

The Spatial Data Infrastructure for the Geological Reference of France

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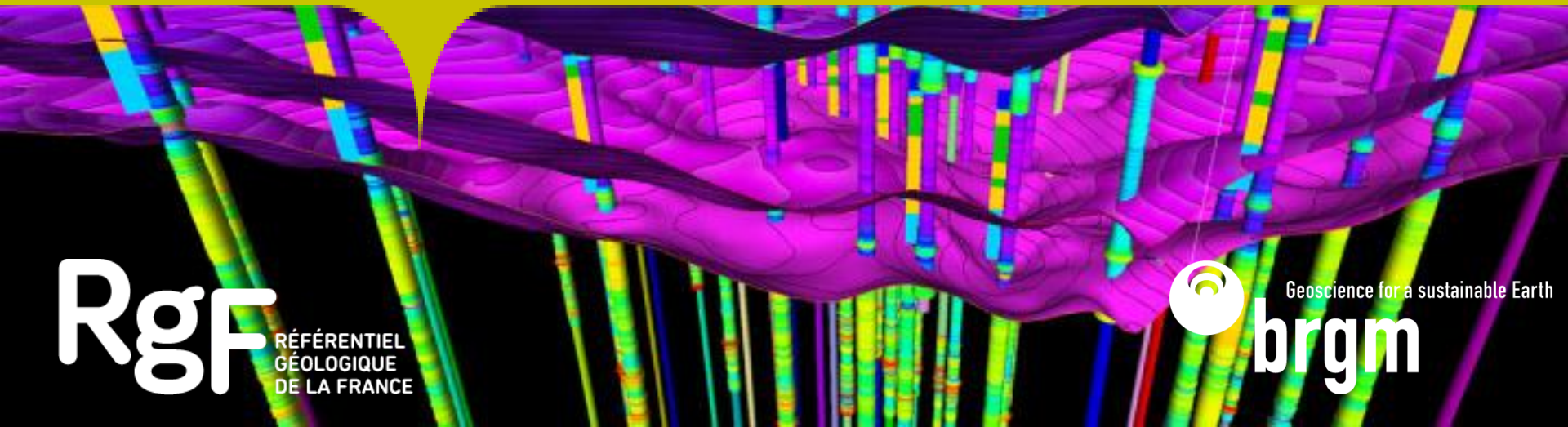
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Spatial Data Infrastructure for the GEOLOGICAL REFERENCE OF FRANCE

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30/08/2016 ***Symposium T7.6: Geoscience data and information systems***



