# Task 1.4

## Task Title

Data infrastructure

## Research Partners

Federal Office of Topography (swisstopo), University of Bern, University of Geneva

## Current Project (presented on the following page)

From Data Aquisition to Risk Reduction: Insights from GeoTherm, the first Deep Geothermal Federal Database

L. Boulicault, C. Minnig, N. Oesterling, M. Faubert, L. Glaus, R. Baumberger

## Research Objectives

- A wide variety of 3D subsurface data must be compiled to quantify the potential for geothermal energy production and CO2 storage within Switzerland, and to guide exploration and efficient exploitation. Moreover, the subsurface data need to be linked to diverse 2D surface information on groundwater protection, land use, conflicting resources, etc., to facilitate planning, licensing and monitoring. The objective of this task is to incorporate new subsurface data produced in WP1 into a digital archive in a sustainable form that is permanently accessible to institutions and industry, and that allows for modern 3D imaging and data-mining.
- During the 2013-2016 project period the Swiss Geological Survey of swisstopo will continue building its Geological Information and Production System (GIPS). This will involve: developing recommendations and standards for structuring, storing and exchanging borehole data and seismic lines; digitizing existing analog maps, sections and other analog information; feeding new subsurface data from WP1 into geospatial databases; expanding the 3D GeoMol model of the subsurface of the Swiss Molasse Basin; reinterpreting existing seismic lines to expand resolution of the Swiss Geophysical Atlas; constructing web-services that allow full interoperability of 3D geological information as well as visualization of 2D data and 3D models via web portal; integrating geological information of various kinds into the national spatial data infrastructure (NSDI); expanding computer storage capacity at swisstopo.
- A professionally managed, web-based platform for the sustainable storage and exchange of geological data and models among SCCER partners, industry and institutions will be delivered, and the work will be integrated with the InterReg project GeoMol, presently conducted by swisstopo in collaboration with the geological surveys in neighboring countries.

## Highlights 2016

- A first, coherent, 3D digital framework model of the Swiss underground has been established for the Molasse Basin into the crystalline basement (i.e., the main target of different potential DGE projects) at a 1:200000 scale. Under the lead of swisstopo,

several SCCER-SoE partner universities have become involved in preparing the next, 1:50000 scale version, integrating for example, the results of the Geneva activities described above. Future integration of geothermal underground models into the geological model will enable direct, virtual preparation of optimal prospecting and exploration strategies, in order provide a sufficient number of sites for DGE development in the future.

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# From Data Aquisition to Risk Reduction: Insights from GeoTherm, the first Deep Geothermal Federal Database

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**03.2015** — **06.2015** — **01.2016** — **01.2018** — **12.2018**

