Institute "IHM", of the Armada Española-Fuerza de Acción Marítima (FAM), is the coordinator of NAVAREA III, which covers the entire Mediterranean and Black Sea. NAVAREA II is coordinated by the French Hydrographic Institute (SHOM). For the transmission of navigational warnings in NAVAREAS, the international SafetyNET service, is used based on the coordinated transmission and automatic reception of MSI, through INMARSAT's Enhanced Group Call (EGC) system, using the English language, in accordance with the provisions of SOLAS. Figure 5 shows the 21 NAVAREA Zones, within the framework of the WWNWS (International Hydrographic Organization).

tion, 2016).

Figure 5: NAVAREAS for the coordination and dissemination of nautical radio warnings.



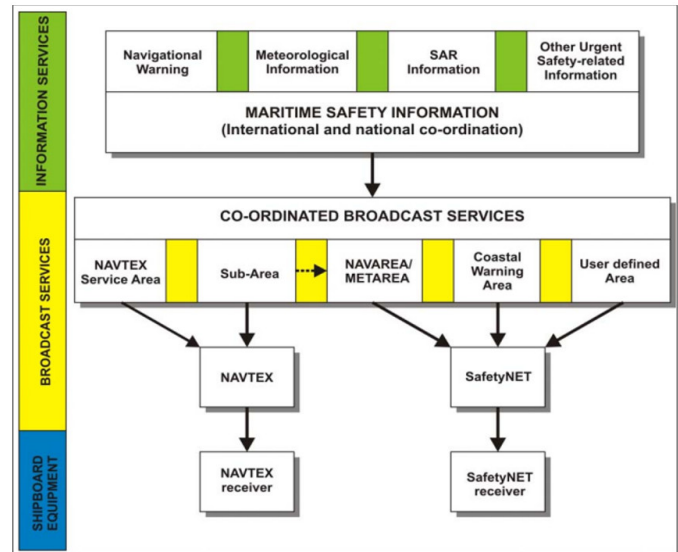
Source: MSC.1/Circ.1310 Annex.

- **Coastal:** SASEMAR is the coordinator (SASEMAR, 2021), which has four NAVTEX transmitters operated from the corresponding Coordination Centres: La Coruña (300nm Service Area), Valencia (220nm Service Area), Tarifa (300nm Service Area) and Las Palmas (400nm Service Area). Coastal navigational warnings transmission, is carried out through the international NAVTEX service, which consists of the coordinated transmission and automatic reception, on 518 kHz, of maritime safety information using narrowband direct print telegraphy, using the English language to maritime communications.

- **Local:** These are radio navigational warnings broadcasted by VHF, limited to the port service waters or their vicinity, landfalls... They are not part of the WWNWS. Local radio warnings, are transmitted by means other than NAVTEX or SafetyNET services and complement coastal radio navigational warnings by providing detailed information in coastal waters. In Spain, they are coordinated by SASEMAR.

The technical tool for the provision of the MSI service by SASEMAR is the network of Coastal Stations “EE.CC.” of the Maritime Radio Communications Centres “CCR”, consisting of 37 VHF EE.CC., nine MF EE.CC., one HF EC and four NAVTEX EE.CC., managed from three CCR: La Coruña, Las Palmas and Valencia. In order to coordinate all the actions that may take place, a link is made between the Rescue Coordination Centre (RCC) operated by SASEMAR and the CCR. The network of EE.CC. also provides the system AIS (Automatic Identification System) to SASEMAR, through the 37 EE.CC. of VHF, which allows obtaining wide signal and image coverage of maritime traffic. Figure 6, displays the IMO and International Hydrographic Organization (IHO) MSI dissemination policy (International Hydrographic Organization, 2016), showing information and transmission services as well as on-board equipment.

Figure 6: MSI dissemination policy.



