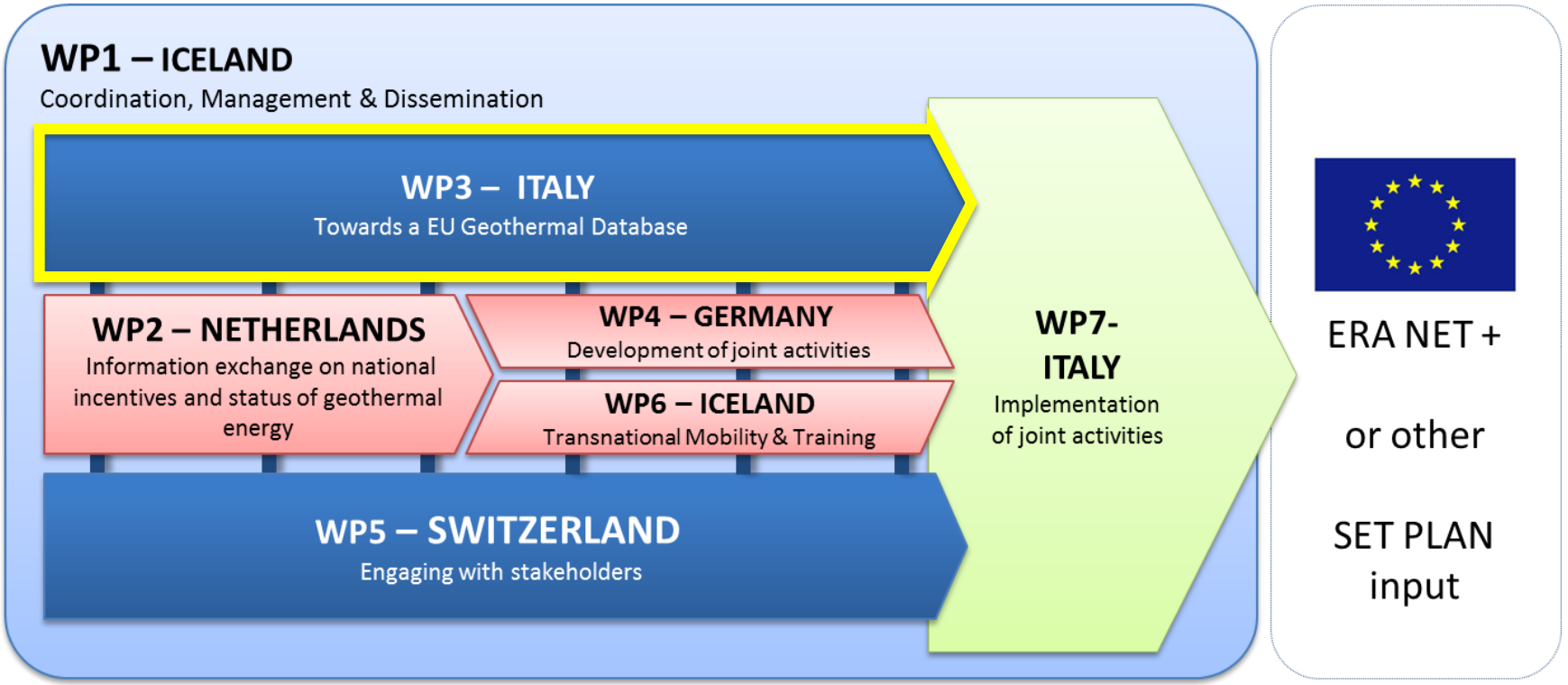
WP4/WP7 – Implementation of Joint Activities:

Eugenio Trumpy, Adele Manzella CNR

Organisational structure / work packages



WP3 Towards a European Geothermal Information Platform

EGIP: why?

1. Specifically mentioned in the EU Commission Call [Topic ENERGY.2011.10.2-2, FP7-ERANET-2011-RTD] which led to the current GEO ERA-NET Project
2. To foster geothermal energy development in Europe, the organization and sharing of geothermal data play an important role
3. To minimize data fragmentation, databases and data-sharing systems are mostly based at at a national level, provided in the local language, and are suitable for local or specialized applications

WP3 Towards a European Geothermal Information Platform

EGIP: aims?

- ✓ reduce information fragmentation
- ✓ simplify data provision
- ✓ reduce project risks (economic aspects)
- ✓ Raise awareness about geothermal energy by providing an overview of its application at the European scale
- ✓ increase the focus on and investments in geothermal energy.

WP3 Towards a European Geothermal Information Platform

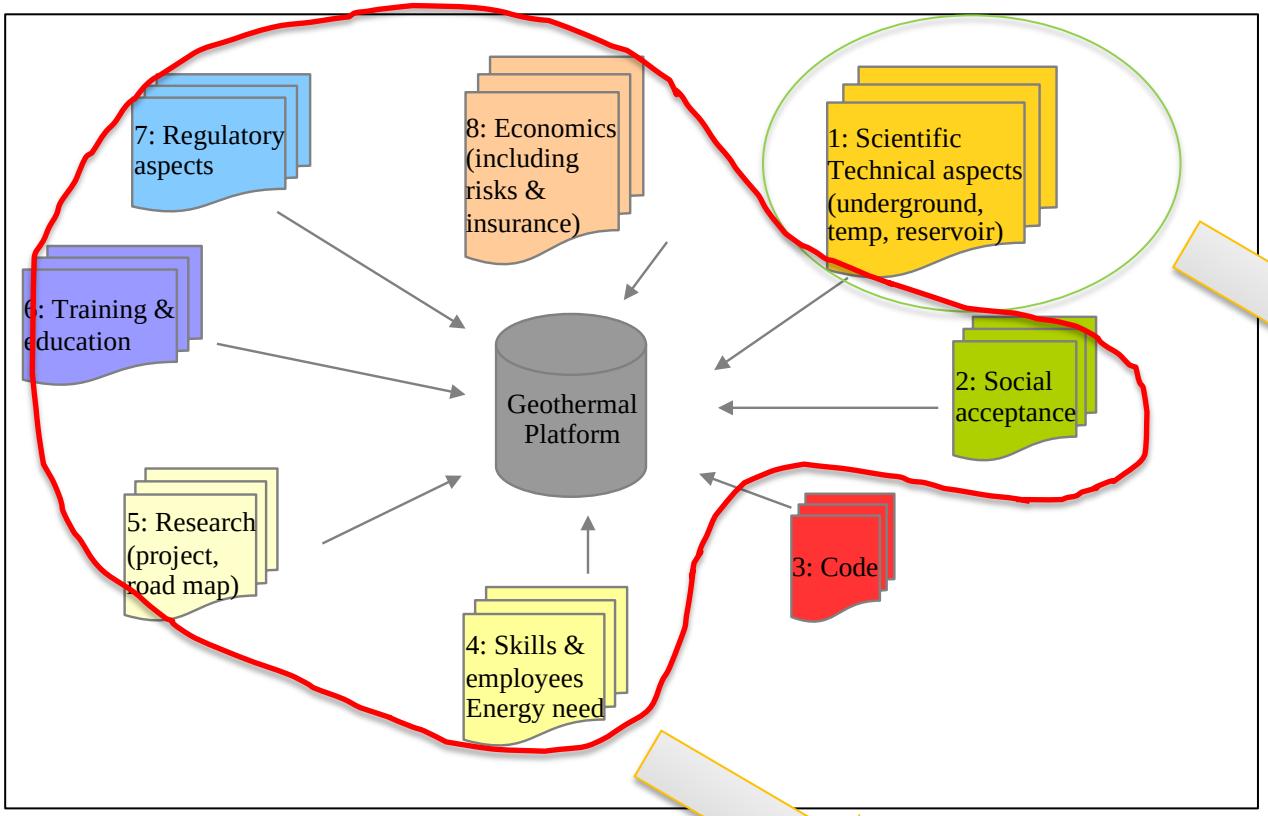
EGIP: for who?

