



Acronym: COLUMBUS

Title: Monitoring, Managing and Transferring Marine and Maritime  
Knowledge for Sustainable Blue Growth  
Grant agreement n° 652690

## Deliverable 4.1

# Inventory of Relevant Projects by Priority Focus Area

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## EXECUTIVE SUMMARY

This report is based on the preliminary results available until April 3<sup>th</sup> of the Collection phase of COLUMBUS' first Knowledge Transfer cycle; whereby Collection is followed by Analysis and Transfer, as outlined below. The Collection phase identifies relevant research results, known as Knowledge Outputs (KOs), that could support Blue Growth and the implementation of the Marine Strategy Framework Directive (MSFD; the environment pillar of the Integrated Maritime Policy) and the revised Common Fisheries Policies (CFP).

To ensure a strategic and effective Collection phase, the identification of relevant EU-funded research - from the 7<sup>th</sup> Framework Programme (FP7) as scoped in the first cycle - has been informed by the key challenges, bottlenecks, barriers and knowledge gaps identified across nine marine and maritime sectors, or "Competence Nodes".

In total, over 160 potentially relevant FP7 projects were identified; of which, just under 80 were addressed by the nine Competence Nodes, where effort is performed by nine Knowledge Transfer Fellows. This phase yielded over 130 validated KOs which have progressed to Analysis. A further 330 KOs are pending validation from the relevant Project Coordinators. Consequently, the full results of this first phase of collection will only be known fully beyond the timeframe of this report.

The collection phase is crucial to identifying and extracting potentially transferable knowledge. Evidently, Collection is a time-demanding process and its success is highly dependent on Project Coordinators' engagement.



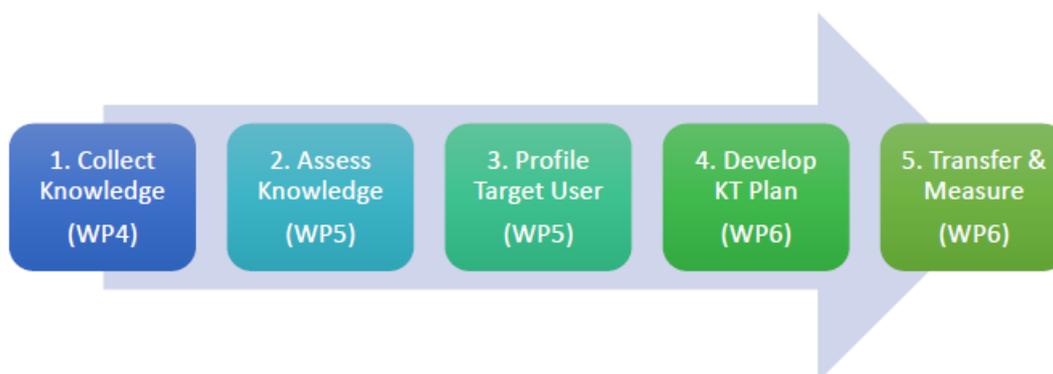
## 1 INTRODUCTION

### 1.1 Background

The COLUMBUS project – Monitoring, Managing and Transferring Marine and Maritime Knowledge for Sustainable Blue Growth – aims to capitalise on applicable knowledge generated mainly through EC-funded science and technology research, by ensuring its accessibility, transfer and uptake by end-users (policy, industry, science and wider society), thus contributing to sustainable Blue Growth<sup>1</sup>.

In order to do so, COLUMBUS will focus on unlocking the potential of past and current relevant research results of EC-funded projects that better address existing knowledge gaps and needs to foster Blue Growth, as well as assisting in the implementation of marine legislation, including the Marine Strategy Framework Directive (MSFD) and the revised Common Fisheries Policies (CFP) among others, through a proven innovative methodology.

Such methodology, the COLUMBUS Knowledge Transfer Methodology, developed based on past validated efforts of the MarineTT<sup>2</sup> and STAGES<sup>3</sup> projects funded under the 7<sup>th</sup> Framework Programme (FP7), entails a five steps approach, designed to ensure the strategic, coordinated and effective: Collection (WP4); Analysis (WP5) and Transfer (WP6) of relevant research findings known as Knowledge Outputs (KOs) in a wide scope of nine marine and maritime areas/sectors termed Competence Nodes<sup>4</sup>.



*Figure 1- COLUMBUS Knowledge Transfer Methodology*

<sup>1</sup> COLUMBUS Project Description of Action; 13<sup>th</sup> February 2015

<sup>2</sup> [MarineTT](#) - European Marine Research Knowledge Transfer and Uptake of Results an FP7 - Environemnt project

<sup>3</sup> [STAGES](#) - Science and Technology Advancing Governance of Good Environmental Status an FP7 - Environemnt project

<sup>4</sup> COLUMBUS Competence Nodes – the COLUMBUS project aiming to ensure a competent team with sufficient critical mass to carry out all stages of the Knowledge Transfer process, implemented 9 Competence Nodes to ensure a full Competence and spatial coverage. The 9 Competence Nodes are: i) Fisheries; ii) Aquaculture; iii) Monitoring & Observation; iv) Marine Biological Resources; v) Maritime Transport & Logistics; vi) Marine Physical Resources; vii) Maritime Tourism; viii) Marine Governance & Management and, ix) Marine Environment & Futures.



To ensure that all COLUMBUS activities are responding to timely knowledge needs, the Knowledge Transfer process runs over three cycles during the lifetime of the project (March 2015 – February 2018).

Prior to the identification of research outcomes with the potential to fulfil knowledge needs (for Blue Growth, MSFD and CFP), the latest EC-funded marine and maritime research projects must be identified. Task 4.1 “Identify Potential Relevant Research Activity” accomplishes this under COLUMBUS’ Work Package 4 “Knowledge Supply - Monitor, Identify & Collect Research Activity and Outputs”, and provides the scope of this Deliverable.

## **1.2 Organisation of this report**

This report provides an overview of the main actions and methodologies applied to determine the latest EC-funded marine and maritime research projects, and most importantly, lists those FP7 projects (the scope of this first cycle) that have the potential to fulfil knowledge gaps and needs as identified by each Competence Node.

Additional, this report will briefly present the first results of the Collection process, which will be later supplemented by a full analysis and report of the collected KOs, under the remit of Deliverable 4.3 – Report on KO identification, due in August 2016 (M18).

The document is structured into four main sections:

- This section briefly introduces the COLUMBUS project;
- Section 2 describes the methodology used to identify marine and maritime projects and develop the preliminary project listings per Competence Node; and,
- The third and final sections present and discuss the results, to inform future cycles of Knowledge Transfer to take place within the COLUMBUS project.

## **1.3 Terminology**

This document uses several keywords that are defined as follows:

**Knowledge Transfer (KT):** The term for the overall process of moving knowledge between knowledge sources to the potential users of knowledge. Knowledge Transfer consists of a range of activities which aim to capture, organise, assess and transmit knowledge, skills and competence from those who generate them to those who will utilise them.

The ambition of knowledge Transfer is to expedite innovation.

**Knowledge Output (KO):** A unit of knowledge or learning generated by or through research activity. They are not limited to de-novo or pioneering discoveries but may also include new methodologies/processes, adaptations, insights, alternative applications of prior know-how/knowledge.

