ECMAR/FORCE Technology, DMI

MARCOM+

Towards a European Integrated Marine and Maritime Science Community

Grant Agreement No.: 244060

Deliverable D 1.3 Priorities and Commonalities

FORCE Technology Project No. 110-20737

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Deliverable D1.3 Priorities and Commonalities

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Executive summary

In task 1.1 it was concluded that humankind is at a crossroad in the relationship with the oceans. The interaction between the population, industry, society and the seas are more intense, more varied, and create more value for Europe than ever before.
As specified in the Action plan for the Maritime Policy, a European Maritime Research Strategy is necessary to provide the interdisciplinary knowledge base to underpin the future EU Maritime Policy. The result from task 1.1, a synthesis to define the policy scene, clearly reveals a European policy scene with the need for an integrated Marine and Maritime research community.

The aim of this report is to identify priorities and commonalities for a scientific and technology interdisciplinary knowledge exchange between the Marine scientific and Maritime Technology communities. The report does not claim to deliver a complete list of existing marine scientific and maritime technology interdisciplinary knowledge exchange.
The aim was achieved by accomplishing three tasks.

1. A review of existing scientific and technology interdisciplinary knowledge exchange between the Marine scientific and Maritime Technology communities.
2. Identification of commonalities in the existing scientific and technology interdisciplinary knowledge exchange.
3. Establishing priorities for possible scientific and technology interdisciplinary knowledge exchange, unveiling existing data bases with the potential of interdisciplinary research.

Many of the projects have more than one objective. The four main focus areas are: interdisciplinary knowledge exchange, data collection, sustainable use and exploitation, and dissemination and awareness creation. These four topics cover all the projects. Most of the projects found in this study focus on interdisciplinary knowledge exchange as the main target (13 of 23) while a few actually focus on the use of interdisciplinary cooperation to achieve a specific goal e.g. creating knowledge among European citizens, raising awareness, reducing effects of climate change, or reducing human effect on the environment.

The study reveals five different projects with existing databases with the potential of interdisciplinary research.

It is clear that both the communities (marine and maritime) perceive knowledge exchange as a key component in building Europe's leading role in marine science and technology and do appreciate the Commission's support for trans-disciplinary, transnational research cooperation, networking and data exchange activities.

Preface

An application "Towards an Integrated Marine and Maritime Science Community (MARCOM+)" has been submitted on January the 7th 2009 by the Aberdeen Plus Task Force to the European Union Framework Programme 7 (Priority 6 of cooperation section "Environment including climate change", sub-priority 6.2. 'Sustainable management of resources', topic 6.2.1.3., topic 'Support to maritime partnerships). The proposal consortium, acting on behalf of the wider Aberdeen Plus Partnership community consists of:

1. Coastal and Marine Union
2. Community of European Shipyards' Associations (representing the Waterborne Technology Platform)
3. European Council for Maritime Applied Research and Development Association
4. European Aquaculture Technology and Innovation Platform
5. European Fisheries and Aquaculture Organization
6. Hellenic Centre for Marine Research (representing the European Global Ocean Observing System)
7. International Council for the Exploration of the Sea
8. Marine Board of the European Science Foundation
9. Mediterranean Science Commission
10. Royal Netherlands Academy of Arts and Sciences (representing the European Network of Marine Research Institutes and Stations

The FP7 MARCOM+ project addresses the objectives of the Aberdeen Declaration[1] to support the marine and maritime science communities to concretize the concept of a partnership through the establishment of a European marine science partnership that would contribute to developing interactions between partners (Member States, regional authorities, the research community, industry and other stakeholders).

The "Aberdeen Plus interest group" joined forces with the "Venice Platform group" to take further steps in integrating the marine, maritime and coastal research sectors in Europe. The goal is to establish a sustainable and long-lasting partnership community, namely the "European Marine and Maritime Science and Technology Community". The community will contribute to a new governance model in research that will exchange views, seek consensus among the marine and maritime sectors and serve to facilitate dialogue with policy makers.

