Brussels, 29 June 2007

GREEN PAPER

THALES's Contribution to the Consultation Process

Foreword

The maritime dimension of the EU economy is recognised essential as 90% of its external trade and 40% of its internal trade is transported by sea. Furthermore strategic energy supplies (oil, gas) of the EU member states depend massively on sea transport.

In this economical environment illegal and criminal activities on the sea and from the sea have developed dramatically during the last 10 years and are impacting massively on European societies. In that regard the following key **risks** and **threats** can be highlighted:
- considerable quantities of narcotics are being shipped daily into EU27;
- illegal immigration and trafficking of human beings which are developing into humanitarian tragedies as hundreds of lives disappear on a monthly basis in the Mediterranean and East Atlantic from the spring to the autumn;
- extensive marine pollutions which could have long lasting impacts on costal economies (cf. *Erika*, 1999 and *Prestige*, 2002);
- technology risks and terrorist attacks permanently challenge strategic energy supplies and could disruptively impact on marine environments and economies as well as cause massive fatalities at sea or in ports.

In that background both economical, environmental and humanitarian where concurrently EU citizens express high expectations to living in a clean, safe and secure environment, the **Maritime Safety and Security** (MSS) domains are recognised essential and have entered the political agenda of the European Parliament and EU Presidencies. MSS is taken seriously both at EU and Members states levels. The maritime stakeholders community is equally strongly committed to it.

As a result a wide spectrum of European projects and initiatives have developed and are still developing at EU and MS levels to enhance maritime safety and maritime security. More are anticipated to develop in the forthcoming decade.

Those projects are mainly about devising appropriate legislative measures, creating and reinforcing capabilities in traffic monitoring, marine pollution prevention, maritime surveillance, port security, coastal patrols network, etc. European Agencies (EMSA[1], FRONTEX, CFCA[2]) are operating work programmes and developing initiatives within each respective sector.

Though all these initiatives share large commonalities in scopes MSS is currently managed in a sectoral and fragmented organisational approach at both EU and MS levels with significant consequences into illegal activities and fatalities. The lack of holistic vision develops into duplication of efforts and little global cost effectiveness.

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[1] European Maritime Safety Agency.
[2] Community Fisheries Control Agency.

THALES supporting the EU Maritime Policy

In this background the initiative towards a future Maritime Policy for the EU and the associated wide ranging process of consultation have been welcomed and supported by THALES from the very beginning.

As a key industry stakeholder in security, maritime and space environments both in terms of ships, aircraft, satellites, platforms, equipment, systems and services THALES is very much concerned in the Green Paper and in the subsequent future EU Maritime Policy. It is ready to abundantly contribute within its remits to support devising and implementing the future Maritime Policy for the EU.

Therefore at this stage THALES would like to take part in the consultation process. It would contribute to develop a **comprehensive EU Maritime Management (EUMM) Perspective** as a key instrument of the future EU Maritime Policy.

Based on SEASAME and SESAR experiences within the air traffic management domain THALES's expertise and leadership associated to its European footprint would contribute mobilising political forces and streamlining initiatives on EUMM.

A Comprehensive EU Maritime Management Perspective

Though large overlapping areas in the extensive maritime civil and military MS' responsibilities, EU and MS agencies, organisations, structures and systems dealing with the MSS environment have been designed to manage arising crisis and tackle specific issues such as illegal activities (e.g. marine pollutions, immigration by sea, drug trafficking, IUU[3] fishing, etc.) as they develop. This consequence management approach show limitations on a daily basis and prefigures more limited future achievements.

There is consequently urgent need for a **transformational approach** to start thinking the maritime domain comprehensively in terms of strategy, concepts, plans and policy benefiting on the commonalities[4] of each sector. There is concurrently urgent need to design an EU Maritime Management framework defining regulations and related operational requirements as well as standards with a view to implementing coordinated decision making, common interoperable procedures, structures and models. In that regard there is room to better coordinate inter-pillars relationships and civil-military interactions.