**End User(s):** The individual(s) who will apply the Knowledge Output at the end of the Knowledge Output Pathway.



**Competence Nodes:** A key objective of the COLUMBUS project, and its legacy, is to develop a competent team that supplies the critical mass required to carry out all stages of the Knowledge Transfer process. Nine full-time Knowledge Transfer Fellows are each responsible for implementing the COLUMBUS Knowledge Transfer Methodology for one of nine Competence Nodes:

- Fisheries
- Aquaculture
- Monitoring & Observation
- Marine Biological Resources
- Maritime Transport & Logistics
- Marine Physical Resources
- Maritime Tourism
- Marine Governance & Management
- Marine Environment & Futures

**EurOcean\_KG Marine Knowledge Gate:** The most comprehensive and innovative information repository on marine and maritime research projects and their results, with over 6,000 project from more than 20 European and National Programmes and, 1,800 Knowledge Outputs.

**Marine-related:** The term encompasses not only all activities commonly considered as marine but also all maritime-related activities.

## 2 METHODOLOGY

As previously mentioned, the first step of the COLUMBUS Knowledge Transfer cycle is to identify where the most relevant knowledge can be found.

For the COLUMBUS project, that is the existing the [EurOcean KG Marine Knowledge Gate](#), a EurOcean (COLUMBUS Work Package 4 Leader) hosted and maintained comprehensive and innovative online information repository on marine and maritime research projects and their results.

The EurOcean\_KG Marine Knowledge Gate, with information on over 6,000 projects and more than 1,800 KOs from a wide range of European and national programmes, is widely recognised as the baseline to help different end-users understand research efforts and activity; to reduce the likelihood of duplication and help to identify synergies.

The EurOcean\_KG Marine Knowledge Gate, which will be used as the repository for COLUMBUS' KOs, is also a very valuable resource to assist in “monitoring marine and maritime research” now and in the future<sup>5</sup>.

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<sup>5</sup> COLUMBUS Project Description of Action; 13<sup>th</sup> February 2015



## 2.1 Potentially Relevant Research Activity Identification

EurOcean, as the owner of the EurOcean\_KG Marine Knowledge Gate and leader of Work Package 4, “Knowledge Supply”, has focused its efforts, from 1<sup>st</sup> March 2015 onwards (prior to the official start of WP4; 1<sup>st</sup> August 2015), towards updating the EurOcean\_KG Marine Knowledge Gate with the latest marine and maritime projects mainly funded under the European Union’ Framework Programmes, in line with COLUMBUS’s remit.<sup>6</sup>

The identification of marine-related projects follows a well-established and proven methodology. This involves the comprehensive analysis of all projects details of all available projects in the official repositories (European Commission’ [CORDIS Database](#)<sup>7</sup> for the EU Framework Programmes). Based on this analysis a project is considered to be marine-related when:

- It deals fully or partially with marine or maritime issues;
- The marine-related research component entails a significant part/funding of the project and,
- It does not deal with strictly freshwater research.

Upon classification, which may require clarification as to the marine nature of a project from the EurOcean network or Project Coordinator, a quality control check is implemented through the analysis of official documents and/or other information of sources, such as EC report and thematic websites.

Standard project details are then collected, whereby the basic information, available in the official repositories, is updated and supplemented with information extracted from the project’s website and other sources, such as Project Coordinators’ direct feedback.

Once all project details are collected and harmonised, the information on the newly identified marine-related projects is uploaded and made available to all end-users through the online EurOcean\_KG Marine Knowledge Gate.

The final step is an ultimate validation by the Project Coordinator either via email or through dedicated online or telephonic questionnaires, where standard information on the projects’ KOs is also requested. Figure 2 shows EurOcean’s multi-step EurOcean\_KG Marine Knowledge Gate Population Methodology.



<sup>6</sup> COLUMBUS Remit as described in the project Description of Action “Identifying and collecting “Knowledge Outputs” from past and current EC projects”

<sup>7</sup> European Commission [CORDIS Database](#) – Community Research and Development Information Service



*Figure 2- EurOcean Marine Knowledge Gate Population Methodology*

The EurOcean\_KG Marine Knowledge Gate does not yet display the full results of its latest update exercise, particularly regarding information on the H2020 marine-related funded projects, as the CORDIS database launched its first information batch of circa 5,000 projects in the fourth quarter of 2015.

Nonetheless, information on the final FP7 marine-related projects batch and the first batch of marine-related H2020 projects has been available internally at EurOcean since August 2015 in the first draft of EurOcean’s internal “Project Information Collection and Management Tool”. This information, which is continuously being updated, is to the COLUMBUS consortium upon request.

This Project Information Collection and Management Tool is being developed to improve on the previous manual and time consuming method of collecting, sorting and finally uploading projects to the EurOcean\_KG Marine Knowledge Gate and will help to streamline the process significantly. Its development is being undertaken partially under Task 4.1 “Identify Potentially Relevant Research Activity” and Task 4.3 “Collect Research Knowledge Outputs”. Not only does it allow a faster identification of marine-related projects through the use of relevant keywords and specific participants search, but it also allows the identification of the newly-available projects on CORDIS. This feature is not possible using only the CORDIS database as there is no search filter allowing the identification and selection of the latest uploaded records.

Additionally, the Tool allows for a more efficient management of the marine-related projects, such as the tagging of each project based on chosen criteria as well as a direct linkage to the EurOcean\_KG Marine Knowledge Gate for a faster and more efficient population process.

The first COLUMBUS-related EurOcean\_KG Marine Knowledge Gate update, foreseen for the second half of the 2016, will feature information on the newly EC-funded marine-related projects and, on of the results of KO Collection phase of COLUMBUS’ first Knowledge Transfer Cycle; a process that is still on-going.

## **2.2 Preliminary Lists of Potential Relevant Projects per Competence Node**

### **2.2.1 Overall Scope**

Work Package 4 has a broad remit of identifying and collecting KOs from past and current EC [and national, if relevant] projects<sup>8</sup> and the available EurOcean\_KG Marine Knowledge Gate and Project Information Collection and Management Tool content. At the 2<sup>nd</sup> Partner Meeting in Berlin, Germany, on 9<sup>th</sup> July 2015, the Consortium collectively discussed and defined the scope of COLUMBUS’s first Knowledge Transfer Cycle.

Several points were taken into consideration for the scope definition such as:

- EurOcean\_KG Marine Knowledge Gate update status;
- Information access;

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<sup>8</sup> COLUMBUS Project Description of Action; February 13<sup>th</sup> 2015



- Information translation;
- Project development stage;
- Project type and,
- Previous initiatives contacts.

As a result, the Consortium deliberated that only European-funded projects funded under FP7 should be considered for the first COLUMBUS Knowledge Transfer cycle as these: i) comprise a fully known and up-to-date universe; ii) are easier to reach, in terms of approaching Project Coordinators, than national projects; iii) unlike the nationally projects information was available in English thus devoid from translation efforts both towards the Project Coordinator in the KO Collection exercise, and back towards the Consortium, and, iv) were unlike H2020 projects, as mainly have concluded or are well underway, which was considered important for the collection of defined and factual KOs.

Upon this decision, a long debate followed regarding the diverse nature of research projects funded under each FP7 Specific Programme<sup>9</sup>. While “Cooperation” and “Capacities” funded projects were widely considered as COLUMBUS relevant, the “Ideas” as investigator-driven 'frontier' research projects and, in particular, the “People” funded projects, aimed to stimulate research profession in an individual basis, raised some concerns. However, all FP7 funded projects were considered relevant by the Competence Nodes.

