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Marine Renewable Energy Infrastructure

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MARINERG-i Final Mission Vision and Values Statement

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Abbreviations

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SH	Stakeholder
DB	Database
NGO	Non-governmental Organization
DRI	Distributed Research Infrastructure
ORE	Ocean Renewable Energy
R&D&I	Research, Development and Innovation
RI	Research Infrastructure
SMEs	Small and medium-sized enterprises
TRL	Technology Readiness Level
PS	Principle Stakeholder
TAC	Transnational Advisory Committee
MS	Milestone

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1. Executive Summary

This report describes the final mission, vision and values statement developed and agreed by the consortium partners. This version has been elaborated from the initial Deliverable D7.1 – Initial Mission, Vision and Value statements with updates that take into account: consortium interactions through the integration workshop (Milestone 5); interactions and with the TAC and stakeholders (D7.5 & D7.6 respectively, initial and final interaction with stakeholders); in order to reflect views and business opportunities that were not originally taken into account.

2. Introduction

The research priorities for Offshore Renewable Energy are being set out in the Strategic Research & Innovation Agenda for ocean energy and the relevant references to floating offshore wind structures in European Wind Energy Technology Platform. Most of the research infrastructure needed to undertake the scientific studies to address the research agendas identified already exists as a result of significant investment by member states. However, working individually, Member States do not have the capability to support the scientific work that needs to be undertaken to address the Strategic Research Agendas identified for the EU. Evidence of the benefits of a coordinated and integrated approach were provided by the FP7 funded MaRINET project and subsequent MaRINET2 funded under H2020. Whilst MaRINET has very successfully delivered joint research to improve the quality of testing outcomes; a functional network; and a high demand access programme; a step change of considerable magnitude is now required in order to ensure delivery of the identified research agendas within Europe.

MARINERG-i will establish a modern, efficient, high-quality, state-of-the-art ecosystem that assembles all the component and parties required to achieve cutting-edge research. The MARINERG-i DRI will include RIs where ocean and offshore wind energy technologies can be tested with varying levels of complexity across the TRLs (1-9). MARINERG-i members will be a partnership of testing facilities with clear foundational objectives and cooperation models. The MARINERG-i project business and science plans will detail these and define contingency procedures for adjusting them to future scenarios, particularly ensuring the flexibility to adapt to industry needs and a growing membership.

In practical terms, the proposed MARINERG-i DRI comprises a central coordination hub located in Cork, Ireland, which is closely connected to a network of operational nodes located in eleven other European countries (consortium partners). Country nodes will act as hubs at national/regional level and coordinate local activities (currently estimating up to 80 facilities). The know-how, capacities and experience of the whole organisation will support each node, while each site will develop specific competencies and learn from providing specific services adapted to users' needs. In addition, each node is a gateway for access to the whole set of services provided by the distributed infrastructure available resources. The network will be perceived externally as a single body, producing the critical mass to become the globally recognised centre of excellence for ORE testing and development.

3. Background

3.1. The need for a distributed RI

The term ORE encompasses offshore wind, wave, tidal and combined technologies. The European research priorities for ORE are set out in the 2016 Strategic Research Agendas for the European Technology & Innovation Platform for ocean and wind energy (Ocean Energy; Wind Energy). It is clear from these that ORE has the potential to provide a significant contribution to the renewable energy mix in the EU and globally.

While offshore wind is commercial and cost-competitive, savings are still being sought; particularly considering new technical and logistical challenges of future farms with larger turbines, further from shore and in deeper water. This will require the development and testing of innovative technologies e.g. increased component reliability and new sensors to optimise monitoring and maintenance; novel vessels & equipment; floating wind concepts etc.

Considering ocean energy (wave and tidal), research is clearly led by European institutions, with a significant role provided by Atlantic countries (e.g. UK, France, Portugal, Ireland, Spain, etc.). However, technologies are still working towards convergence of the best designs. The marine environment is harsh and creates highly challenging conditions. Sustainably harnessing ocean energy resources requires knowledge from different scientific and technological disciplines e.g. oceanography, material science, engineering etc. As for offshore wind, additional issues to consider include reliability and survivability, maintainability and logistics as well as compliance with regulations considering environmental, legal, economic and social constraints, which could vary between regions.

At each stage of technology development, learning by doing is necessary to assure the technical, environmental and economic performance of a technology/device. Developers are faced with the enormous challenge of direct learning at sea in order to progress through the Technology Readiness Levels (TRLs). Private investors are not ready yet to support the cost without public support and require infrastructures to supply the controlled conditions to study different options using secure and assured processes.