Recognising that EMSA, FRONTEX and CFCA since their recent creation have achieved significant results and are developing very promising operational programmes in each three essential sector of the maritime domain (namely Safety[5] Security and Fisheries Control) we anticipate large potentialities to reach global achievements provided the three sectors are apprehended more comprehensively with a view to **extensive coordination and interoperability**. Therefore we consider there is a timely opportunity to benefit the dynamics of the Maritime Policy shaping process and envisage a transformational approach to apprehend holistically the maritime domain.

This vision suggests considering a comprehensive EU Maritime Management (EUMM) perspective which will capitalise on commonalities and best practices of the three sectors and lead to setting up an overarching **inter-agency Maritime Management Organisation (EMMO)**. This organisation would be a supporting instrument of the EU Maritime Policy to enable cross border interactions and coordination as well as stimulate synergies and multi-

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[3] Illegal, Unreported and Unregulated.
[4] e.g. provided interoperable procedures and information systems, airborne and satellite borne surveillance can tackle both oil spills, IUU fishing and illegal immigration though each sector falls formally into specific European Agencies' remits and MS' distinct chains of command.
[5] including Marine Environment Protection.

disciplinary solutions. EMMO will be the relevant receptacle to accommodate the management of maritime information in close cooperation with MS and cooperating third countries. Based on legacy systems and developing programmes at EU and MS levels it will foster the management and the coordination of **Maritime Surveillance** and **Maritime Awareness** in the European coastal waters, maritime approaches and sea basins.

To pave the way towards EMMO a short term interim solution could develop into an EU **Maritime Coordination Scheme** to foster **enhanced coordination between** the operational maritime agencies.
The Maritime Coordination Scheme (a Joint Undertaking structure?) will be supported by a **coordination information system** which will merge the existing agencies operated systems.
The Maritime Coordination Scheme will concurrently experiment and prepare the institutional development of the EMMO structures based on an **inter-agency** (with possibly a view to an inter-pillar) approach matching the comprehensive Maritime Management perspective.

Under the aegis of EMMO concerned EU Agencies and MS will benefit as appropriate comprehensively **pooled Maritime Awareness** to exert more responsively and effectively their operational responsibilities. The multiplying effect of pooling maritime information will optimise the use of funding resources and enhance operational and cost effectiveness at EU and MS levels.
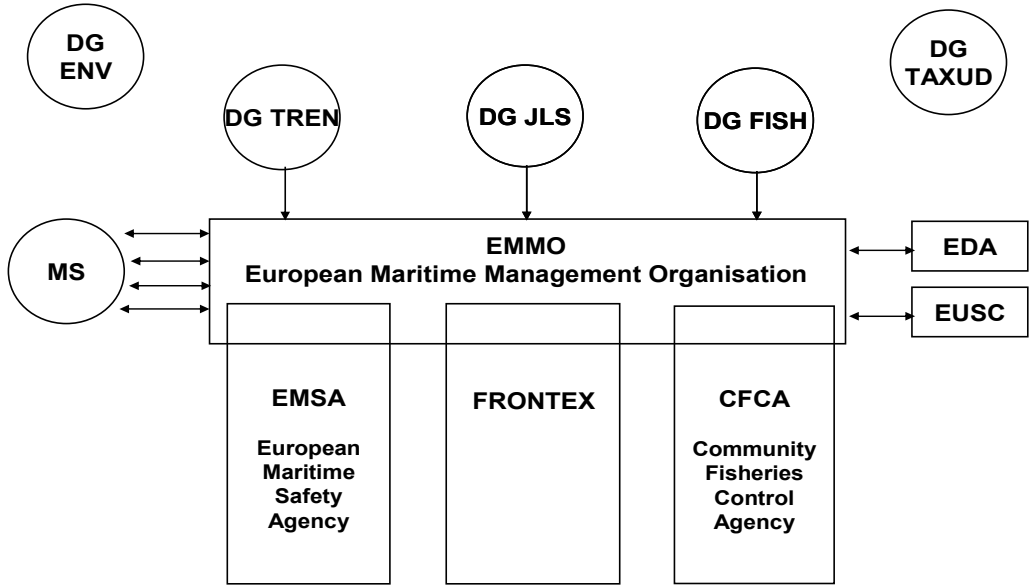
MS will continue contributing their surveillance organisations, systems and data to EMMO as they currently do to EMSA, FRONTEX and CFCA. Additionally MS will contribute as appropriate Maritime Security Operations and Defence activities to EMMO at national, multinational or ESDP levels.

