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## **ANNEX**

### **BACKGROUND PAPER No. 4b**

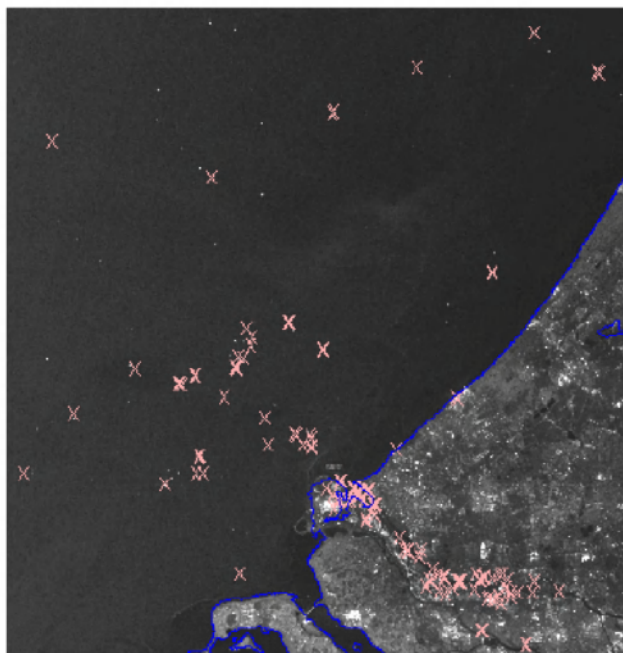
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### **IMPROVING EUROPEAN INTEGRATION IN MARITIME REPORTING, MONITORING AND SURVEILLANCE**

#### **Disclaimer:**

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This background document is therefore purely illustrative and is not intended to represent the political views, nor to indicate or announce possible future initiatives of the European Commission.



## **Improving European integration in maritime reporting, monitoring and surveillance**

## ABSTRACT

Coastguards, fishing inspectors, border guards; police forces, maritime safety authorities, port authorities, and customs need to monitor the positions, activities and cargoes of vessels. A number of systems are accordingly being developed for particular sectors - fisheries, safety, border control, security - for particular ports and for particular coastlines. These systems mostly rely on coastal radar and reports from the vessel. Their Masters are obliged to transmit destinations, positions, cargoes and activities to the appropriate authorities at the appropriate times. Interchange of safety-related information at a European level between participating ports, maritime administrations and coastal stations will be achieved through the SafeSeaNet system which is operated at the European Maritime Safety Agency. National Fisheries Monitoring Centres routinely send positional information of their own vessels to the Monitoring Centre of the countries in whose waters they are fishing. Vessels calling at coastal harbours have to transmit, some time in advance, lists of crew members and passengers for border control and other purposes.

Coastal radar cannot see over the horizon. Infrared cameras have the same limitations. The Automatic Identification System (AIS) only works within the range of VHF – about 40 nautical miles. Air and sea patrols from border guards, customs authorities, police and naval forces, supplement the identification of the maritime traffic in the territorial waters and adjacent space, on the basis of risk analysis. The Vessel Monitoring System (VMS) for fisheries uses satellite communications and has global coverage. The future Long Range Identification and Tracking (LRIT) System will offer a similar capability to those interested in monitoring the position and intentions of merchant vessels. An increased use of satellite imagery might help find those vessels outside the range of coastal radar and AIS that are not carrying VMS or LRIT - or whose system is not working.

The current system is a distributed network of assets which will be increasingly used by both military and civilian users. Each (non-landlocked) EU nation has one Fisheries Monitoring Centre and can have one or more interface with SafeSeaNet. Some are moving towards an integrated system that combines information from different in-situ systems for a particular stretch of their coastline. Whilst the technological means to move forward in a number of sectors – fisheries and vessel safety for instance – are becoming relatively clear - newer challenges - such as an integrated management of the EU's maritime borders - require further study.

It is possible that a better sharing of information and a wider coverage can function with a fully distributed system of connected nodes at a port, national, regional or, if necessary, European and international level. It has not yet been fully explored whether this will work without some formal cross-sectoral action at a European level. Actions that could be considered include (1) appointment of national contact points for the identification of responsible authorities and the sharing of information; (2) developing interfaces and synergies between European information systems such as SafeSeaNet, VMS and the single window used in customs; (3) determining how existing systems could be modified to handle classified or security-critical information; (4) further dialogue between relevant authorities, including the armed forces, to investigate the possibility of operating jointly-owned assets at an EU or regional level. Satellite observation or signals intelligence are obvious examples. (5) developing a legal framework that facilitates the operational deployment of unmanned surveillance vehicles for civilian applications in maritime areas.

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## **1. INTRODUCTION**

Rapid scientific progress in science and technology has provided an unprecedented potential to deliver instruments and systems that can monitor the seas and oceans. At the same time, awareness is growing of the threats to society posed by activities such as overfishing, illegal dumping, the seaborne illegal trafficking of goods (such as cigarettes or counterfeited products), weapons, drugs and humans, the transport of dangerous goods. This awareness has been the driving force for the establishment and maintenance of projects and programmes to build on this technological progress and develop maritime monitoring services for the benefit of society.

