



Geothermal
ERA-NET

EGIP pilot implementation Game's rules



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EGIP PILOT IMPLEMENTATION GAME'S RULES

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EGIP pilot implementation Game's rules

What

In the scope of the Geo ERA-NET European project, this document describes the main rules for data preparation and implementation of the European Geothermal Information Platform (EGIP), to be followed by each participating country.

The rules here presented derives from the D3.2 Report (Feasibility study for EGIP implementation), the EGIP technical meeting held in Gstaad (CH) on the 12th March 2014, and the two conference calls between CNR and BRGM (April 2 and May 27, 2014).

As defined in D3.2, EGIP follows the principles of a distributed architecture, so that at national level each partner decides the data and documents to be shared through the EGIP portal, according to common rules adopted by the EGIP that are compliant with INSPIRE principles. Each partner remains the owner of its national data. The EGIP Pilot, which will be a test to verify the effectiveness and efficiency of a European Geothermal Information Platform in Europe, will organize just a minimum number of data, as listed in Table 1 (same as Table 5 in D3.2).

Tables 2 and 3 list the activities, and describes the main actions required by each participating country at national level (Table 2) and the activities at EU level (Table 3).

For Who

EGIP Pilot is open to any Geothermal ERA-NET partner who volunteers to participate. However, since the implementation is a technical job, this guide is addressed to the IT skilled persons in charge of implementing the EGIP pilot at national level on behalf of their Geo ERA-NET volunteer partner. EGIP implementation entails the following data management requirements:

- existence of data
- data collection
- IT skills
- equipment (e.g. servers, network bandwidth).

Table 1: List of information to include in EGIP Pilot.

Data number	Information	Format	Spatial	Typology Definition	INSPIRE topic category	INSPIRE theme category
1	<i>Temperature maps</i>	Structured	YES	Map coverage (i.e. 2D grid format. This is preferred) or vector format	Geoscientific information	Energy Resources
2	<i>Surface Heat Flow</i>	Structured	YES	Map coverage (i.e. 2D grid format. This is preferred) or vector format	Geoscientific information	Energy Resources
3	<i>Exploration and production licenses and (projected) power production</i>	Structured	YES	Map (vector)	<i>Exploration and production licenses</i>	Area management / restriction / regulation zones
4	<i>Environmental impact laws</i>	Un-Structured	NO Country	Document	Environment	-
5	<i>Licencing regulations (exploration/exploitation)</i>	Un-Structured	NO Country	Document	Planning cadastre	-
6	<i>Legal conditions for grid access</i>	Un-Structured	NO Country	Document	Structure	-
7	<i>Geothermal roadmaps</i>	Un-Structured	NO Country	Document	Economy	-
8	<i>Insurance</i>	Un-Structured	NO Country	Document	Economy	-
9	<i>Royalties & taxes, support scheme (feed-in tariffs, grants, ...)</i>	Un-Structured	NO Country	Document	Economy	-
10	<i>List of education & research institutes</i>	List	YES	Map (vector)	Structure	-
11	<i>List of Industries</i>	List	YES	Map (vector)	Structure	<i>Production and industrial facilities</i>

If a country has more than one dataset or document for any kind of information, it should provide all of them and their associated metadata. In this case, the EU portal will list and link all the data and docs and their sources.

Table 2: Main actions required at national level by each participating country (left column), and the required time to complete the action (right column) (from table 9 of the Geo ERA-NET D3.2 “Feasibility study for EGIP implementation”). Numbers in brackets refer to references, listed at the end of this document.

National level	Time spent (days/person)
1. Collecting/preparing the data listed in Table 1 and in report [1] section 4.2. For technical aspects on data model see [2]	5 + time needed to find information
2. Data mapping, following the documentation produced by BRGM, detailed in [4] and [5]	5
3. Creating catalogue of the metadata. For the list and description see Table 1 ad section 4.2 of [1]; for the metadata schema description see [2] in sections 2.3, 3.1 and subsection 3.4.3, 3.4.4, 3.4.5.	5
4. Implementing discovery, view, download services at a national level (see section 2.2 of [2])	5

Table 3: The main actions (left column), who will perform the activity (central column) and the deadline to complete the action (right column)

