



D7.6: PROMOTING MARINE RESEARCH TOWARDS A BLUE SOCIETY

Deliverable 7.6

PROMOTING MARINE RESEARCH TOWARDS A BLUE SOCIETY

02-2018

Lead parties for Deliverable: Nausicaa, Centre National de la mer

Due date of deliverable: M36

Actual submission date: M36

Revision: V.1.1

Project co-funded by the European Commission within the H2020 Programme (2004-2020)	
Dissemination Level	
PU Public	X
PP Restricted to other programme participants (including the Commission Services)	
RE Restricted to a group specified by the consortium (including the Commission Services)	
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Acknowledgement

The work described in this report has been funded by the European Commission under the Horizon 2020 Framework Programme.

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I. EXECUTIVE SUMMARY

The Blue Society vision¹ is a "concept integrating systematically economy, environment, society, and culture in order to improve geographical and time equity and foster good ocean governance".

The idea and then vision of a Blue Society is the result of an EU project called Sea for Society. This three years project (mobilization and mutual learning plan) aimed for a deeper understanding of how humans relate to the Ocean. Under the European Seventh Framework Programme, it brought together twenty-eight (28) research, education and communication organizations from twelve (12) countries in a process of dialogue and joint actions. Its objectives relied on speaking with all those interested in the Ocean and capturing their views on how society as a whole can develop solutions to promote the sustainable management of the marine environment.

This project's main result has been the definition of this Blue Society vision, based upon this project's activities.

More information about the Blue Society is available from its dedicated website at <http://www.bluesociety.org>.

Linking sustainable Blue Growth and citizens is indeed the backbone of the Blue Society vision. It considers the entire ocean as the common heritage and collective responsibility of all nations on the planet.

In this respect, promoting marine and maritime research and innovation, and any project's added value to relevant audiences through a close collaboration between researchers, the public, entrepreneurs and decision-makers, as COLUMBUS has done, should be the foundation of the Blue Society (<http://www.bluesociety.org>)

COLUMBUS is thus naturally aligned with this Blue Society vision.

This deliverable demonstrates how COLUMBUS has succeeded to promote "marine research toward a Blue Society" through targeting different end-users as stakeholders, with a "science to industry", "science to society" and "science to policy" approach during the lifespan of the project. It also outlines how transfer of knowledge from a "science to society" will continue beyond the lifetime of the project.

To elaborate, the consortium implemented a series of activities and means, which included:

- As of February 2018, the publication of 48 "public format" stories of Knowledge Transfer, outlining the detailed Knowledge Transfer journey across the marine and maritime sectors (across COLUMBUS' eight Competence Nodes),
- The release of COLUMBUS general presentation movie addressed to the general public,
- The enhancement of the social media echo based upon COLUMBUS online campaign,
- The collaboration and bridge created with others projects and networks that promote marine research and the Blue Society concept,
- The participation to specific international and European events and meetings,
- The organisation of brokerage events,
- The launch of two COLUMBUS dedicated exhibits: a permanent one at Nausicaa, and a traveling one by Juelich, and
- COLUMBUS' celebration of the Blue Society throughout COLUMBUS annual conferences and through the Blue Society Award.

As you will read through this reporting, it is only combined and run in parallel that all of these actions and activities have ensured COLUMBUS success "to promote marine research toward a Blue Society".

¹Blue Society Concept presentation : http://seaforsociety.eu/Blue_Society_Concept.pptx

II. INTRODUCTION

The [Blue Society concept](#) was developed by specialists and lovers of the Ocean who believe that a major part of the solution to face the environmental, economical and social crisis will come from the sea. Introduced both at the United Nations Rio+20 Summit on Sustainable Development (Brazil) and at the International Aquarium Congress (IAC) in Cape Town (South Africa) in 2012, the Blue Society concept has really started to emerge.

It has then been defined under the Sea for Society EU-funded project, by setting up its principles and implementing recommendations. Citizens and stakeholders throughout Europe were indeed consulted to identify challenges and develop [new ideas](#) for marine research and maritime governance.

More precisely, three major findings have been integrated to develop the concept of Blue Society:

- The existing legal framework at international and more particularly at EU level, with the importance of the current state of EU strategies and policies such as the Blue Growth Strategy, Marine Strategy Framework Directive (MSFD), revised Common Fisheries Policy (CFP), the Integrated Maritime Policy for the EU, Europe2020, EU Strategy for the Atlantic, Integrated Coastal Zone Management, Marine Knowledge 2020 and many more.
- The importance of marine research: the EU Strategy for Marine and Maritime Research (COM (2008) 534) could be considered as key starting point. For the first time, science and technology have been highlighted as playing a vital role. They indeed both preserve the marine environment and support the "Blue Growth" strategy to enhance the economic potential of seas and oceans. As such it already aimed to become

a key component contributing to the "Europe 2020" goal of smart, inclusive and sustainable growth for Europe. This angle has been recently (last January) emphasized again by the EU communication on the outcomes of the Horizon 2020 interim evaluation: "Europe must step up investment in research and innovation in order to maximise impact, while also further refining the success story that is Horizon 2020, the EU research and innovation programme".

- The role of citizens: the latest Horizon 2020 interim evaluation has highlighted again how important it is to *"create more impact through citizen involvement... involving citizens, customers and end-users in the programme agenda-setting (co-design) and its implementation (co-creation) leads to more innovation by stimulating user-driven innovation and the demand for innovative solutions"*. This can be linked to the Lamy Group made relation to the UN Sustainable Development Goals (UN SDGs). It indeed pleads for involving the public in defining missions and for more citizen science (#8 Mobilise and involve citizens).

This means that reinforced dissemination and exploitation of research results are to be considered to ensure marine research promotion toward a blue society.

With such context, aligning with the Blue Society concept, and more precisely on the outcomes of the Sea for Society project, the COLUMBUS project has dedicated a Work Package (WP7) to enhance the visibility and impact of marine and maritime research to different stakeholders and the wider public. More precisely, marine and maritime research related activities have been organized into eight rather than nine nodes (e.g. sectorial approach) as originally scheduled.

Last but not least, we should mention that COLUMBUS means to "promote marine research towards a blue society" have been

continuously monitored based upon the refined criteria Innovatec presented in its mid-term evaluation.

A dedicated "monitoring and evaluation" programme has been indeed enhanced.

III. OVERALL OBJECTIVE

The overall objective of this task was to promote COLUMBUS activities and this deliverable illustrates how the different actions have positively illustrated the importance of marine research use and its added value toward a Blue Society.

This report focuses also on promoting the impact of marine research and supporting the [Responsible Research and Innovations principles](#).

IV. SPECIFIC OBJECTIVE(S)

As per the Grant Agreement (page 35):

"The focus of this task [has been] to promote the importance of marine research and its value creation for society, as well as supporting the Responsible Research and Innovation principles".

WP7 activities aimed to positively illustrate the impact of research use.

The continuous monitoring of successful Knowledge Transfer activities (with Task 7.2) has enabled to develop specific messages, tools and actions according to the respective audiences.

In this respect, the marine research importance has been well highlighted with the release of the "public format" case studies, supported by the partnership online campaign along with the press releases dissemination.

Moreover, WP7 has ensured that specific promotional material have been produced to positively illustrate the impact of research at different events and settings.

As forecasted in the Grant Agreement, these results have been celebrated throughout a series of actions, with:

- The dedicated "annual *Blue Growth Knowledge Transfer conferences*"
- The Blue Society Award, outlining "the *best examples of successful Knowledge Transfer*",
- The event at the European Parliament, and
- Last but not least the exhibit inaugurated this Spring at Nausicaa venue, which shall enable to mobilize as scheduled "organisations specialized in communicating science to various audiences, such as science centres, etc. and providing them with free use of the information material created on success stories"

In brief, COLUMBUS partners have strived to join efforts with other Blue Growth beneficiaries - including BG13 Ocean Literacy project, such as Sea Change (www.seachangeproject.eu).

V. VARIOUS MEANS and ACTIVITIES

Within this three years programme, several means and activities have been run to *"promote marine research toward a Blue Society"*.

1. Case Studies

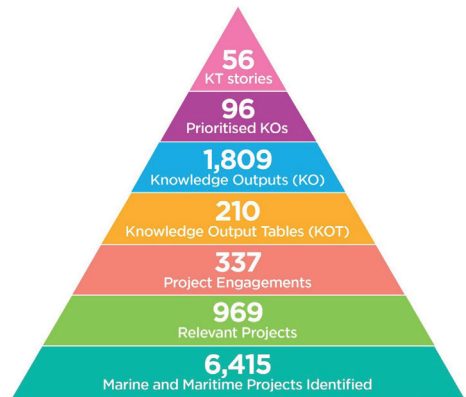
1. Overview

In order to promote the results of the COLUMBUS methodology and more particularly to illustrate the detailed journey taken by COLUMBUS to carry out knowledge transfer across european marine and maritime sectors, "public format" case studies have been designed. Their respective production and dissemination towards COLUMBUS three targeted audiences (e.g.: industry, policy and society) aim to *"promote marine research towards a Blue Society"*.

2. Process

After three years of Knowledge Transfer related activities, implementing the COLUMBUS methodology, 48 "public format" case studies have been selected to illustrate the detailed journey taken by COLUMBUS to carry out knowledge transfer across european marine and maritime sectors.

The respective process has been generated to reach this "public format" case studies release:



As the hereabove chart highlights, these 48 "public format " case studies have been generated from

1. The identification of 6,415 marine and maritime project
2. The selection of 669 relevant projects – that could be considered under COLUMBUS
3. Out of these, 337 projects have been used for further engagements
4. Then 210 projects have been short-listed into the Knowledge Output Tables, covering 1,809 Knowledge Outputs
5. Then 96 priorities Knowledge Outputs have been selected to then reach 56 Knowledge Transfer stories,
6. From which 48 have been published into a "public format", which means into a format used for dissemination purposes.



COLUMBUS STORIES OF MARINE AND MARITIME KNOWLEDGE TRANSFER ACTIVITIES VOLUME 0.2 (24 JANUARY 2018)

THIS IS A COMPILATION OF 48 STORIES DETAILING THE JOURNEY TAKEN BY COLUMBUS TO CARRY OUT KNOWLEDGE TRANSFER ACROSS EUROPEAN MARINE AND MARITIME SECTORS.

AS KNOWLEDGE TRANSFER IS IN SOME CASES FOLLOWING, PLEASE VIEW THE DETAILS OF EACH STORY AS DRAFT. THE COLUMBUS STORIES WILL BE FINALISED AND UPLOADED TO THE COLUMBUS WEBSITE BY THE END OF THE PROJECT (2019/20).



3. Results

These case studies cover the eight COLUMBUS nodes: Aquaculture, Fisheries, Marine Biological Resources, Marine Environment and Futures, Marine Governance and Management, Marine Monitoring and Observation, Marine Physical Resources and Maritime Transport and Logistics.

As their respective stories, as listed in Annex 1 per node, they all really showcase the promotion of marine and maritime research toward a Blue Society.

They all have been released on February 28, 2018. Their respective contents are available for download on the [COLUMBUS website](#).

Their respective dissemination should enhance the promotion of marine and maritime research towards a blue society.

2. COLUMBUS Dedicated Film for the General Public



1. Overview

Another important tool used by COLUMBUS to "promote marine research towards a Blue Society" is the [COLUMBUS dedicated film](#).

It really **aims to introduce the COLUMBUS journey to the general public.**

Being showcased at various events, meetings and venues, as well as within the dedicated COLUMBUS exhibit at Nausicaa, this video advocates the importance of marine research and its value creation for society. It positively illustrates the impact of research use in people's daily lives.

2. Process

In order to reach originally the general public, and since then all three targeted audiences—e.g. "science to industry", "science to policy", and "science to society"—this film is showcased as much as possible. It is being presented in any COLUMBUS related events, meetings the consortium takes part .

It has also been released on the COLUMBUS dedicated website and shared as explained in the following section on social media, on COLUMBUS dedicated social media mainstreams, including [vimeo](#). Since its release on vimeo, this movie has been

viewed 1,534 times, in February 2018. This video was also picked up by the SEVENSEAS Channel (<https://sevenseasmedia.org/sevenseas-channel/>) who posted the video to YouTube <https://www.youtube.com/watch?v=mdQmsMJs7Os> and by Nausicaa, on their projects channel : <https://www.youtube.com/watch?v=ETloRC94Qlk> (viewed 271 times).

It is indeed an impactful tool to present in a very entertaining, educational and simple way the COLUMBUS projet, but more particularly to promote "marine research towards a Blue Society".

3. Script

The film consists of linked sequences in a rapid editing style.

The sequences illustrate the nine themes (e.g. eight nodes, and the Tourism theme that was covered by COLUMBUS at the beginning of the project) while showing the benefit of these research fields for society. Some text (evidence-based facts & figures) appearing in a handwriting style and infographics drawn in white lines support the messaging on how marine sciences contributes to Blue Growth and the Blue Society.

The entire script is available in Annex 2.

→ In brief, this film is a very useful tool to reach toward the general public, but also other audiences. Its sequenced approach enables to highlight each of the nine originally covered sectors by COLUMBUS to "promote marine research toward a Blue Society".

3. Social Media Echo

1. Overview

In order to optimize its online visibility, the consortium has been encouraged to use the social media mainstreams, with the creation of a dedicated LinkedIn group and a dedicated twitter account.

As explained in D7.2, to ensure the respective partners input for these online activities, specific "best practices guide" have been developed and shared with them, covering the LinkedIn tool and the twitter one. They also have been made available on COLUMBUS dedicated basecamp.

→ In brief, the partnership has built its communications strategy based upon an online campaign, and supported by its dedicated website.

2. Process

In this respect, a dedicated Twitter account and dedicated LinkedIn group have been set up to promote the Knowledge Transfer progress and more generally to positively illustrate the impact of research use for all marine and maritime sectors covered by COLUMBUS.

The selected social media mainstreams have been:

Its LinkedIn Group and Related Activities

Its dedicated "best practice guide" recalled that LinkedIn could be very interesting in what concerns "networking exchange", "collaboration" and "open dialogue" of key marine stakeholders. This tool provides already an existing network of industrial and entrepreneurship stakeholders.

