

R5.3 – Regional web-GIS database

Work Package 5 - Identification of the key relevant
policy actors and their planning & management
competence for the project generation 2014-2020

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Preface

The present report is an outcome of the project “Alpine space In Movement – targeted to water and energy capitalisation” in the frame of the Alpine Space Programme, co-funded by the European Regional Development Fund (www.aim2014.eu).

The project is based on:

- 1) Tracking the accomplished results of the Alpine Space Programme projects (ASP 2007-2013), in the thematic fields of renewable energy production, water resources management and conservation & restoration of (aquatic) ecosystems and the identification of the transnational needs of the entire Alpine Space Region (Work Package 4).
- 2) Valorising and capitalising the main ASP project's achievements in terms of policy & management development into effective dissemination and target the relevant policy level/actors to impact on national/regional policies.
- 3) Setting the scene for the 2014+ project generation, by crossing the achieved results with beneficiaries needs, mapping the European/regional/transboundary/national programs with possible synergies and by identifying key relevant policy actors and institutional competences to be addressed.

In particular, the present deliverable R5.3 (Regional web-GIS database) which is part of Work Package 5 (Setting the scene for the 2014+) describes the user-friendly tool developed to map, share and make available information about the achievements obtained by the capitalized projects (Alp-Water-Scarce, ECONNECT, recharge.green, SEAPAlps, SedAlp, SHARE) and implemented in pilot case studies.

The Web-GIS database illustrates programme hot-spot areas, spatial gaps and identifies the potential (spatial) synergies for the project generation 2014-2020.

1. Introduction

The purpose of this document is to detail the work carried out for the realization of the [WebGIS tool](#) for mapping the pilot cases and the results obtained in the framework of the Alpine Space Programme, and capitalized by the AIM project.

2. Reference frame

The developed WebGIS tool has been customized to reach the main *Alpine Space in Movement (AIM)* project objectives, that are the dissemination and capitalization of the Alpine Space Programme results tested in several pilot cases, regarding the promotion of renewable energy production and the optimization of water management.

The reference area of the AIM project includes the following countries: Austria, Slovenia, Switzerland, Italy, France and Germany.

The official website of the AIM project, containing more information and insights on current activities, may be accessed at: <http://www.aim2014.eu>.

Additional details about the Alpine Space program are available at: <http://www.alpine-space.eu>

3. Objective

The objective of the work is to develop a WebGIS tool able to map, share and make available online, all the information about the pilot cases studied and the results obtained in the framework of some selected alpine space projects, such as: Alp-Water-Scarce, ECONNECT, recharge.green, SEAPAlps, SedAlp, SHARE.

For each of the mapped pilot cases, the following information are available:

- Geo-localization of the pilot case;
- Main and Sub topic faced;
- Software used;
- Technical reports.

4. Technology

The technology used for the development of the WebGIS tool is **ArcGIS Online** that, from the analysis carried out, is the most efficient to achieve the project objectives.

ArcGIS Online is a cloud platform for creating and sharing maps, applications, data and geographic content, thanks to the availability of a rich collection of geographical data with a worldwide coverage.

The platform is available through the web and can be used with smartphones and tablets. ArcGIS online is simple to use, and it does not require any installation and configuration. With the platform it's possible to share maps on blogs, websites and social media (Facebook, Twitter, etc.) with other users, add own data, create mash-ups with maps, include pop-up and other highlights, such as photos and links to web pages.

The services are hosted into the ESRI Secure Cloud without transferring ownership and copyrights. Data can be made publicly available to other users, or restricted to specific users.

Furthermore in the new 10.2 version of the ArcGIS on-line, thanks to the new advanced analysis tools implemented, is possible to analyse geographic relationships, discover hidden patterns, evaluate trends in order to take more informed decisions.

