MEDOSMoSIS
D.3.2.1. Studying Field Report

PART I

MEDOSMoSIS Survey:

Overview of the Maritime Surveillance field

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

Document Control Sheet

Project acronym:	MED OSMoSIS
Project title:	Mediterranean governance for Strategic Maritime Surveillance and Safety issues

Related activity:	A3.2 – Studying Field report PART I
Deliverable name:	D3.2.1 – Global report covering problem diagnosis, needs analysis, interoperability issues, development of platforms for countries without one / expansion of existing platforms capacity
Type of deliverable:	Report
Language:	English
Work Package number:	3
Work Package title:	Studying field
Work Package leader:	DGAM
Partners involved:	All

Status:	Draft for D.3.2.1
Author(s):	L. Cotte, D. Carval, A. Sommier, A. Souf – Shom
Version:	V1
Delivery date:	October 2021
Distribution:	Confidential

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

Contents

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

Tables

Figures

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

Glossary

AIS	Automatic Identification System
CECIS	Common Emergency Communication and Information System
CISE	Common Information Sharing Environment
CSD	Central Ship Database
CSN	Clean Sea Net
ECDC	European Centre for Disease Prevention and Control
ECDIS	Electronic Chart Display and Information System
EMSA	European Maritime Safety Agency
EPIRB	Emergency Position Indicating Radio Beacon
EPIS	Epidemic Intelligence Information System
EU	European Union
EUROPHY	EUROpean PHYTosanitary
GIS	Geographical Information System
GISIS	Global Integrated Shipping Information System
IACS	International Association of Classification Societies
IMO	International Maritime Organisation
LRIT	Long-Range Identification and Tracking
MARS	Maritime mobile Access and Retrieval System
MED OSMoSIS	Mediterranean governance for Strategic Maritime Surveillance and Safety issues project
MS	Member States
MSFD	Maritime Strategy Framework Directive
MSP	Maritime Spatial Planning
NSW	National Single Window
OCIMF	Oil Companies International Marine Forum
OVID	Offshore Vessel Inspection Database
RASFF	Rapid Alert System for Food and Feed
S&R	Search and Rescue
SAR	Synthetic Aperture Radar
SART	Search And Rescue Radar Transponder
SIRE	Ship Inspection Report Programme
SIS	EU SHIPSAN ACT Information System
SSAS	Ship Security Alert System
SSN	Safe Sea Net
TRACES	TRAde Control and Expert System
VDR	Voyage Data Recorder
VMS	Vessel Monitoring System
VTS	Vessel Traffic Service
WP	Work Package

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

Introduction

Context

Enhanced cooperation and smooth-flowing exchange of information between Maritime Surveillance authorities is today one of the main strategic objectives of the European Union (EU) in the framework of the Integrated Maritime Policy. It is also a key component of the European strategy for maritime safety[1].

Since 2006, the European Commission has worked to improve cooperation across the Maritime Surveillance authorities of Member States (MS) and to enhance the interoperability of their respective data systems, at both National and European levels. The information exchange systems Europol (criminal and terrorist networks tracking), MARSUR (Maritime Surveillance dialog) and SafeSeaNet (SSN - vessel traffic monitoring and information system) are good examples[2,3] of this working collaboration.

Today, the exchange of nautical information between various maritime authorities at National and European levels is still complex and limited, mainly because of the "non-interoperability" of surveillance systems and existence of legal barriers (EU directives, national policies, etc.). Maritime Surveillance stakeholders continue to produce, collect and use geographical information very often separately, without initiating data sharing. This data can then be collected several times, leading to unnecessary operating costs and loss of efficiency. The development of the Common Information Sharing Environment (CISE) network - another European initiative within the framework of the Integrated Maritime Policy - aims in particular to overcome these limitations while meeting information needs that are not yet covered by existing networks[4]. The Mediterranean governance for Strategic Maritime Surveillance and Safety issues project (MED OSMoSIS) ambitions to tackle this complexity through the development of tools and the implementation of pilot studies that will enable to improve information exchange between different authorities and MS.

[1] Better situational awareness by enhanced cooperation across maritime surveillance authorities: next steps within the Common Information Sharing Environment for the EU maritime domain (2014). *Communication from the Commission to the European Parliament and the Council*, COM(2014) final, 1-8.
[2] https://www.europol.europa.eu/fr/about-europol
[3] Organismes et systèmes d'échange d'information multinationaux contribuant à la sûreté maritime (2015). *Etude prospective et stratégique de la DGRIS*, Ministère de la Défense, 1-47.
[4] Integrating Maritime Surveillance – Common Information Sharing Environment CISE draft roadmap (2010). Communication from the Commission to the Council and the European Parliament, COM (2010) 584 final, 1-28, doi:10.2771/64104).

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

The MED OSMoSIS project

MED OSMoSIS is a strategic project funded by the Interreg MED programme that consists in promoting the implementation of improved governance and data exchange among different actors of the Mediterranean Area towards the policy development of Integrated Maritime Surveillance in the Euopean Union.

MED OSMoSIS brings together ten partners from eight coastal states of the Mediterranean: Greece – as the Lead Partner – Croatia, France, Italy, Montenegro, Portugal, Slovenia and Spain. It gathers public scientific institutions and national authorities in charge of navigation safety and Maritime Surveillance. The project focuses on the development of modules and applications regarding Maritime Surveillance activities – in terms of safety and security – to facilitate information exchanges that will support the further development of a regional/local smart plug-in capability. This capability will support interoperable transnational sectoral systems, ensuring their regional, deployable and mobile interface, in order to enhance In-situ Situational Awareness, wherever needed in the Mediterranean Sea and Atlantic approaches. The project will explore the application of current guidelines and capabilities of the ongoing evolution of the CISE data exchange model. It will carry pilot activities and capitalization actions to test, disseminate and distribute the tools and protocols developed among partners either as being potential users but also as intermediaries to reach other participant entities.

Four pilot activities are foreseen in the project:

1. **Greece and Spain** - Search and Rescue (S&R) Planning: Testing of tools, methodologies and algorithms for S&R operations;
2. **Italy** - Improvement of the cycle management of information necessary for the update of cartography to ensure safety to marine users;
3. **France** - Development of an API (S-124) for the production and diffusion of Navigational Warnings by web services (FR/EN); Study on CISE to assess the process and needs for the integration of Shom's data into the French CISE network;

Each pilot activity will enable to test the tools developed and implemented.

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

Objectives of the Studying Field Report

The development and implementation of relevant tools and pilot studies must rely on a solid knowledge of the field of Maritime Surveillance in countries bordering the Mediterranean Sea. The background information needed encompass the stakeholders involved, the data and tools they routinely used and the needs and issues faced on a regular basis, such as governance, lack of up-to-date data, lack of state-of-the-art tools, etc. The purpose of this document is therefore to provide all the necessary information to better understand the organisation of Maritime Surveillance activities at national and European levels in order to better the knowledge of the Maritime Surveillance's landscape in the Mediterranean.

This Studying Field Report will enable the partnership to grasp a global vision of Maritime Surveillance activities at European level and, based on the information compiled, make recommendations on how to address identified gaps and improve interoperability between existing Maritime Surveillance systems.

The outputs of the Studying Field Report will be especially significant for the implementation of the pilot studies.

Structure of the Studying Field Report

According to the MED OSMoSIS project's Application Form, the present document should include i) a list of gaps, problems and needs identified in terms of data, tools and geoportals; ii) interoperability issues between Geographical Information System (GIS) data and existing geoportals, and iii) recommendations to address the gaps identified, improve existing geoportals and increase interoperability between existing surveillance systems.

Collection of relevant information was first based on an online survey to which relevant maritime stakeholders and organisations of each MED OSMoSIS partner country participated. To enrich the information gathered through the survey, the MED OSMoSIS partnership agreed to further analyse three topics for which more details were needed per country:

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

- Governance of Maritime Surveillance activities
- Gaps in data and tools
- Existing platforms/geoportals[5]

The Studying Field Report is therefore composed of two parts following the steps carried out for the information gathering.

This first part, MED OSMoSIS Survey Part I: Overview of the Maritime Surveillance field, presents the MED OSMoSIS survey and summarizes the information collected, and provides an overview of the Maritime Surveillance field at European level. The Survey itself is attached in Appendix I.

The second part, Part II: National in-depth analysis, will provide the analysis carried out in each country of the partnership.

[5] Platform refers to geoportals on which data related to maritime surveillance activities are managed/shared/disseminated to stakeholders of the field. For instance data.shom.fr is the platform developed and hosted by Shom where one can have access to bathymetry, currents, maritime limits, etc. It can also be any geoportals / portals that provide AIS data, forecast, navigational warnings...

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

PART I. OVERVIEW OF THE MARITIME SURVEILLANCE FIELD

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

1 Background and objectives

In the framework of this study, Maritime Surveillance is defined as the effective understanding of all activities carried out at sea that could impact the security, safety, economy, or environment of the European Union and its Member States[6,7].

Maritime Surveillance data covers all the data related to Maritime Surveillance activities, including the data collected by the systems short-listed below[8] (non-exhaustive):

- **On-board transmission devices**: AIS (Automatic Identification System), VMS (Vessel Monitoring System), LRIT (Long-Range Identification and Tracking), SSAS (Ship Security Alert System), VHF DSC, MF/HF DSC, Inmarsat C & F distress alert, EPIRB, AIS SART;
- **Remote sensing data**: Radar, optical (e.g. Sentinel, Lapan) and SAR (Synthetic Aperture Radar) satellites, video, SART;
- **Recording systems**: VDR (Voyage Data Recorder);
- **Other situational data necessary to handle sea accidents** (e.g. Meteo-oceanographic data (METOC) conditions, bathymetry, wreck locations, sea currents, S&R zones, maritime limits to identify the area of responsibility of countries bordering the Mediterranean).

This can be real-time or delayed-time data. Maritime Surveillance data also covers data handled by:

- **Public International database**: IMO GISIS (Global Integrated Shipping Information System), ITU MARS (Maritime mobile Access and Retrieval System), Equasis, Thetis, IACS[9] Ship/company database, OCIMF[10] database (SIRE, OVID)
- **International/EU data exchange (between authorities - non-public)**: SSN (Safe Sea Net), SSN-CSD (Safe Sea Net – Central Ship Database), NSW (National Single Window), CSN (Clean Sea Net), TRACES (TRAde Control and Expert System), EUROPHY – (EUROpean PHYTosanitary), RASFF (Rapid Alert System for Food and Feed), EPIS (Epidemic Intelligence Information System), ECDC (European Centre for Disease Prevention and Control, SIS (EU SHIPSAN ACT Information System), Fishnet (EFCA Fisheries Information System), NATO AIS, CECIS (Common Emergency Communication and Information System).

