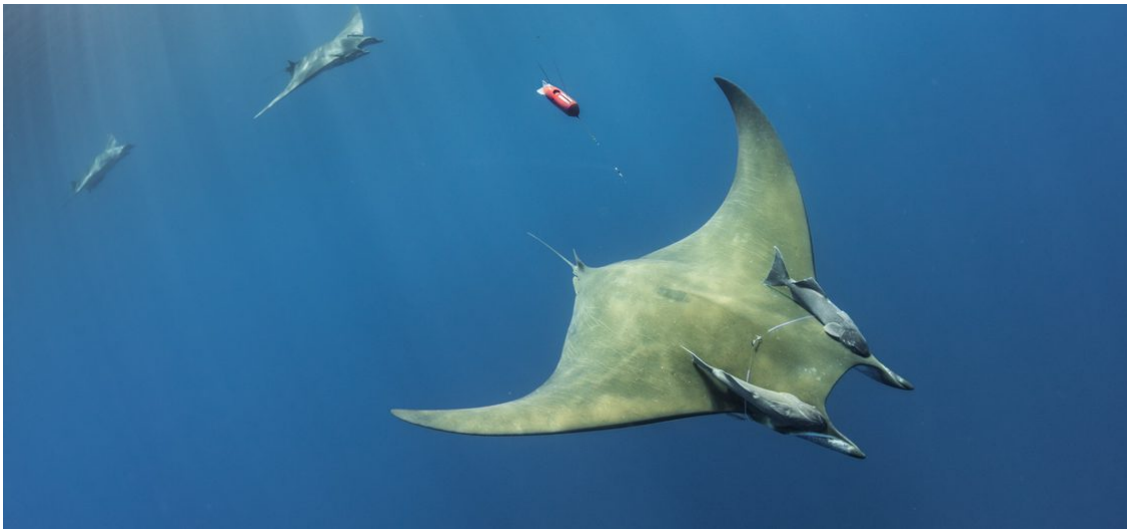


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December 2021, Issue 2

NAUTILOS Newsletter

New approach to underwater technologies for innovative, low-cost ocean observation



NAUTILOS First year – a word by the Coordinator, Gabriele Pieri (CNR)

This first year in the life of the NAUTILOS project just finished with many notable and valuable outcomes. The first version of the project's Data Management Plan has been issued and will be regularly updated; the Project website is online, and the document sharing resources (NAUTILOS OwnCloud for finalized document and NAUTILOS TeamDrive for working/running documents). From a more administrative point of view, the project envisaged 21 deliverables in this first year, and all were submitted for approval by the EU. Two Milestones occurred this year: "MS1-Outreach, Communication and Dissemination Strategy" and "MS2-Specifications completed", and both have been achieved successfully. Many events have already been attended or organized by NAUTILOS members for both the public and the scientific community concerning dissemination and communication actions. NAUTILOS has been presented at various events (e.g., EuroGOOS, EMODnetConf., EC Ocean ObsEvent, All-Atlantic Data&PolicyForum ...).

including several projects and initiatives, such as the ones with other EU Projects: TechOceanS (twin Project on the same H2020 call), AtlantEco, EuroSea, i-Atlantic; moreover, NAUTILUS participates in the Horizon Results Booster initiative, participation that resulted in the production of a joint policy brief by the group of projects involved, under the name of “Nourishing Blue Economy and Sharing Ocean Knowledge”; we were also invited to present in sessions dedicated to “Synergies with Sister Projects” in the respective Consortium Meetings of other projects. We established our session of that type in the NAUTILUS Consortium Meeting for the first year. Lastly, another significant achievement was the establishment of the Project External Advisory Board (EAB), with the first of the yearly EAB meeting held in September.

Looking forward to the next period, all NAUTILUS partners are working towards the first significant landmark. The Project Review is foreseen at Month 18 (March 2022), closing the first reporting period. The work done so far seems to be of high quality and without significant problems. The goal of all partners will be to stay on this path to minimize delays and reduce any risks and issues.

Recap of Work Package 2

The first work package within the NAUTILUS project was successfully finalized in June 2021. Work package 2 concentrated on the political and societal drivers of ocean observing needs and defined technical requirements for the sensors and platforms developed and used within the whole project.

The work package was divided into subtasks, concentrating on different parts of the topic.

Task 2.1 focused on the scope for technological development and refinement to advance the current state-of-the-art in global to local marine environmental monitoring programs.

We reviewed the main drivers on global, to national levels, the infrastructures operating in a long-term scheme in Europe, dealing with marine science as well as ongoing global and European marine data initiatives and projects.

The gaps in observation were analysed as well as the potential trends in technological development and marine environmental monitoring practices to identify how these will help to fill the existing gaps in relation to monitoring needs and how NAUTILUS can contribute to environmental monitoring and to study the processes that underlie the evolution of the ocean and its ecosystems.

