BlueMassMed

BMM Thematic Report.

Users Operational Perspective.

Annex I: BMM Users Requirements

Date: 27 July 2012

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1.   Introduction.

1.1.   Background

In February 2008, the Commission published a set of three working documents taking stock of the status of offshore surveillance, monitoring, tracking and reporting activities in the Member States. The first document establishes which authority in each coastal Member State is responsible for ten offshore activities (customs, border control, Marine pollution, fisheries control, maritime safety, maritime security, vessel traffic management, accident and disaster response, search and rescue, law enforcement). The second describes the existing cross-border cooperation in these areas between the Member States in five sea regions (Atlantic Ocean, Baltic Sea, Black Sea, Mediterranean Sea and North Sea) on the basis of information provided by national authorities. The third working document provides a description of the maritime surveillance systems currently operating at EU level. It is not an exhaustive list and, since it was published, there should been several exchanges between the Member States and the Commission on experiences gained in integrating maritime surveillance systems.

Additionally, there are a number of projects, activities and studies relevant to maritime surveillance which is supported by different Directorate-Generals: European Commission - research projects such as MARISS, LIMES, TANGO, MARNIS, EUROSUR or the Framework Programme 7 project OPERAMAR. The Commission has also commissioned a study by an external consultant entitled "Legal Aspects of Maritime Monitoring and Surveillance data submitted to the European Commission in November 2008". An overview of existing surveillance and monitoring activities at national and Community level is available.

The pilot project is a step towards achieving the aims to render existing monitoring and integrated tracking systems more interoperable between at least two coastal Member States to the Mediterranean and its Atlantic approaches (hereinafter "the project partners"). The objectives of the project are:
To determine the extent to which the project partners are potentially able to set up an exchange of information mechanism at a cross sector and cross border level that is viable and durable in time. **And to identify the legal, administrative, technical obstacles** that may hinder the exchange of the above mentioned information on a long-term basis.
To determine the extent to which the project partners are potentially able to set up an exchange of information mechanism, the project features a combined process of a) **establishing users' requirements** for a durable and interoperable exchange system and studying related users' issues, b) **addressing technical issues** relative to implementing these requirements, c) **studying legal aspects,** and d) defining and experimenting a system that implements an interim and core requirement for exchanges. This process will endeavor to set up viable and durable principles (data exchange format, system architecture, …) and partly test them through the experimentation. The project will help determining to which extent the partners are able to do so.

To test the capacity of project partners to exchange surveillance information relating to border control, customs, fisheries control, maritime safety, marine pollution, maritime

security of ships and ports, prevention and suppression of criminal activities, that take place in the Mediterranean Sea with all the relevant authorities in the same Member State and in other Member States, project partners will conduct a demonstration phase.

To identify on the basis of the acquired experience in exchanging the information, best practices and/or legal adjustments needed to overcome the obstacles identified in (3).

To determine the extent to which this cooperation between the project partners has resulted in added value – both in qualitative and quantitative terms - in relation to what already exists with regard to cross border and cross sectoral cooperation in the geographic area where the pilot project takes place and in relation to the above mentioned domains of surveillance activities.

AIM AND OBJECTIVES. (From Project Description).

The aim of the BLUEMASS-MED (BMM) project is to define the architecture of the future European wide Maritime Surveillance Network **that will allow the interoperability** among all Maritime Surveillance Systems, existing or future, **based on a jointly agreed, standard reference model.** In reaching this objective, the BLUEMASS-MED project will directly and immediately contribute to the optimization and the efficiency of the present use of the maritime patrolling and surveillance resources.

In order to reach the above objectives the proposed action has mobilized more than 30 administrations from six EU Member States bordering the Mediterranean area and its Atlantic approaches. These administrations are all directly concerned by the maritime surveillance as data providers, information receivers or developers of surveillance systems. They are all committed to collectively and jointly improve operational coordination and cooperation in the various fields such as: security at sea, safety, environment protection etc. To this end they are unanimously committed to contribute to the following objectives:

1. **define all the necessary requirements for an integrated Mediterranean maritime surveillance network,**
2. **define together the technical principles (architecture, modeling of data, rules of** dissemination, …) of data sharing, promote a common procedure for exchanging information, establish a common data model which could become the foundation for the design of a future European maritime surveillance system.
3. **Identify both legal, technical, structural, organizational obstacles** that may hinder the exchanges of information and seek practical solutions to overcome them.
4. **Conduct a demonstration** of a shared basic common maritime picture updated on a near real time basis, provided by the inter-connection of national systems - existing or under development - and the experimentation of sensitive data exchanges in liaison with chosen scenario (e.g. terrorist threats, illegal immigration, pollution, etc.) **.**
5. Propose, and evaluate the cost, of the implementation for a European-wide integrated maritime surveillance system consistent with overall developments between EU Member States and in coherence with Commission projects' and global maritime policies.