[6] Integrating Maritime Surveillance – Common Information Sharing Environment CISE draft roadmap (2010). Communication from the Commission to the Council and the European Parliament, COM(2010) 584 final, 1-28, doi:10.2771/64104).
[7] https://ec.europa.eu/maritimeaffairs/policy/integrated_maritime_surveillance_en
[8] Dupont C., Gourmelon F., Meur-Ferec C., Herpers F., Le Visage C. (2020). Exploring uses of maritime surveillance data for marine spatial planning: A review of scientific literature. Marine Policy, Elsevier, 117, pp.103930. (DOI: 10.1016/j.marpol.2020.103930). (hal-02549261)
[9] IACS: International Association of Classification Societies - https://www.iacs.org.uk
[10] OCIMF: Oil Companies International Marine Forum - https://www.ocimf.org

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

1.1 Objectives of the survey

The aim of the MED OSMoSIS survey was initially to investigate the data used by Maritime Surveillance actors, how this data is managed and how it enables them to carry out their daily activities as well as the challenges and difficulties routinely faced.

Data management (acquisition, processing and diffusion) requires tools such as sensors, Geographic Information System (GIS) softwares, Electronic Chart Display and Information System (ECDIS). For this reason, the MED OSMoSIS survey also explored the tools routinely used by Maritime Surveillance actors.

This survey further intended to identify the gaps and/or limitations in terms of governance, data, tools and interoperability between already existing tools. Finally, the correlation between Maritime Surveillance activities and the plans from the European Union Maritime Spatial Planning (EU MSP) Directive were investigated.

1.2 Material and methods

1.2.1 Launching of the survey

Once validated by the MED OSMoSIS partnership, the survey was launched on the 23rd June 2020 using the EU Survey platform[11]. The deadline for answers was initially established on the 31st August 2020 however, in order to ensure the collection of sufficient and relevant data, it was extended until the 16th October 2020. Several official emails requesting participation and providing access to the online survey weblink were sent to the whole partnership by the WP (Work Package) leader.

All OSMoSIS partners were invited to:

- Answer the survey
- Disseminate the survey to relevant stakeholders, experts and organisations involved in Maritime Surveillance activities (e.g. stakeholders acquiring, organizing, processing, sharing and/or analysing Maritime Surveillance information). A specific text to be sent to other relevant stakeholders was also provided to partners in order to facilitate the dissemination process.

[11] https://ec.europa.eu/eusurvey/

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

All Maritime Surveillance stakeholders of interest, regardless of their level of hierarchy, were invited to answer this survey. In addition, all recipients were encouraged to spread out the survey to colleagues and relevant organisations in their network.

1.2.2 Processing of the results

Results were analysed statistically to identify major trends (e.g. data and tools used, needs, etc.) using Microsoft Excel 2010. Comparisons were made country per country to identify similarities (or disparities) in terms of tools and data commonly used or needed. These comparisons would enhance information, data and know-how exchanges hence improving cooperation between the States involved in the partnership.

The analysis of the results was completed in December 2020 following which Shom, leader of the activity, organised online videoconferences to present the results and the first skeleton for the D3.2.1 deliverable to the partnership.

2 Results and discussion

Overall, the online survey enabled the MED OSMoSIS partnership to gather information on:

i) Maritime Surveillance actors and their activities ;

ii) Types of data they use and/or produce;

iii) Tools they use ;

iv) Existing geoportals dedicated to Maritime Surveillance;

v) Gaps, issues and/or limitations they encounter in terms of data/tools/interoperability.

This section is introducing the corresponding results collected with the objective to provide a holistic vision of Maritime Surveillance activities in the Mediterranean area. Note that only relevant information and graphs are shown. Some trends observed might be biased due to a higher participation rate of Slovenia and Spain. However, this part (Part I: Overview of the Maritime Surveillance field) of the report will remain broad to provide a first global vision of Maritime Surveillance activities in EU Mediterranean countries. The second part (Part II: National in-depth analysis) will focus on more specific aspects for each partner country and enable to draw recommendations at national and possibly EU levels.

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

2.1 General information

Although some disparities can be seen among the 9 survey respondents, the total number of participants (T) reached 63. This appears quite satisfying given the length of the survey (See Appendix I – MEDOSMOSIS Survey). National administrations, research institutions and private companies are the most represented among the participants (62%, 13% and 9%, respectively) followed by local and regional administrations (e.g. 5%, Figure 2).

Figure 1: Participation rate per country (N=63 / T63)

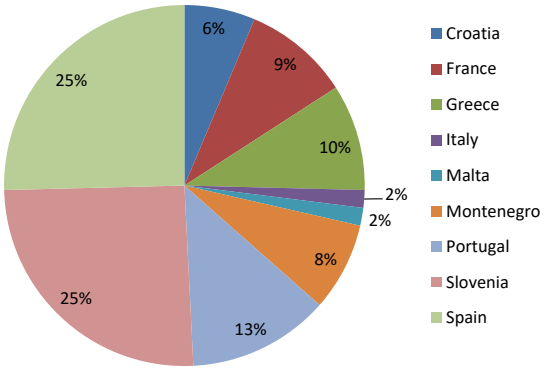
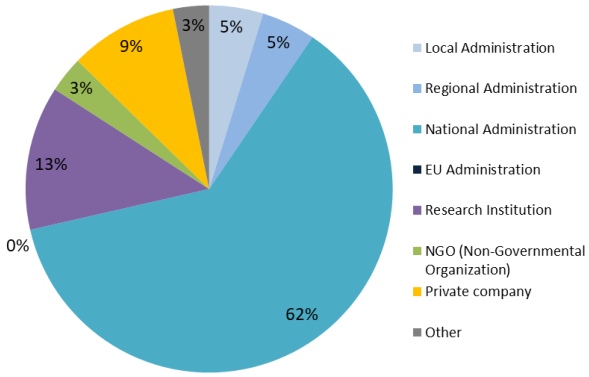


Figure 2: Organisation types (N=63 / T63)



N: Number of responses collected T: Total number of participants

Most of the survey respondents are involved in the surveillance of maritime navigation (N = 32) followed very closely by maritime security and safety (N = 31), protection of marine environment (N = 31), marine pollution surveillance (N = 31) and maritime search and rescue (N = 23), see Figure 3. Note that (N) refers to the number of responses collected for one specific question. Other activities reported (N = 9) include controlling of dangerous goods, port logistics, vessel planning, cargo handling and warehousing services and ships sanitary inspection as shown in Figure 3.

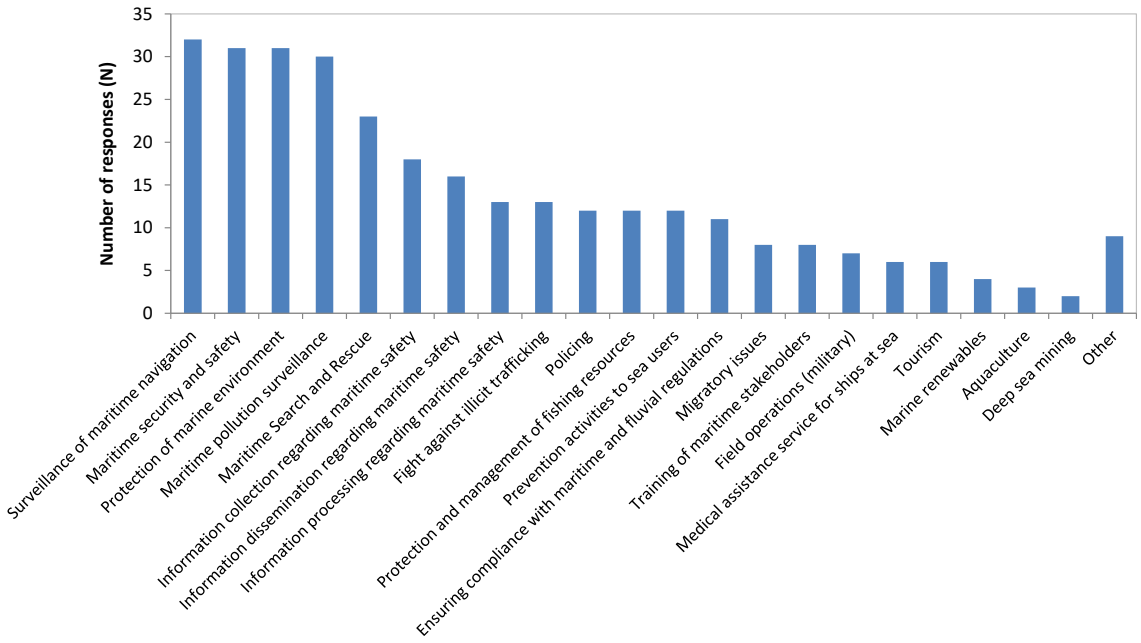
Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

Table 1: List of organisations answering the survey per country

Country & nb of answers	Actors
Croatia (4)	Faculty of Maritime Studies – University of Split Ministry of Marine Affairs Transport and Infrastructures (MSTI) Plovput LLC
France (6)	Marine Nationale - Etat-Major de la Marine (EMM) Direction des Affaires Maritimes (DAM) Ministère de la transition écologique et solidaire (MTES) DDTM/DML Shom COFGC
Greece (6)	Hellenic Ministry of Maritime Affairs and Insular Policy Hellenic Coast Guard (HCG) CERTH Hellenic Centre Marine Research
Italy (1)	Guardia di Finanza
Malta (1)	Transport Malta
Montenegro (5)	Administration for MAritime Safety and Port Management (AMSPM) Ministry of Agriculture and Rural Development Montenegro custom administration
Portugal (8)	Portuguese Navy
Spain (16)	SASEMAR IROX ONA SAFE & CLEAN Parc Natural de Cap de Creus AERTEC Autoridad Portuaria de Valencia Autoridad Portuaria de Alicante Spanish Institute of Oceanography (IEO) Ocean Cleaner Technology INTA Servicio de Explotación de Puertos. Dirección General de Puertos, Aeropuertos y Costas
Slovenia (16)	Slovenian Environment Agency / Agencija Republike Slovenije za okolje / ARSO Slovenian Maritime Administration (SMA) Fining Port of Koper - Luka Koper FURS FU Koper (Finančna uprava republike Slovenije, Finančni urad Koper, Sektor za carine, OMK Luka Koper) Luka Koper INPO Ministère de l'environnement et de l'aménagement du territoire (Ministrstvo za okolje in prostor) Morigenos - Slovenian Marine Mammal Society National Institute Of Public Health Slovenia - OE KOPER NAVTIK, VALTER SUBAN s.p. Pubblic Institute Landscape Park Strunjan Department for safety of coastal sea University of Ljubljana, Faculty of Maritime studies and Transport

