

# The European Geothermal Information Platform (EGIP), an opportunity to be INSPIRE compliant for Geothermal knowledge

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# GEO THERMAL ERA-NET



- It encompasses 9 European countries: Iceland, the Netherlands, France, Germany, Slovak Republic, Switzerland, Italy and Turkey, Hungary
- The Geothermal ERA-NET is aimed
  - to deepen the cooperation on national and administrative level
  - be an enabler for the integration of national research
  - development agendas into a coherent European geothermal R&D programme
  - to create a European Geothermal Information Platform
- The Geothermal ERA-NET will focus on the utilization of geothermal energy, from direct heating use up to higher enthalpy resources and their corresponding use (e.g. power generation)
- Budget : € 2.2 mln (2012-2015); Time: 4 years; Start: June 2012

# ERA-NET partners

- Geothermal energy research program owners and managers

<b>National Energy Authority (coordinator)</b>	<b>Iceland</b>
Agentschap NL	The Netherlands
Swiss Federal Office of Energy	Switzerland
The National Research Council of Italy	Italy
Project Management Jülich	Germany
ADEME (French Agency for Environment and Energy Management)	France
BRGM as third party of ADEME	France
Icelandic Centre for Research (RANNIS)	Iceland
Scientific and Technological Research Council of Turkey (TUBITAK)	Turkey
Ministry of Education, Science, Research and Sport of the Slovak Republic	Slovakia
The EnergyEfficiency, Environmental and Energy Information Agency (NKEK)	Hungary



- Lead partner is Orkustofnun (National Energy Agency of Iceland)
- Good geographical balance (North-West to South-East Europe) . Countries participating in this ERA-NET are, among other things, chosen on the basis of their ambitions to include geothermal energy into their goals for 2020 and 2050 on the reduction of CO2 emissions.
- Adding partners is a high priority target to strengthen and broaden the GTH ERA-NET (...)

# WP3: Towards a European Geothermal Information Platform (EGIP)

was WP3: Towards a European Geothermal Database

## Objectives

- Geothermal ERA-NET aims to work on setting the standard on what geothermal information to collect for Europe, proposing and describing the **structure** of a **European Geothermal Information Platform**, to have a reference that may be followed at national level and to put the base for a common **Data Model** to share information among European countries.
- Within Geothermal ERA-NET we also aim to **define general rules for managing** the catalogued data and implement services to provide the information of the European Geothermal Information Platform following **INSPIRE** specification.

# ERANET - WP3: Towards a European Geothermal Information Platform

## Activities

- To complete the preliminary work required for the creation of a European Geothermal Information Platform with the purpose of sharing information on legal and regulatory aspects, policies, measures, institutions, research projects and data.
- Collection of **statistical data** on the ***principal parameters of geothermal energy utilization*** in each country and a list of multinational projects in this field.
- Overview of ***spatial databases/datasets*** and web services that publish information on geothermal and geology on the internet.
- A feasibility study - including budget estimates – for the implementation of the Platform.
- Follow-up the implementation of the European Geothermal Information Platform.

# WP3: Towards a European Geothermal Information Platform

## Task 3.1 Preparation of the scientific and technical activity

- Preparation activities, including scientific and technical programme, two specialized workshop on European Geothermal Database, organization of additional meeting

## Task 3.2 State of the art and needs

- Questionnaire, data inventory, needs and gaps, State of the art report

## Task 3.3 Preparation of a feasibility study

- Discussion on feasibility, INSPIRE implication on EGIP, budget estimation, feasibility study

## Task 3.4 Following-up the implementation

- The preliminary design will be used to prepare a **call for proposal** to implement the European Geothermal Information Platform through one or more **pilot area(s)**

