

EUROPROJECT
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Outreach, Communication and Dissemination Plan

UPDATE to D10.1
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O	Other	

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NAUTILOS - New Approach to Underwater Technologies for Innovative, Low-cost Ocean observation is an H2020 project funded under the Future of Seas and Oceans Flagship Initiative, coordinated by the National Research Council of Italy (CNR, Consiglio Nazionale delle Ricerche). It brings together a group of 21 entities from 11 European countries with multidisciplinary expertise ranging from ocean instrumentation development and integration, ocean sensing and sampling instrumentation, data processing, modelling and control, operational oceanography and biology and ecosystems and biogeochemistry such, water and climate change science, technological marine applications and research infrastructures.

NAUTILOS will fill-in marine observation and modelling gaps for chemical, biological and deep ocean physics variables through the development of a new generation of cost-effective sensors and samplers, the integration of the aforementioned technologies within observing platforms and their deployment in large-scale demonstrations in European seas. The fundamental aim of the project will be to complement and expand current European observation tools and services, to obtain a collection of data at a much higher spatial resolution, temporal regularity, and length than currently available at the European scale, and to further enable and democratise the monitoring of the marine environment to both traditional and non-traditional data users.

NAUTILOS is one of two projects included in the EU's efforts to support the European Strategy for Plastics in a Circular Economy by supporting the demonstration of new and innovative technologies to measure the Essential Ocean Variables (EOV).

More information on the project can be found at: <http://www.NAUTILOS-h2020.eu>.

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EXECUTIVE SUMMARY

The present **Outreach, Communication and Dissemination Plan** (D10.8) represents an update to the Communication and Dissemination Strategy of NAUTILOS project and its implementation that is to be used by the Consortium to ensure high visibility and accessibility to the project's results and achievements through efficient communication and dissemination undertakings.

In summary, the following plan outlines:

- Context
- Communication and Dissemination Plan - update
- Objectives
- Scope
- Target audience
- Key Messages
- Tools, means, channels, tactics
- Implementation Campaigns
 - Ocean Literacy and Awareness on Marine Sustainability
 - Citizen Science Campaigns
 - Policy Stakeholder Engagement Campaigns
 - Synergies Building Campaigns
- Monitoring - performance evaluated against updated KPIs, tracked analytics
- Management

The updated Outreach, Communication and Dissemination Plan is still considered a living document and can be modified should this be necessitated by the project's progress. It serves as reference for the planned communication and dissemination activities and as a basis for the subsequent impact evaluation.

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LIST OF ACRONYMS AND ABBREVIATIONS

Abbreviation	Definition
AMAP	Arctic Monitoring & Assessment Programme
AtlantOS	Optimising and Enhancing the Integrated Atlantic Ocean Observing Systems
BASEMAN Project	Defining the baselines and standards for microplastics analyses in European waters
BEIS	Department for Business, Energy & Industrial Strategy (UK)
BIOLIT Project	Integrating Biological Literature with Databases
BLUE-CLOUD PROJECT	Piloting innovative services for Marine Research & the Blue Economy
CA	Consortium Agreement
CDE	Communication, Dissemination and Exploitation
CIGESMED Project	Coralligenous based Indicators to evaluate and monitor the "Good Environmental Status" of the Mediterranean coastal waters
CLAIM Project	Cleaning Litter by developing and Applying Innovative Methods in European seas
CMEMS	Copernicus Marine Environment Monitoring Service
COMBER Project	Citizen's Network for the Observation of Marine Biodiversity
COMMON SENSE Project	Cost-effective sensors, interoperable with international existing ocean observing systems, to meet EU policies requirements
DEEPEASTMED	State of the knowledge on deep-water vulnerable species and habitats in the Eastern Mediterranean
DEFRA	Department for Environment, Food & Rural Affairs (UK)
DG CNET	Directorate-General for Communications Networks, Content and Technology
DG ENV	Directorate-General for Environment
DG GROW	Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs
DG MARE	Directorate-General for Maritime Affairs and Fisheries
DG RTD	Directorate-General for Research & Innovation
DOOS	Deep Ocean Observing Strategy
GrAg	Grant Agreement
EAB	External Advisory Board
EB	Engagement Board
EC	European Commission
ECMWF	European Centre for Medium-Range Weather Forecasts

Abbreviation	Definition
ECSA	European Citizen Science Association
EEA	European Environment Agency
EGU	European Geosciences Union
EMB	European Marine Board
EMSA	European Maritime Safety Agency
EMODNet	European Marine Observation and Data Network
EPHEMARE	Ecotoxicological effects of microplastics in marine ecosystems is investigating the toxic effects of microplastics on marine organisms.
ESFRI	European Strategy Forum on Research Infrastructures
ESPCE	European Strategy for Plastics in a Circular Economy
EthAB	Ethics Advisory Board
EU	European Union
EuroGOOS	European Global Ocean Observing System
EuroSea	Improving and Integrating European Ocean Observing and Forecasting Systems for Sustainable use of the Oceans
EUROqCHARM	EUROpean quality Controlled Harmonization Assuring Reproducible Monitoring and assessment of plastic pollution
FAO	Food and Agriculture Organization of the United Nations
FLOTSAM	Floating Litter and its Oceanic TranSport Analysis and Modelling, SCOR Working Group
GA	General Assembly
GEOBON	Group on Earth Observations Biodiversity Observation Network
GEOSS	Global Earth Observation System of Systems
GESAMP	Group of Experts on the Scientific Aspects of Marine Environmental Protection
GMOS	Genetically modified organisms
GOOS	Global Ocean Observing System
HELCOM	Helsinki Commission, The Baltic Marine Environment Protection Commission
Intl	International
IOC	Intergovernmental Oceanographic Commission (under the auspices of UNESCO)
IOOS	Integrated Ocean Observing System
IPR	Intellectual property rights
KOM	Kick-off meeting
KPI	Key Performance Indicator
LifeWatch ERIC	European Infrastructure Consortium providing e-Science research facilities to scientists seeking to increase our knowledge and deepen our

