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The Spatial Data Infrastructure for the Geological Reference of France

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Spatial Data Infrastructure for the GEOLOGICAL REFERENCE OF FRANCE

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Symposium T7.6: Geoscience data and information systems



RgF
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DE LA FRANCE



Geoscience for a sustainable Earth

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From the geological map to the geological information infrastructure...

In 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**)

Also refer to a RGF dedicated presentation Theme T3.8 – 31/08 10:30-12:00)

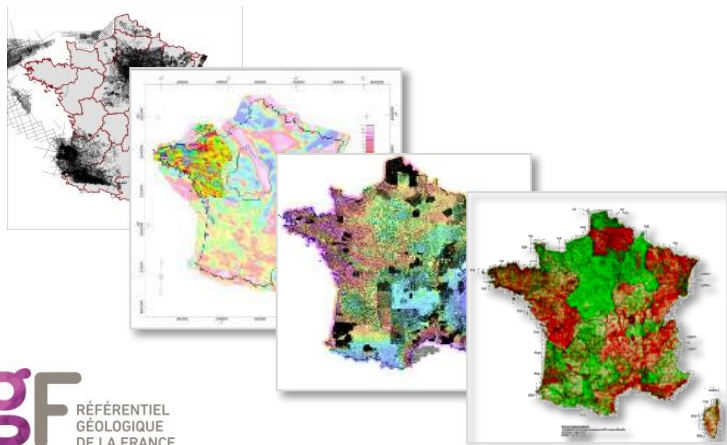
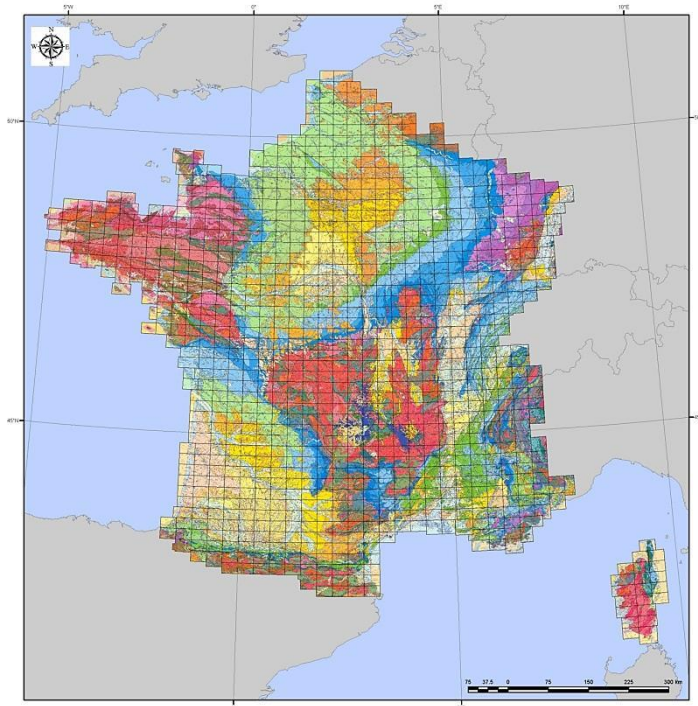
- > New context and paradigm
- > Proof of concept: Vosges-Fossé Rhénan region
- > Principles and objectives of this new SDI at the French Geological Survey
- > Target system, architecture and data modelling
- > Data dissemination and Interoperability
- > Conclusions - Perspectives