The title of this paper includes both the words “monitoring” and “surveillance”. One can find many learned discussions about the differences between the two. For instance it has been suggested that monitoring implies a continuous activity, that surveillance is mostly visual (a listening post would not be surveillance) or that surveillance can be mobile and active whilst monitoring is more stationary. In practice, in English at least, there are many occasions when the two are interchangeable and we will not concern ourselves further with the difference.

Within this paper we are concerned with making better use of the wide range of technologies that allow maritime authorities to obtain information on the traffic of goods and vessels. This information ranges from voluntary reports from the vessel Master, through data from automatically-activated transponders to sightings from patrol aircraft.

We consider what is being done at present, what plans are already in the pipeline, what gaps remain and what further measures at a European level could add value on what is already being done.

## **2. TECHNOLOGIES**

Authorities monitoring vessel traffic, cargoes and maritime spaces in and around EU waters can now call on a number of information systems:

1. According to Commission Regulation (EC) No 2244/2003 of 18 December 2003 all EU fishing vessels over 15 metres must automatically report their positions to the flag state and the coastal state using the Vessel Monitoring System (VMS). Vessels fitted with VMS can be tracked almost anywhere on the planet;
2. The IMO has stipulated that passenger and cargo ships should progressively be fitted with an automatic Identification System (AIS). In the framework of the IMO (SOLAS Convention) and Directive 2002/59/EC the carriage of Voyage Data Recorders (VDR) and AIS are mandatory for almost all categories of ships. AIS can be picked up by other vessels or coastal stations within VHF range (about 40 nautical miles). Under Directive 2002/59/EC, fishing vessels under 45 metres are the only category of vessels exempt from reporting through AIS. In the Third Maritime Safety Package the Commission has proposed to revoke this exemption;
3. Vessel Traffic Services/Vessel Traffic Information and Management Systems (VTS/VTMIS), using information from AIS, coastal radar, and radiocommunications are deployed to manage traffic in specific locations;
4. A long range system for the identification and tracking of vessels is being discussed at IMO. This, like VMS, would have a global range.

Those surveillance systems relying only on cooperative interpellation - ship and port reports, transponders - will remain totally blind to those who try to remain covert. So these are complemented by other methods. Coastal radar can monitor vessels near the coast. Patrol vessels and aircraft fitted with a range of sensors (radar, optical, infrared) monitor the territorial waters of Member States and adjacent spaces.

The technology of systems that can have a wider coverage – such as satellite imagery – is also becoming increasingly available. Research projects beginning under the Global Monitoring for Environment and Security initiative are aimed at assessing the capability for applications such as border monitoring. The Commission's Joint Research Centre is now capable of transmitting vessel positions in all Member State waters derived from radar satellites to fisheries authorities within an hour of the satellite overpass. Similar technology is being employed by French authorities on the Kerguelen island to protect fisheries in the southern Indian Ocean. Satellites cannot provide a continual monitoring but allow a snapshot every time the satellite's orbit positions it over the area of interest. Whilst the frequency of the snapshot depends on the characteristics of the sensor and the geographical latitude of the area being observed, the time between successive snapshots is normally between one and three days.

There is widespread consensus that unmanned aerial vehicles, now widely used for military reconnaissance, might provide an effective means of patrolling maritime areas for civilian authorities. Unlike satellites they can hover above specified areas or swoop lower to observe more closely. The EU project UAVNET has identified border monitoring and fisheries protection as potential application areas. However, in spite of their technical promise, a number of legal barriers – including safety concerns, airspace restrictions and radio frequency allocations – will need to be overcome before they can provide an operational alternative.

Some of these systems have been specifically designed to provide information for one application – safe navigation for instance. But this information might also be useful for other applications – fisheries monitoring for instance. Information that certain vessels are going about their lawful business allows authorities to focus attention on those that might not be.

The challenge is to allow access to those who need the information whilst protecting commercially sensitive information and the individuals' rights to privacy.

### **3. APPLICATIONS**

In this section we summarise the capabilities, limitations and current developments for seven main objectives – improving vessel safety, enforcing fisheries regulations, ensuring security, protecting borders, enforcing customs regulations, providing efficient search and rescue services and monitoring pollution.

#### **3.1. Safety**

##### *3.1.1. VTS*

Safe navigation in major European ports, maritime fairways and sea-routes is handled by Vessel Traffic Services (VTS). For instance the Rotterdam system links 33 radar stations that can follow ships on the radar from port entrance to berth and the operators can directly communicate by voice to ships through relayed VHF. These systems are not only operated by ports. The UK Coastguard Agency manages the Channel Navigation Information System

which uses radar and AIS to keep the Dover Straits under observation, to monitor the flow of traffic and to detect and report vessels which contravene the international regulations for preventing collisions at sea. Increasingly these systems use Automatic Identification System (AIS) information (see also section 3.1.3).