Abbreviation	Definition
	understanding of Biodiversity organisation and Ecosystem functions and services
MARE	Directorate General for Maritime Affairs and Fisheries
MSFD	Marine Strategy Framework Directive
NeXOS Project	Next Generation Web-Enabled Sensors for the Monitoring of a Changing Ocean
NIR	Near-infrared
NGO	Non-governmental organisation
POPD	Protection of Personal Data
REA	Research Executive Agency
RECONNECT Project	Re-connect the lines to protect marine life
RESPONSE Project	Towards a risk-based assessment of microplastic pollution in marine ecosystems
RRI	Responsible Research and Innovation
SEO	Search Engine Optimisation
STEM	Science, Technology, Engineering and Mathematics
TcL	Task Co-Leader
TIB	Technical and Innovation Board
TIM	Technical and Innovation Manager
OCM	Outreach, Communication & Dissemination
OSPAR Convention	The Convention for the Protection of the Marine Environment of the North-East Atlantic
PlaMoWa network	Network for Plastic Monitoring in Waters
PM	Project Manager
RTD	Research and Technology Development
SEO	Search Engine Optimisation
TechOceanS	Technologies for Ocean Sensing
TL	Task Leader
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
WMO	World Meteorological Organisation
WPL	Work Package Leader
WPcL	Work Package Co-Leader
UN	United Nations

I. CONTEXT

1. CONTEXT

The ultimate success of the NAUTILOS project depends on well-coordinated communication and dissemination of its activities. An effective communication and dissemination plan is one having clearly identified and updated goals, target groups and well-defined differentiated key messages as well as the right set of tools and channels for reaching our audience. What is more, dissemination activities must ensure that the relevant information is easily found and accessible for the interested stakeholders, and the new knowledge is spread smoothly, in an understandable language.

II. COMMUNICATION AND DISSEMINATION PLAN

1. OBJECTIVES - A SHIFT FROM INFORMING TO DISSEMINATING

Having passed the hump of its timeline by completing work packages dedicated to the development of sensors and samplers for the measurement of marine biogeochemistry and biology essential ocean variables, NAUTILOS is now entering a phase of integrations, validations and exploitation, when the public disclosure and promotion of the results should take centre stage in order to ensure the mass uptake and delivery of the instruments developed within the project to a wider class of policy makers, researchers, users and citizens, which will ultimately contribute to the project's success and provide for a large-scale and long-term impact.

While bringing awareness about the existing gaps in seas and ocean cost-effective, compact and low-energy consumption observation systems still needs to be maintained, the focus is shifting to dissemination activities setting the ground for engagement and inclusive collaboration with stakeholders from policy makers, end-users, and non-governmental organisations to industry and the broader community, including citizen scientists.

In the sense of the above, the updated **communication and dissemination objective of NAUTILOS** is rendered as follows:

Enable a widespread adoption of NAUTILOS developments by the widest possible range of users through outreach activities such as demonstrations, citizen science campaigns, synergies and policy making round tables.

2. SCOPE

The plan covers the second half of the project and continues to consider both online and offline communication tools and channels. Messages are tailored to the respective audience and level (local, regional, national).

Images, messages and activities are coherent and charged with potential to inspire for action and convert community members to citizen scientists by embracing the values of ocean sustainability and blue economy.

It is a responsibility of beneficiary institutions and individuals involved in NAUTILOS to act as ambassadors and interpreters of the project's results and achievements. All activities should consider answering the questions Who are we talking to, What do we want them to do, How do we reach them, When do we approach them and Where do we find them.

3. TARGET AUDIENCES

It has already been mentioned in the D10.1 that the **Quadruple Helix Innovation Model** is applied in identifying NAUTILOS target groups. It perfectly demonstrates the **interconnectedness of policy makers, scientific community, industry and**

society, who are all of equal importance when it comes to communicating and promoting project's results.

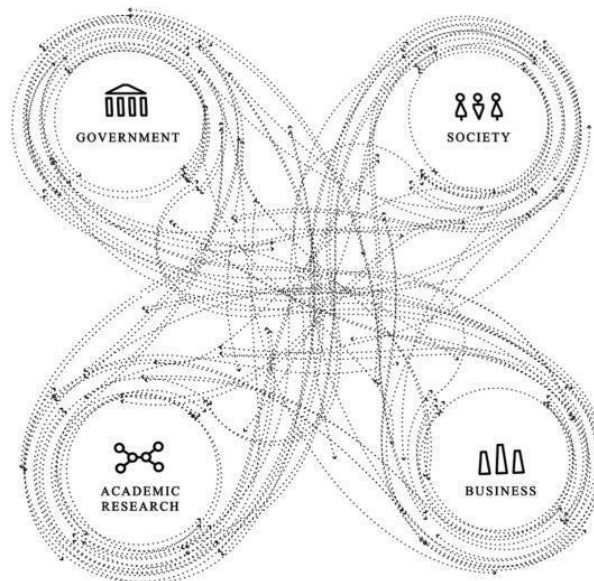


Figure 1 - Quadruple Helix Innovation Model

3.1. GOVERNMENT

The segment comprises public bodies and policy makers at all levels of government authority who are related to the ocean, ocean affairs, and ocean sustainability. For an exhaustive list, refer to the Outreach, Communication and Dissemination Strategy (D10.1).

