

ASSEMBLE



ASSOCIATION OF EUROPEAN MARINE BIOLOGICAL LABORATORIES EXPANDED

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Abstract

ASSEMBLE Plus must be able to attract a diverse user base from academia, industry and policy, so as build strong capacity in value creation and maximize societal impact. This deliverable describes participation of the different types of stakeholders and lessons learned.

Assemble Plus planned to address the challenge through consultation with stakeholders. For this, two Assemble Plus conferences were planned together with meetings with stakeholders to discuss how to reach users from the different sectors. This was achieved through:

- 1) The Assemble Plus conference carried out in January 2021 with participation mainly of academic users and dedicated to showcase transnational access (users and providers);
- 2) A Knowledge and Technology Gap Forum linked to the Assemble Plus conference that debated the role of Research Institutes (RIs) for policy and industry and how to improve industry participation;
- 3) A questionnaire directed to industry to explore their motivation.

Assemble Plus is quite popular with academics as can be inferred by the high number of participants in transnational access and this was confirmed by the high level of participation in the Assemble Plus conference.

Both policy makers and businesses value research infrastructures and will resort to EMBRC / Assemble Plus provided information about services and prices are clear. Thus, a well-defined portfolio of services and communication strategy delivered to their desktop are essential to attract industry to Assemble Plus/ EMBRC. Since personal contacts are important for businesses, communication targeting innovation clusters may be an effective way to reach potential business users. Joint co-innovation projects and contract research seem to be preferred forms of RI use by business.



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1. Introduction

Horizon 2020-funded ASSEMBLE Plus (www.assembleplus.eu) is a four-year Integrating Activities project performed by a consortium of 24 partner organisations from 16 countries, operating under the umbrella of the European Marine Biological Resource Centre (EMBRC-ERIC). ASSEMBLE Plus integrates over 30 marine biological stations and installations from various regions of the world's oceans and seas, offering scientists from academia, industry and policy with the services of these marine stations.

The project's expected impacts include "development of a new generation of researchers who are able to optimally exploit essential tools for their research", "offer high quality services to users from academia and the private sector" and "reinforced partnership of research organisations with industry". Furthermore, the philosophy of EMBRC-ERIC is to "strengthen the connections between science, policy and industry".

To be able to achieve these impacts and follow the model of EMBRC-ERIC, ASSEMBLE Plus must build strong capacity in value creation, impact and stakeholder engagement within its research infrastructures. These concepts include but are not limited to Science in Society; Responsible Research and Innovation; Knowledge Transfer; Outreach and Stakeholder Engagement.

The purpose of this deliverable is to present the results of activities to facilitate recruitment of new users and to assess how to achieve higher participation from policy makers and industry to maximize impact.



2. Objective

ASSEMBLE Plus considers that strengthening the positioning of European marine biological stations as hot-spots for excellent marine science requires participation of the different communities and stakeholders. In particular, to take full advantage of the resources and facilities available at Assemble Plus and EMBRC-ERIC facilities to promote innovation, industry participation is essential. However, effective communication with industry, recognition of industry needs and increase industry's access is a challenge that needs to be addressed.

Assemble Plus planned to address the challenge through consultation with stakeholders from academia, industry and policy. For this, two Assemble Plus conferences were planned together with meetings with stakeholders (knowledge and technology gap forum). The pandemic outbreak delayed and effectively limited some of the activities. However, by resorting to online activities it was still possible to obtain valuable information from 3 activities:

- 4) Assemble Plus conference carried out in January 2021 with participation mainly of academic users and dedicated to show case transnational access (users and providers);
- 5) A Knowledge and Technology Gap Forum linked to the Assemble Plus conference that debated the role of RIs for industry and how to improve industry participation
- 6) A questionnaire directed to industry to explore their motivation.

A summary of the three activities is described below together with the main conclusions.



3. Assemble Plus Conference

The first Assemble Plus Conference was planned for the first trimester of 2020 and as a result of the pandemic outbreak it was delayed and finally moved online having taken place between 18th January and 29th February 2021, over a period of 2 weeks.

Assemble Plus Conference 2021 - Marine biological research at the frontier had as objective to showcase recent developments in marine biology and ecology; state-of-the-art technologies available at marine stations and institutes; how to access biological resources and marine research infrastructure; how to improve services provided by marine stations; and the impact of the services provided on industry and society. The conference's programme and partial recordings are available at <https://assemble2021.b2match.io/> and on [EMBRC's YouTube channel](#).

The conference programme (Figure 1) comprised 6 keynote lectures (45 min) selected among leaders in their field, 34 invited lectures (30 min) selected among Assemble/Assemble Plus users, 13 technology demonstrations to show case the offer by Assemble Plus partners, a Knowledge and Technology Gap Forum round table, a brokerage event on Cryopreservation and an Access and Benefit Sharing workshop. The conference was spread over a period of 2 weeks to avoid very long and tiring sessions.