Task 2.2 and 2.3 concentrated on the technical requirements for sensor and sampler developed within the NAUTILUS project as well as platform-independent sensor integration, focusing on compatibility, modularity and durability.

developed under different topics, such as form factor and electrical interface, power and communication, anti-biofouling measures, cost and scalability and metrological considerations.

An interface control document was provided to ease the integration of the instruments by taking into account the different specifications of the various existing platforms.

The technical requirements and the interface control document were developed with the help of all partners operating marine observation platforms and/or developing sensors and samplers within the NAUTILOS Project.

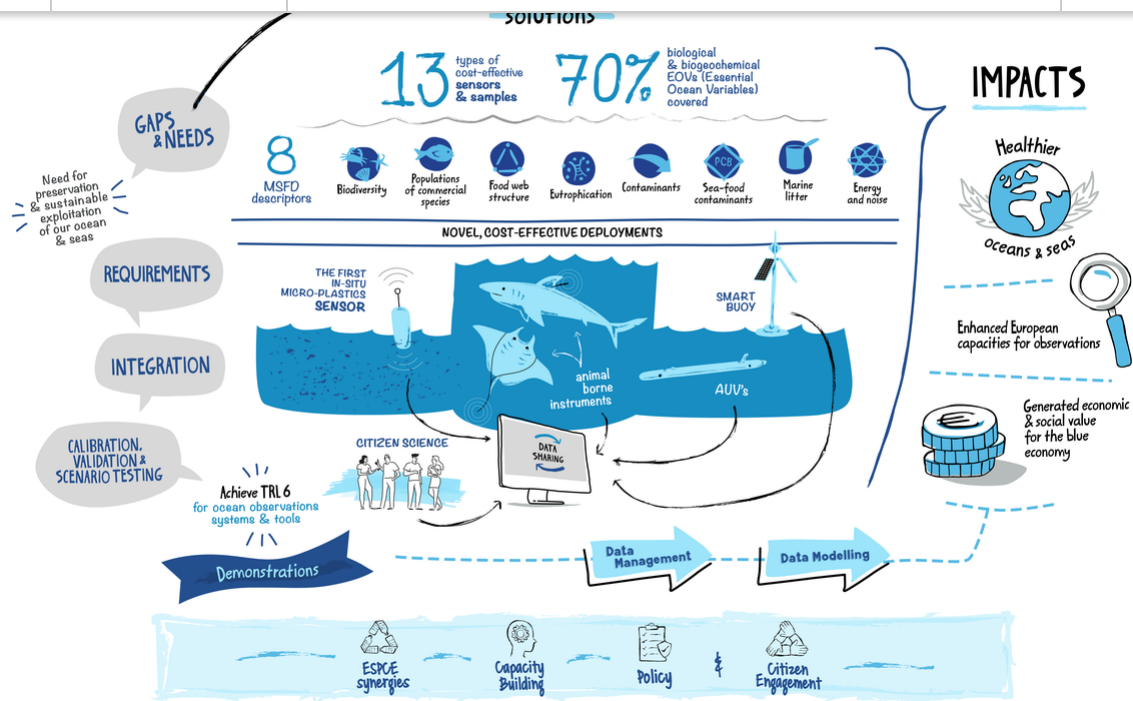
Communication & Synergies

With the project now being in its 14-month NAUTILOS partners are constantly working towards specific objectives and joint initiatives such as data sharing, common demonstrations, as well as establishing a floor for sharing ideas and solutions.

Since its very beginning NAUTILOS initiated synergies with other projects and ongoing initiatives. A first contact was established with our “twin-project” TechOceanS (www.techoceans.eu) led by the National Oceanography Centre of Southampton in the UK, which started in parallel to NAUTILOS and has a similar focus. Four round-table thematic meetings were organized for both projects with the respective work package leaders participating in them. Topics and steps for organizing further more detailed discussions were outlined and the next meetings would be organized at the beginning of 2022.

Similar meetings were also organized between NAUTILOS and EuroSea project representatives, (www.eurosea.eu) led by GEOMAR Helmholtz Centre for Ocean Research in Kiel – a large-scale project focusing on the improvement and integration of Ocean observations in Europe. Here next steps again were outlined and following meetings would be organized in 2022.

Concept of the project



NAUTILOS project in SeaFuture convention



From 28 th September to 1 st October EDGELAB attended the SeaFuture convention for maritime and dual use technologies. This event took place in La Spezia, in Italy and it is unique in the Mediterranean basin because implemented inside a Naval Base.

SeaFuture is the hub on the Mediterranean Sea for the Blue Economy.