The BLUEMASS-MED project also aims at developing a joint methodology and common procedures that could later be shared by all European Nations. In this regard the project takes into special account that the nature of the maritime surveillance itself is devoted to both civil and military users. To this end, the proposed action will demonstrate the relevance and the viability of an exchange of information mechanism. In addition, within the project, the SBCMP will be enhanced by simulated sensitive data to be exchanged between interested and cleared partners. The BLUEMASS-MED Project represents thus a decisive step toward the definition and the implementation of a European wide system architecture that will allow the interoperability among all Maritime Surveillance Systems, existing or future, based on an agree standard reference model.

VISION.

BMM proposes a model through which the existing maritime surveillance systems (MSS) of partners and other available commercial products (such as AIS) contribute to build a **shared basic common maritime picture (SBCMP)** which will enhance regional integration. This proposal is a model through which future or already developing MSS (SafeSeaNet, CleanSeaNet, MARSUR, etc) may participate and benefit from it.

Principles agreed.
- Partners are willing to exchange data .
- Data already available.
- Partners need to set up "Basic data set".
- Partners should be able to share "Additional specific data"   with some specific agencies.
- Partners are able to decide when to share or not to share (time, space, subject, etc.
- Partners need to leave the door open for future developments in data sharing.
- "Basic Shared Common Recognized Maritime Picture" (BMM Description), as a "repository" where all partners could find useful maritime information for the elaboration of their own user oriented Maritime Situational Awareness.
- Bottom up approach. From simple to complex.
- No hierarchical relationship, all partners are equals/No single authority/Internet "like" approach, no aprioristic need of intermediate steps.
- Concept for operational use, based on the integration achieved.
- Honest share of information among partners, non attribution of responsibilities based on shared information.

This proposal will lead to a field demonstration of a SBCMP, updated on a near real time basis, and leveraging this mobilizing end to make incremental advances on user, legal, administrative or technical matters. The SBCMP will be available on a prototype network architecture featuring the functionalities required by the demonstration and some other services; **it will integrate all the basic information made available by the MSS of the partners, from all sources** (AIS, VTS –Vessel Traffic Service, V-RMTC, radar, satellite, etc). It will take due advantage of space remote sensing, communication and navigation available capability, as well as advanced hydrographical surveying products and oceanographic models. **The ability to handle sensitive data exchanges in relation with this SBCMP will also be experimented with simulated data.**

The project will provide a "demonstrator" – an operational experimental network of surveillance systems. **This demonstrator will provide a wide and continuous "near-real-time" Shared Basic Common Maritime Picture (SBCMP) ranging from the Atlantic ocean to middle Mediterranean sea, including cooperative and uncooperative tracks,** new sources of data including, for example, space sensors and associated services providing for an optimal use of the provided information. Shared by all the authorities participating to the present project, **this picture will facilitate cooperation and coordination in actions**. Furthermore, also at this stage, **the resulting picture could also be provided to EU agencies** involved in maritime surveillance for their appreciation and eventual feedback.

OUTCOMES

The aim of the Users Working Group is to conduct the following task in order to produce at least the associated products:

1. Definition of information exchange requirements for the establishment of a SBCMP. The main product will be a "Data Exchange and Dissemination Requirements Document".
2. Study of the current maritime Surveillance Systems. The main product will be an "Information Exchange Systems Catalogue".
3. **Definition of the Functional Requirements. The main product will be a "SBCMP Functional Requirements Document".**
4. Definition of information exchange best practices, rules and procedures for the establishments of a SBCMP. The product will be a "Concept for operational use of the SBCMP".
5. Definition of the Data Exchange Demonstrator. The products will be: "Demonstration objectives document", "Demonstration scenarios document", "Data exchange requirements for experimental system", "Functional requirements for experimental system".

DEFINITION OF INFORMATION EXCHANGE REQUIREMENTS FOR A SBCMP.

The first step is **to define the cross-border and cross-sector information exchanges that the partners need to fulfill their missions and are willing to implement.** They are also committed to test a first level of concrete information sharing involving the national surveillance systems, including the integration of new systems such as surveillance from space assets. Therefore, the information exchange requirements for the demonstrator have also to be defined.

Some of the partners have full-fledged MSS and do exchange data regularly with other partners. Some other partners have their MSS not yet integrated or are in the process of integrating just some surveillance stations. This fact is considered a bonus as it will demonstrate the ability of this proposal to address the call. Not less than 8 major surveillance systems have been identified for connection and data extraction to feed a near real time common Recognized Maritime Picture (RMP) : SPATIONAV, SIVE, SIVICEMAR, SIVICC, DIISM – under development, COSMO Sky Med, VTMIS, VRMTC.-

This will contribute to , Identify the legal, administrative, technical obstacles that may hinder the exchange of information. By forming users', legal and technical working groups, the partners will gather all the expertise necessary to address all the obstacles and explore solutions to overcome them. The concrete experiment will in addition pose very clear questions that will trigger practical resolution of these key issues raised. The proposed action will extrapolate, on a long-term basis, all legal, administrative or technical difficulties encountered during the project and will determine solutions and optimal procedural practices to overcome them, as well as adjustments to apply to the data sharing solution.