Information system for geological survey activities

Several missions of the Geological Survey Organisations

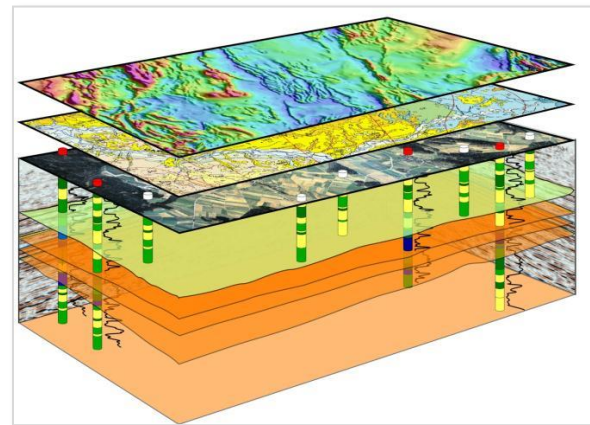
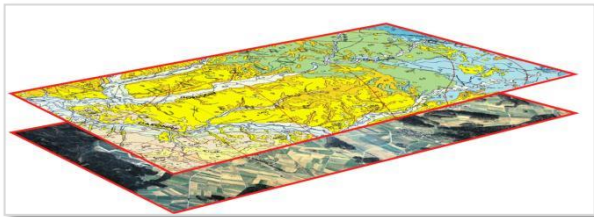
- > **Collect data** (national inventories)
- > **Store & Manage** (national custodians)
- > **Valorise** (generate added value)
- > **Ensure availability** (in paper & digital form)
- > Contribute to the **promotion of the sustainable use of non-renewable resources** (attractiveness key factor in mineral sector development)
- > Contribute to **geohazards mitigation**
- > Support to **geoscientific knowledge and skills**
- > Support the **informed decision-making**

Evolution of missions: data collection and map production => **information capitalisation and dissemination**



