MONALISA 2.0 – Activity 4

Report on scenario definition for pilot maritime Search and Rescue exercise

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Eugenia Sillero |
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LIST OF ACRONYMS

ACO: Air Co-coordinator
AS: Abandon Station
DSC: Digital Selective Call
EPIRB: Emergency position-indicating radio beacon
ERCC: Emergency Rescue Co-ordination Centre
EOC: Emergency Operations Center
ETO: Emergency Towing Operation
FiFi: Fire fighting
LSA: Life Saving Appliance
LNG: Liquefied Natural Gas
LT: Local Time
MCC: Mission Co-ordination Center
ME: Major Event
MOC: Maritime Operations Center
MRCC: Maritime Rescue Coordination Centre
MRO: Mass Rescue Operation
PLB: Personal Locator Beacon
RCC: Rescue Coordination Center
SAR: Search and Rescue
SASEMAR: Spanish Maritime Safety and Rescue Agency
SRU: Search and Rescue Unit
VHF: Very High Frequency
VTMIS: Vessel traffic Monitoring & Information Systems
EXECUTIVE SUMMARY

MONALISA 2.0 exercises are conducted in order to evaluate the organization’s capability to execute one or more portions of its response plans within the project context and beyond. Exercises can be used to provide individual training and improve the emergency management system. Reasons to perform MONALISA 2.0 exercises include:

- Testing and evaluating plans, policies, and procedures.
- Revealing planning weaknesses and resource gaps.
- Improve individual performance and organizational coordination and communications.
- Train personnel and clarify roles and responsibilities.
- Gain program recognition.
- Satisfy regulatory requirements.
- Evaluate MONALISA 2.0 support tools developed, under Activity 4- Operational Safety, to improve MROs.

This report offers a scenario definition in order to perform an exercise based on the response to Mass Rescue Operations (MRO) and resolve problems identified already and arising during the execution phase. It aims to be a guide to understand the main objectives of the Pilot MRO Exercise MONALISA 2.0 SAREX. It is not an audit and cannot establish the best strategy for Mass Rescue Operations. That is one challenge that can only be addressed through continuous work and international cooperation within the relevant IMO body.

Several Small Scale Exercises and a Tabletop Exercise have been planned before the Full SCALE MRO Pilot Exercise in order to prepare equipment and staff individually to the MRO Full Scale Scenario. The tabletop has been designed for the examination of operational plans, problem identification, and in-depth problem solving; It will facilitate a group analysis of an emergency situation in an informal, stress-free environment. The most relevant Spanish government agencies involved in a real MRO were invited to assist.

In parallel to the tabletop exercise a functional exercise with the use of simulators will be conducted, this interactive exercise will test the capability of all the organisms involved in maritime emergencies to respond to a simulated event. The tabletop and simulation exercise will take place in the Jovellanos training center in October 2014, focusing on coordination of multiple functions and organizations. It will strive for realism, short of actual deployment of equipment and personnel.

Finally in June 2015, a full-scale MRO exercise will be conducted. This is a simulated emergency event, as close to reality as possible. It involves all emergency response functions and requires full deployment of technical, material and human resources.

During MONALISA 2.0 SAREX large scale exercise, a passenger ship will be simulated transporting thousands of people on board, a fire will break out and after an assessment of the situation, the passengers will be evacuated and the efforts will be supplied as required.
Several operational areas will be deployed in the full scale exercise, in order to coordinate information, analysis and action plans at organizational levels. Moreover as the main goal of the project, the Full Scale Exercise will provide a testbed, where the activity 4 MONALISA 2.0 partners will test the innovation technologies and the training courses developed in advance within the activity. The human element and relevant training for all who may be involved are key factors in this context.
1. **INTRODUCTION**

MONALISA 2.0 aims at contributing to a continuous improvement and development of efficient, safe and environmentally friendly maritime transport in the European Union by implementing a series of measures in accordance with the EU's transport policies.

MONALISA 2.0 is a concrete step in the process of further developing the Motorways of the Sea concept by implementing concrete pilot actions and studies that will foster deployment of new maritime services and processes. The following Activities are included in MONALISA 2.0:

- Act. 1 – Sea Traffic Management Operations and Tools
- Act. 2 – Sea Traffic Management Definition Phase Study
- Act. 3 – Safer Ships
- Act. 4 – Operational Safety

Activity 4- Operational Safety will improve crisis operational management efficiently in port and at sea paying special attention to passenger ship incidents by:

- Implementing new technology. Technological innovations include among others: on-board life rafts recovery systems (OLRS), maneuvering and recovery damage vessels software, dynamic predictor, information systems to support MRO operations and evacuation applications.
- Pre-identifying risks in order to support tactical decisions and analyzing the behavior, reactions and the chain of responsibility during SAR operations.
- Improving interoperability among SAR services, port emergency control centers, passenger ships, VTMS and Mission Control Centers.
- Designing dedicated training programmes with the aim of improving the level of performance of human resources involved in such activities with the novel technology implementation carried out in the project.

In this sense, several exercises and pilot actions, as the ones describe in this report, will be carried out in relation to the MRO Pilot Exercise MONALISA 2.0 SAREX. The information systems and technologies selected to support SAR operations, evacuation and first aids will be tested with the help of trained professionals for mass rescue operations.

The exercises should be regarded as an integral part of the emergency planning process - not an isolated option. It is important that emergency plans have been prepared and the appropriate staff trained in their roles before the exercise is planned. After any exercise, the plan should be reviewed and amended from lessons learned before the process starts again. All agencies who have a role to play, either in the whole plan or in the component(s) to be tested, should be invited to take part in the exercise, including of course the planning stage, and subsequent reviews. Most exercises are time consuming and cannot be undertaken frequently. Therefore every opportunity should be given to all appropriate agencies to take part when a plan is tested. Managers, executives or chief officers etc. must be kept informed about the plans and their progress as their support is vital for success. If possible, and
particularly for small organizations, help should be sought from neighboring areas or organizations with similar operations.

Doing exercises test and improving operational plans, provide learning experience and improve liaison and co-ordination skills. Exercises, conducted on a realistic basis, help to demonstrate and assess the true effectiveness of training and the operational efficiency and competence of the SAR service. Exercises will reveal deficiencies that may exist in SAR plans and enable them to be improved. It is safer to have shortcomings revealed by exercises rather than during actual operations.

Training is critical to performance and safety. The SAR system should save those in distress when it can, and also use training to reduce risks to its own valuable personnel and facilities. Training personnel in making sound risk assessments will help to ensure that these trained professionals and valuable facilities remain available for future operations. A good training program produces true professionals, personnel who can do it right the first time. The purpose of training is to meet SAR system objectives by developing SAR specialists.

It is not always practicable for organizations to engage in formal SAR training programs. Whenever possible, personnel from these organizations should be invited to participate in or observe training exercises.

Since considerable experience and judgment are needed to handle typical SAR situations, necessary skills require significant time to master. Training can be expensive. Poor training is even more expensive and can result in poor operational effectiveness, which can result in loss of lives of SAR personnel, lives of those in distress and loss of valuable facilities. Quality of performance will match the quality of training.

Scenarios must be as realistic as possible. The decision as to how large and realistic exercises should be will depend on the extent of the SAR service, the demands expected to be made upon it and general considerations of economy. If primary responsibility for SAR has been delegated to Government services, full-scale exercises involving as many units and facilities as possible may provide satisfactory means of implementing training program. Where private concerns are relied upon to play a major part in SAR, the timing of major exercises should be arranged so as to minimize disruption to normal activities.

2. CURRENT SITUATION

2.1 STATISTICS

The number of vessel in European waters is constantly increasing with the risks of possible incidents. Moreover, the vessels are bigger which boost the difficulty of SAR operations and the potential consequences are greater. In 2010 only in European waters more than 500 accidents happened of which 147 passengers' ships (126 ferries and 21 cruise ships) were involved. Between 2012 and 2014 two main accidents Costa Concordia in Italy and Sewol in South Korea resulted with more than 300 loss of live.
Both accidents demonstrate the existing gaps and fails in maritime transport safety, from the ordinary navigation watch keeping and navigational tasks, to the safety management after the accidents have happened. Even the technology available, which was highly developed in terms of equipment, manning, communications, etc., it was misuse as there were a lack in the decision making processes, showing clear crisis management deficiencies from the ship side and the difficulties in coordinating the response actions between the Coast Guard services and the crew, reinforcing the idea that something is still going wrong. Human factor is being the main incidents cause against the safer and more developed ships and equipment today.