RgF RÉFÉRENTIEL GÉOLOGIQUE DE LA FRANCE

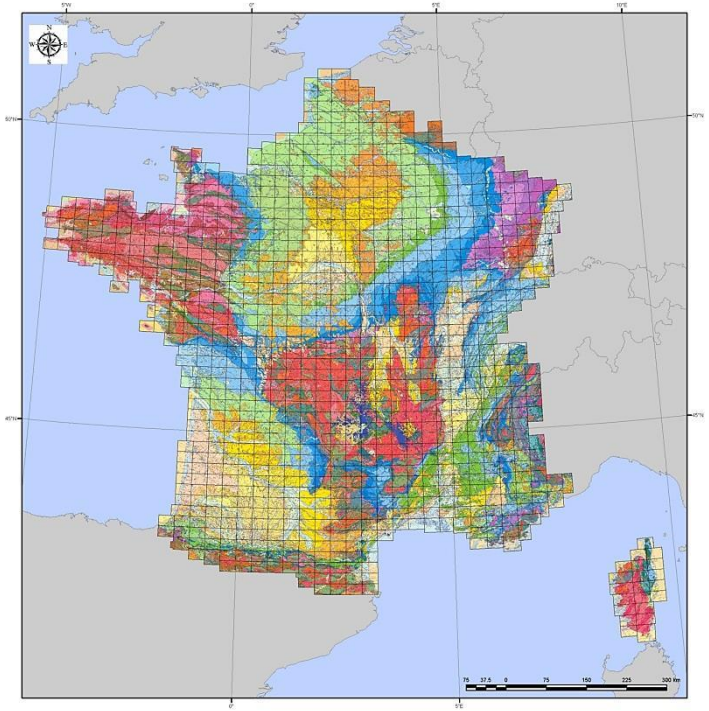
Geoscience for a sustainable Earth brgm

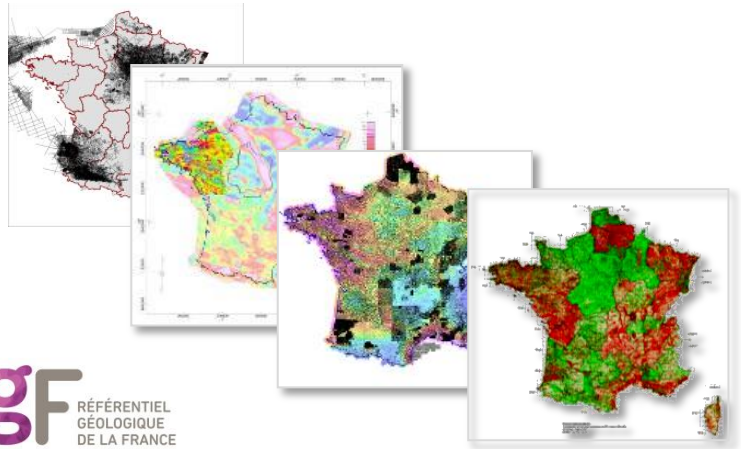
From the geological map to the geological information infrastructure…

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**

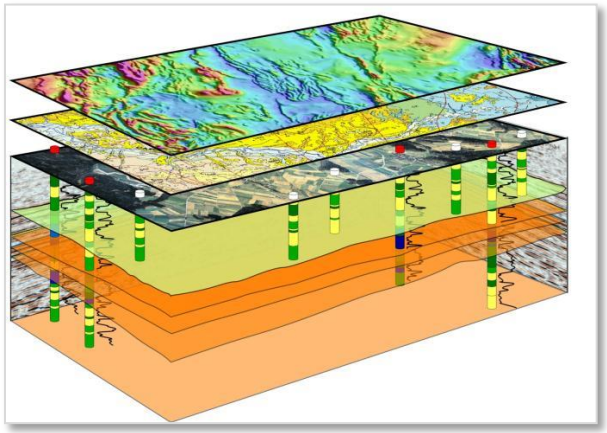
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Geological mapping: evolution of the paradigm

