

# ASSEMBLE



ASSOCIATION OF EUROPEAN MARINE BIOLOGICAL LABORATORIES EXPANDED

**Acronym: ASSEMBLE Plus**

***Title: Association of European Marine Biological Laboratories Expanded***

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## **Deliverable 5.1**

### **Report on RI capacity in value creation, impact and engagement**

**September 2019**

**Lead parties for Deliverable: AquaTT**

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## Abstract

ASSEMBLE Plus must build strong capacity in value creation, impact and stakeholder engagement within its research infrastructures research infrastructures (RIs). To do this, a questionnaire was developed to identify key skills that are required by the participating RIs. Forty-six individuals completed the questionnaire. There was a broad range of respondents, with a third being professors or directors, one tenth being early career scientists (**Research Associate or PhD student**) and the remainder being postgraduate and postdoctoral researchers or professionals.

Of those interviewed, it was felt that the most essential skills that are focused on value creation and stakeholder engagement are in order of importance business and finance acumen, customer orientation, entrepreneurial mindset, influence and persuasion, interpersonal skills, networking, and strategic thinking. Over 72.5% of respondents felt that policy development, understanding of intellectual property, experience collaborating with different communities, commercial application of research, the ability to foster stakeholder relationships and the ability to communicate research in an accessible way to a variety of audiences is important or essential. Capacity-building activities that are resource light or incentivised were most popular.

Guidelines, tools and resources that fulfil the gaps in capacity are presented. Within the next year of ASSEMBLE Plus activities, an online webinar will be developed to build capacity in some of these areas, with a focus on knowledge transfer (as this covers many topics such as engaging society, industry and policy). The information presented within this deliverable will be converted into A4 flyers that can be disseminated to RIs in a more attractive and digestible format. Six flyers, making one 'training series' will be produced covering the following topics: Intellectual property; Knowledge transfer; Media skills; Networking; Outreach and stakeholder engagement; and, Policy development.



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## 1. Introduction

Horizon 2020-funded ASSEMBLE Plus ([www.assembleplus.eu](http://www.assembleplus.eu)) is a four-year project (funded under the 'Integrating and opening research infrastructures of European interest' theme) 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; providing scientists from academia, industry and policy with the services of these marine stations.

The project's expected impacts include to develop "a new generation of researchers [who are able to] optimally exploit essential tools for their research" and "facilitate the use [of its outputs] beyond research and contribute to evidence-based policy making". Furthermore, the philosophy of EMBRC-ERIC is to "offer training facilities and courses for users and service providers" and "strengthen the connections between science, policy and industry through coordinated knowledge and foresight exercises and transfer services".

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 will include but are not limited to: Science in Society (SiS); Responsible Research and Innovation (RRI); Knowledge Transfer (KT); Outreach and Stakeholder Engagement.

The purpose of this deliverable is to present the needs of the ASSEMBLE Plus community; available training guidelines, tools and resources; and, gaps in training that will be filled by ASSEMBLE Plus.



## 2. Objective

ASSEMBLE Plus understands that community capacity building (CCB) is an important model for enabling confident, organised, and influential staff members in RIs, who can demonstrate value creation from the research they generate as well as the importance of the marine station.

To gain an understanding of the level of relevant skills within the ASSEMBLE Plus network, a questionnaire was circulated to the project partners (24) and their contacts. The intention of the questionnaire was to better understand where gaps in knowledge sit, and to quantify the level of interest in developing soft skills so that capacity building tools and training courses can be designed and targeted to those with an interest in developing the respective skills.

Whilst the development of some soft skills is imperative to working within the academic environment, the topics of concern require individuals to be invested in the activities; hence, it would be more efficient and effective to target those with a predilection for the skill sets in question.

The responses to the questionnaire have been analysed to identify areas where capacity building should be prioritised. Available guidelines, tools and resources that can be used to fulfil these skill sets are presented. These will be referred to in future training activities. Where adequate guidelines, tools and resources are not available, these will be developed over the course of the project.



### 3. Questionnaire

The questionnaire was developed based on a similar survey performed by the Canadian Marine Environmental Observation Prediction and Response (MEOPAR; [www.meopar.ca](http://www.meopar.ca)) Network. MEOPAR “is a federally-funded Network of Centres of Excellence (NCE) ... [that] funds research, trains highly-qualified personnel, develops strategic partnerships, and works to support knowledge mobilization in marine challenges and opportunities for the benefit of the Canadian economy and society”.

MEOPAR is recognised internationally, within the limited community of research impact specialists and knowledge brokers, due to the importance that it places on knowledge transfer and value creation from the science that it funds.

In 2018, MEOPAR performed a ‘Training Program Study’ to assess its networks (marine researchers, trainees and professionals working in industry, government, academia and non-profit organisations) needs for training. They were interested in finding out what type of skills and knowledge was needed for trainees, new hires and existing staff. This survey was used to form the basis of ASSEMBLE Plus’ survey, to allow comparison if deemed relevant later, but more importantly as a best practice approach.

A survey was distributed to the full ASSEMBLE Plus partnership, with the intention of guiding an initial training session ahead of the 2018 General Assembly. The survey was sent to 127 individuals on 24<sup>th</sup> September 2019 with a deadline of 5<sup>th</sup> October. The survey was left open for a month after this date to allow for late responses. 56 individuals viewed started the survey and those that completed a full response reduced as they progressed through the survey, with a response rate of 29.9%. The full survey questions are provided in Appendix 1 and the raw data is available as supplementary material upon request. The responses to each section of the survey, outlining the respective questions posed, are analysed below.



### 3.1 You and Us

I. Are you familiar with ASSEMBLE Plus or EMBRC?

- ASSEMBLE Plus
- EMBRC
- Both
- None

II. How long have you been involved with ASSEMBLE Plus or EMBRC?

III. What is your primary role in ASSEMBLE Plus or EMBRC? Please tick all that apply.

- Project Coordinator
- Work Package leader
- Partner
- Access provider
- Access recipient
- Employee at a partner organisation
- Advisory Member / Expert Committee
- Other (Please Specify)

Of the 46 completed responses, 78% of those interviewed were familiar with ASSEMBLE Plus and EMBRC, 20% were familiar with ASSEMBLE Plus alone and one was familiar only with EMBRC (Figure 1). On average, the respondents had been engaged with ASSEMBLE Plus and/or EMBRC for four years (4.10 years ± 3.31) with seven stating that they had been with EMBRC since its conception (Figure 2).

