1. PUBLISHABLE SUMMARY

Summary of the context and overall objectives of the project (For the final period, include the conclusions of the action)

Earth Observation (EO) refers to the use of remote sensing technologies – such as satellites and dedicated measurement systems – to monitor the state and evolution of our planet on land, at ocean and in the atmosphere. EO technologies are one of the most available, feasible and cost efficient technologies to explore, monitor, control and study the exploitation of the oceans and their resources. In addition, EO technologies are made to be used in environments such as oceans since they are wide to cover, the installation of in situ infrastructures is not easy and solutions to be developed for it can be replicated. The economy which targets the ocean and its exploitation is one of the so called emerging industries, named Blue Growth. Blue Growth industries are defined by the European Cluster Observatory (European Cluster Panorama, 2014) as the development and use of the potential of oceans, seas, and related infrastructures as well as any inland fresh-water sources and their exploitation.
The world's maritime economy accounts for an annual turnover of $ 1500 billion. Within this sea economy, nearly $ 190 billion in activity did not exist ten years ago. By 2020, these new activities are expected to generate close to $450 billion in sales12. EO through satellites, drones and stratospheric balloons, dirigibles (HAPs, High Altitude Platforms) offers a unique view of our oceans, seas, and coasts. Therefore, SpaceWave project aims to be the very first structured action for EO based services providers to directly address the huge economic potential of Blue Growth, carefully selected at European and International level with a clear “market pull” orientation.
The SpaceWave project has identified a number of use-cases that demonstrate both significant market opportunities and European capabilities relevant to those opportunities. It has shown how these will be integrated with other capabilities within maritime information services. A selection of European companies bringing these capabilities has been identified, including a wide range of SMEs active in fields such as communications, data analytics and application development.
During the project, the consortium has studied the eight international target countries markets and trends in blue growth sectors to define the final consortium international strategy. The project refined its research to four countries: Australia, Canada, South Africa and United Arab Emirates and focused on markets with high-growth potential including, aquaculture, fisheries, maritime traffic, coastal protection and hazards, ports infrastructures, sea level rise and maritime surveillance. A realistic and medium-term action plan has been implemented through i) the signature of the SpaceWave Alliance among the partners, ii) the definition of an internationalisation strategy and iii) the elaboration of its roadmap until 2022. To support the project development, letters of interest signed either by SMEs from Europe and beyond, large groups or business networks acting for the blue growth development have started to be collected in order to create a strong SpaceWave Community.

Work performed from the beginning of the project to the end of the period covered by the report and main results achieved so far (For the final period please include an overview of the results and their exploitation and dissemination)

The work has been defined in 3 Work packages (WP) plus one WP Management and one WP for communication.

In the WP2 « International markets and trends in Blue Growth sector », the consortium has built and implemented a dedicated methodology to first select countries and sectors to be analysed. Their experiences, precedent studies and knowledge on the countries helped the consortium to choose 8 targeted countries: Australia, Canada, Mexico, Morocco, South Africa, Thailand, United Arab Emirates and Vietnam. SpaceWave consortium has selected sectors in which there are valuable opportunities and markets for Earth Observation: aquaculture, fisheries, maritime traffic, coastal protection and hazards, ports infrastructures, sea level rise and maritime surveillance.

Each partner has conducted desk research on two countries, in the identified sectors. Desk research produced a first inventory of markets and technologies and provided information on market trends and the political, economic, social and technological backgrounds together with cultural specificities for business cooperation. Information about weaknesses and development opportunities for companies and definition of value-chain were also found. Desk research led as well to identify and provide information on international clusters, business networks and agencies from the targeted countries.
The consortium finally organised four workshops:
1) Food from the sea: opportunities for space – fishery: this workshop was organised by MSE on July 9th and gathered 21 participants;
2) Food from the sea: opportunities for aquaculture: this workshop was organised by DTA on July 9th and gathered 20 participants;
3) Water level-rise and coastal erosion: this workshop was organised by AV on July 17th and gathered 26 participants;
4) Monitoring the marine environment: this workshop was organised by PMM on July 17th and gathered 23 participants.
Thanks to the workshops, target countries and sectors have been validated by the participants. It also confirms the willingness of SMEs using EO technologies for maritime application to internationalize their services.

In WP3 « Value Chain identification »
Using a generic value chain structure, value chain maps were defined for each of the application markets. These were populated by each partner with a range of accessible capabilities, ranging from EO data resources through to marine information services. A generic value chain structure has been identified to emphasize key capabilities that will underpin solutions to challenges in all these sectors. The results confirmed that there is a rich resource of expertise in both maritime and space sectors, and that a diverse range of companies and other stakeholders will find opportunities along the value chains. A template for collection of data on assets and capabilities has been developed, and has been populated by partners. It demonstrates the depth of capability in maritime space applications across Europe, and validates the scale of opportunity which SpaceWave is planning to open up. All segments of the value-chain are adequately populated, but it is clear that:
• Data analytics expertise is less widely available at present, due to its specialist nature and the fact that it is a recent discipline;
• Infrastructure (in particular, maritime infrastructure such as drones and platforms of opportunity) is not fully developed and is a segment where SpaceWave is well-placed to stimulate additional investment by expanding the accessible global market.
Priority user cases has been identified for one or more priority applications within a growth sector of the blue economy:
- Fisheries use-case to address challenges of illegal, unlicensed and unreported (IUU) fishing throughout the world, and especially in less-developed countries where fish stock depletion is having a serious socio-economic impact;
- Aquaculture use-case to address challenges of optimising the productivity of aquaculture facilities needed to meet growing global demand for seafood;

- Coastal erosion and sea-level rise use-case to address challenges for coastal protection created by global warming, and needed to protect vital eco-systems;
- Metocean and weather forecasting to enable marine operations within Exclusive Economic Zones, needed for a variety of activities such as shipping, offshore energy and resource management.