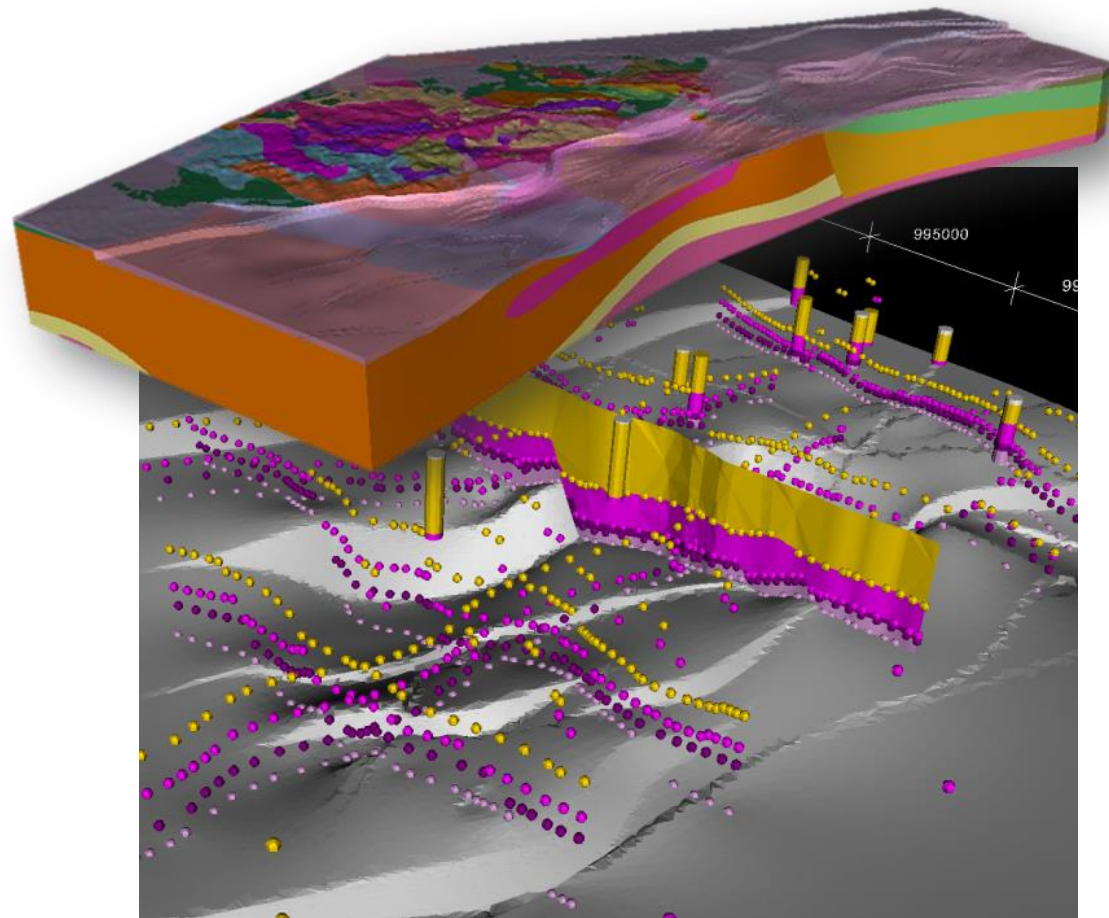
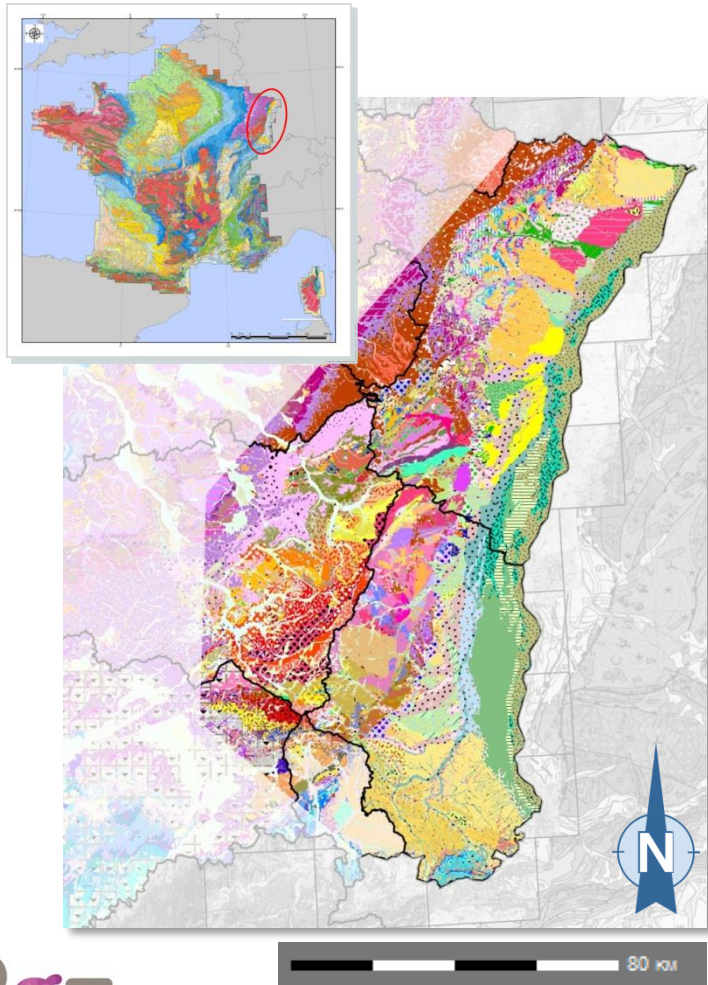
Geological mapping: evolution of the paradigm

- > RGF = **Scientific Programme + Information System**
=> new “production line”
- > RGF **mobilises a network of contributors** from the Survey (BRGM), universities and private sector
- > Evolution from the publication of geological maps stored in a database to a **dynamic SDI to generate end-user oriented products**
- > Evolution from a 2D mapping paradigm to a **3D-4D multi-actor approach**
- > Ensure the **three-dimensional consistency** of the geological data at regional and national scale