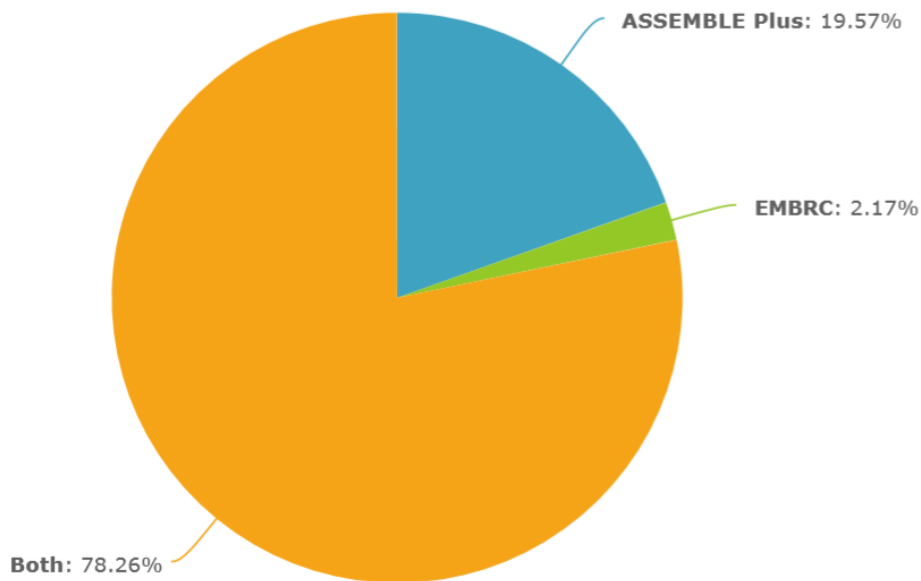


Figure 1: Proportion of survey respondents that were familiar with ASSEMBLE Plus and EMBRC.





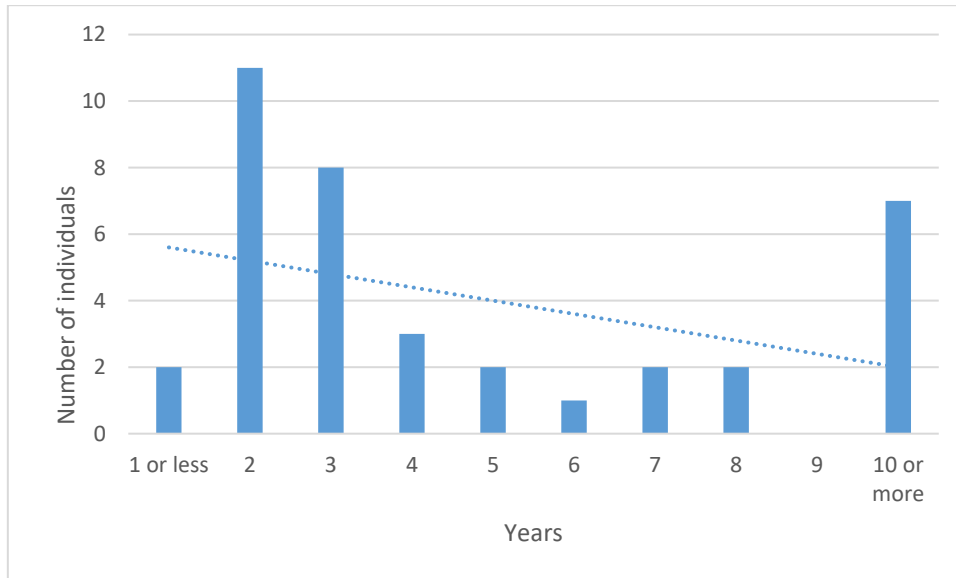


Figure 2: The number of years that the respondents had been engaged with ASSEMBLE Plus and/or EMBRC.

Most respondents were access providers (52%, meaning that they work at marine research installations that provide access to researchers under ASSEMBLE Plus’ transnational or remote access<sup>1</sup> programme (Figure 3). A similar number of the respondents were partners in the project (48%) and/or an employee at a partner organisation (46%). Six of the respondents held the role of a liaison officer, one as EMBRC node leader, another as an EMBRC GA chair and one was associated with Ocean Sampling Day. Six individuals were Work Package leaders within the project, two were involved in the coordination of the project and a further two were access recipients.

Half of the respondents held a single role in the project, but the other half held more than one role within the project. 20% hold two roles, 24% hold three roles and three individuals (7%) held four roles within the project.

<sup>1</sup> <http://www.assembleplus.eu/access/transnational-access>



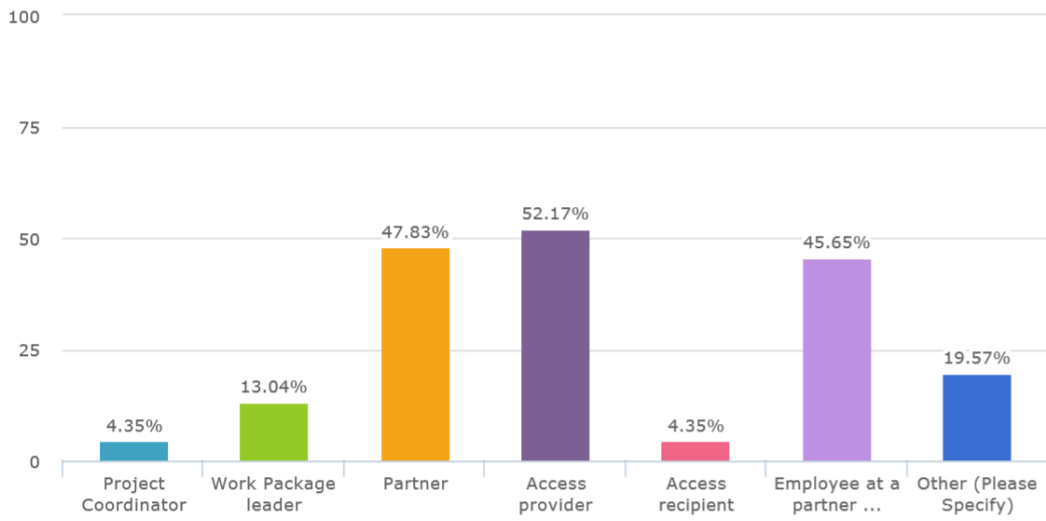


Figure 3: Role of recipients in relation to ASSEMBLE Plus and EMBRC.



### 3.2 Just You

<p>I. What is your primary role in marine research or the marine industry?</p> <ul style="list-style-type: none"> <li>• Marine Industry</li> <li>• Marine Research/Academic</li> <li>• Marine Non-Profit</li> <li>• Other (Please Specify)</li> </ul> <p>II. What is your current level of study or job title?</p> <ul style="list-style-type: none"> <li>• Master's Student</li> <li>• Research Associate</li> <li>• PhD Student</li> <li>• Professor</li> <li>• Postdoctoral Fellow</li> <li>• Other (Please Specify)</li> </ul>
--

Figure 4 shows that while most respondents work within marine research and academic, seven responses were received from those working within marine non-profits and other: from management and administration; a consultancy; and, a data centre. As expected from the mailing list to which the survey was distributed, there were no responses from industry.