The partners have been in charge to create and moderate the dialogue between key marine stakeholders identified.

In this respect, the partners have been encouraged to:

- Join the group and invite their respective LinkedIn contacts to do so. (the same approach has been taken for the twitter account, as described in the following sub-section),
- Add content and participate to the group guaranteeing a lively interaction, and
- Use pictures as a way to catch the attention of the public for most if not all published posts.

It has also been reminded, if unfamiliar with this tool, that the post should:

- Provide information by sharing comments, articles or idea on scientific Knowledge and its Transfer, or news concerning scientific research,
- Be personalised, as a way to highlight each partner's contribution added value, and
- Be as much interactive as possible, by answering to members' questions, remarks and comments, like relevant publications and also by asking questions.

Last but not least, it has also been reminded that this group could be promoted throughout the other social media used mainstream (e.g. Twitter).



Its Twitter Account and Related Activities

Its dedicated "best practice guide" has provided the partners enough guidelines and suggestions to enhance COLUMBUS visibility on twitter, as well as to use this tool as much as possible, when relevant.

Different hashtags on Twitter could indeed be related to COLUMBUS.

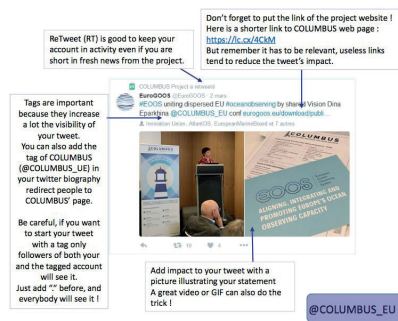
The "best practice guide" has recalled that there were three main hashtags already used on the COLUMBUS account: #KnowledgeTransfer; #MarineScience and #Impact.

It has also been mentioned that other hashtags could be used to cover a specific topic, such as:

- #OceanNews (when sharing some news on marine and maritime research)
- #OceanOptimism (when solutions or good news concerning the ocean is been brought to light) ;
- #MaritimeMonday (by gathering some tweet about boat, ship and more globally maritime transportation, and of course on Monday) and
- #Innovation.

This list served as a base that could be enlarged by other suggestions given by the partners, as long as they did not overly hashtag the posted tweet (#it #is #uncomfortable to #read).

The "best practice guide provided a concrete example on how best to tweet an information, as illustrated hereunder:



Partners have been encouraged to use twitter to communicate on:

- Results: by ensuring that all the protagonists of the story were mentioned to increase the tweet visibility,
- Events: before, during and after, with the respective supporting documents (ex: leaflets, agenda...)
- Quotes and tops, and
- Open questions and polls, ensuring an interactive and lively post.

3. Results

The two social media tools, with the support of a dedicated website, have enabled not only to promote continuously the progress made throughout the partnership's lifespan, but also to highlight and celebrate

- key events such as the brokerage events, special events...
- achievements with the respective brokerage events' outputs...and
- to a further extend the complete knowledge transfer journey as highlighted earlier in the case studies dedicated section.

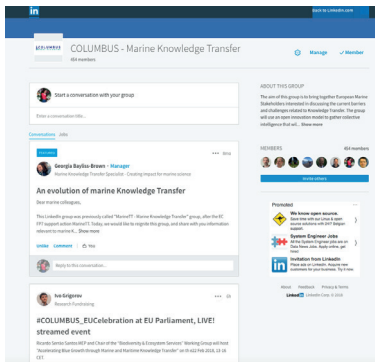
The momentum has been reached at the end of the project with the release of the "public format" case studies celebrating this journey, and further spreading COLUMBUS achievements towards third parties (the partnership' stakeholders).



LinkedIn Group results

In order to communicate with current stakeholders, a COLUMBUS dedicated LinkedIn Group (with 454 members). This group was formed upon the MarineTT group, and reignited to form this group which was already a group of people interested in marine Knowledge Transfer. The COLUMBUS LinkedIn Group was enabled to reach out toward targeted end-users and promote marine and maritime research toward a Blue Society.

Within this group, six articles have been released, and 29 conversations taken place.



COLUMBUS Twitter Account

A dedicated COLUMBUS twitter account (1,764 followers) has been created in order to promote marine research toward a Blue Society.

This account is being followed by 353 members, has posted 363 tweets, re-tweeted 204 posts.

With the release of the "public format" case studies at the end of the project (February 2018), specific Twitter and LinkedIn cards promoting these stories have been designed. They are now ready to be further disseminated and find an echo in the online media sphere, including the dedicated European Commission ones.



4. Outcomes: a Multiplier Effect, some meaningful examples

As a result of the COLUMBUS LinkedIn Group and Twitter account's dedicated activities, COLUMBUS online coverage has benefited from the multiplier effect these communications means have generated.

One example among others, can be well illustrated by the online activity of the

COLUMBUS competent node leader for Aquaculture, Aquark, whose:

- LinkedIn account is being followed by 1,840 individuals. 21 COLUMBUS dedicated articles have been posted, which have generated more than 2,000 views and 400 likes.
- Twitter account is being followed by 190 individuals. 83 COLUMBUS dedicated twitts have been posted, and 10 re-tweets.

Another multiplier effect that can be used as example of a specific COLUMBUS event / milestone celebration on the social media means is the dissemination of the annual conferences coverage. Out of the 351 followers of the COLUMBUS partner, SmartBay Ireland, COLUMBUS 2nd annual conference has generated 255 posts, the 3rd one 626 posts.

Last but not least, and this to better disseminate COLUMBUS stories, a dedicated and voluntary based communications group has been developing, sharing and re-posting COLUMBUS 'stories'. This group's activities have reinforced the multiplier effect within the social media sphere.

→ In brief, the success of any social media related activities rely on the multiplier effect its stakeholders provide.

This is even truer for COLUMBUS ones, with the essential contribution and echo its partners provide with their respective online activities.

4. Specific Press Articles and Publications

4.1 Press Releases

1. Overview

In addition to these online tools, and in order to optimize COLUMBUS dissemination activities, stories dedicated to the milestones described hereabove have been written and published.

The covered stories aimed to "promote marine research towards a blue society". They mainly targeted the two main audiences of COLUMBUS- e.g. industry and policy-.

2. Process

These articles have been written by some of the consortium's partners. Some partners volunteered to write some stories. They usually were the ones directly involved with the covered story and targeted audience. This to ensure the best story description and then outreach.

3. Results

All of these press releases have been uploaded on the COLUMBUS website. Out of the 31,949 visits throughout COLUMBUS lifespan (with 25,504 unique page views), the dedicated news have received 718 visitors.

In addition to this, these articles have been shared throughout the partnership's respective networks.

Some specific examples include:

- The European Aquaculture Society (EAS) has released several COLUMBUS press coverages in its own organization newsletter, distributed to over seven hundred (700) recipients.

SmartBay Ireland has released four dedicated press releases covering COLUMBUS. These press releases were uploaded on SmartBay's website, which would have a reach of about 1,500 unique users for each release.

- It has also released one specific article introducing COLUMBUS in its own organization newsletter, sent directly to 800 people by email. It is also distributed in hard copy at national and international audiences.



4.2 Publications

Two set of publication related items have been disseminated in order to promote "marine research towards a blue society":

- The "*Good Practice Guide: Use and sharing of marine observations and data by industry*", and
- Various knowledge transfer activities related publications.

1. The "Good Practice Guide: Use and sharing of marine observations and data by industry"

a. Overview

As a way to "promote *marine research toward a Blue Society*", the consortium has taken advantage of the publication of the "Good Practice Guide: Use and sharing of marine observations and data by industry".



→ In brief, beyond the consortium,

- 87 COLUMBUS press pages can be found online.
- 6 press releases have published in Alpha Galileo with 13,697 hits and 2,833 asset hits, and
- Additional press releases published on CORDIS.

b. Process

This publication has indeed been shared and disseminated toward COLUMBUS end-users as much as possible, and this throughout various communications channels, including the social media, COLUMBUS website, and more particularly handed at specific events.

This guide has been presented and handed out towards policy makers and industry players at the following industry and policy dedicated events and meetings listed hereunder:

- **Ocean Business 2017 Conference, 4-6 April, 2017 in Southampton (United Kingdom):** launch of the Data-Industry best practice guide and dedicated presentation given by Glenn Nolan – Secretary General of EUROGOOS, one of the COLUMBUS partners.
- **EuroGOOS Executive Directors Board meetings,** February, May, September 2017, with presentations given COLUMBUS; and in January 2018, the Data-Industry Best Practice Guide was presented and disseminated.
- **EuroGOOS General Assembly and open session,** May 2017 – Data-Industry best practice guide was presented and disseminated
- **European Maritime Day 2017, 18-19 May, 2017, in Poole (United Kingdom).** At the EuroGOOS dedicated booth, and on the COLUMBUS one as well, the Data-Industry Guide has been handed out.
- **1st European Strategy Forum on Research Infrastructures (ENMRI) Community Forum, 18-19 May, 2017, in Grenoble (France):** This community of 23 pan-European environmental Research Infrastructures (ENMRI RIs), members of the European Commission Horizon 2020 project ENMRIplus, met with Private Industry partners to explore opportunities for new joint innovation projects.

EUROGOOS attended this event, and disseminated toward its participants the Data-Industry Guide.

- **GEO High-level working group for the European caucus, 22 November, 2017** – The guide handed to Working Group facilitators of the Directorate General for Research and Innovation of the European Commission.
- **COLUMBUS dedicated events/meetings:** The guide has been disseminated at the Aquaculture brokerage event (EAS Conference, September 2017), Sensors brokerage event (PLOCAN event, October 2017) and its follow-up event (EUROGOOS event, January 2018), and at the annual conferences (October 2017 and January 2018).

c. Results

Out of the total print run of 1,500 copies, and by starting its hard copies distribution in April 2017, 1, 350 hard copies have been handed out until now.

The remaining ones will continue to be handed out these coming months.

2. Various Knowledge Transfer Activities Related Publications

a. Overview

Last but not least, we should not forget to mention as a way to “promote marine research towards a Blue Society”, that the consortium has published various knowledge transfer activities related publications.

This to share mainly with the science community in general stories about the knowledge transfer journey and outcomes.

b. Process and Results

COLUMBUS has indeed published seven articles (and two additional already announced for April 2018) in the ResearchGate publications.

They are available from <https://www.researchgate.net/project/H2020-Columbus?sg=loPMrcHTPPv8uxqRwCRvwW61A8Ph9x5CzcFyWIA95BUpCOBI8HNPpnhSSfMF4YR3wQ6zZrFnXkHRLmZo4b5rsVT1PUS8VNEHGeN>

They include:

- **"Demonstrating measurable impact of research outputs with Readiness Levels"**. By Ivo Grigorov and Georgia Bayliss-Brown. Conference: Conference: EGU 2018, At Vienna. April 2018. This publication has received so far 2 reads.
- **"How an impact plan can build on the success of your project – from proposal to legacy (EGU2018-8907)"**. By Sofia Alexiou, Ivo Grigorov and Georgia Bayliss-Brown. Conference: Conference: EGU 2018, At Vienna. April 2018. This publication has received so far 2 reads.
- **"Report on existing knowledge transfer initiatives including their positive and negative attributes from an end user point-of-view"**. By Sofia Alexiou, Rosa Fernandez, Silvana NR Birchenough, and Cliona Ni Cheallacháin. DOI: 10.13140/RG.2.2.19148.62087 . Report number: EC Grant agreement no. 652690 (Deliverable 8.2), Affiliation: NOCS (National Oceanography Centre Southampton). August 2016. This publication has received so far 10 reads.
- **"Report on current metrics for research performance"**. By Nathalie Kowalczyk, Catherine Boyen, Georgia Bayliss-

Brown, and David Murphy. DOI: 10.13140/RG.2.2.20826.34245 Report number: EC Grant agreement no. 652690 (Deliverable 8.1), Affiliation: UPMC. December 2016. This publication has received so far 24 reads.

- **"Guidelines on carrying out COLUMBUS Knowledge Transfer and Impact Measurement"**. By Cliona Ni Cheallacháin, Georgia Bayliss-Brown, and David Murphy. DOI: 10.13140/RG.2.2.22923.49447 Report number: EC Grant agreement no. 652690 (Deliverable 2.2), Affiliation: AquaTT. November 2015. This publication has received so far 5 reads.
- **"Towards synthesized knowledge management and transfer for 'omics' data to better advise fisheries management"**. By Claudia Junge, Ivo Grigorov, Georgia Bayliss-Brown, and David Murphy. Conference: EuroMarine Foresight Workshop: The application of Population Genomics to Fisheries Management, At Faro, Spain. May 2017. This publication has received so far 10 reads.
- **"Knowledge transfer within EU-funded marine science research - a viewpoint"**. By Cliona Ni Cheallacháin, and Georgia Bayliss-Brown. Conference: EGU General Assembly 2016, Volume: 18. January 2016. This publication has received so far 15 reads.
- **"Outreach of the Unseen Majority"**. By Marieke Reuver, Georgia Bayliss-Brown, Tanja Calis and Niamh Dornan. DOI 10.1007/978-3-319-33000-6_18. Publisher: Springer. July 2016. This publication has received so far 5 reads.
- **"Incorporating Knowledge Transfer in a national funding agency for increased research impact: A case study"**. By H Pirlet, Georgia Bayliss-Brown, Cliona Ni Cheallacháin and David Murphy. Conference: 2nd JPI Oceans Conference, At Lisbon, Portugal. October 2014. This publication has received so far 4 reads.

4.3 COLUMBUS Dedicated Newsletter

a. Overview

Most of these stories and released publications have also been covered into the dedicated COLUMBUS newsletters (online format).

A COLUMBUS dedicated electronic newsletter has been indeed been designed and produced regularly to share COLUMBUS progress and main achievements.

It indeed aimed to promote marine research towards a blue society within the consortium and to the three targeted audiences – e.g. "science to industry", "science to policy", "science to society").

b. Process and Results

These newsletters all have been prepared and distributed the last two years of the project, with a specific emphasis given on the last year of the project.

