An interoperable infrastructure for the Italian Marine Research

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Consiglio Nazionale delle Ricerche

Ministero dell'Istruzione, dell'Università e della Ricerca

RITMARE: la Ricerca Italiana per il MARE - Italian Research for the sea

RITMARE Flagship Project is one of the National Research Programs funded by the Italian Ministry of University and Research, involving the whole marine research sector, including various public research bodies (CNR, OGS, INGV, ENEA, ISPRA, Stazione Zoologica) and Inter-university consortia (CoNISMa, CINFAI), as well as private companies working in the sector and, as a result of technological transfer, enhancing the competitiveness of Italian industry.

Objectives

- to support integrated policies for the safeguard of the environment (the health of the sea);
- to enable sustainable use of resources (the sea as a system of production);
- to implement a strategy of prevention and mitigation of natural impacts (the sea as a risk factor).

Sub projects in RITMARE

SP3 - Planning of the Maritime Space in Coastal Waters

SP4 - Planning of the Deep Marine Environment and the Open Sea

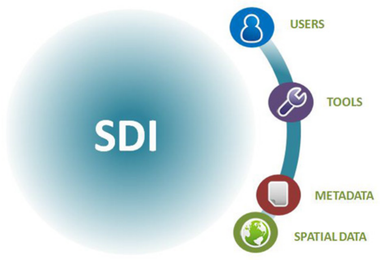
SP2 - Technologies for Sustainable Fishing

SP5 - Observation System for the Marine Mediterranean Environment

SP1 - Maritime Technologies for the development and construction of a Demonstration Vessel

SP6 - Research, Training and Dissemination Structures

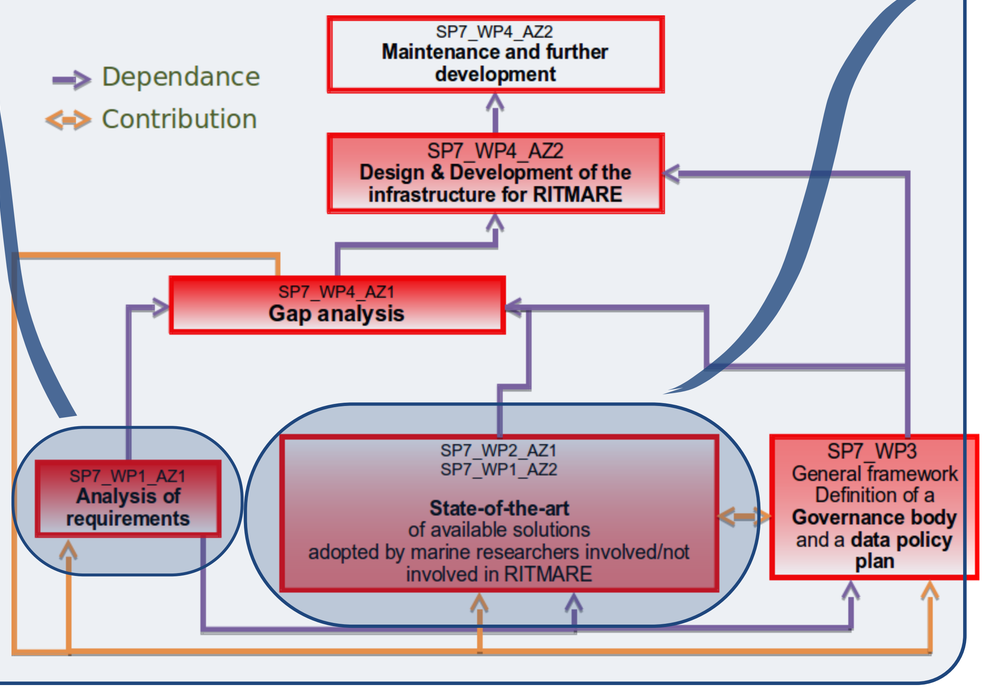
SP7 - Interoperable Infrastructure for the Observation Network and Marine Data



Sub project SP7: Interoperable Infrastructure for the Observation Network and Marine Data

The Sub-Project 7 has as a goal to design and build an infrastructure able to manage and share data, information and processes produced by the other sub-projects, in an interoperable way without forcing the practices and technologies used by the communities participating in the project.
This poster depicts the structure of SP7 and describes the details of the most advanced activities, i.e. Analysis of requirements and of the state of the art.