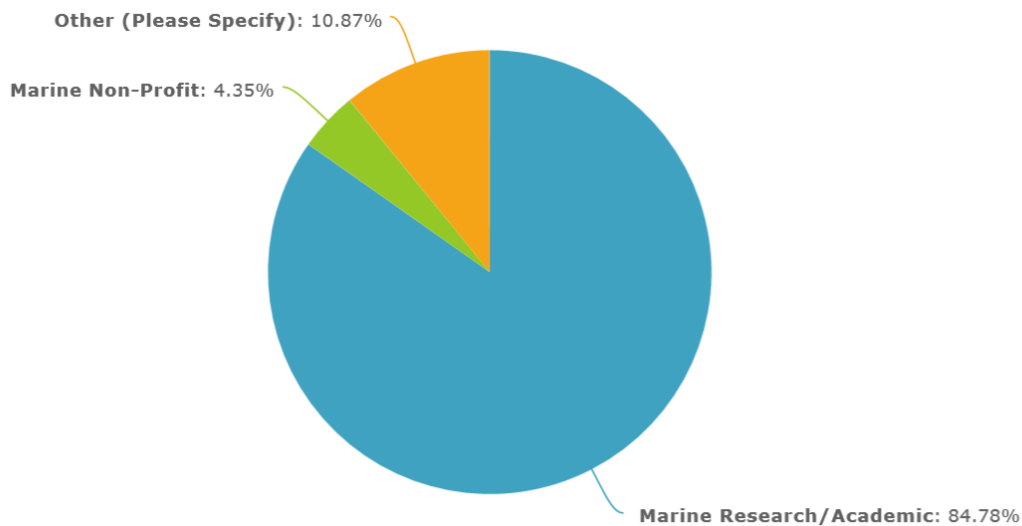


Figure 4: Primary role of the respondents.

In terms of levels of qualifications, the level of study or job title of those responding, the results were wide-ranging (Figure 5). Figure 5 shows that 35% held senior roles (professors or directors), 11% were early career (Research Associate or PhD student); and the remaining majority were mid-career within academia or an alternative professional role. 57% of those with a greater involvement in ASSEMBLE Plus (three or four roles) were professors or directors and the remainder were researchers with postgraduate, professionals with postgraduate qualifications.



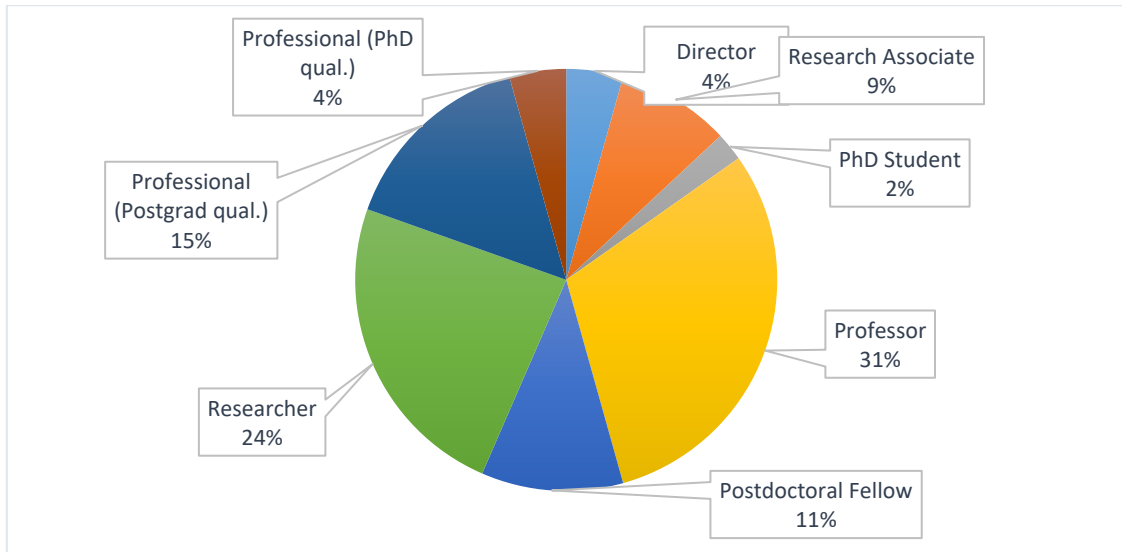


Figure 5: Level of study or job title of the respondents.



### 3.3 You and Your Learning

<p>I. Please rate your interest in the following experiential learning activities:</p> <ul style="list-style-type: none"> <li>- Not interested</li> <li>- Somewhat interested</li> <li>- Moderately interested</li> <li>- Extremely interested</li> <li>• Applying for funding to hire an undergraduate</li> <li>• Internship at a non-academic organisation</li> <li>• Mentoring</li> <li>• Employer tour/visits</li> <li>• Field Experience</li> <li>• Lunchtime seminars</li> <li>• Regional workshops</li> <li>• Day-long courses</li> <li>• Lecture (e.g. at summer school, conference)</li> <li>• Knowledge mobilization competition</li> <li>• Language writing competition</li> <li>• Start-up pitch competition</li> <li>• If you have a preferred experiential learning activity, please specify:</li> </ul> <p>II. Please rate your interest in the following online learning activities:</p> <ul style="list-style-type: none"> <li>- Not interested</li> <li>- Somewhat interested</li> <li>- Moderately interested</li> <li>- Extremely interested</li> <li>• Webinars</li> <li>• Podcasts</li> <li>• Contributing an article to an online newsletter</li> <li>• Online training course (5-10 hours of coursework)</li> <li>• Online training course (10-20 hours of coursework)</li> <li>• Online self-paced training course equivalent to a university semester</li> </ul> <p>III. If you have a preferred online learning activity, please specify:</p>
--

The experiential learning activities that have the greatest number of votes for “extremely interested” are field experience and regional workshops (12 for both, Figure 6). Those experiential learning activities that had more than 50% of the respondents being “moderately” or “extremely interested” were, in order of popularity, regional workshops (31), mentoring (29), lectures (28) and field experience (23). Interestingly these are learning approaches that researchers are exposed to more commonly. If we include “somewhat interested”, the most popular activity that remains is regional workshops (41; 98%); but it appears that more than 80% of respondents (42) are somewhat interested to attend day-long courses (95%), lectures (93%), mentoring (86%) and knowledge mobilization competitions (81%).

Those activities that were least popular for respondents (i.e. where “not interested” was selected), were, in order of unpopularity, language writing competitions (22), start-up pitch competitions (15), employer tour/visits (12), internships at a non-academic organisation (12). Interestingly, just over 21% of respondents were not interested in field experience, showing a divide in opinion, lunchtime seminars or applying funding to hire an undergraduate.