Two newsletters² have been released in 2016, three³ in 2017, and one⁴ in early 2018. All partners have been encouraged to use these newsletters' respective contents to feed the online and social media, as well as sharing COLUMBUS progress and outputs with their respective networks.

² <http://www.columbusproject.eu/Newsletter1.pdf>
<http://www.columbusproject.eu/Newsletter2.pdf>

³ <http://www.columbusproject.eu/Newsletter3.pdf>
<http://www.columbusproject.eu/COLUMBUSBrokerageEvents.pdf>
<http://www.columbusproject.eu/NL%20COLUMBUS%20Fall%202017.pdf>

⁴ <http://www.columbusproject.eu/NL%20Winter%202017.pdf>



Please remember that we need to know if you are planning to participate in any way to some events for COLUMBUS, so that we could provide you with any help necessary concerning communication tools

SEPTEMBER 2016

ICUN World Conservation Congress

Hawaii / 1st-10th

The Congress is the world's largest environmental and nature conservation event.

There is an Ocean and Island pavilion with one theme financing and the blue economy. This could be interesting for COLUMBUS (see the program [here](#)) - Fees: 680 CHF (for members) or 1050 ([HERE](#))



PRADS (Practical Design of Ships)

Copenhagen / 4th-8th

Hosted by the partner DTU, it targets researchers, professionals and all interested to fathom proper design of ships and other floating structures, from theory in the earliest design stages to practical operations at sea. Fees: 995 \$ (after 26/8, considered as on-site, [HERE](#))



Building European Ocean Observing System (EOOS)

Brussels / 8th

The EOOS progress and the draft roadmap will be presented at a dedicated event at the European Parliament hosted by MEP Ricardo Serrão Santos and organised by the partner EuroGOOS. Registration open until August 25th ([HERE](#))



Dear COLUMBUS partners,

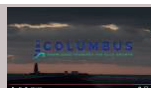
Thanks a lot for your respective input to get together this new edition of our COLUMBUS newsletter!
As you will read through, a lot has happened these past months and more are to come.
Please take your agenda in order to join and / or celebrate our forthcoming COLUMBUS events and activities.

Enjoy your reading!

CONTENT

- WHAT HAPPENED THESE PAST MONTHS?
- PAST COLUMBUS EVENTS
- SAVE THE DATES!
- UPCOMING COLUMBUS EVENTS

WHAT HAPPENED THESE PAST MONTHS? – PAST COLUMBUS EVENTS



We are pleased to announce that the latest COLUMBUS film has been uploaded on the COLUMBUS website and the AquaTT one, as well as on YouTube.
You can view it [HERE](#). We invite you to share this film on your respective online social media!

→ In brief, all of these activities have empowered the multiplier's effect the partnership provides. This multiplier effect is indeed a true added-value for COLUMBUS online communication strategy.

5. Collaboration with Others Projects and Networks

1. Overview

As a way to promote further "marine research towards a blue society, COLUMBUS has enhanced collaboration with existing projects and networks.

2. Process

Several COLUMBUS partners are indeed involved in other EU and international projects and programmes aiming to "*promote marine and maritime research toward a Blue Society*", and enabling to ensure a link between European citizens and the sea.

In this respect, the following projects and networks have been important platforms where COLUMBUS' activities and outputs have been disseminated, and vice versa.

3. Results

Out of COLUMBUS three targeted audiences (e.g.; industry, policy and society), the society one has been the main benefactors of the collaboration with the following projects and networks.

a. Sea Change

.....

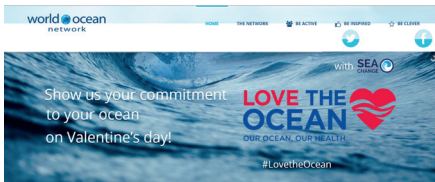


Sea Change (<http://seachangeproject.eu>) is an EU H2020 funded project aiming to establish a fundamental "Sea Change" in the way European citizens view their relationship with the sea, by empowering them, as Ocean Literate citizens, to take

direct and sustainable action towards a healthy ocean, healthy communities and ultimately a healthy planet.

The Sea Change consortium consists of 17 partners from nine different countries, coordinated by the Marine Biological Association of the United Kingdom.

This consortium, which comprises nine public research organisations, one SME, five non profit organisations and two higher



education institutions, brings together selected experts to collectively provide the knowledge, competence, skills and facilities needed for ensuring a good project development, the achievement of project objectives and the successful delivery of project results.

Sea Change main objectives include:

- Compile an in-depth review of the links between seas and the ocean and Human health based on latest research Knowledge Outputs.
- Build upon the latest social research on citizen and stakeholder attitudes, perceptions and values to help design and implement successful mobilisation activities focused on education, community, governance actors and directly targeted at citizens.
- Build upon significant work to date, adopting best practice and embedding ocean literacy across established strategic initiatives and networks in order to help maximise impact and ensure sustainability.
- Ensure that efforts to sustain an Ocean Literate society in Europe continue beyond the life of Sea Change through

codes of good practice, public campaigns and other ongoing community activities.

- Ensure that all activities of Sea Change are carefully monitored and evaluated to ensure maximum sustainability, effectiveness and efficiency.
- Ensure Knowledge exchange with transatlantic partners to bring about a global approach to protecting the planet's shared seas and ocean.

→ These objectives can only be achieved by a closely interlinked programme. Sea Change includes a mobilisation phase engaging with citizens, formal education and policy actors. Crucially, the legacy of Sea Change, including continuing knowledge sharing with North America, are embedded within the project.

b. MARINA



The MARINA project (www.marinaproject.eu) is more than an EU H2020 funded project related to marine issues.


MARINA, in fact, takes into account several cross-cutting topics because our life is strongly connected to marine environments. The Responsible Research and Innovation (RRI) approach is at the core of the MARINA project and is used with all stakeholders in eight strategic marine hot topics issues, defined in the MARINA project and involving all the Horizon 2020 Societal Challenges:

- Marine biotech
- Sea Transportation
- Deep sea mining (including bio prospecting)
- Marine Change caused by climate
- Renewable energy (wave, wind, tidal)
- Tourism and coastal cities
- Fishing and aquaculture

- Pollution caused by human land and sea pressures.

The MARINA project aim is to create an all-inclusive Knowledge Sharing Platform catalysing and organising the convergence of already existing networks, communities, on-line platforms and services providing an online socio-technical environment that facilitates and stimulates the direct engagement of researchers, civil society organisations, citizens, industry stakeholders, policy and decision makers, research funders and communicators for improving RRI.


In particular, the project establishes, curates and experiments a RRI platform involving societal actors working together during the whole research and innovation process for aligning better both the process and its outcomes, with the values, needs and expectations of European society, integrating citizens visions, needs and desires into science and innovation, promoting RRI with focus on marine issues and pressures that have important effects on the European societies.



**MOBILISATION AND MUTUAL LEARNING
WORKSHOP**

Invitation

Discuss, Explore, Propose and Network



March 13th, 2018
9:00 - 17:00
Nausicaä, Boulogne-Sur-Mer

**Sustainable Marine Biotechnologies:
What's at Stake for Tomorrow?
Focus on Marine Pollution**

Join us!

www.worldoceannetwork.org
www.marinaproject.eu

Registration & information : info@worldoceannetwork.org

→ The project activities and outcomes, connected with marine research field, define this systematic approach in order to make it transferable and reproducible for any RRI thematic domain. The expected outcome of the Work Programme is a clear improvement of the integration of society in science and innovation.

c. World Ocean Network



The World Ocean Network (<https://www.worldoceannetwork.org>) works with public-facing organisations such as aquariums, museums and science centres. Such organisations are able to reach a wide audience and also bring together the worlds of politics, science, public administration and the media. They are in a very good position to raise awareness, inform and mobilise citizens on the issue of ocean preservation :

- Inform the general public of the dangers facing the ocean and about the impact human activities are having,
- Develop a world-wide citizen's movement,
- Communicate to the general public about the crucial role the ocean plays in our daily lives,
- Mobilise as many people as possible across the world,
- Encourage everyone to act for the preservation of the ocean and its riches, and
- Foster a more respectful behaviour towards the environment and so make progress towards and more intelligent and sustainable use of the ocean.

The World Ocean Network also possesses policy instruments for uniting the public

around the issue of sustainable ocean stewardship. The concept of ocean citizenship and the ocean passport are designed to reinforce the sense of belonging to a community striving to preserve the ocean and its resources.

The World Ocean Network organises and coordinates World Oceans Day – celebrated every year on June 8. This special day celebration provides an opportunity to unite the general public worldwide around the issue of sustainable ocean stewardship and, by the same token, promote the concept of ocean citizenship.



→ In brief, these specific collaborations have ensured that the promotion of “marine research towards a blue society” has been extended to other networks and projects. This to optimize its outreach and impact.

6. Specific Events and Meetings

1. Overview

As a way to promote “marine research towards a blue society” and more particularly towards its two targeted audiences (e.g: industry and policy) within the project's lifespan, and beyond with the addition of the “science to society” targeted audience, the consortium has participated, attended, organized a series of events.

2. Process : Calendar of events and Participation to Events

As a way “to promote the importance of marine research and its value creation for society, as well as supporting the Responsible Research and Innovation principles”, a calendar of international and European events of interest (for COLUMBUS) has been produced and shared with the partnership. It has also been uploaded on the COLUMBUS website.

COLUMBUS			
KNOWLEDGE TRANSFER FOR BLUE GROWTH			
CONSORTIUM NEWS EVENTS MEDIA LINKS CONTACT DELIVERABLES			
EVENTS			
22 Feb 2018	COLUMBUS European Parliament event "Accelerating Blue Growth through Marine and Maritime Knowledge Transfer"	[DETAILS]	
15 May 2018	Blue Invest 2018	[DETAILS]	

In addition to this calendar, the consortium has indeed been very active promoting “marine research toward a Blue Society” from COLUMBUS' first year of implementation.

Congresses, seminars, conferences and other meetings were very useful forums to consult with COLUMBUS targeted audiences in a face-to-face capacity and to address issues relevant to the work done in the project.

International and sector relevant conferences, meetings, etc. were also attended to communicate the objectives, activities and outcomes of the project to the maximum number of persons.

This set of activities has been intensified throughout COLUMBUS lifespan to reach a pick in 2017, the last year of the programme.

Examples of major events:

The European Maritime Day (EMD) Poole (UNITED KINGDOM)



The 2017 edition (May 18th -19th) had a strong COLUMBUS flavour with a series of various organised events and booths, and a large COLUMBUS delegation with the participation of AquaTT, EMODnet, EurOcean, MSE, Nausicaà, and NOC.

More particularly:

- EMODnet has held a workshop on "involving industry in marine data initiatives". In addition to enable to discuss the challenges, barriers and benefits of public- private collaboration towards data acquisition and sharing, it has also enabled to identify best practices to both promote industry-public collaborations

and facilitate the uptake of data from the private sector.

- Nausicaà has participated in the workshop on "inspiring engagement for a sustainable future for our seas". It has focused on future development trends in our seas, and the communication challenges between sectors. Nausicaà has also taken this opportunity to promote the forthcoming COLUMBUS Annual Conference by handing out the conference's flyers, and this also at the booth stand it had.
- EurOcean also had a booth stand.

For this specific event, a series of EMD tools (being re-usable for other events) have been produced and include the following:

- The booth visuals,
- a COLUMBUS general roll-up, and
- the annual events "save the date" flyers.

COLUMBUS Celebration at the European Parliament - 22 February 2018 (afternoon), Brussels (BELGIUM)



Under the Chair of Ricardo Serrão Santos, Member of the European Parliament, and within the framework of the Intergrup on Climate Change, Biodiversity and Sustainable Development, a dedicated COLUMBUS event on "**Accelerating Blue Growth through Marine and Maritime**

Knowledge Transfer" has been held at the European Parliament.

This event aimed to reflect on the lessons learned in the H2020 COLUMBUS project in relation to stepping up Knowledge Transfer from European funded research and innovation projects in the marine and maritime sphere. This has been achieved by demonstrating, through a number of showcases, all the steps required for successful Knowledge Transfer. Moreover, examples of bodies implementing successful knowledge transfer systems have been provided.

In addition, the event has underlined the advantages of a more proactive approach for Knowledge Transfer, supported by the appropriate resources throughout the process from funding and proposal level evaluation to the research implementation and industry involvement. COLUMBUS organizer, EurOcean (Portugal) invited policy and decision-makers, funding agencies, knowledge generators and users including researchers, consultants, scientists and industry to attend this unique event.

In the scope of this event organization, a dedicated save the date and programmes flyers have been produced and distributed toward the respective targeted audiences.

Most of these events, meetings received coverage through the dedicated COLUMBUS newsletters, and promoted on the COLUMBUS dedicated website, and social media.

A detailed list of meetings, conferences attended and organized is listed in Annex 3.

3. Brokerage events

a. Overview

One of the mechanisms used in the **COLUMBUS** project to foster relationships, interactions and collaboration between Marine and Maritime stakeholders was the organisation of Brokerage events.

These events have been in this way a great way to promote "marine research towards a blue society.

b. Process

Key objectives included sharing of knowledge, promoting the Knowledge Transfer methodologies, presenting evidence of impact and collaborating to multiply the impacts of Knowledge Transfer activities.

c. Results

Please refer to D7.3 for a detailed brokerage events' report, including their respective organization and outputs.

→ **In brief, all of the events, meetings, conferences, brokerage events have enabled COLUMBUS to reach out toward its stakeholders and describe not only its knowledge transfer journey's experience, but also to "promote marine research toward a Blue Society".**

7. COLUMBUS Dedicated Exhibits

In order to raise awareness on the outcomes of marine and maritime research toward a Blue Society, a dedicated permanent exhibit on COLUMBUS has been developed at Nausicaa (Work Package Leader 7), and a traveling one by Juelich (Work Package Leader 3) as a result of one of its Knowledge Transfer activity.