Moves are underway to further develop this capability so as to provide national authorities with a complete picture of traffic along a whole coastline. For instance the SPATIONAV (*système NAVal de Surveillance des aPproches mAritimes et des zones*) enables the processing and display of raw and pre-processed information provided by each of the nineteen radar signal stations and watchtowers along the French part of the Mediterranean coast. Finland and Estonia operate a similar system for monitoring traffic in the Gulf of Finland.

### 3.1.2. *SafeSeaNet*

However ports and national authorities also need information from their counterparts in other countries – a vessel's safety record for instance. The European Community is in the process of developing an integrated vessel traffic monitoring and information system (VTMIS). The broad aim is the establishment of a system of traffic information and monitoring on a Community scale based on modern communication technologies. It should contribute toward safe navigation, safeguarding the carriage of dangerous goods, preventing pollution and improving the response to accidents that threaten human life or the environment. Directive 2002/59/EC<sup>1</sup> provides for the following:

1. An obligation for Member States to set up the suitable ship monitoring infrastructures and equipment, capable notably of handling the information provided by AIS (Automatic Identification Systems). Member States have to set up facilities for 2007 and to ensure that they are operated by properly qualified and trained personnel as well as to ensure their interoperability before the end of 2008;
2. The harmonisation of data exchange by electronic means between Member States, in particular on the transport of dangerous or polluting goods. Member States had until 5 February 2004 to be able to exchange data by electronic means;
3. A better identification and monitoring of the ships presenting a potential risk for safety or the environment;
4. The obligation to cooperate in the future development of the Community network of maritime traffic.

The implementation of the VTMIS system is being achieved through the establishment of telematic networks between Member States aiming at the distribution and exchange of data concerning maritime transport (ships, traffic, dangerous cargoes) The Commission has funded development of the system through the SafeSeaNet project and the resulting system is now being operated by the European Maritime Safety Agency (EMSA) in accordance with EMSA's Regulation (EC) 1406/2002. SafeSeaNet provides for a platform for data exchange between the maritime administrations of the Member States. This system goes beyond the simple positioning of vessels. It provides access to an overview of the ship's situation, characteristics, position and destination, estimated time of arrival, details of the cargo onboard and the security status of the ship. A port authority expecting the arrival of a vessel can ask

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<sup>1</sup> Directive 2002/59/EC of the European Parliament and of the Council of 27 June 2002 establishing a Community vessel traffic monitoring and information system and repealing Council Directive 93/75/EEC, Official Journal L 208 , 05/08/2002, p. 10 – 27.



for that vessel's past history. The information is collected through an active participation from the master, the owner or the operator. Currently six Member States are connected to the SafeSeaNet network. Ten others are testing it.

The Regulation of the European Maritime Safety Agency already allows, when agreed by Member States, to establish the regional centres necessary to monitor navigation and maritime traffic as envisaged by Directive 2002/59/EC.

### *3.1.3. AIS*

In accordance with Directive 2002/59 all Member States must have an AIS coastal network in operation before the end of 2007. These national networks must be capable of feeding information to SafeSeaNet. A number of these Member States plus Norway and Russia have within the HELCOM co-operation already set up a system for the collection and sharing of AIS data.

There are also a number of commercial providers that collect and distribute AIS signals along a particular stretch of coast – sometimes for payment and sometimes free of charge through the internet. This potential loss of commercially sensitive information on positions and cargos worries a number of operators. Information from AIS is part of SafeSeaNet.

This will then constitute the core from which a better-performing European Vessel Traffic Monitoring Information System based upon SafeSeaNet will be further developed. These will take into consideration the deployment of space technologies such as Galileo, the integration of long range identification systems allowing tracking far from the coast and results from research projects such as MARNIS.

## **3.2. Fisheries**

### *3.2.1. Monitoring EU vessels and Waters of EU Member States*

Fisheries authorities use a completely separate system to monitor their vessels. Every EU fishing vessel greater than 15 metres in overall length<sup>2</sup> and every such vessel fishing in EU waters is tracked by the VMS (Vessel Monitoring System) which records the position of the vessel at a regular time interval and transmits it to the Fisheries Monitoring Centre of the flag state which then retransmits it to the coastal state. VMS relies on satellites for positioning and communication. Participating fishing vessels are fitted with a transmitter or transceiver linked to a satellite communications system which is in turn connected to a GPS-based satellite navigation system. By 1 January 2006, the system should also record and transmit speed and course. The time interval between transmissions depends on the Member State and on the system used, but is normally between one and two hours. Some Member States require recording more frequently – every ten minutes – although, in normal conditions, only the one or two-hourly records are transmitted.