5. Technical implementation

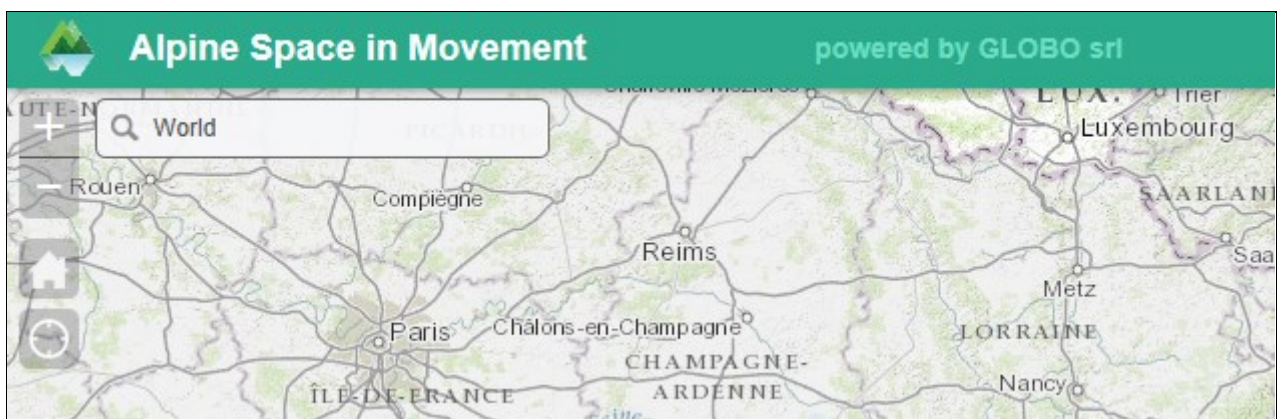
5.1. WebGIS development

Through the ArcGIS Online platform it was possible to develop a WebGIS application that responds to the AIM project needs, regarding the sharing and analysis of geographic data. The advanced tool WebApp Builder – available within ArcGIS online – was used for the creation, configuration and customization of the WebGIS application.

The WebGIS application has been designed for the optimal use through desktops and any mobile device, such as smartphones and tablets: the layout automatically adapts to different screen sizes and to the interaction possibilities offered by the touch technology.

The implementation and the customization of the WebGIS platform (*application*) required the following activities:

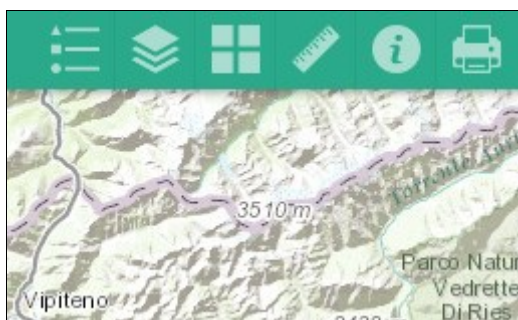
- Upload of the cartographic and descriptive data related to the pilot cases, according to the specification reported in section 5.2.
- Graphic personalization with the AIM logo and colours, in accordance with project visual identity. Language has been settled in order that the whole WebGIS is displayed using the default browser language.



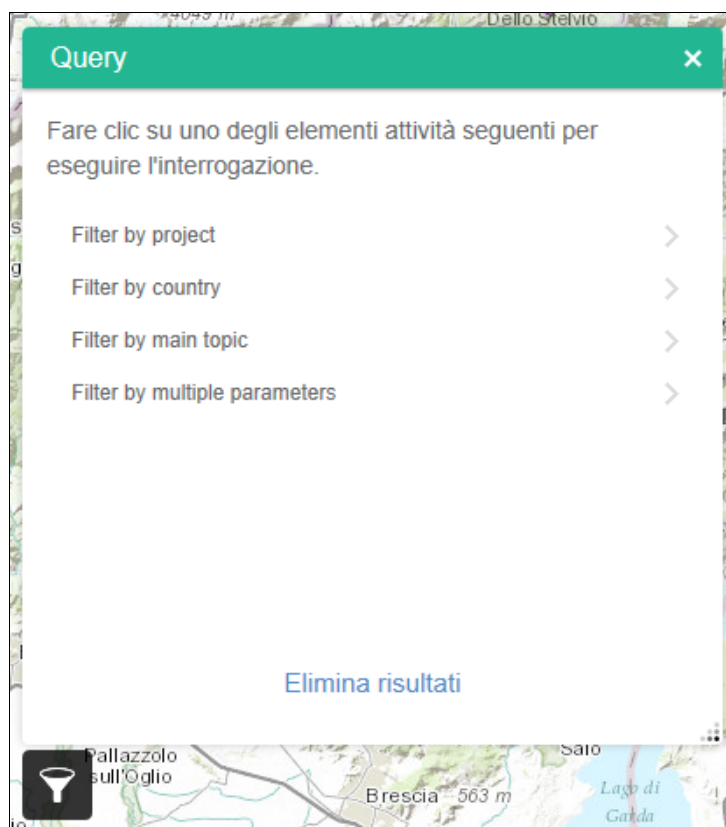
- Introduction of the possibility of consulting the attribute table for the “pilot cases” layer.