# ERANET WP3 roadmap

## D3.2 Feasibility Study Index:

- Introduction: Roadmap towards three stages of development
- Organization of the documents collected (from the state of the art) “Stage zero”
- Definition of data lists for each stage (from the state of the art), data specification and functionalities
- Data Model (first stage):
  - Entities and attributes
  - Relation
- Description of functionalities (first stage)
- Catalogue (first stage)
- Budget estimation
- INSPIRE – BRGM contribution





# Towards a Geothermal European Information Platform EGIP – **state of the art**

## Geothermal knowledge information

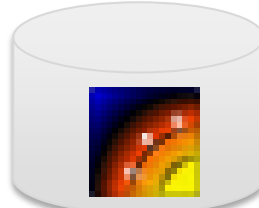
Different DB

International DB



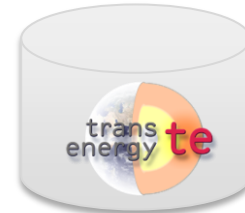
New IRENA (renewable energy database), etc...

National DB



Geothopica – Italian National Geothermal Database, etc...

Project DB

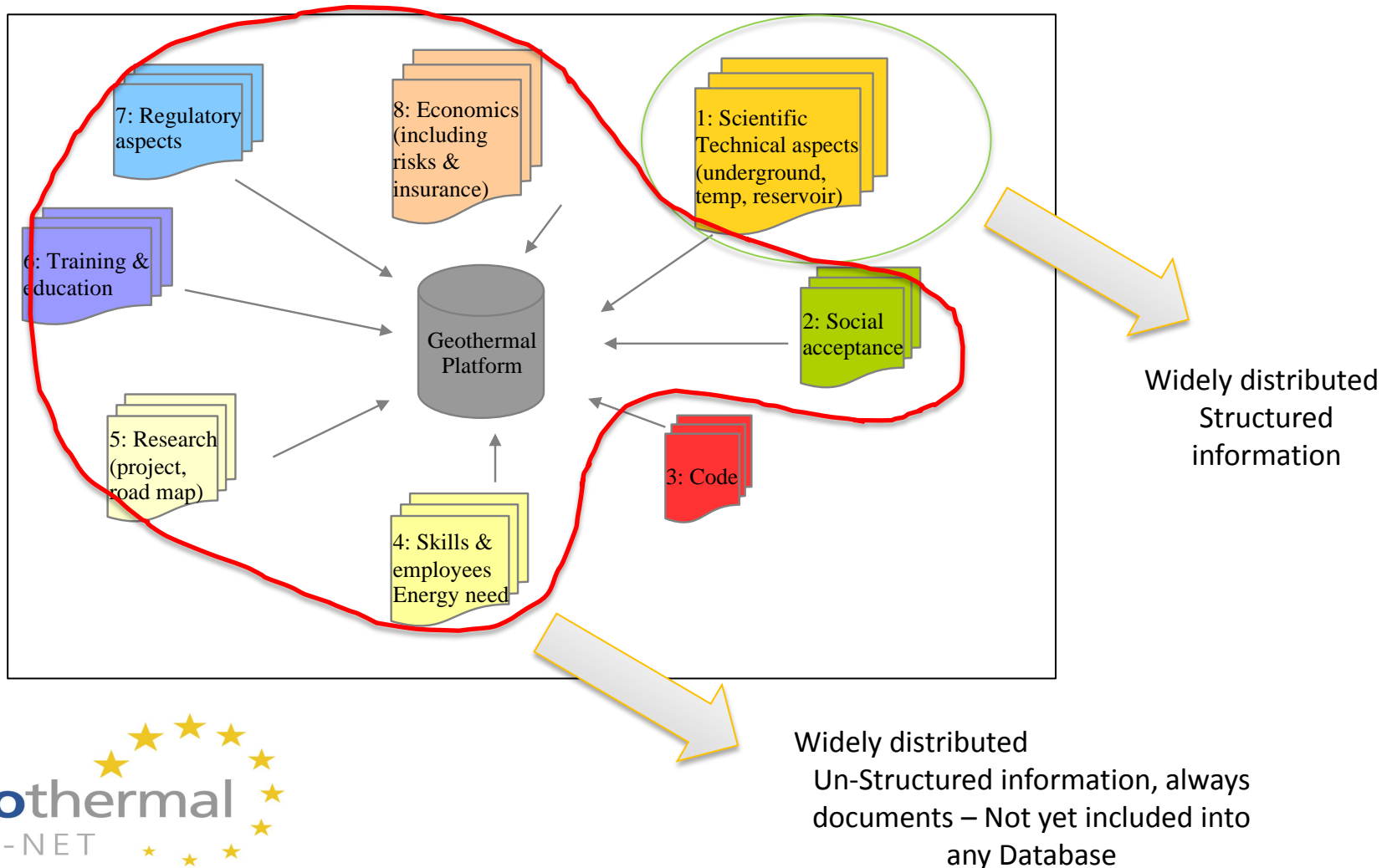


Geoelect, geoDH, ...

Different Application



# Towards a Geothermal European Information Platform EGIP – **content**



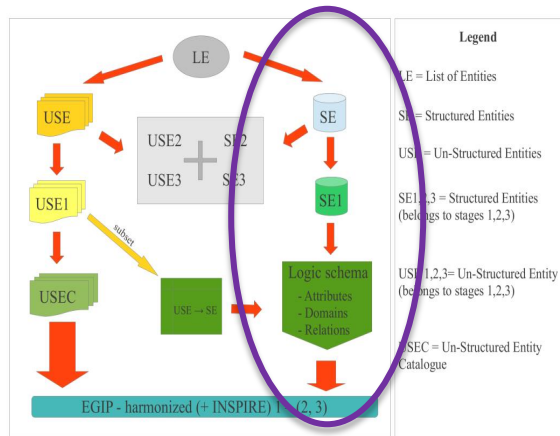
# Feasibility stage 1 list of data

WP3  
questionnaire  
surveyed 42  
different kind of  
geothermal  
information

Data	Structured	Sub-Section	Feasibility stage
Temperature maps at depth (Available depth?) 1 / 2 / 3 km	Y	Scientific and technical aspects	1
Surface heat flow measurements and map	Y	Scientific and technical aspects	1
What is the reference system used for georeferencing data (UTM, WGS, or others)?	/	Scientific and technical aspects	1
Environmental impact laws	N	Social acceptance (including environmental issues)	1
Geothermal national roadmap	N	Research R&D	1
list of Education & Research intitutes		Training and education	1
Rules of licencing (exploration/exploitation)	N	Regulatory aspects	1
Legal condition for grid access	N	Regulatory aspects	1
Insurance covering the geothermal project risks (e.g. deep drilling wells)?	N	support schemes	1
Royalties & taxes, support scheme (feed-in tariffs, grants, ...)	N	support schemes	1
Industry list	N	Deployment	1

# Design Data Model

Structured data – included in the feasibility first stage



## Structured

Name layer:

Description:

Layer cod:

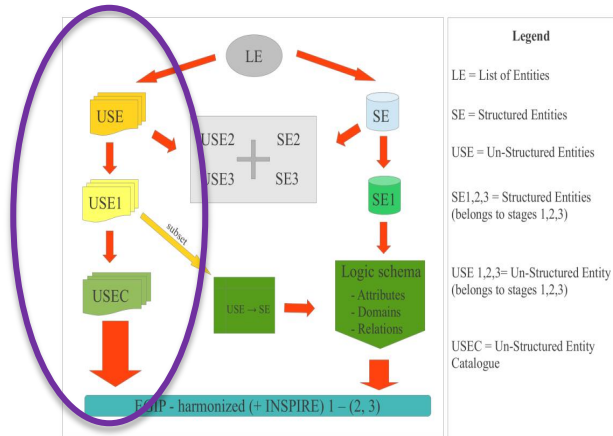
Typology: Raster / Vector / Grid

If Vector, Geometry: Point / Line / Area

Field	Length	Type*	Decimal	Note
POINT_ID	5	I		Unique and not null identity number
TYPE	4	I		1000 = fumaroles 1010 = manifestation of gas 1020 = manifestation of water and gas 2000 = well 2010 = exploration 2020 = thermal gradient well 2030 = production well 2040 = domestic borehole 3000 = spring 3010 = geothermal spring 4000 = monitoring well 9999 = unknown