The different systems are not necessarily mutually compatible. The system is mainly used as an aid to the identification of vessels operating in areas where fishing activities are not authorised. VMS data are not routinely released to scientists for assessment of fishing effort

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<sup>2</sup> Except fishing vessels used exclusively for the exploitation of aquaculture and operating exclusively inside the baselines of Member States.

although there are no doubts about its potential usefulness in that application. It would be feasible to give scientist access to aggregated VMS data while fully respecting confidentiality.

The European Commission has adopted a draft proposal for a Council Regulation on electronic recording and reporting of fishing activities and on means of remote sensing<sup>3</sup>. Electronic recording is intended to replace mainly the paper logbook, landing declaration and sale notes. The purpose is to enhance control efficiency and hence the accuracy of data and reduce the administrative costs due to the digitalization of information contained in the paper logbooks. As regards remote sensing (Vessel Detection System, known as VDS), research has already demonstrated that it is a useful tool for detecting vessels that do not comply with satellite monitoring rules.

### *3.2.2. Support to Fisheries Monitoring WORLDWIDE*

The European Community, as part of its commitment to sustainability on a global scale, has also played an active role in drawing up the international plan of action to prevent, deter and eliminate illegal, unreported and unregulated fishing (IUU)<sup>4</sup>. The Community promotes the adoption of monitoring technology in those areas where it is party to an international regional fisheries convention, and has provided technical and financial assistance with monitoring, control and surveillance of fishing activities in the waters of developing countries in partnership with those countries. The new Community Fisheries Control Agency will play a central role in the coordination of operations to combat IUU fishing.

## **3.3. Maritime Security**

### *3.3.1. Long Range Identification and Tracking System:*

The main system for collecting maritime security-related information will be the future Long Range Identification and Tracking System (LRIT).

Discussions within IMO are underway concerning this system which could extend the capability of communicating information to shore-based authorities by using existing technology on board ships and communicating through satellites.

Discussions within the IMO are ongoing and should be concluded in May 2006 in order to introduce LRIT carriage requirements. A Community driven submission has been tabled. The specifications and performance of the system are still being negotiated. Current indications are that:

1. The LRIT will communicate information on the identity of the ship and its position. LRIT is aimed at security applications Search and Rescue, safety of navigation and pollution prevention;
2. A Flag State will be entitled to track ships under its flag every where in the world. A Port State will track those ships having announced their intention to call at a port of this State from the time of this announcement. A Coastal State should be entitled to

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<sup>3</sup> Proposal for a Council Regulation on electronic recording and reporting of fishing activities and on means of remote sensing (presented by the Commission) Brussels, 28.10.2004, COM(2004)724 final.

<sup>4</sup> Communication From The Commission, Community action plan for the eradication of illegal, unreported and unregulated fishing Brussels, 28.5.2002 COM(2002) 180 final.

track any ship off its coasts (including those ships not having announced an intention to call into a port of this State) navigating within a certain distance from its coastline.

For the EU it is important to ensure that traffic transiting through EU Member State waters without calling at EU ports is covered. It has recently been agreed at the Sub-Committee on Radiocommunications and Search and Rescue (COMSAR) of the IMO that the setting up of the Long Range Identification and Tracking system (LRIT) of ships and their position based on satellites could be managed by regional data centres. At EU level, such regional system will be built upon the existing SafeSeaNet system.

### **3.4. Border surveillance and the fight against illegal immigration and human trafficking**

Member States participating in the Schengen area have a legal responsibility to ensure a high level of surveillance on the crossing of the external border by persons. Those parts of the external border presenting the highest risk of illegal immigration are currently the Mediterranean and the South Atlantic European shores. This traffic does not only present a challenge from the point of view of the fight against illegal immigration and human trafficking, but also results in the tragic loss of hundreds of human lives.

Some Member States have equipped themselves with very efficient detection systems that can serve as an example for other Member States confronted to similar problems. That is the case of the surveillance by the Spanish authorities through the Integrated System of External Vigilance (SIVE), aimed at improving the fight against illegal immigration and also against the traffic of drugs. The system was first deployed in the Gibraltar Strait and is now being extended to the rest of the Spanish South coast and the Canary Islands. Based on command centres and fixed and mobile stations fitted with radar and infrared cameras, it is able to detect any suspicious craft from the moment it leaves the Moroccan shores. It thus provides the necessary information for the interception or, if necessary, the search and rescue operation, to be launched.

The establishment of the FRONTEX Agency has provided the EU with a further tool for strengthening operational cooperation between Member States. In 2006 a study on the possibilities to reinforce the monitoring and surveillance of the Mediterranean Sea will consider the feasibility of a Mediterranean Coastal Patrols Network. This network would ensure permanent contact and coordination between Member States' sea border surveillance authorities and search and rescue services if necessary and would also connect similar services of North African countries that could be involved in the development of this project. As a first step, FRONTEX will launch a pilot project for the organisation and the day-to-day running of a network of national contact points in Member States for control and surveillance of the external maritime borders in the Mediterranean. Another study will explore the technical feasibility of establishing a surveillance system covering the whole southern maritime border of the European Union and the Mediterranean Sea for border control purposes. The Agency is also responsible for activities such as the organization of joint operations, the carrying out of risk analysis, the assistance on training for national border guards and the establishment of common training standards, the follow up of the development of research relevant for the control and surveillance of external borders and the provision of technical and operational assistance to Member States.

