Encoding of geodiversity and geoheritage: towards consistency of representation and comparability of descriptions

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The notion of geoheritage counts numerous attempts of definition in literature, all based on the value that a given element of the environment has for humanity. The major differences concern the values that allow an element of geodiversity to be considered as geoheritage. In particular, the values that every author lists are different from the values of the other authors. In particular, only some values are shared by all the authors (namely Scientific, Educational, Cultural and Aesthetic values), while others are only partially shared (e.g., the Recreational or the Economic values). Our work aims at representing these differences in the definition of geoheritage, starting from a formal representation of the elements of geodiversity, useful for both geosites recognition and geoparks management.

The first phase in the organisation of the information that is necessary for describing the elements of geodiversity is supported by ontological and semantic study, to prove the coherence of the conceptual model. The "elements of geodiversity" and the "elements of geoheritage" are encoded into classes of an ontology for the description of geoheritage, and several properties describe the elements populating both the classes, also underlying their relations. In this phase, the use of the ontology supports the design of a coherent structure to prevent ambiguity and vagueness in the definitions. Moreover, since some of the elements of geodiversity are geologic features, we can lean on ontologies for geosciences, in which these elements are already encoded and unambiguously described.

The second phase is the transformation of the conceptual base into a user-friendly tool, through the support of the Omeka-s Content Management System, that provides tools for the creation of compilation masks that gosites/geopark operators can use to fill a database for the description of elements of geodiversity and geoheritage.

Such an organisation of data can support the consistency of the representation of the data and easy further comparison and consultation of information. This brings to higher transparency in the identification of elements of geoheritage,, a relevant information for the proper management of geoparks or other protected areas. Last but not least, such structured data management can be helpful in the valuation of the changes in time of the condition of the evaluated elements of

geodiversity, and consequently, of the global evaluated area (such as a geopark).