Initialization ◆ Concept ◆ Realization ◆ Launch

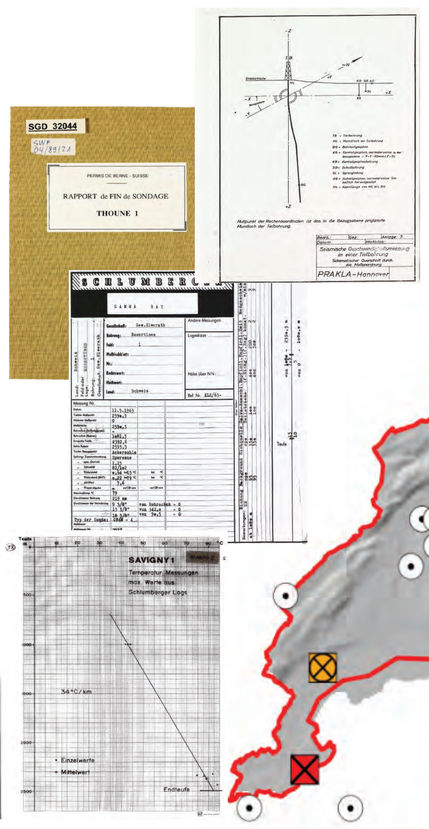
TODAY

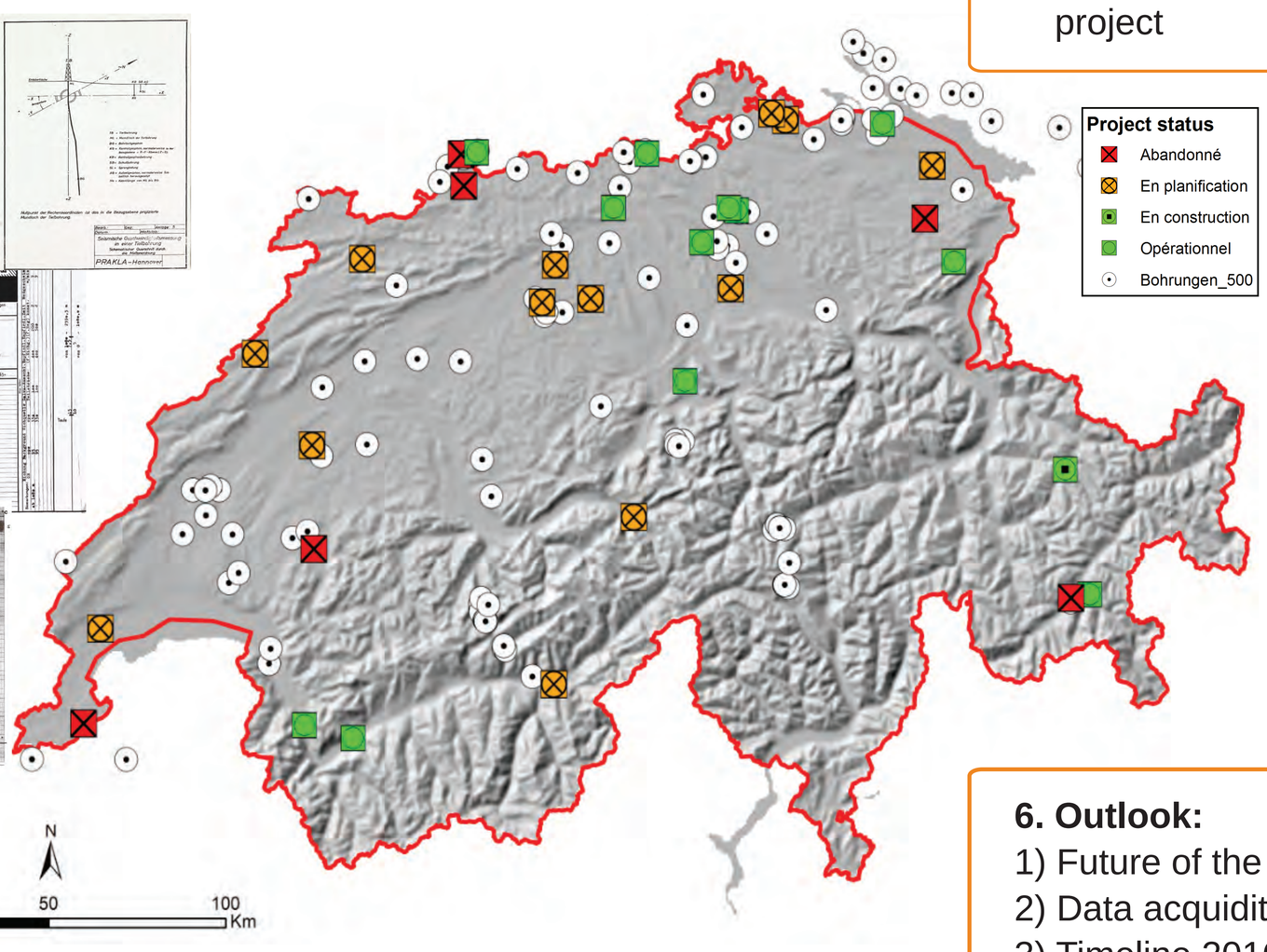
**1. Context:**
1) Legal: Lgéo* (2007) and OGN** (2008)
2) Political: Riklin & Gutzwiller Motions*** (2011)
3) Energetic: Energy Strategy 2050

**2. Who?** BFE / swisstopo 3 years project
**Project goals?**
1) Publish relevant data for deep geothermie
2) Enhance our underground geological knowledge
3) Reduce risks in projects developments
4) Promote new geothermal projects

**3. Realization:**
1) Swisstopo internal data inventory
2) Extern data inventory: collaborations with universities, ETH/EPF, Cantons, private companies, etc.
3) Data harmonisation and integration in the Federal data infrastructure according to the Borehole data model [1]
4) Data web-publications on map.geo.admin.ch

**4. First results: 2 new layers in map.geo.admin !**
1) Geothermal projects in Switzerland
2) Wells >500m deep with associated documents




**5. Objectives 2017 - 2018:**
1) Continue data inventory/harmonization/publication
2) Seismic lines publication
3) Publications of temperature (by depth, by horizons) and geothermal gradient maps
4) Add temperature/porosity data into the 3D GeoMol project

**6. Outlook:**
1) Future of the project (after 2018)?
2) Data acquidition and external collaborations
3) Timeline 2016-2017:
   - Integration of further data from Cantons, SCCER-SoE Partners, Private and research partners

**REFERENCES**
***** Loi sur la géoinformation (Lgéo) 510.62, 2007.10.05
** Ordonnance sur la géologie nationale (OGN) 510.624, 2008.05.21
*** Message de la Stratégie energétique 2050, 13.074, 2013.09.4
[1] Brodhag, S. & Oesterling, N., 2014: Datenmodell Bohrdaten. Beschreibung des Kernmodells mit Objetkatalog und UML – Modell. Version 2.0. Bundesamt für Landestopografie swisstopo