### **3.5. Transport of Goods**

Information systems are being deployed to ease the reporting obligations of those involved in cross-border commerce as well as to identify those who do not report or who falsify their reports.

#### *3.5.1. Reporting*

The Commission has proposed<sup>5</sup> making Member States' electronic customs systems compatible with each other and creating a single, shared computer portal. This would facilitate communications between traders and customs and would allow for faster and better exchange of information between European customs authorities. Electronic declarations would become compulsory, with paper-based declarations becoming the exception. Setting up of an electronic "Single Window" will allow traders of proven trustworthiness ("authorised importers") to deal with one body instead of several customs control authorities as happens at present. Customs and other policy-related information relating to any given import consignment would then only have to be sent once. The goods would then be controlled by customs and other authorities (e.g. police, veterinary and phytosanitary authorities) at the same time and at the same place under a 'One Stop Shop' arrangement.

#### *3.5.2. Prevention and fight against smuggling and illicit trafficking*

Customs, police and other competent authorities monitor movements of all types of vessel on coastal waters for the prevention and fight against smuggling and trafficking. The degree to which this work is integrated with other maritime monitoring activities and with neighbouring countries varies between member States. Some of them have equipped themselves with very efficient integrated detection systems that can serve as an example for other Member States confronted to similar problems. Air and sea mobile patrols, supplement the identification of the maritime traffic in the territorial waters and adjacent space.

### **3.6. Search and rescue**

The Global Maritime Distress and Safety System (GMDSS) provides distress and safety communications to the maritime world. The system includes both terrestrial and satellite components. If the normal way of voice or data communication for a distress alert does not work, the Cospas-Sarsat system for search and rescue encompasses a satellite system capable of detecting distress alert transmissions from compliant Emergency Positioning Radiobeacons, EPIRBs, and determining their position anywhere on the globe. The distress alert and location data is provided to the responsible SAR services. AIS, VMS are and in the near future LRIT will also be used to identify ships in the vicinity of a distress position. The information from the different positioning systems will be incorporated in existing ship reporting systems such as AUSREP, JASREP and AMVER.

The GALILEO support to search and rescue operations will allow not only the near real-time reception of distress messages transmitted from anywhere on Earth and the identification of the precise location but it will also introduce a new search and rescue function - the return link

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<sup>5</sup> Implementing the Community Lisbon programme. Proposal for a Decision of the European Parliament and of the Council on a paperless environment for customs and trade Brussels, 30.11.2005, COM(2005) 609 final

from the operator to the distress emitting beacon, which will facilitate the rescue operations and help to identify and reject false alerts.

### **3.7. Pollution**

Several Member States are working under regional agreements (Bonn, HELCOM, REMPEC) to more efficiently organise oil spill patrolling in their seas.

Directive 2005/35 introduces sanctions for infringements of ship-borne pollution<sup>6</sup>. Article 10 stipulates that the Commission and Member States, in cooperation with EMSA, are to develop accompanying measures to ensure the proper enforcement of the Directive, in particular with a view to develop the necessary information systems required for its effective implementation and developing technical solutions and providing technical assistance, in actions such as tracing discharges by satellite monitoring and surveillance.

The EMSA Action Plan for Oil Pollution Preparedness and Response includes a provision for a satellite surveillance monitoring system by the pollution response unit of the Agency. A wide swath Synthetic Aperture Radar (SAR) on a satellite is first of all capable of detecting oil-spills on the water surface by monitoring the same area for oil-spills between once and three times per depending on the latitude. These sensors can provide a useful indication of the location of a particular spill or statistics on the number of spills in a given area and time. EMSA are currently studying how to set up an operational service. They will see how this service can be complemented with aerial surveillance and patrol vessels to confirm the presence of spills, to support remedial measures and to collect evidence for eventual prosecution.

## **4. ACHIEVING BETTER INTEGRATION**

With these technologies it is becoming easier to avoid collisions, rescue survivors, track dangerous cargoes, discover illegal discharges of oil into the sea, monitor fishing regulations, detect illegal immigrants, apprehend smugglers and deter polluters. However there are some indications that a more coordinated approach might allow stakeholders to use their resources more effectively.

### **4.1. Sharing information – interoperability and standards**

The performance of these systems could be improved firstly by better communication between the different authorities within Member States – maritime safety authorities, fisheries inspectors, border guards, coastguards, search and rescue, police, customs, and secondly by the sharing of assets and information amongst Member States, particularly amongst those located in the same maritime region (e.g. the Baltic sea or the Mediterranean).