In terms of value creation, less popular activities such as start-up pitch competitions, employer tour/visits, and internships at a non-academic organisation are valuable methods for engaging with industry. Fortunately, there was a high level of interest in **knowledge mobilization competitions** which would support the engagement of external users, showing an appreciation that exploitation to others is important. Another unpopular activity was knowledge mobilization techniques. Hands-on demonstrations, staff exchanges and training in applying for funding<sup>2</sup> were noted as other preferred learning activities.

In terms of trends relative to qualifications, no-one showed an interest in start-up pitch competitions with the middle to higher grades being least interested; indicating a focus and commitment to delivering their current role (and less interest to engage in transfer activities with industry or other stakeholders). The knowledge mobilization competitions were of most interest to professors, and those that were not interested were well-mixed in terms of study level and job title; indicating that perhaps higher grades are more informed of the value of such activities. Lower grades were most interested in internships, with the middle grades being least interested. Whilst higher grades were most interested in employer visits, this same group were most commonly voted against these visits; indicating that viewpoints in this kind of engagement activity varies greatly within the higher professional levels.

In summary, the ASSEMBLE Plus network is most comfortable in science-to-science interactions using methods that they are familiar with and there is little interest for this group to create new industry, but they are willing to gain experience in communicating with external stakeholders, using a range of approaches.

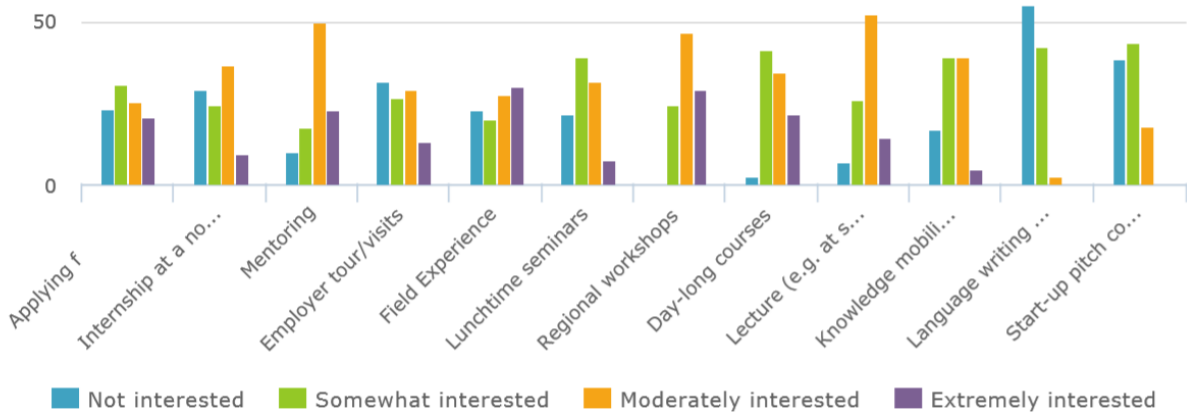


Figure 6: The level of interest related to experiential learning activities.

<sup>2</sup> Others were suggested but the descriptions were indecipherable and so have not been included in this analysis.



The patterns of interest for most of the online learning activities presented are similar (Figure 7). Shorter online training courses were most popular, as were contributing to an article. Clearly, **tasks that are resource light or incentivised** (such as the article publication) were most popular. The least popular were the podcasts followed by the online, self-paced training course where there was limited or no interest.

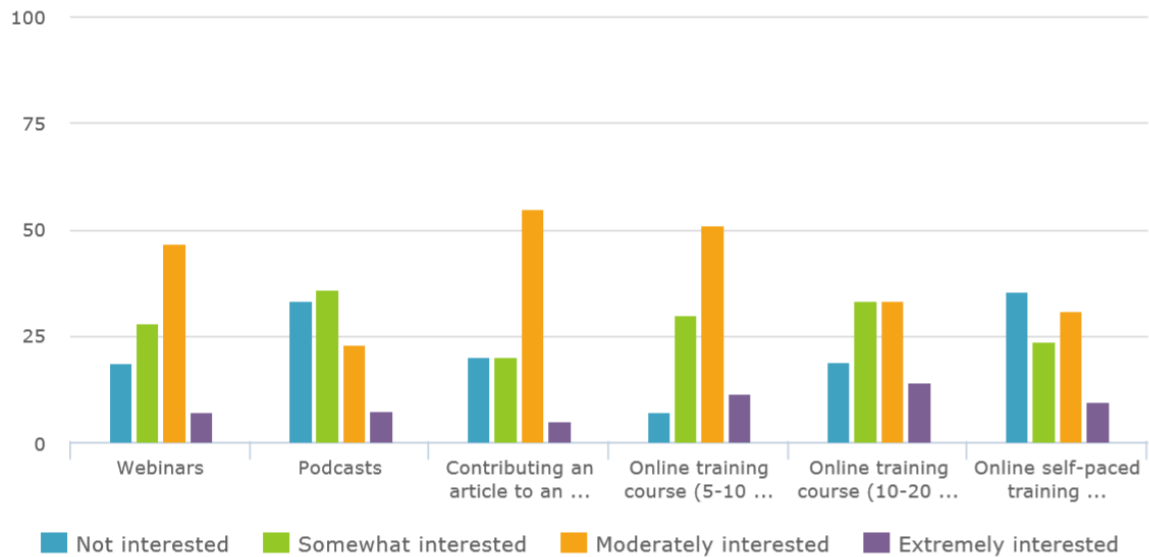


Figure 7: Interest levels for various online activities.



### 3.4 Essential Skills

- I. Please rate the importance of the following 21st century skills for new hires working in marine research institutes:
- Not relevant
  - Important but not essential
  - Essential but can be developed
  - Essential and a requirement
  - Leadership
  - Teamwork and collaboration
  - Flexibility and adaptability
  - Self-direction and initiative
  - Research and inquiry
  - Data analysis, synthesis and interpretation
  - Critical thinking, analytical thinking and problem solving
  - Creativity and innovation
  - Strategic thinking
  - Oral communication
  - Customer orientation
  - Developing others (Mentoring)
  - Project management
  - Entrepreneurial mindset
  - Influence and persuasion
  - Interpersonal skills
  - Business and financial acumen
  - Networking

Figure 8 clearly illustrates that there are several essential skills that are a requirement for new hires (shown in purple) - skills that should have been developed prior to applying for a vacancy at an RI - and others that are not relevant (shown in blue). In which case, the skills that are of most interest to the ASSEMBLE Plus network are those highlighted in yellow as these are “essential but can be developed after hiring” or those shown in green which are “important but are not essential for hiring”.

The ten most important essential skills according to the respondents, in order of importance, are: customer orientation (33; 82.5%), leadership (31; 77.5%), project management (30; 75%), oral communication (30; 75%), influence and persuasion (29; 72.5%), networking (28; 70%), strategic thinking (28; 70%), developing others (Mentoring) (27; 67.5%), interpersonal skills (25; 62.5%) and business and financial acumen (25; 62.5%). Entrepreneurial mindset (24; 60%) comes next in the list, where the other skills are more directly associated with leading research. Interestingly soft skills (i.e. interpersonal skills, oral communication and networking) were deemed as essential.