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

Figure 3: Participants' Maritime Surveillance activities



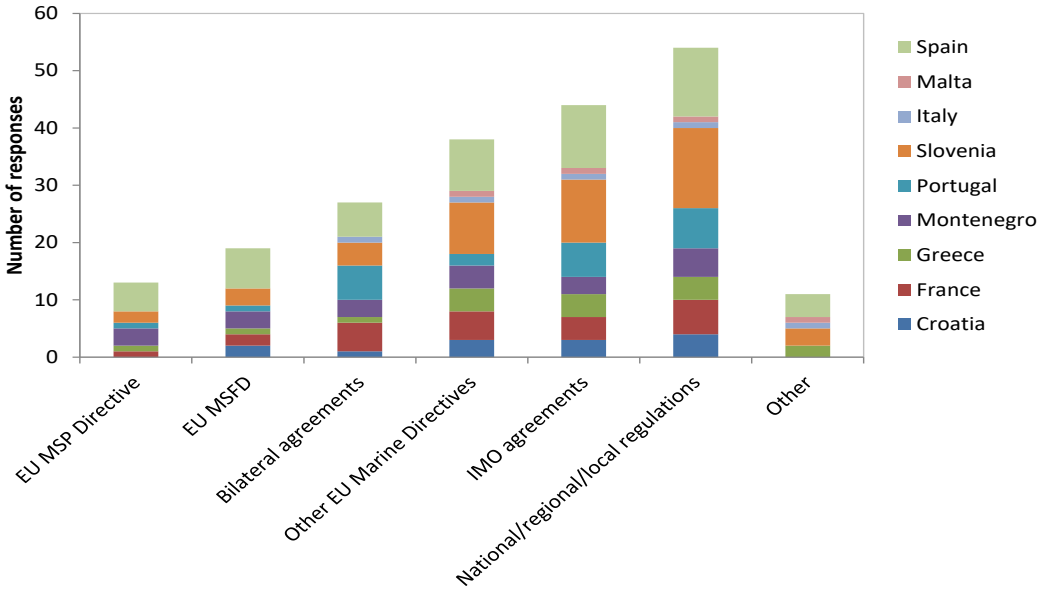
2.2 Governance

At first sight, the regulations and/or directives affecting most of the contributors' activities are national, regional and/or local regulations (N = 54), followed by the International Maritime Organisation (IMO) agreements (N = 44; Figure 4). Other directives / regulations include Union Customs Code, International conventions and agreements (e.g. UNCLOS, SOLAS, Hamburg Convention, ACCOBAMS, etc.), International Health regulations and MARPOL. The trend observed seems very similar in several participant countries (Figure 4).

Nevertheless, a deeper analysis, at national level, is needed to clarify how governance and decision-making are structured in each country. For instance, this deeper analysis could help to understand why it was more difficult for some countries to collect answers from relevant stakeholders. At EU level, this would also enable to show a need of harmonization in terms of governance of Maritime Surveillance activities. This deeper analysis will be reported in Section 2.8: Interaction between Maritime Spatial Planning (MSP) and maritime surveillance.

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

Figure 4: Regulation impacting participants' activities
MSP: Maritime Spatial Planning. MSFD: Maritime Strategy Framework Directive. IMO: International Maritime Organisation.



2.3 Data

In order to collect information as precise as possible from participants, data was separated in two categories: the data used and the data produced. The Data used includes all data related to Maritime Surveillance activities used by the participant, but provided by an organisation different from the participant's one. The data produced refers to all data related to Maritime Surveillance activities that is produced by the participant's organisation. Additional relevant information was collected such as data formats, dissemination restrictions, language for data shared and data suppliers.

2.3.1 Type of data used

Overall, the most commonly used data consist of AIS (N = 43), Nautical charts (N = 33), remote sensing data (N = 28), VMS (N = 28) and forecast products (N = 27) (Figure 5, left). Some participants are not providing any answer (N = 12) to that question, however in the comments to why they don't use the data, answer show it is either because they do not consume data as it is not needed for their activity (N=7), because they are producer of data (N=4) or because of a lack of technical skills/resources (N=1). The "Other" category of data used includes (free text answers):

- Croatia: Case studies from practice;
- Greece: LRIT;
- Slovenia: Port of Koper traffic flow, International databases (GISIS, EQUASIS, Marine Traffic, Vessel Finder...), IMO Virtual

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

– publications, CCTV, HF RADAR, Precise bathymetry survey, International Databases, EMSA CSN.

Figure 6: Type of data used

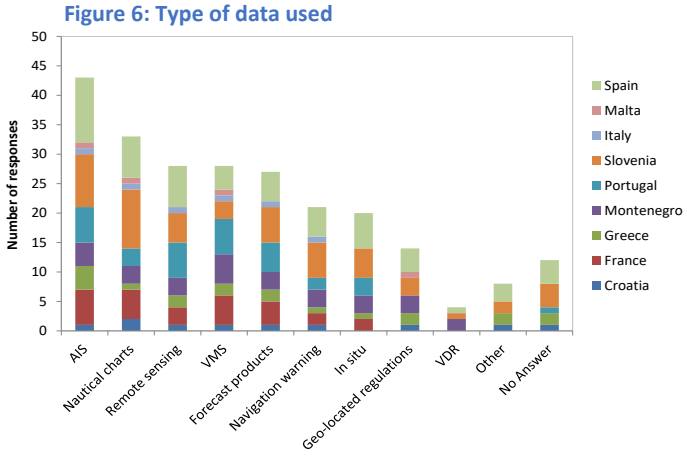
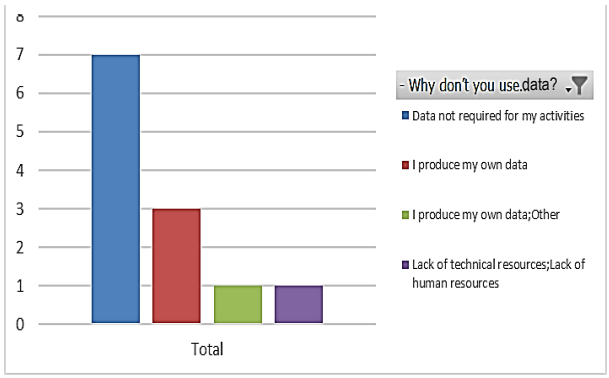
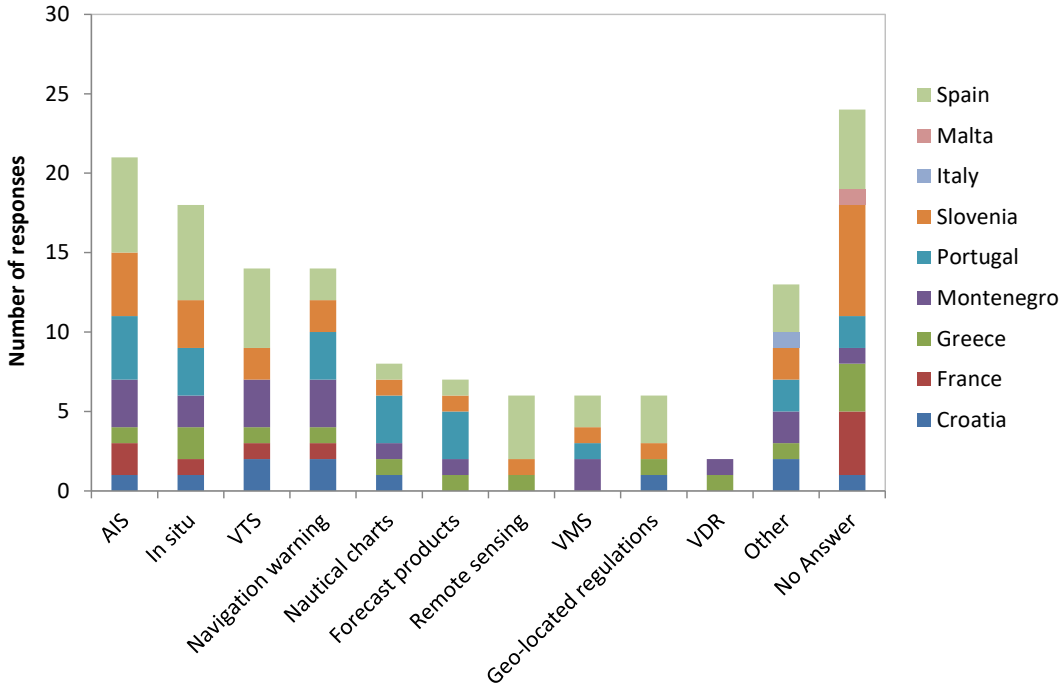


Figure 5: Reasons for not using the data



2.3.2 Type of data produced

Figure 7: Type of data produced



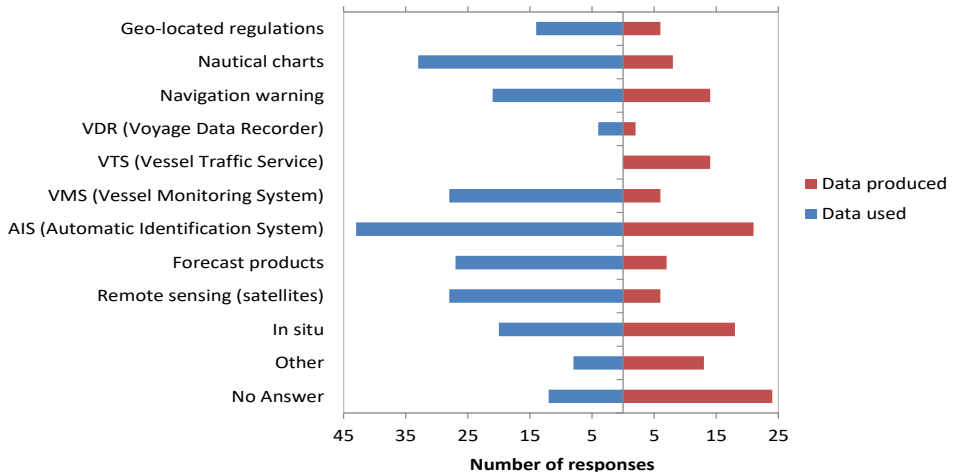
Much less data is directly produced by the participant's institution. This explains the large amount of "no answer" responses collected. This feature is also clearly highlighted in Figure 8 which shows that the most commonly produced data are AIS (N = 21), in situ data (N = 18), VTS (Vessel

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

Traffic Service) and Navigation warnings (N = 14, resp.). The "Other" category of data produced includes (free text answers):

- Croatia: Remote sensing ATONs, monthy/anual statistic of received/sent MSI, number of distress/urgency/safety calls, type of calls, nature of calls;
- Greece: NMEA (AIS DATA FORMAT);
- Italy: Radar stations, military vessels and military airplane;
- Montenegro: Own meteo stations;
- Portugal: Electro-optic surveillance;
- Slovenia: EU SHIPSAN ACT Information System (SIS);
- Spain: Biological information, detections made by aircraft units, position where samples are retrieved by our units (helicopters and ships), data collected by aerial surveillance (slick polygon detected by the SLAR[12], pollution spots detected by EPA[13], IR[14], MRW[15], UV[16], photographs, surface scanned at detection time) and vessel course of the ship detected unloading.

Figure 8: Comparison between data used and produced among different types of data proposed in the survey



[12] SLAR: Slide Looking Airbone Radar
[13] EPA: Environmental Protection Agency (https://www.epa.gov/)
[14] IR: Infrared scanning
[15] MRW: Morphological Random Walker (method for hyperspectral anomaly detection)
[16] Ultraviolet scanning.