Direct access at national level of relevant information concerning vessel tracking and identification of all types of ship and its position should be granted for the prevention and the fight against smuggling and illicit trafficking. Member States should be encouraged to allow

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<sup>6</sup> Directive 2005/35/EC of the European Parliament and of the Council of 7 September 2005 on ship-source pollution and on the introduction of penalties for infringements, Official Journal L 255 , 30/09/2005 P. 11 – 21.

shipping operators to report directly and to allow access, with suitable guarantees of security and confidentiality, to other national authorities and other Member States.

The costs of this integration can be reduced by the development of multi-user systems and the promotion of standards that are accepted by all sectors. However, most stakeholders agree that the major barriers are not technical but institutional. Technical measures need to be accompanied by inducements to encourage information sharing.

#### **4.2. One-stop shop**

Vessels, owners, operators and ports should not have to send the same information more than once<sup>7</sup>. This is the principle behind the “single window” concept for customs declarations. Nor should vessels be obliged to carry one separate hardware unit or designated software for each reporting regulation. The mainstreaming of technological solutions for secure and reliable communication should be a priority and the SafeSeaNet system is a step towards the adoption of a more complete maritime traffic management and information system (VTMIS) within the Community. This system will contribute to maritime safety and environmental protection, but it could be understood that:

1. SafeSeaNet increases the operational efficiency of commercial fleets by allowing shipping operators to provide non-real-time data (cargo details etc) directly to SafeSeaNet rather than through an intermediate relevant national authority;
2. support other authorities - safety, customs, border guards, etc. The system is already prepared for ISPS messages and could incorporate Schengen messages.

Member States should be encouraged to allow shipping operators to report directly and to allow access, with suitable guarantees of security and confidentiality, to other national authorities and other Member States.

#### **4.3. Extending the coverage**

The systems currently operating or being set up will allow the EU's Member States better information on traffic within their territorial waters and better information on vessels arriving at their ports. However, except for fishing vessels and for those vessels whose Long Range Identification and Tracking system is operating, authorities will still be relatively blind in areas outside the range of coastal radar and AIS.

Some of these needs could be met by the regional monitoring centres envisaged under EMSA's regulation. And the European Council<sup>8</sup> has requested a study to be carried out by the end of 2006 exploring "the technical feasibility of establishing a surveillance system covering the whole southern maritime border of the EU and the Mediterranean Sea". Requirements to protect European interests and monitor areas that are further afield – for piracy, illegal

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<sup>7</sup> The new recommended practice 1.8.1 introduced in the FAL Convention in 2005 (amendments not yet into force) provides that “Contracting Governments should encourage public authorities to introduce arrangements to enable trade and transport operators including ships to submit all the information required by public authorities in connection with the arrival, stay and departure of ships, persons and cargo, avoiding duplication, to a single entry point”.

<sup>8</sup> Annex I to Presidency conclusions of European Council of 15-16 December 2005 (15914/1/05 Rev.1 of 30 January 2006), Global approach to migration: Priority actions focusing on Africa and the Mediterranean.

immigration, smuggling, trafficking or illegal fishing for instance - are also emerging where a facility serving the common needs of the EU nations might be considered.

#### **4.4. Dual use**

Security aspects of maritime activity have traditionally been left to the armed forces. But since the end of the Cold War the threats that concern those responsible for maritime surveillance are no longer blockades or invasion fleets but rather a broader, more diverse, range of issues including the fight against illegal immigration, search and rescue, fisheries protection, navigation safety, pollution control, smuggling, trafficking and terrorism. The number of bodies responsible for meeting these threats is also broad. It includes border guard, police, coastguards, pollution-control bodies, fisheries inspectors, maritime safety authorities, customs, port authorities and naval forces.

The common need by all these bodies for similar information means that a number of surveillance assets are now dual-use. For instance the SPATIONAV system being deployed in France has been designed from the outset with military as well as civilian users in mind. Future versions will allow naval authorities to integrate information from SPATIONAV with data coming from surveillance aircraft and patrol vessels.

The same is true of Europe's vessel traffic and monitoring information system. Although developed primarily as a response to safety issues, possible applications in the security domain are being taken into account. Information being gathered primarily for security purposes may well be integrated into SafeSeaNet.

#### **4.5. Promoting Research**

Integrated research projects already started or currently being negotiated in the Sixth Framework Programme are investigating solutions for navigation information services and border surveillance. The Commission proposes to continue these efforts in the Seventh Framework Programme. The security and space thematic area will address border control and surveillance issues as well as technologies to enhance the interoperability of systems, equipment, services and processes<sup>9</sup>.

Some thought needs to be given to providing reporting technology for vessels that are not large enough to fall under any reporting obligation. Vessels under 15 meters can account for considerable fishing effort in coastal waters, trafficking in the Straits of Gibraltar is largely conducted in five to seven meter "pateras" and the explosion that cost the lives of 17 U.S. sailors on the USS Cole originated in a boat some seven metres in length.