European test site installations (ETSI) are typically small to medium sized, with limited resources when compared with other energy sector leaders. Most ETSIs are under-developed; they cannot afford to offer a wide variety or tailored services/conditions for testing multiple or different technologies and lack highly qualified and specialised human capital in some particular fields. This results in developers undertaking isolated testing experiences, carried out in several places, sometimes backed up by limited or short-term financing mechanism. The lack of continuous support and momentum is an obstacle to substantially advancing knowledge and efficiently moving technologies through the TRLs.

There is also a lack of a European reference brand, supporting results obtained from the testing. One essential element for users is a set of common and shared standard practices adopted at all testing facilities. Several methods and procedures have been already delivered by EU projects

(e.g. EQUIMAR¹; MaRINET²) or implemented by some test sites (e.g. EMEC³), although they are not yet generally applied and fully recognized.

In addition, facilities have several constraints due to location, topography, local infrastructures or sea conditions. The lack of strategic planning results in testing facilities scattered throughout the EU sometimes with low visibility to researchers and technology developers or leading to local bias and unequal distribution of funding i.e. higher footfall in the more exposed/accessible facilities which may or may not necessary reflect the quality or value provided. There is also a tendency for short or longer term redundancies and/or gaps to arise across the broader matrix of facilities capacity in respect of some TRL levels.

A long-term coordinated R&D approach is required including a cross-sectoral and multi-disciplinary approach. This is further detailed in the MARINERG-i Science Plan. Additionally, national and international collaboration is needed to create the critical mass necessary to develop the ORE industry; particularly in terms of a bespoke and pan-European supply-chain. This is a key objective of the ocean energy research agenda, as it would reinforce European jobs and leadership in this sector. So far, the ORE R&D community's approach has been to share efforts though joint actions such as ERA-NET, Framework programmes (FP7, H2020) level i.e. MARINET2, Ocean Energy Forum, Cofund, OCEANERA-NET etc. This type of approach proved fundamental to support initial TRL growth of initiatives in the sector.

Evidence of the benefits of a coordinated approach were provided by the FP7 funded MaRINET project and subsequent MaRINET2 funded under H2020 (Jan 2017-June 2021). MaRINET consisted of 45 infrastructures operated by 36 research centres across Europe. The project has successfully delivered joint research to improve the quality of testing outcomes, a functional network, and a high demand access programme. However, these efforts have a limited impact given their transient nature. It is time now to evolve from this fundamental experience to a fully integrated and long-term approach. MARINERG-i will extend existing programmes and seek additional mechanisms to support a more effective and sustainable collaboration.

4. ESFRI and the 2020 roadmap

ESFRI provides an instrument to tackle research challenges that require large or unique facilities to focus scientific research and specific projects for extended periods. Overcoming scientific and technical barriers to harness ORE in a sustainable way is one on those challenges that demands the combined efforts of several countries, potentially over decades ([OEF Roadmap](#)).

ESFRI is the strategic instrument that provides strategy-led policy-making to enabling greater integration of EU RIs. ESFRI also eases the coordination of initiatives by channelling and managing the requests to optimise the different RIs and developing a European joint vision and common strategy.

¹ Equitable Testing and Evaluation of Marine Energy Extraction Devices in terms of Performance, Cost and Environmental Impact. FP7 project supported by EU.

² Marine Renewable Energy Network. FP7 Project 2011-2015

³ European Marine Energy Centre Ltd

ESFRI is engaged in developing a strategic roadmap to foster the role of the RIs for European competitiveness. It helps to structure the European Research Area providing unique data and experimental infrastructures, attracting excellence in science, technology and innovation, and enhancing its socio-economic impact.

Finally, ESFRI acts as a project monitoring and management entity/infrastructure; it shares its SME's knowledge from beginning to end of the value chain in the different projects; and follows-up on the implementation of ongoing projects after a comprehensive assessment as well as on the prioritisation of infrastructure projects listed in the ESFRI Roadmap.

The MARINERG-i project is undertaking development work to ensure that the MARINERG-i distributed infrastructure is optimally positioned to attain the excellence criteria required to be successful in a future European Strategy Forum on Research Infrastructures (ESFRI) roadmap application foreseen for 2020.

