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## **The Spatial Data Infrastructure for the Geological Reference of France**

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As a continuation of the national programme of geological map of France at 1:50,000, the French Geological Survey (BRGM) engaged in the Geological Reference of France (Référentiel Géologique de la France, RGF). Over the next decades, this programme aims at developing a three dimensional knowledge of the eleven different geological regions through a continuous, homogeneous and consistent description permanently updated as well as understanding the mechanisms governing their evolution over time.

All existing and newly acquired information, currently in the Pyrenees, are integrated within the RGF spatial data infrastructure (SDI). It provides the associated scientific programme with the necessary information system (data structure, computer means, applications and tools) to meet the various needs of contributors and end-users, from acquisition to dissemination of public data and knowledge. The RGF SDI must deliver the best available geological information over the territory, whatever the producer, i.e. research works, applied geology projects, both internal and external to the RGF programme. It must also abide by French and European legislation in terms of interoperability and open access to public data.

The quality and reliability of the data and knowledge capitalised in the RGF SDI are primarily based on a thematic reference system including detailed lithostratigraphy, chronostratigraphy, structures and geological events. Both 2D and 3D geometries are also part of the references so that the RGF SDI can be used by other information systems e.g. hydrogeology, mineral resources and geohazards. This involves a dedicated architecture of data sets and applications as well as innovative data structures to capture the complexity of the geological objects and processes. A description-oriented method was used for building original master data sets from textual descriptions in natural language. For example, it was applied to lithology and also its transformation by diagenesis, metamorphism or supergene alteration, as many sub-processes of the event references. This essential foundation for a consistent description and interpretation in 2D-3D is associated to validation workflows involving the RGF Scientific Committee. Several data status i.e. input/proposed/labelled/disseminated allow to manage appropriately the access and publication of the RGF data and references both within the RGF community and to the public.

The multi-stakeholder dimension of RGF drives the technical implementation through a collaborative approach of the SDI platform. It complies with the European INSPIRE Directive while offering a series of web services based on GeoSciML. This enables the RGF SDI contents to be disseminated both through web-enabled geoscientific portals ([rgf.brgm.fr](http://rgf.brgm.fr)) and data processing tools.