TPOLOGY	1	I		0 = missing data 1 = sure 2 = deducted 3 = unsure 4 = .... 9 = not applicable/not classifiable
STATUS	6	I		0 = missing data 1000 = production 2000 = test 3000 = temporary closed 4000 = .... 9999 = not applicable
OTHERS ...	...	...	...	...

# Design Data Model

Un-structured data – list of documents included in the feasibility first stage



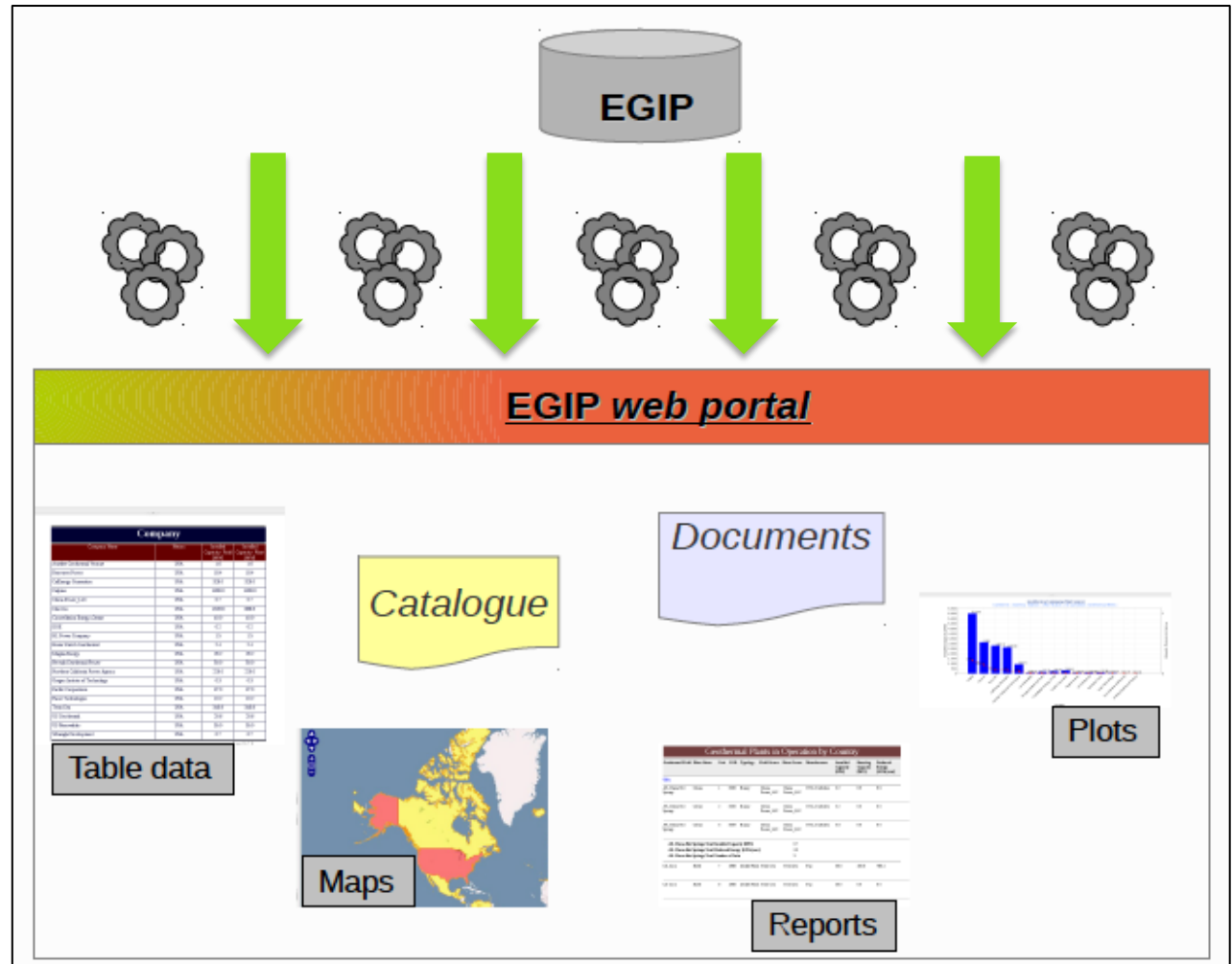
- EGIP Topic:
- Keywords:
- Reference: (journal, year, volume, issue, pages, ISSN, ISBN, DOI)
- URL
- Author\_1:
- Authors:

A catalogue will be organised:

- Title:
- Creator:
- Subject:
- Description:
- Publisher:
- Contributor:
- Date:
- Type
- Format:
- Identifier
- Source:
- Language:
- Relation:
- Coverage:
- Rights:

# Towards a Geothermal European Information Platform EGIP – functionalities

**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.**



# Towards a Geothermal European Information Platform EGIP – **INSPIRE benefits**

- Interoperability: Retrieve, view and access information from other providers (via wms, e.g., temperature maps @ depth, protected areas, ...)
- Harmonization of the geothermal domain at the European level
- European Commission favours and finances such harmonization in some European projects
- Investment for harmonizing at national level

## **INSPIRE compliant**

- Not a single Database (DB) gathering all the information from the countries

## **but**

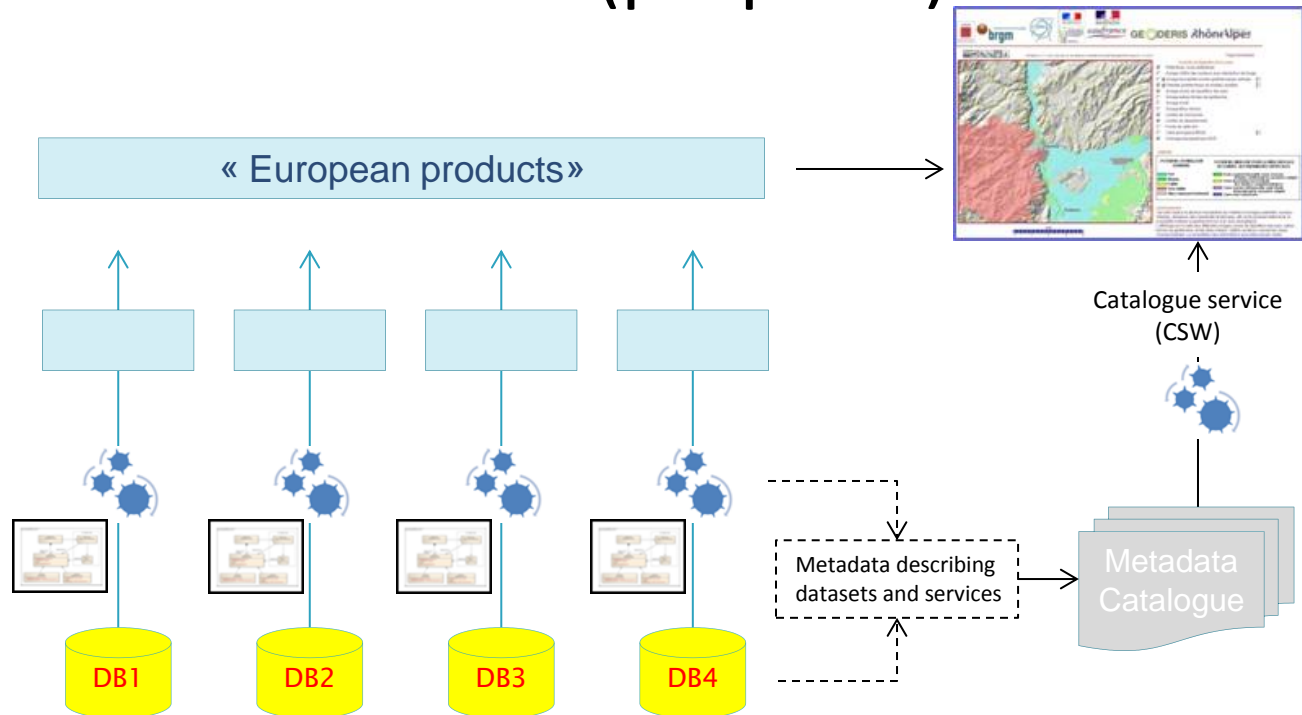


- A way to upscale national knowledge at European scale where the information belongs to the countries and is stored in national DB

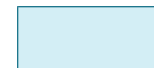
# EGIP Architecture overview (proposal)

## 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

8			4
20			20
20			20
25	55	30	130
10			10
25	131	30	20



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
- Participation to Specification Working Groups for standardisation (INSPIRE and others)
- Development of vocabularies (code-lists)



# Towards a European Geothermal Database

## How to get EGIP: towards feasibility

1. work on the data specification (including both the structured and the unstructured data)
2. Define three importance levels of information for our geothermal community starting from the master data list proposed in two questionnaires e.g., Education/training – Where are located geothermal courses in my country... at national level
3. Define "European product(s)" What to deliver at the European level, gathering national data ex.: Potential type - geothermal gradient, temperature (compulsory in INSPIRE) e.g.: EUROSTAT
4. Define EGIP basic functionality, e.g. **Tables** data, **Reports**, **Maps**, **Charts**, documentation **Search** and **Download**, others???

# INSPIRE implication on EGIP



- Take into account data models of existing databases
- Check INSPIRE Energy Resources data model concepts (Renewable & Waste Resource, Renewable & Waste Potential coverage, Energy Statistics, Aggregated Resource)
- Check other INSPIRE themes as they could provide useful information, with no need to design a new data model (Protected Sites, Statistical Units, Area Management for permits, ...)
- Specify when a property must have a value from a code-list

# INSPIRE Data specification for Energy Resources

- ☐ Data specification for ER – draft guidelines – v3.0 rc 3 (4/02/2013)
- ☐ Core data model => regulation (Implementing Rules)
- ☐ Extensions: to provide more objects and properties
- ☐ 3 packages:
  - Energy resources vector
  - Energy resources coverage (grid)
  - Energy statistics (extension)
  - + Common data types are also defined in the specifications