Public, private, institutional and governmental level support are needed to create and support large RIs, providing the controlled and reference conditions to study different options and innovative design approaches. Additionally, international collaboration is required to create the critical mass necessary to develop a worldwide industry. Isolated experiences carried out in several places, sometimes backed up by limited or short-term financing mechanisms, lack the continued support and momentum necessary to advance knowledge and move devices through the TRLs.

According to the official definition of the European Commission, a distributed RI consists of a Central Hub and interlinked National Nodes. A distributed RI particularly needs to:

- have a unique specific name, legal status and a governance structure with clear responsibilities and reporting lines, including international supervisory and relevant external advisory bodies;
- have legally binding attributions of coordination competences and resources to the Central Hub;
- have a unique access policy and provide for a single point of access for all users with a support structure dedicated to optimise the access for the proposed research;
- have a user programme absorbing a relevant fraction of the total capacity of the RI;
- identify and adopt measurable Key Performance Indicators addressing both excellence of scientific services and sustainability;
- have a human resources policy adequate to guarantee the effective operation of the Central Hub supporting the research, users programme, education and training by equal opportunity hiring and secondments;
- define a joint investment strategy aimed at strengthening the RI through the Nodes and the common/shared facilities. These features mark the difference of a RI with respect to a coordinated research network (international collaborations of fully independent research performing organizations). Nodes may be absorbed partially by the distributed RI while maintaining their national or institutional programmes, but the capacity and amount of resources engaged in the RI must be coordinated and managed by the Central Hub according to agreed statutes and common rules and procedures of the legal RI consortium.

5. Mission, Vision and Values statement

The mission, vision and values outline the fundamental characteristics of an entity and are necessary to establish a common understanding. These foundational principles should be clearly distinguished from other instruments such as objectives, goals, plans or strategies. Mission, vision and values are the key foundation stones that underpin the operation and performance of the entity.

The mission statement is understood as a short-written declaration of an organisation's core purpose and focus; it sets the target boundaries to operate; it remains unchanged and endures over time. The mission statement is used to clarify what is the fundamental reason for existing, the source from where the objectives and strategies of the entity will flow. It also contributes to identify which target users will be addressed and how to establish the identity of the entire research infrastructure. It should be accomplished every day.

The vision is the compass that guides and defines what the organisation wants to become, a permanent recognizable horizon to pursue or desired future state to achieve. The vision should provide focus toward driving the entity, providing orientation, guidance, purpose, direction and motivation for personnel, a long-term course and reference to build plans and strategies. It should be pursued every day.

The main difference between mission and vision is that the second is the consequence of the first; the vision is the horizon that will be pursued while the mission is accomplished. Both should be precise and detailed, clearly assimilated and shared by all the members of the entity.

Values are principles, rules of behavior and common culture of the entity. They are a shared set of beliefs that regulate and constrain the main modes of conduct and attitudes. They contain the DNA of the shared ethical codes, the basis for common understanding, the foundation for establishing a fair, permanent, mutual trust and the stable norms that frame interpersonal relationships and services in the organisation. The values should provide the background and underpin the day-to-day activities in pursuit of the vision.

The following definitions have been elaborated throughout the MARINERG-I project, starting from the initial definition proposed by the members of the consortium (Deliverable D7.1) and continuously updated to take into account stakeholders' feedback, TAC perspectives and outcomes of the two key project workshops.

5.1. Mission - Final definition

The MARINERG-i RI mission is to:

- Drive the development of innovative, investable Offshore Renewable Energy (ORE) technologies by:
 - o Streamlining research, testing, training & user access
 - o Adopting common codes of practice for uniformity in testing, performance metrics, validation and certification
 - o Implementing an E-infrastructure platform for remote access & secure data and analytical services

- Accelerate the development of the (ORE) industry by leveraging and combining local/regional knowledge and capacity.
- Inform national and EU policy and infrastructure investment strategies to sustain global leadership and reputation in the ORE sector.