MARCOM+ project consists of a two-year work programme, starting 1st January 2010, comprising six work packages with the following objectives:

1. Objective 1.1. - deliver a synthesis of the policy scene
2. Objective 1.2. - to identify regional specificities in the global EU framework
3. **Objective 1.3. - to identify priorities and commonalities**

[1] http://ec.europa.eu/research/environment/pdf/aberdeen_declaration.pdf

4. Objective 2.1 - one proximate objective will be to promote innovative, focused research/ industry dialogue leading to joint international R&D projects
5. Objective 2.2 - in the longer-term perspective, implement joint training and capacity building on how to exploit marine resources in a sustainable manner, so as to help prepare the next generation of world-class marine/ maritime specialists/experts to ensure continuing European leadership in this crucial field
6. Objective 3.1 - review regional research governance frameworks and partnerships
7. Objective 3.2 - test pilot forum (Mediterranean case study)
8. Objective 3.3 - assess important mechanisms and tools for regional governance.
9. Objective 4.1 - identification and mobilization of appropriate representative organisations in the partnership
10. Objective 4.2 - organisation of two Marine and Maritime Partnership Open Fora
11. Objective 4.3 - Assess the modalities to best address the longer-term Partnership sustainability
12. Objective 5.1 - develop and redesign the Partnership s internet portal
13. Objective 5.2 - produce relevant outreach material
14. Objective 5.3 - ensure proper and efficient communication between stakeholders
15. Objective 5.4 - ensure the operational activities of the established panels
16. Objective 5.5 - organize the project s final conference
17. Objective 6.1 - execute the project according to its plan and budget
18. Objective 6.2 - ensure proper decision-making dialogue among partners
19. Objective 6.3 - ensure proper reporting to the European Commission

This report is the result of the aim of task 1.3, led by Participant no.3 (ECMAR) that is, a priorities and commonalities report.

1.0 Introduction

In task 1.1 it was concluded that humankind is at a crossroad in the relationship with the oceans. The interaction between the population, industry, society and the seas are more intense, more varied, and create more value for Europe than ever before. The present technology and know-how makes it possible to extract more and more value from the seas and more people want to benefit from the value of the seas. The cumulated effect of this activity is leading to conflicts of use and to the deterioration of the marine environment. The European Commission has recognised this and is promoting an integrated and inter-sectoral approach to face the challenges.

As specified in the Action plan for the Maritime Policy, a European Maritime Research Strategy is necessary to provide the interdisciplinary knowledge base to underpin the future EU Maritime Policy. The result from task 1.1, a synthesis to define the policy scene, clearly reveals a European policy scene with the need for an integrated Marine and Maritime research community.

Furthermore, the report reveals projects that aim to integrate the marine and maritime research agendas. These endeavours are in different areas such as:

- Importance of innovation in other maritime sectors such as tourism.
- Huge efforts made to improve maritime safety in the EU.
- A strategy is needed to avoid duplication, close gaps and create synergies.
- Climate change, energy and blue biotechnology
- Off shore installations e.g. oil, gas, windmill parks, wave energy
- Increasing environmental pressures, due to human activities and climate change
- Increasing competition for a limited marine space

Unless properly addressed, the growing demand for maritime transport, tourism, coastal development, fisheries and aquaculture, security, surveillance and so forth could pose a major threat to the marine environment and biodiversity. Science and technology provide one of the keys for promotion of sustainable economic growth in sea-based activities with environmental conservation. Therefore, an all-embracing maritime policy, supported by excellence in marine scientific research, technology and innovation, is needed. The Marine and Maritime Research Strategy[2] launched by the European Commission in 2008 aims to propose the means to create a better integration between marine and maritime research.

[2] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0534:FIN:EN:PDF

The EU has more sea than land; this is the world's largest maritime territory. There are 1,200 ports. Some 90% of foreign trade and 40% of internal trade is carried by sea. The EU's merchant fleet is the world's largest. Coastal regions account for more than 40% of the EU's gross domestic product (GDP) and are home to 50% of the EU's population. The maritime economy accounts for five million jobs. Some 5% of GDP comes directly from marine-based industries and services. The figure is much higher when indirect contributions from related sectors, such as tourism, are taken into account.

2.0 Objectives

The aim of this report is to identify priorities and commonalities for a scientific and technology interdisciplinary knowledge exchange between the Marine scientific and Maritime Technology communities. This will benefit researchers, technologists, designers, policy makers, and stakeholders, for the exploitation, development and protection of the marine environment and it will benefit the maritime technology and the industry. This report will include:

- A review of existing scientific and technology interdisciplinary knowledge exchange between the Marine scientific and Maritime Technology communities.
- Identification of commonalities in the existing scientific and technology interdisciplinary knowledge exchange.
- Establishing priorities for possible scientific and technology interdisciplinary knowledge exchange, unveiling existing data bases with the potential of interdisciplinary research.