Identify best practices and/or legal adjustments needed to overcome the identified obstacles. Through the experiment on both "basic" data exchange and sensitive data exchange that will engage the various partners to come to grips with precise issues and explore solutions, as well as through large exchange on experience acquired prior to the project, best practices or legal adjustments will emerge from the project activities.

Basic System Services:
- Main service is SCBMP (near real time, aprox 10 min).
- Elaborated information exchange (longer time, range of hours).
- Web based type (email, chats, IP phoning…)
- Imagery exchanges (all available useful, satellite, etc…about non cooperative targets and environmental).
- Collaborative planning tool (in the whole or limited communities of interest).
- Mapping (navigational charts..).

Additional services
- Environmental Information (affecting systems behavior).
- Alerts system based on user defined parameters.
- Correlation of tracks (either manual or automatic).
- Capability to generate user oriented services (single partner or limited community). I.e. Environmental monitoring and environmental risk detection ser vice (marine pollution, oil spil ans waste disposal at sea.
- Re-play past evets.

Determine the extent to which this cooperation has resulted in added value (qualitative and quantitative). By defining desired levels and conditions of information exchanges and implementing a demonstration of operational benefits on cross-sector scenarios and mission specific cross-border scenarios, the project will allow partners to determining clearly the added value of the exchanges through this joint network in comparison to the existing situation.
Determine the extent to which this cooperation enhances exchanges of information that already takes place. Presently, no systematic and wide exchange of information exist between the participating members states. The cooperation engaged through this project will clearly enhance existing information exchanges.

In the course of the proposal preparation, the project partners have already identified the data exchange requirements for a first layer of information (basic information) necessary to form a common SBCMP. This basic information is extracted from cooperative sources (AIS,

VMS,…) as well as non cooperative sources (radar, IR sensors, satellites, human observation, …). It is important to mention that while most frequently information is obtained in a collaborative way (e.g. declaration to port authorities on destination, cargo etc.), important information is often obtained from non-cooperative sources (e.g. pollution related information).
Most commonly operational information is in the following provisional list and can be classified and categorized as shown below:

Basic data set + additional information

This proposed list of basic data has been refined by the user's group in the course of the project and validated by each participating partner.

UWG program of work

Additionally, more sensitive information will be selected by willing participants for the purpose of defining the exchange mechanisms and experimenting with simulated data. This sensitive information will be defined appropriately with regard to specific scenarios that will be defined during the project. Real sensitive information concerning any specific area of maritime surveillance would be exchanged on the basis of a bi or multilateral agreement. Beyond the experiment, the project will explore and identify the necessary agreements (administrative and legal aspects) for further such sensitive exchanges.

Indication of authorities that are providers and authorities that are recipients of the data exchange (cross border and cross sector data)
The project involves many partners and authorities that will be part of the experimental exchange of information.
On the provider side are the authorities that feed or manage the national systems that will be connected to the experimental system and provide automatically information to feed the common SBCMP. These are namely:
France: Navy, Customs, Maritime affairs (SPATIONAV)
Italy :   ASI, Navy, Guardia di Finanza, Cost Guard (DIISM, VRMTC, COSMO SkyMed)
Spain: Navy, Customs, Guardia Civil (SIVICEMAR, SIVE)
Portugal : Navy, National Guard (COMAR, SIVICC)
Greece :   Coast Guard (VTMIS)
Malta: National Surveillance System

All the partners will be recipients of the common SBCMP through at least a light client station. The number of recipients is more than 30 and will possibly be augmented through the participation of EU Agencies to the experimental demonstration and its assessment. These recipients will participate in the experiment with real and simulated data on selected scenarios and will measure the potential of the integrated surveillance.

4) Description of the procedures allowing for the project's exchange of data

The exchange of data will be mainly realized through the demonstrator which will interface the various national systems of the participating partners. The common picture will be available for the participating agencies either through their own surveillance system or

through the light client stations. These light client stations will allow some agencies, who have no access to surveillance systems, to participate to the demonstration.

In the course of the studies of the pilot project, the technical procedures regarding information and data exchange between the different maritime surveillance systems will be precisely determined. In addition, the procedures will be designed in order to provide users with a set of shared services on the basis of event subjects, maritime defined areas and time.

The expected data transfer, which will be implemented for the experimental demonstration, is an automatic near real time data exchange. The exchange of sensitive data will also be tested by using simulated data. Different filter rules, according to user group requirements, should be implemented, to avoid data overflow. Security issues concerning data forwarding will be addressed. Security of exchange of sensitive information and services, addressing in particular issues related to secured and trustful connectivity for sensitive information exchanges (in liaison with users and legal groups) will be enhanced.