5.2. Vision - Final definition

Short Vision Statement

- **Testing facilities united to form the world’s leading distributed infrastructure for delivering Offshore Renewable Energy Technologies to the market**

The MARINERG-i RI will be an **independent legal entity** of distributed testing infrastructures, united to create an integrated centre for delivering ORE. It will be a **long-term, sustainable partnership** between the highest quality testing facilities, providing a coordinated set of services that meet current and future end-user requirements. By **consolidating expertise, investment and access to infrastructures**, the MARINERG-i RI will **foster innovation across a variety of ORE technologies and stages of development**. As the only integrated ORE platform of this scale worldwide, it will be the epicentre of this developing industry and **ensure the EU’s continuing leadership of this sector**. Figure 1 illustrates the core objectives of the MARINERG-i vision at a glance:

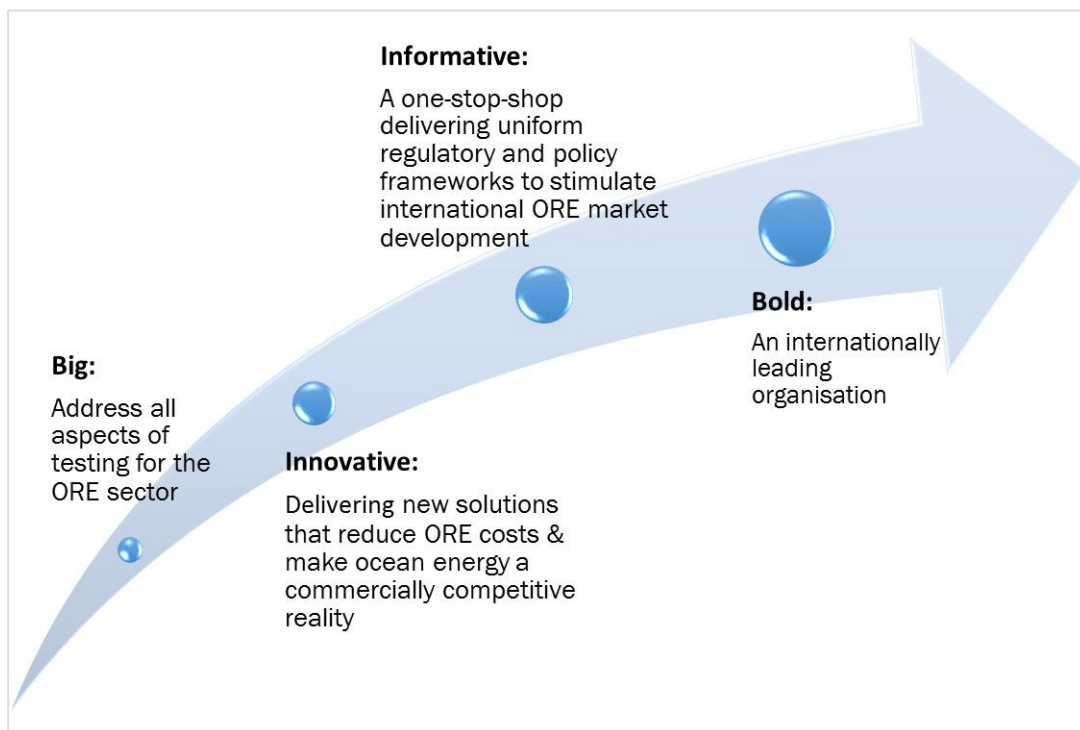


Figure 1: The MARINERG-i vision

5.3. Value - Final definition

MARINERG-i will be governed by the following main values:

- **Excellence and commitment**

Provide infrastructure test services and contribute to the further development of the European Marine Research Area. In this context, MARINERG-i will support cutting edge research and excellence in European research.

- **Openness and accessibility**
Offer the same access to knowledge, expertise and services to all users, providing transparent, accessible and responsive services to stakeholders, while respecting IP rights, terms of reference and agreements with users.
- **Open science and sustainability**
Commit to European open science standards, environmental policies and research strategies.
- **Cross-border, cross-marine energy research**
Promote cross-border and cross-ORE research and the exchange of expertise through transnational collaboration.
- **Collaboration, cooperation and quality assurance**
Create strategies and exchange know-how through engagement with network members, promoting continuous improvement and the application of quality management systems (e.g. ISO 9001; ISO 17025) for the reliability of equipment and procedures.
- **Standardization and interoperability**
Rely on an integrated management which is governed by standardized procedures and processes, established on best practises and quality guidelines. All its components are interoperable and are underpinned by appropriate auditing.
- **Knowledge dissemination**
Contribute to the mobility of knowledge and/or researchers within ORE and increase the use of intellectual potential throughout Europe.

6. Conclusion

This deliverable summarised the progress made throughout the project, in the definition of the MARINERG-i ERIC Mission, Vision and Value statements. It has been elaborated starting from the initial definition of Deliverable D7.1, uniquely based on the consortium partners' views, and complemented with the feedback from the continuous engagement across the various categories of users and stakeholders as reported in D7.6.