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## **The “Référentiel Géologique de la France” : from the Vosges-Fossé Rhéna demonstrator to the Pyrénées application site**

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Today, facing the challenges of the third millennium, life and property safety from natural hazards, infrastructure projects for transport or the habitat, resources and environmental management or adaptation to new technologies, the geological map alone is not enough satisfactory to meet the socio-economic demand and it now reaches the limitations that must be overcome.

That is in response to these new scientific, societal and technological challenges the “Référentiel Géologique de la France (RGF)” is born. It is the new program of "geological knowledge" of the territory established by BRGM as part of its mission of French Geological Survey. It aims to renew and restore the geological knowledge of the basement in three dimensions with data made digitally, continuous, consistent and coherent in order to meet, with adaptations, to the various socio-economic needs of the territory.

Current societal demand involving geosciences covers not only the provision of reliable data but also on the value of this data by three-dimensional geological models, for purposes of numerical simulations to better manage the development and preservation of our sub-ground. Whatever the nature of such needs (hydrogeology, geothermal resources, natural hazards ....) the contribution of geologists varies little: they must provide a geometry increasingly elaborated for the geological bodies that make up the basement and assign them more reliable petro and physicochemical characteristics. A new tool, capable of merging and returning consistently all the data: geological maps, analyses and those from drilling or geophysics, today is necessary. And it is through the RGF program this tool will come up. The RGF ambition is to provide this information in an integrated production chain from the raw data to the three-dimensional model.

Between 2011 and 2013, a RGF demonstrator has been achieved in the region of Vosges - Rhine Graben to launch a full scale methodology program at the boundary between a basement domain (Vosges) and a sedimentary one (Rhine graben) . This demonstrator also helped in organizing the geological data bases on the unique needs of various application fields of geosciences.

Since 2015 and until 2020, the RGF is focusing on an ambitious goal with the Pyrenees site. At the border with Spain, this site covers an area of over 30 000 km<sup>2</sup> with 60 existing geological maps at the

1:50 000 scale to be harmonized from over 4000 lithologies defined and the existence of 700 deep drillings available and to be validated by a common lexicon.