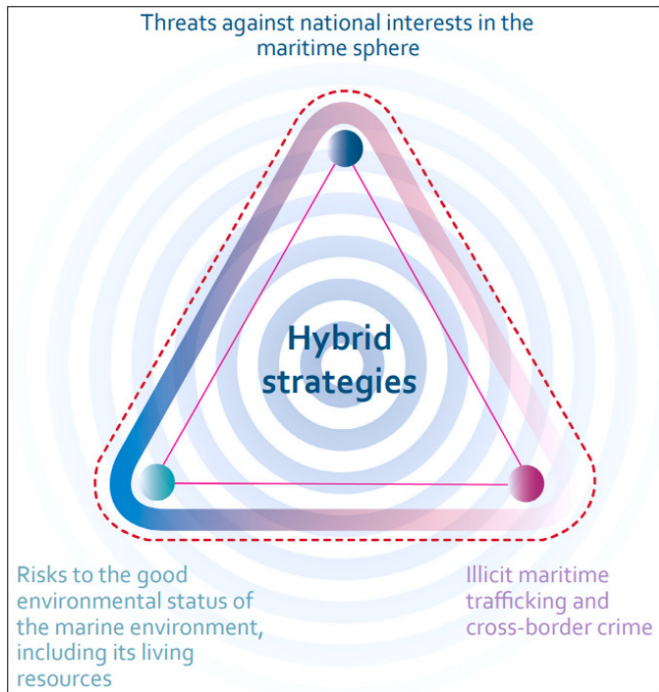
Source: MSC.1/Circ.1310 Annex.

4. The vulnerability of the current Spanish system.

The Spanish model of State action at sea, is characterized by being “function-centric”, with a fragmentation of bodies and competencies, where the resources and staff of each agency, are dedicated to acting in a specific function. This model presents low levels of performance in the indicators of efficiency and coherence in the overall action of the State at sea.

The navigation regime in Spanish waters, is consistent with the international framework (IMO). Likewise, the monitoring, organisation and control of maritime traffic are fully aligned with European legislation. The competencies are assigned to the Port Authorities, in port areas and to DGMM-SASEMAR in general in Spanish waters. However, in crisis situations, damage to communication infrastructure, any disruption of maritime radio communications or to aids to navigation, would have serious consequences for maritime safety and maritime security. This vulnerability increases with the risk of cyberattacks against surveillance and control systems, critical maritime infrastructure and infrastructure of relevance, to national security and navigation and communication systems. These situations may entail a loss of capacity of the Port Authorities or DGMM-SASEMAR, to carry out an effective control of maritime traffic in maritime spaces over which Spain exercises sovereignty, jurisdiction or where has a national interest. In addition, limitations in the national capacity to transmit MSI, can contribute to creating gaps, generating a risk to the safety and FON. This scenario also reflects the need to advance in risk analysis, as a key tool for detecting vulnerabilities, and adapting national systems and capacities to new risks to maritime safety and to maritime security threats. The new ENSM 2024 offers a classification of risks and threats in the maritime domain, as shown in Figure 7.

Figure 7: Risks and threats in the maritime domain.



Source: ENSM, 2024.

5. The solution to maritime vulnerability: safety of navigation and protection of traffic in crisis situations.

The Armed Forces are responsible for the surveillance and security of maritime areas under the LDN. The fourth final provision of the TRLPEMM, Maritime Security, explicitly states: *"The references to maritime safety made in this law must be understood as referring to the technical aspects of the safety of ships and navigation, cargo and persons on board, without affecting the aspects of the security of maritime spaces and national interests at sea regulated in the National Defense Law."* In addition, the "Fifth Additional Provision" of the TRLPEMM, on defence policy in the port and maritime areas, seeks to define a framework for cooperation between the DGMM and the Ministry of Defence, for reasons of National Defence or in crisis situations (National Security), guaranteeing the safeguarding of national sovereignty. The LSN (Spanish Head of State, 2015), Article 10 considers Maritime Security as an area of special interest to National Security. Areas of special interest are "those that require specific attention because they are essential to preserve the rights and freedoms, as well as the well-being of citizens, and to guarantee the provision of essential services and resources". The LSN also develops in Article 22, on crisis management within the framework of the National Security System, the situations of activation of the National Security System and the framework of action and coordination. Furthermore, in Article 23, the LSN develops on the concept of the "Situation of Interest for National Security", a situation where due to the seriousness of its effects and the dimension, urgency and transversality of the measures for its resolution, it requires the reinforced coordination of the competent authorities in the