We consider finally that the forthcoming implementation of **LRIT** and the ongoing development of **GMES** represent a timely window of opportunity to initiate developing a comprehensive EUMM perspective in support of the EU Maritime Policy and prevent risks of future technology impasses[6].
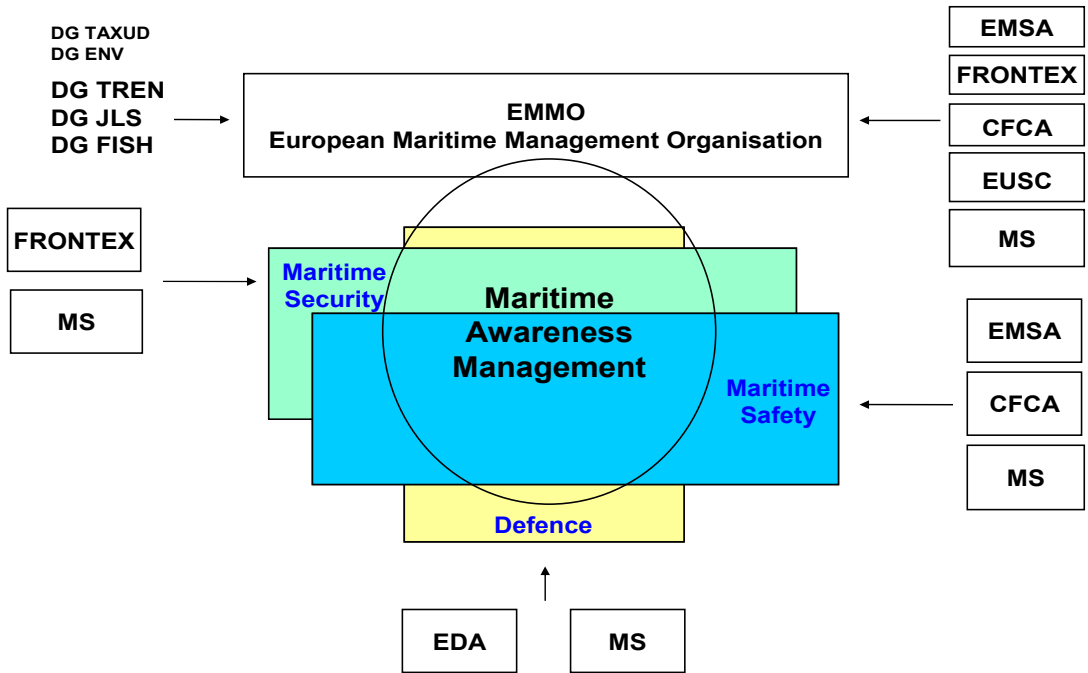
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[6] The sectoral approach which led to the current situation could seriously thwart future developments in MSS. In the absence of holistically and multidisciplinary designed system architecture - notwithstanding allowed resources - there are serious risks that technology challenges could not be met with consequences that seamless interoperability and ultimately Common Maritime Picture could not be reached.

European Maritime Management Organisation

DG ENV

DG TREN

DG JLS

DG FISH

DG TAXUD

MS

EMMO
European Maritime Management Organisation

EDA

EUSC

EMSA
European Maritime Safety Agency

FRONTEX

CFCA
Community Fisheries Control Agency

European Maritime Awareness Management

DG TAXUD
DG ENV

DG TREN
DG JLS
DG FISH

EMMO
European Maritime Management Organisation

EMSA

FRONTEX

CFCA

EUSC

MS

FRONTEX

MS

Maritime Security

Maritime Awareness Management

Maritime Safety

EMSA

CFCA

MS

Defence

EDA

MS

4

S E A S A M E

In this framework THALES and FINMECCANICA have developed a joint initiative in Maritime Management called **S E A S A M E**. This initiative which will open up as appropriate to all maritime stakeholders matches most of the MSS challenges identified in the Green Paper.