The fact that there are so many data providers involved in this project contributes to the degree of sophistication of the data exchange.

1.2.   Scope

The purpose of this document is to capture the NATO Architecture Framework version 3 (NAF v3) Operational View (OV) for the Blue Mass Med (BMM) network. According to NAF v3 definition, the OV is a description of tasks and activities, operational elements, and information exchanges required to accomplish missions.

In the following sections they will be identified and described the operational nodes and their connectivity, as well as the information to be exchanged among those nodes in order to properly collaborate to achieve the common mission.

Additionally the NAF v3 All View (AV) is also included to capture the concepts used and their definitions.

1.3.   Document Overview

This document is organised in the following chapters:

Chapter 1 - Introduction, contains a description of the background and scope of this document, an overview, a compilation of references and definitions, acronyms and abbreviations used along the document.

Chapter 2 - BMM Architecture Development, contains the description of the views involved, the All View and the Operational View, and a list of user requirements.

1.4. References

1.4.1.   Applicable Documents

Grant Agreemnt "Pilot Project on the integration of maritime Surveillance in the Mediterranean Sea nad its Atlantic Approaches"

1.4.2.   Definitions, Acronyms and Abbreviations

ATA	Actual Time of Arrival
ATD	Actual Time of Departure
AV	All View
BMM	Blue Mass Med
CNES	Centre National d'Études Spatiales
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
GMDSS	Global Maritime Distress and Safety System
GMT	Greenwich Mean Time
IMO	International Maritime Organization
ISPS	International Ship and Port Facilities Security Code
METOC	Meteorological and Oceanographic
MMSI	Maritime Mobile Service Identity
NAF	NATO Architecture Framework
OV	Operational View
SCBMP	Shared Common Basic Maritime Picture
SGMer	Secretariat General for the Seas
UTC	Coordinated Universal Time
UWG	Users Working Group
WGS-84	World Geodetic System 1984

Track – an object or item represented in a Maritime Surveillance system.

2.   BMM Architecture Development

BMM architecture will be described following NATO Architecture Framework v3.

This document comprises the part of BMM project under the responsibility of the Users Working Group (UWG) and therefore the views to be included are those that are close to the user view of the system. In this particular case the view to be described is the Operational View, together with the All View.

2.1.   All View (AV)

The All View contains valid and useful information for the rest of the views that NAF v3 defines.

This document develops the Integrated Dictionary subview (AV-2).

2.1.1.   Integrated dictionary (AV-2)

The integrated dictionary is divided in the following parts:

- Operational Nodes

- Information Exchange

2.1.1.1.   Operational Nodes

The Operational Nodes in Blue Mass Med are the agencies that are partners:

Country	Agency
France	Secretariat General for the Seas (SGMer)
	Ministry of Defence-Marine National
	Ministry of Defence-Direction Generale de l'Armament
	Ministry of Budget- Customs
	Ministry of Sustainable Developments- Maritime affairs
	Ministry of Inmigration
	Ministry of Interior
	Centre National d'Études Spatiales (CNES)
Greece	Ministry of Mercantile Marine, the Aegean and Islands policy
	Ministry of foreign affairs
Italy	Italian Space Agency
	Ministry of Defnce-Statto Maggiore della Difesa
	Ministry of Defence-Statto Maggiore della Marina
	Ministry of Home Affairs - Immgration
	Ministry of Home Affairs - Antidrugs
	Ministry of Infrastructures and Transports- Direzione Generale del trasporto marittimo e per vie d'acqua interne

	Ministry of Infrastructures and Transports-Capitaneria di Porto Guardia Costiera
	Ministry of Economy-Comando Generale della Guardia di Finanza
	Ministry of Economy-Customs Agency
	Ministry of Foreign Affairs
Malta	The Office of the Prime Minister
Portugal	Ministry of Defence-Task Group for Maritime Affairs
	Ministry of Defence-Navy
	Ministry of Defence-Air Force
	Ministry of Home Affairs-National Republican Guard
	Ministry of Home Affairs-Aliens and Border Service
	Ministry of Public Works, Transports and Communications-Port and maritime Transportation Institute
	Ministry of Agriculture, Rural Development and Fisheries-General Directorate of Fisheries and Aquiculture
	Ministry of Economy and Innovation-Authority for Food and Economical Safety
	Ministry of Finance and Public Administration-Customs
Spain	Ministry of Foreign Affairs
	Ministry of Defence-Navy
	Ministry of Home Affairs-Guardia Civil
	Ministry of Environment-Fisheries
	Ministry of Economy-Customs
	Ministry of Transports and Infrastructures

2.1.1.2. Information Exchange

The Information Exchange is the data to be exchanged among the agencies mentioned previously.

This information is split in the following groups:

- Positional Data

- Basic Current Voyage Data

- BASIC ID Data

- Historical Data

- Other Data

Description of column headers:

- Group: Group of information

- No: Number of package of information (basic code).