- 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



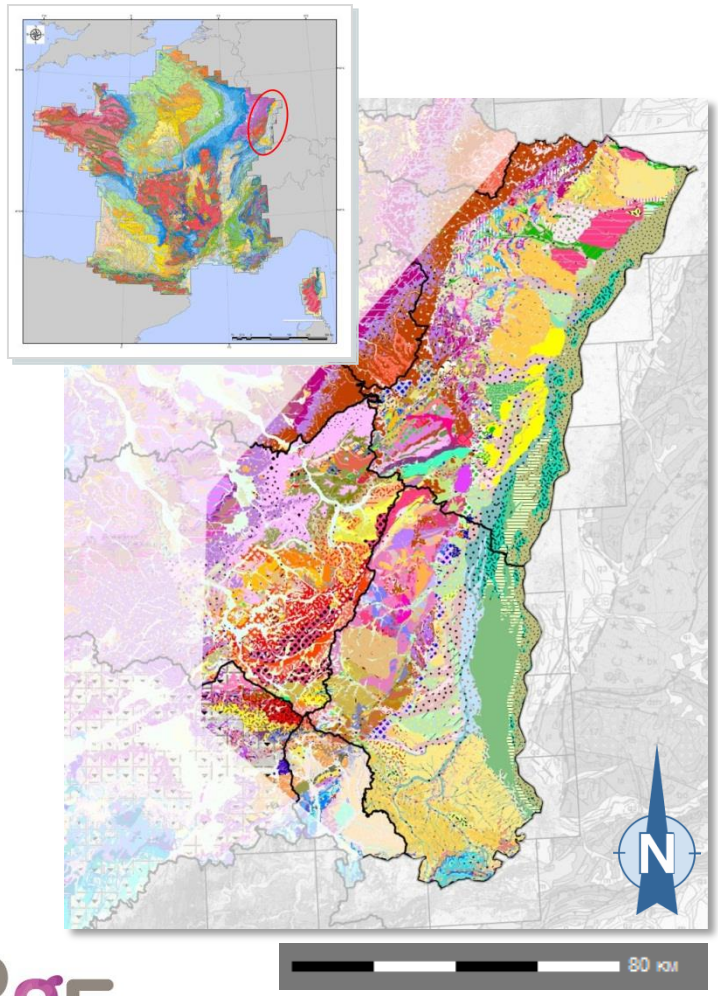


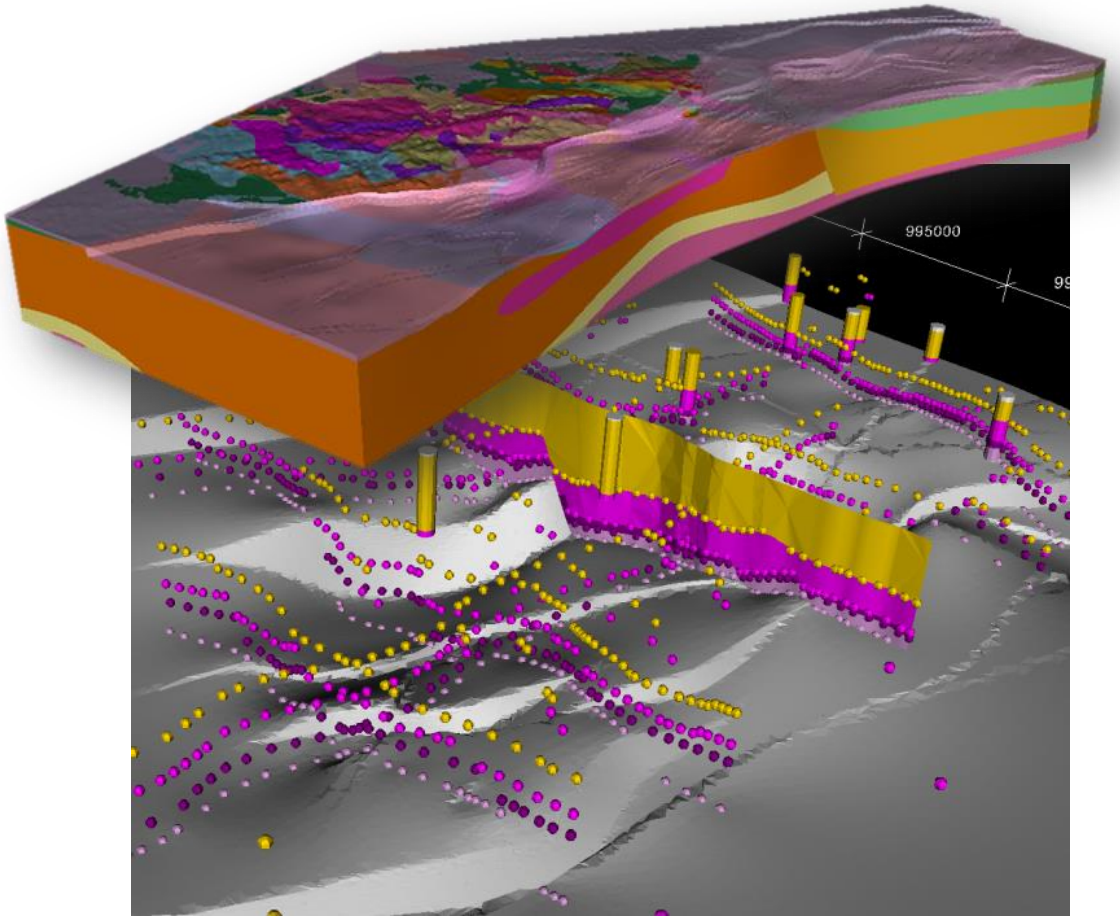
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Outlining the French geological reference platform