According to the Commission Communication - Strategic goals and recommendations for the EU’s maritime transport policy until 2018 [COM(2009) 008], 80% of international freight is carried by sea and 40% of intra-European freight uses Short Sea Shipping. Moreover, European ports welcome more than 400 million passengers each year.

According to EQUASIS there are 81.584 vessel around the world of those 6.463 are passenger ships including all kind of ferries and cruise from which 273 are large (25.000-60.000GT) and 146 very large (more than 60.000GT). 1.715 vessels have between 15 -24 years of which 76 are large and 32 are very large. And 2.880 have more than 25 years. To have an idea a vessel with 99.000 GT can accommodate 2.500 passengers and 1000 crew will work on it.

In 2010, 559 accidents in and around European water happened. 147 passenger’s ships (126 ferries and 21 cruise ships) were involved in accidents in 2010 being contacts between ferries and infrastructure problems the main accident category. Passenger ships is the second highest category for vessel accidents.

The cruise sector over the past 10 years has seen a growth of 77.3% arriving to more than 21.3 million passengers in 2013. In 2013 a total of 28.7 million of passengers called at Spanish ports, according to Puertos del Estado statistics, of which 7.2 million of passenger were from cruise vessel. The capacity of the fleet has also increased in 84% from 73 million bed days to 134.5 million in 2013 having Europe the 37% of it (Mediterranean 35.7 and North Europe 13.9 millions of bed days). As stated in magazine Marina Civil number 113, Spain has become the second largest market in Europe, within twenty-five cruise ports.

The cruise industry generate around 114.8 million of euros on onshore visits by passengers and crew and direct expenditures of the cruise lines for goods and services according to a

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1 The world merchant fleet in 2013. Statistics from Equasis.

2 Annual overview of marine casualties and incidents 2014. EMSA

3 A COMMON MEASUREMENT OF OCCUPANCY USED BY THE CRUISE LINE INDUSTRY, “BED DAYS” ARE CALCULATED BY MULTIPLYING THE NUMBER OF BEDS OCCUPIED BY THE NUMBER OF DAYS.
Taking into account that more than 30% of the cruise market sails in European waters, it makes crucial the recommendations of the Commission Communication:

- Promoting cooperation between European maritime training institutions for upgrading seafarers’ competences and adapting requirements to the prerequisites of today’s shipping industry;
- Working in partnership with training institutions and the industry towards establishing ‘maritime certificates of excellence’ (European maritime postgraduate courses) that may well go further than STCW requirements. In that context, the creation of a network of centers of excellence for maritime training in Europe (European Maritime Academy) could be considered (COM (2009) 8, final Brussels, 21.1.09).

### 2.2 MASS RESCUE OPERATIONS MRO

A mass rescue operation (MRO) is one that involves a need for immediate assistance to a large number of persons in distress such that capabilities normally available to SAR authorities are inadequate. MROs are relatively rare low-probability high-consequence events compared to normal SAR operations, but major incidents leading to the need for MROs have not been infrequent on a world-wide basis, and can occur anywhere at any time. The nature of such operations may be poorly understood due to limited chances to gain experience with major incidents involving MROs. Flooding, earthquakes, terrorism, casualties in the offshore oil industry and accidents involving releases of hazardous materials are examples which, because of their magnitude, may require the application of the same resources as required for mass maritime or aeronautical rescue operations.

Moral and legal obligations and public and political expectations require preparedness to carry out MROs safely and effectively and they become necessary. Since the need for MROs is relatively rare, it is difficult to gain practical experience to help deal with them. Types of potential MRO scenarios vary, but there are certain general principles that can be followed based on lessons of history.

Effective response to such major incidents requires immediate, well-planned and closely coordinated large-scale actions and use of resources from multiple organizations. The following are typical MRO demands:

- Intense and sustained high priority lifesaving efforts may need to be carried out at the same time and place as major efforts to save the environment and property;
- Huge amounts of information need to be readily available at the right times and places to support the response efforts and meet the needs of the media, public and families of the persons in distress, which may number in the hundreds or thousands;
- Many means of communications need to be available and interlinked amongst organizations at various levels to handle huge amounts of information reliably for

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the duration of the response (MRO communications are discussed in more detail later in this chapter);

- A surge in the numbers of competent staffing in all key organizations must be made available immediately and be sustainable for up to weeks at a time;
- Equipment and logistics demands jump to unprecedented levels; and
- Flexible and all-level contingency plans.
- Intense integrated planning and operational efforts must also be carried out in real time throughout actual rescue efforts.
- Complex traffic management;
- Intense public and political attention.
- Multiagency plans are running together.

All actors involved in the overall multi-agency, multi-jurisdiction, multi-mission and possibly international response to major incidents must clearly understand who is in charge, the respective roles of all involved, and how to interact with each other. SAR authorities may be responsible for all or part of the MRO functions, and must be able to co-ordinate their efforts seamlessly with other responders under the overall direction of another authority within or outside their agency. MRO plans need to be part of and compatible with overall response plans for major incidents. Plans must typically allow for command, control and communications structures that can accommodate simultaneous air, sea and land operations.

The consequences of poor preparations for MROs in terms of loss of life and other adverse results may be disastrous. Major incidents may involve hundreds or thousands of persons in distress in remote and hostile environments. A large passenger ship collision, a downed aircraft, or a terrorist incident could, for example, call for the immediate rescue of large number of passengers and crew in extreme environmental conditions, with many of the survivors having little ability to help themselves.

There will often be resistance to paying the high price in terms of time, effort and funding that preparedness for major incidents entails, particularly as they are rare events. The required levels of cooperation, co-ordination, planning, resources and exercises required for preparedness are challenging and do not happen without the requisite commitment of SAR authorities, regulatory authorities, transportation companies, sources of military and commercial assistance and others.

The ability of an MRCC to continue to effectively co-ordinate the MRO and still handle its other SAR responsibilities may become overwhelmed, and another MRCC or a higher authority may need to assume responsibility for their other responsibilities.

With these possibilities in mind, MRO plans should provide various degrees of response, along with criteria for determining which degree of response will be implemented. For example, as local SAR resources are exhausted (or from the outset), SAR resources may need to be obtained from distant national or international sources.
2.3 SPANISH LEGAL RESPONSE FRAMEWORK

In terms of procedures, the Spanish Law on State Ports and the Merchant Navy (Decreto Legislativo 2/2011, de 5 de septiembre, por el que se aprueba el Texto Refundido de la Ley de Puertos del Estado y de la Marina Mercante) introduces the regulatory framework to respond to emergencies at sea. Under this Law the Director of an Emergency at Sea is the Harbor Master who will act following the coordination and operational procedures established among the Spanish Maritime and Safety Agency and the other administrations involved in a MRO at sea and on land, except for those cases that the emergency is considered as marine pollution where other plans will take place. Nevertheless there are many plans which can be activated and the coordination of procedures and the organization of the different agencies involved in a MRO should be perfectly defined.

The execution of MRO passenger's vessel exercise SAREX-MONALISA will help with the establishment of the roles, and the information exchange, identifying potential opportunities for improvement in preparedness and response to a maritime emergency. The exercise will identify the requirements for passengers shipping lines in order to assist the SAR agencies in this type of incidents. Moreover the introduction of new technologies boosting the efficiency of SAR operations and the training of SAR staff is a goal to be achieved during the exercise.

MRO operations are characterized by the immediate need of large amount of assets from different organizations and therefore in case of a real national MRO emergency the activation of European mechanisms and International Cooperation Plans will be required.

The collaboration between France and Spain is constant and fruitful since several years due to neighborly relations between the areas of search and rescue (SAR areas) of France and Spain, both in the Mediterranean and the Cantabrian-Atlantic Sea. Cooperation in resolving emergencies in areas adjacent to the line of separation of SAR areas is common and effective. Also the exchange of information between the Spanish Maritime Rescue Centers involved (MRCC) and their French counterparts (CROSS).

All this collaboration is materialized in two plans of cooperation, one for the Mediterranean area (Gulf of Lion Plan) and one for the subscribed Atlantic region (Bay of Biscay Plan) between the Spanish Maritime and Safety Agency (SASEMAR) and the Maritime Prefecture Mediterranean and Atlantic, respectively.