| Opzioni Zoom a Cancellazione selezione Aggiorna | | | | | |
|---|---------|---------------------|---|--|--|
| Alpine Space in Movement - Pilot cases | | | | | |
| Project | Nation | Area | Main topic | Sub topic | Tools |
| AlpWaterScarce - Water Management Strategies against Water Scarcity in the Alps | Austria | Jauntal | Water and ecosystem management | Optimization of water management considering different water users | Groundwater longterm recharge analyses (Hydrological model MIKE-SHE) |
| AlpWaterScarce - Water Management Strategies against Water Scarcity in the Alps | Austria | Lower Gurktal | Water and ecosystem management | Optimization of water management considering different water users | Groundwater longterm recharge analyses (MIKE-SHE) |
| AlpWaterScarce - Water Management Strategies against Water Scarcity in the Alps | Austria | Entire Land Kärnten | Water and ecosystem management | Optimization of water management considering different water users | A prediction / forecasting tool for early warning (Hydrological model HBV) |
| AlpWaterScarce - Water Management Strategies against Water Scarcity in the Alps | Italy | Piave River | Renewable energy focus on hydropower and water and environment management | Energy efficiency Optimization of water management considering different water users | An early warning system tool (Hydrological model MIKE-SHE) |

- Widgets (measurement tool, info, print) implementation and personalization.



- Query tools configuration that allow to filter the pilot cases according to the following parameters: project name, country, main subject and multiple parameters (a composition of the previous three)



5.2. Acquisition, organization and data loading, related to pilot cases, cooperation programs and basemaps

Pilot cases

A descriptive excel spreadsheet has been prepared, with all the information related to each pilot case (around 120) analysed by the AIM project; the pilot cases have been classified according to the project.

| Project basic information | Pilot Areas | | | | | | |
|---|--------------------|----------------------|---|--------------------------------|--|--|-----------------------------|
| Name, web page | Austria | | | | | | |
| | Name of area | Town | Activites on pilot area | Main Topic | Sub Topic | Tool applicated in the pilot case | Deliverable? |
| AlpWaterScare - Water Management Strategies against Water Scarcity in the Alps | Koralpe | 46.797088, 14.971100 | Past and Future Groundwater Recharge and Runoff analysis. | Water_and_ecosystem_management | Optimization of water management considering different water users | Longterm runoff analyses (Hydrological model MIKE-SHE) | Handbook_Water_Managers.pdf |
| http://www.alpine-space.eu/projects/projects/detail/Alp-Water-%20Scarcie/show/ | Jauntal | 46.606294, 14.750987 | Past and Future Groundwater Recharge and Runoff analysis. | Water_and_ecosystem_management | Optimization of water management considering different water users | Groundwater longterm recharge analyses (Hydrological model MIKE-SHE) | Handbook_Water_Managers.pdf |
| Responsible partners: IzVRS | Lower Gurktal | 46.895665, 14.333390 | Past and Future Groundwater Recharge and Runoff analysis. | Water_and_ecosystem_management | Optimization of water management considering different water users | Groundwater longterm recharge analyses (MIKE-SHE) | Handbook_Water_Managers.pdf |
| | Steirisches Becken | 46.937994, 15.738267 | Artificial Groundwater Recharge as a Mitigation Measure to Prevent Water Scarcity for the Drinking Water Supply | Water_and_ecosystem_management | Optimization of water management considering different water users | Longterm runoff analyses. Artificial Groundwater Recharge studies (Hydrological model MIKE-SHE). | Handbook_Water_Managers.pdf |