### **5. APPROACH OF OTHER MARITIME AUTHORITIES**

A number of maritime authorities in other parts of the world, faced with similar challenges, are setting up operations centers.

For instance Canada has developed a Marine Security Operations Centre grouping together representatives from the Canadian Coastguard, Canada Border Services Agency and

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<sup>9</sup> Proposal for a Decision of the European Parliament and of the Council concerning the seventh framework programme of the European Community for research, technological development and demonstration activities (2007 to 2013) Brussels, 6.4.2005 COM(2005) 119 final

Transport Canada, all under the authority of the Navy<sup>10</sup>. This Operations Centre accumulates of data on the worldwide position and movement of vessels on the oceans. Information on these vessels comes from commercial airlines and weather reports, chartered flights, observations by other vessels, satellites and details from foreign ports concerning vessels departing for Canada.

The United States Coastguard operate a National Vessel Movement Center which, in 2004 was receiving about six hundred notices a day, by phone, fax, and e.mail<sup>11</sup>. This information is entered into a consolidated database that can be examined by Coast Guard intelligence and operations people. The idea is that vessels can be intercepted, boarded, and inspected while they are still safely at sea. In 2004 this was being done on average about twice a day.

## **6. POSSIBLE ACTIONS AT A EUROPEAN LEVEL**

Setting up a structure at a European level is more complex. It involves Community aspects under different legal basis of the EC Treaty as well as police and defence aspects under Titles VI and V of the Treaty of European Union. Present responsibility within Member States is divided between different authorities. However it is clear that actions over and above those already in place are needed if Europe is to shoulder its responsibilities and use its resources most efficiently.

It is possible that a better sharing of technical means and information and a wider coverage can work with a fully distributed system of connected nodes at a European, regional, national or port level and no formal cooperation between sectors at a European level. The Vessel Monitoring System in fisheries is operating without any central European node or database. Exchange of information between flag state and coastal state is routine and automatic. The SafeSeaNet system, currently being deployed, operates under the same principle.

The European Community can support interoperability, the exchange of information and the purchase of surveillance means through the funding of research activities and of projects presented by Member States or by other bodies. In this sense, the Commission has presented a proposal, currently under discussion in the Council, for the creation of a External Borders Fund<sup>12</sup>, that will contribute, among other objectives, to the development and application of the measures necessary to improve border surveillance systems.

It has not yet been fully explored, however, whether a fully distributed model can be extended to a wider range of objectives without at least some formal cross-sectoral action to maintain interoperability, ensure confidentiality and allow the provision of services at a European level to a number of national or sectoral bodies. Possible actions that might be explored include:

1. Appointment of national contact points for the identification of responsible authorities and the sharing of information;
2. Developing interfaces and synergies between European information systems such as SafeSeaNet, VMS and the single window used in customs;

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<sup>10</sup> A visit was made to this Centre by the Eur. Commission's Maritime Policy Task Force preparing the Green Paper on June 10, 2005

<sup>11</sup> William Langewiesche, "the Outlaw Sea", North Point Press, 2004

<sup>12</sup> Communication from the Commission to the council and the European Parliament establishing a framework programme on Solidarity and the Management of Migration Flows for the period 2007-2013, Brussels, 6.4.2005, COM(2005) 123 final/2



3. Determining how existing systems could be modified to handle classified or security-critical information;
4. Further dialogue between relevant authorities, including the armed forces, to investigate the possibility of operating jointly-owned assets at an EU or regional level. Satellite observation or signals intelligence are obvious examples;
5. Developing a legal framework that facilitates the operational deployment of unmanned surveillance vehicles in maritime areas.

## APPENDIX 1 GLOSSARY OF ACRONYMS

The intention, in preparing this document, was that the meaning of acronyms used in this document could be determined from context. This appendix provides some additional details. It should not be considered an exhaustive description of the organizations, projects, concepts and networks represented by the acronyms used in this report but rather a guide to further investigations with internet search engines such as Google.