performance of their ordinary powers, under the direction of the Government, within the framework of the National Security System, guaranteeing the optimal, integrated and flexible functioning of all available resources.

NATO's military crisis response systems, NCAGS (Naval Cooperation and Guidance for Shipping) and AWNIS (Allied Worldwide Navigational Information System), play a crucial role during crisis situations in the maritime environment. At the national level, the Spanish Navy Maritime Operations and Surveillance Centre (COVAM) dependent of Maritime Action Force (FAM), it is presented as a central point that the Spanish Navy (Armada Española) makes available to the maritime community, without affecting its own ability to monitor and conduct military operations (De la Gándara, 2011). Broadly speaking, we could say that COVAM's work is circular. COVAM receives information from various external sources, including ships, shore stations, AIS systems, LRIT messages, satellites, etc. In addition, COVAM manages the NATO systems: NCAGS and AWNIS, and the associated information.

The NCAGS is a NATO military cooperation system, which provides guidance, advice and assistance to the merchant community, reinforcing the safety and security of ships that voluntarily adhere to it, while minimizing the interference that may occur between the activities carried out by naval units and merchant traffic that transits an Area of Operations (AOO). Armada Española-FAM, manages the NCAGS system from COVAM (Armada Española, 2023), which acts as the national point of contact. The structure and operation of NCAGS can be found in the publication: NCAGS - Guide to Owners, Operators, Masters and Officers (NATO, 2014) and consists of a permanent element known as the NATO Shipping Center (NSC), located at NATO Maritime Command (MARCOM) Northwood in United Kingdom, which is the liaison between NATO naval forces and the merchant marine community. At the national level, the organization of the NCAGS system is found in the publication: AAP-8(F)(NAVY) II (NATO, 2007), and it is structured in three levels, as shown in Table 2.

Table 2: NCGAS management levels in Spain.

LEVEL	AUTHORITY	FUNCTION
Strategic	Admiral of the Maritime Action Force (ALMART).	NCAGS CDR, i.e., the naval commander executing the NCAGS plan, or CDR subordinate to another NCAGS CDR, as required.
Operational	Four Standing Shipping Cooperation Points (SCPs): - Canary Islands Naval Command (ALCANAR). - Cadiz Maritime Action Command (AMARDIZ). - Ferrol Maritime Action Command (AMARFER). - Head of the Balearic Islands Naval Sector (JESBAL). - NCAGS subordinate units, activated on duty in all the main ports of Spain.	SCPs implement the NCAGS at the operational level, and deal directly with the merchant fleet, providing briefings, routes, or liaison officers.
Support	ALMART, SCP and NCAGS staff.	They can be deployed to support other NCAGS organizations.

Source: Authors.

The merchant marine, reports and receives guidance and assistance from the NCAGS system, to improve safe and secure transit. As a current example (January 2024), in the context of the crisis situation arising from the Russian invasion of Ukraine, the Armada has established an NCAGS cell (SCP) at COVAM (Armada Española - Fuerza de Acción Marítima, 2023), to get awareness of the Spanish ships that are in the area of the central Mediterranean (including the Adriatic Sea) and the East, as well as the Black Sea, East of the 12° East meridian.