S E A S A M E will provide:
- the framework for promoting standards to foster the development of synergies between various civil and military maritime sectors as well as mitigate discrepancies between institutional terms of reference to maximise operational and cost effectiveness in European Maritime Management*;*
- multi-user systems to develop broader links between maritime stakeholders both civil and military and contribute combining their policies to reinforce each other (e.g. a Common Maritime Picture).

S E A S A M E will encompass MS' existing monitoring (e.g. VTS) and information systems as well as networks operated by EU Agencies (i.e. EMSA, FRONTEX, CFCA). It will pave incrementally the way for further programme developments taking into account developing systems (e.g. GMES), regional priorities and specific MS concerns as well as evolving technologies, scenarios and circumstances.

O P E R A M A R

THALES and FINMECCANICA have recently submitted (31st May 2007) a project to the European Commission (DG Enterprise) within the 7th Framework Programme for Research & Development. The proposal under the topic SEC-2007-7.0-02 of Activity 7 'Security Research Coordination and Structuring' aims at studying an inter**opera**ble approach to the EU MSS Management. The project is called **O P E R A M A R**..

The project concurs entirely with the Green Paper that quite relevantly pointed out the sectoral and fragmented organisational approach to European MSS Management. The project anticipates there are immense potentialities to make progress in the domain provided it is apprehended more comprehensively with a view to interoperability. Its scope is therefore about identifying how **interoperability** could contribute to generate inter-sectoral fertilising effects, develop synergies and enhance Maritime Management in terms of organisation, structures and systems. **O P E R A M A R** could be considered as the initial phase of **S E A S A M E** initiative on comprehensive EU Maritime Management.

The project intends to gather a wide spectrum of maritime stakeholders ranging from European Agencies to Coastguards and Customs including maritime operators and Research Centres. It will consist in assessing **interoperability** requirements and standards, evaluate organisational and procedural challenges and identify common related models. **O P E R A M A R** will develop into interviews, meetings and workshops organised by the Project Team and deliver recommendations. At this stage **O P E R A M A R** has been received positively and formally supported by a wide range of maritime stakeholders.

Conclusion

Finally meaning to address a comprehensive vision of Maritime Management within the EU Maritime Policy, **O P E R A M A R** and **S E A S A M E** are about contributing to:

- **develop** an inter-agency European Maritime Management Organisation (EMMO) as the MSS, Marine Environment and Fisheries Control's instrument to support the EU Maritime Policy;
- **provide**, under the aegis of the EMMO, EU Agencies, MS and maritime stakeholders with relevant overarching frameworks and platforms (organisational, procedural, technology systems) with a view to allowing them exerting more comprehensively and responsively their responsibilities, missions and tasks;
- **enable** coordination, generate synergies, make more efficiently use of capabilities devoted to EUMM and pave the way for future developments;
- **bring** enhanced safety, security, more effective fisheries control and pollution prevention into MS' ports, maritime approaches and EEZs;
- **increase** global cost effectiveness of both EU and MS' funding resources committed to Maritime Management;
- **support** the heavily sea depending EU27 economies and ultimately the EU stability and prosperity in developing a clean, safe and secure maritime environment.

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THALES and FINMECCANICA

S E A S A M E - An Overview

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1. S E A S A M E's Goals, Scopes, Priorities and Stakeholders

The *Goals* of the **S E A S A M E** programme are to **provide Europe with the incremental capabilities of a coordinated Maritime Safety and Security (MSS) policy, supported by the adequate Institutional, Legal and Operational frameworks at European, Regional, and national levels to:**

• Improve **Member States' Capabilities**
• Improve **interstate cooperation and European coordination**
• Provide tools to ensure a **permanent and comprehensive picture** of the European waters
• Provide a **framework for a better cooperation** between **public** institutional entities and private companies

The *Scopes* of activities of the **S E A S A M E** programme are to:

• **Foster cooperation and interoperability** between EU Agencies, MS' organisations and stakeholders
• **Develop European Regional Coordination Centres** cooperating with MS' National Centres
• **Enhance the Vision** (regulation, organisation, equipment and systems) in order to be able to master MSS, taking into account the present and anticipated challenges (e.g. IUU fishing, organised crime and illegal immigration, etc.)
• **Design, Develop, and Implement the future European policy, regulation and systems** for MSS with a distributed and interconnected Control Centre Network which fuses data originating from sensor/platform/intelligence of MS in an integrated system of systems
• **Propose EU Codes and Standards** dealing with Maritime Safety and Security
• **Establish a European infrastructure for MSS** to facilitate interactions, synergies, communication and promote exchange of information

S E A S A M E's *Regional Priorities* concern:

• **Mediterranean**: illegal immigration and related search and rescue, illegal fishing, drug trafficking
• **East Atlantic**: illegal immigration and related search and rescue, marine pollution, drug trafficking
• **Baltic Sea**: navigation safety, marine pollution
• **Black Sea**: marine pollution, smuggling, drug trafficking
• **North Sea, English Channel**: navigation safety, marine pollution

S E A S A M E's *Stakeholders* are:

European Institutions (including European Agencies like FRONTEX, EMSA, CFCA, EEA, etc.), National Administrations, Sectoral Organisations (Suppliers, Operators, Users, etc.), Pollution Prevention Organisations and Committees, Industry, Research Centres, Military Navies, Merchant Navies, Customs, Coast Guards and Border Guards, Port Authorities, Insurance Companies, Passengers.

2. Added Value to Strategic Missions

Beyond **illegal immigration**, there is a **wide range of risks and threats related to Maritime Safety and Security which would benefit from an efficient Maritime Border Surveillance System**, as stated in the Green Paper.

For example **Illegal, Unreported and Unregulated Fishing** (IUU) is reported to cost between €4bn and €9bn per year to the community.

Additionally there are obvious synergies to be created with **Vessel Traffic Management** by tracking and identification of ships in coastal areas and in the open sea with the generalisation of AIS, and the development of the Long Range Identification and Tracking (LRIT).

Fighting **pollution** and **oil spills** will benefit from the same tools, and from the integration in **S E A S A M E** of space imagery. The European programme GMES is paving the way for this with projects like Marcoast. New technology is being developed with performance increasing to a point where it will provide the same sort of benefit to help counter all sorts of trafficking and smuggling.

Beyond trafficking, crime and terrorism, it is important to take into account other risks to the European coastal regions, which are related to **environmental issues**: water pollution and eutrophication, loss of biological diversity, land use and landscape deterioration and coastal erosion.

In 2004 almost 20% of all vessels reportedly attacked by **pirates and armed robbers** were EU-flagged vessels. Today this may not be directly related to the Mediterranean area, but it stresses the high level of severity of the issue.

An effective maritime surveillance system will be a strong **deterrent to criminal activity** or any related activity and it will increase the level of prevention that is currently available.

The domain covered by such a response includes **not only coastal waters but also the open sea** (cf. BORTEC Study's Terminology) which could also entail coverage of the wide maritime areas overseas under European jurisdiction.

To address these threats and risks **the missions of a Maritime Border Surveillance system are multiple**. In addition to specific border control they cover areas like Port Protection, Navigation Safety and Collision Avoidance, Surveillance, Cargo Control and Container Security, Security of Energy Supply, Environment Protection, etc.

3. A Three Phase Programme

The comprehensive **S E A S A M E** initiative will be deployed in accordance with a three phase project plan in order to properly tackle and manage the relevant aspect of the overall initiative. This scheme is very similar to the SESAR programme, the Single European Sky initiative for air traffic management.

3.1. Definition Phase (up to 2 years)

A common vision of MSS will be established (starting from the existing processes, infrastructures and available platforms), giving a baseline for future systems, equipment and services in MSS.

The necessary policies, regulations, organisation frameworks will be proposed, together with a roadmap of what needs to be developed in the next phases (the need for MSS, the high level concepts of operations, the objectives in terms of surveillance intensity, functionalities, performance, system architecture, as well as the main technology axis required to achieve the **S E A S A M E** goals including sensors, decision making aids, unmanned vehicles, etc.).