Similarly, no FP7 marine-related projects were discarded on the basis of previously established contacts by past initiatives, such as the MarineTT and STAGES projects. Although Project Coordinator fatigue was identified as a strong concern, the Consortium considered that relevant KOs could exist in previously contacted FP7 marine-related projects; in particular in those that were not yet concluded at the time of the first contact. Additionally, despite different remits, the previously contacted projects were also considered, by the COLUMBUS partnership, to most likely feature KOs that might fulfil the identified knowledge gaps and needs.

### 2.2.2 Scope Refinement

As COLUMBUS aims to focus on prioritising KOs that might fulfil the key knowledge needs, for the achievement of Blue Growth, as well as the implementation of MSFD and the revised CFP<sup>10</sup>, analysis of each FP7 marine-related project and their potential impact was required. Such analysis was informed by the current key knowledge challenges, bottlenecks, barriers and gaps as defined by the Competence Node Profiles under the Knowledge Demand Work Package (WP3).

Initially foreseen for August 2015, the completion of this task, under WP3, was slightly postponed (September 2015); due to efforts focusing on a non-contractual request from the European Commission regarding the collection of all exploitable results<sup>11</sup> from the 31 [FP7 Ocean of Tomorrow](#) projects, as to support the population of the [EC Marine Information Sharing Platform pilot](#) (see Section

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<sup>9</sup> [FP7 Specific Programmes](#): Cooperation; Ideas; People; Capacities

<sup>10</sup> COLUMBUS Project Description of Action; February 13<sup>th</sup> 2015

<sup>11</sup> EC's Exploitable Results differ slightly from COLUMBUS's Knowledge Output definition as the former does not consider results that are not possible to be technological exploitable.



3.2). Consequently, informed by the Competence Node Profile exercise, EurOcean initiated a project potential identification process based on a selected keywords search methodology.

Due to the non-specificity of the text string search, a refinement of the chosen keywords was considered crucial as to ensure each Competence Node project listing would contain a manageable number of relevant projects. Additionally, due to the non-sensitive semantic keyword methodology, supplementary keywords were included by EurOcean, taking also into consideration possible spelling alternatives.

Upon conclusion of the keyword refinement process, which took several iterations, each Competence Node had a defined set of relevant keywords (Annex A) based on the knowledge gaps and needs identified in WP3. As expected, due to the nature of marine and maritime sectors, not all keywords were exclusive of a single Node. As a result, EurOcean provided the Competence Nodes' preliminary lists of potential projects in two batches:

- The first batch was provided on 16<sup>th</sup> November 2015, containing only projects flagged by a single Competence Node; and,
- The second and final batch was provided on 18<sup>th</sup> January 2016 and contained all projects flagged by two or more Competence Nodes; in which case, these were subject to a predefined Competence Node allocation based on the keywords search results.

Both batches provided information on the projects, known KOs, and details on prior contact by previous initiatives such as MarineTT; STAGES; AqualInnova and MG4U; as to best inform the Competence Nodes Collection work and maximise efforts by building on past accomplishments.

### **2.3 Final Lists of Potential Relevant Projects per Competence Node**

Despite the keyword refinement exercise, the preliminary project lists were on average quite significant and thus the Competence Nodes were requested to carry out a subsequent brief project relevance analysis. Such analysis, based on the provided information, project website and the Competence Node Leader/Fellows' project awareness and knowledge, aimed at further prioritising the project lists; to identify those most promising to produce qualitative case studies<sup>12</sup>. The projects were further prioritised as part of the methodology (Step 1; Figure 1) over a duration of circa 4 months (16<sup>th</sup> November 2015 until 18<sup>th</sup> March 2016).

A number of time constraints influence the Collection phase: staff absences (such as Christmas vacations and paternity leave) and effort being significantly reduced as the Knowledge Transfer Fellows invested resource into collecting KOs from Oceans of Tomorrow projects in October and November 2015.

Nonetheless, Nodes were urged to consider widening their project universe by pursuing any other project they come across that they deemed relevant regardless of its funding nature (funded by other programmes, including nationally-funded projects).

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<sup>12</sup> COLUMBUS qualitative case studies aim to illustrate how the project activities have successfully transferred knowledge to policy, industry, science and society resulting in impacts that measurably contribute to "Blue Growth"



Both the prioritisation exercise and the identification of additional relevant projects, have been subsequently recorded in a first version of a Tracker Document, developed by EurOcean on 29<sup>th</sup> March 2016. This Tracker aims to record how each research project and associated KO migrates through the five steps of the COLUMBUS Knowledge Transfer Methodology (Figure 1), as well as to facilitate the cross-fertilization, communication and responsibility transfer within the Fellowship.

### 3 RESULTS

As a result of the decisions taken by the COLUMBUS consortium at the 2<sup>nd</sup> Partner Meeting (Berlin, Germany; 9<sup>th</sup> July 2015), a total of 1,256 marine-related projects representing the entire marine and maritime FP7 universe, were considered as the basis for the first cycle of the COLUMBUS Knowledge Transfer exercise. Of these 1,256 FP7 marine-related projects, a total of 877 were flagged as potentially relevant according to the keyword search methodology.

#### **3.1 Prioritisation for collection using keywords**

Although no correlation exists between the number of used keywords and the number of flagged projects; as expected, the narrower the scope of keywords the lower the number of flagged projects. Such evidence can be observed (see Tables 1 and 2), when comparing the Fisheries Node, where the keywords addressed only one very specific need (discards = 7 keywords), and the Marine Physical Resources Node, which covered several gaps and needs (tidal; wave and offshore wind energy = 9 keywords). While the number of keywords was similar, the Marine Physical Resources Node's keywords flagged a substantially larger number of potential projects (66 and 5 respectfully).



Competence Nodes	Node Leader	Nº Identified Keywords	Nº Alternative Keywords	Total Nº Keywords
Fisheries	DTU Aqua	4	3	7
Aquaculture	Aquark	7	7	14
Marine Biological Resources	UPMC	11	0	11
Marine Environment & Futures	Juelich	16	7	23
Marine Physical Resources	Aquatera	3	6	9
Marine Governance & Management	CETMAR	77	0	77
Marine Tourism	MSE	67	0	66
Marine Transport & Logistics	CMT	42	10	52
Monitoring & Observation	SEASCAPECONSULTANT	46	8	54
<b>TOTAL</b>		<b>273</b>	<b>41</b>	<b>314</b>

Table 1 – Number of COLUMBUS’ 1<sup>st</sup> Knowledge Transfer Cycle Keywords by Competence Node

Competence Nodes	1 <sup>st</sup> Project Batch	2 <sup>nd</sup> Project Batch	H2020 Project Batch	Additional Projects *	Total Nº Projects **
Fisheries	5	3	0	7	15
Aquaculture	51	45	0	6	99
Marine Biological Resources	49	119	0	0	166
Marine Environment & Futures	48	42	0	1	91
Marine Physical Resources	66	0	18	0	84
Marine Governance & Management	31	102	0	1	128
Marine Tourism	105	29	0	1	135
Marine Transport & Logistics	87	30	0	9	124
Monitoring & Observation	60	29	0	0	83
<b>TOTAL</b>	<b>502</b>	<b>375</b>	<b>42</b>	<b>25</b>	<b>914</b>

\*Additional Projects – Projects flagged by the Competence Node as relevant in addition to those provided, therefore excluding the OoT projects.

\*\*Total Nº Projects - The total number of projects is determined considering the project Node ownership reallocation excluding any keyword flagged Ocean of Tomorrow project, as these were previously addressed at the request of the European Commission.