2.4 FRANCE LEGAL RESPONSE FRAMEWORK

France adopted in April 2010, the Maritime ORSEC framework, which has its origins in the Civil Security Modernization Act of 2004, which resulted in a comprehensive review of the system of crisis management in France, both at sea and on land.

The ORSEC structure allows a common crises management approach to all events focusing on the sea-land interface.

There is one ORSEC plan for each department, started by the préfet, and one national ORSEC plan started by the Prime Minister.
Every year, two major exercises are organized by the Maritime Prefects: a Large Rescue Exercise and Pollution Exercise, where all administrations and services that contribute to the action of the sea state are regularly trained to deal with these types of situations. This framework provides constant monitoring and may change depending on the extent and severity of the event.

Under this scope on the 8 and 9 of April of 2015 the simulated MRO Exercise “NEPTUNE EXERCISE” on a large passenger vessel was carried out by the Prefecture Maritime of Atlantic, SASEMAR staff attended the exercise in order to enhance liaisons, exchange information and synergies for the coordination of MRO plans and the preparation of the SAREX-MONALISA pilot exercise.

The NEPTUNE exercise was a "coordination exercise", which means that there was no mobilization of maritime assets but it was 'live' in the sense that the participants were mobilized, playing in the place where they usually work. The rules of the game were done by a wide animation team with specialists from the different fields, which made possible to effectively lead the crisis management chain from departmental and centrally level.

The general objective of the Neptune exercise was to test the intervention strategy, capacities and improve procedures to face a serious event occurring at sea in France in the Mediterranean Area, focusing on the MRO at sea of large number of people from a passenger vessel in distress. It involved all levels of the organization ORSEC, both management teams crisis in the maritime prefecture, operational centers responsible for Response Management (CROSS and CODIS / Site PC) and land response teams.

A significant number of helicopters was hired: 13 helicopters of maneuver (including two Spanish and two helicopters earth l’armée without winches), and 3 helicopters light aircraft could be mobilized in this exercise (without deployment real);

An intervention team of 27 people (fire brigade and paramedics) with response assets was activated to assist passengers’ on board the vessel.

About half of the passengers were evacuated by helicopter and the rest by maritime units after performing marine towing and mooring the vessel in waters close to Sete.

The relevance of continuing working on plans and procedures relating to sea-land interface and international cooperation, together with the need to join efforts at European level in the field of preparedness and response to a major large maritime rescue accident at sea were stressed in the conclusions.

3. OPERATIONAL SAFETY TESTBED

The activity 4 testbed on operational safety will be performed by means of a deployment of the joint SAREX-MONALISA 2 Exercise, which will have three main functions:

A. Evaluate and optimize the coordination and response plans at sea stablished for MRO in case of passenger ships accidents.
B. Evaluate and optimize the response and contingency plans during mass evacuation in ports.

C. Serve as an innovation testbed platform, to test and validate technologies and training programs developed under MONLISA 2.0 Project.

This report covers only the first function listed above. The second function is explained in the Deliverable 4.1.2 Pilot Exercise on Mass Evacuation in Ports, and the third function is covered by each deliverable related with the technologies.

Below the list of technologies and innovations that could be tested in the pilot exercise are described together with their corresponding deliverables.

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<th>OBJECT</th>
<th>PARTNER AND DELIVERABLE</th>
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<tr>
<td><strong>Onboard Life-Rafts Recovery System OLRS</strong></td>
<td>Onboard life-rafts Recovery System, is a system capable of recovering life rafts and shipwrecked, once they are afloat in the water, and place them at safe on board the rescue ship in a very short time (which is particularly advantageous at bad weather and sea conditions), and minimizing the risk of people lost during the whole recovery operation.</td>
<td>FERRI (D.4.2.3 On Boards Life Boats Recovery Systems)</td>
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<td><strong>ICT tools to support Bridge operations and use of the dynamic predictor tested</strong></td>
<td>The ICT tool for Dynamic predictor can be implemented in a simulator as well as on board. It will incorporate real time data (hydrography, meteorological) to foresee the risk of the operation. Moreover it can help in the recovery of damage vessels minimizing the risks</td>
<td>SSPA (D4.3.2 Report on bridge ICT support/Dynamic Predictor)</td>
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<td><strong>Simulations on Manoeuvering/Recovering of damaged ships</strong></td>
<td>This system will improve the vessel’s recovering operations after an accident. During simulation different parameters will be combined from the vessel itself (LOA, weight..) with hydrodynamics and meteorological real data.</td>
<td>COMPASS. (D4.2.2 Manouvering/Recoveryng Damaged Ships)</td>
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<td><strong>Integrated web viewer of port and RCC systems.</strong></td>
<td>This viewer will allow to access and integrate the emergency platforms systems at port and at sea. The information of the specific area of an incident is displayed in different layers over a GIS. The remote access could give the possibility to create virtual crisis rooms to support emergencies responses. Moreover this tool could share data with SWIMM or maritime cloud.</td>
<td>CIMNE (D4.5.4 Information Systems Integration and interoperability)</td>
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<td><strong>RISK ASSESSMENT GUIDELINES</strong></td>
<td>This system offers a complete database with accidents history since 1900. Different accidents, results from the operations applied, investigation on the causes and after the accidents are included. Decisions taken are also registered. Accident on course can be recorded, updating the database.</td>
<td>Technical University of Madrid (D4.4.4 Definition of Protocols in case of accidents)</td>
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<td><strong>SAFETRX</strong></td>
<td>Implementation of SAFETRX, a vessel tracking smartphone application, that facilitates leisure boats to operate as vessels of opportunity in MRO.</td>
<td>SASEMAR (D.4.5.2 Information Systems to support SAR operations)</td>
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<td><strong>SIGO</strong></td>
<td>Improvements in the Integrated Management Operation System (SIGO) of the Spanish Maritime Safety &amp; Rescue Agency to upload MRO information in real time from MRCCs and SAR units.</td>
<td>SASEMAR (D.4.5.2 Information Systems to support SAR operations)</td>
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<td><strong>NAVSAR</strong></td>
<td>Validation of NAVSAR-12 in SAR units, a customized navigation, chart and communication system for a dynamic emergency management from MRCCs.</td>
<td>SASEMAR (D.4.5.2 Information Systems to support SAR operations)</td>
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<tr>
<td>WEB-PAGE</td>
<td>Information and communication site to publish the evolution of the rescue operations. It maintains informed the public, relatives of victims and press. Web page design in order to have an official information site, ready to be activated in MRO with information from all the stakeholders.</td>
<td>SASEMAR (D.4.5.2 Information Systems to support SAR operations)</td>
</tr>
<tr>
<td>WEB VIEWER ESRI</td>
<td>Merging in a Web Viewer, GIS information from SIGO, concerning emergencies and SAR units, together with AIS maritime traffic data.</td>
<td>SASEMAR (D.4.5.2 Information Systems to support SAR operations)</td>
</tr>
<tr>
<td>SARMAP</td>
<td>Optimization of SARMAP simulation tool integrated in SIGO for drifting objects, raft boats and persons in a MRO.</td>
<td>SASEMAR (D.4.5.2 Information Systems to support SAR operations)</td>
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<tr>
<td>SAFEESCAPE</td>
<td>Videogame to train passengers on what to do in an emergency situation and mass evacuation.</td>
<td>SASEMAR/JOVELLANOS/UNIVERSIDAD DE OVIEDO (D.4.5.2 Information Systems to support SAR operations)</td>
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<td>TRAINING</td>
<td>The training for SAR and MRO, massive evacuation in ports, emergency management on board and at sea, leadership and human factor in crisis scenarios, IMO/ICAO/IAMSAR and for firefighting within MONALISA 2.0 concept, update the staff qualifications to improve response skills when MRO incident happens including firefighting response capabilities.</td>
<td>JOVELLANOS, UPC, NTUA, CHALMERS, VALENCIA PORT FOUNDATION (D4.6 Training Deliverables)</td>
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Table 1: Monalisa 2.0 Activity 4 technologies
4. EXERCISE GENERAL INFORMATION

4.1. SCOPE
Incident management of a passenger ship on-water crash landing and resulting in a Maritime Mass Rescue Incident involving passenger evacuation with some injuries and deaths.