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





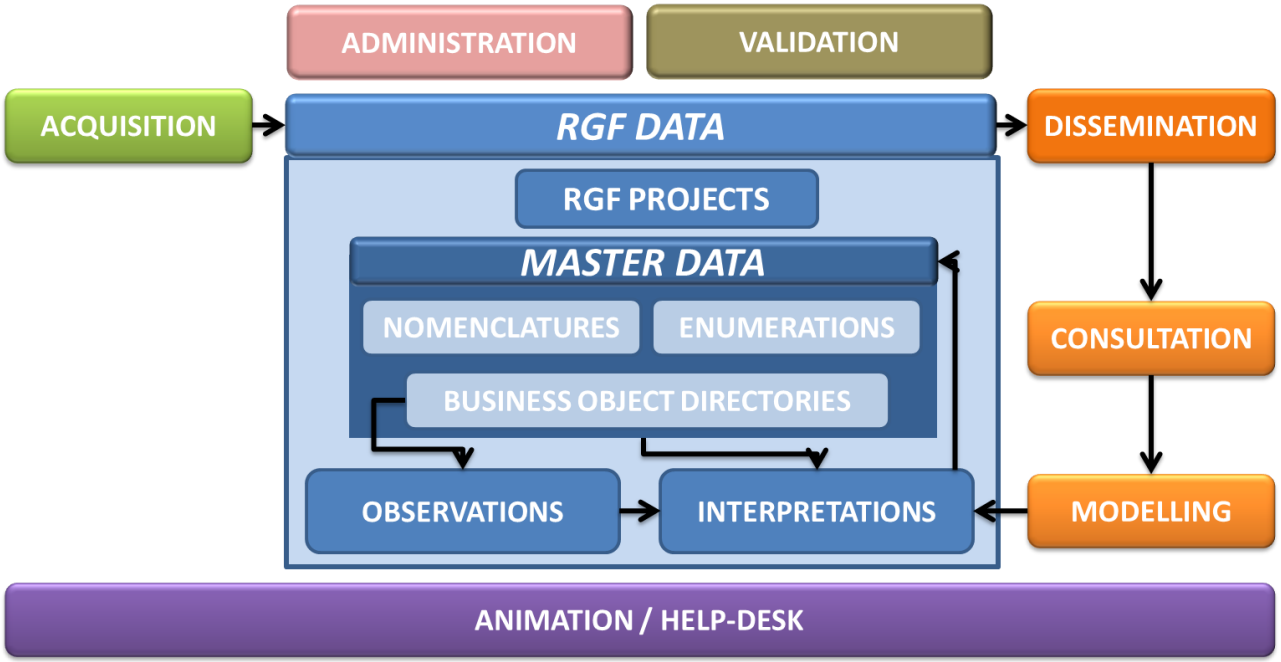
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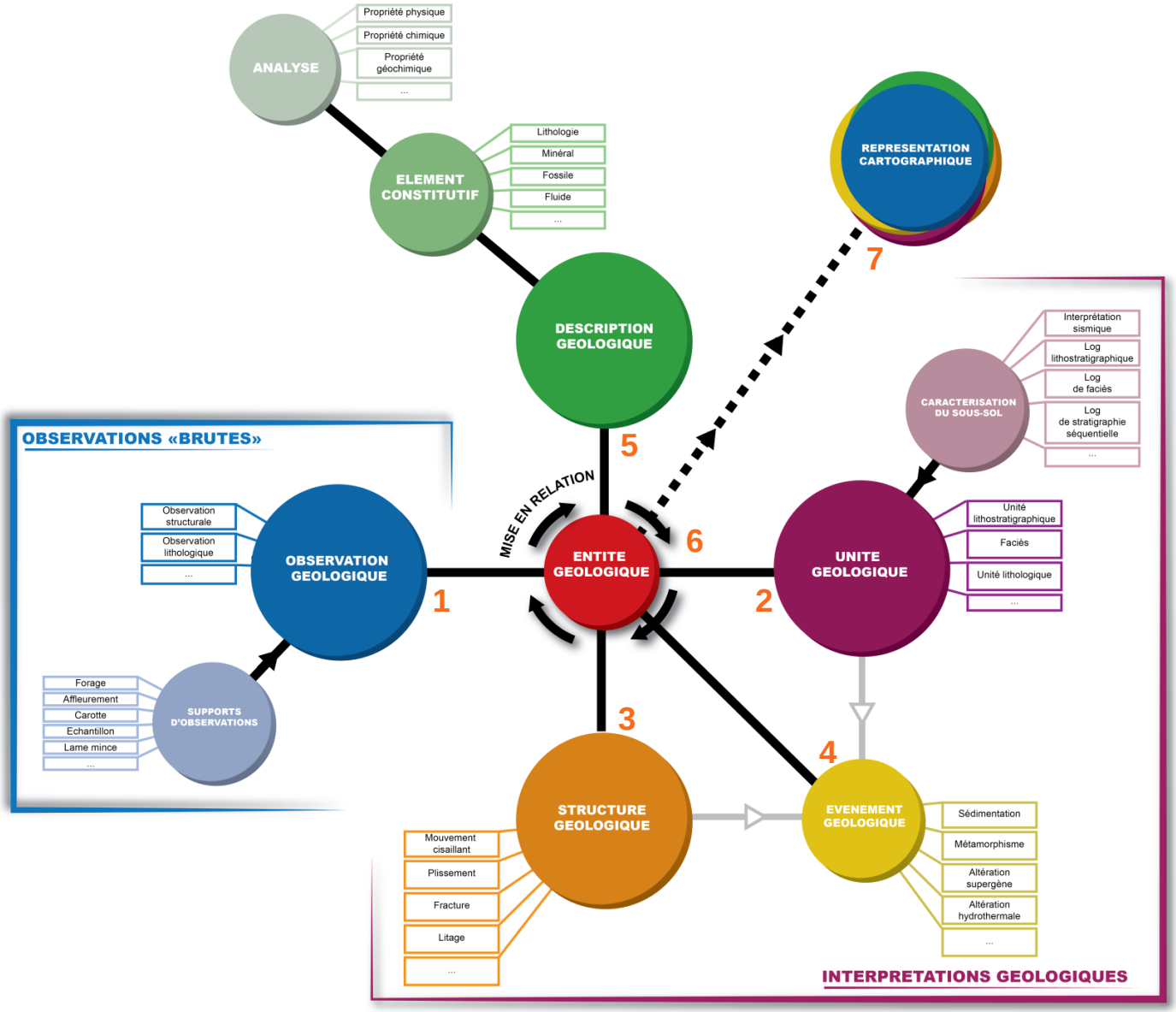
An Information System for the RGF (2014 - …)