Both the "science to policy" and more particularly "science to society" are targeted as essential stakeholders of COLUMBUS and its legacy.

1. COLUMBUS Dedicated Exhibit at Nausicaa, Centre National de la Mer

a. Overview

The COLUMBUS dedicated exhibit, opening in April 2018, aims to be educational, visually attractive striking and interactive. It reaches out to all publics to illustrate the importance on the planetary scale of oceanographic research for today's environmental, economic and societal challenges.

In particular, the exhibit aims at promoting ocean-related science to young people. It also illustrates, to all visitors, why it is important to support scientific research.



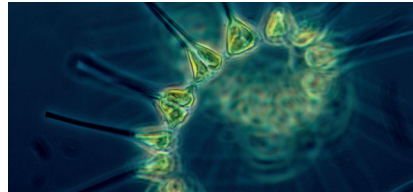
b. Process

To do this, the exhibit presents concrete examples of European oceanographic research projects using graphics, audiovisuals and multimedia displays. Visitors discover the different areas of marine research themes, as well as their benefits for society, in an understandable and enjoyable way.

In order to raise the profile of marine research, it conveys this main message: *"Because the ocean offers solutions to myriad challenges: climate and biodiversity, water and energy, raw materials and food, health, the economy and employment and peace, it is not merely important, but crucial, to support marine and maritime research".*

It is thus very important through this exhibit to encourage young people to choose careers in the oceanographic fields, to be and to participate in the change that is needed, and to get involved in participatory science.

It also showcases the importance of marine research and its applications in daily life.



It is reminded that on numerous occasions the General Assembly of the United Nations has stressed the importance of marine and maritime science for:

- Preserving the health of the ocean,
- Reducing poverty,
- Improving security and protection (food security, protection from extreme climate events or erosion, etc...),
- Preserving marine resources and the

marine environment at the planetary scale,

- Better understanding and forecasting of natural phenomena and improving the policy response, and
- Better explaining the value of the seas and oceans (to the public).

It is indeed important to understand the ocean and its role on our planet to undertake research and continuously monitor it a wide range of disciplines are indeed involved: biology, geophysics, hydrology, meteorology, and so forth.

Apart from research on the ocean itself, marine and maritime research generates technologies that have a wide range of applications.

Based upon the raised issues listed hereabove, one of the COLUMBUS project's objectives is to raise the profile and impact of marine and maritime research among various stakeholders, with a focus on nine themes.

c. Results

Exhibit Messages per Theme (e.g. COLUMBUS node)

The following messages are addressed within the exhibit for each of the nine themes.

Themes	The main message we (e.g.:within the exhibit) wish to convey
Monitoring and Observation	Research data gives us a better understanding of the sea and how it functions and enable us to spot and plan for certain risks/ phenomena: storms, blooms, etc.
Maritime Transport and Logistics	The sea is the most used form of transport. Numerous innovations are available to ensure that sea vessels' impact on the environment is limited. A Future sea craft is showcased.
Physical Maritime Resources	The sea is a source of clean and renewable energies (wind farms at sea, currents, etc.) and minerals.
Fisheries	Sustainable consumption of seafood.
Aquaculture	Sustainable aquaculture can help us to continue to consume fish.
Marine Environment and the Future	The role of the Ocean in regulating the climate. Action needs to be taken to limit climate change, pollution and the acidification of the oceans.
Biological Marine Resources	The Ocean is a source of mostly unknown compounds. This marine biodiversity is crucial to ecological balances, but is also a source of numerous products in the fields of health (medical research, etc.), and industry, etc.
Maritime Tourism	Attractiveness and sustainability but also pressure on coasts.

Governance and Marine Management	We each share responsibility for the protection and management of the oceans. Governance derives from dialogue and exchange between key actors. Crucial to create the Blue Society (management or areas outside of national jurisdictions, governance instruments such as the Marine Protected Areas (MPAs) etc.).
----------------------------------	--

2. COLUMBUS Travelling Exhibition on "Ocean Plastics Lab" - throughout 2018 (worldwide)

a. Overview

In a way to promote "marine research towards a blue society", this traveling exhibit aims to present to policy makers how Knowledge Transfer activities is essential to raise awareness on a specific issue which is marine litter.

Focus on the Concept of Knowledge Transfer

This concept of Knowledge Transfer will be presented as such:

- Knowledge transfer improves links between scientists/researchers, between different disciplines and between different countries.
- Knowledge from research is also transferred to policymakers, industry and society to fulfil evidence-based needs.
- Knowledge Transfer and cooperation are foundations for a more holistic vision, a prerequisite for the pooling of capabilities and resources and a better exploitation of research results, etc.

Specific Examples of Research and Innovation Achievements

Concrete examples of research and innovation's outputs, Knowledge Outputs, are presented.

COLUMBUS has indeed identified and transferred innovations and technologies as examples of Knowledge Transfer. Some of the "public format" case studies have been used as a base to present new technologies that can help to take us towards a Blue Society.

To sum up, this dedicated exhibit enables to carry on COLUMBUS beyond the project's lifespan and feeds into promoting "*marine research toward a Blue Society.*"

b. Process

Marine litter as a global challenge was first tackled at the high-level G7 summit 2015 in Germany. The Federal Ministry of Education and Science (BMBF) promoted this topic e.g. via the brochure "The Future of the Oceans – Joint research for a healthy marine environment". A "G7 Action Plan to Combat Marine Litter" was set up as an Annex to the Leaders' Declaration of G7 2015.



© BMBF / Virginia Chiodi Latini

Since then, marine litter has been a regular agenda item at the science ministers G7 meetings, like in Tsukuba in 2016 and also in 2017 in Turin. Germany has been an important driver from day one on this.

c. Results: The "Ocean Plastics Lab"

These meetings' main output, and more particularly as a G7 follow-up activity, has been when the travelling exhibit "Ocean Plastics Lab" has been initiated in 2017.

Between 2017 and 2019 this "Ocean Plastics Lab" will be exhibited at prominent places around the world, always in conjunction with high-level events.

The exhibit is designed as a hands-on science lab, inviting visitors to assume the role of scientists, and throughout 4 consecutive containers to explore the extent and impact of plastics in the ocean. Additional exhibit items are collected in a digital archive, which has been updated during the lifespan of COLUMBUS. Some of the collected and validated knowledge outputs from past FP7 EU projects dealing with marine litter have been highlighted into this exhibit.

To sum up, this exhibit is an excellent example of Knowledge Transfer to end-users (policy makers and the society). The traveling exhibition will be implemented in Brussels (April), Washington D.C. and Ottawa in 2018.

→ In brief, these two exhibits enable to raise awareness on the importance of marine and maritime research toward a Blue Society.

8. COLUMBUS Celebration toward a Blue Society

1. Overview

COLUMBUS has celebrated with its various stakeholders, mainly from the "science to policy", "science to industry" representatives at its three dedicated annual conferences, and with its Blue Society Award.

2. Process

Sharing of experiences on Knowledge Transfer activities, with both internal and external audiences has been an important aspect of refining and improving the COLUMBUS methodologies.

In this respect, COLUMBUS organised on an yearly basis a Knowledge Transfer conference. This conference has endorsed the role of forum where experience sharing has been as its core.

3. Results

a. Annual Conferences

In order to celebrate COLUMBUS key milestones, the consortium has organized three COLUMBUS dedicated annual conferences: March 2016, November 2017 and January 2018.



A detailed reporting on these three annual conferences is available in Annex 3.

b. The Blue Society Award Celebration at the 3rd Annual Conference - 24 February 2018, Brussels (BELGIUM)

Celebrated at COLUMBUS 3rd Annual Conference - 24 February 2018, Brussels (BELGIUM) - the award's objective is to highlight best practice examples of successful Knowledge Transfer, specifically those resulting in impactful uptake by end-users contributing to Blue Growth and the implementation of marine and maritime policies such as the Marine Strategy Framework Directive (MSFD) in harmony with the principle of Blue Society.

Fifty individuals entered the competition. Five were short listed for submission. Out of the five, one was ineligible, as being a non EU-funded project.

All four eligible submissions were reviewed by an internal COLUMBUS team, against seven criteria:

1. Innovative - in terms of concepts, processes, tools, methodologies and/or technology,
2. Tailored - in terms of the type of research and the specific audiences targeted,
3. Integrated - covering the entire research project lifecycle, core values and concepts rather than only after the end of the project,
4. Impactful - in terms of measured impact of both the Knowledge Transfer activities and the resulting uptake by targeted audience,
5. Leadership and Community Empowerment - How does it contribute to progressing Blue Society and/or demonstrates leadership in inspiring change,
6. Responsible - How does it comply with the RRI principles? , and
7. Legacy - How will the results continue to be impactful?

The four eligible submissions were:

- New online training tool on real time

monitoring of sea contaminants: This course is designed to familiarise with the SEA-on-a-CHIP device, a remote, miniaturized, autonomous and flexible immuno-sensor platform for real-time analysis of marine waters in estuarine and coastal areas, in multi-stressor conditions.

- Figueira da Foz Sea & Industry Business Accelerator: A sea business accelerator directed to knowledge transfer to sea economy (www.iefp.pt).
- The DEVOTES project: Aims to develop innovative tools for understanding marine biodiversity and assessing good Environmental Status (www.devotes-project.eu).
- The Mr.Goodfish programme: Aims to raise awareness of the general public and the fish industry professionals on sustainable consumption of seafood products (www.mrgoodfish.com).

Due to their efforts to combine numerous Knowledge Outputs into one user-friendly tool and develop capacity of its use, and to have broader, measurable impact on marine policy, the winner of this first Blue Society Award is the **DEVOTES project** represented by Ángel Borja, the Project Coordinator.



In addition to a Blue Society Award Certificate and as a symbol of appreciation, the winner got the unique opportunity to present its activity at the COLUMBUS dedicated European Parliament event of February 22 2018 on *"Accelerating Blue Growth through Marine and Maritime Knowledge Transfer"*.

As described earlier, this event aimed to reflect on the lessons learned in the Horizon 2020's flagship project on Knowledge Transfer for Blue Growth, COLUMBUS, in relation to stepping up Knowledge Transfer from European and nationally-funded research and innovation projects in the marine and maritime sphere.

→ In brief, these three annual conferences and the COLUMBUS Blue Society Knowledge Transfer Award were essential to celebrate COLUMBUS key milestones and share them with third parties, these to "promote marine research toward a Blue Society".

VI. OUTPUT(S)

"Promoting marine and maritime research toward a Blue Society" has well been achieved as all of the activities and means described hereabove have demonstrated.

They have indeed succeeded to reach the three originally scheduled targeted audiences, "science to policy", "science to industry", and "science to society" as mentioned hereabove.

COLUMBUS main outputs shall be well described in WP8 reporting activities.

All of the COLUMBUS dissemination and communication activities and means reported in this deliverable had been regularly collected within the internal COLUMBUS Monitoring & Evaluation (M&E) programme.

Indeed, as mentioned earlier, Innovatec's external review report, criteria have been adjusted to better meet the targeted audiences and include additional meaningful indicators, to have the following criteria for the two identified objectives

- *"Enhance The Visibility and Impact of Marine/Maritime Research in Society",*
- *"Engage and exchange with other related initiatives, including the jrc marine competence centre and other fp7 and h2020 initiatives, to ensure cooperation and sharing".*

Once this new set of criteria was validated by Innovatec (it indeed plans to use the new criteria set for its final report), it has been requested to all partners to fill out the prepared excel table or the provided google form for the project's period.

If the project would have lasted longer, with the opportunity to promote the "public format" case studies once available, this M&E programme would have enabled to

really assess continuously COLUMBUS success in "Promoting marine and maritime research toward a Blue Society".

Most of the data received have been compiled into this D7.6, and into COLUMBUS final reporting (WP7)

VII. CONCLUSION

In addition to validating its unique Knowledge Transfer methodology, COLUMBUS has ensured through its activities and means, as described along this D7.6 reporting, that many of its partners have played a major role at both individual and consortium levels to "*promote marine research toward a Blue Society*".

- At an individual level, as experts within the marine and/or maritime sectors, the partners have guaranteed that COLUMBUS has reached out toward the targeted audiences – e.g. "science to industry", "science to policy", and "science to society"- throughout their respective networks and beyond by capitalizing on COLUMBUS activities:
 - The publication of 48 "public format" stories of Knowledge Transfer, outlining the detailed Knowledge Transfer journey across the marine and maritime sectors
 - The release of COLUMBUS general presentation movie addressed to the general public, and used towards the two other audiences (industry and policy)
 - The enhancement of the social media echo based upon COLUMBUS online campaign,
 - The collaboration and bridge created with others projects and networks,
 - The participation to specific international and European events and meetings,
 - The organisation of brokerage events,
 - The launch of two COLUMBUS dedicated exhibits: a permanent one at Nausicaa, and a traveling one by Juelich, and
 - COLUMBUS' celebration of the Blue

Society throughout COLUMBUS annual conferences and through the Blue Society Award.

- At consortium level, partners have been (and should continue beyond the project's lifespan) a key link of the communication's route to reach the targeted audiences, and to play an essential role of the multiplier effect COLUMBUS has benefited in its communication and dissemination activities.

COLUMBUS outputs and produced tools are now available for any stakeholders, including the consortium current members, interested to continue promoting "*marine research toward a Blue Society*".

As described into D7.2, these tools include the two COLUMBUS movies, press releases and publications, "public format case studies" and their respective "twitter cards", the COLUMBUS linkedIn Group and twitter accounts, Booth visuals and settings, roll-ups, posters, technical briefs, media kit, fact sheets, leaflets...and related best practice guides.

All being available on COLUMBUS website.

ANNEXES

Annex 1: List of “Public format” case studies per node

1. Aquaculture

- Improving fish texture evaluation using non-destructive assessment of fish flesh freshness,
- FishShape mobile app to identify malformations in commercial fish species in European aquaculture,
- Creating sustainable abalone aquaculture across Europe,
- Novel veterinary treatment to reduce bacterial caused mortalities in larval aquaculture,
- Improving fish nutrition through novel fish feed premixes,
- Mitigating negative dietary side effects of changing to plant-based feed for sea bream, and
- Convenient vaccination of small fish against harmful diseases.