Those skills that are more focused on value creation and stakeholder engagement are: **business and finance acumen, customer orientation, entrepreneurial mindset, influence and persuasion, interpersonal skills, networking, and strategic thinking**. Those in a higher pay grade saw strategic thinking and business and finance acumen as an essential skill. Influence, persuasion, interpersonal skills, and, interestingly, customer orientation were selected as essential skills throughout the range of grades. Entrepreneurship was considered important across the range of respondents.





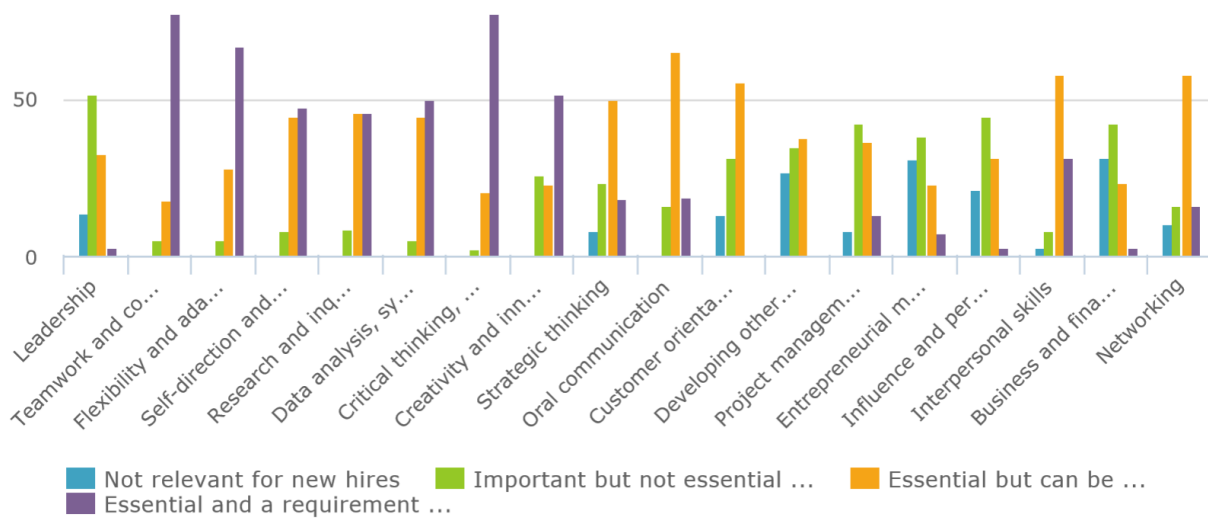


Figure 8: Importance of 'essential skills' for new hires.



### 3.5 Knowledge Mobilization Skills

- I. Please rate the importance of the following knowledge mobilization skills for new hires working in marine research institutes:
- Not relevant
  - Important but not essential
  - Essential but can be developed
  - Essential and a requirement
  - Ability to communicate research in an accessible way to a variety of audiences
  - Ability to foster stakeholder relationships
  - Experience with citizen and/or community engagement
  - Experience collaborating with different communities
  - Policy development
  - Commercial application of research
  - Graphic design
  - Media skills
  - Social networking skills
  - Teaching & curriculum development
  - Understanding of intellectual property

Figure 9 shows that there are many knowledge mobilization skills that are considered irrelevant for new hires in a RI. This includes over 20% of respondents believing the **policy development and media skills** are not relevant for new hires. Whilst these are skills that can be learned through doing, these are common skills for achieving impact, and so capacity building within RIs would be valuable.

In order of the grading by response from most to least essential, the most important knowledge mobilization skills are the following<sup>3</sup>: Ability to communicate research in an accessible way to a variety of audiences (23); Ability to foster stakeholder relationships (21); Experience with citizen and/or community engagement (18); Experience collaborating with different communities (17); Understanding of intellectual property (14); Policy development (13); Teaching & curriculum development (13); Social networking skills (9); Media skills (9); Graphic design (5); and, Commercial application of research (5). **Over 72.5% of respondents felt that policy development, understanding of intellectual property, experience collaborating with different communities, commercial application of research, the ability to foster stakeholder relationships and the ability to communicate research in an accessible way to a variety of audiences is important or essential.** Interestingly, those with less qualifications or working at lower grades felt that skills in policy development were essential for new hires; perhaps recognising that this is often a steep learning curve when entering an RI or they are entering the research community at a time when an impact-focused culture is more dominant.

<sup>3</sup> The first number in the brackets is the number of votes to say that it is an essential skill but can be learned within the role, and the second number is the number of votes to say that it is an essential or important skill that can be learned within the role.



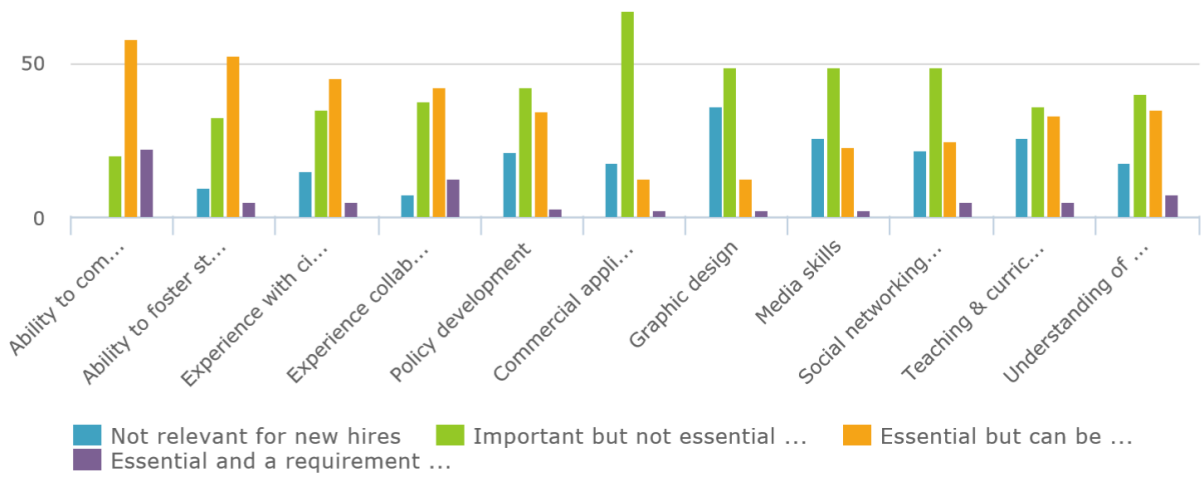


Figure 9: The importance of knowledge mobilization skills within RIs.