NAUTILOS will continue to cooperate with ocean observing programmes and panels, and EU and international ocean data aggregation initiatives, such as EuroGOOS and EMODnet to promote its activities and gain support for its mission.

Within this group is the Intergovernmental Oceanographic Commission (IOC) which promotes the UN International Decade of Ocean Science for Sustainable Development 2021 – 2030 - a key initiative aiming to raise public awareness of the urgent need to promote new technologies and the use of existing science to increase our understanding of the cumulative impacts that affect our oceans.

A Policy Roundtable is planned to be organized in 2023 to facilitate the production of a strategic policy agenda to frame policy engagement and define common priorities between the different players. Additionally, this is an opportunity to present project's results and acquire feedback on how project outcomes address current limitations, match the needs of the decision makers for the marine environment related policies and potentially address future needs. Active collaboration with NAUTILOS Policy Officer will be sought in order to identify the right size and policy representation of the participants in the roundtable so that the right messages reach the right people.

3.2. RESEARCH AND ACADEMIA

Fundamental and applied research community, including oceanography institutes are a key target for the project outputs and results:

- Research community (incl. research Infrastructures (e.g. ESFRI)), data management initiatives, oceanographic research bodies, national oceanographic, hydrographic and meteorological agencies and institutes, universities, EU and international weather forecasting centres (ECMWF, WMO);
- Research infrastructure managers (e.g. Dr Christos Arvanitidis, CEO of LifeWatch ERIC Research Infrastructure, member of the EAB of Nautilus project);
- Students/Early career scientists.

The latter group is primarily targeted for the capacity building learning labs that will be carried out within the duration of the project.

Related projects and initiatives in the areas of marine and earth observation

Linking and collaborating with kindred to NAUTILOS projects and initiatives is of paramount importance for the project's success in terms of knowledge sharing and impact. Some of the projects that we joined forces with are TechOcean, EuroSea, SeaFuture, Roboris, EMSEA, EMODNet, EuroGOOS, Plastic Pirates, EUROFLEETS, EMSO-ERIC.

3.3. BUSINESS

European observation commercial sector

Technology providers for ocean observation sensors, vehicles and equipment, developers of oceanographic services and products; data, services and product users delivered via NAUTILOS.

The companies that intend to commercialise the products and services developed in the demo work packages will require robust exploitation plans, risk and benefit assessments, and methodologies. They will also benefit from the networking opportunities in the project. A focus on dissemination and exploitation activities is paramount for this group.

Blue economy commercial and industrial sector operators

Fishing industry, aquaculture operators, offshore energy industry (oil and gas exploration, wind and tidal generation), seabed extractive activities, the tourist and recreational sector, marine biotechnology and bioprospecting, telecommunications, coastal protection, defence, search and rescue (such as Aqualit for example).

The blue economy is a major contributor to the European economy, but the multiple socio-economic benefits provided by the ocean are reliant on observations, measurements, and forecasts. Key blue economy stakeholders are reliant on the data and information of ocean observation technologies some of which are developed within the project and their impact will be communicated to them through participation in trade shows, international fairs, scientific conferences, NAUTILOS website, popular science magazines, etc. In a reverse way, they can also provide some

context in which ocean observation innovation can take place and therefore connection with them is deemed valuable.

3.4. SOCIETY

NGOs and citizen scientists

Citizen scientists, activists and volunteers from marine-related NGOs are an integral component of the project - they are ambassadors of change through spreading the word, sharing knowledge, raising awareness, participating in project campaigns and field work. The group comprises primary and secondary schools, divers' clubs, community organisations and associations – lovers of the ocean and dedicated to its preservation.

NAUTILOS Ocean literacy campaigns will continue to engage them to create a feeling of belonging to the common cause of saving the ocean and underwater life, to inspire them to influence others and co-participate in the promotion and embracing of innovative technologies for ocean observation through excitement to volunteer for contributing data, time and knowledge. The commitment of students, divers, NGOs and the general public are going to be among communication and dissemination priorities during the second half of the project.

The general public

All members of the public who are not members of any of the above target audiences and have only a basic knowledge and understanding of marine-related issues or lack the knowledge.

Raise awareness of the importance of the ocean for our planet, the challenges it faces and the role of monitoring, preserving and restoring it. The general public will be engaged both in the ocean literacy campaigns as well as citizen science activities.