For each pilot case, the excel table reports the following information: name of the reference project, main and sub topics faced, country, related deliverables or informative material, links to online reports and spatial coordinates.

The re-organization of the provided information has been the first action carried out, in order to elaborate a compatible database for the publication in the WebGIS platform. The spatial coordinates of the pilot cases have been used to generate a georeferenced Feature Layer, to which, through a join operation, the relevant descriptive information contained in the excel sheet has been associated.

The new elaborated data have been implemented in a Geodatabase File (.gdb) and uploaded in the ArcGIS Online cloud platform.
















Transnational Cooperation Programs

The Alpine Space region has synergies with other European transnational cooperation programs, in fact, several regions located in the AS area, also fall within other programs (see table below).

| Programma | Austria | Francia | Germania | Italia | Liechtenstein | Slovenia | Svizzera |
|---|---------------|--|--|---|---------------|--------------------------------------|---------------|
| Alpine Space | whole country | Rhône-Alpes, Provence-Alpes-Côte d'Azur, Franche-Comté, Alsace | districts of Oberbayern and Schwaben (in Bayern), Tübingen and Freiburg (in Baden-Württemberg) | Lombardia, Friuli Venezia Giulia, Veneto, Trentino-Alto Adige, Valle d'Aosta, Piemonte, Liguria | whole country | whole country | whole country |
| Adriatic Ionian Cooperation Programme | | | | Lombardia, Friuli Venezia Giulia, Veneto, Trentino-Alto Adige | | Vzhodna Slovenija, Zahodna Slovenija | |
| Danube Transnational Programme | whole country | | Baden-Württemberg and Bavaria | | | whole country | |
| Central Europe Programme | whole country | | Baden-Württemberg, Bayern, Berlin, Brandenburg, Mecklenburg-Vorpommern, Sachsen, Sachsen-Anhalt, Thüringen | Friuli-Venezia Giulia, Lombardia, Provincia Autonoma Bolzano/Bozen, Provincia Autonoma Trento, Veneto | | whole country | |
| MED Programme | | Corse, Languedoc-Roussillon, Provence Alpes Côte d'Azur, Rhône-Alpes | | Lombardia, Friuli Venezia Giulia, Veneto, Piemonte, Liguria | | whole country | |
| INTERREG IVC | whole country | whole country | whole country | whole country | | whole country | whole country |

A polygon *shapefile* has been created for each cooperation program, that covers the entire extension of the involved European regions. The boundaries of the Unit Territorial Statistics (NUTS 2) - whose standard is defined by the European Community – have been used for the digitalization in the WebGIS.