### 3.6 Technical Skills

I. Please rate the importance of the following technical skills for new hires working in marine research institutes:

- Not relevant
- Important but not essential
- Essential but can be developed
- Essential and a requirement
- Statistics
- Big data analytics
- High-performance computing
- Programming
- Marine modelling
- Satellite data analysis
- Remote sensing concepts for research
- Autonomous Underwater Vehicles (AUVs), including gliders
- Marine logistics
- Marine management
- Quality Assurance/Quality Control (QA/QC)

II. What other skills do you think are important for new hires to marine research institutes?

In terms of the topics covered, Figure 10 illustrates the level of importance of having specific technical skills. These results are less relevant for the purpose of this deliverable, and very subjective depending on which organisation is being interviewed. What is most interesting here is that fewer respondents felt that technical skills were a requirement of hiring than they did for essential skills, and that these could be developed internally. Due to the depth of understanding required in science, prior experience in statistics, big data analytics, high performance computing and modelling were considered the most essential technical skills for new hires.

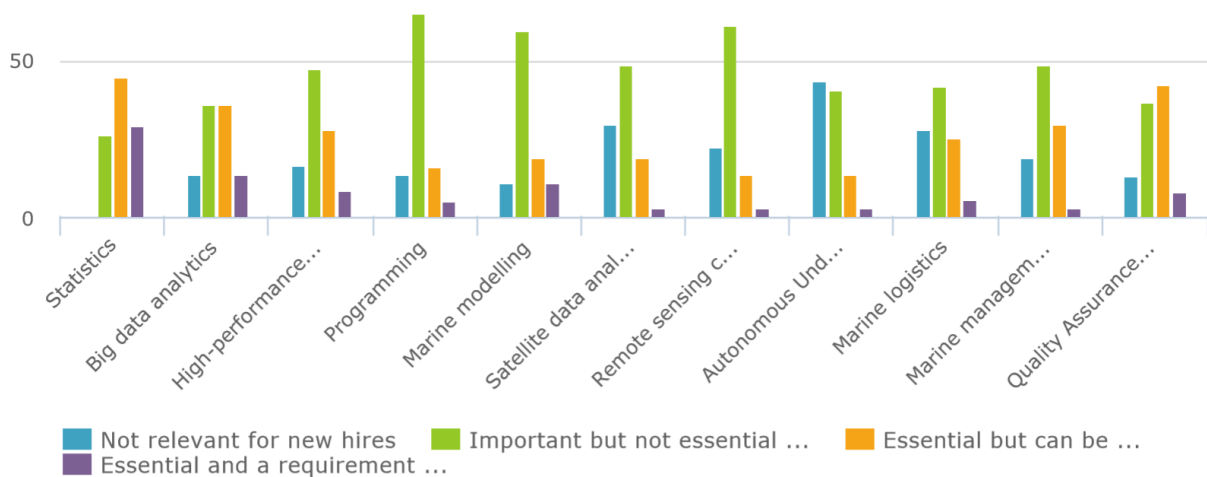


Figure 10: The importance of technical skills in RIs.



### 3.7 Training Programmes

- I. Would an ASSEMBLE Plus certificate program be useful for your field? Please comment on your answer:
- II. Please list any training programs or organizations you are aware of that may be interested in partnering with ASSEMBLE Plus:
- III. Do you have additional thoughts about what is needed to create a successful training program for researchers/trainees at marine research institutes?

24 responses were received in relation to training programmes. The majority agreed that certificates were not essential but useful for developing a CV and added validation to statements made in applications. Several individuals proposed that a long-term infrastructure, such as EMBRC, would be able to develop an accredited training scheme for new hires. In terms of specific comments, the following statements were made:

- (i) Courses in management within the sector are rare but would be extremely valuable.
- (ii) Staff exchanges (that are offered by ASSEMBLE Plus) are a valuable tool for technical skill development.
- (iii) Staff are employed based on their ability to publish and generate income, and those were the key skills to the organisation.
- (iv) Many training courses are devoted to young researchers but employees who lack skills are often neglected; and are often still willing to learn and be included in research work and be competitive at the market.
- (v) It would be important to have training courses or short-term internships in transversal themes, such as knowledge transfer, open science, ethics, RRI, IPR, science communication, etc. Young researchers still lack these competencies since regular post-graduation programs do not offer these types of training courses.
- (vi) The rapid scientific/technological advancement in many fields of marine research, as well as the recent emphasis on EU research networks/blue growth/connection with industry and society, require further and continuous training of new hires/trainees in these fields/concepts.
- (vii) An interdisciplinary approach to problems could be developed and taught.

The following training programmes were mentioned by the respondents (but the knowledge across the cohort was limited): [DISSCo RI](#), [EMSO ERIC](#), [GEO BON](#), [IMBRsea](#), [LifeWatch ERIC](#), [LTER Europe RI](#), [MarineTraining.eu](#), [MarPipe](#), [MASTS](#), [MEDIN](#) and [OceanTeacher](#).



## 4. Skill gaps

The results of this questionnaire show that in relation to value creation, impact and engagement, researchers in RIs would benefit from the development of the following skills:

### Part A

- Business and finance acumen
- Commercial application of research
- Customer orientation
- Entrepreneurial mindset
- Experience collaborating with different communities
- Influence and persuasion
- Interpersonal skills
- Strategic thinking
- The ability to foster stakeholder relationships

### Part B

- Intellectual property
- Knowledge transfer
- Media skills
- Networking
- Outreach and stakeholder engagement
- Policy development

These skills were selected as they were identified as important but not essential to start employment, or essential but could be developed after being hired into a role.

To develop the skills outlined in the first half of this list (Part A) an individual would have to have a mandate related to business development. They would require a deep knowledge of the strategy of an RI and significant time and/or financial investment of the individual to develop these skills. This might entail developing these skills through exposure, shadowing others within the organisation, completing an internship within industry, or gaining professional qualifications and undertaking further education in business administration or related subjects.

Guidelines, tools and resources are available, or can be developed, for the skills listed in Part B. The following section outlines the tools that are available.



## 5. Training guidelines, tools and resources

As highlighted by the survey analysis, there is a need to build capacity in the following areas:

1. Intellectual property
2. Knowledge transfer
3. Media skills
4. Networking
5. Policy development
6. Outreach and stakeholder engagement

The following sections outline the training guidelines, tools and resources available to develop capacity within RIs.

### 5.1. Intellectual Property

Intellectual property rights (IPR) protect intangible assets, which are regularly created as a result of research projects. Whilst the legal elements of IPR are very complex, the European IPR helpdesk provides the information that is essential for technicians working within RIs.

A number of guides are available on their website, including a [Guide to IP in Europe](#), a [Guide to IP Commercialisation](#) and a [Guide to IP in Horizon 2020](#). The links provided are to English versions but other languages are available [here](#).