This Exercise Plan provides exercise developers with guidance concerning procedures and responsibilities for exercise design and support. It explains the exercise concept, establishes the basis for the exercise, and establishes and defines the communications, logistics, and administrative structure needed to support the exercise—before, during and after.

A fire has been selected because passenger vessel statistics showed that:

- 50% of casualties leading to abandonment are related to fire or grounding events
- 50% of casualties lead to disembarkation at sea

4.2. TYPE OF EMERGENCY
Passenger vessel fire on board due to mechanical failure. Abandon ship. Mass Rescue Operation MRO. Cruise vessel Emergency Towing Operation ETO

4.3. LOCATION
Valencia harbor has been identified as a location where the simulated hazard could realistically occur. For the full-scale exercise, traffic problems or safety issues may make it necessary to compromise on an area similar to the ideal location.

4.4. EXERCISE NEEDS

4.4.1 HAZARDS
A fire on a passenger vessel characterized by the need for immediate response to a large number of persons in distress.

4.4.2 MISSION AREAS:

First: Mass Rescue Operations MRO

<table>
<thead>
<tr>
<th>FREQUENCY OF OCCURRENCE</th>
<th>LOW</th>
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<tr>
<td>Relative likelihood of occurrence:</td>
<td>Low</td>
</tr>
<tr>
<td>Magnitude:</td>
<td>High</td>
</tr>
<tr>
<td>Intensity:</td>
<td>High</td>
</tr>
<tr>
<td>Spatial extent:</td>
<td>Depending on geographic location and drifting conditions</td>
</tr>
<tr>
<td>Speed of onset and availability of warning:</td>
<td>Normally quick</td>
</tr>
<tr>
<td>Potential severity of consequences to people:</td>
<td>Severe</td>
</tr>
</tbody>
</table>
Potential cascading events: Oil spill

**Second: Cruise Vessel Emergency Towing Operations ETO**

<table>
<thead>
<tr>
<th>FREQUENCY OF OCCURRENCE:</th>
<th>LOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative likelihood of occurrence:</td>
<td>Low</td>
</tr>
<tr>
<td>Magnitude:</td>
<td>Moderate</td>
</tr>
<tr>
<td>Intensity:</td>
<td>Moderate</td>
</tr>
<tr>
<td>Spatial extent:</td>
<td>Depending on geographic location</td>
</tr>
<tr>
<td>Speed of onset and availability of warning:</td>
<td>Normally quick</td>
</tr>
<tr>
<td>Potential severity of consequences to people:</td>
<td>Light</td>
</tr>
<tr>
<td>Potential cascading events:</td>
<td>Grounding/MRO</td>
</tr>
</tbody>
</table>

The sequence of priority in major multi-mission incidents must be lifesaving first, generally followed by environmental protection, and then protection of property.

### 4.4.3 PLANS AND PROCEDURES

List of plans and procedures (emergency response plans, contingency plans, operational plans, standard operating procedures etc.) that guide SASEMAR's response in case of an emergency subject to the exercise.

- SASEMAR Search and Rescue Procedure P-EMM-22
- SASEMAR Conclusion of SAR Operation Procedure P-EMM-23
- SASEMAR Mass Rescue Procedure P-EMM-24 [MRO] (in draft stage)
- SASEMAR Incident Command System
- Cooperation plan between the SAR services and passenger ships that operate fixed routes.
- Valencia Port Authority Emergency Plan.

### 4.4.4 ORGANIZATION

The incident command structure will be set up in Valencia, the place of the accident, constituting there the crisis management center.
VALENCE

A. Incident Command

- **Emergency Director**: Responsible of the emergency.
- **Technical Advisory Committee**: Gives advice to the Emergency Director about of all those, environmental, scientific, legal or economic technical issues that may be relevant to the assessment, development and overall management of the response operations.
- **Operations Director**: In charge of all search and rescue and the pollution response operations performed by SASEMAR.
- **Information Office**: In charge of the relationship and communications with the press media. In coordination with the Emergency Director, prepares the press releases, etc.
- **Liaison officers**: They perform coordination tasks at local and regional level with various jurisdictions and agencies providing means, by identifying points of conflict, resource needs and operational constraints.
- **Safety Officer**: Assists the Emergency Director in identifying dangerous situations for the crew and other staff.

B. Unified Command:

Extension of the Command and Control System. Integrated by representatives of agencies, organisms or departments that can be affected by the emergency, or that can take part in the response operations. These organizations have sufficient authority and jurisdiction. The main objective of the Unified Command is that these organisations can participate in the decision-making processes, providing to the Director of the emergency a comprehensive and global response using all the available resources.

C. Operations:
- **Operations Director:** Responsible of all the operations
- **Operations Coordinator:** Responsible for the coordination of all operations at tactical level. The Operations Coordinator gives the necessary orders to achieve the objectives defined in the Operational Plan; assesses the preparation of operational plans, proposing changes; and evaluates the results of the operations at the incident site, proposing adjustments in the organization, in terms of strategies, tactics and resources to both, the Director of the Emergency and the Operations Director.
- **Maritime Operations Cell:** Responsible of evaluating the impact of the operational plan in the maritime units, identifying equipment needs, shift handovers, maintenance, overload of working hours; keeping in-formed the Emergency Director, the Operations Director and the Operations Coordinator, about the status of maritime units performance.
- **Air Operations Cell:** Responsible of evaluating the impact of the operations plan in air units, identifying equipment needs, shift handovers, maintenance, overload or work/flight hours, rotations, keeping in-formed the Emergency Director, the Operations Director and the Coordinator about the status of the air units performance.
- **Operational in Course Cell:** In progress operations cell processes and organizes all the information on the development of the emergency. It is responsible for maintaining the image of the situation of all resources allocated to the emergency since the beginning of it, including their positions, traceability, capabilities and operability. Analyzes the data collected and prepares the report of ongoing actions. It provides maps on the emergency and its evolution.
- **Other Cells:** According to the emergency needs. The emergency Director activate these cells. They are in charge of the implementation of the plan associated to their role.

### D. Planning

- **Head of Planning:** Usually this will be the coordinator of operations, although in some large emergency magnitude may be necessary to turn to someone else. Responsible for collecting, evaluating, distributing all the information on the emergency and assigned units. Oversees the preparation of the plan of operations. It facilitates planning meetings. Gather information on strategies and alternative courses of actions.
- **Operative Information Cell:** Responsible for maintaining all documentation of emergency for distribution. Make specific re-ports.
- **Industry Representative:** Responsible for coordinating the actions and the flow of information between the shipping company and the coordinator of the response. Although initially assigned to the planning unit, their presence in
various cells may be necessary, if the result excessive workload could be assigned several representatives.

- **Technical specialists:** They support planning in their respective fields of knowledge. They are assigned to different cells as needed.
  - Operational Oceanographic Specialist
  - Marine Pollution Specialist
  - GIS Specialist
  - Offshore Operations Specialist
  - Naval Engineer Specialist

E. Administration

- **Head of Administration:** Responsible for all financial, administrative matters which may arise related with the emergency. Oversees and coordinates the expenses of the activated cells.
- **Cost Recovery Cell:** Responsible for maintaining an accurate record of all operating expenses associated with emergency for later use. Review the Plan of Operations and advise management on the impact on costs.
- **Human Resources Cell:** Responsible to meet the recruitment, shift handovers or strengthening of staff of all the cells and units activated. Review the Plan of Operations and advice on the impact on personnel management.
- **Recruitment Cell:** Responsible for providing support in all matters relating to the management of contracts for the emergency, startup of the procedure of contracts etc. Review the Plan of Operations and advice on the impact of proposed contracts.

F. Logistics

- **Head of Logistics:** Organizes and coordinates acquisition, transportation, storage and installation of equipment for the emergency management, maintains an inventory.
- **IT Cell:** IT support to the emergency management.

**MADRID- CENTRO DE OPERACIONES MARITIMAS-Maritime Operation Center (COM)**

- **National Coordination Center:** Information emergency repository. National and international management support. National and international resources start-up.

- **National and international coordination multiagencies:** agencies, organism or department that have an interest in the emergency according to its magnitude.
4.4.5. FUNCTIONS
The exercises focus in the emergency management functions described below, due to the fact that they have not been exercised recently or related to new procedures.