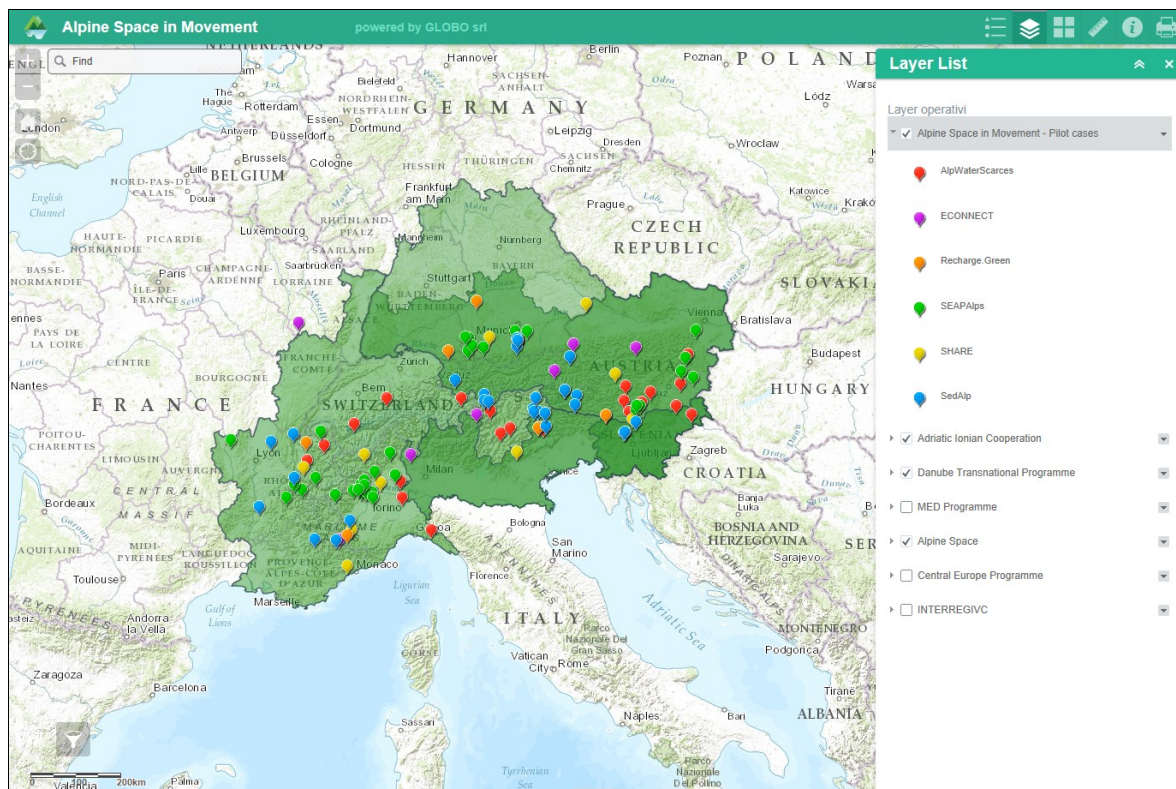
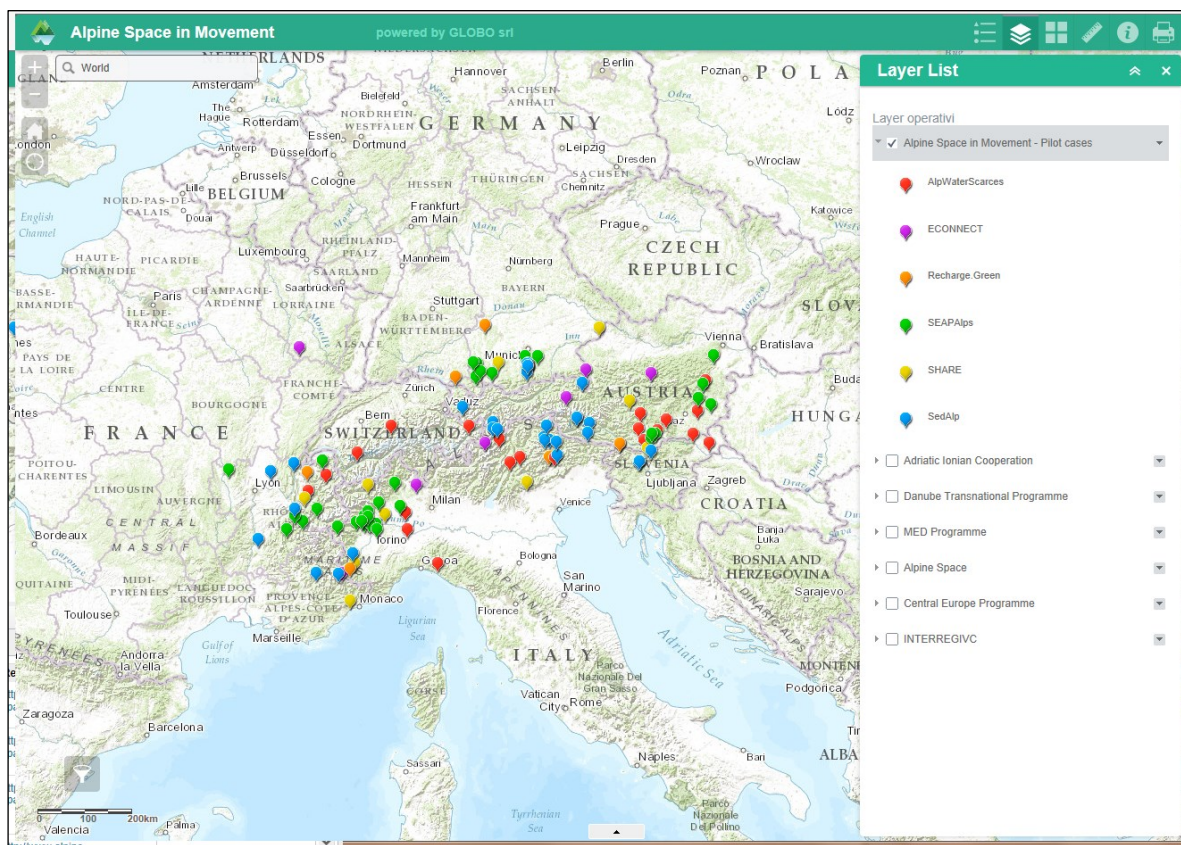
Finally, the database has been uploaded to the ArcGIS Online cloud platform.