- potential international energy users (international operators and funding agencies interested in launching new geothermal projects)
- any geothermal stakeholder
- to respond to the increasing concerns of non-geothermal sector stakeholders that geothermal applications are too confusing and difficult to manage

EGIP: what is?

- distributed system: each (national) data provider delivers its data according to a common standard data model and common services
- Not only scientific data from underground
- Information are catalogued and served following the INSPIRE directives
- A EU portal will request all national service providers to deliver their part of the European puzzle

Towards a Geothermal European Information Platform EGIP – content



Widely distributed Structured information

Widely distributed Un-Structured information, always documents – Not yet included into any Database

Geothermal ERA-NET

WP3 Towards a European Geothermal Information Platform

EGIP: how?

Step-by-step plan:

- *First step* - ***Stage 0***: map the links and documents where geothermal information is currently provided at a national level
- *Short term* – ***Stage 1:*** implemented as Joint Activity in GEO ERA-NET
- *Medium term* – ***Stage 2***
- *Long term* – ***Stage 3***

EGIP: when?

EGIP pilot concepts:

The aim of this early stage is to prove the **effectiveness** and **efficiency** of **EGIP**

The initial development of the pilot project involved setting up a geothermal **common data model** and the management and optimization of **services**

EGIP is designed to fully satisfy the end-user by providing easy and useful *data retrieval* and *cost containment*, in compliance with **INSPIRE** rules for building a (spatial) Data Infrastructure

Geothermal ERA-NET

EGIP *Architecture* overview I

« European products»

Catalogue service (CSW)

DB1 DB2 DB3 DB4

Metadata describing datasets and services

Metadata Catalogue

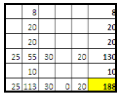
Common rules for:

1. Metadata (INSPIRE)

2. Web Services:
   - View
   - Access (download)
   - Process

3. Common data model, used by services to deliver and process data

Each provider delivers a piece of the puzzle:

Which can be map  or data 

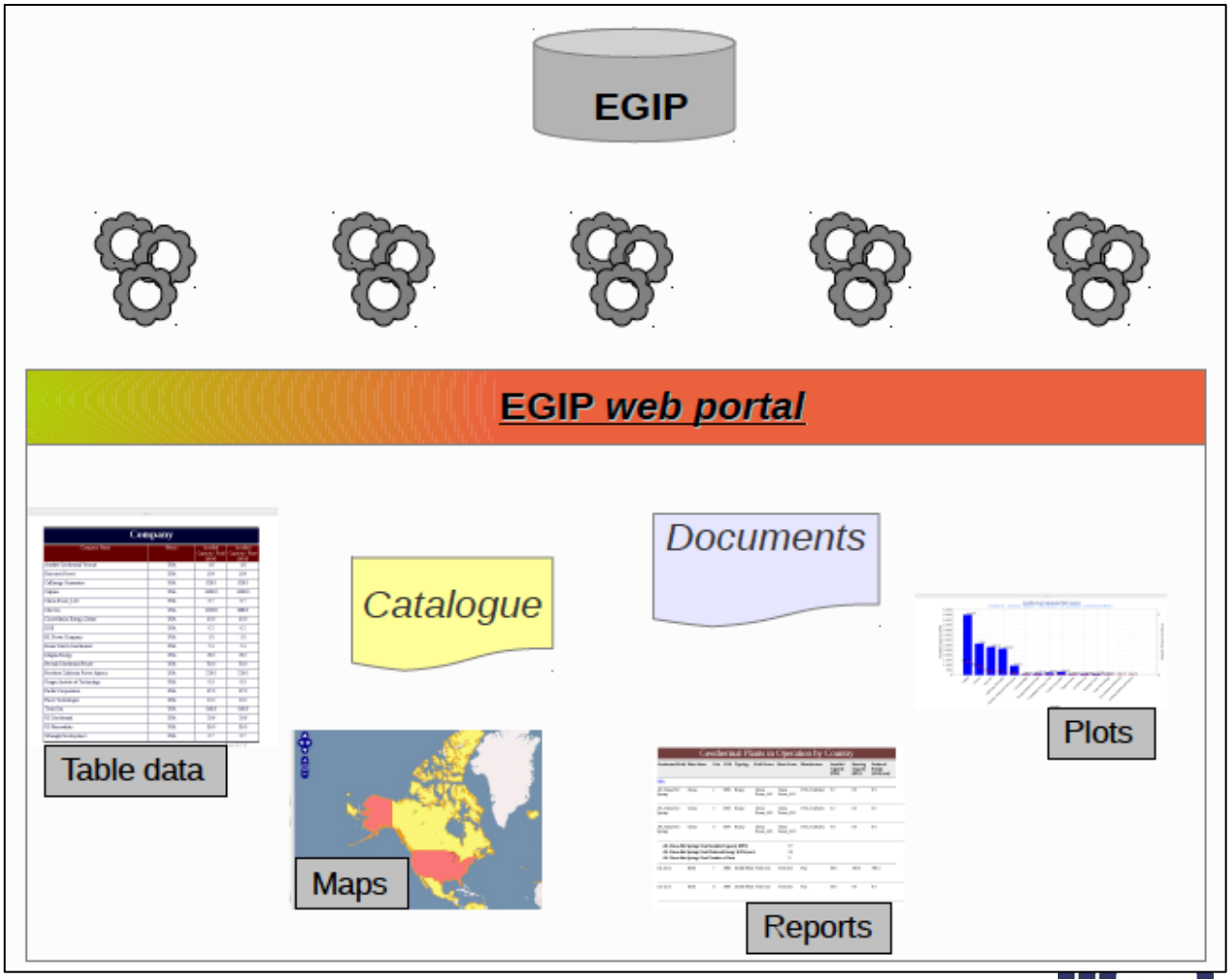
Geothermal ERA-NET

For the services:
- View and access/download services are well specified in INSPIRE
- Process services have to be compliant with a general framework only

For the common data model to be used by the access, download and process services:
- to specify this data model : input from existing DB, and INSPIRE requirements
- Development of vocabularies (code-lists)

EGIP *Functionalities* overview II

EGIP tools have to guarantee a 360° data browsing (e.g., browsing from a catalogue to a document, from a document to a tabled info or spatial data) and **allowing a deep survey into the geothermal knowledge**.



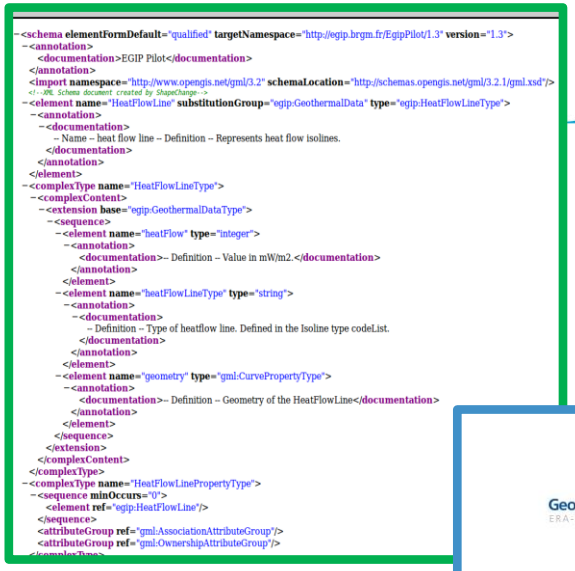
Set-up **EGIP pilot**:

Startup conference call with BRGM 02/04/2014

Produced documents:

- *EGIP.xsd*
- EGIP_Pilot_data_model_1.0.pdf
- *EGIP-Pilot_Implementation_Games_Rules.pdf*