Assemble Conference	Time is CET									
Time (Lisbon)	18/jan Monday	19/jan Tuesday	20/jan Wednesday	21/jan Thursday	22/jan Friday	25/jan Monday	26/jan Tuesday	27/jan Wednesday	28/jan Thursday	29/jan Friday
9:00-9:30										
9:30-10:00										
10:00-10:30	Rudolf Amann (Plenary)	Ester Serrão (Plenary)			Colin Brownlee (Plenary)	Chris Bowler (Plenary)		Maria Ina Arnone (Plenary)	Vincent Laudet (Plenary)	
10:30-11:00										
11:00-11:30										
11:30-12:00	EMBRC France	Knowledge and Technology Gap Forum (Policy)	Embrc Israel	Knowledge and Technology Gap Forum (Industry)	NIB Slovenia ECIMAT	IOPAS Poland AWI	VLIZ SOI Plazentia	MBA CIMAR EMBRC Italy	Brokerage Cryopreservation	ABS workshop
12:00-12:30	EMBRC Portugal									
12:30-13:00										
13:00-13:30										
13:30-14:00	Andrea Waeschenbach	Belen Gonzalez G	Promoting access to RIS	Karl Attard	Federica Montesano	Pedro Martinez	Jorune Sak		Roberta Johnson	Daniel van Denderen
14:00-14:30	Martina Copari	Carl Carrano		Imke Lang	Aschwin Engelen	Tiago Repolho	Peter Croo		Carmen de los Sa	Valeria Di Dato
14:30-15:00	Danilo Calliari	José M. Martín Du		Sam Dupont	Gidon Winters	Emanuela Dattolo	Jan Pawlow		Tim Wollesen	Kenny Bogaert
15:00-15:30	James Waggitt	Jan Rubens			Astrid Holzer	Mariarita Caraccio	Chiara Con			Inga Martinek
15:30-16:00		Eleni Galliopolou								Pedro Vieira
16:00-16:30		Gretchen Goodbo								Daniel Wangpraseurt
		Tech demonstrations								
		short lectures								
		Plenary lectures								

Figure 1 – Outline of Assemble Plus Conference 2021 programme.

There was a total of 574 registered participants from 50 countries and 82.5% from the European Union. Participation from industry and policy making was very low, respectively with 1.7% and 2.8%.

The attendance of sessions varied from ca 30 to around 80.



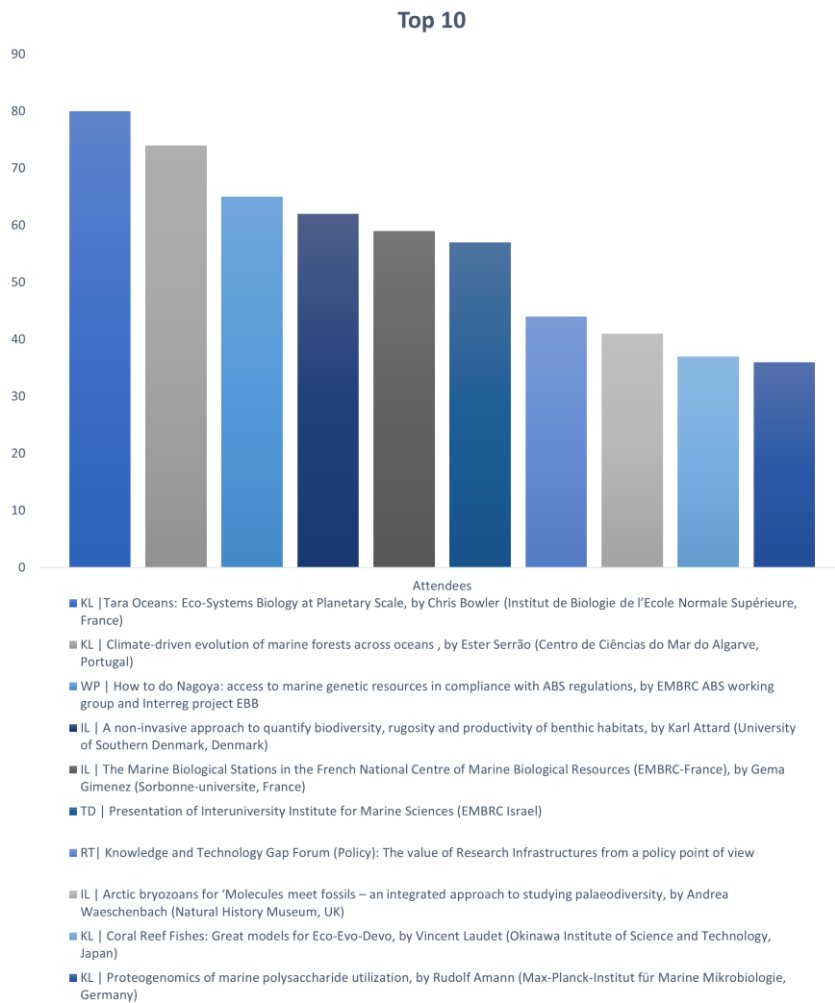


Figure 2 – The 10 most participated sessions in the Assemble Plus conference 2021. The full programme is in annex 1.

Overall, the Assemble Plus online conference was highly successful as it achieved its main objective of reaching a large number of attendees, including many potential new users from different parts of the world, something that would not be expected in a presential conference.

4. Knowledge and technology gap forum

4.1 Contributions from Policy

Representatives from diverse policy institutions were invited to discuss specific questions related to the relevance, impact, and sustainability of RIs.

Sheila Heymans, Executive Director of Marine Board, a pan-European organization bridging the gap between science and policy.

Giuseppe Magnifico, vice-president of EurOcean, an organization dedicated to promote information exchange, cooperation and collaboration among its members, the ocean community and society.



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Claire Jolly, Head of Innovation Policies for Space and Oceans of the Organization for Economic Co-Operation and Development (OECD), which provides evidence-based information to improve the research and innovation policy mix for sustainable ocean management.