2. Fisheries

- Influencing Danish law to accept integrated multi-trophic aquaculture schemes,
- Improving inspections of underwater structures using laser imaging systems,
- State-of-the-art innovations in energy for offshore aquaculture,
- Optimisation of fishing gear selectivity using underwater imaging, and
- Underwater camera for improving the assessment of the small lobster nephrops.

3. Marine Biological Resources

- Highlighting the importance of access and benefit-sharing of marine biological

resources,

- Exploring the use of seaweed-derived biopolymers in biomedical technology,
- Low-cost marine microbial sampling kit for the next generation,
- Novel low-cost respirometer for measuring coral health,
- Mitigating microplastic pollution with waste water treatment technology,
- Harmful algal bloom (HAB) forecast and warning system, and
- Using human diagnostics technology to screen for chemicals in the environment.

4. Marine Environment and Futures

- Engaging regional policy makers in marine litter prevention,
- Educational material on the impact of plastic littering in marine environments,
- New exhibition on the environmental impacts of plastic waste (more information also available in the exhibit section), and
- Innovative solutions for the packaging industry using material made from crustaceans.

5. Marine Governance and Management

- Innovative tools combined to support quality environmental impact assessments in marine environments,
- Achieving good environmental status in maritime ports,
- European research's contribution to the achievement of good environmental status and a stronger blue economy in Europe,
- Specialised database to assess the status of non-indigenous species in European seas,
- Furthering the integration and harmonisation of existing information systems on marine non-indigenous species,

- Clustered knowledge on marine litter used to fulfill EU policy needs,
- Incorporating knowledge management and transfer methodologies in a publicly funded project to maximise its uptake and impact,
- Discards data sharing: An outcome from dialogue between discards-focused projects and the European Fisheries Control Agency,
- Enhancing stakeholders' perception of the landing obligation in European fisheries, and
- Using performance data of selective fishing gears to reduce shing discards.

6. Marine Monitoring and Observation

- Best practice in use and sharing of marine observations and data by industry,
- New innovative marine data applications by building on existing resources and services,
- Advancing state-of-the-art technology in sensing marine pollutants, and
- Using marine tourism to increase access to European marine biodiversity data.

7. Marine Physical Resources

- Reference turbine overcomes bottleneck in offshore wind development,
- Sensors for measuring large scale hydrodynamics,
- State-of-the-art mutually supporting systems for offshore aquaculture,
- New environmentally-friendly biofouling and corrosion prevention coating for marine renewables,
- New model propels the development of coating vertical axis wind turbines,
- Multimedia e-learning tool promoting education of aquatic renewable energy technologies, and
- Developing a consistent and proportionate approach to Environmental Impact Assessment of marine renewable energy in the UK

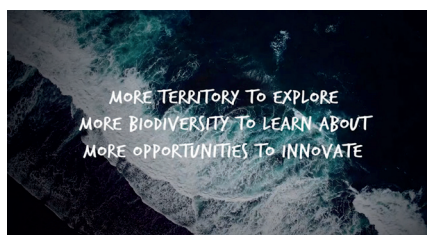
8. Maritime Transport and Logistics

- Environmentally-friendly anti-fouling paint for marine observation devices,
- Novel solution for composite-steel joints,
- Application of new innovative composite materials for river cruise ships, and
- Self-healing coatings as corrosion protection in maritime shipping.

Annex 2: COLUMBUS General Film - Script



1. Sequence 1 Introduction : COLUMBUS and the Knowledge Transfer



Marine sciences contribute to discover, understand and sustainably grow ocean's resources.

This should be much more explored to achieve Blue Growth.

The European Union has more sea than land.

More territory to explore.

More biodiversity to learn about.

More opportunities to innovate.

The COLUMBUS project aims to unlock the value of marine and maritime research by transferring its results to potential users.

Ultimately, COLUMBUS will bring ocean-related innovation to every one of us across Europe.

2. Sequence 2 - Monitoring and Observation



Data related to the ocean enable to know the marine ecosystem better and its evolution.

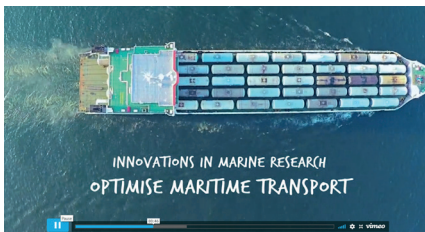
Marine Knowledge is a major decision making and forecasting tool.

Behind 15,000 platforms collecting marine data...

European scientists are working to prevent the damage caused by extreme weather events, algal blooms and oil spills.

Our safety relies on their dedicated work and research.

3. Sequence 3- Maritime Transport and Logistics



Maritime routes account for the largest part of freight transport. Logistic sector improves

its practices and technologies and reduces its environmental impact with the help of engineers. About 9 out of 10 imported purchases in Europe came by sea.

Of all the ways of transporting our goods, shipping is the least harmful to the environment.

Innovations in marine research are further optimizing maritime transport.

4. Sequence 4 - Marine Physical Resources



The seabed is source of rare minerals (gold, silver, copper, manganese, phosphates, cobalt and zinc) but of energy also. Deep sea mining research leads largely conditions their sustainable exploitation.

Our smart devices rely on rare mineral deposits and new sources of energy.

The seabed could provide us with as many mineral deposits as we have inland.

Europe's offshore wind industry already supplies the grid with as much energy as ten nuclear power plants. Innovations in marine research produce sustainable technologies .

5. Sequence 5- Fisheries



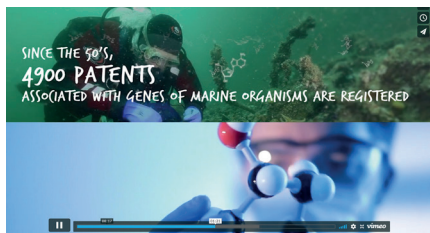
It contributes to EU economic growth. Developing selective techniques contributes to a better management of fisheries stock. Almost one tenth of fish landings between 1992 and 2001 were discarded. Innovations in marine research help us manage fisheries sustainably. So as we can still eat fish tomorrow and keep our ocean healthy.

6. Sequence 6- Aquaculture



Developing new aquaculture techniques reduces the impact on the environment while increasing the quality of the product. (environmental impact of farming products is 3 to 8 time more impactful)
Europe hosts 14,000 aquaculture enterprises. Aquaculture fulfils one fifth of the demand for seafood with high quality products. Innovations in marine research are improving sustainability in this sector.

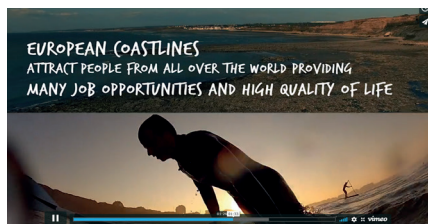
7. Sequence 7- Marine Biological Ressources



They contain an incredible amount of unknown molecules and are a major capital for innovation. 34 out of 36 phyla live in the

ocean. Since the 50's, marine scientists' work has led to 4,900 patents associated with genes of marine organisms. Half of those inventions are used in pharmacology to cure us.

8. Sequence 8- Maritime Tourism



Ocean plays a major role in tourism attractiveness. Marine and coastal tourism increase pressures on the environment. Raising awareness and a deepening our knowledge of about the ocean contribute to sustainable coastal planning and management. European coastlines attract people from all over the world. Coastal and marine tourism provides many jobs in Europe. Researchers are working with civil society to ensure manage this natural capital sustainably alongside the growth in human activities.

9. Sequence 9- Marine Environnement & Futures



The ocean is the planetary life support system.

Climate change, pollution, non-natives and ocean acidification threaten its balance. Actions must be taken to reverse this trend.

Research shows that :

- The ocean has stored a quarter of carbon dioxide emissions caused by humans since the industrial revolution.
- 2-5% of the plastic waste we generate ends up in the oceans, as debris or particles.
- 1/3 of commercial fisheries' stocks are currently overfished.
- The ocean regulates the planet's climate.
- The ocean provides half the air we breathe.
- The ocean is the life support system for planet Earth.

10. Sequence 10- Governance and Management



Ocean governance has a concrete impact on European citizen's lives.

Governance builds itself through dialogue and exchanges.

Knowledge transfer from sciences to key players from all marine and maritime sectors will facilitate crosscutting approaches and open the way to Blue Growth and a Blue Society.

European people have a shared responsibility toward ocean sustainable management

Almost half of the EU population lives in Europe's coastal regions.

Everyone on Earth relies on the ocean.

EU marine science projects open the way

to innovation for Blue Growth and the Blue Society.

Annex 3: List of Events

YEAR 2015

In 2015, COLUMBUS consortium leader AquaTT has attended a series of events, meetings in order to raise COLUMBUS profile, and to a larger extend promote *marine research toward a Blue Society*.

Theses events and meetings have included the following:

- **SeaFEST meeting on 9 July, 2015** in Cork (IRELAND). Out of the forty participants, twenty COLUMBUS fact sheets have been distributed to this marine monitoring audience.
- **COMMON SENSE 24M Partner Meeting from 6-7 October, 2015** in Barcelona (SPAIN). Out of the thirty participants, twenty COLUMBUS fact sheets have been distributed to this marine monitoring audience.
- **AquaExcel 2015 Conference from 20-23 October, 2015** in Rotterdam (the Netherlands). A dedicated COLUMBUS presentation has been given to this audience of 1,095 individuals from the aquaculture setor. In addition to this, 50 COLUMBUS fact sheets have been distributed.
- **Irish Sea Rim Environmental and Scientific Observatory workshop on 15 October 2015** in Dublin (IRELAND). 30 individuals from all marine sectors (in linkage with Blue Growth) were invited to join this workshop.
- **2nd Atlantic Stakeholder Platform Conference from 28-30 October, 2015** in Brest (France). Out of the 300 participants from all marine setors (in linkage with Blue Growth) attended this conference, 30 COLUMBUS factsheets have been

distributed.

- **Teagasc Conference** – leveraging public R&D for the benefit of industry – the case of Food- **on 24 November 2015** in Dublin (IRELAND). 300 participants from all marine sectors (in linkage with Blue Growth) attended this conference. This event provided a unique opportunity to share some ideas.
- **Cross-cutting opportunities in EU funding meeting from 6-7 October, 2015** in Galway (IRELAND). In addition to attending specific & relevant workshops, this meeting gathered about 80 participants from all marine sectors (in linkage with Blue Growth).
- **European Commission Bioeconomy Summit from 9-10 November, 2015** in Brussels (BELGIUM). Out of the 1,000 participants from the Knowledge Bioeconomy sectors (mostly agriculture, some marine) attended this high-level event. 20 COLUMBUS factsheets have been distributed.
- **CommBeBiz Annual Conference from 10-11 November, 2015** in Dublin (IRELAND). This event gathered more than 300 participants from the agriculture sector.

YEAR 2016

In 2016, COLUMBUS consortium leader AquaTT has attended a series of events, meetings in order to raise COLUMBUS profile, and to a larger extend promote marine research toward a Blue Socitey. Theses events and meetings have included the following:

- **EGU General Assembly from 17-22 April, 2016** in Vienna (AUSTRIA). A COLUMBUS poster has been sent by AquaTT for presentation in this event poster session. 13,500 individuals from the science sector in general attended this event.
- **Ocean Week 2016 from 9-12 May, 2016**

in Trondheim (NORWAY). A COLUMBUS poster has been presented in the poster session. In addition to this, 50 factsheets have been distributed. This event gathered 150 participants from all marine sectors (in linkage with Blue Growth).

- **Blue Economy Business and Science Forum from 12-13 September, 2016** in Hamburg (GERMANY). 30 factsheets have been distributed. This event gathered 150 participants from all marine sectors (in linkage with Blue Growth).
- **European Maritime Day from 18-19 May, 2016** in Turku (FINLAND). 75 factsheets have been distributed. This event gathered 800 participants from all marine sectors (in linkage with Blue Growth). In addition to this, AquaTT organized a training on COLUMBUS methodology within the NEAT workshop.
- **Aquaculture Europe 2016 from 20-23 September, 2016** in Edinburgh (UNITED KINGDOM). This annual event gathered 2,000 participants from the aquaculture sector.
- **Environment Ireland 2016 on 22 September, 2016** in Dublin (IRELAND). Specific workshops have been attended. 30 factsheets have been distributed. This event gathered 200 participants from the environment sector.
- **3rd Atlantic Stakeholder Conference on 27 September, 2016**. 30 factsheets have been distributed. This event gathered 300 participants from all marine sectors (in linkage with Blue Growth).
- **SeaTech Week from 10-13 October, 2016** in Brest (FRANCE). 50 factsheets have been distributed. This event gathered 1,200 from all marine sectors (in linkage with Blue Growth).
- **OceanKan workshop from 3-6 December, 2016** in Kiel (GERMANY). 30 factsheets have been distributed. This event gathered 150 from all marine sectors (in linkage with Blue Growth).

The COLUMBUS partners also attended a series of events to present COLUMBUS and promote marine research toward a Blue Society :

- **International Aquarium Congress 2016 from 25-30 September, 2016** in Vancouver (CANADA). A presentation of COLUMBUS, the Blue Society and the Blue Society award has been organised by Nausicaa.
- **Annual Global Seafood ratings alliance meeting from 06-07 October, 2016** in Monterey (USA). Nausicaa had the opportunity to present the COLUMBUS project to 30 participants from the Fisheries & Aquaculture sector.
- **MARINA Local workshop 2016 on 03 November, 2016** in Boulogne-sur-mer (FRANCE). Nausicaa presented the Columbus project and 30 factsheets have been distributed.
- COLUMBUS partner, Jülich, organized a stakeholder **workshop** in Rostock (GERMANY) **on November 17th 2016**, to share know-how and expertise on environmental education and awareness rising regarding the topic of marine plastic litters.
- **On November 17th 2016, a webinar took place under COLUMBUS Marine Governance and Management node's umbrella.** Potential end users were trained in the practical use of results coming from the project PERSEUS. Before this, a previous workshop was held in Vigo (SPAIN) to transfer the NEAT tool (Nested Environmental status Assessment Tool) as a promising result from the DEVOTE EU funded project.
- The work of the COLUMBUS Monitoring and Observation Node was presented by Jan-Bart CALEWAERT from EmodNet in terms of promoting uptake of marine data resources by industry - at the recent **World Sustainable Ocean Summit in Rotterdam (THE NETHERLANDS) – from November 30th to December 2nd** - in a

session on '*Smart Ocean-Smart Industries: Industry Data Collection and Sharing to Improve Ocean Knowledge*'.