Table 2 - Number of COLUMBUS’ 1<sup>st</sup> Knowledge Transfer Cycle Preliminary Relevant Projects by Competence Node, excluding all Ocean of Tomorrow projects

The average number of projects flagged exclusively by a specific Competence Node, amounted to a somewhat substantial 55 projects per Competence Node (n = 502 projects; Table 2). When considering the second batch of projects (see Section 2.2.2), those flagged by keywords of two or more totalled 375 projects, the total average of potential relevant projects per Competence Node increased to circa 100 projects.

Given the significant number of projects allocated per Competence Node, a preliminary project relevance analysis was carried out by the Competence Nodes, to prioritise projects deemed more promising to produce successful case studies. This analysis, based on a simple screening of project objectives, also considered the first H2020 marine-related batch, provided to the Competence Nodes



upon request, as well as additional ad-hoc projects considered relevant by the Competence Nodes. The result of this prioritization summing up a total of 168 projects, is displayed in Annex II.

As a result of such analysis, informed also by Step 1 (Figure 1), only 18.7% of the projects were prioritised for the first cycle of KO collection (Table 2 [n = 914] and Annex II [n = 168]).

Competence Nodes	N.º Projects with collected KO	N.º KO Validated Projects	N.º Validated KO	N.º Pending KO
Fisheries	7	3	31	16
Aquaculture	14	0	0	45
Marine Biological Resources	14	4	37	27
Marine Environment & Futures	6	1	14	25
Marine Physical Resources	7	0	0	60
Marine Governance & Management	3	2	4	
Marine Tourism	7	0	0	17
Marine Transport & Logistics	10	4	55	128
Monitoring & Observation	5	0	0	12
<b>TOTAL</b>	<b>73</b>	<b>14</b>	<b>141</b>	<b>330</b>

*Table 3 - COLUMBUS' 1st Knowledge Transfer Cycle Preliminary Results by Competence Node, excluding Ocean of Tomorrow projects*

Even though not all projects were assessed, due to time constraints, several Competence Nodes reported on the non-specificity of the keyword exercise. Quantitatively, this translated into as much as 30% of the projects being non-relevant in some Nodes; and 80% of the projects (in some cases) having been allocated to “incorrect” Competence Nodes. It is therefore clear that the specificity and adequacy of the keywords and keyword search methodology is of significant importance as it can impair time-wise the project prioritisation and project identification exercise (in fact the majority of the Nodes focused solely on the first project batch, see Section 2.2.2).

Although the COLUMBUS Collection process was officially closed on 18<sup>th</sup> March 2016, some Competence Nodes were given extra time for the collection and /or validation of KOs. Due to the nature of the process, which is heavily dependent on the Projects Coordinator engagement, further validated KOs are expected to be submitted in the near future. Nonetheless, the full analysis of KOs is presented in Table 3. These data clearly reveal the time consuming nature of KO extraction; as over 40% of the highest potential projects had KOs collected (n = 73 and n = 168, respectively).

Table 3 also clearly showcases the difficulty experienced in gaining validation of KOs – the final action of the Knowledge Transfer Cycle Collection phase – which is heavily dependent on successful engagement with the Project Coordinator; whereby around 20% (14 of 73 projects) had their KOs validated (n = 141 validated KOs).

Although insufficient data is available as to infer a response rate across the different FP7 Specific Programmes and the effect of previous contacts established by past initiatives, a higher validation rate by the Cooperation funded projects was detected. This behaviour was observed previously, and



indicates that they are more likely to validate KOs regardless if previous contact had been established or not.

### 3.2 Collection of knowledge from Oceans of Tomorrow projects

Competence Nodes	Nº Projects with collected KO	Nº KO Validated Projects	Nº Validated KO	Nº Pending KO
Fisheries	2	2	25	0
Aquaculture	2	2	21	0
Marine Biological Resources	3	2	38	15
Marine Environment & Futures	2	2	15	0
Marine Physical Resources	4	4	71	0
Marine Governance & Management	5	5	237	0
Marine Tourism	2	2	34	0
Marine Transport & Logistics	4	4	29	0
Monitoring & Observation	7	6	54	7
<b>TOTAL</b>	<b>31</b>	<b>29</b>	<b>524</b>	<b>22</b>

*Table 4 - COLUMBUS' 1st Knowledge Transfer Cycle Preliminary Results by Competence Node, for all Oceans of Tomorrow projects*

Prior to the collection by keywords, knowledge was collected from the 31 EC-funded Oceans of Tomorrow Projects. Deliverable 4.6 (to be added to the Description of Work) will provide a complete report of this activity (Table 4).

The combined data from both tasks - collecting KOs from Oceans of Tomorrow projects (Table 4) and collecting from FP7 and H2020 projects (Table 3), as identified mainly by the keyword search - is presented in Table 5.

Competence Nodes	Nº Projects with collected KO	Nº KO Validated Projects	Nº Validated KO	Nº Pending KO
Fisheries	9	5	56	16
Aquaculture	16	2	21	45
Marine Biological Resources	17	6	75	42
Marine Environment & Futures	8	3	29	25
Marine Physical Resources	11	4	71	60
Marine Governance & Management	8	7	241	0
Marine Tourism	9	2	34	17
Marine Transport & Logistics	14	8	84	128
Monitoring & Observation	12	6	54	19
<b>TOTAL</b>	<b>104</b>	<b>43</b>	<b>665</b>	<b>352</b>

*Table 5 - COLUMBUS' 1st Knowledge Transfer Cycle Preliminary Results by Competence Node*



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Over 20% of the total number of projects identified by COLUMBUS (Oceans of Tomorrow projects [n = 31] combined with relevant projects from the keyword search [n = 877]) were prioritised for KO collection in the first cycle (n=199 168 FP7 + 31 OoTs). Of these, little more than half the projects (n=104, corresponding to 10% of total universe) where KOs have been collected, an average of 6 KOs per project was identified.

## 4 DISCUSSION

During the course of the Collection phase of COLUMBUS's first Knowledge Transfer cycle, several issues of were to various degrees commonly encountered by the Competence Nodes. These can be classified under the following headings:

- Preliminary List of Potential Relevant Projects
- Information Availability/Accessibility
- Project Coordinator Engagement

### 4.1 *Preliminary List of Potential Relevant Projects*

The identification of projects that may fulfil the Competence Nodes' knowledge needs forms the foundation of the COLUMBUS project.

The keyword methodology was proven to have limitations of not being sufficiently specific; as albeit several projects were flagged, a large percentage of these were either irrelevant or relevant for a different Node.

Subsequently, EurOcean will strengthen its keyword search methodology, presently under assessment, that could entail a specific string text search and a stronger semantic component, as well as, an in-depth analysis of the keywords to better inform the Knowledge Transfer Fellows on how to best select their keywords. Furthermore, given the highly integrative nature of the marine-related research projects which promotes an overlap of keywords, a pre-classification by Node of the keywords flagged projects, should be also considered in the following cycles as to minimize the number of non-relevant projects and hence, allowing the Nodes to better focus their efforts in the KO Collection and validation. The above stated and other possible solutions will be subject to a full consortium discussion prior to the start of the second Knowledge Transfer Cycle.

While a few Nodes found that the relevant projects addressed their identified knowledge needs, others reported that the flagged projects did not respond to current knowledge needs, but to historic needs within their sector. This was due to the fast-paced nature of their specific sector or due to the age of the KO.

An additional point, outlined by the Aquaculture Competence Node in particular, relates to difficulty in prioritising projects, from an industrial industry end-user perspective, as projects and results were not "mature" enough for an industrial exploitation.