Summary of main points of discussion:

Importance of RIs

- RIs are important for where we go forward where we want to go into the U.N. Ocean Decade.
- High quality information about RIs is essential for ocean science and technology development. It is a basis for the identification of capabilities, gaps and opportunities, decision-making on development and funding priorities, education, and training.
- RIs are essential to produce new knowledge innovation to help understand environmental, societal, and economical challenges. They provide key resources for the implementation of European policies (Marine Strategy Framework directive, Common fisheries policy, EU biodiversity strategy for 2030, European Green Deal).
- However, there are still open questions on how to channel funds through RIs nationally and internationally to make sure that they indeed deliver.

Optimising the Use and Operation of RIs

- Portfolio management: there are issues of RI competition, long-term planning, but most importantly of budget availability for the demand. In particular, for marine biology there is stronger and stronger demand during the UN decade for Ocean science. Technical and scientific advances are very exciting, but also require much more commitment from the RIs.
- The national versus international investments: since European RIs have been mostly funded at national level and then European programmes are supporting more the RIs, the issue of long-term duration of some projects comes to the fore. We're seeing these particularly on Ocean observations (e.g. EOOS). Some of the RIs are institutes that need to be funded over the long run.
- User-base optimization: Some of the scientists that are working with the RIs are typical users, but do we know them well? Do they also know well how to access facilities, resources and services? Two options for a strategic orientation. The first has to do with monitoring the user base. One option is collection of user access information during user meetings (also away of collecting data on gender). Depending on the communities, you can see different types of users, different types of scientific communities joining the meetings and that shows more and more interdisciplinary. Another option is regular ad-hoc surveys on the facilities or resources used that may include accessing portal, but also including very specific surveys. Regular ad-hoc surveys are very useful to track users and get their feedback. Often RIs are sitting on data they are not using for the particular purpose of trying to monitor user base. Typically, data that is collected via training, annual reporting processes, extraction from proposals.
- Research and innovation networks for the ocean economy: clusters related to the ocean economy are linking research institutes with several players creating innovation networks - aquaculture, robotics, Ocean energy. The multiplication of these innovation hubs is booming in Canada and in the United States in particular. When we talk about research and innovation networks, there is a network orchestrator, typically a public research infrastructure, that



contributes to build the network, design it with membership structure positioning, but also managing knowledge mobility, managing intellectual property and the stability of the network. RIs can have a key role improving cross sector synergies, accessing various research facilities (e.g., Assemble Plus). But also developing and bringing to market brand new products for industry. Although, it may seem bit far away from some pure fundamental science there is a need to be part of some of these networks to make sure that the value proposition of the science is well linked to some of these other activities that are going on. Ocean innovation ecosystems tend to be regionally driven and marine biological stations (Assemble Plus/EMBRC) are well positioned to facilitate cooperation between regional innovation ecosystems. Regional competition can be converted into cooperation through financial stimulus from central governments/European Commission. Building on your regular regional expertise and building the links at regional level with the regional economy, but always need to have this link with the national level so as not to be in direct competition for national funds.

- Cooperation among RIs: EurOcean is considering the creation of a European Community of interest on marine research infrastructures information end users (this could be a central point for infrastructure access). The European Ocean Observing System (EOOS) operational committee considers information exchange (learning and sharing) across nations, sectors (monitoring, research, industry) and RIs, a priority to identify commonalities and opportunities to improve the efficiency of ocean observing activities through cooperation.
- Dialogue among data providers: marine stations that sit on a huge amount of data and it's not clear if that data is available for everybody to use. Data is a commodity that can be used to make people aware how important RIs are. Making data available shows the value of the network, and it shows the value of the research station. Assemble Plus has a work package dedicated to making data available and to encourage the users of the Assemble Plus transnational access programme to submit their data to Open Access platforms. This has been an incredibly challenging amount of work to do first of all with the FAIRfication of data. A lot of the data has been collected a long time ago and making it FAIR and therefore available is hugely challenging. However, resources are needed to make data available (to make it FAIR). Another bottleneck is lack of awareness not just in young scientists but throughout the generations. FAIR principles need to be taught at university level, explaining to people the value of FAIR and how we generate FAIR data. The RIs can play a role in raising awareness of this.
- Biological observations: Biological observations seem to be poorly integrated in monitoring efforts in Europe. Biological observations are expensive: with the need to use research vessels, boats or ships, mobile units, and a worrying aspect of this is the long-term sustainability of these tools. There is a recent publication from Copernicus and the European Environmental Agency which indicate that only 28% of systems involved in Ocean observation have a clear long-term funding to ensure their sustainability. So, one component is the improved exchange of information not to lose lessons learned. Should try to collect all the information and suggestions, try to speak with a unified voice and try to advocate for sustained funding.
- How to make RIs more attractive to the user community: RIs need to improve visibility and attractiveness, as there is still available capacity but is their portfolio too broad? Public research institutes/RIs want to make sure that they do reach larger group of scientists, making sure to increase the number of users. In some cases, they have limited capacity and want to pick and choose the users. But more often they want to enlarge their user base. One way to attract private sector users would be to promote multi-, inter- and transdisciplinary



collaborations, e.g., research innovation networks. Taking a theme as an example (Aquaculture, Robotics Ocean energy), a portfolio should be built around the theme. More and more actors are interested in aquaculture, in ocean energy, and that is where there is the need to be able to differentiate the offer. This should be the communication campaign, the opportunity that marine biology is well recognised. Making sure to include in the message an aspect of a value proposition. It is also scientific value proposition, demonstrating again and again that indeed biology is needed to solve the climate change issues too. One cannot go without the other - loss of biodiversity is so dire that we need to make sure the marine stations are well funded in the long run. One should be making sure that high quality science is well recognised and is funded over a sustained period. But indeed, from scientists some of the elements for this initial value proposition are needed, and that's where Assemble Plus comes in.