- COLUMBUS was represented at the recent and second **CommOcean Conference (International Marine Science Communication Conference) from December 6th and 7th, 2016 in Bruges (BELGIUM)**, through a poster presentation, the work of the Monitoring and Observation Node presented by Oonagh McMeel in a session on "*Ocean maps & knowledge systems*", and the project dissemination by Nausicaa.

..... **YEAR 2017**

In 2017, COLUMBUS consortium leader AquaTT has attended a series of events, meetings in order to raise COLUMBUS profile, and to a larger extend promote marine research toward a Blue Society. These events and meetings have included the following:

- **CommBeBiz Conference from 21-22 February, 2017** in London (UNITED KINGDOM). 30 factsheets have been distributed. This event gathered 70 participants from the agriculture sector.
- **BIOPROSP Conference from 6-11 March, 2017** in Tromsø (NORWAY). 30 factsheets have been distributed, and specific workshops attended. This event gathered 200 participants from the environment sector.
- **PHARMASEA Final Conference & Partner Meeting from 13-15 March, 2017** in Grenada (SPAIN). A dedicated COLUMBUS presentation (PPT) has been given. In addition to this, 20 factsheets have been distributed. This event gathered 60 participants from the biotech sector.
- **Black Sea Conference from 7-9 May, 2017** in Athens (GREECE). 30 factsheets have been distributed. This event gathered 100

stakeholders from the Policy/Sustainable Development sectors around the Black Sea region.

- **INvertebrateIT kick-off meeting from 6-7 June, 2017** in Porto (PORTUGAL). 50 factsheets have been distributed to the audience composed of companies, research centres, associations and clusters from the marine and maritime sectors.
- **AQUAEXCEL2020 ExCom Meeting from 19-20 June, 2017** in Brussels (BELGIUM). 30 factsheets have been distributed to the dedicated audience of the ten WorkPackage leaders of AQUAEXCEL.
- **MEOPAR Annual Conference/Steering Group from 19-20 June, 2017** in Montreal (CANADA). This event provided an unique opportunity for knowledge transfer, where 200 stakeholders on climate change gathered.
- **Digital Ocean Conference & Our Ocean Wealth Conference from 19-23 June, 2017** in Galway (IRELAND). This event provided also a great opportunity for knowledge transfer, where stakeholders from all marine sectors (in linkage with Blue Growth)
- **Investing in Irish business (IBEC) meeting 7 September, 2017** in Dublin (IRELAND). 10 factsheets have been distributed. 80 participants from all sectors attended this meeting.
- **Knowledge Transfer Summit "Accelerating Impact" on 14 September, 2017** in Dublin (IRELAND). 20 factsheets have been distributed. 120 participants from all sectors attended this meeting.
- **"Accelerating Impact" Conference on 30 November, 2017** in Dublin (IRELAND). 20 factsheets have been distributed. 250 participants from all sectors attended this meeting.

February 2017

- **The First EMODnet Stakeholder Conference** took place on February 14th in Brussels (BELGIUM).

This event presented the findings of the EMODnet Sea-basin Checkpoints. The checkpoints aim to demonstrate how well the current monitoring systems and data collection frameworks provide data to meet the needs of users.

- **Knowledge on Discards: a Dialogue with the European Fisheries Control Agency, Vigo (SPAIN)**

On February 2nd, this knowledge transfer activity was organised by both the Competence Node Leader of Marine Governance and Management and the Competence Node Leader of Fisheries. The European Fisheries Control Agency (EFCA) was informed on new scientific evidence that might support actions related to fishing discards.

- **COLUMBUS at the Research and Innovation Conference, Dublin (IRELAND)**

SmartBay took this conference opportunity to promote COLUMBUS. COLUMBUS flyers were shared with the participants. Participants were research and innovation leaders that are instrumental in creating cutting- edge research, and bringing that research output into the market. Industry leaders came from various sectors such as pharmaceutical, medical technology, biotechnology, life sciences, energy & environment, food & agriculture, health, transport, chemical, information & communication technologies, etc.

March 2017

- **Conference North Atlantic Seafood Forum from 07-09 March, 2017** Bergen (NORWAY). Nausicaa took the

opportunity to raise awareness of the COLUMBUS project. 1200 participants from the Fisheries & Aquaculture sectors attended this meeting.

- **Analysis Meeting on Fishing Gear, DTU Aqua, Charlottenlund (DENMARK)**

On March 24th, the Competence Node Leader on Fisheries organised an analysis meeting on Fishing Gear. Twenty-eight (28) KO's from three projects (FP7 NECESSITY; FP7 BENTHIS; H2020 DISCARDLESS) were analysed.

April 2017

- **COLUMBUS at the European Geosciences Union (EGU) General Assembly, Vienna (AUSTRIA)**

COLUMBUS participated with DTU Aqua, NOC, PLOCAN from April 23rd to 28th. The following partners, DTU Aqua, NOC, and PLOCAN, were among the thousands of worldwide scientists who joined EGU, the largest European Geoscience Conference. They took this opportunity to promote COLUMBUS. Ivo Grigorov (DTU Aqua) gave a talk on how Knowledge Transfer can help researchers achieve measurable impact. Sofia Alexiou (NOC) presented with a poster the COLUMBUS methodology for effective knowledge transfer.

- **Nested Environmental status Assessment Tool (NEAT) Practical Session at the ATLAS H2020 2nd General Assembly, April 26 ,2017 – Mallorca (SPAIN)**

Both Marine Governance and Management Competence Node Leaders (CETMAR) and AquaTT, with the ATLAS consortium's assistance, co-organized a session to present NEAT. The NEAT tool – developed through the FP7-Oceans of Tomorrow Project DEVOTES – is a new software created to assess the environmental status of the European

seas in an integrative way. NEAT has been designed to support the environmental authorities of the European Union Member States, but also the Regional Sea Conventions and the Marine Strategy Framework Directive.

Despite its versatility, the tool's developers are quite confident about its usefulness for other types of environmental assessment in the marine context. Through the scheduled open science session, the COLUMBUS partners wanted to make deep sea researchers involved in the ATLAS project aware of the NEAT potentiality and assess its testing opportunities, as part of both the WP6 and any of the case studies to be developed within ATLAS.

- **Monaco Ocean Week on 03 April, 2017** in Monaco. 100 factsheets have been distributed by Nausicaa. This event gathered 300 participants from the environment sector.

May 2017

- **COLUMBUS partners participated at Black Sea Horizon (BSH) International Conference, Athens (GREECE) on May 8th, 2017.**

Building on structured and effective dialogue and aiming to optimize the framework for STI cooperation between the EU and the non-EU Black Sea countries, the BSH International Conference organised by the International Centre for Black Sea Studies (ICBSS) aimed to present:

- > the progress of key activities and achieved results of the BSH Project, and
- > discuss and consolidate the "EU – Black Sea Cooperation Programme in STI", prepared within the framework of the Black Sea Horizon Project.

Through interactive sessions, participants from the field of STI policy making, STI

policy delivery and STI policy analysis had the opportunity to reflect, discuss and endorse recommendations to improve the framework conditions and to mitigate remaining obstacles for bi-regional STI cooperation.

• **Marine Knowledge Transfer: Learning from Regional & European Initiatives, Southampton (UNITED KINGDOM)**

On May 17th, MSE joined this workshop whose objectives were to:

- > Examine good practice and progress arising from recent initiatives at the regional and European levels,
- > Identify where barriers have been overcome and whether efforts can be replicated, and
- > Brainstorm ideas about how to overcome challenges and barriers in the future.

Its outcomes have enabled to draw some recommendations for future actions. They have been presented at the European Maritime Day conference in Poole, following this event.

• **MARINA International workshop 2017 on 11 May, 2017** in Boulogne-sur-mer, (FRANCE). A presentation of the COLUMBUS project has been made and 30 factsheets have been distributed by Nausicaa. This event gathered 30 participants from all Marine Sectors/Blue Growth sectors.

• **The European Maritime Day (EMD) Poole (UNITED KINGDOM)**

The 2017 edition (May 18th -19th) had a strong COLUMBUS flavour with a series of various organised events and booths, and a large COLUMBUS delegation with the participation of AquaTT, EMODnet, EurOcean, MSE, Nausicaa, and NOC.

More particularly:

- > EMODnet has held a workshop on "involving industry in marine data initiatives". In addition to enable to discuss the challenges, barriers and benefits of public- private collaboration towards

data acquisition and sharing, it has also enabled to identify best practices to both promote industry-public collaborations and facilitate the uptake of data from the private sector.

- > Nausicaa has participated in the workshop on "inspiring engagement for a sustainable future for our seas". It has focused on future development trends in our seas, and the communication challenges between sectors. Nausicaa has also taken this opportunity to promote the forthcoming COLUMBUS Annual Conference by handing out the conference's flyers, and this also at the booth stand it had.

- > EurOcean also had a booth stand.

For this specific event, a series of EMD tools (being re-usable for other events) have been produced and include the following:

- The booth visuals,
- a COLUMBUS general roll-up, and
- the annual events "save the date" flyers.

June 2017

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• **COLUMBUS at the ERA-MBT Industry Workshop, June 1 2017 - Brussels (BELGIUM)**

With the objective to support efficient value creation from academic knowledge, **ERA-NET MarineBioTech**, with AquaTT support, organized this workshop. Close to 20 stakeholders along the value chains from academic knowledge shared their experiences, and their respective knowledge outputs to market's products and services. They discussed challenges related to information flow and communication to gain tangible guidelines. These to be aggregated for efficient and targeted communication between stakeholders.

Rosa Fernández presented COLUMBUS and chaired the session 3 dedicated to "brainstorming towards solutions".

- **Bussiness2sea Forum do Mar 2017, June 6 2017 – Porto (PORTUGAL)**

Organized by Forum Oceano, and with the participation of CETMAR, this B2B matchmaking event on maritime economy provided an unique opportunity to present COLUMBUS to a tailored audience. Indeed, this 6th edition of the former Fórum do Mar is an international event dedicated to stakeholders from the different activity sectors comprising the maritime economy.

This B2B event encompasses international conferences, seminars and workshops as well as an exhibition area for sea products, services and technologies.

At this event, 50 COLUMBUS fact sheets have been distributed.

- **The Ocean Conference, on 08 June, 2017 in New-York (USA).** Nausicaa took the opportunity to raise awareness of the COLUMBUS project and networking at the International Conference on the Ocean organised by the United Nations. 30 Factsheets have been distributed by Nausicaa.

- **COLUMBUS Knowledge Transfer Activity: "Data Management in Relations to the MSFD Descriptor 2 (D2)", June 9 2017, Madrid (SPAIN)**

The Marine Governance and Management (MG&M) CN hosted this knowledge transfer activity at the Spanish Oceanographic Institute headquarter. The main objective was to explore suitable pathways to transfer one of the EU research project VECTORS' knowledge output, named AquaNIS. MG&M CN-CETMAR (Rosa Fernández, Marisa Fernández and Mónica Incera) took also part to this event.

July 2017

- **COLUMBUS partners participation at European MSP Platform Meeting, Lisbon (PORTUGAL).**

From July 12th – 14th, participants enjoyed a blend of plenaries, panel discussions, inspirational keynotes and a showcase of EU funded projects and national initiatives. Key political leaders and stakeholders from Europe, Brazil and South Africa discussed:

- > Climate and ecosystem approaches;
- > Earth and ocean observation and forecasting systems;
- > Food security, fisheries management and aquaculture;
- > Ocean technology; and
- > Polar research (especially interconnections between the Atlantic and Antarctica).

August 2017

- **COLUMBUS at the European Wave and Tidal Energy Conference, August 29-September 1 2017- Cork (IRELAND)**

Among the 500 delegates from almost 30 countries, SmartBay Ireland attended this year edition. It also attended the workshop hosted by the MARINET2 Coordination Team.

This event provided a platform for test facility providers from across Europe, a unique opportunity to discuss their facilities with potential users. There is 566 weeks of free-of- charge testing available through MaRINET2 at 53 different test facilities. Through the project wind, wave and tidal energy technologies can be tested, as well as electrical systems, and technologies with cross-cutting applications.

- **COLUMBUS at AquaNor trade fair, Trondheim (NORWAY)**

Aqua Nor has been an important international meeting place for the aquaculture industry, and it is today the world's largest aquaculture technology exhibition. In recent years, the Aqua Nor exhibition has drawn about twenty thousand (20,000) visitors from up to seventy-six (76) nations to its halls. All the latest innovations of importance are presented to the industry. In this respect, the COLUMBUS partner NTNU (Norway) has promoted COLUMBUS with the distribution of dedicated leaflets and "save the date" flyers (annual events) at its 2017 edition (from August 14th to 18th).

September 2017

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- **COLUMBUS at the EAFP 18th conference in Belfast (IRELAND)**

From September 4th to 7th 2017, COLUMBUS partners' AquarK and AquaTT attended among the 700 international delegates experts this unique international fish health conference. Aiming to promote marine and maritime research to end-users, specific meetings with IP holders were organized. This event has been promoted beyond this event's audience with the dedicated LinkedIn post has generated 149 views - 21 likes <https://www.linkedin.com/feed/update/urn:li:article:9148034954066530567/>

- **COLUMBUS Knowledge Transfer Activity: STAGES and COLUMBUS Projects, September 7, 2017- Madrid (SPAIN)**

This activity has been organized by COLUMBUS Marine Governance and Management (MG&M) Competent Node Leader with the assistance of the Spanish Research Agency at the Spanish Research Agency headquarter.