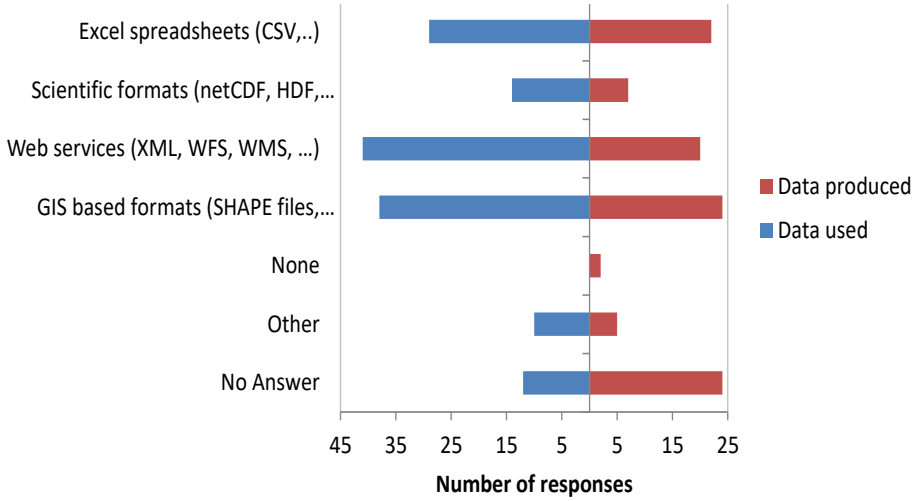
Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

2.3.3 Data formats

For both data used and produced, the most common formats employed are web services (XML, WFS, WMS …), GIS based formats (SHAPE files, raster images) and Excel spreadsheets (CSV) as shown in Figure 9. The "Other" category of formats reported includes (free text answers):

- Greece: NMEA (AIS data format);
- Portugal: Data stream (NMEA, ARPA), Video stream;
- Slovenia: PDF, Word documents.

Figure 9: Formats for used and produced data



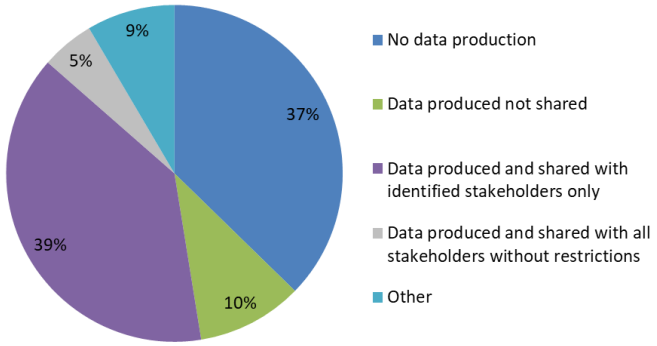
2.3.4 Sharing and diffusion of the data produced

49% of the participants reported restrictions for the dissemination of the data they produce. The data produced is mainly shared with identified stakeholders: 39% indicate that restrictions depend on the type of data while 10% don't share their data at all (Figure 10). Only 5% of the participants share the data they produce in open source.

This feature emphasizes the difficulties that Maritime Surveillance authorities might face with regards to nautical information exchanges as data is usually confidential. It appears that the sharing of the data is not spontaneously initiated and collaboration agreements therefore have to be made between the various authorities to for it to take place.

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

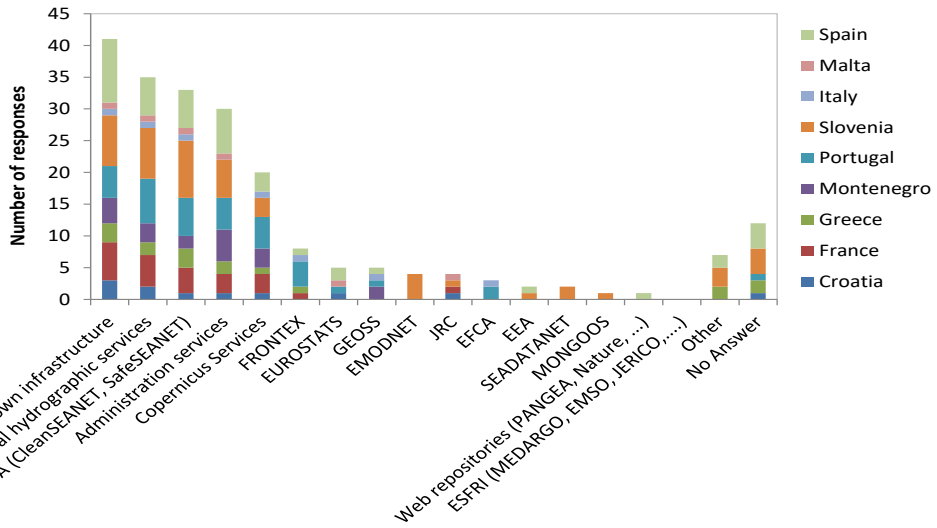
Figure 10: Data dissemination restriction
(N = 63 / T = 63)



2.3.5 Data suppliers

Participants mainly use data provided by their own organisation (N = 41) – which appears inconsistent with the fact that less data are produced than used. This could be explained by the fact that participants have answered on their own behalf and not on behalf of their organisation. National hydrographic services (N = 35) come in second position among the reported data suppliers, followed by the European Maritime Safety Agency (EMSA – N = 33). Among the EU agencies, the most popular data suppliers with Maritime Surveillance actors are EMSA and Copernicus, which are used by contributors of very different nationalities. Other data suppliers reported by the participants are summarized in Figure 11.

Figure 11: External data suppliers



EMSA: European Maritime Safety Agency; FRONTEX: European Border and Coast Guard Agency; EUROSTATS: Statistical office of the EU; GEOSS: Global Earth Observation System of Systems; EMODNET: European Marine Observation and Data Network; JRC: Joint Research Centre of the EU; EFCA: European Fisheries Control Agency; EEA: European Environment Agency; SEADATANET: Pan-European infrastructure for ocean & marine data management; MONGOOS: Mediterranean Operational Network for the Global Ocean Observing System; ESFRI: European Research Infrastructures.

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

Among the list of data suppliers proposed in the survey, participants were asked which ones they were unfamiliar with. The least known of are MONGOOS (Mediterranean Operational Network for the Global Ocean Observing System) and ESFRI (European Research Infrastructures), e.g. MEDARGO, EMSO, JERICO, etc. with N = 15 for both. Then come SEADATANET (Pan-European infrastructure for ocean and marine data management) with N = 13, GEOSS (Global Earth Observation System of Systems) N = 12, EMODNET (European Marine Observation and Data Network) with N = 11 and the EEA (European Environment Agency) with N = 9. It is possible are those data suppliers are more sollicited in other fields than maritime security and surveillance such as Marine energy and mining resources or Marine biological resources. The survey however didn't enable the collection of further details.

Additional suppliers were mentioned by participants as shown in Table 2.

Table 2: Additional data suppliers for Greece, Slovenia and Spain

Country	Other data suppliers identified
Greece	The fishing vessels that are obliged by the legislation to transmit data to the Fisheries Monitoring Center (FMC) National Meteorological Service
Slovenia	National services (VTS, Port of Koper, Harbur Master...) International databases (IMO GISIS, Equasis, Thetis...) IMO GISIS, EQUASIS National VTMIS, Port of Koper, Harbour Master Office, IMO GISIS
Spain	T-MEDNet[17], Josep Pascual[18]; Data detected and some layers of the corresponding zones have been collected / created by the participant himself. The information layers used can be found on the internet or provided / created by colleagues of the participant.

[17] T-MEDNet: Website linked to several INTERREG EU projects (e.g. MPA-ENGAGE) on surveying and monitoring Marine Protected Areas in the Mediterranean (mostly temperature) (source: https://t-mednet.org).
[18] Josep Pascual: Monitoring volunteer that has performed 45 years of oceanographic and meteorological observations at a coastal station in the NW Mediterranean (source: https://link.springer.com/article/10.1007/s10236-019-01285-z).

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

2.4 Tools

Four categories of tools were defined in the MED OSMoSIS survey, depending on whether they are used for data acquisition, processing, diffusion or displaying.

However, the difference between the notion of data diffusion and data displaying might not have been very clear to some participants and the analysis of the answers to this question shall be carefully made.

Data display corresponds to the action of consultation by a user of a data layer. Tools for data display include geoportals and GIS software (QGIS, ArcGIS, etc.). For Maritime Surveillance activities, this can be some on-board tools/software allowing crew members to receive and display data (e.g. ECDIS).

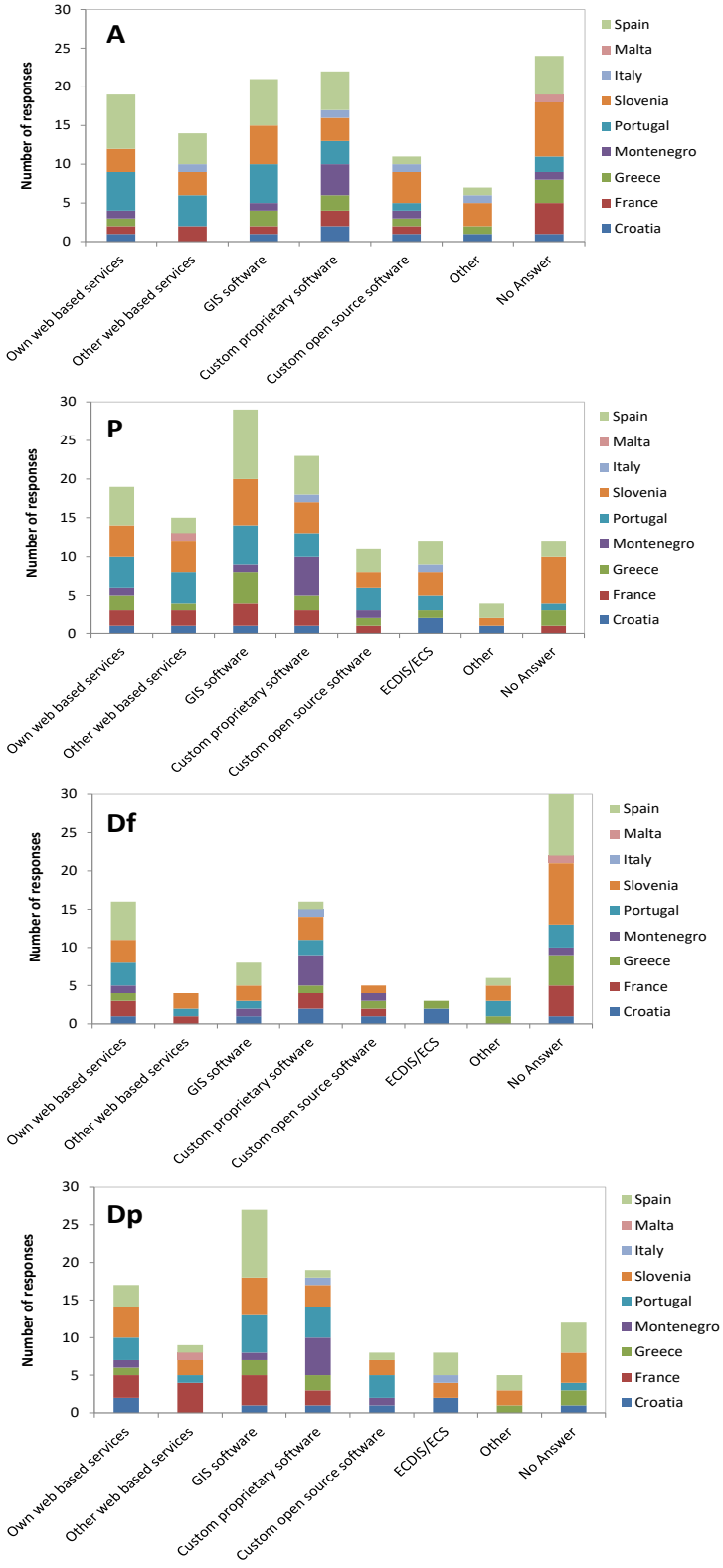
Data diffusion implies that the data provider makes data available to users. The tools used to disseminate the data are data servers –provided for instance by GIS software (e.g. QGIS server, ArcGIS server, etc.) or the open source cartographic engine MapServer.