- **RIs and Industry:** RI projects can offer opportunities for industry to work together in joint research activities. The participation in European projects can offer the possibility for European researchers and industry to work together and to move from having industry just as a supplier or as a user. To move from this back towards engagement of industry as a co-creator or co-development of innovative products.

4.2 Contributions from Industry

Representatives from small and medium-sized enterprises (SMEs) in the biological marine sector were invited to discuss specific questions related to the importance of RIs and how to ensure industry can benefit from them.

Sophia Letsiou, Laboratory Manager at APIVITA. APIVITA is an international cosmetic company that produces natural based cosmetics that are available in 35 countries around the world, and would like to present some of it as activity in research. Two international and three national patents 10 publications in scientific journals, and 20 new methods and assays that APIVITA is using in the lab.

Adrianna Ianora, Vice-president at BIOSEARCH. BIOSEARCH is spin off directed at the development of new drugs, cosmetics and nutraceuticals from marine biological sources, mainly microalgae.

Christopher Bridges, Chief Communications Officer at TunaTech GmbH. TunaTech has been established as a spin off based on a long-standing involvement in several European research projects dealing with fisheries and aquaculture, with the aim of contributing to a sustainable and eco-friendly aquaculture for the future.

Summary of main points of discussion:

How can science and RIs (institutes/marine stations) best serve industry?

- **Joint research projects:** Collaboration is important and a challenge for both sides. There is a need for industry to trust more RIs and academia in general and a good way to do so is through joint participation in research projects. An example is the Marie S. Curie RISE projects which support development of long and lasting collaborations via the exchange of researchers that can lead to eventually filing for patents. These projects offer excellent training opportunities. This type of interaction is very important because it is not only



necessary to have services and equipment, but you need people and there are a lot of scientists that have potentially good products that could be developed and brought to market, but they don't know how to go about this. If you have industries collaborating with RIs, they can probably develop these products together.

- Entrepreneurial mindset: RIs need to be more aware of industrial needs and the way to do this is to foster an entrepreneurial mindset. This can greatly contribute to the reduction of cultural divide which exists between industry and academia. It is important to identify scientists with entrepreneurial specific skills and to pull their knowledge transfer competencies. Building up the entrepreneurial mindset needs some time. But there are some steps that RIs can take. For instance, they can invite researchers from industry to give lectures in master classes. The University of Dusseldorf has an entrepreneurship chair and all Biology students have all the classical entrepreneurship tools, workshops, which they can attend free of charge. Need to start early so as not to “indoctrinate” PhD students, but to give them the tools, the soft skills they need. They need these soft skills later on when they start thinking about research projects and the commercialization of this research projects.
- Services and technology platforms: RIs can offer services, support and technology platforms which are not available to industry as a whole. RIs can offer many advantages to SMEs, that include not only lab space facilities and equipment but also expertise. RIs open up new opportunities for industrial partners that otherwise would not have access to knowledge and innovation due to prohibitive costs of equipment and high cost of qualified personnel.

Is industry willing or interested in having access to RIs (facilities, equipment, resources)?

- Knowledge and technology transfer: Industry works on two basic principles, 1) the acquisition of scientific information on a specific technology to solve a need of society, in other words, basic research and 2) to transfer this scientific information into commercially viable enterprises which generate revenue. If access to an RI will aid in bringing either of these two principles together to fruition, then industry will be interested in using the RI. Companies will look to see where they can gain this scientific knowledge - joint EU projects have been extremely good for SMEs working together with scientific institutes has worked extremely well. But one must balance this up with the fact that many of the SMEs do not have time to run scientific projects. In other words, they do not want to be a coordinator and in many cases the money provided by EC to the SMEs is not sufficiently attractive.

What are the industry expectations of RIs?

- RIs as commercial propositions: Industry treats any RI as a commercial proposition, and therefore expects a professional approach from the RI. It is very important to have a clear plan of what the company is going to pay. Companies may plan to use RIs as outsourcing of a production step or a process to save either expense, as it would be more costly to provide their own facilities or have access to equipment and technology and protocols and knowledge not available to the company. If the company has the idea themselves, they can outsource it and obviously if the outsource has a very good business plan, then basically they will then fit into the company's needs for generating that product, which can then put it onto the market. And this is a very important aspect of the RI, what it can provide.
- Clear communication: Companies should not need to search for hidden information. The services on offer must be very clearly presented to the industry, what they are really being offered and for what price. One of the problems is that most SMEs and larger industries are



not aware of RIs and what they can offer. The information present in websites has to be made much clearer. Industry wants to see information upfront and how much it is going to cost, because most of the time they are outsourcing things or parts of their research to other biotech companies. And maybe it would be more convenient for them to outsource these things to RIs if they knew what these RIs offered. Setting up a workshop and inviting these industries to see what RIs can offer and how they can be modulated according to their needs.

How can RIs contribute to companies' needs? What should the RIs approach be?

- Unique selling point: RIs can provide something unique that is not universally available - for instance access to material from the Arctic, the Antarctic or Deep Sea Environment. RIs must determine their own USP, their "unique selling point" as a strategy in the first place, and if industry knows exactly what is available in the RI or on the market, careful consideration can be made of this internally and then consulting with external experts a business plan for the RI could be developed.
- There are not only physical or material needs, but also experience and knowledge of methodologies "hands on" which are present in the RIs needed for a particular process such as generating antibodies or cell lines, etc. So industry can profit from the RIs but the RIs have to present what they can offer in a very clear manner. And there are many aspects of RIs which are available only to these RIs/Marine stations that we know, they have specific attributes which are important.