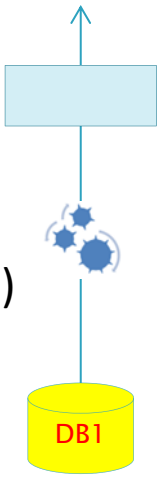
- ***Conference call minute with volunteer partners:***
  - ✓ Conf #1 01/07/2014
  - ✓ Conf #2 16/07/2014
  - ✓ Conf #3 31/07/2014
  - ✓ Conf #4 06/08/2014
  - ✓ Conf #5 25/08/2014
  - ✓ Conf #6 04/09/2014



EGIP *Architecture* overview II

The EGIP @ national level:

1. Collecting/preparing the data
2. Data mapping (if needed)
3. Creating catalogue of the metadata (following the INSPIRE rules)
4. Implementing discovery, view, download services



The EGIP @ EU level:

1. Preparation of the xsd file and EGIP data model documentation
2. Web portal implementation
3. Setting up the portal on web services retrieved from the confederate national portals
4. Checking the EU-portal functionalities

EGIP pilot – Stage 1: list of data

Step-by-step plan:

- *First step - **Stage 0***:
- *Short term – **Stage 1***
- *Medium term – **Stage 2***
- *Long term – **Stage 3***

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

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

The **EGIP** consortium:

The volunteers participating countries up to now:

- National Research Council of ITALY
- Bureau de Recherches Géologiques et Minières - FRANCE
- Swiss Federal Office of Energy (with Swiss Geological Survey)
- Magyar Foldtani és Geofizikai Intézet - HUNGARY

Coming soon:

- OS Orkustofnun - ICELAND
- Slovenia Geological survey

How does EGIP work?

EGIP pilot initiative deploy a **data infrastructure** aimed at facilitating open access, the sharing of data, collaborative analysis, processing and mining processing, as well as the dissemination of newly generated knowledge.

The EGIP pilot offers a flexible and secure **web-based**, **community-centric** platforms, so geothermal stakeholders can work together on common challenges

The EGIP platform uses a specific Virtual Research Environment (**VRE**) set-up exploiting some of the **D4Science** infrastructure capabilities, which are developed and operated employing the **gCube** technology

The EGIP follows the **INSPIRE** specification and deploy **OGC** standard services

Powered by:

The EGIP apps

application in EGIP belongs three different domains

ConnectCube applications are a comprehensive suite of tools, which support a **collaborative**, standards-oriented data publication environment:

- Shared workspace
- Social Network facilities

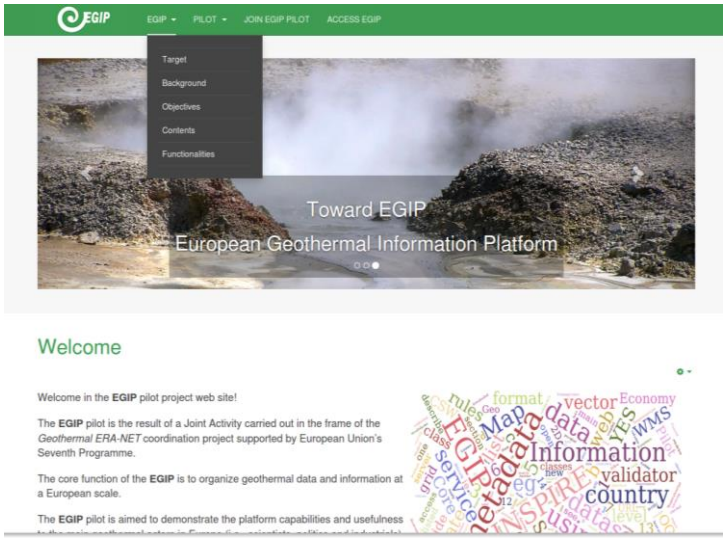
GeosCube applications help practitioners dealing with geospatial information to properly **access** and **consume**:

- Geospatial Data Discovery
- Metadata catalogue

StatCube applications make up analytical tools:

- Statistical manager

EGIP pilot website

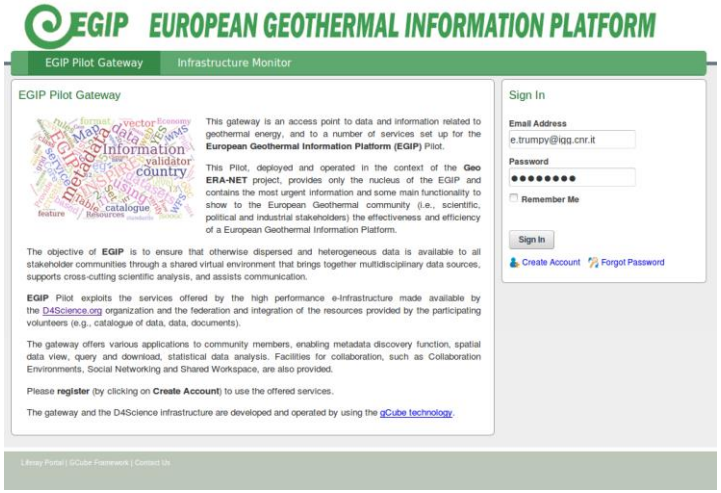


SEVENTH FRAMEWORK PROGRAMME

Access EGIP

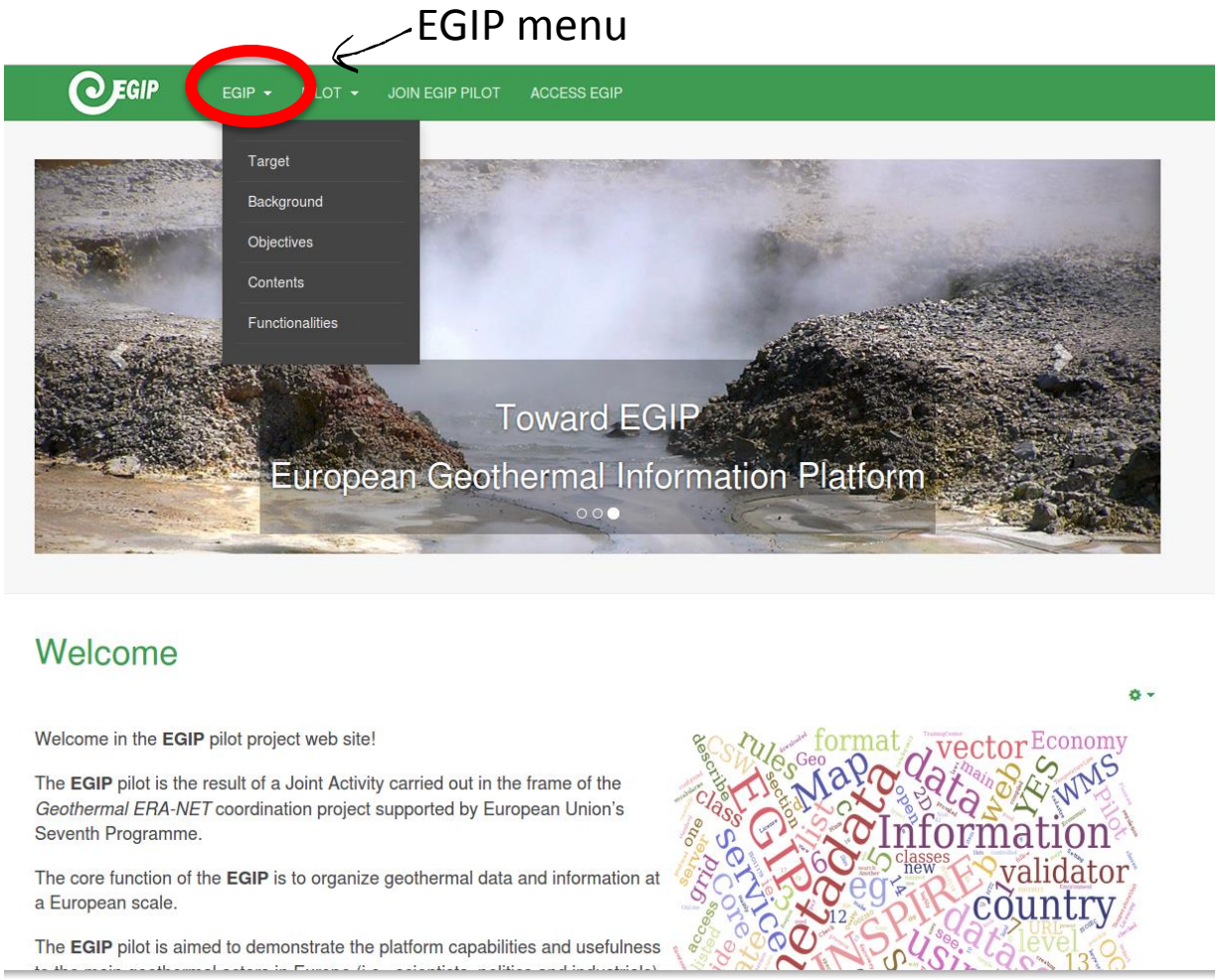
Registration and access

EGIP pilot platform



Geothermal ERA-NET

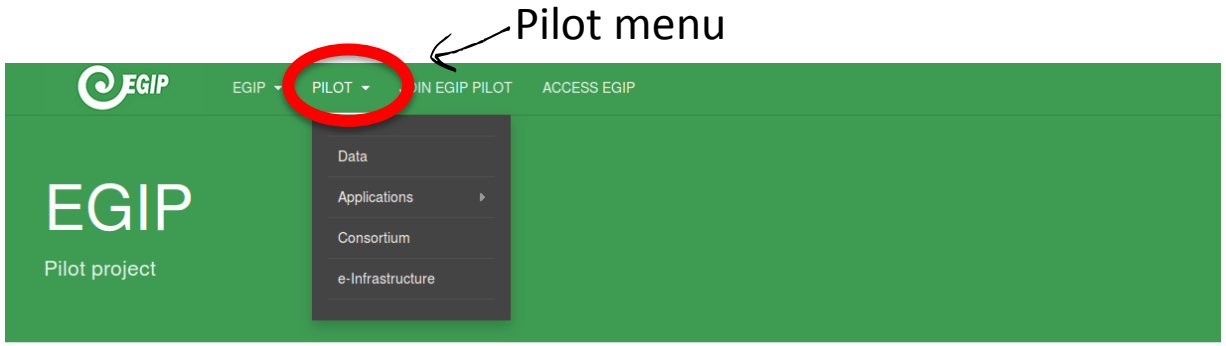
EGIP web site I



EGIP menu:

- Target
- Background
- Objectives
- Contents
- Functionalities

EGIP web site II



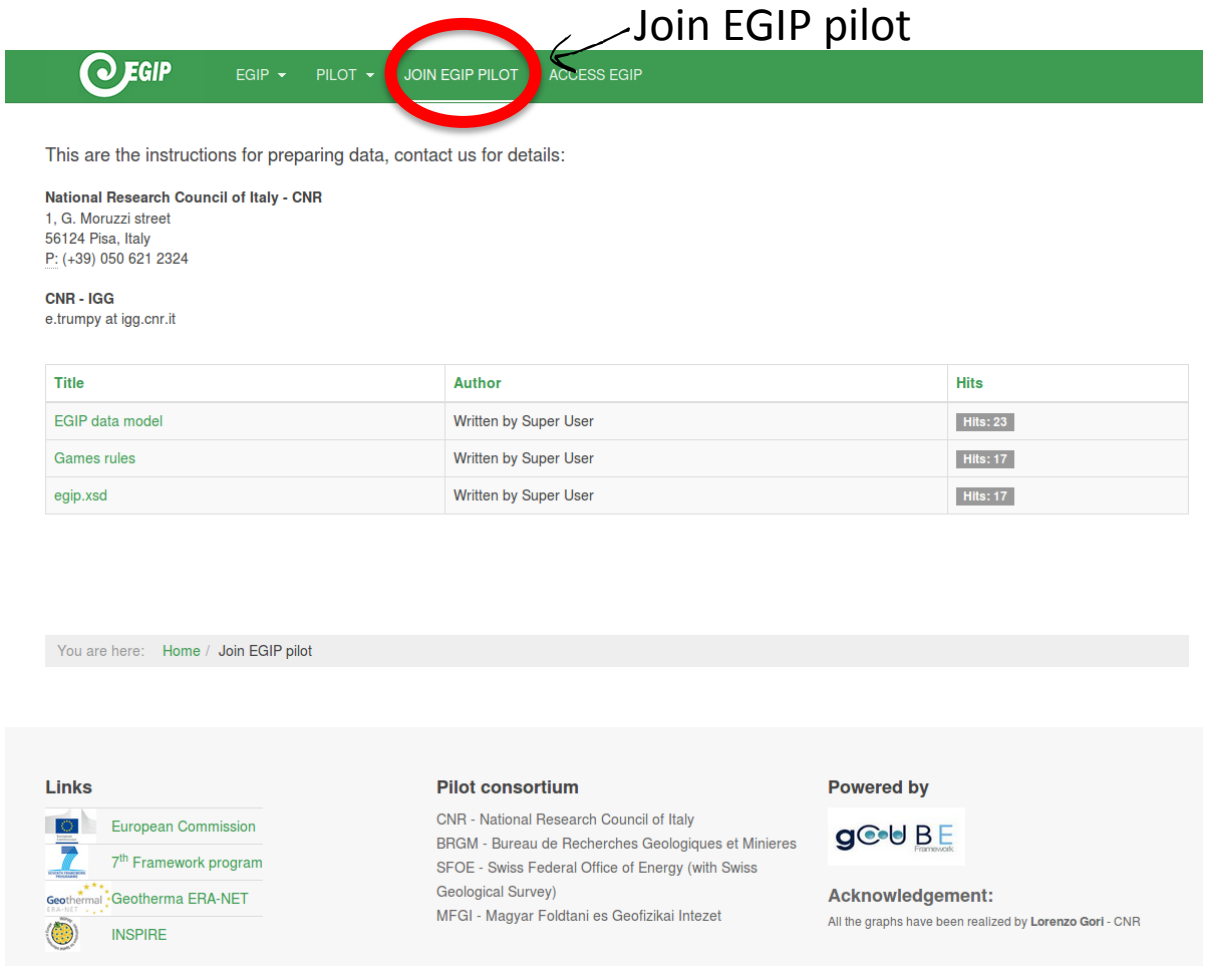
Pilot project

This is the portal of the European Geothermal Information Platform (EGIP) pilot project, offering a number of services, information and data specially set up for the Geothermal ERA-NET project. EGIP pilot exploits the services offered by the high performance e-Infrastructure made available by D4Science.org organization [see the detailed description] and the federation and integration of the resources provided by the participating volunteers (e.g., Catalogue of data, data, web services and documents).
This pilot provides only the nucleus of the EGIP and contains only the most urgent information and some main functionality to prove to the European Geothermal community the effectiveness and efficiency of a European Geothermal Information Platform.
When you **ACCESS** the available applications allow you to enable metadata discovery function; spatial data view, query and download, statistical data analysis. Facilities for collaboration, such as Collaboration Environments, Social Networking and Shared Workspace are also provided.
Please register to use the offered services

Pilot menu:

- Data
- Applications
  - connectCube
  - geosCube
  - statCube
- Consortium
- E-infrastructure