The “diffusion step” means that the data is not accessible to the user, and a tool is necessary to make it available. The “displaying step” means that data is available, but the user needs a tool to consult it.

Information collected regarding tools commonly used for each of the 4 steps is presented in Figure 12 and Table 3. It appears that GIS software are the most widely used tools for data acquisition (N = 21), processing (N = 29) and displaying (N = 27). Customized proprietary softwares are also widely used for data acquisition (N = 22), processing (N = 23), diffusion (N = 16) and displaying (N = 19), perhaps because it meets more specifically the needs of Maritime Surveillance actors. Customized open source softwares are barely used compared to other tools for each of the 4 steps (N = 11; 11; 5; 8, respectively). A large number of “no answers” was collected for the data acquisition and diffusion steps: N = 24 and N = 30, respectively (Figure 12). This is probably because few contributors produce and share their own data.

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

Figure 12: Tools commonly used by participants for data acquisition, processing, diffusion and display A: acquisition; P: Processing; Df: Diffusion and Dp: Displaying (N = 63 / T = 63).



Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

Table 3: MED OSMoSIS Survey Contributors Tools (4 categories combined)

Type of tool	Tool name	Nb of quotes
Own web based services	Géolittoral	1
	NAVY WEB SERVICES	1
	www.morigenos.org	1
	oversee	1
	own-developed	1
	several python, R, JScript etc. libraries & frameworks	1
	several Linux&Windows tools & libraries	1
	custom solution	1
	Siva	1
Other web based services	IMS/SEG	1
	Géobretagne	1
	Copernicus	1
	Google Earth	1
	EMSA	1
	CleanSeaNet	1
	IMS	1
	DATASHOM	1
	Marine Traffic	1
	Météofrance	1
	Allmetsat	1
	Port Net	1
GIS software:	QGIS	6
	ESRI platform & products (ArcGIS included)	6
	Caris	1
	Global mapper	2
	VTS software	1
	SEG	1
	JORA	1
	ANAIS	1
	SPATIONAV	1
	Google Earth	1
	GIS PROPIOS	1
Custom proprietary software:	VTMIS System	3
	SPATIONAV	1
	I4D marine	1
	ANAIS	1
	Oversee	1
	Costa Segura	1
	MS OFFICE	1
	outsource-developed	1
	IBL (iblsoft.com)	1
	MATLAB	1
	Java scripts	1

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

	Visualization of AIS is also done via software developed by the respective equipment manufacturers	1
	C4i	1
Custom open source software:	CMS: own-developed, WebGUI, Typo3, etc.	1
	Several JScript libraries & frameworks	1
	Petri net tools	1
ECDIS/ECS:	TRANSAS/WARTSILA ECDIS	3
	DEMBRIDGE MARINE	1
	GISMAR	1
	KDI (expensive, restricted access)	1
Other:	PDF	1
	CLEANSEANET SOFTWARE	1
	Wartsila VTMIS	1
	Ship plotter	1
	FOR SASEMAR	1

2.5 Gaps

Several gaps and limitations were identified by the participants and are shown in Figure 13. The needs mostly reported are linked to lack of skills, manpower, funds and equipment (N = 33). The lack of interoperability among organisations (N = 24), the data sharing/access (N = 21), the lack of tools to handle the data (N = 19), data confidentiality (N = 17) as well as a lack of interoperability across state borders (N = 16) also appear as significant issues for Maritime Surveillance actors. Figure 14 also highlights a relative homogeneity in the needs identified by several countries of the partnership. However, considering the unequal level of participation from partner countries, this may be further analysed in the national reports.

Meaningful information was also collected regarding tools requirements and is short-listed in Table 4. Among others, shortfalls were reported with regards to fusion/correlation between maritime information and data updates. Difficulties in exchanging data between Member States and IPA[19] countries (Montenegro) are also reported. More detailed information is required in order to draw recommendations to address these gaps within each partner country, in particular from Croatia,

[19] From January 2007 onwards, the Instrument for Pre-Accession Assistance (IPA) replaces a series of European Union programmes and financial instruments for candidate countries or potential candidate countries, namely PHARE, PHARE CBC, ISPA, SAPARD, CARDS and the financial instrument for Turkey. The IPA beneficiary countries are divided into two categories 1) EU candidate countries (Turkey and the former Yugoslav Republic of Macedonia) are eligible for all five components of IPA; 2) Potential candidate countries in the Western Balkans (Albania, Bosnia-Herzegovina, Montenegro, Serbia, and Kosovo under UN Security Council Resolution 1244/99) are eligible only for the first two components.

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

Greece, Italy and Slovenia where no tool gaps were mentioned. This specific topic shall be addressed in respective national reports.

Figure 13: Gaps and limitations highlighted by MED OSMoSIS survey contributors (N = 63 / T = 63

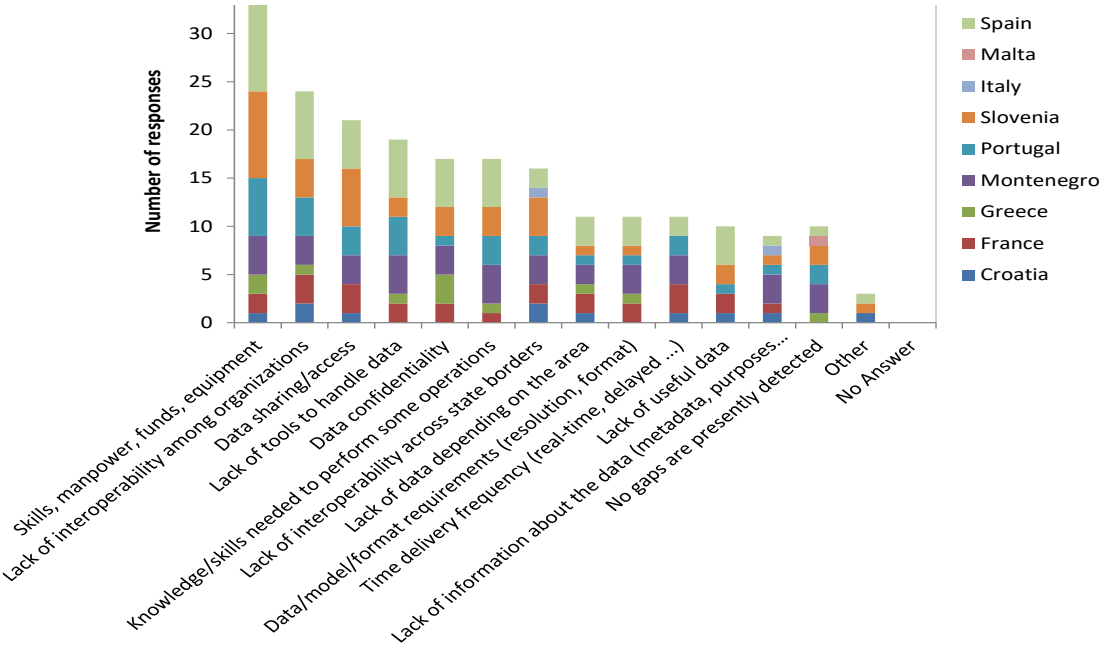


Table 4: Gaps identified by contributors

Country	Gaps identified
Croatia	No gaps reported in the survey (more details in national reports)
France (N = 3)	– Improvement needed for the fusion-correlation of maritime information as well as « consolidation » of the data itself – Depending on the GIS: voyage data not displayed / AIS not up-to-date
Greece	No gaps reported in the survey
Italy	No gaps reported in the survey
Montenegro (N = 3)	– Not possible to exchange data with other EU countries as Montenegro is not a member of EU (application for SafeSeaNet and CISE membership)
Portugal (N = 3)	– Pattern detection, more robust alarmistic – Inter connection – Tools limited regarding big data processing
Slovenia	No gaps reported in the survey
Spain (N = 5)	– Lack of access to raw Radar data – Difficulty to improve the tools – Include artificial intelligence in future projects – Specific tools for specific measurement (e.g. env. radioactivity)

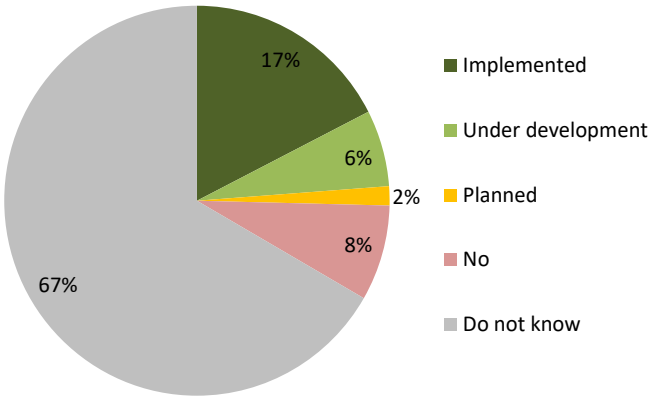
Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

2.6 Geoportal dedicated to Maritime Surveillance

Participants were asked to communicate about the existing geoportals handling the data related to Maritime Surveillance activities. Only 25% of the participants provided information on such geoportals: 17% indicated that a national geoportal was already implemented, 6% that a geoportal was under development and 2% that such a geoportal was planned.

More than half of the participants (67%) were not aware of the existence of such a platform (Figure 14). This suggests that very few geoportals related to Maritime Surveillance activities are available and used.

Figure 14: National geoportals for Maritime Surveillance activities' data sharing or display (N = 63 / T = 63)



More details were collected regarding the national geoportals already implemented and are listed in Table 5. Some geoportals are available to the public (e.g. Geolittoral, Poseidon) whereas others are dedicated to confidential purposes (e.g. MINARM, HKOM).

Further details are needed, such as information on the similarities and the interoperability of these existing platforms, in order to facilitate data and information exchanges and to drive the development of platforms for countries without one. This is expected to be addressed in the national reports.