Outlining the French geological reference platform

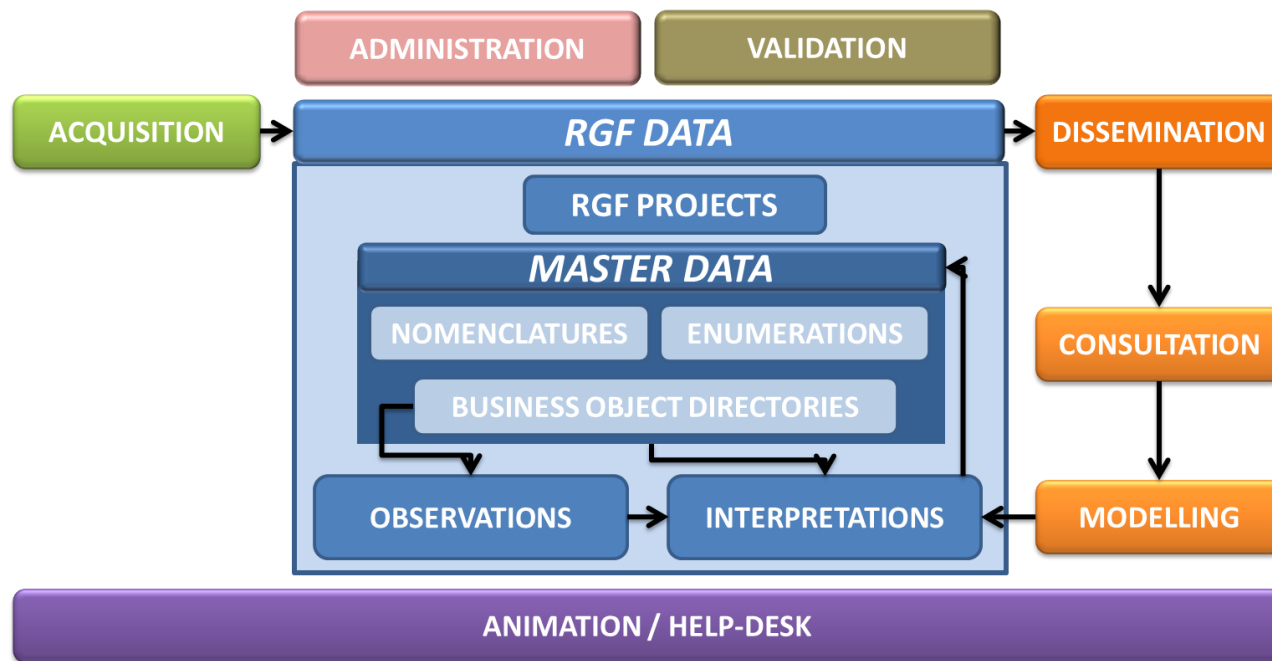
> Proof of concept: Vosges – Fossé Rhénan (2012-2013)