3.0 Method

This report is based on the systematic literature review of EU documents in Task 1.1 supplemented by search on the Internet. The report does not claim to deliver a complete list of existing marine scientific and maritime technology interdisciplinary knowledge exchange. The finding of existing marine scientific and maritime technology interdisciplinary knowledge exchange is shown in table 1.

To identify commonalities, a short summary of each of the existing marine scientific and maritime technology interdisciplinary knowledge exchange was made. This is also shown in table 1. From the summaries, steps towards identifying commonalities are made in table 2. The commonalities were condensated into four main commonalities.

To find existing databases with the potential of interdisciplinary research, all initiatives found in table 1 were examined.

It can be difficult to differ between marine and maritime. In fact many sea-based activities have both dimensions:

- Mariculture is marine (biological dimension) and maritime (farm equipment and management)
- Fishing is marine (stocks management) and maritime (fishing vessels)
- Dredging is a maritime activity with direct impact on the marine environment
- Wave & tidal energy are marine and maritime … etc.

When searching for interdisciplinary knowledge exchange, the following definitions were used:

Marine[3]

- Refers to the physical, environmental aspects and biological resources of the sea.
- Of or relating to the sea: marine exploration. Native to, inhabiting or formed by the sea.

Maritime[4]

- Refers to transport, offshore technologies, energy.
- Connected with the sea in relation to navigation, shipping, etc. or connected with human activity at sea, near the sea, or the coastal areas.

[3] http://dictionary.cambridge.org/dictionary/british/marine_1
[4] http://dictionary.cambridge.org/dictionary/british/maritime

4.0 Results

The focus on Maritime policy has resulted in some initiatives. A review of existing scientific and technology interdisciplinary knowledge exchange between the Marine scientific and Maritime Technology communities revealed the following list:

Table 1. A review of existing interdisciplinary communities

Activity	Short introduction
The Venice Platform	*The Venice Platform*[5] initiative aims to bring science and stakeholder communities together in the process of an emerging European maritime platform. The subscribing parties, representatives of maritime, marine and coastal networks, express their intention to engage in a cooperation process, which will support the European Maritime Policy in several ways. The parties will strive for the establishment of a common European Platform. • The Platform is a joint venture of networking organizations, which contribute in diverse ways to sustainable coastal development and sustainable use of the sea. • The Platform facilitates improved delivery of services, through greater communication, liaison, and joint working between Platform members. • The Platform voices at the European level the shared objectives and concerns of the network organizations and seeks to achieve a permanent and constructive dialogue with the different authorities and more specifically the European institutions.
EMODNET, European Marine Observation and Data Network	*EMODNET*[6], the Commission proposed a new European Marine Observation and Data Network in its Green Paper on maritime policy. Following an overwhelmingly positive response from stakeholders to its proposal, the European Commission, in its EU's Maritime Policy Blue Book, adopted in October 2007, undertook to take steps towards EMODNET in order to improve availability of high quality data. This marine data infrastructure will be a network of existing and developing European observation systems, linked by a data management structure covering all European coastal waters, seas and oceans, accessible to everyone.
EMAR2RES	*EMAR2RES*[7] is a support action financed by the transport research budget to identify commonalities and strengthen cooperation between marine science and maritime industries.
CLAMER	*CLAMER*[8] FP7 project aims to raise the awareness of European citizens and society at large to the effects of climate change on the marine environment and their socio-economic consequences.

[5] http://www.veniceplatform.eu
[6] http://ec.europa.eu/maritimeaffairs/emodnet_en.html#1
[7] http://www.esf.org/research-areas/marine-sciences/framework-programme-activities/emar2res.html
[8] http://www.esf.org/research-areas/marine-sciences/framework-programme-activities/clamer.html