Addressed to staff members from the

Spanish Funding Agencies, this activity highlighted "Managing knowledge from public funded research for maximizing its uptake and impact generated".

Both STAGES and COLUMBUS project's key processes and outcomes were presented by Marisa Fernández. Then Rosa Fernández explained the key steps to implement knowledge management methodologies at the Spanish level. Both projects respective recommendations and methodologies for knowledge management were assessed by the Spanish Research Agency and the Ministry of Economy and Competitiveness.

PLOCAN (Ayoze Castro) and INNOVATEC (Erika Sela) also took part to this event.

- **COLUMBUS flavor at Infoday on 22 September 2017 in Antwerp (BELGIUM).**

This open sea Lab kick-off event has been attended by COLUMBUS partner, SeaScape Consultants. COLUMBUS case study has indeed led to the Open Sea Lab concept. This event was attended by 40 programmers, developers, coders, maritime industry, data scientists, marine scientists.

- **The 2nd Submariner Conference «Better off Blue» (September 27-28, 2017) in Berlin (Germany).**

Knowledge transfer activities in the Baltic Sea Region were presented by Juelich at this unique event (<https://betteroffblue17.b2match.io/>), attended by more than 150 participants from stakeholders of the maritime sector, including research and industry key players.

In this scope and in order to better reach and discuss with target users, three dedicated technical Briefs were produced and presented.

• **COLUMBUS Facilitates the Pathway from Research Outputs to Aquaculture Industry Products - 18 October, 2017, Dubrovnik (CROATIA)**

The ongoing Horizon 2020 initiative COLUMBUS is pioneering a new technique to better understand how to optimise the use of knowledge derived from research. Through the COLUMBUS project's process of identification of Knowledge Outputs (KOs), and the development of Knowledge Transfer plans to facilitate the increase of Technology Readiness Level (TRL) to bring this knowledge to market, COLUMBUS partners organised a special event at European Aquaculture Society's Aquaculture Europe 2017 (AE2017) conference on 18 October 2017, Dubrovnik, to present several aquaculture case studies that are currently going through the process.

Case studies were presented which consisted of innovative knowledge being effectively transferred and applied with measurable impact. These presentations were broad and varied, examples include:

- > A sensor whose technology originated from the oceanographic sector, where it was used to measure ice-melt but was now finding new applications in waste water, drinking water and Recirculating Aquaculture Systems (RAS).
- > An app, called Fish Shape, whose unique selling point lies in the opportunity to pick up the onset of juvenile fish malformations before they become visible.

Following the presentations, an open forum was held and moderated by COLUMBUS partner and owner of AQUARK, Panos Christoflogiannis. As well as identifying end-users and 'knowledge amplifiers' for the knowledge that was presented, and discussing important related subjects such as intellectual property, the attendees also brainstormed

on new ideas and projects.

In total, the half-day workshop attracted around 60 participants from ten countries, representing a fair cross-section of the stakeholder participation of AE2017.

In addition, COLUMBUS partners and Knowledge Transfer experts were also present at the COLUMBUS Brokerage Stand during the rest of the conference to allow interested parties to set up individual meetings to review their project and its potential. For those wishing to go further, this would be the start of a process towards impact, and a relationship with COLUMBUS, that could include: mentorship in the protection of intellectual property; development of a business plan; identification of end-users and development partners; and, assessment of appropriate channels to market.

Over the years, Aquaculture Europe has developed into an event to share and communicate the latest scientific research and attracts a dynamic and multi-disciplinary audience. AE2017 attracted a total participation of 1700 from more than 60 countries, with 92 exhibitors present at the trade show. Following the success of COLUMBUS' Brokerage Event, the European Aquaculture Society has decided to adopt brokerage events as an integral part of its Aquaculture Europe events – to stimulate knowledge transfer between researchers and exhibitors, to mentor students and to develop B2B contacts between companies in attendance.

- **Connecting and protecting our seas on 13 October, 2017 - Monaco.** 50 Factsheets and 50 "Save the dates" have been distributed by Nausicaa. This event gathered 300 participants from all Marine Sectors/Blue Growth sectors.

- **COLUMBUS Workshop: "The Digital Ocean: An Opportunity for Value Creation in Europe", November 8, 2017 (afternoon) - Brussels (BELGIUM)**

Being organized and coordinated by the Norwegian University of Science and Technology (NTNU), the mission-oriented approach within.

FPg has been discussed in the context of marine and maritime research. The workshop has involved the research community, policy makers and industry.

- **COLUMBUS at Infoweeek, November 17, 2017 – Brussels (BELGIUM)**

During the recent European Commission info Week on Horizon 2020 Societal Challenge 2 (SC2) "Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the Bioeconomy", the COLUMBUS project was given the spotlight.

As part of this week-long programme, an event was held to specifically address Blue Growth Research and Innovation, and its cross-sectorial and interdisciplinary approach to marine, maritime and aquatic research and innovation and its relevance to EU policies and to the blue economy. This event show-cased examples of impactful EU projects and their uptake by different stakeholders including policy makers, as well as synergies with other major programmes and initiatives that contribute to the blue economy in Europe and beyond.

The event consisted of introductory remarks by Commission representatives on the instruments and tools to fund blue growth, followed by sub-sessions on the value of sustainable marine bioresources, marine stressors and food security and marine data and digitisation. Four projects were presented in each sub-session and followed by comments from a user panel of industry and other key representatives.

The event was opened by John Bell,

Director of Bioeconomy in DG RTD, who provided the scope and the challenge that lies before us. He referred to the recently published report "Investing in the European future we want " from the High-Level Group on maximising impact of EU Research and Innovation Programmes, chaired by Pascal Lamy, and specifically to its main message on the need to invest in research and innovation and where success depends ever more on the production and conversion of knowledge into innovation. He noted that with important policy decisions that will impact the next 5-10 years, we will need to change the way in which we organise our society around Blue Growth. He specifically asked the research community to step up its efforts to become the 'intelligence service' for policy makers and fill the knowledge gaps that have been identified.

The COLUMBUS video "The Importance of Marine Sciences " was shown just after and more detail on the initiative was provided by COLUMBUS project manager, Cliona Ni Cheallachain, with the second COLUMBUS video showing "An introduction to Knowledge Transfer " with a detailed explanation of the process developed by COLUMBUS.

In her presentation, Cliona went on to explain how the core objective of COLUMBUS - to ensure that applicable knowledge generated through EC-funded science can be transferred effectively to unlock the potential of the oceans to create future jobs and economic growth in Europe – has been put into action. As the project draws towards its end, key achievements include the identification of 6,415 projects, 1199 Knowledge Outputs identified and 96 KO prioritised for transfer. Through the generation of 60 case studies, COLUMBUS is therefore providing evidence that EC Funded marine research projects are generating valuable knowledge with real applications for blue growth impact.

Given that retrospective knowledge collection is prohibitively expensive and difficult, a key COLUMBUS recommendation is that funding agencies implement effective processes for high quality collection of Knowledge Outputs during the project life.

Cross-cutting applications of knowledge have very high potential added value, hence further capacity building efforts are required across the marine science community to be able to carry out effective knowledge transfer and bring about a culture change in the approach to impactful science for society at large.

A summary report of the EC Blue Growth Research and Innovation Day will be published soon on the DG Research and Innovation web site.

• **COLUMBUS Knowledge Transfer in Maritime Sensing Technologies - 23 November 2017, Canary Islands (SPAIN)**

On 23 November 2017, the Oceanic Platform of the Canary Islands (PLOCAN), lead the organisation of a COLUMBUS Brokerage Event, in collaboration with fellow COLUMBUS partners, Seascope Consultants, EuroGOOS, and Aquatera, as well as the related initiative, EMODnet. The event took place during the AtlantOS General Assembly in Gran Canaria, Spain. The goal of this event was to facilitate brokerage and foster partnerships between two stakeholder groups: representatives of national marine observations and data programmes, based in Europe and from across the Atlantic; and, sensor developers who have generated new technologies through their participation in EU-funded projects.

New technologies and innovations in sensor development funded through the EU framework programmes were presented and discussed to aid knowledge transfer and foster collaboration among these marine and maritime stakeholders.

The participants, including publicly-funded organisations and SMEs, comprised of:

- >European companies that are focused on maritime sensing technologies and/or observing platforms and have recently participated in the development of new sensors with the support of the European Commission-funded research and innovation projects;
- >Companies and institutions with expertise in marine sensor interoperability, data collection and transmission, and data sharing and use, who have developed innovative cutting-edge solutions, mostly with the support of the European Commission, in the framework of research and innovation projects;
- >Potential users of these innovations amongst the AtlantOS partnership, together representing the European oceanographic observation and monitoring community.

Through its brokerage events and other initiatives, the Horizon 2020 COLUMBUS project aims to ensure that applicable knowledge generated through EU-funded projects is transferred effectively to marine and maritime sectors. The intention of this effective transfer is to capitalise on the European Commission's investment in research and contribute to sustainable Blue Growth.

The event proved to be a significant success, and raised awareness of selected sensor technologies and innovations to end-users. The knowledge generated will now be applied by new actors in both new ways and new sectors, thus achieving measurable impact and value.

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December 2017

- **Forecasting and Anticipating Effects of Climate Change on Fisheries and Aquaculture - 15 December 2017, Brussels (BELGIUM)**

The European Commission for Research and Innovation Directorate General (DG) organised a policy-making meeting to enable the COLUMBUS partner, CETMAR, to further exchange on COLUMBUS methodology for knowledge action. CETMAR provided a preliminary analysis of policy oriented Knowledge Transfer opportunities. More particularly were highlighted the progress achieved so far (month 18) by H2020 CERES and CLIMEFISH projects, with a special focus given to policies' relevant outcomes.

The meeting participants included representatives from the respective European Commission DGs: Research and Innovation (Marine Resources Unit and Agri-Food chain), Maritime Affairs, Environment, for Climate Action, and the Research Executive Agency.

YEAR 2018

January 2018

- **COLUMBUS Athens Aquaculture Training Event – 16 January 2018 (GREECE)**

Columbus aquaculture competence node leader, AquarK, organized this dedicated training event as a way to promote marine research to end-users. Trainings on four dedicated COLUMBUS aquaculture case studies were run for 25 delegates. They were R&D and Production managers of the top companies in Greece (representing >70% of the aquaculture production).

This event has been promoted toward a larger audience with its dedicated LinkedIn

post <https://www.linkedin.com/pulse/great-columbus-athens-aquaculture-training-event-christoflogiannis/> which has generated 87 Views / 25 likes.

- **COLUMBUS Porto Bufalo training / demonstration event– 18 January, 2018 (GREECE)**

Columbus aquaculture competence node leader, AquarK, organized this other dedicated training event as a way to promote marine research to end-users, and more particularly to run a field Demonstration of Rossi vaccination machine (case study). This event gathered 19 Delegates representing 70% of Greek mariculture and 80% of Croatian mariculture. This event has been promoted to a larger audience through the social media means. Its dedicated LinkedIn post has generated 151 views / 36 likes / 2 shares (<https://www.linkedin.com/pulse/targetfish-farm-vaccination-strategies-workshop-christoflogiannis/>)

February 2018

- **COLUMBUS at the Future Earth Development Team Meeting in Portland (USA) – 10-11 February, 2018.**

AquaTT, COLUMBUS project leader, presented the results of 20 case studies to the 20 participants from the marine funding sector.

This event provided a great opportunity to build on COLUMBUS legacy, and this throughout training, discussion, dissemination, and networking activities.

- **COLUMBUS Celebration at the European Parliament - 22 February 2018 (afternoon), Brussels (BELGIUM)**

Under the Chair of Ricardo Serrão Santos, Member of the European Parliament, and within the framework of the Intergroup on Climate Change, Biodiversity and Sustainable Development, a dedicated COLUMBUS event on **"Accelerating Blue**

Growth through Marine and Maritime Knowledge Transfer" has been held at the European Parliament.

This event aimed to reflect on the lessons learned in the H2020 COLUMBUS project in relation to stepping up Knowledge Transfer from European funded research and innovation projects in the marine and maritime sphere. This has been achieved by demonstrating, through a number of showcases, all the steps required for successful Knowledge Transfer. Moreover, examples of bodies implementing successful knowledge transfer systems have been provided.

In addition, the event has underlined the advantages of a more proactive approach for Knowledge Transfer, supported by the appropriate resources throughout the process from funding and proposal level evaluation to the research implementation and industry involvement.

COLUMBUS organizer, EurOcean (Portugal) invited policy and decision-makers, funding agencies, knowledge generators and users including researchers, consultants, scientists and industry to attend this unique event.

In the scope of this event organization, a dedicated save the date and programmes flyers have been produced and distributed toward the respective targeted audiences.

- **COLUMBUS Knowledge Transfer in Maritime Sensing technologies- 23 February 2018, Brussels (BELGIUM)**

This follow-up workshop has been organized by COLUMBUS partners: Seascope, PLOCAN, EuroGOOS, Aquatera, VLIZ, SmartBay Ireland. In addition to present COLUMBUS, the Monitoring & Observation Node Activities and specific knowledge outputs, it aimed to continue the discussions on barriers and opportunities in maritime sensing technologies.

The existing COLUMBUS powerpoint

slides and COLUMBUS 'Use & Sharing of Marine Observations by industry: Good practice guide' have been respectively used.

The 17 participants were representatives from funding bodies, sensor technology companies, oceanographic community, EU data-sharing initiatives.

March 2018

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- **COLUMBUS field demonstration in Thessaloniki (GREECE)**

On March 6 2018, The Columbus aquaculture competence node leader, AquarK, plans to organize this dedicated training event as a way to promote marine research to end-users. A Field demonstration of SIM PROJECT case study technology on toxic microalgae will be run. Thirty Greek Shellfish farmers (60% of Greek mollusc production) are expected to attend this field demonstration.