- Alert Notifications (Emergency Response. Basically due to updates in national plans and policies. Also changes in staff at Government level.)
- Reporting Requirements
- Incident Command System
- Staff Mobilization
- Multiple agency coordination
- Media Management
- Passenger & Crew Accountability
- On-Scene coordinator tasking and execution abilities
- Medical/Triage
- On Site Security and Traffic Control
- Relatives Support / Next of Kin Notifications
- Survivor Reception Center
- Air Coordinator ACO
- SAR Resource Management
- Health and medical attention facilities
- Individual/Family Assistance
- Damage Assessment
- Industry Emergency Preparedness

4.4.6 LEVELS OF PERSONNEL EXPECTED IN THE EXERCISE
The following four levels have been identified as desired to participate in the exercise

- Policy makers: Elected officials, chief operating officers, department heads.
- Coordinators: Managers, coordinators, operations specialists, industry representatives, department deputies.
- Monalisa 2.0 partners
- Public representatives, media, stakeholders and general public

In particular the Agencies and MONALISA 2.0 institutions expected to participate in the exercise, collaborating in the achievements of the main objectives are:

- Spanish Maritime Safety Agency
  - Direction of Operations
  - Technical Secretariat
  - MRCC Valencia
  - MRCC Madrid
- Guardia Civil: Fiscal and border surveillance headquarters
  - ICC- International Coordination Centre
  - NCC- National Coordination Centre
- Guardia Civil: Maritime Service
- Valencia Port Authority
- Valencia Port Foundation
- Capitanía Marítima de Valencia- Valencia Maritime Authority
- Merchant Marine Directorate
- Spanish Red Cross
- Spanish Navy
- Spanish Civil protection: National Level
- Spanish civil protection: Autonomic level
- Spanish Army
- Spanish Air Force
- Presidency of the Government
- Ministry of Development: Emergency, coordination and crisis management Unit
- European Commission’s Humanitarian Aid and Civil Protection department (ERCC)
- Spanish customs
- Trasmediterranea Shipping Company
- State Department for Security
- National Health System
- Ministry of Foreign Affairs
- Government of Valencia
- CIMNE
- Compass
- Ferri
- Polytechnic University of Catalonia
- Polytechnic University of Madrid
- SSPA
- NTUA
- MARSEC

### 4.4.7 MAIN OBJECTIVES CHECK LIST

<table>
<thead>
<tr>
<th>Items</th>
<th>Completion Rate</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MRCC VALENCIA/CNCS</strong></td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>1.1 Verify information &amp; location. Complete notifications</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>1.2 Conduct SMC duties</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>1.3 Activate and document the notification procedures identified in the Mass Rescue Operations (MRO) Plan required by SASEMAR specific procedures</td>
<td>0%</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td>---</td>
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</tr>
<tr>
<td>1.4</td>
<td>Establish an effective internal communications system. This encompasses communications between the MRCC, deployed on scene assets, Incident Command Post, and industry and state Emergency Operations Centers</td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>Identify and effectively share critical information</td>
<td></td>
</tr>
<tr>
<td>1.6</td>
<td>Develop / share a common operational picture at each operational location</td>
<td></td>
</tr>
<tr>
<td>1.7</td>
<td>Check communications interoperability of local responders: fire, police, medical, state, federal, etc. (ability of emergency responders and government officials to maintain communication in the event of natural disasters, act of terrorism, or other man-made disaster, and to ensure, accelerate, and attain interoperable and operable emergency communications nationwide)</td>
<td></td>
</tr>
<tr>
<td>1.8</td>
<td>Obtain SAR Plan of Cooperation from SAR Data Provider</td>
<td></td>
</tr>
<tr>
<td>1.9</td>
<td>Establish communications with organizations external to the response organizations (private company)</td>
<td></td>
</tr>
<tr>
<td>1.10</td>
<td>Demonstrate the ability to satisfy the briefing demands of senior management</td>
<td></td>
</tr>
<tr>
<td>1.11</td>
<td>Develop and release situation reports understandable by all involved agencies</td>
<td></td>
</tr>
<tr>
<td>1.12</td>
<td>Provide an accurate initial assessment of the incident</td>
<td></td>
</tr>
<tr>
<td>1.13</td>
<td>Activate the MRO response plans immediately</td>
<td></td>
</tr>
<tr>
<td>1.14</td>
<td>Activate additional staff to augment, replace or sustain needed staffing levels</td>
<td></td>
</tr>
<tr>
<td>1.15</td>
<td>Identify, acquire, and task local response resources</td>
<td></td>
</tr>
<tr>
<td>1.16</td>
<td>Organize, coordinate and direct operations related to the implementation of action plans approved by the Director of Operations</td>
<td></td>
</tr>
<tr>
<td>1.17</td>
<td>Provide continuing assessments on the effectiveness of the tactical operations</td>
<td></td>
</tr>
<tr>
<td>1.18</td>
<td>Coordinate emergency medical services and TMAS and to coordinate medical support with local hospitals</td>
<td></td>
</tr>
<tr>
<td>1.19</td>
<td>Assemble and deploy salvage resources required by action plans</td>
<td></td>
</tr>
<tr>
<td>1.20</td>
<td>Identify hazards and risks presented by the operations and communicate them accordingly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Monitor all maritime operations and ensure compliance with safety standards</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>1.21</td>
<td>Document operational and support aspects of the response and provide records of decisions and actions taken</td>
<td></td>
</tr>
<tr>
<td>1.22</td>
<td>Obtain an accurate manifest of all persons on board; passengers, crew, and other non-revenue individuals (Evacuee Accountability)</td>
<td></td>
</tr>
<tr>
<td>1.23</td>
<td>Identify, track and account for all evacuees at each stage of the operation (Evacuee Accountability)</td>
<td></td>
</tr>
<tr>
<td>1.24</td>
<td>Identify handicapped or special need evacuees and plan for their safe evacuation and transfer (Evacuee Accountability)</td>
<td></td>
</tr>
<tr>
<td>1.25</td>
<td>Communicate accountability information effectively between organizations (Evacuee Accountability)</td>
<td></td>
</tr>
<tr>
<td>1.26</td>
<td>Identify suitable landing sites and communicate to response organization</td>
<td></td>
</tr>
<tr>
<td>1.27</td>
<td>Identify primary and secondary landing sites</td>
<td></td>
</tr>
<tr>
<td>1.28</td>
<td>Identify specific components not addressed elsewhere in this list</td>
<td></td>
</tr>
<tr>
<td>1.29</td>
<td>Use of search and rescue drift modeling software</td>
<td></td>
</tr>
<tr>
<td>1.30</td>
<td>Deploy SLDMB</td>
<td></td>
</tr>
<tr>
<td>1.31</td>
<td>Manage massive EPIRB/PLB activation</td>
<td></td>
</tr>
<tr>
<td>1.32</td>
<td>Use ship reporting systems for SAR and vessel tracking</td>
<td></td>
</tr>
<tr>
<td>1.33</td>
<td>Establish triage in coordination with responsible authority</td>
<td></td>
</tr>
<tr>
<td>1.34</td>
<td>Elaborate and distribute maritime safety information as required</td>
<td></td>
</tr>
<tr>
<td>1.35</td>
<td>Simulation recovery of damaged ship (COMPASS)</td>
<td></td>
</tr>
<tr>
<td>1.36</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## DIRECTION OF OPERATIONS/SASEMAR

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Assess the situation and develop an effective response organization structure to meet the demands</td>
</tr>
<tr>
<td>2.2</td>
<td>Develop and communicate joint response priorities, objectives, and tasks</td>
</tr>
<tr>
<td>2.3</td>
<td>Develop and implement incident action plans</td>
</tr>
<tr>
<td>2.4</td>
<td>Provide continuing assessments on the effectiveness of the tactical operations</td>
</tr>
<tr>
<td>2.5</td>
<td>Redeploy firefighting resources at regional/national level</td>
</tr>
<tr>
<td>2.6</td>
<td>Redeploy salvage resources at regional/national level</td>
</tr>
<tr>
<td>2.7</td>
<td>Develop short-range tactical plans based on objectives</td>
</tr>
<tr>
<td>2.8</td>
<td>Consolidate the various concerns from different organizations/agencies into joint planning recommendations and specific long-range plans</td>
</tr>
<tr>
<td>2.9</td>
<td>Document operational and support aspects of the response and provide records of decisions and actions taken</td>
</tr>
<tr>
<td>2.10</td>
<td>Perform international coordination</td>
</tr>
<tr>
<td>2.11</td>
<td>Update action plans</td>
</tr>
</tbody>
</table>