During this phase 'proof of concepts' will be used to prove the feasibility of processes, concepts of operation, and technologies to be used in the implementation of a complete integrated system.

At the same time it will be necessary to establish a close synergetic linkage and co-ordination with ongoing EU projects related to Maritime Safety and Security such as: GMES, MARNIS, SafeSeaNet, Galileo, SOBCAH, etc.

3.2. Development and Pilot Implementation Phase (2 to 3 years)

The second phase will see the technology gaps matched with adequate R&D programmes, and the results incrementally integrated in 'development and demonstration prototypes'. A few Pilot Projects will be implemented in selected critical areas.

The immensity of areas to be managed, the variety of events to be detected and the difficulty to detect small targets at sea will require new techniques and technologies, which will increase the innovative 'edge' of Europe and its R&D capabilities.

These needs should be supported by the successive FP7 calls possibly funded by the **External Border Fund**.

It will be necessary to develop the technological capabilities required to develop the systems, equipment and services identified in the definition phase (including sensors, multi-sensor/multi-platform data fusion, decision making aids, unmanned vehicles, long range identification and tracking (LRIT) etc.).

3.3. Incremental Implementation Phase (2010 onwards, starting before end of Phase 2)

This Phase will feature a short term aspect addressing the integration, modification and upgrade of existing systems and organisations, and a long term aspect for new systems. The implementation phase will be driven by national initiatives according to local priorities in a commonly agreed European framework. As such it will eligible to the **External Border Fund**.
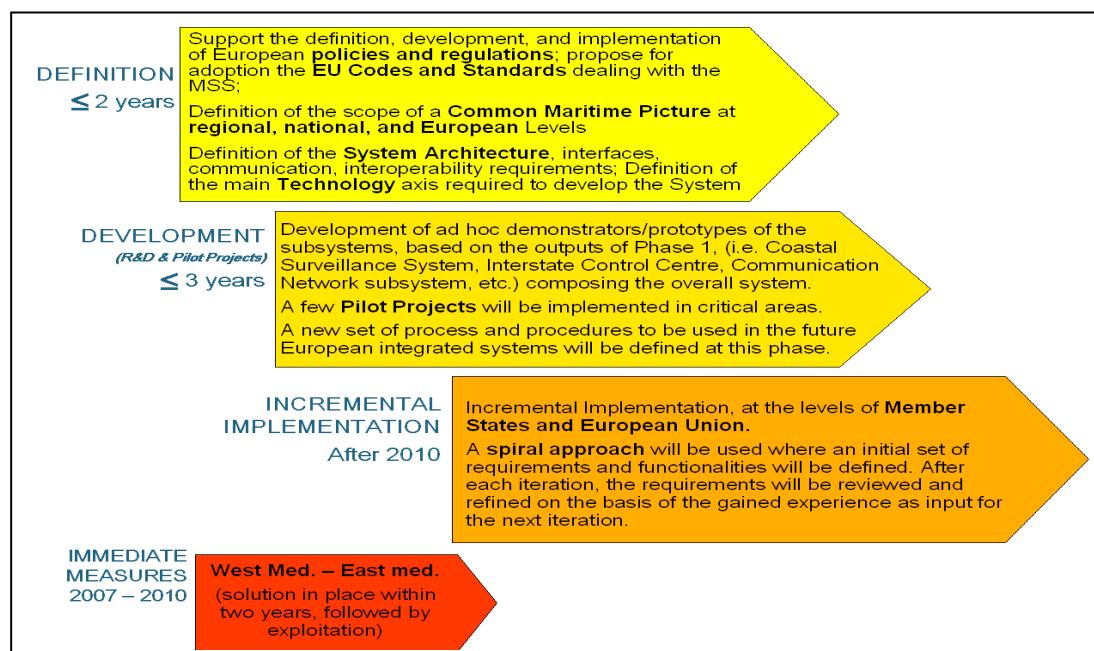
These three phases are likely to overlap, since R&D activities will start within FP7 before phase one is over and there will be needs to improve existing systems (such as the capabilities available in the Mediterranean sea) before phase one and two are complete.