In the WP4 « Action Plan », the consortium defined and planned a five years collaboration partnership. The project beneficiaries signed a common agreement, titled « SpaceWave Alliance » to ensure the sustainability of the consortium and its actions. 21 letters of interest have been collected from SMEs owners, clusters or other business organisations at European and international levels.
The consortium defined an Internationalisation Strategy Plan targeting the four countries selected and high-value maritime markets to address. A roadmap built on this plan has been developped in order to define concret actions to be undertaken from now on until 2022. The overall roadmap will offer a complete offer to European SMEs willing to set up a strategy to go global. These four sets of instruments include a branding toolkit, training sessions, matchmaking missions abroad and continuous tailored follow-up.

In the WP5 « Communication », the consortium first of all defined a communication and dissemination strategy, with the creation of an ECCP profile, logo, banner, social network accounts, etc. A database gathering the major stakeholders in target countries has been built and will be used to disseminate the results of SpaceWave project. In order to faciliate the work of recording the dissemination and communication activities of all partners, the consortium created a communication tool, delivered every six months.
The consortium laucnhed three press release in the last three months of the project in order to inform on the main outcomes in the Action Plan.
As a whole, the consortium attended around 15 events linked to earth observation and Blue Growth economy.

The results obtained during the project will be mainly exploited during the internationalisation strategy of the partnership. European SMEs joining the fast-track to internationalisation programme will be the first and main actors exploiting the results. Their feedback will also help to reorient the actions planned in the roadmap in order to always better understand the SMEs needs.

Progress beyond the state of the art, expected results until the end of the project and potential impacts (including the socio-economic impact and the wider societal implications of the project so far)

According to the Horizon 2020 Work Programme, the field of space technologies and application is a Key Enabling Technology (KET) which will be applied in a multitude of sectors and activities, notably for Blue Growth. EO through satellites, drones and stratospheric balloons, dirigibles (HAPs, High Altitude Platforms) offers a unique view of our oceans, seas, and coasts. For instance, ocean monitoring is a growing business as 30 satellite missions focusing on it have been launched for the last 10 years, including 36 countries all over the world.
SpaceWave clusters strongly believe that an important growth potential for EO lies in Blue Growth. Indeed, new value chains are expected to be developed in this emerging industry. The capability for the European EO Industry to grow is based on their capability to export their services. But, in this relatively new sector, the companies are generally small to be able to deploy significant commercial actions abroad and obtain knowledge from the “end-users” needs at international level.
EO services deployment is still challenging because of the following reasons:

- For the past decade, the approach for aerospace application market development is “Technology push” driven and not “Demand pull”.
- Lack of knowledge and visibility of the EO community about applicative industrial sectors markets and trends.
- Weak knowledge of EO technologies at the European level among non-EO companies.
- Deriving from the two previous weaknesses, lack of knowledge about market segments presenting growth potentialities.
- Ignorance of existing EO technologies applications and their utility in solving well defined necessities in other industrial sectors.
- Difficult access for SMEs and entrepreneurs to EO technologies and applications.

The project have worked with and for 50 SMEs mainly by inviting them to participate to workshops and involving them in the SpaceWave community. Within the project implementation, the consortium will be widen and more SMEs should benefit from the specific actions and will be accompany to export abroad.
Also, the European cooperation with the four international countries targeted will be reinforced and business agreement or Memorandum of Understanding should be signed.

SpaceWave partnership has initiated links with 17 other clusters working for Earth Observation or Blue Growth Economy in Europe and worldwide. These contacts will be reinforced in the future with the idea to create a strong blue growth community dedicated to space applications development since economic opportunities are growing.

SpaceWave project has redefined the value chain and selected seven sectors in which there should be the most opportunities and markets for Earth Observation, in the targeted countries: aquaculture, fisheries, maritime traffic, coastal protection and hazards, ports infrastructures, sea level rise and maritime surveillance. The eight countries selected have been analysed in regards to the potential impact of market sectors and finally four countries were selected according to their real potential for European SMEs in Earth Observation. Analysis realised by SpaceWave shown the high potential and interest for European SMEs willing to export abroad. The consortium conscientiously selected four international countries with high potential in term of markets and possible establishment of business agreements.

A strong action plan (Alliance, internationalisation plan and roadmap) have been designed according to SMEs needs and real market trends. Among the letters of interest collected, 2/3 are signed by SMEs which shows their willingness and needs to be supported by SpaceWave Alliance in their international development.

EO for maritime activities will have a strong impact for the society, first in working for a better sustainable development in joining forces to keep oceans safe and clean but also in answering international challenge such as "feed the planet". European SMEs already have technologies, applications which answer those international challenges and many of them are now ready to export global. In this context, SpaceWave partnership will support the European economy with its internationalisation programme.

Address (URL) of the project's public website

https://www.clustercollaboration.eu/escp-profiles/spacewave

Photos

SpaceWave Logo

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