Who	What	How	
		<u>During the project</u>	<u>After the project, Legacy</u>
Government			
EU and International networks	Raise awareness and gain support. Ensuring compliance and alignment to gaps and needs	EAB representation, Stakeholder meetings, NAUTILOS initial, mid and final conferences	Project website

Who	What	How	
		<u>During the project</u>	<u>After the project, Legacy</u>
Policy makers	Represent NAUTILOS interests to decision makers, bridge the science-policy gap	EAB representation; policy briefs, policy roundtable, newsletter (policy section), presentations elaborated for European institutions, NAUTILOS initial, mid and final conferences, social media, Website, Project videos	Project website, project videos
Business			
Blue economy commercial and industrial sector operators	Inform about NAUTILOS marine technological developments relevant to their sector, primarily aquaculture and fisheries	EAB representation, Stakeholder brokerage meetings, NAUTILOS initial, mid and final conferences, external events participation (i.e. congresses, trade shows), social media, website	Social media, Project website, project videos, Joint proposal applications
European observation commercial sector (technology providers)	Inform and collaborate for NAUTILOS marine technological, modelling and data developments and products	EAB representation, Stakeholder brokerage meetings, NAUTILOS initial, mid and final conferences, external events participation (i.e., congresses, trade shows), social media, website, project videos	Social Media, Project website, project videos, Joint proposal applications
Research & Academia			
The fundamental and applied marine research community	Be informed and feed information into the project	EAB representation, Journal publications, synergies building activities, capacity building dissemination campaign and learning labs, stakeholder meetings, NAUTILOS conferences, external events participation (i.e. conferences, symposia, workshops)	E-learning material Joint proposal applications Project website

Who	What	How	
		<u>During the project</u>	<u>After the project, Legacy</u>
Related projects in the areas of marine and earth observation	Ensure synergies, differentiation, building on previous projects and increasing project's impact	Synergies building and clustering activities, articles, NAUTILOS conferences, external events participation	Clustering initiatives, Joint proposal applications, Project website
Society			
NGOs and citizen scientists	Bridge the society-science gap, recruit citizen scientists for the campaigns	Ocean literacy and public engagement campaigns, citizen science trainings and campaigns, Online campaigns	Project website, project videos, e-learning material
The general public	Inform and engage the public, convert it to citizen scientists	ocean literacy and public engagement campaign, citizen science campaigns	Project website, social media, project videos, e-learning material
The media	Inform & promote	Press releases, website, newsletter	Project website

Table 1 - Strategic Communication and Dissemination Plan

4. KEY MESSAGES

In the second half of the project, the key messages strive to influence the opinions and change attitudes of the public, gain support by the policy makers, and trigger action for change. Additional goal of NAUTILOS messaging is to have its results recognized and validated by the scientific community as valuable and innovative, cost effective and sustainable, thus indirectly influencing the level of trust in the industry and contributing to tech products' mass uptake and commercialization.

The key messages are designed to bring forward different aspects of NAUTILOS work so that they correspond to the interests of the respective target group.

Message 1: NAUTILOS improves our understanding of the ocean through the broad range of sensors and samplers it develops for the comprehensive and regular measurement of a variety of EOVs across the entire water column, from seabed to the surface.

Message 2: EU partners work jointly in NAUTILOS for technological research and innovation that will make ocean observation and data management in European seas fit for the future. NAUTILOS supports the blue economy and ocean sustainability efforts by aligning its activities with international agreements such as the G7 Future

of the Oceans Initiative, Paris Climate Agreement, the UN Decade of Ocean Science for Sustainable Development, and the Marine Strategy Framework Directive.

Message 3: The observation and monitoring technologies developed within NAUTILOS will significantly contribute to the policy making in research, innovation and technology aimed at promoting the good environmental status, conservation and protection of marine ecosystems.

Message 4: A state-of-the-art development in NAUTILOS is the first microplastics sensor, which along with several other instrumentations directly addresses the European Strategy for Plastics in a Circular Economy (ESPCE). By determining the distribution and fate of marine litter and microplastics, NAUTILOS contributes to cleaner and healthier seas and oceans.

Message 5: NAUTILOS is an advanced technology project. It develops emerging marine operational monitoring technologies, with high potential for future industry applications thus contributing to EU being a global leader in ocean observation and forecasting.

Message 6: NAUTILOS fosters economic value in the EU blue economy by shortening the time span between research and innovation, improving the professional skills and competences of all working, and being trained to work, within the blue economy and in the context of open data sharing.

Message 7: NAUTILOS lays the foundations for the sustainable management and protection of marine and coastal ecosystems to mitigate significant adverse impacts (UN SDG 14). It achieves this by engaging a broad range of users and ocean stakeholders through the establishment of synergies and collaborations.

Message 8: NAUTILOS believes in the power of citizens. It will engage with marine citizen scientists to foster widespread adoption of the technologies developed within the project. Marine citizen scientists play an active role in both contributing to and seeking scientific solutions.

5. TOOLS, CHANNELS & TACTICS

5.1. MARKETING COLLATERAL

The marketing and promotional materials are now available in print and as giveaways to promote NAUTILOS at physical meetings and forums.

Communication materials are *localized* as requested by partners to achieve maximum impact and widest possible outreach.

Online communication tools are uploaded on the website, distributed via social media channels and over partner's networks.

Infographic

An **infographic** summarizing the concept of the project was created in December 2021. Due to NAUTILOS acknowledging that animal tagging may bring some level of ethical concern among citizens, a second infographic, as part of the media kit, will be designed, provided to partners and distributed to media and all NAUTILOS communication channels, illustrating the approaches used for animal tagging, showing policy makers and public alike that no harm is inflicted on animals. It will be in English and translated to local languages by partners if there is such a need.