4. Data Information Flow – Common Maritime Picture (CMP)

The **S E A S A M E** source data is collected from a number of systems and sensors. Beyond the VTS, AIS and Coastal Radar Sensors of national systems, data can derive from sensors based on various technologies assembled on platforms like ships or airborne manned and unmanned vehicles which can provide a useful extension of the coverage beyond coastal waters.

All the collected information is used to support the production and maintenance of a comprehensive Common Maritime Picture (CMP) at national level in each Control Centre.

The process of CMP generation, correlation and distribution is real time: new data will be fed into the system and **it will dynamically update the European and national CMP**.

The purpose of the Common Maritime Picture is to allow the development of a comprehensive and in depth situational awareness that is easily shareable between all involved parties.

This is intended to provide the interstate and different member states' Operational Centres with useful, real time knowledge that enables the recognition of key events and the formulation of responses and at the same time to convey the commander's intent to all concerned parties. This allows for:
• A fast decision making cycle
• Enhanced cooperation and synchronization
• High effectiveness and timeliness of operations

The centralised CMP produces the best possible knowledge on maritime traffic: position, course and speed, identity, cargo manifesto, ship sailing plan, security info, etc. of any vessel at sea.

Collaboration tools and decision making aids will also be provided to control centres to share information on the generated CMP and improve the decision making process across national borders. To make best use of the considerable increase of accessible data operators should be provided with powerfully effective tools such as 'threat filters' and abnormal behaviour alert systems.

The decision making process will also be supported by workflow management capability to respond effectively to critical events following predefined process/procedures.

Collaboration tools, workflow management and the real time process of collecting and correlating source data will be implemented using styles and patterns (e.g. publish/subscribe and information dissemination) typical of a Service Oriented Architecture (SOA) which will be deployed within and between the national centres.

The SOA will also provide the power and flexibility to:
• integrate legacy systems in the national or European wide infrastructure
• publish the functionalities of each national centre in the form of coarse-grained services.

5. Link with European Programmes

S E A S A M E is entirely in line with the results of studies carried out by FRONTEX (i.e. MEDSEA and BORTEC). It will take into account the results of the large Green Paper consultation process on the EU Maritime Policy as well as the related Action Plan and Blue Paper.

Similarly **S E A S A M E** will benefit from other European initiatives in the same domain such as:

- **SafeSeaNet**: system of networks between Member States aimed at the distribution and exchange of data concerning maritime transport (ships, traffic of dangerous cargoes). The system is operated by the European Maritime Safety Agency (EMSA). SafeSeaNet provides a platform for data exchange between the maritime administrations of the Member States.
- **CleanSeaNet**: a satellite based monitoring system operated by EMSA for marine oil spill detection and surveillance in European waters. The service provides a range of detailed information including oil spill alerts to MS, rapid delivery of available satellite images and oil slick position.
- **GMES**: the Global Monitoring for Environment and Security project will implement a number of public information services in support of European policies. Marine services have been identified as a one of the first priorities (fast track services).
  Other European projects of interest are MARCOAST, LIMES and the Maritime Security Service project (MARISS). MARISS is supported by the European Space Agency.
- **GALILEO**: new instruments to strengthen the monitoring of international rules on the high seas and their control by port states should be developed using state-of-the-art technologies such as global satellite navigation.

S E A S A M E will also draw benefits from the results of the past Framework Programmes (FP) for European Research, the 2004-2006 Preparatory Action for Security research (PASR), and the current FP7 of which Security is a major theme. For example **S E A S A M E** is a logical continuation of major actions such as:

- **MARNIS** (a 6th FP project focused on transportation by sea, and including safety, security, and economical aspects)
- **SOBCAH** (a PASR project on border security, including a demonstration of green and blue border security in the port of Genoa Italy)
- **MA**in **P**ort **S**ecurity **S**ystem and **WI**de **Maritime Areas Surveillance** projects of the FP7 call 1