#### **4.2 Information Availability/Accessibility**

The COLUMBUS Knowledge Transfer Methodology insists that the Knowledge Transfer Fellows carry out a desktop study of the most promising projects to initially extract the KOs from available material. Such an approach not only avoids the burden of the Project Coordinators - whose time and availability is extremely limited - but it, allows for better effort allocation by the Competence Nodes by focusing on the collection of the perceived most impactful KOs of a certain project. This is to say that the COLUMBUS project does not aim to collect all the knowledge generated by a research project but to gather that that can have a higher potential for Blue Growth fulfilment.

It stands to reason that a project whose website is no longer operational will significantly impair the identification and collection of KOs; therefore, EurOcean strives to provide active links to project reports available under CORDIS database as well as any other web available information.

Project reports, considered an extremely relevant information source when available, were also considered as not detailed enough to assist in the complete KO extraction. Therefore, access to all project deliverables would be an additional advantage. However, EurOcean cannot ensure the archive of every single project deliverable neither it can provide information on confidential deliverables. Hence providing Project Coordinator contacts is crucial for the extraction of further potentially-relevant KOs.

#### **4.3 Project Coordinator Engagement**

Ensuring a strong engagement with the projects' Coordinators is key for the validation of the extracted KOs and for advancing to subsequent steps of the COLUMBUS Knowledge Transfer Methodology.

Project Coordination engagement issues entails more than Coordinator response; as the establishment of contact can also be undermined due to carrier changes and/or the lack of valid email addresses. Furthermore, Competence Nodes commonly reported that the Project Coordinator is, in most cases, not the KO producer and lacks the in-depth information required to allow for the complete and correct KO extraction and validation.

While EurOcean tries to provide the correct email address of the person designated as Project Coordinator under the CORDIS Database, it is not yet able to ensure that: i) the contact are details are indeed for the Coordinator of the project; ii) it keeps up-to-date with the carrier changes and hence changes to email addresses; and, iii) the contact is the KO owner or aware of the knowledge generated within the project.

As no contact details are provided by the CORDIS database, the identification of the right person with whom to establish contact with can be extremely time-consuming and sometimes unsuccessful. Nevertheless, to date, the Project Coordinator, once correctly identified, continues to be the best vehicle to reaching the actual KO owner or developer.





## 5 CONCLUSION

The Collection phase of COLUMBUS' first Knowledge Transfer Cycle was delayed by six months and its duration halved, due to the additional request to collect exploitable results from the FP7 Ocean of Tomorrow projects. In addition, by focusing on the entire FP7 marine-related projects universe - over 1,250 projects – in the first cycle, the effort required to refine the potential of the flagged relevant projects was significant.

Such project prioritisation effort is extremely time consuming and revealed a weakness in the Competence Nodes knowledge needs keyword definition and in the keyword search methodology; as a substantial part of the flagged project universe was either not appropriate or relevant.

Other issues were identified during the Collection activities, such as the difficulties in collecting KOs for projects without an operational websites or whose Project Coordinator was non-contactable; as they contact details were either not known, not correctly provided by CORDIS, or are no longer correct.

Several methodology adaptations are being considered to strengthen the two remaining COLUMBUS Knowledge Transfer Cycles; such as a refinement of the overall universe and the keyword search methodology. Despite this, the main constraint to the successful conclusion of the Collection process is, by far, the heavy dependency on engagement with the Project Coordinator. In fact, COLUMBUS' Knowledge Transfer Methodology implies that with no final validation, collected KOs cannot be further analysed and transferred.

Hence, COLUMBUS's main efforts should be placed on guaranteeing a strong, working relationship with the Project Coordinator or KO owner.



## 6 ACRONYMS

CFP	Common Fisheries Policy
EC	European Commission
EU	European
EurOcean_KG	Marine Knowledge Gate InfoBase
KO	Knowledge Output
KOT	Knowledge Output Table (1 per project listing of all collected KO)
MSFD	Marine Strategy Framework Directive
OoT	Ocean of Tomorrow Projects
WP	Work Package





ANNEXES

Annex I - COLUMBUS' 1<sup>st</sup> Knowledge Transfer Cycle Keywords by Competence Node

Fisheries	Aquaculture	Marine Biological Resources	Marine Environment & Futures	Marine Physical Resources
Discard Selective gear Selective fishing gear Selective fishing tackles Gear Fishing gear Fishing tackles	Novel nutrient delivery systems Nutritional requirements Nutrient bioavailability Marine algae Maggot meal Insect protein Processed animal proteins Novel nutrient Nutrient delivery Algae Processed proteins Nutrient Proteins Aquaculture	Access benefit sharing Alga Animal Bacteria Enzyme Genomic Metabolite Physiology Pigment Polysaccharide Virus	Plastic littering Marine litter Plastic waste Microplastics Toxicological impacts on marine species Plastic substitutes Global warming Impacts of climate change Arctic region Loss of sea ice Coastal areas Sea level rise Changes on marine flora and fauna Socio-economic changes Natural hazards Ballast water Litter Toxicological impacts Toxicological Toxicity Plastic Climate change impacts Sea ice Natural hazard	Tidal energy Wave energy Offshore wind Tidal Tide Tides Wave Off-shore Offshore





Marine Governance & Management	Marine Tourism	Marine Transport & Logistics	Monitoring & Observation
Biological Diversity Biodiversity Non-Indigenous species Non indigenous species Invasive Species Alien Species Commercially Exploited Fish Commercial Fish Commercially Exploited Shellfish Commercial Shellfish Fish Stocks Shellfish Stocks Common Fisheries Policy Food Web Food Chain Trophic Level Algae Bloom Oxygen Deficiency Eutrophication Sea-Floor Integrity Sea Floor Integrity Seafloor Integrity Seabed Integrity Benthic Ecosystem Hydrographical Conditions Hydrographic Hydrographical Changes Ocean Parameters Effects of contaminant Concentration of contaminants Contaminant Concentration Pollution Effect Effects of Pollution Contaminant	Leisure Tour Travel Recreation Marina Theatre Luggage Restaurant Cruise Holiday Festival Visitor Exhibition Scenic Hike Ramble Seaside Camping Liner Luxury Accommodation Gastronomy (gastro) Landscape Seascape Adventure Boating Music Dance Concert Folklore Cuisine Cultural Caravan Racing Sports	Shipbuilding Ship engineering Ship equipment Ship design Ship production Ship production processes Ship prototype production Ship material Ship material for harsh conditions Large scale structures Ship technology Ship welding Ship repair Ship maintenance Ship retrofitting Ship-scrapping Ship-breaking Shipping Ship operation Ship operator Ship owner Shipping specification Ship inspection Ship specification Ship infrastructure Shipping authorities Ports Port operations Port planning Port design Port construction Dredging Dredging equipment Dredging of ports Dredging of waterways	Marine knowledge INSPIRE MSFD CISE Public-private partnerships Open data Open data licensing Open source policy Satellite ocean colour radiometry Data assimilation Marine modelling Coastal marine hazard tracking Oceanic variables Ocean instrumentation systems Sea-bed mapping Bathymetry Sea-bed habitats Marine and maritime human activities Open-access data Environmental indicators Open-source Data acquisition system Data stewardship Data integration Data standardization Data validation Ocean monitoring Bio-sensors Vessel-based acoustic sensors Acoustic sensors Marine Genomic Environmental Data Sensors Sonar Essential ocean variable Marine acoustics