- Information: Description Name

- Description: Brief description of the information package

Group	No	Information	Description
Positional Data			
	1	Track number or label	
	2	Position latitude and longitude	
	3	Time Greenwich Mean Time (GMT)	
	4	Course	
	5	Speed	
	6	Navigational status	
	7	Type of sensor	
	8	Data provider	

Basic Current Voyage Data		
	9	Events related with last port
	10	Port of origin
	11	Last port of Call
	12	Estimated Time of Departure And Actual Time of Departure (ETD + ATD)
	13	Activity
	14	Port of destination
	15	Estimated Time of Arrival and Actual Time of Arrival (ETA +ATA)
	16	Route Plan
	17	Cargo (IMO class + quantity)
	18	Draught

19	Master/Captain details	
20	Crew list	
21	List of persons o/b	
22	Total number of persons onboard	
23	Elements of suspicion of the persons on board	
24	Latest report	
25	International Ship and Port Facilities Security Code (ISPS) level	
26	Platform limitations	

BASIC ID Data

27	Name	
28	Year of construction	

29	Type
30	Hull main color
31	Number of masts
32	Propulsion type
33	Ship maximum speed
34	Length
35	Beam
36	Max draught
37	Gross tonage
38	Dead weight

	39	Port of registry
	40	Flag
	41	Ship owner
	42	Ship company
	43	International Maritime Organization (IMO) number
	44	Maritime Mobile Service Identity (MMSI) number
	45	International Radio Call Sign
	46	Classification society
	47	Ship photograph
Historical Data (No basic)	48	Global Maritime Distress and Safety System (GMDSS) class

	49	Ship name history
	50	Ship ports history
	51	Ship flag history
	52	Ship ownership history
	53	Ship routes history
	54	Ship MMSI history
	55	Port State control history
	56	Elements of suspicion of the vessel
Other Data		
	57	Satellite Imagery
	58	Environmental information (detail what info) (SERV)

59	Meteorological and Oceanographic (METOC) data (SERV)
60	Intelligence
61	Alerts
62	Infrastructure
63	Insurance coy
64	Ship agent
65	Environmental Incident (BASIC DATA)
66	Safety Incident Report (UNCLAS)(BASIC DATA)
67	Elaborated Sectorial Information

2.2. Operational View

The Operational View is a description of activities, operational elements and information exchanges required to complete an operation. In order to describe Blue Mass Med network, NAF v3 has been tailored and three subviews have been selected:

- High-Level Operational Concept Description (OV-1)

- Operational Node Connectivity Description (OV-2)

- Operational Information Requirement (OV-3)

2.2.1. High-Level Operational Concept Description (OV-1)

The purpose of the Operational Concept Description is to provide a quick, high-level description of the architecture, and its functionality. It illustrates the operational domain's needs for information exchange in support of operational Activities.

BMM shall allow partners to share information to collaborate in maritime surveillance tasks by establishing a common communications network and a common interface to collect and distribute significant data.

A core model of information shall be defined to be used in the common interface, so that BMM partners could speak a common language to enable seamless interoperability.

2.2.2. Operational Node Connectivity Description (OV-2)

A BMM node is defined as an agency or partner which:

- Produces information related to maritime surveillance and is able to make it available to other nodes by publishing it, so that the nodes that are interested in that information can subscribe.

- Consumes information related to maritime surveillance published by other nodes.

The information interchanged among the BMM nodes could be used to improve the making decision processes of an agency or an agencies' group collaborating in a common mission. This means that this information should be trust, timely and reliable.

BMM will provide a common interface that will allow agencies to interchange information by integrating this interface in their systems.

For some agencies that may not be able to implement this integration, BMM will also define a common web interface; optionally the agencies with enough resources may provide a web server with this common web interface, so that not integrated agencies could participate in the BMM system by accessing to the web server. Each web server will give such agencies the view of BMM data that the agency which has provided the server has reached through the connection with other nodes using the common interface.

Three types of nodes are defined:

- Nodes with BMM common interface integration

- Nodes with BMM common interface integration providing a web server

- Nodes accessing BMM through another node web server

All the agencies participating in the BMM network shall have authorization .While BMM Pilot Project is under development, a group will be designated to manage this authorization and to provide the proper credentials to the agencies. In the future, an organizational mechanism could be created to continue this management.

Final user accounts management to access the system will be responsibility of each agency.

The BMM Networking Architecture would be:

Open, flexible network not centralized. This model provides an abstraction between the networking resource and its underlying technical architecture. It will be built on net-centric architecture. A consumer of information should be provided or be able to get information needed in a timeframe whenever or wherever the consumer may be.

The diagram below shows the flow of information sharing among the agencies (partners) participating in the BMM Network.

BMM Network will be designed to support flexible sharing, integration and exploitation of heterogeneous Maritime Surveillance Data by Competent Authorities.