In certain circumstances, there may be failures in the MSI and WNWNS broadcast systems, due to damage to equipment caused by a natural disaster or naval/military actions. The main objective of the AWNIS, is to ensure the provision of Safety and Security of Navigation (SASON) information, for military and merchant ships in support of maritime operations. The structure and operation of the AWNIS system are regulated by the publication AHP-01 (NATO, 2015). The concept of AWNIS, is to use the existing means of communication, of military and civilian organizations, responsible for maritime safety and security, and combine them into a coherent organization for use by allied military commanders in crisis situations. It does not, therefore, require ships to adopt unknown procedures during periods of tension or conflict. The AWNIS, is managed by the Navigation Safety Information Coordinator (SONIC) who is a naval officer specialized in merchant fleet (speaks and understands the language of merchant ships), who collects, coordinates, and promulgates information related to maritime safety. This specialist naval officer, also approves guidance for the merchant marine from NCAGS, on risks to merchant ships or the safety of navigation (NATO, 2015).

The activation of the AWNIS, involves military support to the civilian coordinator of MSI and WNWNS, including the promulgation of navigational warnings on their behalf. In exceptional circumstances, the civilian National Coordinator may be relocated to the military authority, to ensure continuity of proceedings. This responsibility cannot be assumed in isolation and must be carried out together with the civil authorities concerned, including the national coordinator of the IMO, in the case of Spain, DGMM-SASEMAR, the IMSO (International Mobile Satellite Organisation) and the IHO (Hydrographic Institute of the Armada).

Both, NCGAS and AWNIS doctrines, are increasingly relevant in the context of an aggressive Russia, which openly defies the laws of the sea through hybrid maritime activity (Lt. Colin Barnard, 2019). For example, in November 2018, Russia closed the Kerch Strait using deceptive tactics, such as issuing a fake NAVWARN and blocking the Strait with a merchant ship. The NCGAS and AWNIS systems are implemented at the Naval Commands, which act as NCAGS SCPs with a SONIC officer (AWNIS), led by the Maritime Action Force “FAM” Headquarters, in its capacity as NCGAS CMR, to conduct the MARSEC Maritime Security exercises (Armada Española, 2023). However, they are not formally established at the national level, within the framework of State action at sea (Madariaga et al., 2015).

Conclusions.

Article six of the TRLPEMM, considers a part of the Merchant Marine: “h) *The management of maritime traffic and communications.*” As such, it attributes competences to the DGMM and SASEMAR for its implementation. The national system is robust and in line with international and EU regulations, however, as we have seen in the previous sections, there are crisis situations, relevant to National Security or National Defence, which may affect the FON in waters of sovereignty, jurisdiction or national interest.

In such cases, in order to ensure effective protection of maritime traffic and guarantee the transmission of MSI, it would be necessary to establish a legal framework for cooperation between the DGMM-SASEMAR and the Armada Española-FAM, for a shared management or the transfer of competences in functions of: traffic control, management of MSI and of maritime communications. This should be accompanied by activation protocols and coordination procedures relating to the implementation of the NCAGS and AWNIS systems.

For this transfer to be effective, the legal framework and activation protocols should be defined in the National Security Council, which according to Article 25 of LSN, determine the liaison and coordination mechanisms, necessary for the National Security System to be activated preventively, and to follow up on cases that may lead to a situation of interest to National Security. Moreover, this new approach should be aligned with the ESN 2021 and the ENSM 2024, particularly in its Action Plan.

NCAGS and AWNIS tools become particularly relevant for dealing with new hybrid and cybersecurity threats, causing interference to the Global Navigation Satellite System (GNSS), i.e., GPS system interference, or AIS spoofing, to ensure that maritime traffic can take place safely and that MSI is disseminated in the EEZ, NAVAREA and METAREAS effectively.

Disclaimer.

The content of this study, does not necessarily reflect the official opinion of the European Maritime Safety Agency nor Universidad de Cantabria. Responsibility for the information and views expressed, therein lies entirely with the authors.

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