## ON SCENE COORDINATOR

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Effectively communicate with the distressed vessel master to support on-board emergency and manage on scene rescue assets</td>
</tr>
<tr>
<td>3.2</td>
<td>Manage and track lifeboats and rescue craft, including empty boats</td>
</tr>
<tr>
<td>3.3</td>
<td>Accurately track evacuee numbers and communicate to MRCC</td>
</tr>
<tr>
<td>3.4</td>
<td>Provide critical information to MRCC</td>
</tr>
<tr>
<td>3.5</td>
<td>Transfer OSC duties and to communicate change to MRCC</td>
</tr>
<tr>
<td>3.6</td>
<td>Coordinate several SRUs</td>
</tr>
</tbody>
</table>

## LOGISTICS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Provide the necessary support of both the short-term and</td>
</tr>
</tbody>
</table>

MONALISA 2.0 - REPORT ON SCENARIO DEFINITION
| 4.2 | Provide effective land transportation for all elements of the response | □ |
| 4.3 | Provide effective water transportation for all elements of the response | □ |
| 4.4 | Provide effective air transportation for all elements of the response | □ |

| 5 | FINANCE | □ |
| 5.1 | Document the daily expenditures of the organization and provide cost estimates for continuing operations | □ |
| 5.2 | Establish an effective procurement system | □ |
| 5.3 | Provide effective water transportation for all elements of the response | □ |
| 5.4 | Provide effective air transportation for all elements of the response | □ |

<p>| 6 | PRESS/MEDIA DEPARTMENT | □ |
| 6.1 | Manage media demands. (press, radio, video) | □ |
| 6.2 | Notify, manage, and assist information demands from large number of families and friends of passengers and crew. | □ |
| 6.3 | Utilize technology (web sites etc) to support high demands for information. | □ |
| 6.4 | Form a joint information process and provide the necessary interface between the operations department and the media to provide a reliable information source. | □ |
| 6.5 | Release timely, clear, accurate and consistent reports to the media. | □ |
| 6.6 | Identify spokespersons to speak to the media, family, etc. | □ |
| 6.7 | Establish a coordinated informative response with all organizations/agencies involved | □ |</p>
<table>
<thead>
<tr>
<th>7</th>
<th>VESSEL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1</td>
<td>Count and give name of passengers entering the Assembly Station</td>
<td>Gathering assembly station</td>
</tr>
<tr>
<td>7.2</td>
<td>Count and give name of passengers entering the LSA</td>
<td>Embarking LSA</td>
</tr>
<tr>
<td>7.3</td>
<td>Give name and location of people permanently identified as requiring specific care, as soon as danger is identified.</td>
<td>Find people requiring care</td>
</tr>
<tr>
<td>7.4</td>
<td>Detect presence of people in sweeping zones Provide detected persons locations (optional) Analyse detected persons behaviour to detect abnormal behavior (optional)</td>
<td>Ship sweeping phase</td>
</tr>
<tr>
<td>7.5</td>
<td>Provide pax and crew location and name</td>
<td>Travel from sweeping zone</td>
</tr>
<tr>
<td>7.6</td>
<td>Analyse individual pax and crew behaviour</td>
<td>assembly point to AS</td>
</tr>
<tr>
<td>7.7</td>
<td>Provide pax and crew location and name Analyse individual pax and crew behavior</td>
<td>Travel from sweeping zone assembly point to AS</td>
</tr>
<tr>
<td>7.8</td>
<td>Provide position and name of safety groups’ crewmembers anywhere on the ship</td>
<td>Normal safety groups gathering</td>
</tr>
</tbody>
</table>

5. **EXERCISE TYPES**

Type of exercises to be conducted:

5.1 Small scale Exercises: to prepare equipment and staff individually to the MRO Full Scale Scenario.

5.2 Tabletop: to facilitate a group analysis of an emergency situation in an informal, stress-free environment. In parallel to the tabletop exercise a functional exercise with the use of simulators will be conducted. Simulation will be used in two contexts: simulation of SAR operations and emergency towing operations for performance optimization, safety
engineering, training. And secondly will be also used for scientific drift modeling to gain insight into the functioning of different meteo-oceanographic information sources.

5.3. Full-Scale MRO Pilot Exercise: To be carried out with a RO-PAX vessel. Mustering, abandonment and rescue ruteing. Search and Rescue operations.

5.1. SMALL SCALE EXERCISES

Small scale exercises are coordinated, supervised exercises used to test a single specific operation or function. It involves deployment of equipment and personnel. Small scale exercises are a very cost effective way to test preparedness of the SRU search and rescue elements to respond to any MRO scenario without stressing the system excessively.

The objectives should be:

- Simple
- Measurable
- Achievable
- Realistic
- Task Oriented

COMPREHENSIVE SMALL SCALE EXERCISE PROGRAM PLANNING WORKSHEET

June 2014

**Exercise: SRU operational cycle timings and interactions**

Purpose: For this drill, it was decided to focus on the time needed for the SRU to complete operational cycles (ex: winching cycle) and SRU to SRU transfer times.

Rationale: MRO scenarios usually require quick rescued people transfers between units. It was decided to establish a self-assessment process in which we could get a clear overview of the real SRU capabilities when engaged in transfers between units. Because of the fairly limited scope of this drill, pre-drill announcements were limited to those necessary for safety and operations, and those needed for the drill control organization.

June 2014

**Exercise: Establishment of practical radar sweep widths for use during MROs**

Purpose: Radar sweep widths For each combination of sensor, search object involved in a MRO, and set of environmental conditions, a sweep width can be estimated using tables of values based on exercises and testing like this one.
July 2014

Exercise: SafeTRX validation tests
Purpose: Test Safetrax tool as a means for filling the gap in the maritime situational awareness picture.
Rationale: When SAR services require vessels of opportunity other than SRUs, they normally relay on merchant and fishing vessels. However in coastal areas the availability of an important leisure fleet can add important assets when coordinating a MRO. Safetrax is designed in close cooperation with SAR professionals, it is a vessel tracking Smartphone application that fills a critical gap in the maritime situational awareness picture.

September 2014

Exercise: Electronic search 406 MHz during MROs
Purpose: Review of SASEMAR’s 406 MHz direction-finding requirements and capabilities
Rationale: SAR services benefit from knowing the capabilities and limitations of each device providing final homing and locating of a distress device. Testing should be conducted by search air-craft at various altitudes on the homing and locating capabilities of 406 MHz EPIRB alert signal, and the 121.5 MHz homing signal on the 406 MHz EPIRB. Significant quantifiable differences among the individual technologies can be extremely important in case of a MRO.

September 2014

Exercise: Electronic search 121.5 MHz during MROs
Purpose: Review of SASEMAR’s 121.5 MHz direction-finding requirements and capabilities
Rationale: SAR services benefit from knowing the capabilities and limitations of each device providing final homing and locating capabilities of 406 MHz EPIRB alert signal, and the 121.5 MHz homing signal on the EPIRB. Significant quantifiable differences among the individual technologies can be extremely important in case of an MRO.

November 2014 (during Barcelona meeting)

Exercise: SafeTrx and ACO exercise
Purpose: Exercise ACO. Test SafeTrx as a tool to obtain a better surface picture.
Rationale: In a fatal MRO distress scenario, the main mission of the ACO is to exercise organization and control. Air units must exercise evacuation procedures from surface units and communications with ACO and Rescue Centre. Air Coordination of one or more aircrafts and evacuation of multiple persons both injured and not injured. Organize participating units in Sub On Scene Coordinators and SRU’s in order to carry out the distress scenario. Exercise communication with OSC and exercise multiple helicopter hoists from different units.
Exercise: Compass

Purpose: Data for the Simulation of the Manoeuvring/Recovering of damaged ships

Rationale: This system will improve the vessel’s recovering operations after an accident. During simulation different parameters will be combined from the vessels itself (LOA, weight.) with hydro-dynamics and meteorological real data. Data was collected from the Punta Mayor SASEMAR tug vessel located in Barcelona in order to build the model. The model will be validated during the final MONALISA 2.0 SAREX exercise.