Annex 4: Annual Conferences

COLUMBUS First Annual Conference- 2 March 2017, Brussels (BELGIUM)

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On March 2nd 2016, 57 attendees were welcomed to the 1st COLUMBUS Annual Conference. Representing 11 countries and 36 organisations, including all of COLUMBUS' partner organisations and eight of the Expert Advisory Board, the Conference was internally-focussed and was intended as a reflective, stimulating day of interactive discussions among participants. The Conference comprised keynote presentations, a Pecha Kucha session and two panel discussions.

The Conference was opened by Ricardo Serrão Santos MEP and Ms Sigi Gruber (Head of the Marine Unit for Director General of Research & Innovation of the European Commission). They both spoke of the importance of Blue Growth and how COLUMBUS might contribute towards its achievement. Following this, four keynote presentations were provided to set the scene.

Georgia Bayliss-Brown (AquaTT) introduced Knowledge Transfer as a concept and methodology, and provided background on the importance of achieving measureable impact from funded research. This presentation was followed by different Knowledge Transfer perspectives provided by three members of the COLUMBUS External Advisory Board:

- Beverley Sherbon (Researchfish) presented the Medical Research Council's initiative, which was subsequently developed into Researchfish, that collects information on research outputs, outcomes and impacts and is being implemented by an increasing number of research councils and funding agencies globally beyond the medical sector;
- Iain Shepherd (MARCOM Defence)

provided examples of science-industry engagement coming out of "knowledge communities", Southampton Marine and Maritime Institute (SMMI), Marine Robotics Innovation Centre (MARSIIC) and the Centre for Defence Enterprise (CDE); and,

- Simon Gerrard (SMMI) reflected on his experiences in holding an industrial liaison role and presented important lessons learned whilst working across the science-industry boundary.

Then eleven initiatives were presented during the Pecha Kucha-style session, where each presenter was given five minutes and a maximum of four slides to publicise their activities, and explain how it was relevant to COLUMBUS. This session covered:

- AtlantOS (<https://www.atlantos-h2020.eu/>)
- The Compendium for Coast and Sea (<http://www.compendiumcoastandsea.be/en>)
- DEVOTES (<http://www.devotes-project.eu/>)
- ECMAR (<http://www.ecmar.eu>)
- EMODnet (<http://www.emodnet.eu/>)
- EOOS (<http://www.eoos-ocean.eu/>)
- Euromarine (<http://www.euromarineconsortium.eu/>)
- JRC (<http://mcc.jrc.ec.europa.eu/>)
- EurOcean: Marine Knowledge Gate (<http://www.kg.eurocean.org/>)
- Sea for Society (<http://seaforsociety.eu/np4/home.html>)
- STAGES (<http://www.stagesproject.eu/>)

COLUMBUS External Advisory Board members who were available in the afternoon of March 2nd 2016 sat on one of two panel discussions, covering legacy and impact. These were chaired by COLUMBUS Work Package Leaders, Rosa Fernandez (WP5 – CETMAR) and Simon Powell (WP6 – MSE) respectively.

- The first Panel dealt with the increasingly important question "What is impact?"

The expert panel was comprised of the following members of the COLUMBUS External Advisory Group: JanReid Hole (NordUniversity), Simon Gerrard (Southampton Marine and Maritime Institute), Beverley Sherbon (Researchfish).

The objective of this session was to determine what impact is for different sectors and how COLUMBUS can therefore adapt its Knowledge Transfer activities for each sector. To build this discussion, panellists were posed the question: "What is impact for your sector and can you provide examples of where a research project has had an impact on your sector. Why was it successful? Why have others failed?"

Following the Panel responses, the floor was opened to all participants to respond to answers provided or to offer an opinion on the open question "*How can COLUMBUS be effective in achieving impact within each of the stakeholder groups: industry, policy, science and society?*"

- The second panel considered changes to the Research System to facilitate impact "Breaking barriers to Knowledge Transfer to achieve COLUMBUS legacy".

The expert panel was comprised of the following members of the COLUMBUS External Advisory Group: Ángel Borja (AZTI Tecnalia), Virginie Hart (UNEP), Jan-Stefan Fritz (KDM), Iain Shepherd (MBE)

- The MARCOM Defence dedicated session aimed to determine how the research funding system should evolve to generate more impact. To build this discussion, panellists were posed the question: "*What does and does not work in the research system (i.e. what do you see the key barriers are) with regard to creating impact and added-value from research?*"

Again, following the Panel responses, the floor was opened to all participants to respond to answers provided or to offer an opinion on the open question "How can the research funding system, evolve to

ensure it generates its intended impacts; and what can COLUMBUS do to influence this?"

Lively and enthusiastic discussions followed both the Keynote presentations in the morning of the Annual Conference as well as during the afternoon participatory panel sessions. Key points and learnings from the day have been grouped together to simplify and structure the overall themes discussed, as follows:

- **Achieving Impact**

- Economic growth should be viewed in complement with sustainable and mediatory management of our Seas and Ocean.

- Sharing research data opens more doors than it does not.

- COLUMBUS has a noble aim to preserve and recover the health of our oceans.

- Impact can only be maximised if knowledge is transferred.

- How can marine economy models work when not all knowledge is available?

- Impact can only be assured if innovations are fostered and scientific excellence is progressed through the right channels, and not left to sit "in drawers".

- We have a huge responsibility to ensure that society reaps the benefit of marine research, following significant investment of public funds.

- Tacit Knowledge is equally as important as it influences change, but it is difficult to quantify and transfer.

- Funded research consortia often believe that publications and workshops are the main results from their work – but is it? We need to think deeper – consider what is within the publications and link it to impact factors.

- Communicating results so that they can be immediately understood by a non-scientist is becoming increasingly important.

- There needs to be a feedback loop, where funding agencies benefit from providing evidence of impact and investment; but

also where researchers are recognised for their efforts, beyond the number of scientific publications etc. to their name.

- We need to consider how to quantify the proportionate impact of a Knowledge Output that is the result of numerous funding awards and project efforts.

- Impact should be considered early on in funded projects/proposals, in many cases SMEs are involved later in the process.

- We also need to beware of prioritising research with a minimum Technical Readiness Level (TRL) – otherwise in a few years the basic research for the next wave of technologies won't have taken place.

- It is important to note that research, policy and industry are working on different timelines, which can subsequently affect when impact can occur.

- Funding agencies could consider improved systems to coordinate the outputs of funded projects, including data platforms and existing initiatives, to ensure that investment is efficient.

- Knowledge Transfer Processes

- Collaboration and communication is key to quality collection of knowledge.

- Recognising why transfer activities fail is as important as knowing why they work.

- Knowledge Transfer processes should be user-friendly and interoperable (link up with other data collection and impact measuring initiatives).

- Early-career scientists need to become familiar with the landscape in which their research sits, and the potential impact of their work. For example, those PhD students who have been asked to use Researchfish are beginning to understand the value of impact and their work.

- The Research Community need to realise that they cannot assume that knowledge is taken up if it is not disseminated correctly.

- The Research Community needs to understand the differences between terminology, such as end users and beneficiaries, to perform successful Knowledge Transfer. Furthermore,

stakeholders and researchers need to work together to use the same language, and understand each other's cultures.

- Networks and participatory groups are successful but they cost time and money. Society needs to be engaged with on a peer-to-peer level - using an intelligent voice.

- The Research Community need to be more interdisciplinary, across the sciences, and determine what their vision is for the ocean, to be able to work together to reach it.

- Building a Knowledge Transfer community can increase the likelihood of serendipity, providing a platform where business and science can discuss and share ideas, and develop collaborations together.

- SMEs and businesses do not often approach scientists, and perhaps this relationship should be promoted.

- We could consider that gaps in knowledge or stakeholder mapping may exist because they have no value rather than that they have been accidentally omitted.

- Benefits of engagement and contribution by the research community must be clear.

- Overcoming Challenges:

- A methodology for impact assessment and on-going data collection should be in place.

- Sharing terminology between sectors is essential - key scientific challenges (e.g. climate and environment or trade and transport) might need to be framed as business topics, such as safety, risk and regulation, or vessel design and performance.

- Strategic partnerships can be initiated from an early stage of a researcher's career, as trust develops over time.

- Researchers without a hunger for commercialisation - or a wide range of other transfer activities - will need assistance, or the help of a broker, to reach full potential for science that has a possible application.

- In some cases, a project cannot progress further due to lack of funding opportunities - are the funding programmes looking

at the longevity of funded projects and identifying where there should be more funding put in place?

- People's ambition and capacity to engage should be taken into account when interacting with them.

- COLUMBUS Evolution:

- It is important that COLUMBUS remains interdisciplinary and that we can "see" over and across the individual marine and maritime sectors within the Competence Nodes to innovatively determine where knowledge can be applied.

- We need to develop case studies that we can publicise to illustrate the successes of the COLUMBUS methodology, both to funding agencies and researchers.

- It was stated that value chains are rarely linear, and therefore there are concerns that COLUMBUS might be trying to systematise the Knowledge Transfer process when it depends on trust and timing, as well as needs. In response, others stated that the methodology is simply aligning the ingredients for success, e.g. end user engagement, research results that are ready to be transformed, coherence of funding and policy mechanisms, accessibility and networking.

→ To sum up, COLUMBUS recognised this Annual Conference as a forum for contextual Knowledge Transfer Brainstorming and Discussions – there was a need to rationalise its approach and philosophy. So as it has evolved, the project got able to clearly articulate its approach. All of the discussion points, ideas and statements have indeed been taken on board by the COLUMBUS partners.

COLUMBUS Second Annual Conference - 7 November 2017, Brussels (BELGIUM)

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On 7 November 2017, over 50 participants converged in Brussels for COLUMBUS project's second Annual Blue Society

Knowledge Transfer Conference.

This second COLUMBUS conference titled "Achieving Impact from Marine Research" provided the forum to collaboratively explore the barriers, challenges and possible solutions to achieving the impact potential of marine and maritime research, at all stages of the funding cycle.

The conference was opened by David Murphy of AquaTT, COLUMBUS Strategic and Operational Lead, who emphasised *"the need for action is now, we need to stand together as a community and work towards a future where high-quality research is more effectively transferred for measurable impact and the benefits are seen on the ground by society at large"*.

The day commenced with the presentation of relevant knowledge generated by the COLUMBUS project, as well as examples of impact achieved from successful Knowledge Transfer activities performed by other initiatives, organisations and projects. This celebration of impactful Knowledge Transfer set the scene for the afternoon session where keynote speeches from representatives of industry, academia and policy informed a lively panel discussion with provocative topics being covered; such as:

- Whose responsibility is it to carry out Knowledge Transfer?
- How can funding mechanisms be improved to incorporate Knowledge Transfer mechanisms?
- What are the barriers to effective Knowledge Transfer and are they evolving?

The intense enthusiasm that resulted from these discussions only highlighted further the need for training and consultation in Knowledge Transfer to become more abundant. The participants strongly agreed on the benefits of brainstorming

and debating with other attendees. The overarching consensus was that roles and responsibilities needed to be clarified, as well as the terminology surrounding the topic.

→ To sum up, COLUMBUS has continued to involve all interested stakeholders as it defines recommendations and guidelines for how Knowledge Transfer could be incorporated into funded research as a key legacy output of the project, which will be presented at the final COLUMBUS conference.

COLUMBUS Third and Last Annual Conference - 24 February 2018, Brussels (BELGIUM)

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On 24 January 2018, more than 70 participants met in Brussels (Belgium) for the COLUMBUS project's third and final Annual Blue Society Knowledge Transfer Conference.

The COLUMBUS conference, entitled *"Making Marine and Maritime Science Count"*, provided a forum to collaboratively explore the barriers, challenges and possible solutions to increasing the impact potential of marine and maritime research. Based on feedback from the 2017 edition, the conference was designed to be an interactive panel-based forum, providing a refreshing change to traditional conference formats. Overall, the conference was very successful, producing interesting debates and vigorous discussions around the concept of Knowledge Transfer.

The conference was opened by David Murphy of AquaTT, the COLUMBUS Strategic and Operational Leader. Surprise guest Ricardo Serrão Santos - Member of the European Parliament and of COLUMBUS External Advisory Board- gave the first welcome address, expressing that *"it is always good to be in a room with like-*

minded people interested in the seas." During this address, Serrão Santos emphasised the need for relevant decisions to be made *"from [the] best scientific evidence," adding, however, that such evidence "can be hard to identify."*

The COLUMBUS European Commission Policy Officer, Marco Weydert, also welcomed the participants and discussed the European Commission's move towards *"reviewing portfolios of projects rather than focusing only on their outputs individually."* Interestingly, this method mirrors COLUMBUS's approach to gathering knowledge from many sources to identify those that respond to knowledge gaps and needs.

The day commenced with an overview of the project's achievements through a panel discussion. Facilitated by Alistair Lane of the European Aquaculture Society (EAS), partners involved in the COLUMBUS Knowledge Transfer journey shared their experiences, insights and reflections. Following this, a second panel of industry representatives were invited to explore synergies, commonalities and differences in their approaches to value creation from research investments.

This morning session was followed by the Blue Society Vision presented by Philippe Vallette, Director General of Nausicaa, Centre National de la Mer (COLUMBUS Work Package Leader). Following his presentation, the Blue Society Award winner has been announced. Please refer to the next section for more information.

In the afternoon, the results of a flash survey of the COLUMBUS network were presented and discussed. The attendees enjoyed talking about the challenges and barriers involved in three key stages of the research lifecycle: pre-project, project implementation and post-project.

Finally, a panel comprised of experts from the policy-facing research management sector discussed what strategic actions need to be taken to further optimise the research system and ultimately increase the impact of marine and maritime research.

A major objective of COLUMBUS was to show the effectiveness of the COLUMBUS Knowledge Transfer Methodology and that demonstrable impact was achieved during the project. A compilation of COLUMBUS Knowledge Transfer stories was provided to all those in attendance, along with 48 examples made available for download. The stories illustrate how the COLUMBUS Knowledge Transfer Methodology was implemented and how corresponding impacts were achieved by different COLUMBUS Competence Nodes. Since Knowledge Transfer is, in some cases, still ongoing, the published stories are still in a draft format. More than 50 stories will be finalised and uploaded to the COLUMBUS website at the end of the project (28 February 2018).



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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 652690. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.