Structuring of Geological Datasets in the Scale of 1: 50.000 in Austria – Advantages and Lessons Learned

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The importance of the possibility to process geological data increases permanently and the amount of data is growing enormously. Uniform data structures, based on elaborated data models or given data standards (e.g. INSPIRE, GeoSciML) help to manage and use the data in a structured and sustainable way. A cross-border usability and interoperability of public sector data is also the aim of the European Union directive INSPIRE (2007). The INSPIRE directive (implemented in Austria by BGBl – GeodatenInfrastrukturgesetz, 2010) obliges the Geological Survey to provide its public data information on geology in a semantically and technically standardized form. That means it has to be possible to search, visualize and download spatial data information in a uniform structure and description. Until then, the focus of the Geological Survey has always been on printed map sheets as a work of authorship. Therefore, prior to INSPIRE no overall data model on Geology has been established. The main geologic information linked to the geometry (geological legend) was just stored as plain text information without the possibility for satisfying queries. Hence, it was inevitable to structure geological data information on basis to a well-defined and sophisticated data model in order to publish datasets according to given standards. After being aware of the main geological object classes and attributes to cover, a first approach of data model to structure the map information implied in the legend text and legend structure has been started – the data harmonization process. Eighty-nine geological datasets in the scale of 1:50.000 have been harmonized through that first data structuring process. Now it is possible to run queries, achieving results in the topic of formation age, lithology, tectonic units, etc., over all harmonized geological datasets in Austria. However, the data harmonization points out how important it is to establish and define a common vocabulary for geologic data information (GBA-Thesaurus). A common “language” avoids misleading information and ambiguous interpretation regarding terminology such as homonyms, synonyms, errata, obsolete labels and concept definition. Beside the visualization of geologic feature details, another advantage of the query results is the display of inconsistent data information between the different map sheets. Thus, the data harmonization may be useful for further scientific investigation, compilation, homogenization or adjustment of interpretation of geological data.

BGBl. I Nr. 14/2010 (2010): Bundesgesetz über eine umweltrelevante Geodateninfrastruktur des Bundes (Geodateninfrastrukturgesetz GeoDIG).
European Legislation Identifier (ELI): https://www.ris.bka.gv.at/eli/bgbl/I/2010/14/20100301

European Parliament (2007): Directive 2007/2/EC of The European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE). Official Journal of the European Union.

GBA-Thesaurus link: http://resource.geolba.ac.at/