Activity	Short introduction
MarinERA	*MarinERA*[9] (2004-2009) was an EU FP6 pilot European Research Area Network (ERA-NET). MarinERA involved 16 partners including leading Marine Research Funding Organisations from 13 European countries. The legal and financial coordination was provided by Ifremer (France), while the directional and operational coordination was provided by the Marine Board-ESF. The MarinERA project main objectives are to: • Map European marine RTD programmes and specialised infrastructures, facilitating the creation of an internal market and quantifying the existing European marine research capacity. • Facilitate the networking of Marine RTD funding agencies in the European Union, leading to a more cost effective and efficient use of Member State resources including scientific personnel, specialist infrastructures and planned investments. • Contribute to the development of a European marine research policy, by identifying future scientific challenges. • Provide a basis for the sharing of available resources to address priority issues which are beyond the capacities of individual Member States. Progress the reciprocal opening of Member State Marine RTD Programmes.
SEAS-ERA	*SEAS-ERA*[10], "Towards Integrated Marine Research Strategy and Programs" is of strategic importance for the European Research Area. Several European strategic fora (e.g. ESFRI) and European Commission's Communications (e.g. Communication on Joint programming – 2008) have emphasized marine research as a field where major synergistic benefits can be reached by improving the coordination of research and infrastructure investments. SEAS-ERA overall objective is to facilitate the establishment of a stable and durable structure for strengthening marine research across the European Sea Basins. To do so the project brings together 20 major European Marine Research Funding Organizations from 20 countries in the basin regions of the Atlantic, the Mediterranean and the Black Sea, and the Marine Board-ESF. SEAS-ERA will start in Q2 2010 for a 48-month period under the coordination of Spanish Ministry of Science and Innovation (MICINN).
EUROFLEETS	*EUROFLEETS*[11], "Towards an alliance of European research fleets", started September 2009, aims to define a common strategic vision for European research fleets and associated heavy equipment, use more cost-effectively the existing European ocean/global and regional fleets, facilitate a wider sharing of knowledge and technologies between industry, promote greener and sustainable research vessel operations and responsibility, develop training and education at sea.

[9] http://www.esf.org/research-areas/marine-sciences/framework-programme-activities/marinera.html
[10] http://www.esf.org/research-areas/marine-sciences/framework-programme-activities/seas-era.html
[11] http://www.eurofleets.eu/np4/home.html

Activity	Short introduction
EfficienSea	*EfficienSea* [12] has the overall objective to improve maritime safety in the Baltic region. It will develop the necessary tools to create a safe, sustainable and efficient traffic at sea. The project is working towards common international solutions for less pollution and better management of marine resources.
The ocean of tomorrow	"*The ocean of tomorrow*[13]" is a joint call to promote excellence in marine and maritime research, and in particular an improved integration between all the relevant scientific disciplines, are needed to address complex sea-related issues in the framework of the EU maritime policy. This is an essential objective of the Communication "A European Strategy for Marine and Maritime Research" which suggested, among other actions, to launch joint calls under FP7 in 2009-2010 on major research topics requiring a cross-thematic approach. The ocean of tomorrow call, which has been launched on 30 July 2009 and closed 14 January 2010, is the first Commission initiative to implement this commitment. The objective of the call is to build the knowledge base for a sustainable growth of sea-based activities. It will do this in two ways: by improving understanding of marine ecosystems' response to a combination of natural and anthropogenic factors, and by providing a scientific foundation for feasible, sustainable management measures supporting policies and possible related technologies. FP7 2011 Ocean of Tomorrow Call: Joining research forces to meet challenges in ocean management closes on18/01/2011. This Ocean of tomorrow call is a cross-thematic call across the energy, environment, transport and food, agriculture and fisheries and biotechnology themes.
BLAST (Bringing Land and Sea together)	*BLAST*[14] *(Bringing Land and Sea together)* is a regional project for maritime safety in the North Sea region. Over three years, 16 partners from six countries, including governmental organisations, universities and private companies will collaborate to harmonise and integrate land and sea data. BLAST is funded by the European Union as part of the Interreg IVB North Sea Region Programme. The project starts in 2009 and will be completed in 2012. From 2009 till 2012, four of the BLAST project groups will focus on the following tasks: - Address the needs of marine spatial planning, environmental protection, socio-economic development, risk management and mitigation, by delivering harmonised land and sea geographic datasets. - Explore practical tools, processes, and applications that the North Sea maritime community might use to implement the coming new generation of standards for marine information systems. - Improve vessel safety and efficiency, and enhance management of the environment through the design and development of a regional maritime traffic monitoring platform for the North Sea region. - Develop new common policies and instruments that will support coastal zone planning and management (ICZM) under the emerging climate change.