EU level	Who	Deadline
1. INSPIRE issues: EGIP data model refining on the base of the *.eap produced by JJ. Serrano. Checking the metadata schema for documents. Converting *.eap file in XSD. Documenting the content and services (type and version) to be implemented.	BRGM	1 st week of june
2. Web portal implementation	CNR	Mid of june
3. Setting up the portal on web services retrieved from the confederate national portals	CNR	End of June
4. Setting up the search tool in the EU-portal	CNR	End of June
5. Checking the EU-portal functionalities	CNR BRGM	July and August

When

The EGIP pilot will be presented in the Geo ERA-NET meeting to be held in Trieste (10-11 September, 2014). In the same occasion EGIP pilot will be also shown to the EERA – JPGE, which is one of the main stakeholder/potential user of such platform.

To achieve this deadline, the planning should follow the timetable shown in the next page.

Table 4: Timetable

The EGIP Pilot Implementation activities	April	May	1/2 June	1/2 June	1/2 July	1/2 July	Aug	Early Sept
1. INSPIRE issues: Pilot EGIP data model refining. Delivery of Metadata schema of documents and of the file [5] to be used in the ‘mapping’ software. Preparation of the document [4] describing the [5] and metadata schema & services (type + version) to be implemented; BRGM								
2. Implementation of the web portal; CNR								
3. Data collection: refer to Table 1 for the data list, [1] Chapter 2 subsection 4.4.2 for data description, and [2] [4] for EGIP INSPIRE data model; ALL PARTICIPANTS								
4. Data preparation and mapping following the documentation provided by BRGM [4] and [5] (see point #1); ALL PARTICIPANTS								
5. Creation of a catalogue of metadata for the Pilot data (Table 2 of [1]) as described in Subsection 4.2.1); ALL PARTICIPANTS								
6. Implementation of discovery, view, download web services at national level - ALL PARTICIPANTS								
7. Set up of EGIP Portal web services harvesting data from the national web services ([1] and [2] Chapter 2); CNR								
8. Set up of EGIP Portal search tools; CNR								
9. Check of the EGIP Portal functionalities; CNR, BRGM and ALL PARTICIPANTS								

How

EGIP is a distributed and open architecture and uses the standards recommended by INSPIRE and OGC, which are:

- **For the metadata to describe datasets and services.** INSPIRE recommends a set of metadata elements based on the OGC/ISO metadata standards ISO19115 and ISO19119. All information is provided in the INSPIRE Metadata technical guidelines [6];
- **For the services.** To search and access metadata, a discovery service based on the OGC CS-W standard – Catalogue Service for the Web has to be implemented. The view service is based on the ISO/OGC WMS (Web Map Service), and the downloaded service can be implemented by an ISO/OGC WFS (Web Feature Service). For details, see the INSPIRE [15] [16] [17] and OGC [8] [9] [10] services technical guidelines;
- **For the metadata to describe documents.** Dublin Core recommends a set of metadata elements based on ISO/IEC 11179 [ISO11179], see [7].

Each country partner has to:

1. Collect the information listed in [1], section 4.2;
2. Prepare the datasets:
 - a. Map the existing datasets following the EGIP data model schema [4] and [5]
 - b. Create new datasets (if missing) following the EGIP data model schema [4] and [5]
 - c. Extract the suggested information from documents and create a feature class ‘GeothermalManagementArea’ [4] and [5];
3. Set up a CS-W (e.g., using the opensource software Geonetwork [13] or any other compliant):
 - a. Compile metadata using the INSPIRE metadata schema [6] for dataset and services;
 - b. Compile metadata for document using the Dublin core metadata schema [7];
 - c. Verify the INSPIRE compliance by using both the catalogue schematron validator (only for partner who will use geonetwork software for catalogue[13]) and the INSPIRE web validator [14] ;
 - d. Insert the specific keyword “EGIP”. This way the harvesting will consider only the metadata produced for EGIP.
4. Set up a WMS and WFS (e.g., using the opensource software MapServer[12], or GeoServer [11], or using any other commercial server software);
5. Provide the datasets prepared in #2 as services WMS/WFS.
6. Provide the URL of the metadata catalogue, to make possible the harvesting by the EGIP portal