| <input type="checkbox"/> | ▲ Titolo | Tipo |
|--------------------------|---|--|
| <input type="checkbox"/> |  Alpine Space in Movement | <input type="checkbox"/> Web Map |
| <input type="checkbox"/> |  Alpine Space in Movement - Pilot cases | <input type="checkbox"/> Feature Layer |
| <input type="checkbox"/> |  Alpine Space in Movement - Storymap Journal | <input type="checkbox"/> Web Mapping Application |
| <input type="checkbox"/> |  Alpine Space in Movement - WebGIS Application | <input type="checkbox"/> Web Mapping Application |
| <input type="checkbox"/> |  AlpWaterScarce | <input type="checkbox"/> Web Map |
| <input type="checkbox"/> |  alpwaterscarce_logo | <input type="checkbox"/> Image |
| <input type="checkbox"/> |  Cooperation programs area | <input type="checkbox"/> Shapefile |
| <input type="checkbox"/> |  Cooperation programs area | <input type="checkbox"/> Feature Layer |
| <input type="checkbox"/> |  ECONNECT | <input type="checkbox"/> Web Map |
| <input type="checkbox"/> |  logo_AIM | <input type="checkbox"/> Image |
| <input type="checkbox"/> |  logo_AIM_storymap | <input type="checkbox"/> Image |
| <input type="checkbox"/> |  pilot_cases.gdb | <input type="checkbox"/> File Geodatabase |
| <input type="checkbox"/> |  Recharge.Green | <input type="checkbox"/> Web Map |
| <input type="checkbox"/> |  recharge_logo | <input type="checkbox"/> Image |
| <input type="checkbox"/> |  share_logo | <input type="checkbox"/> Image |