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<p>Environmental Quality Standard EQS Contaminants in Seafood Contaminants in Sea food Contaminants in Sea-food Contaminants in Fish Contaminants in Shellfish Fish Contaminants Seafood Contaminants Shellfish Contaminant Litter Debris Garbage Patch Plastic Soup Underwater Noise Submerged noise Undersea Noise Noise Pollution Underwater Energy Submerged Energy Undersea Energy Marine Strategy MSFD Good Environmental Status GES Descriptor Monitoring Noise Energy Submerged Undersea Impact Pollution Fish Seafood Sea food Sea-food Shellfish Contaminant Benthic</p>	<p>Stroll surfing Footpath Streetscape Countryside Nightclub Casino Museum Cosmopolitan Railway Traditional Jazz Re-enactment Amusements Tourism Culture Historic Archaeological Guide Wine Vine Swim Local Welcome Hinterland Centre Park Demographic Operator Coastal Ethnic Sunshine Peace Interest City Comfort Beach Shoreline Seasick Travelsick</p>	<p>Shipping rules and regulations Maritime rules and regulations Shipping industry regulation Sustainable shipping Energy-efficient ships Zero-emission ships Environmental friendly ships Energy efficient ship Efficient ship Zero emission ship Emissions ship Emissions Environmental ship Green Vessel Greening Vessel Emission Vessel Efficient vessel</p>	<p>Automated Underwater Vehicles Argo floats Gliders Drifting buoys Ocean forecasting systems Marine observation Marine data Marine metadata Marine data products Marine technology Marine platforms Marine sensors PPP Open source radiometry Ocean colour hazard tracking marine human activities maritime human activities AUV</p>
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Seafloor Sea floor Seabed Integrity	Events Season Deep-sea Aroma Odour Pollution Safety Noise Littoral Sunshine Weather Port Sustainable Tourism		
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**Caption:**

Black –Single keywords

Blue – Keywords Combinations

Brown – Alternative keywords



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*Annex II - COLUMBUS' 1<sup>st</sup> Knowledge Transfer Cycle Relevant Projects by Competence Node (excluding Oceans of Tomorrow projects)*

Fisheries Node		
Programme	Acronym	Title
FP7 - Cooperation	Ecofishman	-
FP7 - Cooperation	MYFISH	Maximising yield of fisheries while balancing ecosystem, economic and social concerns
FP7 - Cooperation	Socioec	Socio economic effects of management measures of the future Common Fisheries Policy
FP7 - People	BE-FISH	Pace of life syndromes in fish: harvesting effects and the role of marine reserves
FP7 - People	DIOMFISH	Design and Implementation of Optimal Management Systems for European Fisheries
FP7 - People	QUAESITUM	Quantifying Environmental and Social Interactions for Tuna fisheries Management
-	Fast track	-
-	Fishermen-research network	-
-	Necessity	-
Aquaculture Node		
Programme	Acronym	Title
FP7 - Cooperation	ARRAINA	Advanced Research Initiatives for Nutrition & Aquaculture
FP7 - Cooperation	COEXIST	Interaction in coastal waters: A roadmap to sustainable integration of aquaculture and fisheries
FP7 - Cooperation	DIVERSIFY	Exploring the biological and socio-economic potential of new/emerging candidate fish species for the expansion of the European aquaculture industry
FP7 - Cooperation	LIFECYCLE	Building a biological knowledge-base on fish lifecycles for competitive, sustainable European aquaculture
FP7 - Cooperation	PREVENT ESCAPE	Assessing the causes and developing measures to prevent the escape of fish from sea-cage aquaculture
FP7 - Cooperation	PRO-EEL	Reproduction of European Eel: Towards a Self-sustained Aquaculture
FP7 - Cooperation	SEAT	Sustainable trade in ethical aquaculture
FP7 - Cooperation	SELFDOTT	From capture based to self-sustained aquaculture and domestication of bluefin tuna, thunnus thynnus
FP7 - Cooperation	TARGETFISH	Targeted disease prophylaxis in European fish farming
FP7 - Cooperation	TRANSDOTT	TRANSLATION OF DOMESTICATION OF THUNNUS THYNNUS INTO AN INNOVATIVE COMMERCIAL APPLICATION
FP7 - People	FISHINUTRIGEN	Fish intestinal nutrigenomics in response to fish oil replacement in Atlantic salmon diets
FP7 - People	IRC-IMTA	An International Research Consortium for promoting and developing Integrated Multi-Trophic Aquaculture
FP7 - People	PASSA	Partnerships for sustainable shrimp aquaculture
FP7 - Capacities	AIRX	Oxygenation by efficient air diffusion system for aquaculture farms (cages and earthen ponds)
FP7 - Capacities	AQUAMMS	Development of a portable miniature mass spectrometer to monitor important, but technically difficult parameters in aquaculture
FP7 - Capacities	CLOSEDFISHCAGE	Development of an innovative, cost-effective environmentally friendly closed cage for sea-based fish farming
FP7 - Capacities	DEAMMRECIRC	The development of a deammonification treatment to remove nitrogen from recirculated water used in aquaculture
FP7 - Capacities	EFISHERNT	Improvement of feeds and feeding efficiency for seabass in cage farms in the Mediterranean
FP7 - Capacities	ENRICH	ENRICHMENT OF AQUACULTURE IMPLANTS BY INTRODUCTION OF NEW MARINE SPECIES FROM THE WILD TO BREEDING
FP7 - Capacities	FISHSCAN	Development of novel system for continuous remote monitoring of weight, growth, and size distribution of fish in aquaculture enclosures
FP7 - Capacities	OYSTERECOVER	Establishing the scientific base and technical procedures and standards to recover the European flat oyster production through strategies to tackle the main constraint, bonamiosis
FP7 - Capacities	REPROSEL	REPRODUCTION protocols and molecular tools for mass spawning and communal rearing based SElective breeding schemes applied to multiple-spawning marine fish
FP7 - Capacities	SALMOTRIP	Feasibility study of triploid salmon production
FP7 - Capacities	SETTLE	Bivalve conditioning and settlement keys to competitive hatchery production