Hints and Tips (H&T)

1. Collect the information

- a. Spatial classes: TemperatureUnit, TemperatureLine, HeatFlowLine, HeatFlowUnit, TrainingCenter, Industry, License. Temperature and heat flow could be more than one e.g. at 1km depth, 2km depth,...
 - b. Non spatial classes (documents): Economics, Insurance, Regulations, Roadmap...
2. Prepare the datasets
 - a. Map the existing datasets: consider the software [18]. Expose the mapped datasets in your geoserver [11] or [12] as WMS/WFS.
 - b. Create new datasets: create a simple spatial features class (e.g. shp file, db table) and expose them in your geoserver [11] or [12] as WMS/WFS.
 - c. Extract the suggested information from documents and create a feature class 'GeothermalManagementArea'. For creating and exposing such kind of information follow the previous H&T (2.b).
 3. Set up a CS-W: Geonetwork [13] could be a good solution
 - a. Compile metadata using the INSPIRE metadata schema, pay attention mainly to the keywords, they have to be chosen from controlled vocabularies (e.g. Region, GEMET, GEMET – INSPIRE, etc...). Remember the keyword "EGIP". Another topic point is the "Data Quality" section, where "Lineage" and "Report" elements have to be carefully compiled following the requirements in [6].
 - b. Check the metadata with a validator: this is highly recommended to verify the compliance with the INSPIRE metadata rules. A schematron validator can be configured in geonetwork software catalogue [13], otherwise the INSPIRE web validator [14] can be used.
 - c. Compile metadata for documents using the Dublin core metadata schema [7].
 - d. Dublin Core Metadata can be checked using one of the tools suggested in [3].
 4. Setting up a WMS and WFS (e.g., using the opensource software MapServer[12], or GeoServer [11], or any other commercial server software)
 5. Provide the dataset prepared as in H&T#2 as services WMS/WFS. Remember to compile the item "OnLine resources" of each dataset metadata with the URL linking to its corresponding WMS and WFS service.

References (documents, files, software, weblink):

- [1] Geo ERA-NET – WP3 – D3.2 Feasibility study for EGIP implementation
- [2] Geo ERA-NET – WP3 – D3.2 Feasibility study for EGIP implementation – Appendix 2
- [3] Dublin core metadata validators: <http://dublincore.org/tools/>
- [4] Geo ERA-NET – WP3 – EGIP pilot Data Model : EGIP_Pilot_data_model_draft0.2.doc
- [5] Data model: egip.xsd
- [6] INSPIRE Implementing Rules for Metadata: http://inspire.jrc.ec.europa.eu/documents/Metadata/MD_IR_and_ISO_20131029.pdf
- [7] Dublin Core metadata initiative: <http://dublincore.org/documents/dcmi-terms/#H1>
- [8] Open Geospatial Consortium (OGC) – Web Map Service (WMS): <http://www.opengeospatial.org/standards/wms>

- [9] Open Geospatial Consortium (OGC) – Web Features Service (WFS): <http://www.opengeospatial.org/standards/wfs>
- [10] Open Geospatial Consortium (OGC) – Catalogue Service for Web (CS-W): <http://www.opengeospatial.org/standards/cat>
- [11] Geoserver: <http://geoserver.org/>
- [12] Mapserver: <http://mapserver.org/>
- [13] Geonetwork: <http://geonetwork-opensource.org/>
- [14] INSPIRE metadata web validator (second version): <http://inspire-geoportal.ec.europa.eu/validator2/>
- [15] INSPIRE: Download services http://inspire.jrc.ec.europa.eu/documents/Network_Services/Technical_Guidance_Download_Services_v3.1.pdf
- [16] INSPIRE: View services http://inspire.jrc.ec.europa.eu/documents/Network_Services/TechnicalGuidance_ViewServices_v3.11.pdf
- [17] INSPIRE: Discovery services http://inspire.jrc.ec.europa.eu/documents/Network_Services/TechnicalGuidance_Discovery_Services_v3.1.pdf
- [18] HALE – The Humboldt Alignment editor: <http://www.dhpanel.eu/humboldt-framework/hale.html>