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

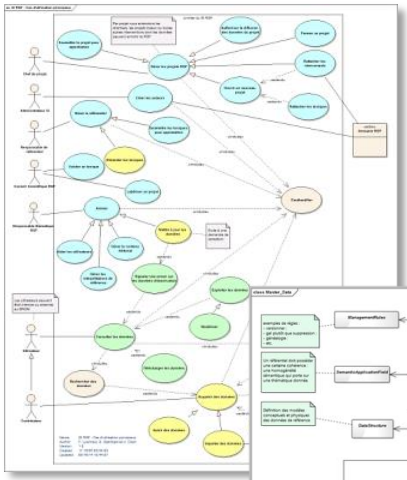


Data model overview: the RGF approach

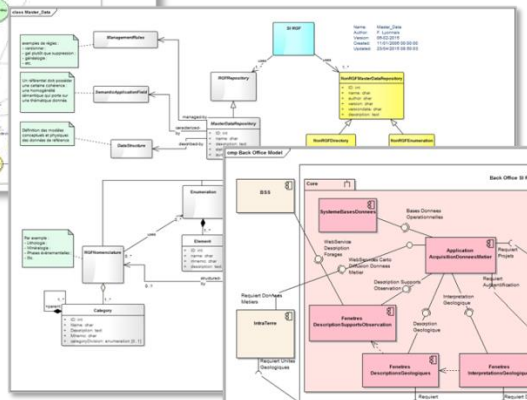


System design and Data modelling

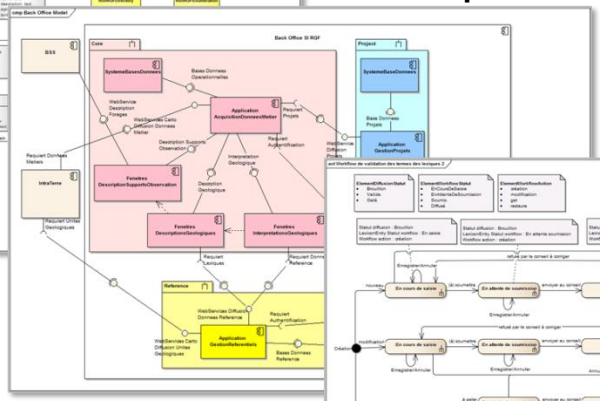
> Use cases, actors, data workflows, validation processes, functional analysis, technical architecture in line with international standards