EGIP web site III



- Contact references
- Documents describing how to join in EGIP pilot

EGIP web site IV

Click here to enter

Spatial data discovery, view and download

Dataset analysis

Platform home page

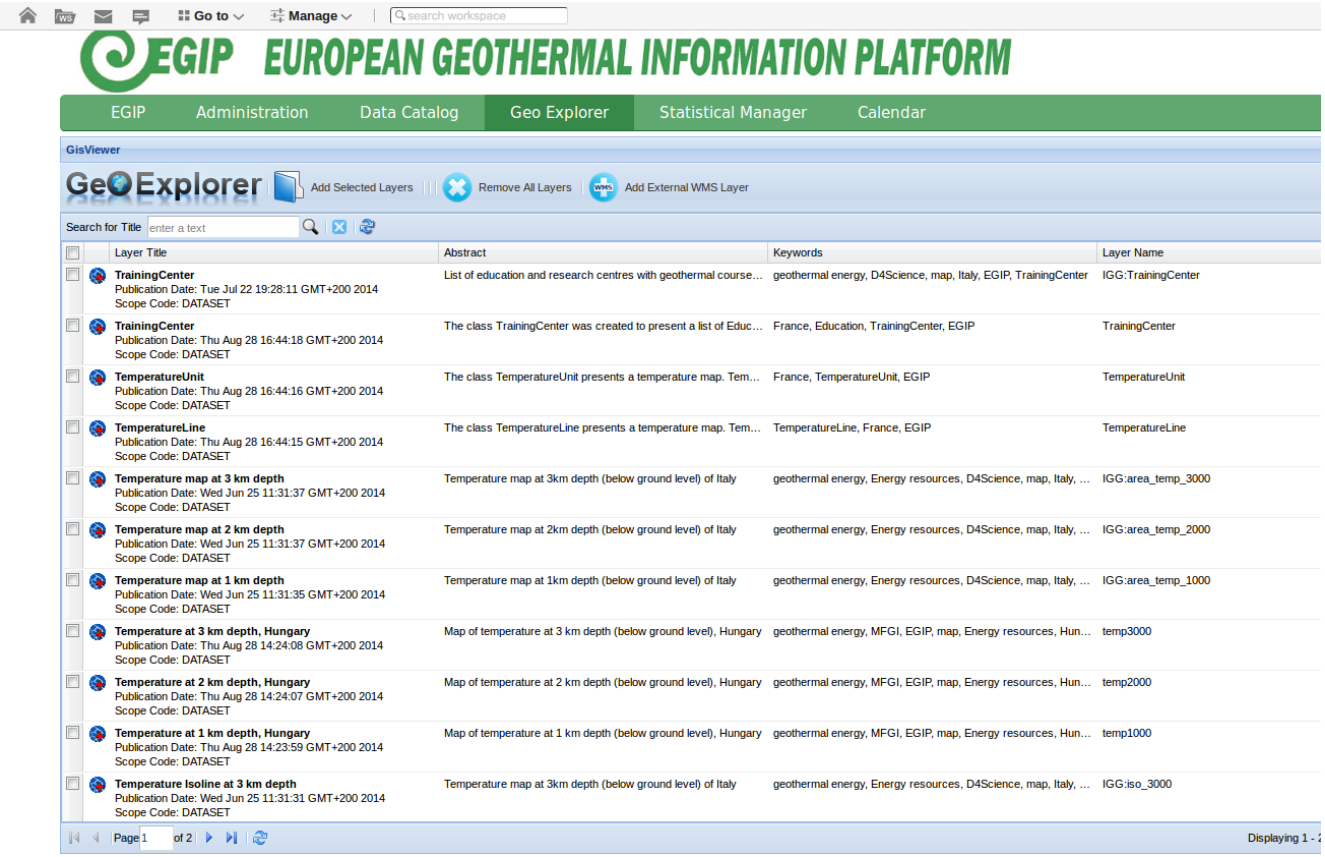
Metadata catalogue

EGIP platform: Data Catalogue

CS-W catalogue:

- Harvests the metadata from partners metadata catalogues
- Metadata collection for spatial dataset
- Metadata collection for documents
- INSPIRE Standard ISO-19139
- Dublin-core
- Spatial search
- Text search

EGIP platform: GeoExplorer



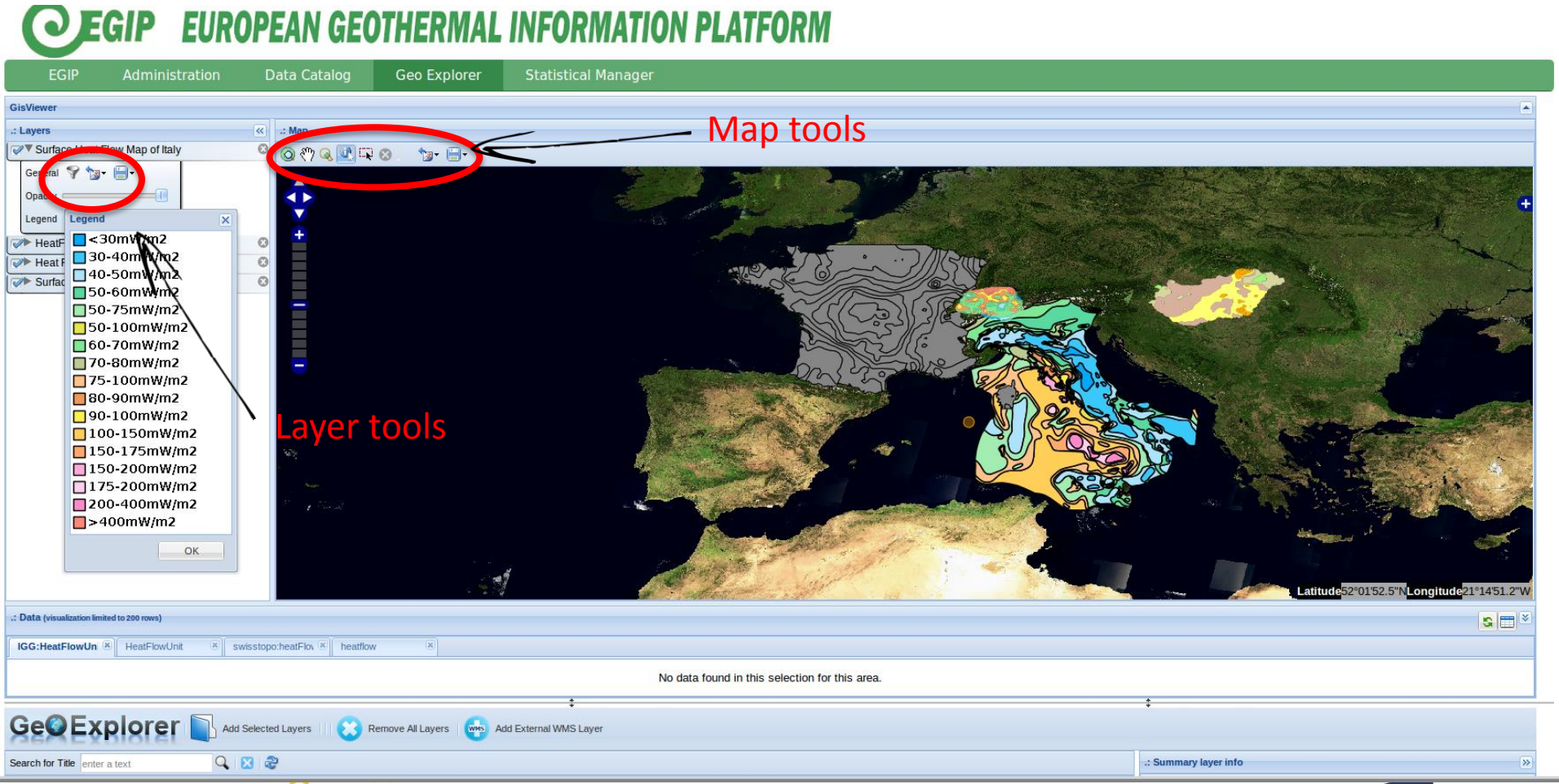
Geo-explorer capabilities:

- Harvest the spatial dataset from partners
- Show spatial layers
- Browse map: zoom, pan
- Query spatial layer
- Manage the layer opacity
- Save & Share the layers and maps
- Metadata outlook

EGIP platform: GeoExplorer

- HeatFlowUnit among volunteers participants

SEVENTH FRAMEWORK PROGRAMME



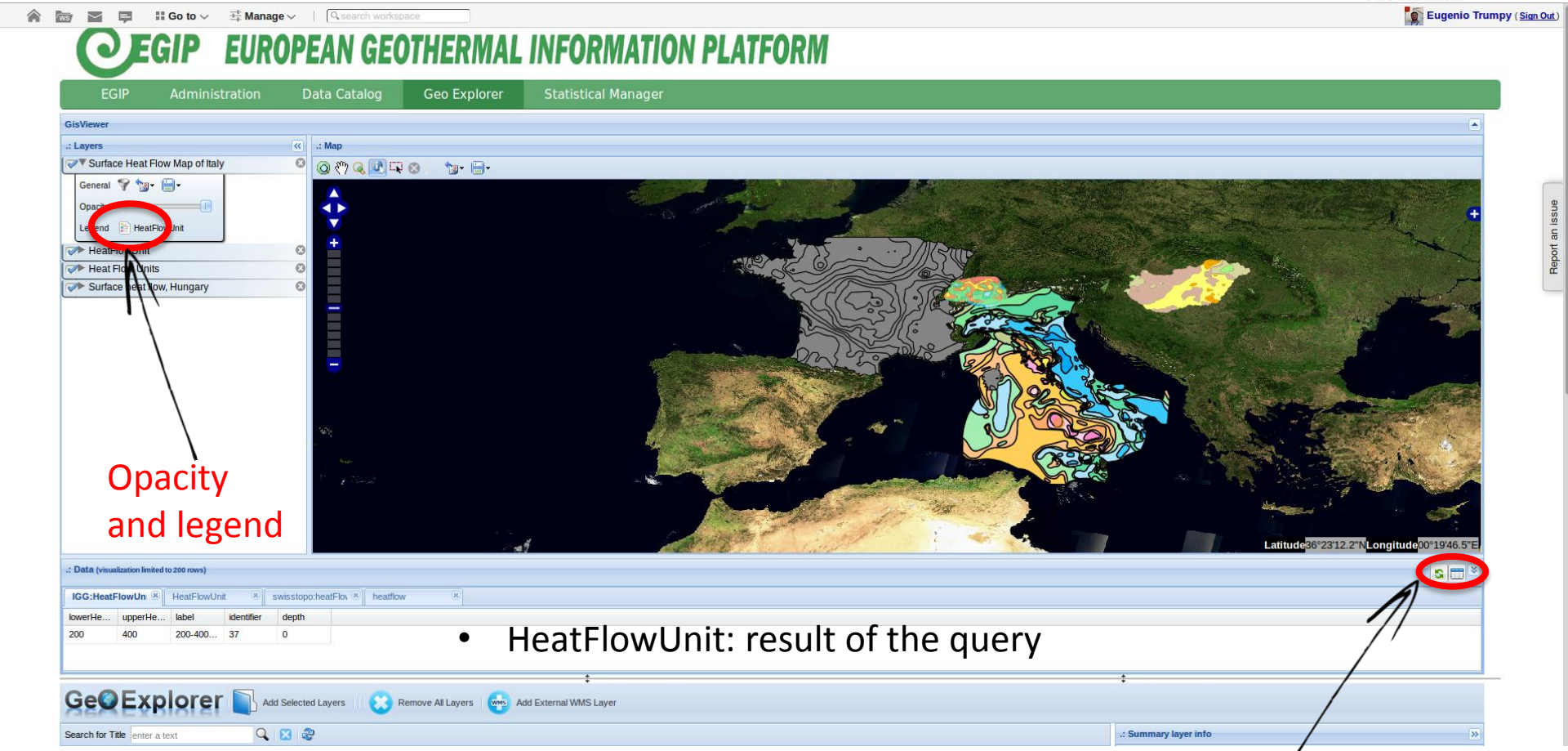
Geothermal ERA-NET

OGC Open Geospatial Consortium, Inc.

INSPIRE Infrastructure for Spatial Information in Europe

EGIP platform: GeoExplorer

- HeatFlowUnit among volunteers participants



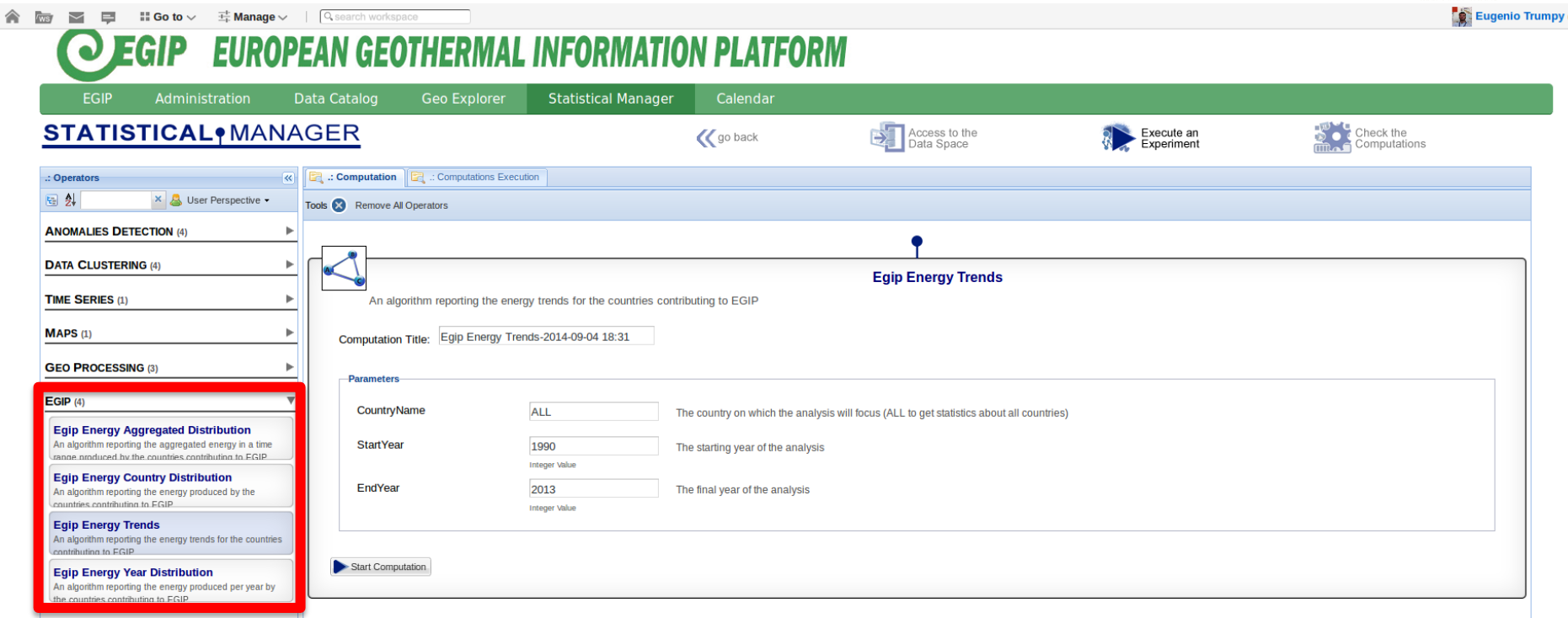
Opacity and legend

- HeatFlowUnit: result of the query

Download dataset

EGIP platform: Statistical Manager

SEVENTH FRAMEWORK PROGRAMME



Statistical analysis:

- Analysis served by WPS
- Import dataset
- Define analysis name

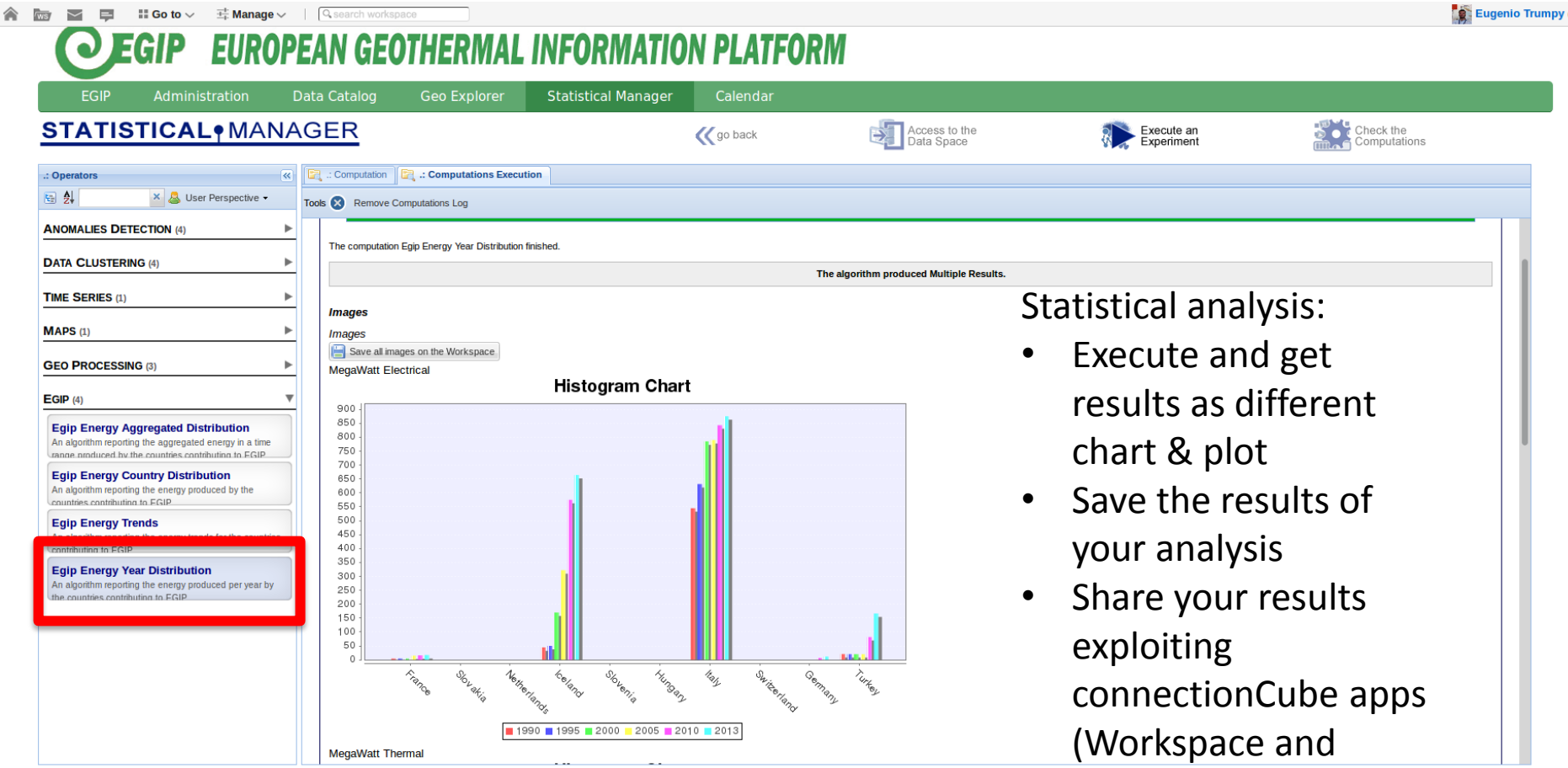
- Manage series
- Execute and get results as different chart & plot
- Share your analysis

Geothermal ERA-NET

INSPIRE Infrastructure for Spatial Information in Europe

OGC® Open Geospatial Consortium, Inc.

EGIP platform: Statistical Manager



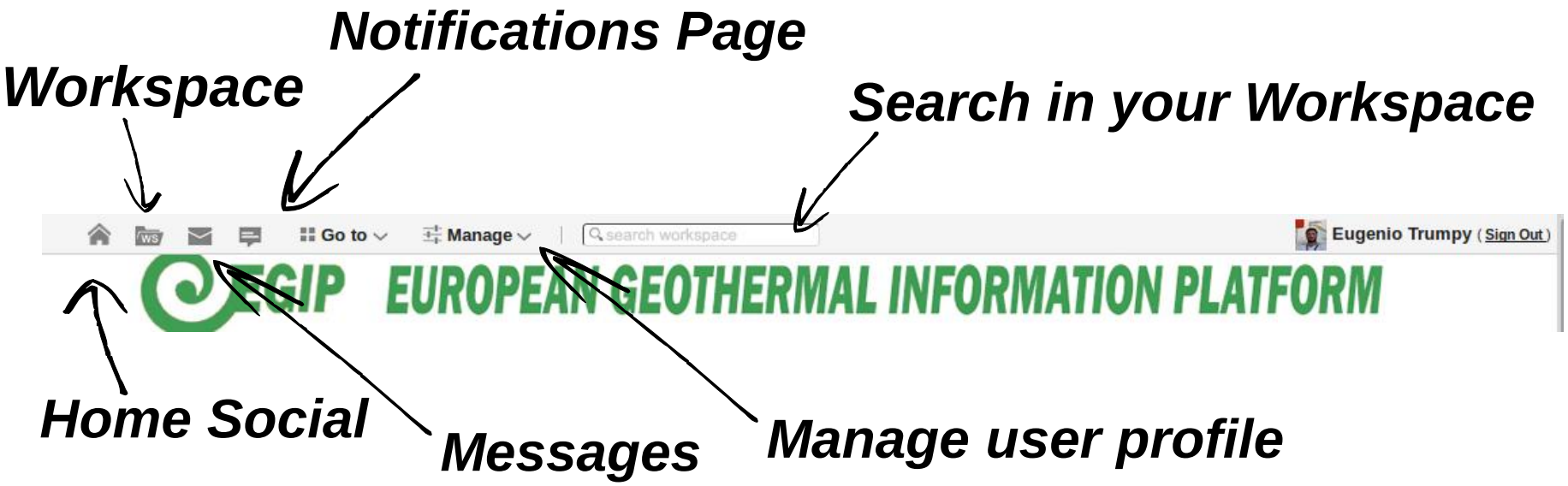
Statistical analysis:

- Execute and get results as different chart & plot
- Save the results of your analysis
- Share your results exploiting connectionCube apps (Workspace and Social)