[12] http://efficiensea.org/default.asp
[13] http://cordis.europa.eu/fp7/dc/index.cfm?fuseaction=UserSite.FP7DetailsCallPage&call_id=274
[14] http://www.blast-project.eu/index.php

Activity	Short introduction
Joint Baltic Sea Research Programme – Bonus 169	*Joint Baltic Sea Research Programme*[15]. The BONUS-169 Joint Baltic Sea Research Programme is fully aligned with the objectives of the European Strategy for Marine and Maritime Research. It is also central to the success of the EU Strategy for the Baltic Sea Region which seeks to provide both a co-ordinated and inclusive framework in response to the key challenges facing the Baltic Sea Region, together with concrete solutions for these challenges. By implementing a policy-driven, fully-integrated joint research programme, based on extensive and on-going stakeholder consultations, BONUS-169 will provide concrete scientific outputs facilitating the implementation of ecosystem-based management of environmental issues in the Baltic Sea area.
Knowledge-based Sustainable Management for Europe's Seas (KnowSeas)	*Knowledge-based Sustainable Management for Europe's Seas* (KnowSeas)[16]. Europe's four regional seas (Baltic, Black, Mediterranean and NE Atlantic) have suffered severe environmental degradation due to human pressure. Existing measures to manage pressures have proven inadequate and the EU Member States have recently responded by adopting a new policy (Blue Book for Maritime Policy) and environmental legislation (Marine Strategy Framework Directive). There is a strong need for a "joined up" systems approach between natural and social science that delivers the knowledge base to support management for sustainable seas. By carefully scrutinizing biological and social aspects of these and other issues the project will develop a template for the implementation of the Ecosystem Approach throughout Europe and this template will inform the way in which EU nations implement the Marine Strategy Framework Directive.
The WATERBORNE Technology Platform	*The WATERBORNE Technology Platform*[17]. The European Technology Platform WATERBORNE is a forum where all stakeholders from the waterborne sector (sea & inland) define and share a common vision and a strategic research agenda, driving the necessary innovation efforts forward.

European Aquaculture Technology & Innovation Platform, EATIP	The objective of *EATIP*[18] is to
	• Establish a strong relationship between aquaculture and the consumer
	  o including issues relating to human health, product quality, and traceability
	• Assure a sustainable aquaculture industry
	  o covering social, environmental and economic issues
	• Consolidate the role of aquaculture in society
	  o developing knowledge management, skill development, communications, and networking

European Fisheries Technology Platform, EFTP	The European Fisheries Technology Platform, EFTP[19], is an essential tool to promote the transition from an obsolete and traditional sector to another competitive, sustainable and modern sector, in which the fishing industry must be a fundamental part of it, not only as a consultancy forum but as a board of directors, managing his footsteps.

[15] http://www.bonusportal.org/bonus-169
[16] http://www.knowseas.com
[17] http://www.waterborne-tp.org
[18] http://www.eatip.eu

Activity	Short introduction
Maritime clusters and the European Network of Maritime Clusters	*European Network of Maritime Clusters*[20]. The European Network of Maritime Clusters (Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Poland, Spain, Sweden, and United Kingdom) was founded on 4 November 2005 in Paris by maritime organisations of ten countries, with the objective to learn from each other and to promote and strengthen the maritime clusters of member states and Europe as a whole.
GMES Marine Core Service	*GMES (Global Monitoring for Environment and Security)*[21]. The European Earth observation programme, GMES, provides Environmental information of crucial importance. It helps to understand how our planet and its climate are changing, the role played by human activities in these changes and how these will influence our daily lives. The well-being and security of future generations are more than ever dependent on everyone's actions and on the decisions being made today on environmental policies. To take the right actions, decision makers, businesses and citizens must be provided with reliable and up-to-date information on how our planet and its climate are changing.
SEADATANET	*SeaDataNet*[22]. SeaDataNet has federated open digital repositories to manage, access and share data, information, products and knowledge originating from oceanographic fleets, new automatic observation systems and space sensors.
Black Sea SCENE	*Black Sea SCENE*[23]. Implementing FP6 RI SeaDataNet project standards regarding common communication standards and adapted technologies will ensure the data centres interoperability. Main output will be on-line access to in-situ and remote sensing data, meta-data and products.
METRI-2	*METRI-2*[24]. The European Union offers a free of charge access to Ifremer Marine Environment Tests and Research Infrastructure.
CeMaCE, Centre for Marine Chemical Ecology	*CeMaCE, Centre for Marine Chemical Ecology*[25]. CeMaCE is a center for integrated science in marine chemical ecology. New laboratory facilities and an immediate access to the marine environment provide unique opportunities for multidisciplinary research and industrial collaboration.
DesignACT	*DesignACT*[26]. The overall objective of the design study is to provide the fundaments for a unique full-scale sea-based European Aquaculture Centre of Technology (ACT), where aquaculture stakeholders will be strongly involved both in the planning and the use of the infrastructure.

