**Development of integrated systems for the data storage and analysis to study plant biodiversity in the field of macro-ecology**

**Rationale**: National research in plant taxonomy, plant ecology and plant geography, is producing a wealth of biodiversity data. While part of these data is available online, sometimes also in the form of searchable online aggregators, we are still far from an ideal situation, in which fragmentation of the resources is absent, or limited, and digitization of existing data is (almost) complete. Italy still lacks of a common infrastructure for data aggregation and management, which could also provide web services to researchers.

Thanks to the PON project LifeWatch Plus, the University of Bologna is becoming the botanic digital biodiversity center in the country. However, this center must be populated with data, resources, and services, in order to become useful to the scientific community.

**Objective**: Development of a contribution for the aggregation of digital resources for botany in Italy focusing on biogeographic and macroecological themes. The logical integration of available resources in the digital biodiversity center of the University of Bologna. Application of solutions based on distributed cloud computing and distributed data center of LifeWatchPLUS for biodiversity data aggregation. Analysis of the major gaps in botanical knowledge, and development of novel strategies for the production of data in order to fill these gaps.

**Work plan**: the researcher in charge of the work will work in the field of biodiversity informatics, developing the digital infrastructure, and, when necessary, standards, protocols, and novel strategies.

The project is based on a three years perspective, and the work plan is explained below:

1. Analyses of available data sources and typologies at national level on spatial and temporal occurrences, co-occurrences within communities, habitat, ecosystems, taxonomy and functional traits of vascular plants designed to aggregate data in the national Hub for biodiversity and ecosystem research.
2. Development of a thematic contribution aimed to realize an hub for the aggregation and management of available biodiversity data in databases for flora, vegetation, *herbaria* and functional traits with solutions based on distributed cloud computing and distributed data center of LifeWatchPLUS.
3. Networking with the main European and international initiatives and projects on diversity and composition of vascular flora and vegetation. Development of tools for the harmonization and integration of available national data in the national Hub.
4. Data analysis on biogeographic and macro-ecological distribution of vascular plant in relation to main ecosystems, environmental constraints, land-use and isolation, designed for organizing conservation strategies.