Edgelab had the opportunity to show the AUV on which the sensors developed by various partners in the NAUTILOS project will be integrated.

NAUTILOS has the fundamental aim 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 democratize the monitoring of the marine environment to both traditional and non-traditional data users.

SeaFuture brings together a large number of companies united by a single goal: developing technologies to protect and save the sea as a safe and secure sea ecosystem grant supplying of raw materials, energy and blue growth.

NAUTILOS joins sail and explore association expedition



The Sail & Explore Association has established a collaboration with Nautilus for organising an expedition to explore the occurrence and impact of microplastics in the Aegean Sea.

In the framework of the WP12 Synergies of the NAUTILOS project, the Institute of Marine Biology, Biotechnology and Aquaculture (IMBBC) of the Hellenic Centre for Marine Research (HCMR) collaborated with the Sail and Explore Association in order to study plastic and micro-plastic pollution in the Aegean Sea, Greece. Two young marine

expedition was to investigate plastic pollution in this area in relation with meteorological data and sea currents. The duration of the sailing expedition was 14 days during which the team implemented samplings at ten stations around nine islands of the Cyclades. Microplastics were collected using two Manta Trawl nets of 300µm and 150µm diameter.

The two IMBBC-HCMR scientists participated in complementary dissemination activities giving lectures on board to the non-scientific participants on the following subjects: 1) basics of marine ecology, 2) aims of the NAUTILOS project, 3) marine cave ecosystems and 4) alien species in artificial substrates (ports and marinas). In addition, they participated in beach cleanings in Paros Island in collaboration with a local NGO (Common Seas). Upon their return, they also presented the outcome of this expedition in HCMR researchers, young scientists and students.

Policy brief ‘nourishing blue economy and sharing ocean knowledge’



Nautilus is one of the ten innovative EU projects committed to build ocean observation systems that provide input for evidence-based management of the ocean and the Blue Economy. These projects have joined forces in the strong cluster ‘Nourishing Blue Economy and Sharing Ocean Knowledge’. Under the lead of the EuroSea project, the group published a joint policy brief listing recommendations for sustainable ocean observation and management. The cooperation is supported by the EU Horizon Results Booster and enables the group to achieve a higher societal impact. The policy brief will be presented to the European Commission on 15 October 2021.

The ocean covers 70% of the Earth’s surface and provides us with a diverse set of ecosystem services that we cannot live without or that significantly improve

with a large range of exploitable resources (from inorganic resources such as sand and minerals to biotic resources such as seafood), allows us to generate renewable energy, is an important pathway for world transport, an important source of income for tourism, etc.

The Organisation for Economic Cooperation and Development (OECD) evaluates the Blue Economy to currently represent 2.5% of the world economic value of goods and services produced, with the potential to further double in size by 2030 (seabed mining, shipping, fishing, tourism, renewable energy systems and aquaculture will intensify). However, the overall consequences of the intensification of human activities on marine ecosystems and their services (such as ocean warming, acidification, deoxygenation, sea level rise, changing distribution and abundance of fish etc.) are still poorly quantified. In addition, on larger geographic and temporal scales, marine data currently appear fragmented, are inhomogeneous, contain data gaps and are difficult to access. This limits our capacity to understand the ocean variability and sustainably manage the ocean and its resources.

Joining forces in Europe

Consequently, there is a need to develop a framework for more in-depth understanding of marine ecosystems, that links reliable, timely and fit-for-purpose ocean observations to the design and implementation of evidence-based decisions on the management of the ocean. To adequately serve governments, societies, the sustainable Blue Economy and citizens, ocean data need to be collected and delivered in line with the Value Chain of Ocean Information: 1) identification of required data; 2) deployment and maintenance of instruments that collect the data; 3) delivery of data and derived information products; and 4) impact assessment of services to end users.

To provide input to the possible future establishment of such a framework, ten innovative EU projects to build user-focused, interdisciplinary, responsive and sustained ocean information systems and increase the sustainability of the Blue Economy, joined forces in a strong cluster to better address key global marine challenges. Under the lead of the EuroSea project, the group translated its common concerns to recommendations and listed these in the joint policy brief ‘Nourishing Blue Economy and Sharing Ocean Knowledge. Ocean Information for Sustainable Management.’. Following up on these recommendations will strengthen the entire Value Chain of Ocean Information and ensure sound sustainable ocean management. In this way, the 10 projects jointly strive to achieve goals set out in the EU Green Deal, the Paris Agreement (United Nations Framework Convention on Climate Change) and the United Nations 2021–2030 Decade of Ocean Science for Sustainable Ocean Development.



NAUTILOS

NAUTILOS wishes you a **bright** and **joyful**
festive season & **Happy New Year!**

www.nautilus-h2020.eu



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