[19] http://www.eftp.eu
[20] http://www.european-network-of-maritime-clusters.eu
[21] http://www.gmes.info/index.php
[22] http://www.seadatanet.org
[23] http://www.blackseascene.net
[24] http://www.ifremer.fr/metri/index.htm
[25] http://www.cemace.tmbl.gu.se
[26] http://www.designact.org

Activity	Short introduction
SALVADORE	*SALVADORE*[27]. Seismic Analysis of the Lithosphere Via Advanced Processing Techniques and Access to Deep Ocean Recorders During Exploration. In the framework of the project "SALVADORE", IFM-GEOMAR[28] offers access to the Seismic Processing Centre (SPC) and to the Ocean Bottom Seismic Recorders (OBR). Research at IFM-GEOMAR is structured in 4 areas: • Ocean Circulation and Climate • Marine Biogeochemistry • Marine Ecology • Dynamics of the Ocean Floor Although the main focus is on basic research, a large number of topics is highly socially relevant such as issue related to anthropogenic climate change, influences and interaction within marine ecosystems or natural hazards due to marine volcanism and earth quakes. Research at IFM-GEOMAR has experimental components (e.g. expeditions or laboratory experiments) as well as theoretical work (e.g. ocean modelling).
HYDRALAB.III	*HYDRALAB.III*[29]. In April 2006 HYDRALAB-III started as an integrated infrastructure initiative (I3), i.e. an integrated programme of Networking activities, Transnational Access to 22 unique and/or rare facilities and two Joint Research Activities. The aim of HYDRALAB is: • to support the integrated provision of infrastructure related services to the research community at a European level • to better structure the fabric of European hydraulic research by promoting the coherent use and development of infrastructures in the fields it covers • to improve the long-term integrating effect on the way research infrastructures are developed and utilised in the fields of Hydraulics, Geophysical hydrodynamics, Environmental fluid dynamics, Ship dynamics and Ice engineering (in this proposal abbreviated to HyGESI) operate, (which was already started by HYDRALAB-II), thereby contributing to the goal of structuring the European Research Area • to develop a balanced methodology for using the various research tools available for the hydraulic research world, summarised in the term “Composite modelling”
PLANKTON-NET	*PLANKTON-NET*[30]*.* The PLANKTON*NET projects started as a collaboration with the MBL Woods Hole in 2004. The focus was then broadened through funding under the Sixth EU Framework Programme. PLANKTON*NET contains records of thousands of species of phyto- and zooplankton. In addition, PLANKTON*NET records are cross-referenced with environmental data archived in WDC-MARE/PANGAEA and various publication repositories.

[27] http://www.ifm-geomar.de/index.php?id=2249&L=1
[28] http://www.ifm-geomar.de/index.php?id=home&L=1
[29] http://www.hydralab.eu/default.asp
[30] http://www.planktonnet.eu

5.0 Analysis

Objective 1:

A review of existing scientific and technology interdisciplinary knowledge exchange between the Marine scientific and Maritime Technology communities.

Table 2. Steps towards identifying commonalities

Main focus extracted from the existing interdisciplinary communities in table 1:	Derived from:	Condensation of the main focus areas to commonalities:
All embracing Maritime Stakeholders Platform for the EU Maritime Policy	The Venice Platform	Interdisciplinary knowledge exchange
Cooperation between marine science and maritime industries	EMA2RES	
Facilitate the networking	MarinERA	
Facilitate the establishment of a stable and durable structure for strengthening marine research	SEAS-ERA	
Facilitate a wider sharing of knowledge and technologies between industry	EUROFLEETS	
Define and share a common vision and a strategic research agenda	WATERBORNE	
Objective to learn from each other and to promote and strengthen the maritime clusters. Promote and strengthen the maritime clusters.	Maritime clusters	
Integrated infrastructure initiative.	HYDRALAB.III	
Integrated science in marine chemical ecology. Multidisciplinary research and industrial collaboration.	CeMaCE	
Promote excellence in marine and maritime research. Build the knowledge base for a sustainable growth of sea-based activities	The ocean of tomorrow	
Scientific outputs facilitating the implementation of ecosystem-based management of environmental issues in the Baltic Sea area. Joint research programme.	Bonus 169	
Develop a template for the implementation of the Ecosystem Approach throughout Europe	KnowSeas	
Provide reliable and up-to-date information on how our planet and its climate are changing	GMES	