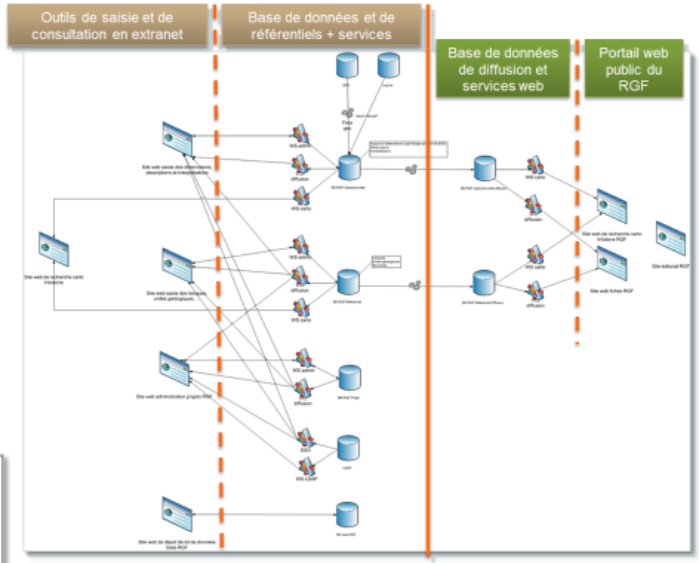
Use cases



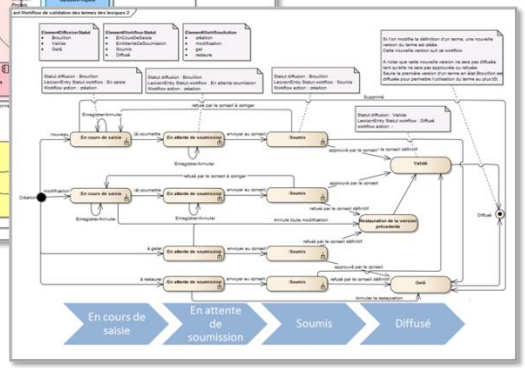
Master data



Back-office components



General technical architecture



Validation process

Target system architecture

BACK OFFICE

FRONT OFFICE

Declared Geodata

Off-shore observations

On-shore observations

Validated cores

RGF Geodata

Features of interest

Observations

Interpretations

Measurements

DataRGF

Unstructured geodata

Management of RGF Projects

Master Data Management

Litho-stratigraphy

Structures

Geological Units 2D

Events

Other

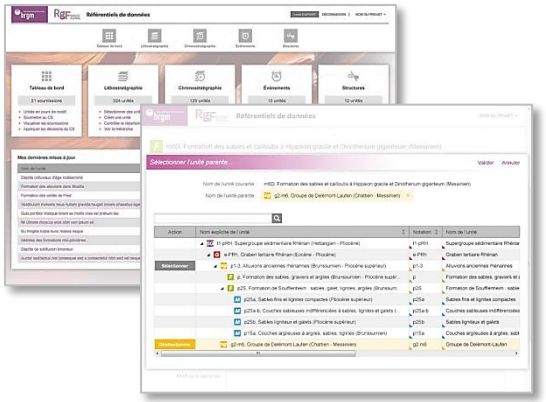
Geological models 3D

Geospatial Feature Production

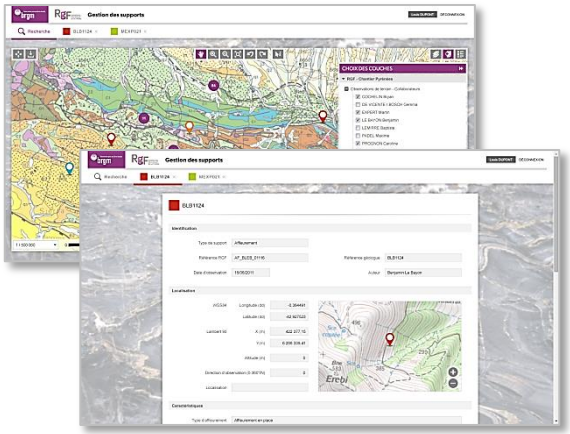
New back office for the French geologists

- 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**

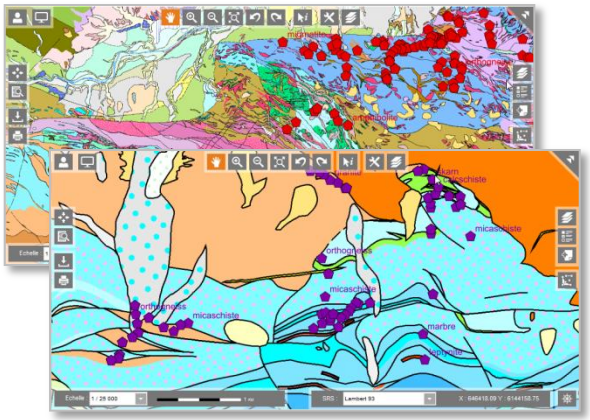
Master data management



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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