EGIP platform: Collaborative environment

A single place to

- Manage all the portal extension

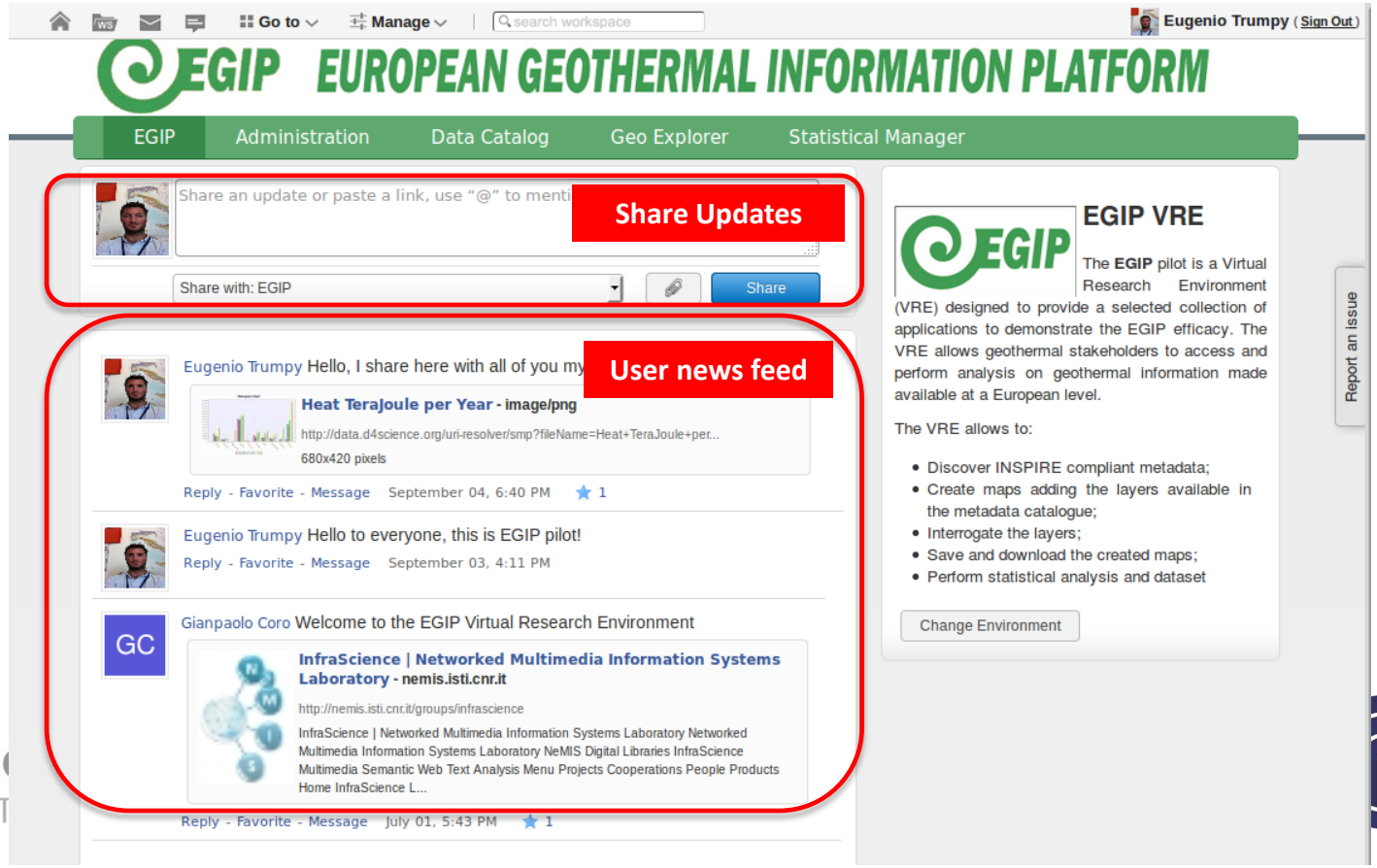


EGIP platform: Collaborative environment, Social facilities

SEVENTH FRAMEWORK PROGRAMME

A single place to

- Get status and updates from applications and other users
- Get notifications about messages, jobs completion, new generated products, etc.

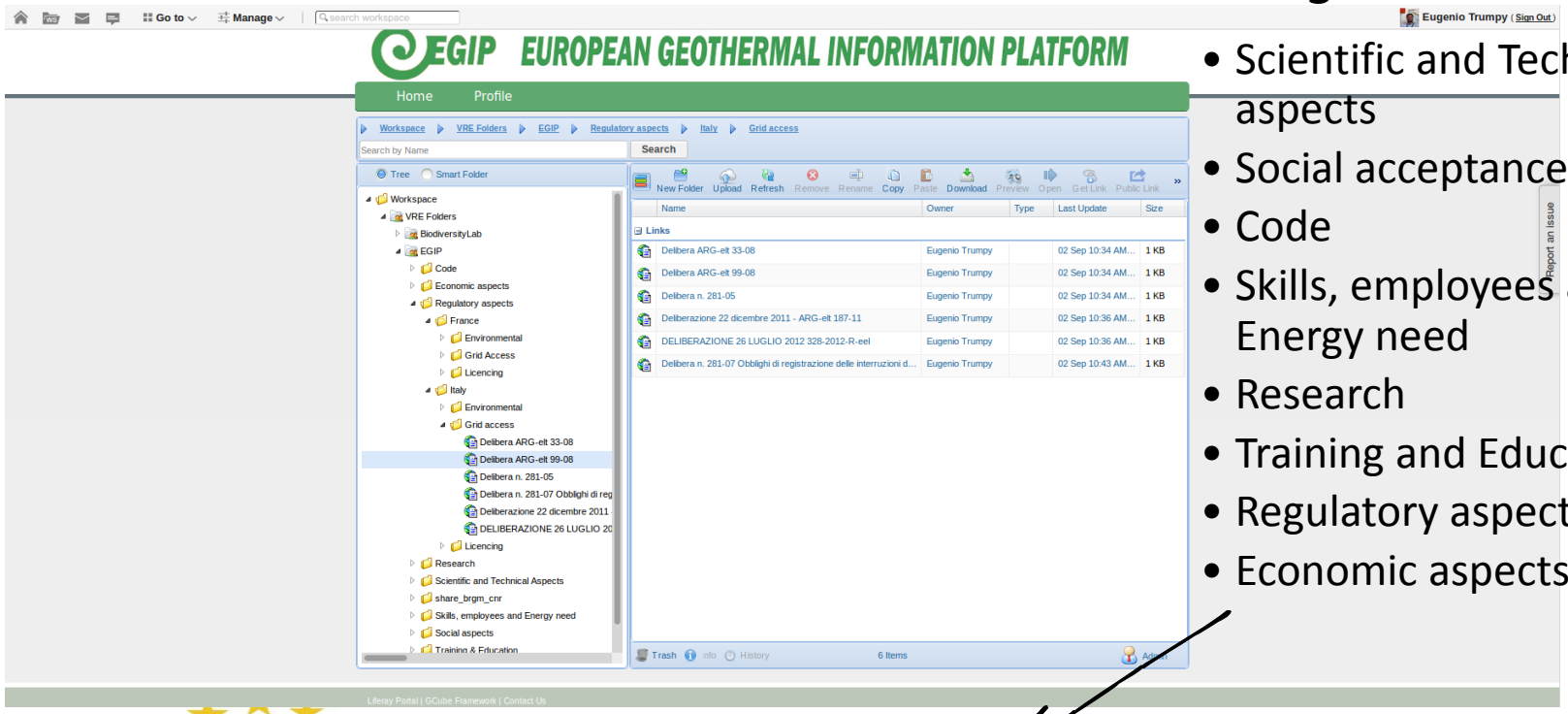


Geoth
ERA-NET

EGIP platform: Collaborative environment
Workspace

A single place to

- Manage data, store and preserve them
- Share data
- Share your analysis & Maps



EGIP documents categories

- Scientific and Technical aspects
- Social acceptance
- Code
- Skills, employees and Energy need
- Research
- Training and Education
- Regulatory aspects
- Economic aspects

Document metadata – Standard Dublin Core

EGIP pilot benefit:

- Guaranteed data interoperability: retrieval, viewing and access of information from partners (via WMS, WFS e.g. TemperatureUnit, HeatFlowline, …)
- Harmonized geothermal domain at a European level
- **Efficiency**, thanks to the multiplicity of data sources, the latter being directly related to national databases
- Guaranteed ownership: data **belong** to and **stay** in the country they are related to
- Durability and maintainability
- Economically viable, requiring only coordination with respect to what each country would need to develop independently
- Productivity, by covering all published data in the long term

WP4/WP7 Joint Activity

SEVENTH FRAMEWORK PROGRAMME

EGIP pilot

http://egip.igg.cnr.it

Geothermal ERA-NET

Thank you for your attention!!