November 2014

Exercise: Simulation for requirement for Onboard life rafts recovery systems

Purpose: Data for specifications for onboard life rafts recovery systems

Rationale: Onboard life-rafts Recovery System, is a system capable of recovering life rafts and ship-wrecked, once they are afloat in the water, and place them at safe on board the rescue ship in a very short time (which is particularly advantageous at bad weather and sea conditions, and minimizing the risk of people during the whole recovery operation. The data was collected in order to build the simulation of the tool. The tool will be finally tested in a pool of Jovellanos Centre.

February 2015

Exercise: Navsar conceptual testing

Purpose: Navsar-12and SAR operations

Rationale: NAVSAR-12, is an onboard navigation system customized for SAR operations. The main functionality of this system is to provide interoperability and flow management including search patterns among SAR units and MRCCs. The system communicate through a control panel allowing to upload the navigation data (ECDIS), video, position, search pattern and any other information required to assist the SAR units in the emergency in real time. For the first NAVSAR trail, the CCS Barcelona and Mintaka SASEMAR rescue boat have been selected in order to test the communication set up between a MRCC and a SAR unit. For the MRO Pilot Exercise MONALISA 2.0 SAREX, the NAVSAR system will be installed in Valencia MRCC, Barcelona MRCC, the National MRCC; and in the SASEMAR maritime units that will participate in the exercise. During the MRO exercise the interoperability among centers and SAR units for MRO management will be tested.

5.2. TABLETOP

The tabletop exercise aims to simulate a MRO emergency situation in an informal, stress-free environment. The participants are a decision-makers, coordinators and operational level professionals who gather around a table to discuss general problems and procedures in the context of the MRO emergency scenario. The focus is on familiarization with roles, procedures, and responsibilities.
A tabletop is largely a discussion guided by a facilitator. Its purpose is to solve problems as a group. A tabletop exercise is like a problem-solving or brainstorming session. Problems are task-led one at a time and talked through without stress.

32 persons attended the tabletop on the 7th and 8th of October in Sasemar training center:

Jovellanos from:

- Spanish Maritime Safety Agency
- Guardia civil: Fiscal and border surveillance
- Guardia Civil: Maritime service
- Valencia Port Authority
- Valencia Maritime Authority
- Merchant Marine Directorate
- Spanish Red Cross
- Spanish Army
- Presidency of the Government
- Ministry of Development: Emergency, coordination and crisis management units
- Spanish Customs
- Trasmediterranea Shipping Company
- State Department of Security
- Government of Valencia
- Ministry of Transport

Problem statements were handled in two ways:

- The facilitator verbally presented general problems, which were then discussed one at a time by the group.
- Written detailed events (problems) and related discussion questions were given to individuals to answer from the perspective of their own organization and role, and then discussed in the group.

Pre-scripted messages were delivered to players as needed. The facilitator presented them, one at a time, to individual participants. The group then discussed the issues raised by the message, using their own operating plans for guidance. The group determines what, if any, additional information was needed and requested that information.

Moreover a simulation of the exercise was carried out in real time simultaneously using the ship handling simulator of Jovellanos Centre. To that purpose the virtual Valencia scenario was reproduced in advance. The information received from the crisis room was transformed into information for the simulator. They reproduced everything that happened in real time like vessels and helicopters time arrival, the position of all the boats used in the area.

The tabletop enabled to identify points for improvements in the coordination among the different agents involved in a maritime emergency. All the organisms involved could foresee their possible roll and how they would have reacted.
5.3. Full-Scale Exercise Plan

This Exercise Plan identifies policies, procedures, administrative requirements, exercise roles and responsibilities that will support exercise-planning initiatives.

5.3.1 Scenario Narrative

At approximately 1100 LT on the 15th of June 2015, a fire broke out in the auxiliary engine room on board the Bahamas registered cruise/roll-on roll-off passenger ferry Monalisa. The ferry had sailed from Mallorca, Spain, after completing her last port of call. The seat of the fire was in way of the auxiliary engines’ fuel supply module and quickly spread across the compartment. The fire was eventually extinguished by the ship’s crew. There were 400 people between passengers on board and crewmembers.

The cooperation plan between the shipping company and the Sasemar is activated. Maritime and Air units from different organization are mobilized. The emergency evacuation procedures onboard ship and the Crisis Management Center are activated.

The fire occurred when a pressure regulating valve’s actuator diaphragm ruptured and fuel oil sprayed onto an exposed high-temperature surface on an adjacent auxiliary engine. The fire caused the vessel to lose electrical power, which ultimately required her to be towed into port for repairs.

5.3.2 Major and Detailed Events

Major events as follows, detailed events and expected actions will be included in the exercise control plan:

1. Fire in auxiliary engine room. Crew firefighting team extinguishes the fire. Shore side authorities were not reported.
2. Ship sends a distress alert and reports fire on board. The first fire was detected 3 hours be-fore but the crew firefighting team was able to extinguish it.
3. MRCC Valencia receives alert: Via DSC CH70.
5. MRCC Valencia establishes communication with ship.
6. Distress phase declared.
7. Search Mission Coordinator appointed by MRCC Valencia.
8. Helimer, Salvamar and SAR Mesana tasked.
10. Development of rescue plan.
11. Commence firefighting effort support. SAR Mesana cooling of the ship’s hull
12. The Captain cannot guarantee that the ship is safe. Captain orders abandon ship
13. After mustering Captain reports three passengers missing, last time they were seeing was three hours before when the first fire broke out. Crew firefighting efforts continued. Commence search operation for the three missing passengers.
15. Multi-agency units tasked (Guardia Civil, Cruz Roja, Ejército del Aire, Unidad Militar de Emergencias, Armada, Vigilancia Aduanera)
16. Commence SAR search of the three missing passenger. Most likely jumped overboard when first fire broke out at 0900 LT.
17. Estimates of passenger injuries/casualties rise between 200 and 220 and at least 20 severe burn victims. 4000 passenger and crew on board.
18. Several passengers present disabilities with special mobility needs. Several passengers are injured on deck.
19. MRCC Valencia makes notifications to the competent authorities to consider establishing a forward medical base to enable triage by competent medical staff and whether to send medical personnel to the scene. Procedures are activated for post-traumatic stress syndrome cases.
20. Helicopters used to rescue injured on deck by winching. Commence winching operation.
21. Ship crewmembers start to load, launch and maneuver away the lifeboats and liferafts.
22. Surface units commence rescuing survivors at sea from liferafts and lifeboats.
23. Massive COSPAS-SARSAT activation: Up to 25 EPIRBs and PLBs being carried on board. Activated from liferafts.
24. Missing passengers found adrift. Rescue operation.
25. Captain reports the vessel fire is extinguished.
26. The Captain declares the vessel disabled.
27. Ship is towed to Valencia

5.3.3 Exercise Objectives
Each developed exercise requires objectives that provide the foundation and guidance for exercise development. Objectives are designed to reflect the validity of community plans, procedures and systems and provide the basis for exercise control/simulation and evaluation:
• Demonstrate the capability to initiate public warning procedures at the EOC, including activation of the Emergency Alert System.
• Demonstrate the capability of the local EOC to coordinate the comprehensive response activities.
• Demonstrate the capability of management to conduct and coordinate an evacuation.
• Demonstrate responsible organization capability to identify shelters and mass care facilities for immediate use.
• Demonstrate the collection and dissemination of information to the public during emergency operations.
• Demonstrate the capability to conduct rapid situational assessment.
• Demonstrate the ability to identify immediate supplemental medical assistance to meet the health and medical needs of disaster victims.
• Demonstrate procedures for tracking assets and resources committed to response operations.
• Demonstrate the ability to prioritize and use jurisdictional resources and assets for maximum effectiveness during response operations.
• Determine the procedures for requesting assistance from higher levels of government.

5.3.4 Exercise Assets

- Crisis Management Center
- National MRCC
- Valencia MRCC
- Saseumar Helicopter Helimer 200
- Saseumar 101 Aircraft
- Clara Campoamor MultiPurpose Vessel MPV
- SAR Mesana Tug Vessel
- Patrol boat Caliope
- Fast Rescue Boats Es Salvamar Pollux

- From Other Organizations:
  - Trasmediterranea Ferry JJ Sister: Sarex-Monalisa
  - Spanish Air Force: Helicopter SAR
  - Spanish Navy: Patrol boat
  - Civil Guard: Patrol boat
  - Red Cross: 2 Lifeboats
  - Monalisa Technology test-bed exhibition.