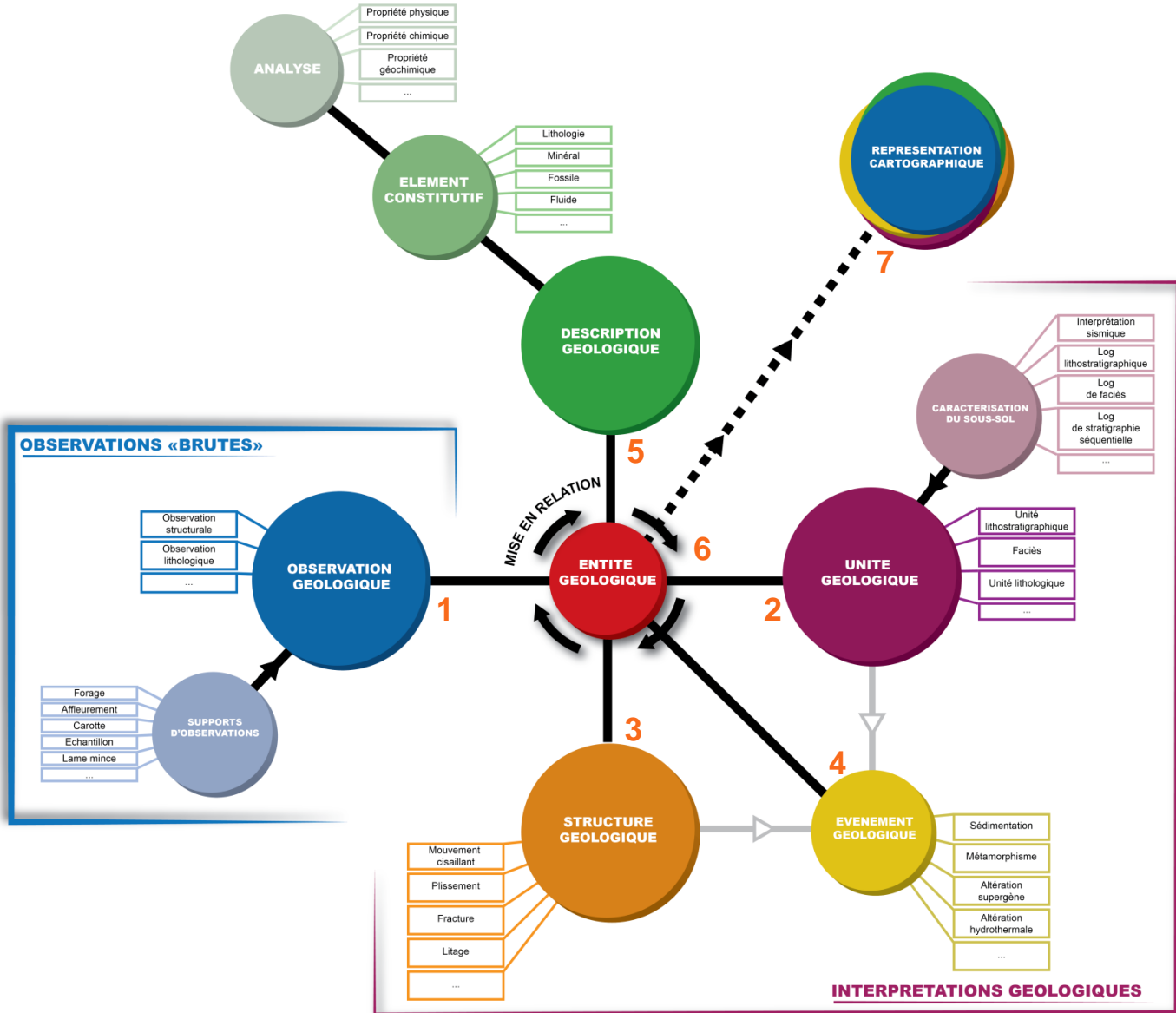
An Information System for the RGF (2014 - ...)

The RGF Information System must provide the **best available geological information** on the French territory, **whatever the producer** (French Geological Survey, universities, Earth science research institutes, ...) through **validation and traceability processes** which define and **guarantee the quality** of data and knowledge that are **capitalised and disseminated**.