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FP7 - Capacities	SPACETASTE	Advanced Research Initiatives for Nutrition & Aquaculture
Marine Biological Resources		
Programme	Acronym	Title
FP7 - Cooperation	BIVALIFE	Controlling infectious diseases in oysters and mussels in Europe
FP7 - Cooperation	MACUMBA	Marine Microorganisms: Cultivation Methods for Improving their Biotechnological Applications
FP7 - Cooperation	ULIXES	Unravelling and exploiting Mediterranean Sea microbial diversity and ecology for xenobiotics' and pollutants' clean up
FP7 - Ideas	GRACE	Genetic Record of Atmospheric Carbon dioxide (GRACE)
FP7 - Ideas	PIMCYV	Physiological Interactions between Marine Cyanobacteria and their Viruses
FP7 - Ideas	PROTOBRAIN	Sensory-motor circuits in marine zooplankton and early evolution of the nervous system
FP7 - People	COGNISEPLANCTOMYCES	Construction of a Genetic System for Planctomycetes
FP7 - People	DIASIN	Integrative Eco-mechanics of Diatom Sinking: Cellular Physiology, Complex Advection and the Biological Carbon Pump
FP7 - People	GENMARPHYTO	FUNCTIONAL GENOMICS STUDIES IN MARINE PRIMARY PRODUCTIVITY: ENVIRONMENTAL AND POLLUTION EFFECTS ON PHYTOPLANKTON
FP7 - People	GYPSY	A forward genetic screen in the marine planktonic diatom Pseudo-nitzschia multistriata
FP7 - People	HERPISH	Herpes virus in Irish oysters and identification of resistant stocks
FP7 - People	LYNGBYA-KENYA	Cyp-450 biosynthesis of Lyngbya majuscula natural products
FP7 - People	MESODERM EVOLUTION	The development and evolution of the mesoderm in basal bilaterian acoel worms
FP7 - People	NEMATOSTELLAMICRORNA	Functional study of MicroRNAs in the starlet sea anemone Nematostella vectensis (Cnidaria; Anthozoa)
FP7 - People	REV GYR MECH	Towards Understanding the mechanism of positive supercoiling by reverse gyrase from Thermotoga maritima
FP7 - People	SEAWEED AD	Anaerobic Digestion of Seaweed for Biofuels
FP7 - People	SQUID-SWITCH	How do post-copulatory male-male and male-female interactions shape the evolution of mating strategies? A test using two species of squid
FP7 - People	SYMBIOCORE	SYnergies through Merging BIOlogical and biogeochemical expertise in COral REsearch
FP7 - People	SYMBIOX	Role of the oxidative environment in the stability of symbiotic associations
FP7 - People	THE WEAKEST LINKS	How climate change affect the weakest links of animal tolerance?
FP7 - Capacities	EMBRC	EMBRC preparatory phase
FP7 - Capacities	HYFFI	Hydrocolloids as functional food ingredients for gut health
Marine Environment & Futures		
Programme	Acronym	Title
FP7 - Cooperation	ARCH	Architecture and roadmap to manage multiple pressures on lagoons
FP7 - Cooperation	AWARE	How to achieve sustainable water ecosystems management connecting research, FP7 - People and policy makers in Europe
FP7 - Cooperation	ENHANCE	Enhancing risk management partnerships for catastrophic natural disasters in Europe
FP7 - Cooperation	MONARCH-A	Monitoring and Assessing Regional Climate change in High latitudes and the Arctic
FP7 - Cooperation	SIDARUS	Sea Ice Downstream Services for Arctic and Antarctic Users and Stakeholders
FP7 - Capacities	N-CHITOPACK	Sustainable technologies for the production of biodegradable materials based on natural chitin-nanofibrils derived by waste of fish industry, to produce food grade packaging
Marine Physical Resources		
Programme	Acronym	Title
FP7 - Cooperation	CLEARWATER	Commercial Energy ARray for Widespread Acceleration of Tidal European Resources
FP7 - Cooperation	CORES	Components for ocean renewable energy systems
FP7 - Cooperation	DEEPWIND	Future Deep Sea Wind Turbine Technologies
FP7 - Cooperation	DTOCEAN	Optimal Design Tools for Ocean Energy Arrays
FP7 - Cooperation	EQUIMAR	Equitable testing and evaluation of marine energy extraction devices in terms of performance, cost and environmental impact
FP7 - Cooperation	HIPRWIND	High Power, high Reliability offshore wind technology
FP7 - Cooperation	MARINA PLATFORM	Marine renewable integrated application platform
FP7 - Cooperation	PULSE STREAM 1200	Full scale demonstration prototype tidal stream generator
FP7 - Cooperation	RELIAWIND	Reliability focused research on optimizing wind energy systems design, operation and maintenance: tools, proof of concepts, guidelines & methodologies for a new generation
FP7 - Cooperation	SURGE	Simple underwater generation of renewable energy



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FP7 - Cooperation	WAVEPORT	Demonstration & Deployment of a Commercial Scale Wave Energy Converter with an innovative Real Time Wave by Wave Tuning System
FP7 - Cooperation	WINGY-PRO	Increasing efficiency of wind power plants for the production of energy
FP7 - People	MARE-WINT	new MAterials and REliability in offshore WIND Turbines technology
FP7 - People	MARINCOMP	Novel Composite Materials and Processes for Offshore Renewable Energy
FP7 - People	NANOMAR	NANOCONTAINER-BASED ACTIVE COATINGS FOR MARITIME APPLICATIONS
FP7 - People	WAVETRAIN 2	Initial training network for wave energy research professionals
FP7 - Capacities	ACORN	Advanced Coatings for Offshore Renewable ENergy
FP7 - Capacities	AQUAGEN	Development of cost-effective, water based power take-off system for marine energy applications
FP7 - Capacities	GEOWAVE	Geotechnical design solutions for the offshore renewable wave energy industry
FP7 - Capacities	MAGNETIDE	Improved magnets for energy generation through advanced tidal technology
FP7 - Capacities	MERIKA	Marine Energy Research Innovation and Knowledge Accelerator
FP7 - Capacities	MOORINSPECT	DEVELOPMENT OF AN ADVANCED MEDIUM RANGE ULTRASONIC TECHNIQUE FOR MOORING CHAINS INSPECTION IN WATER
FP7 - Capacities	SNAPPER	The development of a novel rare-earth magnet based wave power conversion system - Snapper
FP7 - Capacities	TIDALSENSE	Development of a condition monitoring system for tidal stream generator structures
FP7 - Capacities	TIDALSENSE DEMO	Demonstration of a Condition Monitoring System for Tidal Stream Generators
FP7 - Capacities	TOWERPOWER	Continuous monitoring of the structural condition of the tower and supporting structure of floating and static offshore wind turbines

### Marine Governance & Management

Programme	Acronym	Title
FP7 - Cooperation	AQUAMAR	Marine Water Quality Information Services AquaMar
FP7 - Cooperation	BIODIVERSA2	FP7 - Cooperation and shared strategies for biodiversity research programmes in Europe
FP7 - Cooperation	BIOMETAL DEMO	Biometal demonstration plant for the biological rehabilitation of metal bearing-wastewaters
FP7 - Cooperation	CLIMSAVE	Climate change integrated assessment methodology for cross-sectoral adaptation and vulnerability in Europe
FP7 - Cooperation	COMET-LA	COMmunity-based Management of EnvironmenTal challenges in Latin America
FP7 - Cooperation	DS <sup>3</sup> F	The Deep Sea & Sub-Sea-floor Frontier
FP7 - Cooperation	EU BON	EU BON: Building the European Biodiversity Observation Network
FP7 - Cooperation	FISH4KNOWLEDGE	Supporting humans in knowledge gathering and question answering w.r.t. marine and environmental monitoring through Analysis of multiple video streams
FP7 - Cooperation	HERMIONE	Hotspot ecosystem research and Man's impact on European seas
FP7 - Cooperation	KNEU	Developing a Knowledge Network for EUropean expertise on biodiversity and ecosystem services to inform policy making economic sectors
FP7 - Cooperation	MarineTT	European Marine Research Knowledge Transfer and Uptake of Results
FP7 - Cooperation	MEDINA	Marine Ecosystem Dynamics and Indicators for North Africa
FP7 - Cooperation	MIDTAL	Microarrays for the detection of toxic algae
FP7 - Cooperation	NETBIOME-CSA	Strengthening European research FP7 - Cooperation for smart and sustainable management of tropical and subtropical biodiversity in outermost regions and overseas countries and territories
FP7 - Cooperation	PROTOOL	Productivity tools: Automated tools to measure primary productivity in European seas. A new autonomous monitoring tool to measure the primary production of major European seas
FP7 - Cooperation	RADAR	Rationally Designed Aquatic Receptors integrated in label-free biosensor platforms for remote surveillance of toxins and pollutants
FP7 - Ideas	CODEMAP	COMplex Deep-sea Environments: Mapping habitat heterogeneity As Proxy for biodiversity
FP7 - Ideas	MINOS	Microbial Network Organisation
FP7 - People	BIOCONNECTENCE	Biodiversity and connectivity in the resilience of coastal marine communities
FP7 - People	INVABIOECOF	BIODIVERSITY AND ECOSYSTEM FUNCTIONING: individual-based modelling to understand and predict the consequences of biological invasions
FP7 - People	LUSOQUABARCODE	Implementing DNA barcoding into aquatic biodiversity research in Portugal and priming new macrobenthos monitoring tools
FP7 - People	STORMITURTLE	Ecological correlates of storage and migration strategies in a capital-breeding oceanic 'jellyvore?' multiyear migrant turtle
FP7 - Capacities	D4SCIENCE-II	Data Infrastructure Ecosystem for Science