5.3.5 Assets Functions:

**National MRCC-Spanish Maritime Safety Agency-Madrid**

- Support the emergency management at national and international level.
• Notification and manage the maritime and safety information during the emergency

Valencia MRCC-Spanish Maritime Safety Agency

• Coordination centre responsible of the emergency
• Makes the notifications and establish the communication with vessel
• Mobilize the assets
• ACO coordinator

Helicopters: Rescue Operations and Transfer of the firefighting MRO team

Aircrafts: Search Operations

Clara Campoamor MPV: On Scene Command OSC

SAR Mesana: Lifeboats rescue operations, fire intervention team transfer, firefighting and tug.

6.3.6 Sarex Monalisa Programme

![Figure 3: Exercise Large Scale draft Agenda](image)

The SAREX MONALISA FULL SCALE EXERCISE organized by SASEMAR and Valencia Port Authority, has been programmed in 3 days, in order to understand each agency’s capabilities and concerns during a maritime mass rescue event from the point of view of the response at sea and on land competences.

The detailed programme of event is presented in figure 3. The first day an open day has been organized where people from the city of Valencia can visit the maritime and air units of
Sasemar as well as the port of Valencia. In the afternoon a welcome reception of the main representative of the institutions present in the exercise will take place for all the guests.

The second day will begin around 9 am with several presentations and around 11 am the practical exercise on sea will be follow by streaming in the Trasmediterránea Maritime Station. The operations in ports will start at 14:00 and activities will be visible in situ from the terrace of the station. The Sarex Monalisa full scale exercise will end up the next day with a debriefing including all the actors involved the previous day in order to get a feedback.

5.3.7 Organization of the Exercise

The charts below indicate the different scenarios and rolls during the full-scale exercise plan.

Figure 4: Maritime Exercise Scenarios

Every person involved in the exercise will have a role which will be identified by vest as follow:

Figure 5: Exercise rolls
5.3.8 Exercise Assumptions
The following assumptions must be made in order to ensure that the exercise is as realistic as possible. It is intended that exercise events progress in a logical and realistic manner and that all exercise objectives be achieved during exercise play.

- Exercise participants are well versed in their own department and agency response plans and procedures.
- The term “participants” includes planners, controllers, simulators, evaluators, and players.
- Players and controllers will use real-world data and information support sources.
- Players will respond in accordance with existing plans, policies, and procedures. In the absence of appropriate written instructions, players will be expected to apply individual initiative to satisfy response and recovery requirements.
- Implementation of disaster response plans, policies, and procedures during the exercise will depict actions that would be expected to occur under actual response conditions and, therefore, will provide a sound basis for evaluation.
- Actions to direct unit, personnel, or resource deployments will result in simulated movement during the exercise unless live deployment in real time is stipulated to achieve an exercise objective.
- Real-world response actions will take priority over exercise actions.
- Hoax calls will not be simulated.
- Ship able to be evacuated and abandoned orderly. Emergency systems capable of operation > 3h in the remaining zones

5.3.9 Exercise Artificialities
It is recognized that the following artificialities and constraints will detract from realism; however, exercise planners should accept these artificialities as a means of facilitating accomplishment of exercise objectives.

- The exercise will be played in near-real time; however, to meet exercise objectives, some events may be accomplished by participants before the exercise, and other events may be accelerated in time to ensure their consideration during play.
- Many alert, notification, initial activation, and emergency response procedures, as well as some early response actions, will not be a part of the exercise.
- Responses obtained by players from simulations may not be of the quality or detail available from the real organization or individual.
- During the exercise, actions may occur to direct unit, personnel, or resource deployments, and subsequent movement of resources may be played; however, these actions may be simulated with no live movement occurring in the exercise.
- Some personnel and equipment may be pre-positioned at exercise locations rather than moved in real-time during the exercise, and they will enter play at predetermined times from their pre-positioned locations. When this exercise
artificiality occurs, it will be referred to in exercise documentation as exercise pre-positioning to differentiate it from the live deployments that will be evaluated.

5.3.10 Exercise Animation

Animation during exercises is required to compensate for nonparticipating individuals or organizations. Although simulations necessarily detract from realism, they provide the means to facilitate exercise play.

- Simulation of nonparticipating organizations
- Simulation of media calls
- Simulation of victim's familiars
- Simulation of evacuees

For the execution of the exercise an animation cell was defined. The animation cell was formed by personnel from the National MRCC and from the Red Cross.

5.3.11 Management Structure

Overall exercise planning, conduct, and evaluation for the exercise is the responsibility of the Direction of operations. Specifically the MRCC is responsible for coordinating all exercise planning activities between agencies and other participating organizations.

5.3.12 Exercise Team Staffing, Rules and Procedures

For a large exercise, there may be an exercise director with assistants and other functional areas besides evaluation and control and simulation, such as support and coordination. The team chiefs and personnel selected as exercise team members must be knowledgeable of emergency management and response functions. They need this knowledge to understand ongoing exercise activities and to be able to track them. The exercise team will identify rules or guidelines for conduct during the exercise and will identify procedures of the exercise—before, during and after.

The following team structure will be used.
5.3.13 Exercise Design Structure

The following structure will be used to design and control the exercise:

**Exercise Design Team** – Responsible for coordinating all exercise planning activities. The Exercise Director will assign exercise tasks and responsibilities, provide guidance, establish timelines and monitor the development process. The team chief is responsible for developing the exercise objectives, concepts, scenarios, master scenario events list, exercise messages ad-ministrative support requirements, communication methods.

**Control/Simulation Team** – The control/simulation team chief is responsible for the development of the Control Plan. The plan should include but not be limited to the following:

- Exercise control and simulation activity management.
- Provisions for controller/simulator training and briefing.
- Procedures for monitoring and reporting of exercise activities to include the flow and pace of the exercise.
- Procedures to track the accomplishment of exercise objectives.
- Procedures to record the responses of players.
- Procedures for message injection, including the development of ad hoc messages to support exercise objectives.
- A list of required exercise forms, including instructions for use and preparation.
- Preparation for the critique.

**Evaluation Team** – The Evaluation Team Chief is responsible for the development of the Evaluation Plan. The plan should include all evaluation activities that should occur before, during, and after the exercise. Evaluation activities should include but not be limited to the following:

- Exercise evaluation activity management.
- Provisions for evaluator training and briefing.
- Procedures for monitoring and evaluating exercise activities.
- Procedures to track the accomplishment of exercise objectives.
- Procedures to record and evaluate the responses of players.
- Procedures to track message injection, including the development of ad hoc messages to support exercise objectives.
- A list of required exercise forms, including instructions for use and preparation.
- Preparation for the critique.

**Participant Support Team** – The participant support team is responsible for coordinating exercise support activities. This team works with the other teams to develop consistent staff briefings for the controllers, simulators, evaluators, and participants and develops all necessary documentation which should contain but not be limited to the following:

- A schedule of player exercise briefings.
- Provisions for review of community or organization plans, policies and procedures
- Scenario overview
- Exercise objectives
- Procedures for preparation of exercise-generated messages, logs, and reports
- Emergency Operating Center procedures
- Expected player actions
- Administrative requirements
- Recommended pre-exercise training events

5.3.14 Safety and Security

Safety measures will be in place as in during normal operations. Any special security issues involved with the exercise, location, or equipment will be dealt with according to Spanish regulations.

5.3.15 Administrative and Logistical Support Requirements

Administrative and logistical support will be required to support all phases of the exercise. The level of support required will depend upon the complexity and length of the exercise, number of players involved, and the number of objectives being demonstrated. Administrative and logistical support consists of personnel, equipment, supplies and facilities.

- Administrative support at exercise locations/action sites
- Personnel to assist with pre-exercise training registration, training, and packaging of training materials
- Information on facilities (rooms etc.) for the exercise

5.3.16 Site Preparation / Support

Site preparation and Support will be organized by the Port authority of Valencia and the Spanish Red Cross. Every participating organization is responsible of preparation in their own premises and facilities.

6. CONCLUSIONS

The conclusions and outcomes after the exercise experience will be collected in deliverable D4.2.6 Report on the massive SAR operation in coastal waters, from the different events and milestones executed. Besides to the own measurements used for the parameters and performance indicators collection, the different actors and stakeholders will be part of a debriefing activity at the end of the exercise programme. The debriefing will make possible to analyze the gaps, the strengths and the improvements needed, considering all of the opinions and points of view, reinforcing the conclusions and lessons learned after this experience.
7. REFERENCES

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