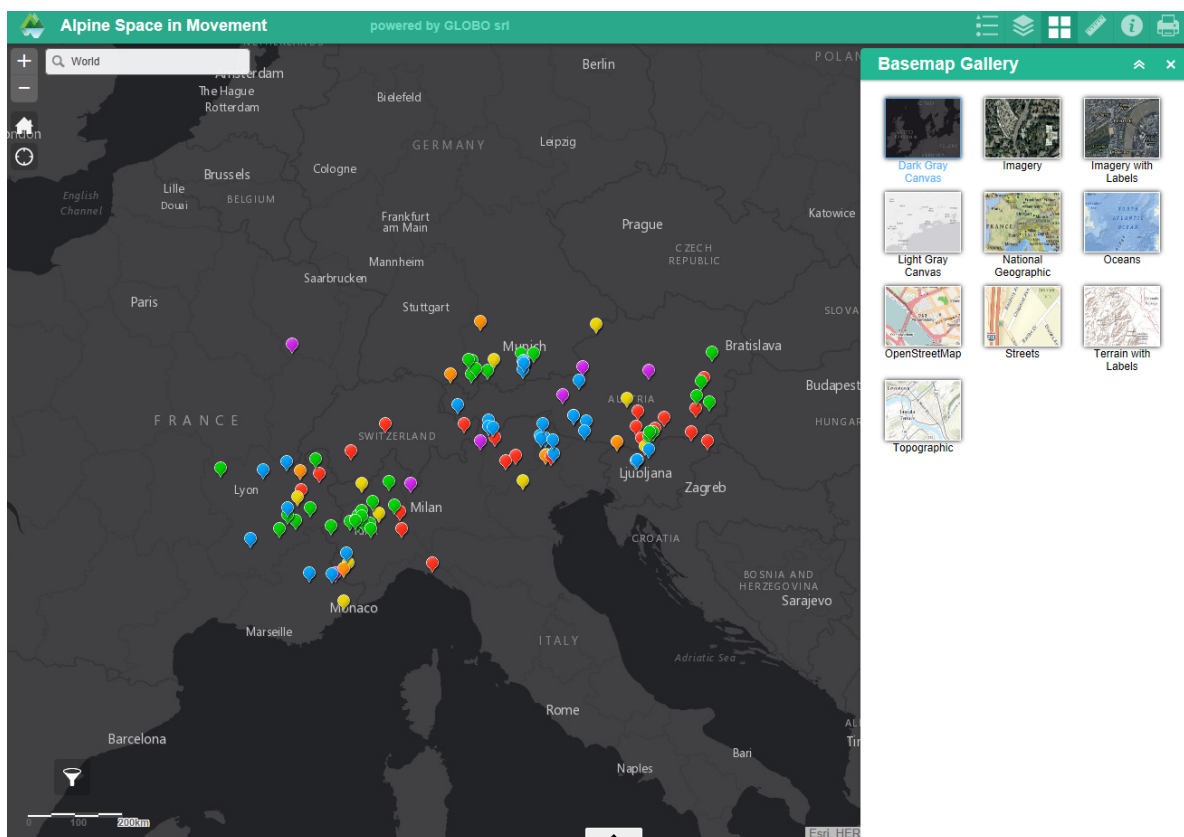
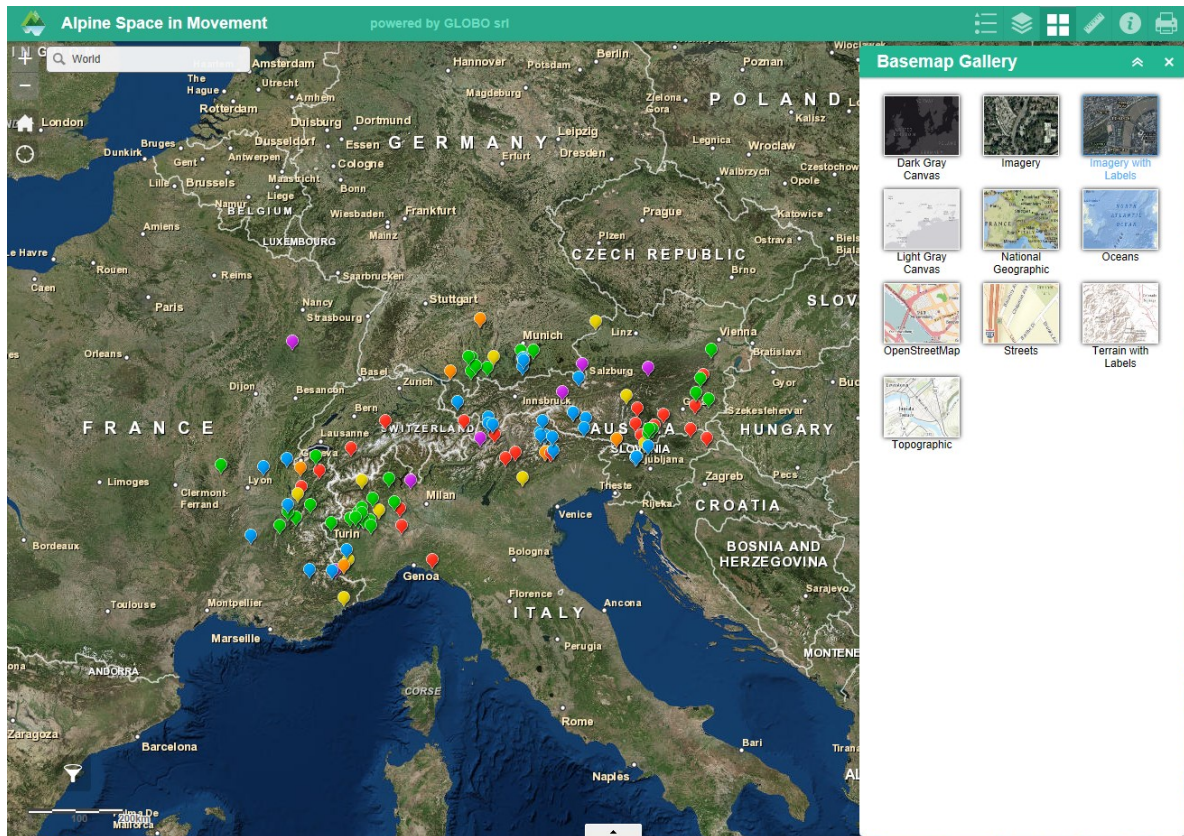
Cartography preparation