Structure of SP7: current advancement



Requirements

The main objective of WP1 is to collect the requirements of RITMARE researchers with respect to the data and data process infrastructure; in particular it aims at defining:

- **data** to be used, managed, produced;
- their **characteristics**;
- **functionalities**/tools required to work on data;
- **workflows** to be considered

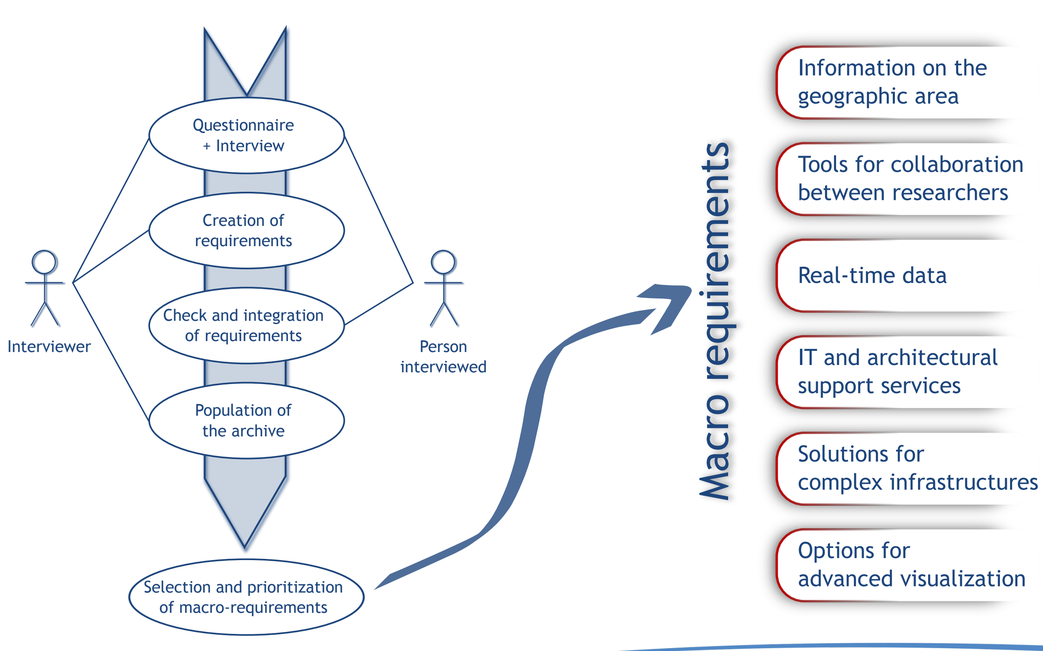
On this above basis, action 1 of WP1 produced a **questionnaire** that has been filled through interviews to a representative sample of **30** selected RITMARE researchers. Each researcher had the possibility to express more than one requirement and the total amount is **104**.

Interviews and requirements are stored in an archive that can be accessed at: *http://sp7.irea.cnr.it/questresults/*

The requirements have been analysed and revealed that the scientific community of RITMARE is pretty unanimous in wishing that:

- the infrastructure should manage a wide spectrum of data typologies, such as digital terrain models, bathymetries, remote sensing imagery, bio-molecular data and processes, environmental observations, etc. produced both within and outside RITMARE;
- data in the infrastructure should be shared and managed by researchers to be used, by example, in feeding models, in supporting decisions, in planning research activities, etc.

All requirements have been clustered in **6 macro-requirements** going to be examined and evaluated by an expert panel, in order to establish their relative importance and priority.

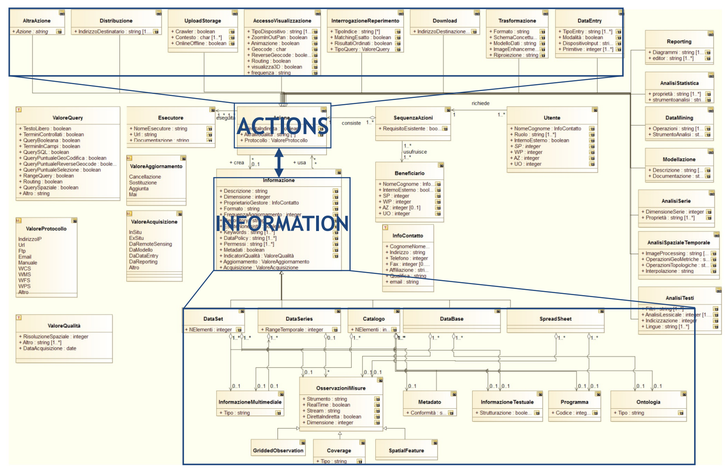


Analysis of the state of the art

Main Objective:
to define the state of the art of the infrastructures for marine research data and to give input for a gap analysis between requirements and state of the art.

A complete conceptual schema was defined for this purpose to describe the collected information.

Conceptual schema of information collected



Information collected in the state-of-the-art have been summarised in sheets describing more than 60 initiatives in the field of data infrastructures for marine research. Descriptions include the following details:

- **Identification**: information to identify the initiative project described.
- **Solutions**: this section describes the main functionalities of the initiative/project.
- **Description of data and information** made available, used, managed in the initiative/project.
- **Maturity**: synthetic score to enhance the maturity level of the initiative/project with respect to RITMARE.
- **Hardware/Software** used in the surveyed infrastructures.

Next future of RITMARE SP7

After completion of the gap analysis the design of the RITMARE infrastructure will start in the next months, followed by a first development of prototypes involving the research communities that are more ready to collaborate.
First actions will be addressed at:

1. creating startup environments, i.e. friendly software 'kits' to enable less mature communities in effectively contribute with data and metadata through distributed and interoperable geoservices
2. defining a flexible overall infrastructure, able to overcome interoperability, interdisciplinary and IT unfriendliness issues via semantic tools tailored on the skills and needs of researchers