At least two more subject specific infographics will be designed to illustrate in a clear way the processes in selected work packages and their interconnectedness with the rest of the activities in NAUTILOS.

5.2. MEDIA RELATIONS AND PUBLICATIONS

Press releases

The press releases are the means by which relevant news is communicated to the press. Three more press releases will be prepared during the timeframe of the project (M24, M36, M48).

Publications

Publicising the work and results of NAUTILOS is essential for meeting the project's objectives. Partners are encouraged to speak about the project in public venues and to publish results obtained through the project.

EurOcean as WP10 leader is actively engaging partners to submit articles presenting their work and publish it on the website as well as sector-specific blogs. It also keeps partners informed of opportunities regarding scientific conventions, congresses and conferences and encourages them to submit abstracts. EurOcean has established partnerships with magazines on popular science and technology where partners can publish articles and/or abstracts of research papers.

5.3. PROJECT WEBSITE

NAUTILOS Website

The project's website can be found at the following link: www.NAUTILOS-h2020.eu

Being the main virtual communication and dissemination vehicle, the entry point to the project, the website is updated regularly with the progress of the project.

A new "Results" section was added, which hosts NAUTILOS public deliverables, citizen science platform and data portal.

The “News and Events” section is becoming an increasingly dynamic space with frequently published short articles dedicated to results and featuring the achievement of milestones and outcomes.

Further engagement and coordination among the partners will be required in order to clearly identify the most relevant activities to be showcased.

NAUTILOS website is updated in collaboration with all partners. The website will be functioning and accessible 2 years after the project’s end, ensuring access to the knowledge and data accumulated during the project to partners, interested stakeholders and the public at large.

The specific goals of the website have changed priorities as follows:

- Disseminate project results and highlight its achievements
- Inform about opportunities for public engagement during the demonstration and citizen science events
- Build understanding and facilitate the adoption of the project’s results
- Link the project with external stakeholders, media and citizens
- Raise awareness about the project’s goals and objectives

As a reference communication tool, the website’s address (URL) is featured in all project’s communication materials.

5.4. SOCIAL MEDIA

Social media is very actively and productively utilized in NAUTILOS, gaining effective engagement with users and followers from a variety of stakeholder audiences. NAUTILOS makes use of relevant social media networks to promote the project, its partners and results – scientific knowledge and RTD Innovations. The objectives have shifted from building awareness, visibility and general interest in the project to becoming more interactive with the various audiences the project engages with. Although still promoting the knowledge, activities, events, benefits and outcomes generated during the project, now, with more weight being put on dissemination, NAUTILOS transitions from a sole supplier of information to engaging in conversation partner, building relationships and reputation as a place for open discussion and sharing of ideas.

With regard to the above, launching a **Facebook page** of the project is considered. This will be led by WP10 Leader and will be maintained in addition to the existing Twitter and LinkedIn accounts, with the help and contribution of all partners. FB page launch is subject to approval by the Consortium.

80% of the world's population visit Facebook daily and it is the largest social media nowadays. While Twitter and LinkedIn provide the professional setting for social exchanges, Facebook is the ground for a massive public reach. With its capabilities for event creation, event live streaming, reels, user instant experiences, stories and user generated content, it holds vast potential for making NAUTILOS forthcoming

demonstrations, citizen science campaigns, synergies building events and learning labs popular, and even viral through the organic content it produces.

The project will continue to use **YouTube** as the largest video sharing platform. Videos from the demonstration sites will also be uploaded there, but also videos and interviews by local and national TV channels.

Targeted online campaigns are considered to be run at a later stage with respect to results' exploitation and uptake by the industry and interested stakeholders.

5.5. NEWSLETTER

In the context of NAUTILOS, newsletters constitute an excellent tool for disseminating results to academia, business and government but not so much to wider public which is more easily accessible through the website and social media channels, including YouTube.

Until its end, the project will publish three more newsletters, to present latest developments, events promoting its results and citizen scientist engagement. It will also feature articles about the results of each work package upon their tasks completion.

The newsletters are available for download on the project's website.

Compliance

The subscription to the newsletters is in full compliance with GDPR rules and requires readers to manually opt-in to receive emails.

5.6. PROJECT VIDEOS

Videos are an essential communication tool which has a high reach, improves SEO and accounts for half of all mobile traffic (surpassing all other communication tools).

Two more professionally edited videos will be made during the demonstrations of NAUTILOS results and uploaded to YouTube, on the website, and shared via social media networks. Live streams and reels can be made by participants and also shared on FB and other social media channels, tagging NAUTILOS, partners and demo sites.

What will the videos achieve:

- Keep the interest in the project's topics;
- Trigger engagement;
- Ensure the continuity and legacy of NAUTILOS (final video).

Regarding the video recording and publication, eventual external participants will be provided with suitable forms to fill and sign for an informed consent, details are given in D13.1 H – Requirement No. 1.

The first two project videos were developed and are available at:

<https://www.youtube.com/channel/UC6TiBpIUQ4NbIW0wXhfdsXQ>

5.7. EVENTS

The events NAUTILOS organizes, attends and co-organizes with similar projects and initiatives are becoming increasingly important for the efficient dissemination of outcomes and results. As mentioned earlier, careful analysis of what the project has done was performed and a need for more interactive events has been established, so that NAUTILOS reaches the wider public and increases the impact of its work activities.