Table 5: Existing data portals related to Maritime Surveillance activities and web access (when provided)

Country	Geoportal reported in the survey (free text)	Public access	Language(s)	Comments
Croatia	--	--	--	
France	Geolittoral: http://www.geolittoral.developpement-durable.gouv.fr/sommaire.php3	Yes	French	
	MINARM	No	French	
	SPATIONAV	No	French	
Greece	https://poseidon-new.hcmr.gr/	Yes	English Greek	
Montenegro	--	--	--	
Portugal	Hydrographic geoportal	?	Portuguese	

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

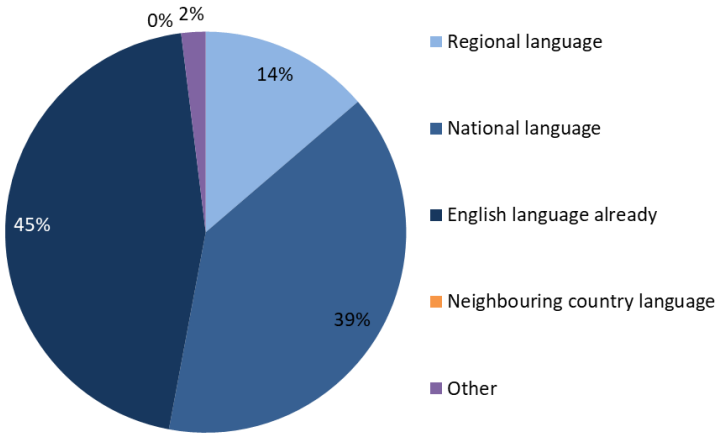
Slovenia	http://gis.arso.gov.si/atlasokolja/profile.aspx?id=Atlas_Okolja_AXL@Arso	Yes	English Slovene	Environmental data (ex : water quality), bathing water monitoring stations
Spain	Institut Cartogràfic i Geològic de Catalunya: https://www.icgc.cat/en/Applications http://sig.intranet.gencat.cat/portalsig.html https://www.miteco.gob.es/es/biodiversidad/servicios/banco-datos-naturaleza/default.aspx	Yes No Yes	English Spanish Catalan English Spanish French Catalan Galician Basque	

2.7 Data interoperability

2.7.1. Language

A key to the exchange of data and information is the language used by the various actors. The survey shows that depending on the data being shared with restrictions or in open source, English is the language mainly used for the diffusion of the data produced (45%), followed by National languages (39%). Regional languages can also be used at a smaller scale (14%) as illustrated by Figure 15.

Figure 15: Data language (N = 63 / T = 63)



2.7.2. CISE

Started in 2009, the CISE (Common Information Sharing Environment) project is dedicated to the setting up of a sharing environment for maritime surveillance data between EU Member States. The aim of CISE is to improve the efficiency, quality, responsiveness and coordination of surveillance operations. As Figures 16 and 17 show, 46% of participants are aware of the CISE data exchange model, among which 16% are members of CISE project.

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

Figure 17: Awareness of CISE project among participants

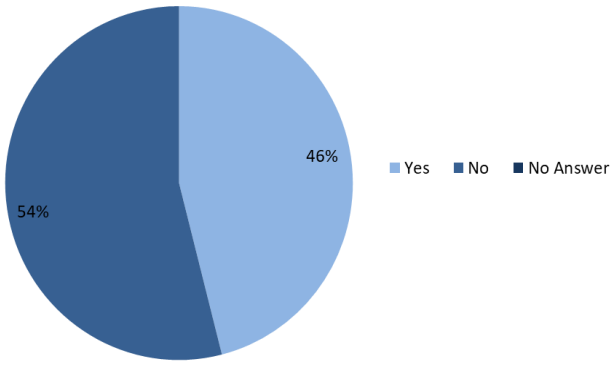
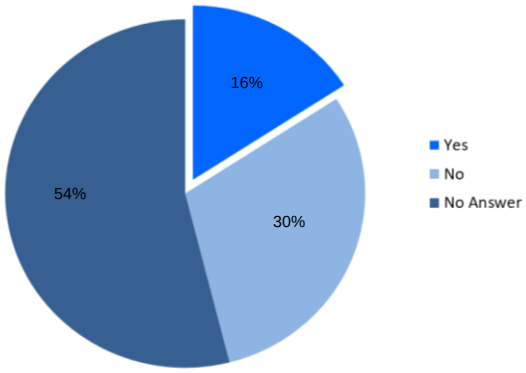


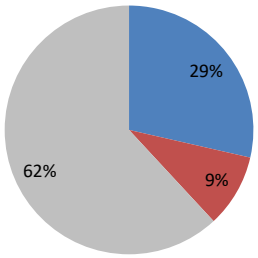
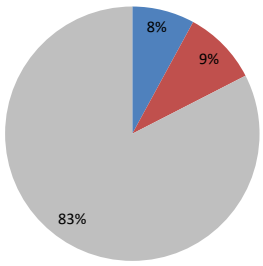
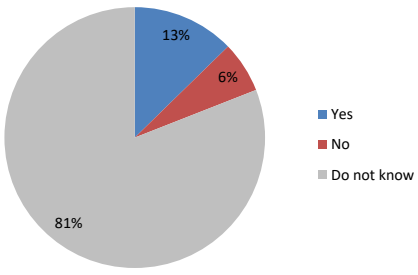
Figure 16: CISE Members among participants



2.8 Interaction between Maritime Spatial Planning (MSP) & Maritime Surveillance

Finally, the interactions between Maritime Surveillance activities and the plans of the EU MSP Directive were investigated. Figure 18 shows that most participants at the time of the survey are unaware of MSP plans.

Figure 18: Interaction between Maritime Surveillance and spatial planning activities

Do you think the EU Directive on MSP and the associated National plans have any impact on Maritime Surveillance activities?	Are Maritime Surveillance activities being taken in proper consideration in MSP plans?	Are MSP plans results being taken in proper consideration in maritime activities plans?
		

It appears that little connection has been established so far between the actors of Maritime Surveillance and the MSP community. The EU MSP directive seems little known to Maritime Surveillance actors since, at the time of the survey, over 80% of the participants were unaware of the impact of national MSP plans on their activities, or of the existence itself of MSP plans.

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

The establishment of an interaction between these 2 communities is a key objective of the actions carried out by Shom in the framework of the MSP MED project (CINEA/EMFF). In this context, a transboundary workshop between Italy, Monaco and France may be organised to develop a dialogue between MSP and Maritime Surveillance communities and relevant stakeholders. The objective of such a workshop would be to focus on the importance of MSP data for the Action of the State at sea activities, and on the integration of its cartographic representation. It also would enable to assess how the areas of the RAMOGEPOL plan are taken into consideration in the National plans resulting from the MSP Directive. This cross-border workshop represents an opportunity for both MSP and Maritime Surveillance communities to meet and to discuss their respective needs and views on the coupling of navigation safety information and national MSP plans. The expected outcome would be recommendations and identification of best practices to ease the cross-analysis of geographical information layers of common interest. The conclusions of this activity carried out within the MSP MED project would be shared with the MED OSMoSIS project.

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

3 Conclusion

The MED OSMoSIS survey enabled the partnership to collect information on i) Maritime Surveillance actors and their activities; ii) the type of data they use and/or produce; iii) the tools they use; iv) the existing geoportals dedicated to Maritime Surveillance activities and v) the gaps, issues and/or limitations they encounter in terms of data/tools/interoperability.

This is a first significant step towards a full understanding of the organisation of Maritime Surveillance activities in the EU Mediterranean countries. The information gathered using this survey can now be used as a shared foundation to focus on specific and relevant aspects in each partner country, such as the governance of Maritime Surveillance activities, gaps and issues in terms of data/tools/interoperability and the web platforms managing Maritime Surveillance and navigation safety data.

Although the actors of the maritime surveillance surveyed might have different responsibilities, duties, human capacities and use different tools, a common output is the lack of knowledge regarding MSP (MSP literacy) that was shared by more than ¾ of the maritime surveillance offices. The report also shows that MSP was not much considered for maritime activities plans at the time of the survey. This might be related to the fact that the process of maritime spatial planning was not yet achieved as the plans were expected by the EU by March 2021, while the survey was conducted before January 2021. The survey also draws attention to the fact that very few geoportals related to Maritime Surveillance activities seem to be available and used.

Cross borders issues are well understood by the different entities, as the highlighted necessity to provide data in a commonly used language reflects. There are however several obstacles such as interoperability of data between different organisations, access to data, data availability depending on the geographic location, and data format.

The CISE project, for which Shom is particularly involved within the MED OSMoSIS project, is meant to address the topic of interoperability and will help enhancing considerably information and data exchange between EU Member States.

The second part of this document will complete this first analysis and provide additional information in the form of “National reports” in order to help drawing recommendations at national and EU levels when relevant.

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

Appendix I – MED OSMoSIS survey

Mediterranean Governance Poll on Maritime Surveillance

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

The MED OSMoSIS project:

MED OSMoSIS is a strategic project funded by the Interreg MED programme that consists in promoting the implementation of a better governance and data exchange among different actors of the MED Area towards the policy development of Integrated Maritime Surveillance in the EU. It is focusing on the development of modules and applications regarding Maritime Surveillance activities in terms of safety and security in order to enhance maritime situational awareness in the Mediterranean Sea.

It aims at facilitating information exchanges that will support the further development of a regional / local smart plug-in capability supporting interoperable, transnational sectoral systems, ensuring their regional, deployable and mobile interface.

It will also explore the application of the current guidelines and capabilities of the on-going evolution of the CISE data exchange model.

It will carry out pilot activities and capitalization actions to test, disseminate and distribute tools and protocols among partners either as being potential users but also as intermediaries to reach other participant entities.

The expected results will include innovative solutions for Maritime Surveillance, the capitalisation on the project's Pilot studies as well as establishing a list of platforms for Maritime Surveillance. The strategic project will finally enable to address the gap between EU Mediterranean countries and IPA Countries (Albania, Bosnia & Herzegovina and Montenegro) related to Maritime Surveillance systems by producing a Guide to improve the IPA countries' surveillance capacities and services at local, regional and national levels.

The partnership brings together 10 partners from 8 coastal states of the Mediterranean: Greece - project leader, Spain, Italy, Portugal, Croatia, Slovenia, Montenegro and France. It gathers public scientific institutions and national authorities in charge of navigation safety and Maritime Surveillance

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

Terms of reference:

Background:

Maritime Surveillance, for the purpose of this questionnaire, is defined as the effective understanding of all activities carried out at sea that could impact the security, safety, economy, or environment of the European Union and its Member States[20,21].

Objectives:

This survey aims at better understanding how Maritime Surveillance data are managed by stakeholders involved in Maritime Surveillance.

Maritime Surveillance data cover all the data related to Maritime Surveillance activities, including those collected by the systems short listed below[22] (non-exhaustive):

- On-board transmission devices : AIS (Automatic Identification System), VMS (Vessel Monitoring System), LRIT (long-range identification and tracking), SSAS (Ship Security Alert System), VHF DSC, MF/HF DSC, Inmarsat C & F distress alert, EPIRB, AIS SART;
- Remote sensing data: Radar, optical (e.g. Sentinel, Lapan) and SAR (Synthetic Aperture Radar) satellites, video, SART;
- Recording systems: VDR (Voyage Data Recorder);
- Other situational data necessary to handle sea accidents (e.g. Meteo-oceanographic data (METOC) conditions, bathymetry, wreck locations, sea currents, S&R zones, maritime limits to identify the area of responsibility of countries bordering the Mediterranean).