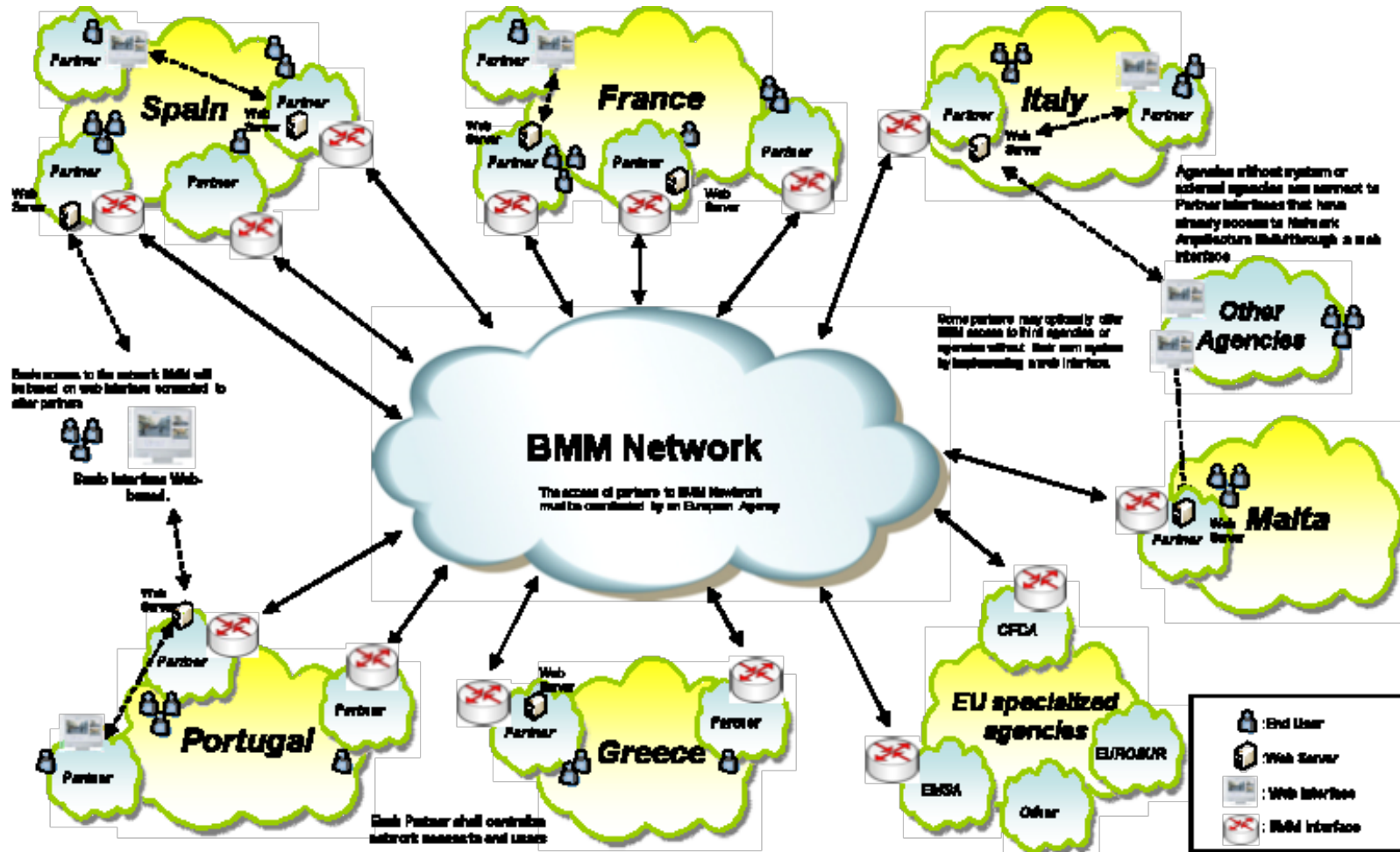The following diagram illustrates the Operational Node Connectivity in the BMM.

Figure 2-1: Operational Node Connectivity Diagram

2.2.3. Operational Information Requirements (OV-3)

The purpose of the Operational Information Requirements subview is to identify and describe all information exchanges that make up all information needlines between the operational nodes, as identified in OV-2.

The OV-3 subview identifies who exchanges what information, the relationships among nodes, what information and why is necessary, and the level of quality required for the information exchange.

Operational Nodes in BMM will exchange data divided in five groups as shown in the following table:

Group	Definition
Positional data	
Basic Current voyage data	
BASIC ID Data	
Historical data (No basic)	
Other data	

In addition two packages of information are defined:

- Basic package

- Classified package

The nodes connected in BMM network must publish all information they have available belonging to the basic package, and the information of the classified package will be exchanged according to previous agreements between agencies.

It will not be defined or restricted here which information is exchanged among the operational nodes, as all information could be of interest for every node. This is due to the fact that information exchanges requirements which have been defined as a core information model that makes sense to all nodes. This also means that all nodes could participate in the system with an unique and homogeneous profile, through it could depend on the system services list that each node provides to the rest and the services provided by other nodes that the node apply for.