We continue to monitor the COVID-19 situation and remain ready to adjust event planning and format accordingly.

Led by NAUTILOS partners

- **Policy engagement:** one of the goals of NAUTILOS is to bridge the science-policy gap thus setting the grounds for a common understanding of science and innovation and raising public confidence in the project's outcomes. To achieve it, NAUTILOS is planning to conduct **1 Policy Round table** in Brussels (Year 3), prepare **2 more Policy briefs and 2 NAUTILOS presentations for the European Institutions.**
- **Citizen science-related events:** 2 citizen science campaigns
- **Capacity Building Summer Schools:** 2 summer schools will be organised within the framework of the project
- **2 international conferences:**
 - Mid-term conference (M30): to inform and obtain feedback from key stakeholders on the project's progress. The intent is to align the conference with M30 management meeting and organize it as an external event.
 - An international final conference (M48) will be organised at the end of the project in parallel to the final field demonstrations. Its goal is to spread the results of NAUTILOS and ensure sustainability of the initiative after the EC funding is over. Targeted number of participants is 100 from all key stakeholder groups.
- **Other activities, coordinated with other projects, networks and initiatives**

Participation in other events

Partners are constantly encouraged to present the project (poster, paper) at relevant national, European and international events they attend. EurOcean, jointly with EP, works on introducing a new tool (dissemination tracker) to partners for collecting information on the events they are planning to attend for dissemination purposes.

Table 2 - NAUTILOS External Events

Name of the conference/event	Area/Descriptions
EurOCEAN conferences	Major European marine science policy conferences

Name of the conference/event	Area/Descriptions
EMODnet Workshops	Community workshop collecting and sharing latest updates on parameters/network-oriented recordings and progress towards the development of common standards and best practices
European Maritime Day (EMD) Conference and Expo	Annual two-day event for the maritime community to network, discuss and forge joint action on maritime affairs and sustainable blue economy. NAUTILOS aims to participate in at least one event.
European Marine Board Biennial Open Forum	Platform bringing together marine science stakeholders to discuss and share knowledge, identify common priorities, develop common positions
International Workshop on Modelling the Ocean (IWMO)	Annual event focussing on all aspects of ocean and coupled air-wave-sea, ice and current-sediment modelling
European Marine Biology Symposium	Annual event for marine biologists
International Symposium on GIS/Spatial Analyses in fishery and aquatic sciences	Symposium highlight developments, applications, improvements, techniques of GIS/Spatial analyses in Fishery and Aquatic Sciences
EGU	EGU provides a forum for geoscientists
Oceanology International	Marine technology exhibition with associated international conference
AGU Ocean Sciences Meeting	Biennial international ocean science conference

III. IMPLEMENTATION: DISSEMINATION CAMPAIGNS

Communication is yielding to dissemination with the maturing of the project. Overall, the campaigns will strive to predominantly demonstrate and popularise the opportunities NAUTILOS results bring to all project stakeholders, including but not limited to: Researchers, Industry, Society and Policy makers, which will consequently expand the impact of the project on potential uptake of project's key outputs for exploitation and development of interdisciplinary interactions.

The launching of the dissemination campaigns is aligned with the achievement of major milestones of the project and all partners are cooperatively involved in their advertising and execution.

1. OCEAN LITERACY AND PUBLIC ENGAGEMENT CAMPAIGNS

The Ocean literacy campaigns promote innovative methods of engagement across society by piloting state of the art communication tools and digital technology to enhance understanding of ocean science research and create a more 'Ocean Literate' public. It will seek to engage, educate, inform and inspire a range of audiences.

Over the second half of the project, screening of all project's outcomes will be conducted and data will be promoted to the relevant target audiences in sync with the Key Message identified earlier.

- **Target groups:** Citizen scientists, activists, volunteers from marine-related NGOs, primary and high school students, and public at large.
- **Main content conveyed:** Project outcomes and how they benefit our ocean and improve our lives
- **Channels:** NAUTILOS partners websites, NAUTILOS Partners Social Media Channels, NAUTILOS social media, NAUTILOS website, Posters, Flyers, Magazine Advertorials, Events (workshops, boat trips).

2. CITIZEN SCIENCE CAMPAIGNS

The Citizen Science campaigns are the ones transferring knowledge, raising awareness and encouraging participation of the general public in simple and user-friendly scientific activities related to the specific outcomes of the project. The campaigns organised within WP10 will be mainly focused on the technological outputs of the project and will promote the utilisation of novel cost-effective sensors and samplers (WP3, WP4) measuring and recording different physical and chemical parameters in the marine environment (e.g. temperature, salinity, chlorophyll). Citizen Science campaigns will be assisted by the established network of observatories, developed with the participation of diving associations and leisure diving centres which will be provided with the necessary equipment for marine data collection.

An additional campaign will include crowd-sourcing for visual marine image annotations using underwater photographs from subtidal, shelf-sea and deep-sea areas. These images will be annotated in order to visually classify the seabed habitat and to detect the coverage of larger and more easily recognizable fauna present (e.g. sponges, corals and other major seafloor organism types) and will note down macroplastics when these will be present in the photos and estimate their quantity. Available images will be taken from partner's repositories (Task 10.4). The Automatic Image Analysis algorithms (T8.5) will be also possibly used to integrate feedback to and from the Citizen Scientists e.g., through an automated detection with subsequent crowd-sourced annotation.