How important are the resources and technology provided by marine stations/EMBRC for industry?

- Human resources and savings on infrastructure: Savings on investment First of all, a) cost of alternative resources either in house or outsourced, and b) the lack of feasible alternatives in terms of time frame, finance and know-how. The RI may have a wealth of trained or of training potential for students. This human resource is extremely important for industry because the industry itself cannot generate scientists. They can use scientists to generate information, and from this information, then go on to develop a business study. This wealth of information can be incorporated at an early stage of joint projects with industry, thereby giving both partners a win-win situation. The RI helps to cover the costs of running infrastructures and platforms at the same time, while the commercial enterprise gathers information for their own basic use.

What schemes would facilitate industry use of RIs/EMBRC?

- A portfolio of services and resources: First, one could enable a "stock-taking" review of each RI using a template designed to recognize the assets of the RI. These assets could be divided into different divisions such as: biology, technology, logistics, workforce, etc. Then provide a pipeline or channel to reach industry who can make their requirements known. Previous experience indicates that both partners need to profit from such an interaction, either financially or academically in terms of new knowledge, training, or job generation. RIs have a lot to offer, and it is up to them to make it available and promote it to make it obvious for industry to make contacts.



- **Joint research activities:** quite often RIs are offering services and equipment, but they're not offering this unique possibility of working together with scientists from these infrastructures to eventually develop products together. Industry needs to see robust, already established methods by the RIs. They're not going to spend time waiting for amazing results, it is not going to be. The innovative idea should normally come from the industry because they have access to market demands and to marketing policies, and the RIs need to scientifically support this idea.
- **Transnational access:** It could be interesting, to have a call for an industrial partner and an RI partner to develop something together using the facilities of the RI and eventually also those from the industrial partner when available. And so, this might be an interesting way of getting the two sides to communicate. This requires that websites advertise clearly and include exactly what's available at the RI in terms of platforms because companies are outsourcing what they can't do themselves, they can outsource to RIs rather than other companies - it may cost a lot less.
- **Contract research:** For companies, the more employees they have as researchers the more the product costs. But if they can recruit the help of the RI, their workforce or their brain power, it is an excellent opportunity for them to gain something not for nothing, but obviously it will be a good collaboration. A liaison officer between industry and the RI plays a very important role and their salary will be paid back by the actual success of gaining industrial support. A liaison officer who aids people to connect is very important. Not only making people connect with services and equipment, but also with people within these RIs and can also be a chance to bring products from the RIs into the market.
- **Target innovation clusters:** Europe has many different clusters, and they map industries in their various territories and the type of activities that they do. Having access to these maps, would make it much easier to see what kind of industries could be interested in Assemble Plus/EMBRC and so that they could be contacted directly. They could then target the relevant industries by sending them brochures, inviting them to workshops, generate joint projects together etc.

5. Questionnaire to industry

A questionnaire was sent out by the Assemble Plus partnership to companies related to the marine sector in different European countries. The main purpose of the questionnaire was to assess how knowledgeable the industrial sector is of the existence of RIs, in particular EMBRC and Assemble Plus and how best can the RIs serve industry.

In total 22 companies answered to the questionnaire, representing largely the aquaculture (59%), fisheries (36.4%), marine biotechnology including bioprospecting (31.8%), tourism (18.2%) and marine transport (18.2%) sectors. Although 52% had heard of EMBRC they were not familiar with its activities, while 23.8% were familiar with EMBRC and its services and a similar percentage had never heard about it. However, 86% were familiar with the concept of RIs and 68% considered that the research and innovation services provided by EMBRC can definitively benefit the business sector, while the remaining 32% considered that perhaps it could. Of all respondents 50% knew of Assemble Plus.



To the question “What type of research and innovation services would help improve your business / industry sector?”, there is an emphasis on fundamental science but also on biofuels, industrial scale pilots for Recirculating Aquaculture Systems (RAS), digitalization, sensors, unmanned vehicles, monitoring, decarbonisation measures to implement in the port or port community, analytic services, assistance on product development.

Most respondents found constraints in accessing EMBRC services, mainly in understanding services offered (45%), the bureaucracy involved (36%), financial difficulties in paying for services (32%), with 10% finding no constraints. Suggestions to overcome the identified constraints included improved communication, simplification of access services, clear prices, and reduced bureaucracy.

As to the best way for business/industry to use EMBRC services, half the respondents (50%) considered “contract research”, i.e. marine stations are responsible for the necessary research and analysis, while 32% favoured sending staff to the marine stations so that they can directly use the experimental facilities. No respondent considered that EMBRC services would not benefit the business/industry sector.

An overwhelming majority of 90% would apply for transnational access through Assemble Plus if they considered their business would benefit. The favoured communication channels to find out about EMBRC and Assemble Plus services are e-mail or newsletter (80%) followed by social media (41%), large or small events targeting industry in general or industry sectors (41%) and to a much lower extent specialized press (23%).

To the question where to look for research and innovation services, information provided by personal contacts received the largest support (68.2%) followed by web searches (54.5%). Engaging with a tech transfer (31.8%) and a business association (27.3%) also had significant followers.

6. Conclusion

Assemble Plus is highly successful in attracting researchers from academia to carry out research projects in marine stations. This is clearly visible from the number of applications received and approved, and the outcomes of those visits are substantial in terms of publications and collaborations. This was also confirmed by the popularity of the online Assemble Plus conference 2021, with more than 500 registrations and an average of 30-80 participants attendance per session.