The next table shows the list of information items that comprises this core model, with an indication of the package and the groups where every item is included:

Group	No	Information	Package
Positional data	1	Track number or label	basic
	2	Position latitude and longitude	basic
	3	Time GMT	basic
	4	Course	basic
	5	Speed	basic
	6	Navigational status	basic
	7	Type of sensor	basic
	8	Data provider	basic
Basic Current voyage data	9	Events related with last port	classified
	10	Port of origin	basic
	11	Last port of Call	basic
	12	Time of Departure (ETD + ATD)	basic
	13	Activity	classified
	14	Port of destination	basic
	15	Time of Arrival (ETA +ATA)	basic
	16	Route Plan	basic
	17	Cargo(IMO class+ quantity)	basic
	18	Draught	basic
	19	Master/Captain details	classified
	20	Crew list	classified
	21	List of persons o/b	classified
	22	Total number of persons onboard	basic
	23	Elements of suspicion of the persons on board	classified
	24	Latest report	classified
	25	ISPS level	basic
	26	Platform limitations	basic
BASIC ID Data	27	Name	basic
	28	Year of construction	basic
	29	Type	basic
	30	Hull main color	basic
	31	Number of masts	basic

	32	Propulsion type	basic
	33	Ship maximum speed	basic
	34	Length	basic
	35	Beam	basic
	36	Max draught	basic
	37	Gross tonage	basic
	38	Dead weight	basic
	39	Port of registry	basic
	40	Flag	basic
	41	Ship owner	basic
	42	Ship company	basic
	43	IMO number	basic
	44	MMSI number	basic
	45	International Radio Call Sign	basic
	46	Classification society	basic
	47	Ship photograph	basic
Historical data (No basic)	48	GMDSS class	basic
	49	Ship name history	classified
	50	Ship ports history	classified
	51	Ship flag history	classified
	52	Ship ownership history	classified
	53	Ship routes history	classified
	54	Ship MMSI history	classified
	55	Port State control history	classified
	56	Elements of suspicion of the vessel	classified
Other data	57	Satellite Imagery	basic
	58	Environmental information (detail what info) (SERV)	basic
	59	METOC data (SERV)	basic
	60	Intelligence	classified
	61	Alerts	classified
	62	Infrastructure	classified
	63	Insurance coy	basic
	64	Ship agent	basic
	65	Environmental Incident (BASIC DATA)	basic
	66	Safety Incident Report (UNCLAS)(BASIC DATA)	basic
	67	Elaborated Sectorial Information	classified

See the integrated dictionary (AV-2) for the definition of each of the information items.

In the following sections are developed the requirements related to how the information flows between nodes.

2.2.3.1. Data exchange requirements (DER)

2.2.3.1.1. Track management

[BMM.DER.01]

The BMM system shall allow partners to exchange data to set up a situational awareness in the sea, from the Western Approaches to the Strait of Gibraltar to the east of the Mediterranean Sea establishing a Shared Common Basic Maritime Picture (SCBMP).

[BMM.DER.02]

The data to be exchanged shall comprise the following categories:
- Positional data
- Basic current voyage data
- BASIC ID Data
- Historical data (No basic)
- Other data

This data is mainly related to ships but not only, and comprises as well meteorological information, safety data, pollution information, etc.

[BMM.DER.03]

A BMM node shall be able to manage and share tracks with other nodes. Track management shall include at least:

[BMM.DER.03.01]

A BMM node shall be able to automatically or manually notify the creation of new tracks in the system.

[BMM.DER.03.02]

A BMM node shall be able to automatically or manually notify the update of existing tracks data.

[BMM.DER.03.03]

A BMM node shall allow users to manually modify the number assigned for a track.

[BMM.DER.03.04]

A BMM node shall be able to automatically or manually notify the deletion of an existing track.

[BMM.DER.03.05]

A BMM node shall be able to automatically label tracks as not valid if they have been lost/dropped for agreed amount of time.

[BMM.DER.03.06]

Every track in the system shall have an unique identifier.

[BMM.DER.03.07]

Every track in the system shall be labelled with indication of its nature.

[BMM.DER.03.08]

BMM shall allow nodes to exchange track historic data.

2.2.3.1.2. Track correlation and fusion

[BMM.DER.04]

BMM shall allow nodes to manage track correlation including at least:

[BMM.DER.04.01]

BMM shall allow users to correlate tracks.

[BMM.DER.04.02]

Every track distributed in the system shall contain an attribute indicating if it is a correlated track.

[BMM.DER.04.03]

A BMM node shall be able to automatically correlate tracks under established conditions and rules.

[BMM.DER.04.04]

Tracks correlated in a BMM node could be published to other nodes under user decision or due to automatic filtering.

[BMM.DER.04.05]

BMM shall allow nodes to establish filters in subscriptions, so that only correlated data is sent.