Citizen Science Campaigns are actively promoted and supported by WP10 through publishing preliminary information about upcoming events on Nautilus social media channels as well as website, with additional information regarding participants, location and objectives.

2.1. TWO CAPACITY BUILDING LEARNING LABS CAMPAIGNS

The Capacity Building Learning Labs are activities within WP12, targeting early career scientists and two such events are planned to be conducted during the second half of the project. The 1st one will be organised in Year 3 in Greece and the 2nd one in Year 4 in Norway.

These are attractive activities that will again be marketed through social media flyers, website announcements, newsletter promotion. Activities allowing, they could be live streamed on social media, Facebook in particular. Upon campaigns' conclusion, all materials and video footage are made accessible on the website to keep them live long after they have ended, thus increasing their reach beyond the physically present audience.

3. POLICY STAKEHOLDER ENGAGEMENT CAMPAIGNS

These campaigns are NAUTILOS' main vehicle for representing its interests to decision makers including National bodies, EC, Parliaments, MS officials, UN bodies, HELCOM and OSPAR commissions. Within the framework of its participation in hearings, groups of experts, or meetings concerning MSFD, ocean and climate and research.

- **Target groups:** National, Regional, European and International Policy and Decision makers.
- **Main content conveyed:** Project outcomes and interests
- **Channels:** 2 policy briefs, 1 Round Table in Brussels.

The NAUTILOS project was presented at the EMODNET and EuroGOOS for the past 18 months and for the remaining duration of the project a poster presentation by CNR at EMSEA is envisaged.

The Round Table is planned as a workshop conducted jointly with TechOcean, EurOcean, NAUTILOS Policy Officer and other recommended by participants from relevant EU policy bodies. The expected outcome of the round table is to publish a joint policy brief as a recommendation for sustainable ocean observation and management under the lead of EurOcean and NAUTILOS project. Two more policy briefs are foreseen to be presented to the European Commission in M36 and M48.

4. SYNERGIES BUILDING CAMPAIGNS

Since its very start NAUTILOS has established collaborations and expanded its network with current and past projects, initiatives, networks and relevant stakeholders, in order to magnify the impact and build capacity within the European Strategy for Plastics in a Circular Economy. For the coming months NAUTILOS will keep the momentum and continue to seek cooperation with the exhaustive list of initiatives itemized in D10.1.

Types of events: round tables to share experience and discuss common views regarding encountered challenges, best practices, ways ahead.

The communication and exchanges with TechOcean and EuroSea are going to be reinvigorated to organise another round of subject-based discussions in the coming

months with the two project representatives and seek opportunities for cross-dissemination and cross-communication endeavours.

EP, with the invaluable support of EurOcean, further analyses current and past projects' scopes and objectives with the potential for establishing more contacts with the respective project's coordinator to implement possible joint activities, some of which might be cross-dissemination, joint participation as speakers at events, co-organisation of events, cross-project demonstrations, etc.

IV. MONITORING AND EVALUATION

Dissemination and communication monitoring is vital since the impact of those activities contribute to the successful implementation of the project. It is important that this evaluation is continuously applied so that the impact of the dissemination and communication activities is effectively assessed and their good quality and adequacy is maintained.

KEY PERFORMANCE INDICATORS AND IMPACT-TRACKING

The KPIs are updated to reflect the remaining lifespan of NAUTILOS, as follows:

Related to strategic objectives:

- Number of citizen science campaigns planned - 2
- Policy-related initiatives – 4
- Number of collaborations within the timeframe of the project > 25

Related to NAUTILOS' impact:

- IMP13.1 Scientific Papers → at least 5
- IMP13.2 Conferences and exhibitions → Number of papers/ presentations/ posters > 10, Desired number of events' attendees > 25 per event
- IMP13.3 Workshops → Number of workshops - 5, Number of attendees > 25
- IMP13.4 Video tutorials and video lessons → Number of tutorials - at least 3; number of followers > 100
- IMP13.5 Open data access → Number of connected infrastructures, Number of data downloads
- IMP13.6 Web portal → Instead of Number of hits (tracked by analytics tools) > 2000 we will start tracking with priority bounce rate - less than 65%.
- IMP13.7 Social media campaign → Number of followers > 500, Number of retweets/shares/likes >100 - Engagement Rate is added

The partners of the consortium provide information about their communication and dissemination activities (type of event, number and type of stakeholders reached, articles published, flyers distributed, etc.) in the newly introduced dissemination tracker, every six months. The information gathered via the dissemination tracker is

added to the information in the internal project report done by the WP leaders every six months.

1. MONITORING THE JOINT DISSEMINATION ACTIVITIES

Partners report every 6 months the communication and dissemination activities through the dissemination tracker and attach it to the Internal Progress Report template. It is filled in every 6 months by each WP leader and sent to the project coordinator, and the tracker to WP10. Additionally, all partners should save evidence of the activities conducted.

The advantage of the dissemination tracker is that in due time partners will be able to see what activities have had the largest impact on the stakeholders (both in quantitative and qualitative terms) and to adjust communication actions if necessary.

Based on the reporting documents received from the partners, EurOcean provides recommendations for the future dissemination and communication activities.