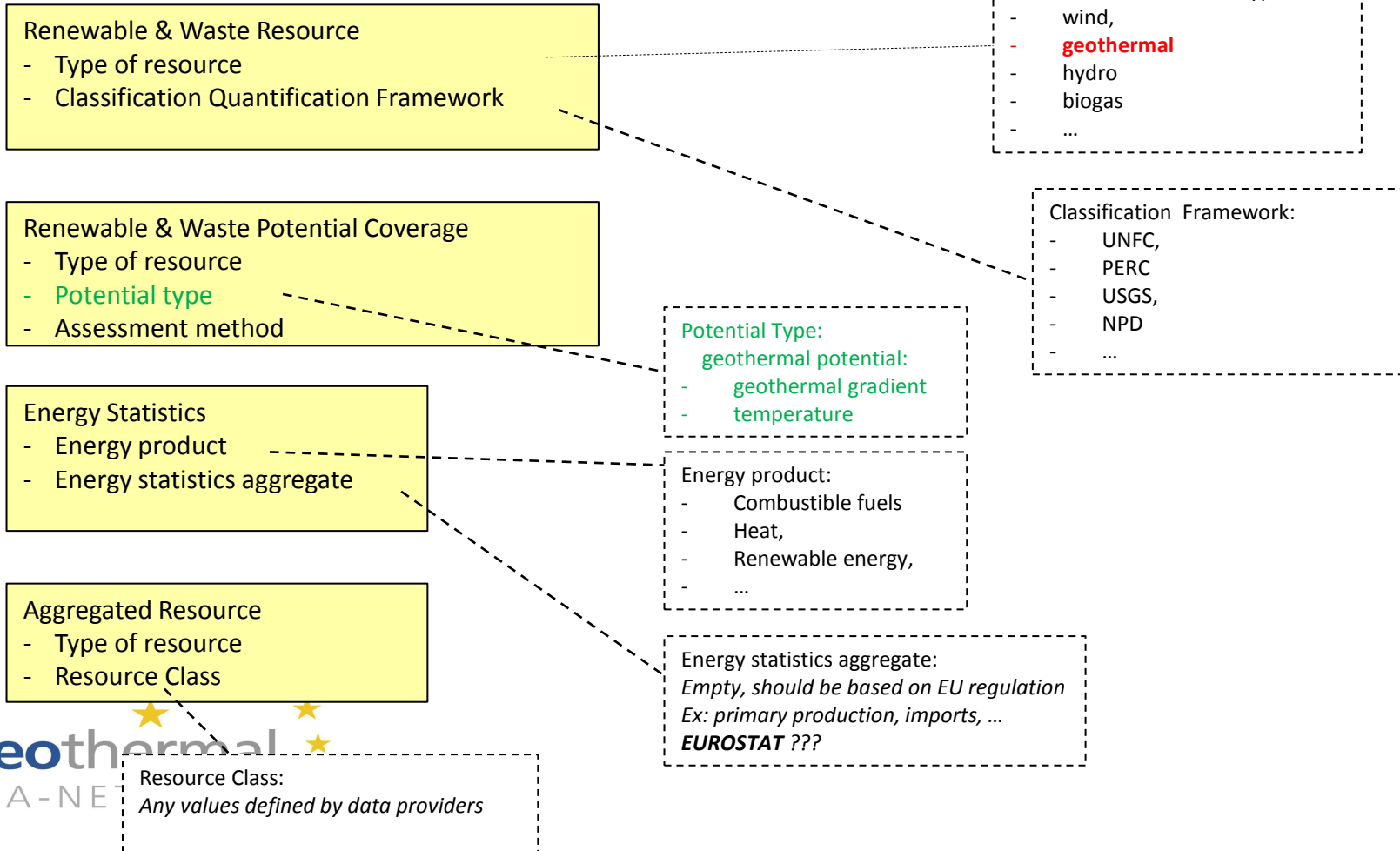
Next slides: only Geothermal Energy is presented

# INSPIRE Data specification for Energy Resources

**Geothermal:** **Energy** available as heat emitted from within the Earth's crust, usually in the form of hot water or steam. This energy production is the difference between the enthalpy of the **fluid** produced in the production borehole and that of the fluid eventually disposed of. It is exploited at suitable sites for electricity generation or directly as heat.

## Code-lists:

## Properties with value from a code-list:



# Final remarks

**Not only...**

- ✓ **Finalization of the data model for EGIP compliant with INSPIRE**
- ✓ **A few Web services**
  - ☐ Visualize data: Web Map Services (WMS)
  - ☐ Access data: Web Feature Services (WFS)
  - ☐ Process data: Web Processing Services (WPS)
- ✓ **A pilot accessing a few countries to demonstrate the implementation**

**...but also:**

- ✓ **Contributing to the INSPIRE working group ?**
  - **Next Technical Guideline 2014**
- ✓ **Participate and influence specifications and implementations for the geothermal sector**



**THANK YOU FOR YOUR  
ATTENTION**