AIS	Automatic Identification System Automatic identification systems (AISs) are designed to be capable of providing information about the ship to other ships and to coastal authorities automatically. It is a shipboard broadcast system that acts like a transponder, operating in the VHF maritime band, that is capable of handling well over 4,500 reports per minute and updates as often as every two seconds.
AUSREP	Australian ship reporting system. AUSREP is an integral part of the Maritime Search and Rescue (SAR) system in Australia and is operated by the Australian Maritime Safety Authority through the Rescue Coordination Centre (RCC Australia). Regular reporting is imposed for certain Australian and foreign vessels in the waters covered by Australian search and rescue.
AMVER	A safety reporting system sponsored by the United States Coastguard. It is open to most commercial vessels on voyages of over 24 hours. Currently 12,000 ships from over 140 nations participate and on average over 2,800 vessels are plotted each day. The information is only used for search and rescue
Bonn	The Bonn Agreement is an international agreement by North Sea coastal states, together with the EC to offer mutual assistance and co-operation in combating pollution and to execute surveillance as an aid to detecting and combating pollution and to prevent violations of anti-pollution regulations.
COMSAR	The IMOs' Sub-Committee on Radiocommunications and Search and Rescue
EMSA	European Maritime Safety Agency
EPIRB	Emergency position indicating radiobeacons (EPIRBs) alert rescue authorities by indicating location.
FRONTEX	European Agency for the Management of Operational Cooperation at the External Borders of the Member States of the European Union), headquartered in Warsaw, Poland. It is the external border security agency of the European Union.
GALILEO	A European radionavigation satellite network which been designed and developed as a non-military application, while nonetheless incorporating all the necessary protective security features. It is based on the same technology as the United States military GPS and provides a similar - and possibly higher - degree of precision. It includes a signal "integrity message" informing the user immediately of any errors. The testing phase will be complete in 2008.

GMDSS	The Global Maritime Distress and Safety System, GMDSS, provides distress and safety communications to the maritime world. The system includes both terrestrial and satellite components
HELCOM	HELCOM is the governing body of the "Convention on the Protection of the Marine Environment of the Baltic Sea Area" - more usually known as the Helsinki Convention.
IMO	International Maritime Organisation whose purpose is “to provide machinery for cooperation among Governments in the field of governmental regulation and practices relating to technical matters of all kinds affecting shipping engaged in international trade; to encourage and facilitate the general adoption of the highest practicable standards in matters concerning maritime safety, efficiency of navigation and prevention and control of marine pollution from ships”
ISPS	The International Ship and Port Facility Security Code (ISPS Code) is a comprehensive set of measures to enhance the security of ships and port facilities, developed in response to perceived threats to ships and port facilities
IUU	illegal, unregulated and unreported (fishing)
JASREP	A ship reporting system established by the Japan Coast Guard for search and rescue.
LRIT	Long range identification and tracking to communicate information on the identity of the ship and its position. Unlike AIS it will use satellite communications. Hence the “long-range”.
MARNIS	is an Integrated Research Project in the 6th Frame Work Programme, aiming to develop Maritime Navigation and Information Services on a pan-European basis
MSOC	Marine Security Operations Centre (Canadian Centre for monitoring maritime traffic)
REMPEC	Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC).
SafeSeaNet	a European Platform for Maritime Data Exchange between Member States' maritime authorities, It is a network/Internet solution based on the concept of a distributed database.
SAR	Search and Rescue  Synthetic Aperture Radar

SIVE	Sistema Integrado de Vigilancia Exterior Sistema Integrado de Vigilancia Exterior" Operated by the Spanish "Guardia Civile" on the southern coast of Spain and in the Canary Islands. Its aim is to improve the control of the Spanish southern border, notably in fighting illegal immigration and drug trafficking. The SIVE works with fixed and mobile radars and night vision cameras installed in strategic points on the southern coast, that send round the clock information to the different control centres, where they are analysed and problems detected.
SOLAS	International Convention for the Safety of Life at Sea (SOLAS), 1974 The SOLAS (Safety of Life at Sea) Convention in its successive forms is generally regarded as the most important of all international treaties concerning the safety of merchant ships. The first version was adopted in 1914, in response to the Titanic disaster,
SPATIONAV	French project to improve surveillance of coastline. Involves Ministry of Defence, (Navy), Ministry of Transport (Maritime Rescue Coordination Centres) and Ministry of Finance (Customs).
UAVNET	Fifth Framework Programme thematic network to advance the development of UAVs (Ummanned Air Vehicles) for civilian purposes
VDR	Voyage Data Recorders. Passenger ships and ships other than passenger ships of 3000 gross tonnage and upwards constructed on or after 1 July 2002 must carry voyage data recorders (VDRs) to assist in accident investigations, under regulations adopted in 2000, which entered into force on 1 July 2002.
VDS	Vessel Detection System. A system for detecting vessels using earth observation technology (mostly synthetic aperture radar) and comparing those positions with those obtained from the on-board VMS system.
VMS	Vessel Monitoring System. These systems rely on satellites for positioning and communication. Participating fishing vessels are fitted with a transmitter or transceiver linked to a satellite communications system which is in turn connected to a GPS-based satellite navigation system. The navigation system continually calculates the position of the vessel in question and the communication system transmits the position either at pre-determined intervals – normally hourly – to a Fisheries Monitoring System (FMC) or when polled by the authorities
VTMIS	Vessel Traffic Management and Information Systems (see VTS for details)
VTIS	Vessel Traffic Information System (see VTS for details)
VTS	Vessel Tracking System using information from AIS, coastal radar, and radiocommunications deployed to manage traffic in specific locations. There is no internationally agreed difference between VTS, VTIS and VTMIS