Geospatial data dissemination in the GIOCOnDA project

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Abstract. Cross-border governance coordination and collaboration is by no means a simple task. In particular, when the shared resources are unstructured and located in isolated silos of information, with no linking from one to another. In addition, other criticalities frequently encountered are lack, misalignment, and underuse of information, which lead to issues for sharing the data. The GIOCOnDA Interreg project aims at tackling data-sharing problems regarding geodata sharing in the Insubric Area (Italy-Switzerland cross border area).

GIOCOnDA is a project funded under the Interreg V-A Italy-Switzerland Cooperation Programme, led by Politecnico di Milano for Italy and by the SUPSI (University of Applied Sciences and Arts of Southern Switzerland) Department of Innovative Technologies for Switzerland. The project's output considers the adaption, enrichment, and collection of the data of interest in a common platform for the Insubric Area according to standard ontologies. During the project, the focus for data collection and sharing has been on culture and tourism.

First, the work explored publication practices for data interoperability of public administrations at the Italian-Swiss border. The DCAT-AP-IT [1] and the DCAT-AP-CH [2] are the data catalogue application profiles for Italy and Switzerland, respectively, which allow for the possibility to work on a unique standard. For these standards, the geospatial related attributes, to which particular attention has been dedicated in this work, are considered optional. Next, a preliminary study on the Open Government Data sources of the Lombardy Region (https://dati.lombardia.it/) and the Opendata.swiss portal (https://opendata.swiss/it/, where the open data of the Swiss public administration are archived) were examined for the availability of the geospatial components in the datasets. A frequency analysis has been performed, with FOSS Python libraries requests, on the most used keywords to single out geospatial related information. For example, it was found that in Regione Lombardia geoportal, out of 118 datasets under the "tourism" category, 75 included information related to geodata, showing that most of the content can be related to geospatial information.

SUPSI research group has developed for the project a data-sharing platform populated with 22 LOD (Linked Open Data) datasets, based on OntoPiA [3], regarding tourism, culture and environment, both for Italy and Switzerland (https://gioconda.supsi.ch). The use of LOD brings benefits such as transparency, discoverability, accessibility, reusability, and interoperability. The data that have been already included in the GIOCOnDA portal come from wikidata, Ticino Turismo (touristic institution of Ticino

Canton) and OASI (Department of territory, Environment division, air, water and land protection section, of Ticino Canton, <u>https://www.oasi.ti.ch</u>) for Switzerland, and Regione Lombardia open data portal, and other sources, including ARPA (Regional Agency for the Protection of the Environment <u>https://www.arpalombardia.it/</u>), for Italy. The use of standardized metadata [4] allows to overcome the semantic heterogeneity due to the characteristics of different sources, types and forms of geospatial data. For this reason, under the scope of GIOCOnDA project dedicated to culture and touristic resources, the Cultural-ON ontology vocabulary has been considered as suitable.

The e-Government vocabularies [5] represent the starting point for the definition of the Cultural-ON and the source from which the latter inherits the attributes. For this work, the attention is focused on the definition of the Representation System and coordinates of spatial data within the Cultural-ON.

The Cultural-ON ontology assumes, by default, that spatial data are represented in the geocentric Datum WGS84 and that the coordinates are in geographical format (latitude and longitude). Of course, this implies that the data are transformed in this System before being documented according to this ontology and this is the process that has been followed for the data dissemination through the GIOCOnDA platform. However, given that it is considered fundamental to explicit the Coordinate Reference System (CRS) in the metadata, the attributes related to geometry, already foreseen by the ontologies from which the Cultural-ON is derived [3], have been added to the Cultural-ON metadata and included in the data exposed through the platform. In particular, the <clvapit:coordinateSystem> data property (ref. IRI: https://w3id.org/italia/onto/CLV/coordinateSystem) has been used from the CLV Address(Location) Ontology (https://w3id.org/italia/onto/CLV).

A deep understanding of the key attributes of metadata and a careful documentation of data and geodata is essential to guarantee efficient sharing of information among public administrations, stakeholders and citizens.

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