Main activities of the information system

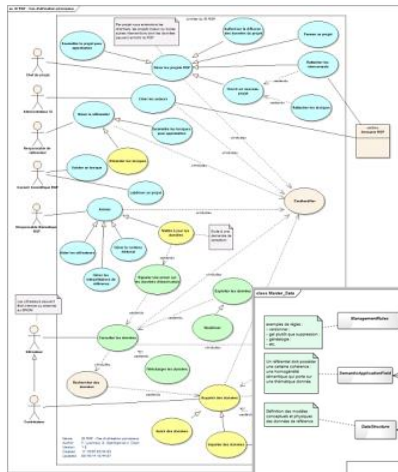


Data model overview: the RGF approach



System design and Data modelling

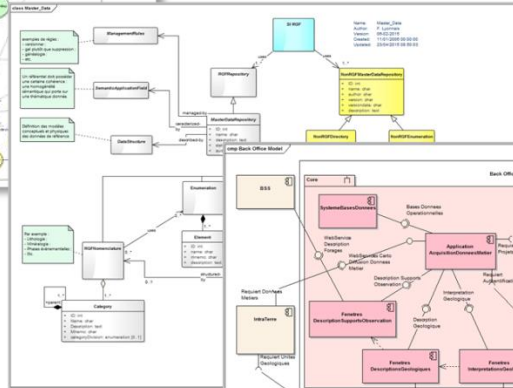
- > Use cases, actors, data workflows, validation processes, functional analysis, technical architecture in line with international standards



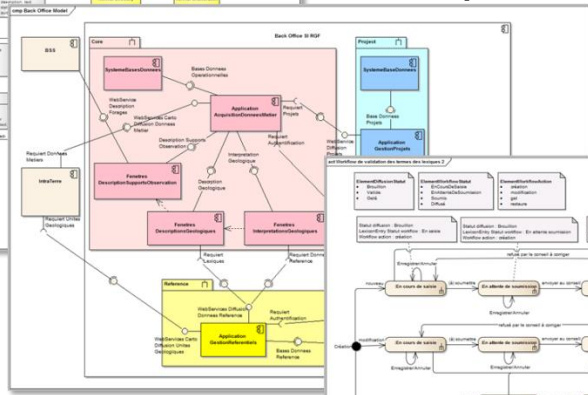
Use cases



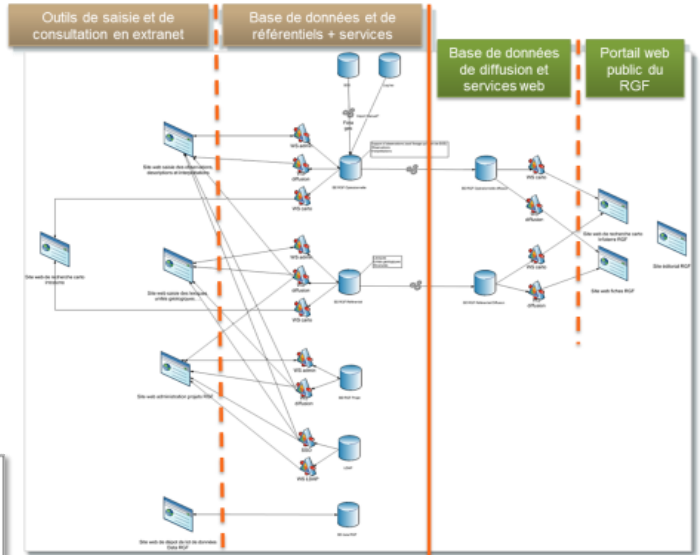
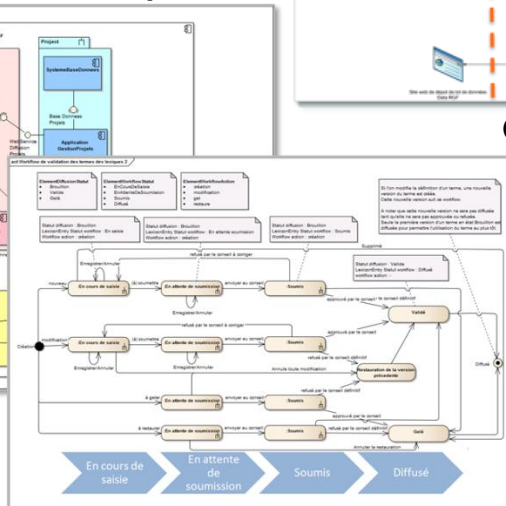
Master data