A number of fact sheets have also been developed which will be useful to those working on research projects, particularly those within management roles: [The importance of collecting evidence for the purpose of enforcing IP rights](#), [how to define and manage background in Horizon 2020](#), [Asserting your rights](#) and [IP and business plans](#).

As IPR is a complex subject, it is a specialist sector often employing individuals with a background in law; however, the IPR helpdesk provide regular training at [events](#) and longer-term summer schools across Europe which offer a valuable introduction to the topic.

Most RIs will have access to Technology Transfer Offices (TTO) and these should be engaged where there is a potential IP query for researchers. Furthermore, IP policies vary between countries and the staff at an RI's TTO will be able to provide national advice. Alternatively, the World Intellectual Property Organization (WIPO) provides information on national [IP strategies for 192 member states](#) and provides a platform for country-specific information.

### 5.2. Knowledge Transfer

To create value and measurable impact within projects, it is important for researchers to communicate, disseminate and exploit their findings. Communication and dissemination cover traditional channels such as websites, videos, press releases and news articles, social media and policy briefs (Figure 11). We will deal with these topics in the coming sections, but this section introduces the [handbook](#) for COLUMBUS Knowledge Transfer methodology as a tool that supports a researcher wishing to exploit their work. A number of case studies, or '[success stories](#)' are also presented to understand the varieties



of activities that can be covered by knowledge transfer, exchange or mobilization (often the preferred term in other continents).

NERC, a UK funding agency, also provide [guidelines](#) on how to develop a pathway-to-impact, which complements the work of COLUMBUS (albeit described a Knowledge Output Pathway in their products).

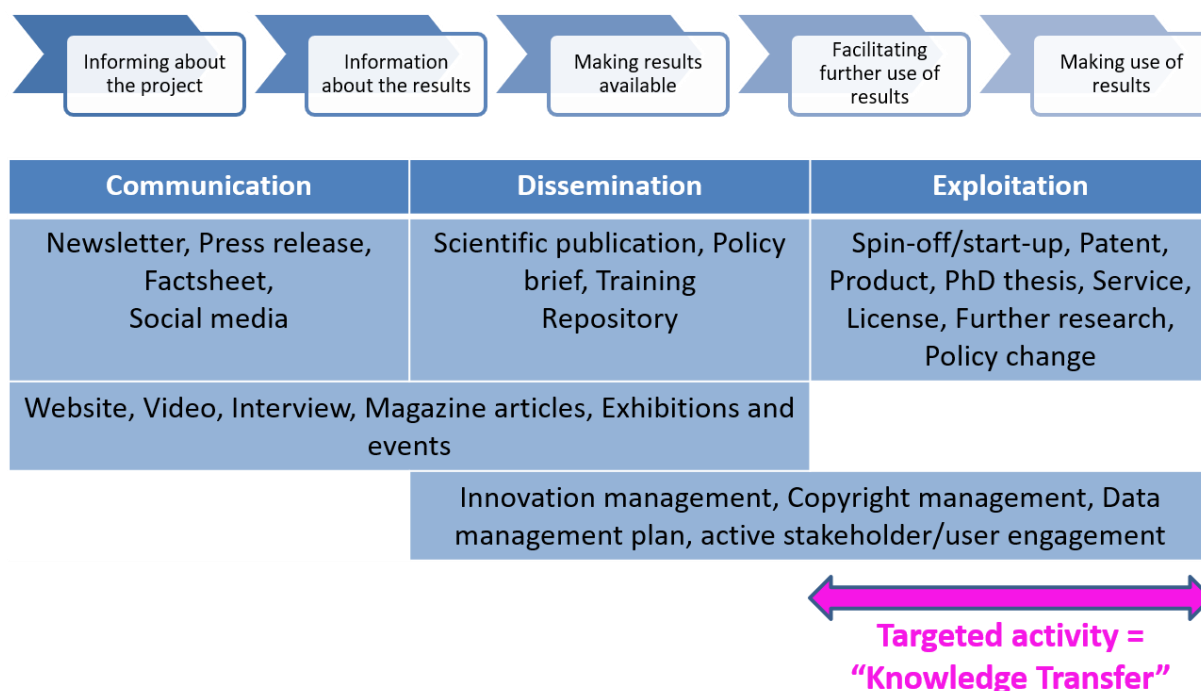


Figure 11: The European Commission's definitions of communication, dissemination and exploitation.

### 5.3. Media Skills

For the purpose of this deliverable, media skills will include developing communication strategies and press releases, participating in social media and designing materials to present science (posters, videos and infographics).

#### 5.3.1. Communication Strategy

Ocean Communicators Unite developed a [guide](#) on how to develop a communication strategy for an international organisation, programme or project, research institutions or educational venue. The European Commission have developed similar materials ([presentation](#), [factsheet](#) and [guide](#)) for those developing a Dissemination and Exploitation Plan, as required when developing a proposal for funding.

#### 5.3.2. Press releases

Writing a press release can be a daunting task but all that is really needed is a summary of the research that was completed and what the key findings were, all presented in lay terms. A number of reasonable guides are available, and some of the best how-tos are outlined here: [American Society for Biochemistry and Molecular Biology](#); [University of Leicester](#); [European Geosciences Union](#) and





[Climatica](#). The best starting point for scientists would be to complete a ‘message box’ as promoted by COMPASS; whose [website](#) takes individuals through all the steps needed to identify their key messages to support the communication process.

### **5.3.3. Social Media**

The best guide for social media for Horizon 2020 projects is the [Social media guide for EU funded R&I projects](#) produced by the European Commission, as it outlines their expectations and rules.

### **5.3.4. Design**

When developing a designed product, whether it be a poster, video or infographic, a professional graphic designer or videographer will be engaged. As a researcher, the best way to interact with these individuals is to be prepared with a concept note or brief. There are many guides online relating to developing a brief for video production ([example](#)). Developing a brief for a poster, graphic or infographic is very much the same; with some great tips provided by the UK’s Department of Environment, Food and Rural Affairs in a recent [blog post](#).

## **5.4. Networking**

There is a valuable TED talk entitled “[An introvert’s guide to networking](#)” which is a valuable watch for those where networking is not a natural behaviour. A [blog post](#) was developed by Lindsey Drayton in relation to networking at conferences and it provides some valuable advice in relation to preparing for networking ahead of a conference.

## **5.5. Policy Development**

The European Commission publishes many policy briefs on a regular basis. Examples relevant to marine sciences are published by the [European Marine Board](#), [ecologic](#) or the [WWF](#). The FAO provides [guidelines](#) on how to write policy briefs in their [Food Security Communications Toolkit](#), which provides guidelines on working with media, communicating with policy makers and writing effective reports and is a valuable kit for many of the previous topics.