It can be real-time or delayed-time data. Maritime Surveillance data also covers data handled by:

- Public International database : IMO GISIS (Global Integrated Shipping Information System), ITU MARS (Maritime mobile Access and Retrieval System), Equasis, Thetis, IACS Ship/company database, OCIMF database (SIRE, OVID)
- International/EU data exchange (between authorities - non public): SSN (Safe Sea Net), SSN-CSD (Safe SeaNet – Central Ship Database), NSW (National Single Window), CSN (Clean Sea Net), TRACES (TRAde Control and Expert System), EUROPHY – (EUROpean PHYTosanitary), RASFF (the Rapid alert system for food and feed), EPIS (Epidemic intelligence information system), ECDC

[20] Integrating Maritime Surveillance – Common Information Sharing Environment CISE draft roadmap (2010). Communication from the Commission to the Council and the European Parliament, COM(2010) 584 final, 1-28, doi:10.2771/64104).
[21] https://ec.europa.eu/maritimeaffairs/policy/integrated_maritime_surveillance_en
[22] Dupont C., Gourmelon F., Meur-Ferec C., Herpers F., Le Visage C. (2020). Exploring uses of maritime surveillance data for marine spatial planning: A review of scientific literature. Marine Policy, Elsevier, 117, pp.103930. (DOI: 10.1016/j.marpol.2020.103930). (hal-02549261)

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

(European Centre for Disease Prevention and Control, SIS (EU SHIPSAN ACT Information System), Fishnet (EFCA Fisheries Information System), NATO AIS, CECIS (Common Emergency Communication and Information System)

The management of this data (acquisition, processing and dissemination) requires some materials tools (e.g. Sensors, Geographic Information System (GIS) software, Electronic Chart Display and Information System (ECDIS)). This questionnaire seeks to identify these tools as well.

This survey also intends to identify the gaps and / or limitations in terms of governance, data, tools and interoperability between already existing tools. The results will be used to suggest recommendations on how to address these gaps and improve interoperability between existing Maritime Surveillance systems, i.e. information exchange between stakeholders.

Finally, the questionnaire will attempt to provide a better understanding of the relationships between Maritime Surveillance activities and the EU MSP (European Union Maritime Spatial Planning) Directive.

Time needed to answer to the survey: 30-40 minutes

Targeted audience:
This survey is intended for stakeholders involved in and / or related to Maritime Surveillance activities.

The questionnaire will be online until 16/10/2020.

Thank you for your cooperation.

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

STAKEHOLDER INFORMATION					
	CONDITION	**QUESTION**	**ANSWER**	**TYPE OF ANSWER**	**MANDATORY**
Q1.		Last name	…… …… ……	Free text	
Q2.		First name	…… …… ……	Free text	
Q3.		Phone number	…… …… ……	Free text	
Q4.		Email	…… …… ……	Free text	x
Q5.		Please indicate the country you represent	❑ Albania ❑ Algeria ❑ Bosnia and Herzegovina ❑ Croatia ❑ Cyprus ❑ Egypt ❑ France ❑ Greece ❑ Israel ❑ Italy ❑ Lebanon ❑ Malta ❑ Montenegro	Dropdown menu, single choice	x

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régional

Project co-financed by the European Regional Development Fund
Projet cofinancé par le Fonds européen de développement régiona

			❑ Morocco ❑ Portugal ❑ Slovenia ❑ Spain ❑ Tunisia ❑ Turkey ❑ Other: ……		
Q6.		Where are you located (e.g. region)?	…… …… ……	Free text	
Q7.		What is the name of your organisation (Official name and acronym, if any)?	…… …… ……	Free text	x
Q8.		Organisation type:	❑ Local Administration ❑ Regional Administration ❑ National Administration ❑ EU Administration ❑ Research Institution ❑ NGO (Non-Governmental Organisation) ❑ Private company ❑ Other: ……	Checkboxes menu, single choice	x
Q9.		To which authority your organisation depends on? (Official name and acronym, if any)?	…… …… ……	Free text	
Q10.		What is your role in Maritime Surveillance?	❑ Representative of the State (public services included) ❑ Local Government Representative ❑ GIS (Geographic Information System) manager ❑ Thematic expert ❑ Data manager	Checkboxes menu, single choice	x

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

			❑ Researcher ❑ Stakeholder ❑ Sea Professional ❑ Other (please provide details): ……		
Q11.		Which activities of Maritime Surveillance are you involved in?	❑ Maritime Search and Rescue ❑ Maritime security and safety ❑ Surveillance of maritime navigation ❑ Migratory issues ❑ Information collection regarding maritime safety ❑ Information dissemination regarding maritime safety (e.g. weather forecasting, tide) ❑ Information processing regarding maritime safety ❑ Policing ❑ Fight against illicit trafficking (e.g. drugs, weapons, counterfeits, protected species, cultural assets) ❑ Protection and management of fishing resources ❑ Protection of marine environment ❑ Maritime pollution surveillance ❑ Training of maritime stakeholders (e.g. sea rescuers) ❑ Prevention activities to sea users ❑ Medical assistance service for ships at sea ❑ Ensuring compliance with maritime and fluvial regulations ❑ Field operations (military) ❑ Aquaculture ❑ Marine renewables ❑ Deep sea mining ❑ Tourism	Checkboxes menu, multiple choices	x

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

			❑ Other: ……		
Q12.		Detail your missions:	…… …… ……..	Free text	
Q13.		Define your scope of responsibility:	…… …… ……..	Free text	
Q14.		Do you collaborate with other stakeholders involved in Maritime Surveillance at national level?	❑ Yes ❑ No	Binary answer, single choice	x
Q15.	Q14 =YES	Please indicate with which stakeholders:	…… …… ……..	Free text	

GOVERNANCE

Please provide information on any limitations you have detected regarding regulations

	CONDITION	QUESTION	ANSWER	TYPE OF ANSWER	MANDATORY
Q16.		Please indicate which regulations and/or directives affect/condition your activities?	❑ IMO (International Maritime Organisation) agreements ❑ EU MSFD (Marine Strategy Framework Directive) ❑ EU MSP (Maritime Spatial Planning) Directive ❑ Other EU Marine Directives	Checkboxes menu, multiple choices	x

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

GOVERNANCE

Please provide information on any limitations you have detected regarding regulations

	CONDITION	QUESTION	ANSWER	TYPE OF ANSWER	MANDATORY
			❑ Bilateral agreements (typically for join crossborder operations) ❑ National/regional/local regulations ❑ Other: ……		

IDENTIFICATION OF THE GIS (Geographic Information System) DATA USED

This part includes all data related to Maritime Surveillance activities that you use.

	CONDITION	QUESTION	ANSWER	TYPE OF ANSWER	MANDATORY
Q17.		Do you use surveillance data that you do not produce?	❑ Yes ❑ No	Binary answer, single choice	x
Q18.	Q17 =YES	What kind of data do you use?	❑ In situ (met-ocean, ARGO, drifters, moorings, ground and ship based radars systems, water samples, lab analysis) ❑ Remote sensing (satellites) ❑ Forecast products ❑ AIS (Automatic Identification System) ❑ VMS (Vessel Monitoring System) ❑ VDR (Voyage Data Recorder) ❑ Navigation warning ❑ Nautical charts	Checkboxes menu, multiple choices	x

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

IDENTIFICATION OF THE GIS (Geographic Information System) DATA USED

This part includes all data related to Maritime Surveillance activities that you use.

	CONDITION	QUESTION	ANSWER	TYPE OF ANSWER	MANDATORY
			❑ Geo-located regulations ❑ Other: ……		
Q19.	Q17 =YES	Which data formats do you use?	❑ GIS (Geographic Information System) based formats (SHAPE files, raster images) ❑ Web service (XML, WFS, WMS, …) ❑ Scientific formats (netCDF, HDF, GRIB...) ❑ Excel spreadsheets (CSV,..) ❑ None ❑ Other: ……	Checkboxes menu, multiple choices	x
Q20.	Q17 =YES	Which data models do you currently use (e.g. CISE data models[23], INSPIRE data model)? (Please, avoid using acronyms)	…… …… ……..	Free text	x
Q21.	Q17 =YES	Who supplies your data?	❑ Your own infrastructure ❑ National hydrographic services ❑ Administration services (complementary from regional or national based systems) ❑ EMSA: European Maritime Safety Agency	Checkboxes menu, multiple choices	x

[20] http://emsa.europa.eu/cise-documentation/cise-data-model-1.5.3/

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

IDENTIFICATION OF THE GIS (Geographic Information System) DATA USED

This part includes all data related to Maritime Surveillance activities that you use.

	CONDITION	QUESTION	ANSWER	TYPE OF ANSWER	MANDATORY
			(CleanSEANET, SafeSEANET) ❑ EFCA: European Fisheries Control Agency ❑ FRONTEX: European Border and Coast Guard Agency ❑ EEA: European Environment Agency ❑ EMODNET: European Marine Observation and Data Network ❑ SEADATANET: Pan-European infrastructure for ocean & marine data management ❑ MONGOOS: Mediterranean Operational Network for the Global Ocean Observing System ❑ JRC: Joint Research Centre of the European Commission ❑ Copernicus Services ❑ EUROSTATS: Statistical office of the European Union ❑ GEOSS: Global Earth Observation System of Systems ❑ ESFRI (MEDARGO, EMSO, JERICO,....): European Research Infrastructures ❑ Web repositories (PANGEA, Nature, ...) ❑ Other: ……		

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

IDENTIFICATION OF THE GIS (Geographic Information System) DATA USED

This part includes all data related to Maritime Surveillance activities that you use.

	CONDITION	QUESTION	ANSWER	TYPE OF ANSWER	MANDATORY
Q22.	Q17 =YES	Are you aware of all the previous listed services?	❑ Yes ❑ No	Binary answer, single choice	x
Q23.	Q22 =NO	If not, which ones are unfamiliar to you?	…… …… ……..	Free text	
Q24.	Q17 =NO	Why don't you use surveillance data?	❑ Data not required for my activities ❑ Lack of technical resources ❑ Lack of human resources ❑ I produce my own data ❑ Other: ……	Checkboxes menu, multiple choices	x

IDENTIFICATION OF THE GIS (Geographic Information System) DATA PRODUCED

This part includes all data related to Maritime Surveillance activities that you produce.

	CONDITION	QUESTION	ANSWER	TYPE OF ANSWER	MANDATORY
Q25.		Do you produce your own surveillance data?	❑ Yes ❑ No	Binary answer, single choice	x

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

IDENTIFICATION OF THE GIS (Geographic Information System) DATA PRODUCED

This part includes all data related to Maritime Surveillance activities that you produce.