Main focus extracted from the existing interdisciplinary communities in table 1:	Derived from:	Condensation of the main focus areas to commonalities:
Marine data infrastructure	EDMONET	Data collection
Coastal zone planning and management (ICZM) under the emerging climate change. Marine spatial planning, environmental protection, socio-economic development. Integrate land and sea data.	BLAST	
To manage, access and share data, information, products and knowledge	SEADATANET	
On-line access to in-situ and remote sensing data, meta-data and products	Black Sea SCENE	
Species of phyto- and zooplankton cross-referenced with environmental data	PLANKTON-NET	
Develop the necessary tools to create a safe, sustainable and efficient traffic at sea. Improve maritime safety.	EfficienSea	Sustainable use and the exploitation of the oceans and seas
Anthropogenic climate change. Influences and interaction within marine ecosystems	SALVADORE	
Promote greener and sustainable research vessel operations and responsibility. More cost-effectively	EUROFLEETS	
Raise awareness of the effects of climate change on the marine environment and their socio-economic consequences	CLAMER	Dissemination

Objective 2:

Identification of commonalities in the existing scientific and technology interdisciplinary knowledge exchange.

The condensation of the main focus areas (see table 2) reveals four commonalities, namely:

- Interdisciplinary knowledge exchange and International cooperation
- Data collection
- Sustainable use and the exploitation of the oceans and seas
- Dissemination and enlightenment of the European citizens

Objective 3:

Establishing priorities for possible scientific and technology interdisciplinary knowledge exchange, unveiling existing data bases with the potential of interdisciplinary research:

The study reveals five projects with existing data bases with the potential of interdisciplinary research

EDMONET
BLAST
SEADATANET
Black Sea SCENE
PLANKTON-NET

6.0 Discussion

Many of the projects have more than one objective. The four main focus areas are: interdisciplinary knowledge exchange, data collection, sustainable use and exploitation, and dissemination and awareness creation. These four topics cover all the projects. Most of the projects found in this study focus on interdisciplinary knowledge exchange as the main target (13 of 23) while a few actually focus on the use of interdisciplinary cooperation to achieve a specific goal e.g. creating knowledge among European citizens, raising awareness, reducing effects of climate change, or reducing human effect on the environment.

While fisheries and environment policy have been seen as two sides of a single coin for some years, the EU is now taking a much broader view to encompass all uses of the maritime space. The goal is to build on Europe's strengths in marine research, technology and innovation. This fits with the Lisbon agenda for more and better jobs and growth, and with the EU's overarching commitment to ensuring that economic development does not come at the price of environmental sustainability. The integrated maritime policy encompasses maritime transport, the competitiveness of maritime businesses, employment, scientific research, fisheries and the protection of the marine environment. To emphasise the importance of this sector, the European Commission has designated May 20th each year as European Maritime Day[31].

[31] http://europa.eu/pol/fish/index_en.htm

It is clear that both the communities (marine and maritime) perceive knowledge exchange as a key component in building Europe's leading role in marine science and technology and do appreciate the Commission's support for trans-disciplinary, transnational research cooperation, networking and data exchange activities.
In the following the four main focus areas are discussed.

Interdisciplinary knowledge exchange and International cooperation

To ensure compliance with restrictions on fishing in the interests of the long-term survival of fish stocks, the EU in 2005 set up the Community Fisheries Control Agency. Currently based in Brussels, this agency is due to move in July 2008 to a permanent home at Vigo in Spain, Europe's leading fishing port. The agency coordinates enforcement of rules to prevent over-fishing and protect other forms of marine life. It also trains inspectors and organises joint deployment of inspectors from more than one member state. Fisheries agreements with countries outside the EU and negotiations within regional and international fisheries organisations ensure that not only the waters of the EU, but those of the whole world, are not over-fished. At the same time, they give EU fishermen access to fish in distant waters. With developing countries, the EU pays for access rights. The funds raised in this way are largely invested in the fisheries industries of these countries and in building up their fish stocks.

Data collection

Aquaculture can offset declining wild fish stocks. Already, 19% of the tonnage caught by the EU fishing industry comes from fish farms. Molluscs, mussels, rainbow trout and salmon are generally the most important aquaculture products, but carp and sea bream are important in some countries.

The EU industry has been growing less rapidly than the rest of the world. The European Commission is considering additional steps to develop this industry's potential. The key challenges include a lack of space and of water of good quality, and high standards of protection for public health and the environment. European aquaculture is at the forefront of sustainable development in the world, both in terms of social and environmental impacts, but this makes it more difficult to compete with producers in other countries, especially in Asia and in South America.