## **5.6. Outreach and Stakeholder Engagement**

The remaining topics that have not been covered above include Science in Society (SiS); Responsible Research and Innovation (RRI); and citizen science. A toolkit and training on RRI is provided by [RRI Tools](#). This covers how to embed RRI into higher education, citizen science, participatory research and much more. For those who are interested in setting up citizen science projects, [SciStarter](#) hosts citizen science projects (that it has vetted) which can be a useful tool to get engagement from citizen scientists. The UK’s Centre for Ecology and Hydrology has developed a [best practice guide](#) which is helpful for those setting up citizen science projects.



## 6. Conclusion

There are numerous tools available for researchers who want to build capacity in value creation, impact and engagement. We have highlighted some of the best tools available. In our experience, the best education is gained through experience. As knowledge transfer requires an individual to participate in several elements of communication, dissemination and exploitation, ASSEMBLE Plus will be organising a webinar that covers Knowledge Transfer that will be available online for RIs. This recorded webinar will be available on the ASSEMBLE Plus website by September 2020 (M36) but an earlier launch is anticipated so that ASSEMBLE Plus' partners are able to build capacity sooner in the project, allowing them more time to apply their lessons.

In its current format, this deliverable contains important information and relevant links, but is not appealing for researchers and technicians. Accordingly, the information will be converted into A4 flyers that can be disseminated to RIs in a more attractive and digestible format. Six flyers, making one 'training series' will be produced covering the following topics:

1. Intellectual property
2. Knowledge transfer
3. Media skills
4. Networking
5. Outreach and stakeholder engagement
6. Policy development

These flyers will be produced under Task NA3.1, "Building RI capacity in value creation".



## 7. Appendix 1

### Introduction

ASSEMBLE Plus is a Horizon 2020-funded project that provides scientists from academia, industry and policy with a quality-assured programme of access to marine biological station facilities and resources. These stations offer a wide variety of services, including access to marine ecosystems, unique marine biological resources, analytical technology platforms, state-of-the-art experimental facilities and e-infrastructure.

Under the leadership of the European Marine Biological Resource Centre (EMBRC), the goal of the ASSEMBLE Plus project is to stimulate fundamental and applied research excellence in Europe in the fields of marine biology and ecology, thereby improving the knowledge- and technology-base for the European bio-economy, policy shaping and education.

One aspect of ASSEMBLE Plus is to engage with user communities which requires capacity in soft skills. The purpose of this survey is to gain an understanding of the skills that exist within the marine research community.

#### 1. You and Us

IV. Are you familiar with ASSEMBLE Plus or EMBRC?

- ASSEMBLE Plus
- EMBRC
- Both
- None

V. How long have you been involved with ASSEMBLE Plus or EMBRC?

VI. What is your primary role in ASSEMBLE Plus or EMBRC? Please tick all that apply.

- Project Coordinator
- Work Package leader
- Partner
- Access provider
- Access recipient
- Employee at a partner organisation
- Advisory Member / Expert Committee
- Other (Please Specify)

#### 2. Just You

III. What is your primary role in marine research or the marine industry?

- Marine Industry
- Marine Research/Academic
- Marine Non-Profit
- Other (Please Specify)



IV. What is your current level of study or job title?

- Master's Student
- Research Associate
- PhD Student
- Professor
- Postdoctoral Fellow
- Other (Please Specify)

### 3. You and Your Learning

IV. Please rate your interest in the following experiential learning activities:

- a. Not interested
- b. Somewhat interested
- c. Moderately interested
- d. Extremely interested

- Applying for funding to hire an undergraduate
- Internship at a non-academic organisation
- Mentoring
- Employer tour/visits
- Field Experience
- Lunchtime seminars
- Regional workshops
- Day-long courses
- Lecture (e.g. at summer school, conference)
- Knowledge mobilization competition
- Language writing competition
- Start-up pitch competition

e. If you have a preferred experiential learning activity, please specify:

V. Please rate your interest in the following online learning activities:

- a. Not interested
- b. Somewhat interested
- c. Moderately interested
- d. Extremely interested

VI. Webinars

VII. Podcasts

VIII. Contributing an article to an online newsletter

IX. Online training course (5-10 hours of coursework)

X. Online training course (10-20 hours of coursework)

XI. Online self-paced training course equivalent to a university semester

a. If you have a preferred online learning activity, please specify:

### 4. Essential Skills

The OECD defines 21st century skills as "the skills and competencies young people will be required to have in order to be effective workers and citizens in the knowledge society of the 21st century".



I. Please rate the importance of the following 21st century skills for new hires working in marine research institutes:

- a. Not relevant
- b. Important but not essential
- c. Essential but can be developed
- d. Essential and a requirement

- Leadership
- Teamwork and collaboration
- Flexibility and adaptability
- Self-direction and initiative
- Research and inquiry
- Data analysis, synthesis and interpretation
- Critical thinking, analytical thinking and problem solving
- Creativity and innovation
- Strategic thinking
- Oral communication
- Customer orientation
- Developing others (Mentoring)
- Project management
- Entrepreneurial mindset
- Influence and persuasion
- Interpersonal skills
- Business and financial acumen
- Networking

#### 5. Knowledge Mobilisation Skills

Knowledge mobilisation is the process by which evidence (usually in the form of research findings) is applied or made useful to non-academic end-users (e.g., government organizations, policy makers, the public, private industry or non-profits).

II. Please rate the importance of the following knowledge mobilization skills for new hires working in marine research institutes:

- a. Not relevant
- b. Important but not essential
- c. Essential but can be developed
- d. Essential and a requirement

- Ability to communicate research in an accessible way to a variety of audiences
- Ability to foster stakeholder relationships
- Experience with citizen and/or community engagement
- Experience collaborating with different communities
- Policy development
- Commercial application of research
- Graphic design
- Media skills
- Social networking skills
- Teaching & curriculum development
- Understanding of intellectual property



## 6. Technical Skills

III. Please rate the importance of the following technical skills for new hires working in marine research institutes:

- a. Not relevant
- b. Important but not essential
- c. Essential but can be developed
- d. Essential and a requirement

IV. Statistics

V. Big data analytics

VI. High-performance computing

VII. Programming

VIII. Marine modelling

IX. Satellite data analysis

X. Remote sensing concepts for research

XI. Autonomous Underwater Vehicles (AUVs), including gliders

XII. Marine logistics

XIII. Marine management

XIV. Quality Assurance/Quality Control (QA/QC)

e. What other skills do you think are important for new hires to marine research institutes?

## 7. Training Programmes

Some networks offer a certificate program endorsed by their industry, public-sector, and non-profit partners. Trainees who choose to participate pursue learning opportunities in pre-defined competency areas, such as knowledge transfer and interdisciplinary research. Learning opportunities may range from mentoring or internships to online or in-class training.

IV. Would an ASSEMBLE Plus certificate program be useful for your field? Please comment on your answer:

V. Please list any training programs or organizations you are aware of that may be interested in partnering with ASSEMBLE Plus:

VI. Do you have additional thoughts about what is needed to create a successful training program for researchers/trainees at marine research institutes?