However, both the participation in the Assemble Plus conference and the number of transnational access projects by scientists from the policy and business sectors was extremely low. Hence this deliverable focused mostly in trying to clarify the reasons for the discrepancy.

It was very clear that both policy makers and businesses value RIs and will resort to EMBRC / Assemble Plus provided information about services and prices are clear. Thus, a well-defined portfolio of services and communication strategy delivered to their desktop are essential to attract sectors other than academia to EMBRC. Bureaucracy and costs can however be important obstacles. Since personal contacts are important for businesses, communication targeting innovation clusters may be an effective way to reach potential business users. There is preference for contract research allocated to the RIs, although a significant proportion of businesses also value hands on engagement, and joint co-innovation projects seem to be an attractive proposition.



Annex 1

AGENDA - ASSEMBLE PLUS CONFERENCE 2021

Date	Time	Duration	Type	Description	Speaker	Affiliation
Monday 18/01/2021	08:20	10'	PPT screen	Welcome		
	08:30	4'	Speaker+PPT	Introduction with presentation	Nicolas Pade	EMBRC (Executive Director)
	08:35	2'	Video	Assemble Plus video		
	08:37	3'	Speaker	Introduction and presentation of the first invited speaker	Adelino Canário	CCMAR (Director)
	08:38	45'	Keynote lecture+PPT	Proteogenomics of marine polysaccharide utilization	Rudolf Amann	Max- Planck-Institut für Marine Mikrobiologie, Germany
	09:25	35'	Q&A	Questions and answers about the session	AC+Rudolph Amann	
	10:00	30'	PPT Screen	Coffee break		
	10:30	2'	Video	Video EMBRC		
	10:32	30'	Technology Demonstrations	Presentation of the European Marine Biological Resource Centre (EMBRC France)		



	11:00	30'	Technology Demonstrations	Presentation of CCMAR - Centro de Ciências do Mar do Algarve (EMBRC Portugal)		
	11:30	60'	PPT Screen	Lunch Break		
	12:30	25'	Invited lecture + PPT	Arctic bryozoans for 'Molecules meet fossils – an integrated approach to studying palaeodiversity	Andrea Waeschenbach	Natural History Museum, UK
	12:55	5'	Q&A	Questions and answers about the session		
	13:00	25'	Invited lecture + PPT	Unveiling asexual reproductive traits in black corals: polyp bail-out in Antipathella subpinnata	Martina Coppari	Polytechnic University of Marche, Italy
	13:25	5'	Q&A	Questions and answers about the session		
	13:30	25'	Invited lecture + PPT	A straight story: riding the microzooplankton from South America to Northern Europe (and back)	Danilo Calliari	Universidad de la Republica, Uruguay
	13:55	5'	Q&A	Questions and answers about the session		
	14:00	25'	Invited lecture + PPT	Responses of foraging seabirds to local and daily-scale meteorology in coastal environments	James Waggitt	Bangor University, UK
	14:25	5'	Q&A	Questions and answers about the session		
	14:30	1'	Video	Advertisement - NHBS		
14:31	60'	Brokerage event	B2B networking space			
Tuesday 19/01/2021	08:20	10'	PPT screen	Welcome		
	08:30	45'	Keynote lecture+PPT	Climate-driven evolution of marine forests across oceans	Ester Serrão	Centro de Ciências do Mar do Algarve, Portugal
	09:15	45'	Q&A	Questions and answers about the session		



	10:00	30'	PPT Screen	Coffee break		
	10:30	90'	Forum	Knowledge and Technology Gap Forum (Policy): The value of Research Infrastructures from a policy point of view		
	12:00	60'	PPT Screen	Lunch Break		
	13:00	25'	Invited lecture + PPT	Hospital waters: health or environment? A successful story between chemists and biologists	Belén Gonzalez-Gaya	Universidad del País Vasco, Spain
	13:25	5'	Q&A	Questions and answers about the session		
	13:30	25'	Invited lecture + PPT	Establishing the annelid <i>Owenia fusiformis</i> as a reference species for evolutionary genomics and EvoDevo	José M. Martín-Duran	Queen Mary University of London, UK
	13:55	5'	Q&A	Questions and answers about the session		
	14:00	25'	Invited lecture + PPT	The whereabouts of fish: Aquatic Animal Tracking in Europe	Jan Rubens	Flanders Marine Institute, Belgium
	14:25	5'	Q&A	Questions and answers about the session		
	14:30	25'	Invited lecture + PPT	Development of specific sandwich ELISA system for Transthyretin (TTR) in gilthead sea bream (<i>Sparus aurata</i>)	Eleni Galliopoulou	University of Thessaly, Greece
	14:55	5'	Q&A	Questions and answers about the session		
	15:00	25'	Invited lecture + PPT	Physiological Plasticity of Corals Across Depth Gradients in the Caribbean and Red Sea	Gretchen Goodbody-Gringley	Bermuda Institute of Ocean Sciences, St. George's, Bermuda
	15:25	5'	Q&A	Questions and answers about the session		
	15:30	25'	Invited lecture + PPT	Laminaria kelps impact iodine speciation chemistry in coastal seawater	Carl Carrano	San Diego State University, USA
	15:55	5'	Q&A	Questions and answers about the session		
Wednesday 20/01/2021	10:20	10'	PPT screen	Welcome		
	10:30	2'	Video	Video EMBRC		
	10:32	30'	Technology Demonstrations	Presentation of Stazione Zoologica Anton Dohrn, Italy (EMBRC Italy)		