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FP7 - Capacities	GENESI-DEC	Ground European Network for Earth Science Interoperations - Digital Earth Community
FP7 - Capacities	iMarine	Data e-Infrastructure initiative for fisheries management and conservation of marine living resources
FP7 - Capacities	MARBIGEN	Supporting research potential for MARine Biodiversity and GENomics in the Eastern Mediterranean
FP7 - Capacities	PESI	A Pan-European Species-directories Infrastructure
FP7 - Capacities	SFS	Sea For Society
FP7 - Capacities	VIBRANT	Virtual Biodiversity Research and Access Network for Taxonomy

### Marine Tourism

Programme	Acronym	Title
FP7 - Cooperation	CITCLOPS	Citizens' observatory for coast and ocean optical monitoring
FP7 - Cooperation	FLOODPROBE	Technologies for the cost-effective flood protection of the built environment
FP7 - Cooperation	ITACA	Innovation Technologies and Applications for Coastal Archaeological sites
FP7 - Cooperation	PURE	Development of Auxiliary Power Unit for Recreational yachts
FP7 - Cooperation	SASMAP	Development of Tools and Techniques to Survey, Assess, Stabilise, Monitor and Preserve Underwater Archaeological Sites
FP7 - Cooperation	WRECKPROTECT	Strategies for the protection of shipwrecks in the Baltic Sea against forthcoming attack by wood degrading marine borers. A synthesis and information project based on the effects of climatic changes.
FP7 - Ideas	ECONOMIC HISTORY	Contracts, Institutions, and Markets in Historical Perspective
FP7 - Ideas	LUPE	Sailing into Modernity: Comparative Perspectives on the Sixteenth and Seventeenth Century European Economic Transition
FP7 - Ideas	SEALINKS	Bridging continents across the sea: Multi-disciplinary perspectives on the emergence of long-distance maritime contacts in prehistory
FP7 - People	AFRICAN TRAVELLERS	African Travellers: Exploring Transcultural Lives in the Atlantic World
FP7 - People	COMEX	Transport Jars and Commodity Exchange in the Late Bronze Age Argolid: Tiryns and Midea
FP7 - People	CTA-VLC COMPARISON	Catania and Valencia's way to modernity. A multidisciplinary comparison between two port cities within Mediterranean Europe (1850-1915)
FP7 - People	DIALECT EVOLUTION	Principles of dialect evolution in killer whales
FP7 - People	FORSEADISCOVERY	Forest resources for Iberian Empires: Ecology and Globalization in the Age of Discovery
FP7 - People	MISAMS	Modelling Inhabited Spaces of the Ancient Mediterranean Sea
FP7 - People	TOGETHER	65 Years Together
FP7 - People	TOSTODEM	Towards Sustainable Tourism Development Models in the Euro Mediterranean region: A case study of Malta and Sardinia
FP7 - Capacities	4SEAS	Synergies between science and society for a shared approach to European seas
FP7 - Capacities	BOMA	Boat Management
FP7 - Capacities	DIGITAL OCEAN	Integrated Multimedia Mixed Reality System, Of Real Time Virtual Diving, By Web Teleoperated Underwater Data Collecting Robots, Diffused Online And Through A Network Of Submersible Simulation Devices
FP7 - Capacities	GEEWHEZ	manaGEmEnt and leisure middleWare for tHemE parks and Zoo
FP7 - Capacities	STACHEM	Science and technology for archaeology and cultural heritage in the Eastern Mediterranean

### Marine Transport & Logistics

Programme	Acronym	Title
FP7 - Cooperation	ADAM4EVE	Adaptive and smart materials and structures for more efficient vessels
FP7 - Cooperation	AQUO	Achieve QUIeter Oceans by shipping noise footprint reduction
FP7 - Cooperation	BESST	Breakthrough in European Ship and Shipbuilding Technologies
FP7 - Cooperation	CYCLADES	Crew-centered Design and Operations of ships and ship systems
FP7 - Cooperation	EXTREME SEAS	Design for ship safety in extreme seas
FP7 - Cooperation	HILDA	High Integrity Low Distortion Assembly
FP7 - Cooperation	INCASS	Inspection Capabilities for Enhanced Ship Safety
FP7 - Cooperation	MINOAS	Marine INSpection rObotic Assistant System
FP7 - Cooperation	RETROFIT	RETROFITting ships with new technologies for improved overall environmental footprint
FP7 - Cooperation	SELEKTOPE	Introduction of a new sustainable antifouling technology to the global maritime market.
FP7 - Cooperation	THROUGHLIFE	Development and proof of new approaches for through-life asset management based on next generation of materials and production technology
FP7 - Capacities	CLEANSHIP	Prevention and detection of fouling on ship hulls



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Monitoring & Observation		
Programme	Acronym	Title
FP7 - Cooperation	ARGOMARINE	Automatic oil-spill recognition and geopositioning integrated in a marine monitoring network
FP7 - Cooperation	CORE-CLIMAX	COordinating Earth observation data validation for RE-Analysis for CLIMAtE ServiceS
FP7 - Cooperation	EuroSITES	Integration and enhancement of key existing European deep-ocean observatories
FP7 - Cooperation	HIGHROC	High spatial and temporal resolution Ocean Colour coastal water products and services
FP7 - Cooperation	MELODIES	Maximising the Exploitation of Linked Open Data In Enterprise and Science
FP7 - Cooperation	MYOCEAN	Development and pre-operational validation of the "Ocean Monitoring and Forecasting" component of the future GMES Marine Core Service
FP7 - Cooperation	MYOCEAN2	Prototype Operational Continuity for the GMES Ocean Monitoring and Forecasting Service
FP7 - Cooperation	OSS2015	Ocean Strategic Services beyond 2015
FP7 - Cooperation	PEGASO	FP7 - People for Ecosystem Based Governance in Assessing Sustainable Development of Ocean and Coast
FP7 - Cooperation	SAFEWIN	Safety of winter navigation in dynamic ice
FP7 - Cooperation	SANGOMA	Stochastic Assimilation for the Next Generation Ocean Model Applications
FP7 - People	RAIA.DA	Data Assimilation in RAIA
FP7 - Capacities	FIXO3	Fixed Point Open Ocean Observatories Network
FP7 - Capacities	JERICO	TOWARDS A JOINT EUROPEAN RESEARCH INFRASTRUCTURE NETWORK FOR COASTAL OBSERVATORIES
FP7 - Capacities	ODIP	Establishing and operating an Ocean Data Interoperability Platform
FP7 - Capacities	OSLO	Ocean Surface Layer Observations
FP7 - Capacities	SEADATANET II	SeaDataNet II: Pan-European infrastructure for ocean and marine data management



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