	CONDITION	QUESTION	ANSWER	TYPE OF ANSWER	MANDATORY
Q26.	Q25 =YES	What kind of data do you produce?	❑ In situ (met-ocean, ARGO, drifters, moorings, ground and ship based radars systems, water samples, lab analysis) ❑ Remote sensing (satellites) ❑ Forecast products ❑ AIS (Automatic Identification System) ❑ VMS (Vessel Monitoring System) ❑ VTS (Vessel Traffic Service) ❑ VDR (Voyage Data Recorder) ❑ Navigation warning ❑ Nautical charts ❑ Geo-located regulations ❑ Other: ……	Checkboxes menu, multiple choices	x
Q27.	Q25 =YES	Which data formats do you produce?	❑ GIS (Geographic Information System) based formats (SHAPE files, raster images) ❑ Web services (XML, WFS, WMS,...) ❑ Scientific formats (netCDF, HDF, GRIB...) ❑ Excel spreadsheets (CSV,..) ❑ None ❑ Other: ……	Checkboxes menu, multiple choices	x

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

IDENTIFICATION OF THE GIS (Geographic Information System) DATA PRODUCED

This part includes all data related to Maritime Surveillance activities that you produce.

	CONDITION	QUESTION	ANSWER	TYPE OF ANSWER	MANDATORY
Q28.	Q25 =YES	Do you share the surveillance data that you produce?	❑ Yes ❑ No ❑ It depends on data	Binary answer, single choice	x
Q29.	Q28 =”It depends on data”	What kind of data do you share?	❑ In situ (met-ocean, ARGO, drifters, moorings, ground and ship based radars systems, water samples, lab analysis) ❑ Remote sensing (satellites) ❑ Forecast products ❑ AIS (Automatic Identification System) ❑ VMS (Vessel Monitoring System) ❑ VTS (Vessel Traffic Service) ❑ VDR (Voyage Data Recorder) ❑ Navigation warning ❑ Nautical charts ❑ Geo-located regulations ❑ Other: ……	Checkboxes menu, multiple choices	x
Q30.	Q28 =YES or “It depends on	With whom are you sharing those data? (This is for the purpose of recording possible ascending and descending information flows within and among different institutional levels)	…… …… ……..	Free text	

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

IDENTIFICATION OF THE GIS (Geographic Information System) DATA PRODUCED

This part includes all data related to Maritime Surveillance activities that you produce.

	CONDITION	QUESTION	ANSWER	TYPE OF ANSWER	MANDATORY
	data "				
Q31.	Q28 =YES or "It depends on data "	Do your surveillance data involve any dissemination restrictions regarding data confidentiality?	❑ Yes, the data produced are shared with identified stakeholders ❑ No, data produced are shared with all stakeholder without restrictions ❑ Other: ……	Checkboxes menu, single choice	x
Q32.	Q28 =YES or "It depends on data "	In which languages do you share your surveillance data?	❑ Regional languages ❑ National language ❑ English ❑ Bordering countries' languages ❑ Other: ……	Checkboxes menu, multiple choices	x
Q33.	Q32 = « Regional langu ag	Data sharing improves transnational cooperation. This sharing is favoured when data are produced in several	❑ Yes ❑ No ❑ Do not know Explain: ……	Checkboxes menu, single choice	

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

IDENTIFICATION OF THE GIS (Geographic Information System) DATA PRODUCED

This part includes all data related to Maritime Surveillance activities that you produce.

	CONDITION	QUESTION	ANSWER	TYPE OF ANSWER	MANDATORY
	es » or « Country's language »	languages, especially in English. Do you think that an English translation (at least) of your existing data and metadata would be relevant for the information sharing, if it is not already the case?			
Q34.	Q28 =NO or "It depends on data"	Would you be willing to share the surveillance data that you produce?	❑ Yes ❑ No ❑ Do not know	Checkboxes menu, single choice	x
Q35.	Q34 =YES	Please explain :	…… …… ……	Free text	
Q36.	Q28 =NO or "It dep	Why don't you share the surveillance data you produce?	❑ No need identified ❑ Sensitive data ❑ Lack of technical resources ❑ Lack of human resources	Checkboxes menu,	x

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

IDENTIFICATION OF THE GIS (Geographic Information System) DATA PRODUCED

This part includes all data related to Maritime Surveillance activities that you produce.

	CONDITION	QUESTION	ANSWER	TYPE OF ANSWER	MANDATORY
	ends on data"		❑ Implementation of a transmission system in progress ❑ Other: ……	multiple choices	

DATA GAPS

	CONDITION	QUESTION	ANSWER	TYPE OF ANSWER	MANDATORY
Q37.		Which kind of gaps/limitations have you detected regarding data in your daily activities?	❑ Skills, manpower, funds, equipment ➔ Explain : …… ❑ Data confidentiality ➔ Explain : …… ❑ Lack of interoperability among organisations ➔ Explain : …… ❑ Lack of interoperability across state borders ➔ Explain : …… ❑ Lack of tools to handle data ➔ Explain : …… ❑ Lack of data depending on the area ➔ Explain : …… ❑ Lack of useful data	Checkboxes menu, multiple choices	x

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

DATA GAPS					
	CONDITION	**QUESTION**	**ANSWER**	**TYPE OF ANSWER**	**MANDATORY**
			➔ Explain : …… ❑ Data/model/format requirements (resolution, format) ➔ Explain: …… ❑ Data sharing/access ➔ Explain: …… ❑ Lack of information about the data (metadata, purposes of the data) ➔ Explain: …… ❑ Time delivery frequency (real-time, delayed ...) ➔ Explain: …… ❑ Knowledge/skills needed to perform some operations ➔ Explain: …… ❑ No gaps are presently detected ➔ Explain: …… ❑ Other: ……		
Q38.	Q17 =YES	Please explain briefly the gaps/limitations detected in the data that you **use**:	…… …… ……	Free text	

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

DATA GAPS					
	CONDITION	**QUESTION**	**ANSWER**	**TYPE OF ANSWER**	**MANDATORY**
Q39.	Q25 =YES	Please explain briefly the gaps/limitations detected in the data that you **produce** (e.g. needs identified but no technical or financial means to address it):	…… …… ……	Free text	
Q40.		Started in 2009, the CISE (Common Information Sharing Environment) project[24] aims to set a sharing environment for Maritime Surveillance data between EU Member States to improve the efficiency, the quality, the responsiveness and the coordination of surveillance operations.	❑ Yes ❑ No	Binary answer, single choice	x

[24] http://www.emsa.europa.eu/cise.html

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

DATA GAPS					
	CONDITION	**QUESTION**	**ANSWER**	**TYPE OF ANSWER**	**MANDATORY**
		Are you aware of the CISE data exchange model?			
Q41.	Q40 =YES	Are you already a CISE member?	❑ Yes ❑ No	Binary answer, single choice	x

TOOLS (SENSORS, SOFTWARES, …)					
	CONDITION	**QUESTION**	**ANSWER**	**TYPE OF ANSWER**	**MANDATORY**
Q42.	Q25 =YES	Which technologies/tools do you use to **acquire** data?	❑ Own web based services ➔ Can you name it: …… ❑ Other web based services ➔ Can you name it: …… ❑ GIS (Geographic Information System) software ➔ Can you name it: …… ❑ Custom proprietary software ➔ Can you name it: …… ❑ Custom open source software ➔ Can you name it: …… ❑ Other: ……	Checkboxes menu, multiple choices	x

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

TOOLS (SENSORS, SOFTWARES, …)					
	CONDITION	**QUESTION**	**ANSWER**	**TYPE OF ANSWER**	**MANDATORY**
Q43.		Which technologies/tools do you use to **process** data?	❑ Own web based services ➔ Can you name it: …… ❑ Other web based services ➔ Can you name it: …… ❑ GIS (Geographic Information System) software ➔ Can you name it: …… ❑ Custom proprietary software ➔ Can you name it: …… ❑ Custom open source software ➔ Can you name it: …… ❑ ECDIS/ECS: Electronic Chart Display and Information System ➔ Can you name it: …… ❑ I don't process data ❑ Other: ……	Checkboxes menu, multiple choices	x
Q44.	Q28 =YES or "It depends on data"	Which technologies/tools do you use to **disseminate** data?	❑ Own web based services ➔ Can you name it: …… ❑ Other web based services ➔ Can you name it: …… ❑ GIS (Geographic Information System) software ➔ Can you name it: ……	Checkboxes menu, multiple choices	x

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

TOOLS (SENSORS, SOFTWARES, …)					
	CONDITION	**QUESTION**	**ANSWER**	**TYPE OF ANSWER**	**MANDATORY**
			❑ Custom proprietary software ➔ Can you name it: …… ❑ Custom open source software ➔ Can you name it: …… ❑ ECDIS/ECS: Electronic Chart Display and Information System ➔ Can you name it: …… ❑ Other: ……		
Q45.	Q17 =YES	Which technologies / tools do you use to **display** data?	❑ Own web based services ➔ Can you name it: …… ❑ Other web based services ➔ Can you name it: …… ❑ GIS (Geographic Information System) software ➔ Can you name it: …… ❑ Custom proprietary software ➔ Can you name it: …… ❑ Custom open source software ➔ Can you name it: …… ❑ ECDIS/ECS: Electronic Chart Display and Information System ➔ Can you name it: ……		x

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

TOOLS (SENSORS, SOFTWARES, …)					
	CONDITION	**QUESTION**	**ANSWER**	**TYPE OF ANSWER**	**MANDATORY**
			❑ Other: ……		
Q46.		Are there any specific features missing in the tools that you use?	…… …… ……	Free text	

GEOPORTAL					
	CONDITION	**QUESTION**	**ANSWER**	**TYPE OF ANSWER**	**MANDATORY**
Q47.		Is there a national geoportal allowing to share/display surveillance data in your country?	❑ Implemented ❑ Under development ❑ Planned ❑ No ❑ Do not know Explain: …… …	Checkboxes menu, single choice	x
Q48.	Q47 = « Implemented »	Geoportal URL or name:	…… …… ……	Free text	x

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

LINK BETWEEN MARITIME SPATIAL PLANNING (MSP) AND MARITIME SURVEILLANCE					
	CONDITION	**QUESTION**	**ANSWER**	**TYPE OF ANSWER**	**MANDATORY**
Q49.		Do you think the EU Directive on MSP (Maritime Spatial Planning) and the associated national plans have had any impact on Maritime Surveillance activities?	❑ Yes ❑ No ❑ Do not know Explain why: ……	Checkboxes menu, single choice	x
Q50.		Are Maritime Surveillance activities being taken in proper consideration in MSP (Maritime Spatial Planning) plans?	❑ Yes ❑ No ❑ Do not know Explain: …… …	Checkboxes menu, single choice	x
Q51.		Are MSP (Maritime Spatial Planning) plans results being taken in proper consideration in maritime activities plans?	❑ Yes ❑ No ❑ Do not know Explain: …… …	Checkboxes menu, single choice	x

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional

GENERAL COMMENTS					
	CONDITION	**QUESTION**	**ANSWER**	**TYPE OF ANSWER**	**MANDATORY**
Q52.		Do you have any other comments, questions or concerns on the themes addressed in this survey?	…… …… ……	Free text	
Q53.		Do you want to be notified about the poll results?	❑ Yes ❑ No	Binary answer, single choice	x

Project co-financed by the European Regional Development Fund

Projet cofinancé par le Fonds européen de développement régional