Thursday 21/01/2021	11:00	30'	Technology Demonstrations	Presentation of Interuniversity Institute for Marine Sciences (EMBRC Israel)		
	10:20	10'	PPT screen	Welcome		
	10:30	90'	Forum	Knowledge and Technology Gap Forum (Policy): The value of Research Infrastructures from a policy point of view		
	12:00	30'	PPT Screen	Lunch Break		
	12:30	25'	Invited lecture + PPT	Assessing the Post-Trawl Impact of Demersal Trawling on Sedimentary Carbon Stores	Kirsty Black	University of St Andrews, UK
	12:55	5'	Q&A	Questions and answers about the session		
	13:00	25'	Invited lecture + PPT	A non-invasive approach to quantify biodiversity, rugosity and productivity of benthic habitats	Karl Attard	University of Southern Denmark, Denmark
	13:25	5'	Q&A	Questions and answers about the session		
	13:30	25'	Invited lecture + PPT	Identification of optimal cryopreservation conditions for the red microalgae <i>Porphyridium</i> and <i>Rhodella</i>	Imke Lang	University of Applied Sciences Bremerhaven, Germany
	13:55	5'	Q&A	Questions and answers about the session		
	14:00	25'	Invited lecture + PPT	Addressing and minimizing the impact of ocean acidification	Sam Dupont	Göteborgs Universitet, Sweden
	14:25	5'	Q&A	Questions and answers about the session		
	14:30	1'	Video	Advertisement - NHBS		
	14:31	60'	Brokerage event	B2B networking space		



Friday 22/01/2021	08:20	10'	PPT screen	Welcome		
	08:30	45'	Keynote lecture+PPT	The unique physiologies of biomineralizing phytoplankton	Colin Brownlee	Marine Biological Association, and School of ocean and Earth Sciences, University of Southampton, UK
	09:15	45'	Q&A	Questions and answers about the session		
	10:00	30'	PPT Screen	Coffee break		
	10:30	2'	Video	Video EMBRC		
	10:32	30'	Technology Demonstrations	Presentation of National Institute for Biology (Slovenia)		
	11:00	30'	Technology Demonstrations	Presentation of ECIMAT (EMBRC Spain)		
	11:30	60'	PPT Screen	Lunch Break		
	12:30	25'	Invited lecture + PPT	Ascidians hunters: discovery and integrative taxonomy of invasive and cryptic ascidians	Federica Montesanto	Università degli Studi di Bari Aldo Moro, Italy
	12:55	5'	Q&A	Questions and answers about the session		
	13:00	25'	Invited lecture + PPT	Biogeography of the seagrass <i>Halodule wrightii</i> and <i>Caulerpa seaweeds</i> and their associated microbiomes	Aschwin Engelen	Centro de Ciências do Mar do Algarve, Portugal
	13:25	5'	Q&A	Questions and answers about the session		
	13:30	25'	Invited lecture + PPT	<i>Halophila stipulacea</i> descriptors from Sint Eustatius (the eastern Caribbean) – comparisons between a newly invasive population, and its native counterpart from the northern Gulf of Aqaba	Gidon Winters	Dead Sea-Arava Science Center, Israel



	13:55	5'	Q&A	Questions and answers about the session		
	14:00	25'	Invited lecture + PPT	Parasites with a sting: Evolution and genomics of host-parasite interactions in the Cnidaria	Astrid Holzer	Biology Centre of the Czech Academy of Sciences, Czechia

Date	Time	Duration	Type	Description	Speaker	Affiliation
Monday 25/01/2021	08:20	10'	PPT screen	Welcome		
	08:30	45'	Keynote lecture+PPT	Tara Oceans: Eco-Systems Biology at Planetary Scale	Chris Bowler	Institut de Biologie de l'Ecole Normale Supérieure, France
	09:15	45'	Q&A	Questions and answers about the session		
	10:00	30'	PPT Screen	Coffee break		
	10:30	2"	Video	Video EMBRC		
	10:30	30'	Technology Demonstrations	Presentation of IOPAS (Poland)		
	11:00	30'	Technology Demonstrations	Presentation of the Alfred-Wegener-Institut für Polar-und Meeresforschung-Biologische Anstalt Helgoland Helgoland, Germany		
	11:30	60'	PPT Screen	Lunch Break		
	12:30	25'	Invited lecture + PPT	Deconstructing the enigmatic xenacoelomorphs	Pedro Martinez	Universitat de Barcelona, Spain
	12:55	5'	Q&A	Questions and answers about the session		
	13:00	25'	Invited lecture + PPT	ASCEND: Multigenerational adaptation to ocean warming and acidification	Tiago Repolho	Universidade de Lisboa, Portugal
	13:25	5'	Q&A	Questions and answers about the session		
	13:30	25'	Invited lecture + PPT	Circagrass: Adaptation of the seagrass circadian clock to latitudes	Emanuela Dattolo	Stazione Zoologica Anton Dohrn, Italy
	13:55	5'	Q&A	Questions and answers about the session		