Sustainable use and the exploitation of the oceans and seas

Challenges are faced in relation to both the sustainable use and the exploitation of the oceans and seas. The importance of these challenges is already reflected in various policies, but they are based on a sector

by sector approach. This can lead to inconsistencies or conflicts and prevent the exploitation of possible synergies. This situation can also lead to the adoption of measures that negatively affect the environment or impose unnecessary constraints on competing maritime activities. Internationally, countries like USA, Canada and Australia have developed integrated approaches to manage this complex area.

The sea and its resources make an important contribution to jobs and growth in the EU. They provide food (from fish) and energy (from offshore oil and gas fields and windmill parks), while the EU's merchant fleet carries its trade across the world's oceans. Coastal areas are home to tourism - another big economic sector. Therefore, exploitation of the sea's resources must take place in a responsible manner by preventing over-fishing and ensuring that maritime transport and oil and gas extraction does not harm the marine or coastal environment conducting wide-scale biodiversity monitoring.

The EU fishing industry is the third largest in the world. It provides some 6.9 million tonnes of fish each year. Fishing and fish processing provide jobs for more than 400,000 people.
The priority for EU fisheries policy is to strike the right balance between having a competitive fishing industry and having both sustainable fish stocks and a sustainable marine eco-system.
Over the period 2007-2013, the European Fisheries Fund has €3.85 billion to spend on priorities established by each member state based on their own decisions on what they need most. The funds can be used for sea and inland fisheries, aquaculture businesses, producer organisations, the processing and marketing sectors, and for economic diversification in fishing communities.

Dissemination and enlightenment of the European citizens

In 2007, with the Aberdeen Declaration, the European Marine and Maritime Science and Technology Community stated its support of the European Commission's proposal for an all-embracing European Maritime Policy, based on the principle of sustainable development. Following extensive consultation, in October 2007, the European Commission launched its vision of an integrated maritime policy for the EU through the “Blue Book”. In addition, the European Strategy Forum for Research Infrastructure has made recommendations for integrating marine sciences in Europe and for strengthening marine research infrastructure. European marine scientists are contributing to the long-term observation and operational monitoring of the oceans and seas in the context of the Global Earth Observation System initiative and the Global Monitoring for Environment and Security initiative, in compliance with the INSPIRE Directive.

The purpose of the following matrix in table 3, showing the themes vertically in relation to the horizontal EU policies, is to identify whether anything is lacking or whether there is over capacity.

Table 3. Themes in relation to policies

Policy → / Theme ↓	Europe 2020, A strategy for smart, sustainable and inclusive growth. COM(2010)2020	A European Strategy for Marine and Maritime Research. COM(2008)534	Towards joint programming in research. COM(2008)468	An Integrated Maritime Policy for the European Union. COM(2007)575	Towards a future Maritime Policy for the Union. COM(2006)275	Working together for growth and jobs. A new start for the Lisbon Strategy, COM(2005)24	The Lisbon Strategy, 2000
Environment	X		X	X	X	X	X
Climate change	X		X	X	X	X	X
Energy	X		X	X	X	X	X
Transport	X			X	X	X	
Fisheries				X	X		
Shipping				X	X		
Marine research		X		X	X		
Maritime research		X		X	X		
Cross-sectoral research		X		X	X		
Sustainability				X	X	X	X
Competition	X		X	X	X	X	X

7.0 Conclusion

The aim of this report was to identify priorities and commonalities for a scientific and technology interdisciplinary knowledge exchange between the Marine scientific and Maritime Technology communities. The aim was achieved by accomplishing three tasks.

1. A review of existing scientific and technology interdisciplinary knowledge exchange between the Marine scientific and Maritime Technology communities.

The focus on Maritime policy has resulted in a diversity of initiatives. The review conducted in task 1 found 23 different existing initiatives across Europe. The study does not claim to be a complete list of projects but gives a good indication of the diversity of initiatives.

2. Identification of commonalities in the existing scientific and technology interdisciplinary knowledge exchange.

The study found different commonalities in the existing scientific and technology interdisciplinary knowledge exchange. The condensation of the main focus areas were

- Interdisciplinary knowledge exchange,
- Data collection
- Sustainable use and the exploitation of the oceans and seas
- Dissemination and enlightenment of the European citizens

3. Establishing priorities for possible scientific and technology interdisciplinary knowledge exchange, unveiling existing data bases with the potential of interdisciplinary research.

The study revealed five different projects with existing databases with the potential of interdisciplinary research. The five projects are EDMONET, BLAST, SEADATANET, Black Sea SCENE, and PL.