

Digital dissemination of geological information – Recent insights into the geoinformation bubble

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One objective in the work on public sector geoinformation is to publish the geospatial data created by the respective institution digitally. This must be done in such a way that they are easily accessible and available in an interoperable way in accordance with the legal basis. With regard to this processing of geoinformation, there is a rapidly progressing development, also in the field of geosciences. In this area, one increasingly encounters terms such as 3D GIS and BIM, Controlled Vocabulary, Linked (Open) Data, Knowledge Graph, AI, Big Data, Data Cube, Digital Twin and many more. But what are these topics about? To what extent can they be useful for the processing and dissemination of geological information and what are the prerequisites for this? In particular, these technologies should help us to do our work more efficiently. They should offer added value in the generation of new knowledge, especially with regard to the currently relevant challenges in the field of climate change and raw material resilience. Furthermore, the use of these technologies aims to improve the processing, generation, storage and exchange of knowledge. Basic requirements for the use of the technologies mentioned are a stable spatial data infrastructure and machine-readable data. The implementation of internationally agreed standards is also an essential point in order to be able to use knowledge digitally in a sustainable, replicable and interoperable way. A well-known use case in which these basic requirements have already been implemented is the controlled vocabulary of the Geological Survey of Austria (GBA), the GBA Thesaurus (<https://thesaurus.geolba.ac.at/>). The free availability of this vocabulary to all users and the use of open, accredited standard formats (e.g. RDF, SKOS), enables the applicability of Linked Open Data (LOD) technology. Furthermore, this supports the use of knowledge graphs and the building of knowledge bases. A larger-scale practical implementation in this regard is already planned in an upcoming Coordination and Support Action project “Geological Service for Europe (GSEU)” under the programme Horizon Europe. To ensure that geoscientific data, however well prepared, can be found and accessed at all in the sheer vastness of the internet, it is essential to implement the “FAIR Data Principles”. These have already been taken into account in the GBA Thesaurus and are an important basic element in “TETHYS”, the Research Data Repository (RDR) of the GBA (<https://www.tethys.at/>). FAIR Data Principles – the acronym stands for Findable, Accessible, Interoperable, Re-usable – are gaining more and more importance. Along with these four marking key concepts, sustainability is very important to make the data a solid base of information and knowledge within the scientific community. It is well understood, that data intended for reuse and networking must be made accessible at a low threshold for both the user and for the machine. To achieve this, validated standards at various levels are indispensable. Using the research data repository of the Geological Survey of Austria „TETHYS“ (www.tethys.at) as an example, we want to show a possible implementation of the FAIR Data principles and their influence in the international digital science network.