Back-office components

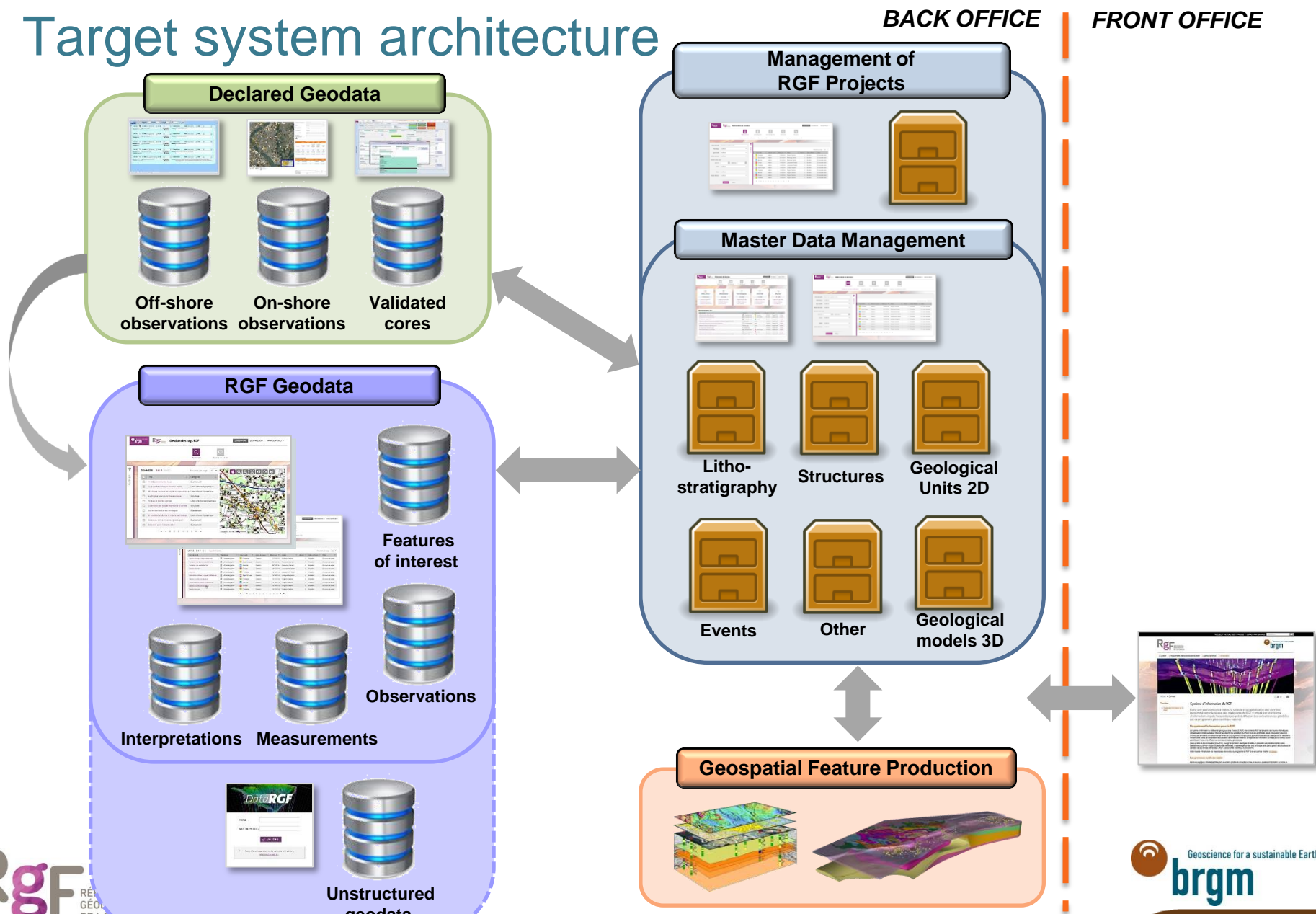


Validation process



General technical architecture

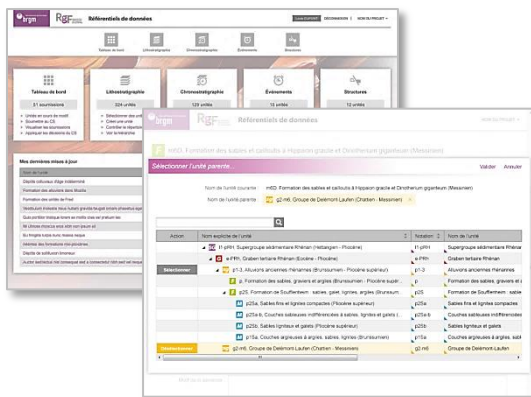
Target system architecture



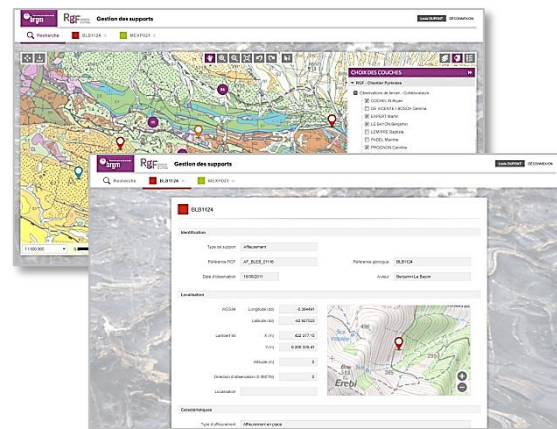
New back office for the French geologists

- The **national network of contributors** to the RGF programme includes BRGM geologists, university researchers and students on 5-year regional projects
- **Supervision and validation** by a Scientific Committee
- Facilitated direct access for the registered contributors to the information system through a **web extranet environment**

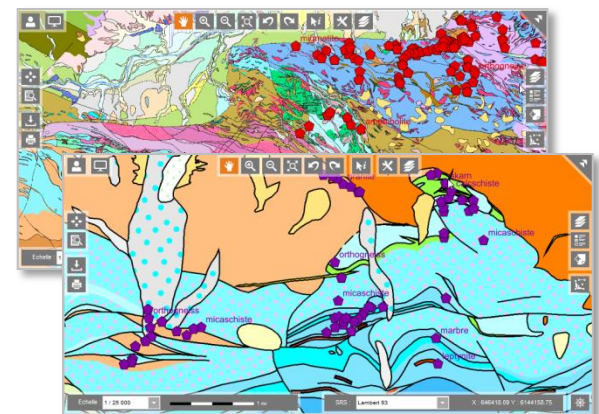
Master data management



Observation and measurement data management



Multi-thematic data search



Data dissemination and interoperability

The SDI of the “Référentiel Géologique de la France” is designed and developed according to the state-of-the art regarding the **Public Sector Information**

- > **Legal frameworks:** INSPIRE European Directive (2007), French implementation of INSPIRE-compliant interoperability (2007), new French law on “Digital Republic” (2016), Open Data commitment (G8, 2013)
- > **Specifications and vocabularies:** GeoSciML, Observations and Measurements, INSPIRE theme “Geology”, International Chronostratigraphic Chart
- > **Internet of Things:** referencing with International Geo Sample Number (IGSN) and Digital Object Identifier (DOI)

Conclusions and perspectives

- > **Ambitious innovative project**: first stage (5 years) of a permanent infrastructure
- > Design and implementation **jointly with the scientific research programme** on Pyrénées
- > **Timely with the mature level** of a range of methods, processes, standards and obligations
- > **Core of the Geoscientific information system** of the French Geological Survey (hydrogeology, mineral resources)
- > **Provider of master data** to other French SDIs (underground water, mineral resources, geothermal energy, ...)
- > **Provider to international infrastructures** e.g. EGDI, EPOS and OneGeology: French contribution re. geological data and knowledge (observations and interpretations)
- > **Built on international collaborative projects experience** such as OneGeology-Europe, Minerals4EU, EuroGEOSS, etc.



Merci de votre attention
Thank you for your attention

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