2.2.3.1.3. Layers

[BMM.DER.05]

The BMM system shall support several layers of surveillance data:
- One basic data layer
- Classified layers, as required by different partners needs

[BMM.DER.06]

The BMM shall support multi security layer activity and shall be able of managing sensitive information (legal, commercial, open source intelligence, etc). The restrictions to the data exchange are operational, political, commercial and legal.

2.2.3.1.4. Messaging

[BMM.DER.07]

BMM nodes shall be able to exchange additional free text information via electronic mail (e-mail).

[BMM.DER.08]

BMM nodes shall be able to exchange singular or multiple track data by using standardized message text formats and additional free text information.

[BMM.DER.09]

It shall be possible to send email with attachments, including data files.

[BMM.DER.10]

All email messages shall be labelled at least with:
- Sender
- Recipients
- Date and time sent
- Priority

2.2.3.1.5. Latency and information updating

[BMM.DER.11]

BMM shall allow the update of all information held by the partners within 15 minutes.

[BMM.DER.12]

The upper limit of the data update frequency must be established in order to ensure the reliability of the data exchanged, and this value should be configurable. If no new data is available, the transmission of the contact information must be based on the last known position of the vessel, or it must be removed from the system by the drop command.

2.2.3.1.6. Information Classification

[BMM.DER.13]

The last valid measurement time must be indicated in the transmission of the exchanged data.

[BMM.DER.14]

A confidence value shall be allocated to the exchanged information:
- 1 = very high confidence, verified data
- 2 = high confidence
- 3 = confident
- 4 = low confidence, unsure source of verification
- 5 = very low confidence, no verification, co-operative target

[BMM.DER.15]

A quality value shall be allocated to the exchanged information.

[BMM.DER.16]

The BMM shall have a mechanism for delivering information flagged as important to all partners with very high probability this will be achieved by BMM having some control of parameters for prioritising and acknowledging events.

2.2.3.1.7. Information Filtering

[BMM.DER.17]

The BMM nodes shall be able to limit the level of data exchange by filter rules based on security level of the data or any other attribute.

[BMM.DER.18]

The BMM system must support filtering in disseminating process based on time, geographical area or any other significant known target attribute to be able to utilise lower bandwidth connections and not to exchange unnecessary data.

2.2.3.1.8. Types of BMM nodes

[BMM.DER.19]

BMM shall provide a common interface to allow one node to exchange data with other nodes.

[BMM.DER.20]

BMM common interface is not responsible of visualization. Each node implementing the common interface is responsible of displaying the information collected through BMM and its own information.

[BMM.DER.21]

BMM shall implement a web application which will allow partners without an integrated common interface to access to BMM basic capabilities, including visualization.

[BMM.DER.22]

BMM nodes with an integrated common interface could optionally provide a web server running the BMM web application to grant access to BMM basic capabilities for other partners.

2.2.3.1.9. Alerts

[BMM.DER.23]

The BMM shall receive, manage and distribute alerts and warnings, i.e. suspect vessels, pirate vessels, vessels in danger, track of special interest, oil spill, etc.

[BMM.DER.24]
Alerts and warnings can be automatically generated by either a predefined set of rules or an operator. Alerts and warnings can also be received from other external systems. All above types of data set can be used to generate alerts and warnings.

2.2.3.1.10. Requests and acknowledgements

[BMM.DER.25]
The BMM shall support system to system acknowledgements process.

[BMM.DER.26]
The BMM partners shall be able to transmit operator initiated acknowledgements.

[BMM.DER.27]
The BMM shall support system to system information requests.

2.2.3.1.11. Additional data
[BMM.DER.28]
The BMM shall receive, manage and distribute the following additional data:
- Static Media files (pictures, video clips, satellite information as geomedia files),
- Streaming Media files (Camera feed),
- Telephone calls (IP-phone, hotline)

[BMM.DER.29]
It shall be possible to publish different types of geometric objects with optional attached meta data:
- Lines
- Points
- Areas
- Special marks

2.2.3.1.12. Others communication and collaboration tools
[BMM.DER.30]
It shall be possible to collaborate by means of electronic white boarding.

[BMM.DER.31]
It shall be possible to collaborate by means of telephone.

[BMM.DER.32]

It shall be possible to collaborate by means of secure telephone communication.

2.2.3.1.13. Communications

[BMM.DER.33]

BMM shall be able to work using commercially available communications networks.

2.2.3.1.14. Time related requirements

[BMM.DER.34]

Exchanged information shall always be in Coordinated Universal Time (UTC) to eliminate possible time zone problems.

[BMM.DER.35]

All messages sent from one system to another shall be time stamped.

2.2.3.1.15. Georeferentation

[BMM.DER.36]

The data exchanged by BMM shall be geographically referenced on global scale.

[BMM.DER.37]

Geodetic datum used in the interface shall be World Geodetic System 1984 (WGS-84).