Starting from the cartographic databases (pilot cases and perimeter of cooperation programmes) uploaded in the ArcGIS Online cloud, the required feature layers have been created for the composition of the cartographic view used by WebGIS application.

The symbology used for the Layers Feature respects the graphic rules set out in the visual identity of the AIM project and, at the same time, was optimized for the clear understanding of the WebGIS end-users.

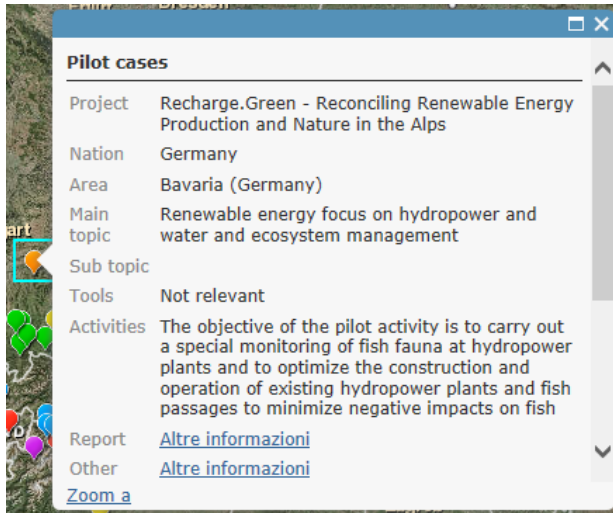


Together with the functional layer symbolization, the cartographic basemaps have been implemented. From this point of view, the identified technology (see paragraph 4) provides a significant number of high quality cartographies with worldwide coverage (World Topographic Map, World Imagery).



Query results configuration

In the WebGIS platform, the user can query the cartographic elements, and clicking on them is possible to visualize the associated information; the pop-up containing the query results has been customized to include, in addition to the information reported in the data base, hyperlinks that connect to the pilot cases reports, and a banner that links to the official website of the project.





www.aim2014.eu

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