	14:00	25'	Invited lecture + PPT	Metabarcoding analysis to explore protists phenology and diversity	Mariarita Caracciolo	Station Biologique Roscoff - Sorbonne, France
	14:25	5'	Q&A	Questions and answers about the session		
	14:30	1'	Video	Advertisement - NHBS		
	14:31	60'	Brokerage event	B2B networking space		
Tuesday 26/01/2021	10:20	10'	PPT screen	Welcome		
	10:30	2"	Video	Video EMBRC		
	10:30	30'	Technology Demonstrations	Presentation of the VLIZ - Flanders Marine Institute (EMBRC Belgium)		
	11:00	30'	Technology Demonstrations	Presentation of the Scottish Oceans Institute (EMBRC UK)		
	11:30	30'	Technology Demonstrations	Presentation of Plentzia Marine Station (EMBRC Spain)		
	12:00	30'	PPT Screen	Lunch Break		
	12:30	25'	Invited lecture + PPT	Spondylus multiOmics: bridging biomineralization and archaeology (SpondylOmics)	Jorune Sakalauskaite	University of Turin, Italy
	12:55	5'	Q&A	Questions and answers about the session		
	13:00	25'	Invited lecture + PPT	Bio-optical and Biogeochemical properties of Atlantic Phytoplankton (BAP) –how one request aids multiple projects	Peter Croot	National University of Ireland Galway, Ireland
	13:25	5'	Q&A	Questions and answers about the session		
	13:30	25'	Invited lecture + PPT	Benthic monitoring of highly polluted Gulf of Bagnoli (Italy) using foraminiferal environmental DNA and morphological analyses	Fabrizio Frontalini	Università degli Studi di Urbino "Carlo Bo", Italy
	13:55	5'	Q&A	Questions and answers about the session		
	14:00	25'	Invited lecture + PPT	The succession overtime of the leaves' epiphytic microbial community associated with the seagrass Halophila stipulacea in the Red Sea	Chiara Comte	Tor Vergata University of Rome, Italy
	14:25	5'	Q&A	Questions and answers about the session		
Wednesday	08:20	10'	PPT screen	Welcome		



	08:30	45'	Keynote lecture+PPT	Gene regulatory networks for evolution and development: lessons from the sea urchin embryo	Maria Ina Arnone	Stazione Zoologica Anton Dohrn, Italy
	09:15	45'	Q&A	Questions and answers about the session		
	10:30	2"	Video	Video EMBRC		
	10:30	30'	Technology Demonstrations	Presentation of the Marine Biological Association (EMBRC UK)		
	11:00	30'	Technology Demonstrations	Presentation of the CIIMAR - Centro Interdisciplinar de Investigação Marinha e Ambiental (EMBRC Portugal)		
	11:30	30'	Technology Demonstrations + VIDEO	Presentation of Stazione Zoologica Anton Dohrn, Italy (EMBRC Italy)		
Thursday 28/01/2021	08:20	10'	PPT screen	Welcome		
	08:30	45'	Keynote lecture+PPT	Coral Reef Fishes: Great models for Eco-Evo-Devo	Vincent Laudet	Okinawa Institute of Science and Technology, Japan
	09:15	45'	Q&A	Questions and answers about the session		
	10:30	60'	Brokerage event	Cryopreservation Brokerage Event		
	11:30	1'	Video	Advertisement - NHBS		
	11:31	60'	Brokerage event	Brokerage Cryopreservation B2B Meetings		
	12:30	25'	Invited lecture + PPT	Increased Nutritional Content of <i>Emiliana huxleyi</i> Under Ocean Acidification and Warming	Roberta Johnson	Universitat Autònoma de Barcelona, Barcelona, Spain
	12:55	5'	Q&A	Questions and answers about the session		
	13:00	25'	Invited lecture + PPT	Microplastic retention in marine coastal canopies	Carmen de los Santos	Centro de Ciências do Mar do Algarve, Portugal
	13:25	5'	Q&A	Questions and answers about the session		
	13:30	25'	Invited lecture + PPT	Studying the evolution of spiralian cell types by single-cell RNA sequencing	Tim Wollesen	University of Vienna, Austria
	13:55	5'	Q&A	Questions and answers about the session		
	14:00	1'	Video	Advertisement - NHBS		
14:01	60'	Brokerage event	Brokerage Cryopreservation B2B Meetings			



Friday 29/01/2021	10:20	10'	PPT screen	Welcome		
	10:30	120'	Forum	How to do Nagoya: access to marine genetic resources in compliance with ABS regulations (EMBRC ABS Working Group)		
	12:30	25'	Invited lecture + PPT	Impacts of bottom trawl fishing and oxygen depletion on benthic communities	Daniel van Denderen	Technical University of Denmark, Denmark
	12:55	5'	Q&A	Questions and answers about the session		
	13:00	25'	Invited lecture + PPT	Maternal determination of apical-basal polarity in the brown alga Dictyota	Kenny Bogaert	Gent University, Belgium
	13:25	5'	Q&A	Questions and answers about the session		
	13:30	25'	Invited lecture + PPT	Metabolism of Prostaglandins, animal hormone-like molecules, in marine microalgae	Valeria Di Dato	Stazione Zoologica Anton Dohrn, Italy
	13:55	5'	Q&A	Questions and answers about the session		
	14:00	25'	Invited lecture + PPT	Swimming in the sea: can eDNA reveal the diversity of marine Myxozoa?	Inga Martinek	Swedish Museum of Natural History, Sweden
	14:25	5'	Q&A	Questions and answers about the session		
	14:30	25'	Invited lecture + PPT	Novel insights into marine invertebrate biodiversity under a molecular perspective	Pedro Vieira	Universidade do Minho, Portugal
	14:55	5'	Q&A	Questions and answers about the session		
	15:00	25'	Invited lecture + PPT	Light harvesting and optical properties of mesophotic corals	Daniel Wangpraseurt	University of Cambridge, UK
	15:25	5'	Q&A	Questions and answers about the session		
	15:30		Speaker	Vouchers		
			PPT Screen	Thank you		
		Speaker	Closing Ceremony	Adelino Canário		