2. MONITORING OF PARTICIPATION IN RELEVANT EVENTS

Examples of impact monitoring are:

- o number of participants in the network of observatories,
- o log in accounts in the citizen science interface (platform),
- o number of thematic maps/layers released,
- o number of photos annotated by citizen scientists,
- o number of video viewings,
- o photos taken from events,
- o registration sheets and
- o number of presentations.

3. WEBSITE AND SOCIAL MEDIA ANALYTICS

NAUTILOS analyses user behaviour trends and statistics on its digital communication channels in order to assess the impact of each performed activity and adjusts as necessary to improve performance.

The project monitors **Google Analytics** for the website as well as the **Insights tools** for social media. For the remaining duration of the projects, the website metrics that will be closely examined are as follows:

- o Unique users count visiting the website in combination with average visit time and bounce rate
- o Top landing pages
- o Language and geographical dimension of visitors
- o Average page views per visit
- o Sources visitors come from – organic search, referrals, social media, email.

As far as social media is concerned, the project will be less interested in number of followers and likes but rather in engagement rate and type of engagement – shares, comments, saves, recommendations, reviews.

V. EC COMMUNICATION REQUIREMENTS

The project and all partners continue to acknowledge EU funding and display the EU emblem in all public communication material.

VI. MANAGEMENT

1. ROLES AND RESPONSIBILITIES

WP10 leader, EurOcean, takes responsibility for the steering and implementation of the updated Communication and Dissemination Plan, supported by EP as co-leader and EP and HCMR as task leaders.

All partners are frequently reminded about their important role for the successful communication and dissemination by encouraging them to provide input, produce publications for popular science magazines and the website, produce content for social media channels, and promote NAUTILOS activities and results during their participation in scientific conferences and synergy events.

Specific roles remain unchanged as to their definition in D10.1.

2. SCHEDULE AND DELIVERABLES

2.1. SCHEDULE

The current updated Communication and Dissemination Plan focuses on activities covering the second half of 2022 onward per Figure 11.

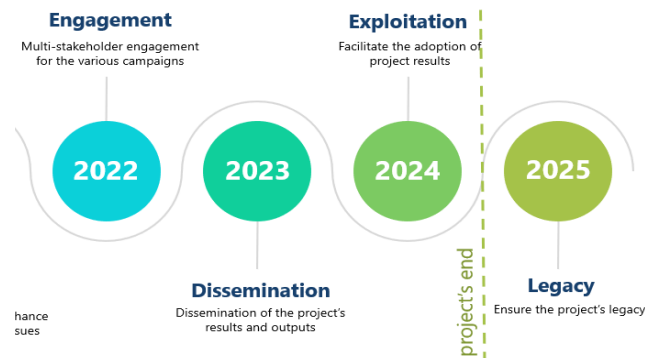


Figure 2 - NAUTILOS Outreach, Communication, Dissemination & Exploitation Waves

2.2. DELIVERABLES

All public deliverables are available to the public through the project's website and will continue to be accessible long after the project's completion.

3. INTELLECTUAL PROPERTY

Dissemination of project results as well as open access to scientific publications and research data is governed by the procedure described in the Grant Agreement.

The dissemination of project's results should not entail intellectual property infringement to NAUTILOS partners. To ensure this, all partners are notified about the content of each dissemination material or activity related to their operation. If necessary, partners will have the possibility to decline dissemination of their own know-how.

4. INTERNAL COMMUNICATION

The established internal communication rules for NAUTILOS have proved to be efficient and ensure unimpeded and well-coordinated exchange among all partners. Therefore, no alterations to the plan are made to this end. For detailed information regarding the frequency and communication tools such as email, web conferencing and shared working space as well as each partner's responsibilities, refer to the Outreach, Communication and Dissemination Strategy (D10.1).

5. RESPONSE TO COVID-19

NAUTILOS closely monitors the situation with COVID-19 and strictly abides by national and European regulations while taking all necessary measures to ensure the health and safety of all participants involved during outreach, communication & dissemination activities.

Future restrictions on physical events are mitigated through adaptation to transform them to virtual events or webinars. Partners jointly decide on which approach to take when required.

VII. CONCLUSIONS

Building on the strong foundation the first Communication and Dissemination Strategy of NAUTILOS has laid in terms of promoting the project and its mission, this updated Plan reinforces dissemination activities to highlight the results and achievements of the project during its most productive phase. It shifts focus towards reaching the wider audience across the whole spectrum of stakeholders through continuing to actively utilise digital communication channels, launching demonstrations of the results at specifically designated sites and putting special emphasis on conducting citizen science campaigns. It also changes the nature of communication to be more interactive, bidirectional and more user-engaged. Its success is dependent upon the collective participation and contribution of all partners. Lastly, the Plan supports NAUTILOS prominent reputation and strong drive for innovation in marine systems observation as well as greater public engagement in protecting our ocean at all levels.

APPENDIX 1: REFERENCES AND RELATED DOCUMENTS

Deliverable 10.8 has been developed in accordance with the provision outlined within the following related documents:

- NAUTILOS Grant Agreement,
- NAUTILOS Consortium Agreement Nr. 101000825.

ID	Reference or Related Document	Source or Link/Location
1	NAUTILOS Grant Agreement	NAUTILOS ownCloud
2	NAUTILOS Consortium Agreement Nr. 101000825.	NAUTILOS ownCloud
3	D10.1 Outreach, Communication and Dissemination Strategy	10.5281/zenodo.7163695