

Atlantic Regional Initiative: Cities and Ports

The main technical objectives of Atlantic Regional Initiative Topic 3: Cities and Ports (ARIA3) are the development, delivery to the end user community and respective impact assessment of an agreed number of customised Earth Observation-based information services to support decision making processes by local stakeholders in the Atlantic Region.

Those services shall cover three sub-topics:

1. Climate Resilience
2. Atlantic Cities and Ports
3. Protecting the Ocean

The project, which initiated in August 30th 2020, is developed by a consortium led by Elecnor DEIMOS and comprehends Planetek Italia SRL., Climate Impact LLC, University of the Aegean's Marine Remote Sensing Group (MRSG), Instituto Hidrográfico and The Atlantic International Research Centre (AIR Centre).

The proposed services will be specified, implemented, tested and demonstrated, following the requirements defined in the Atlantic from Space Workshop, organized by ESA in January 2019 in Southampton, UK. Consolidation of those requirements will be based on the engagement and co-design process with a wide range of key stakeholders in the Atlantic Region. High-level user requirements shall be collected from organizations which are developing a range of highly relevant investments or technical assistance projects in the Atlantic region. Specific requirements will then be identified by working with end user judiciously selected for the implementation of a set of pilot case studies. A list of those stakeholders is provided below.

High-level organizations:

- Atlantic Cities Network - <https://atlanticcities.eu/>
- International Council for the Exploration of the Sea - <https://www.ices.dk/>
- Network of European Regions Using Space Technologies - <https://www.nereus-regions.eu/>
- MIT Portugal Program - <https://www.mitportugal.org/>
- Future Earth Regional Office for Southern Africa - <https://futureearth.org/>
- EurOcean - <https://www.eurocean.org/>
- Marine Institute, University of Plymouth - <https://www.plymouth.ac.uk/research/institutes/marine-institute>

Selected end users at this point:

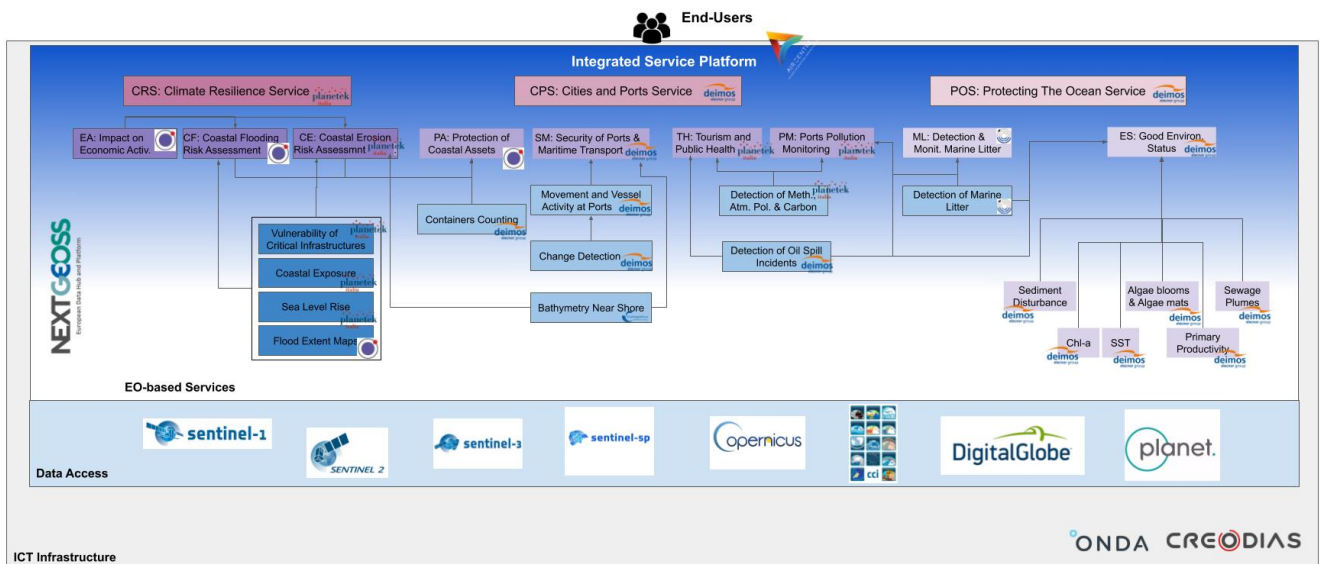
- Porto di Taranto - <https://port.taranto.it/>
- Port of Azores - <https://portosdosacores.pt/en/>
- Port of Imbituba - <http://www.portodeimbituba.com.br/site/index.php>
- EPAGRI - <https://www.epagri.sc.gov.br/>

The final technical requirements will guide the service chain specification and implementation process. Foreseen services should be mostly based on the fusion of large volumes of EO data from the Sentinel missions and other European EO missions as well as Copernicus service datasets. During the development of these solutions,

a series of co-design exercises with the users will be promoted, the resulting prototype EO applications being given to representatives of the original stakeholders to test and provide feedback that will iteratively drive the evolution of the provided services.

The system will be developed and deployed on the **service4EO** DEIMOS solution, installed in a cloud infrastructure such as the Copernicus DIAS. The system will be integrated and brought to operational level by DEIMOS, including a Service Dashboard and two additional service layers:

- **Data services** generating EO based information and upstream data series (e.g. Bathymetry Near Shore), that will be the basis for all implemented downstream services.
- **Downstream Service chains** that will provide user-driven information, integrating data services in a meaningful way, generating periodic reports, and triggering alerts set up by the users.



Structure of the proposed system.