



# Minerals Inventory as a part of Mineral Intelligence for Europe

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## Overall objectives of Mintell4EU:



- ① To update the electronic European Minerals Yearbook with production and trade data, resource and reserve data as well as exploration information.
- ② **To improve the quality and spatial coverage of the minerals inventory, addressing harmonization issues and facilitating interoperability with other ongoing European mineral intelligence projects.**
- ③ To test the application of the UNFC classification system as a tool to obtain more accurate information on pan-European mineral inventories.
- ④ To establish recommendation on interactions between already existing databases and data portals and the Raw Materials Information System (RMIS).
- ⑤ **To integration of the electronic European Minerals Yearbook and minerals inventory (Minerals4EU database) in the European Geological Data Infrastructure (EGDI).**



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## Mineral Inventory

### Objective

- To refine the Minerals Inventory (current Minerals4EU database) by
  - Identifying and filling data gaps,
  - Identifying low-quality or completely missing data
  - Harmonizing data
  - Extending the spatial coverage
  - Develop Quality Control tool
- To document historical mine sites with touristic features and provide information and a map (layer in EGDI)

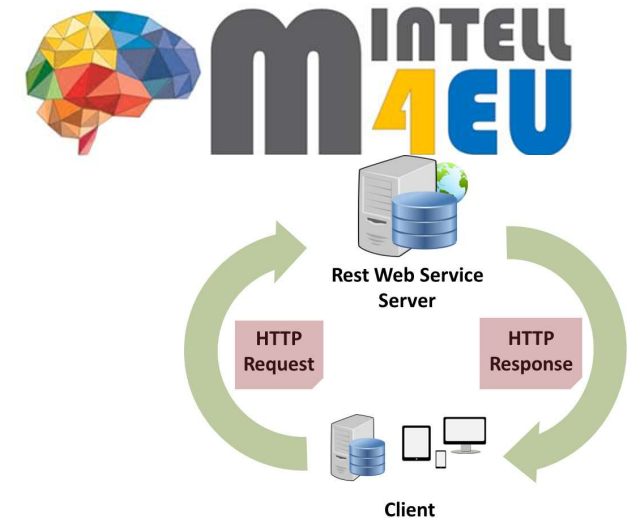


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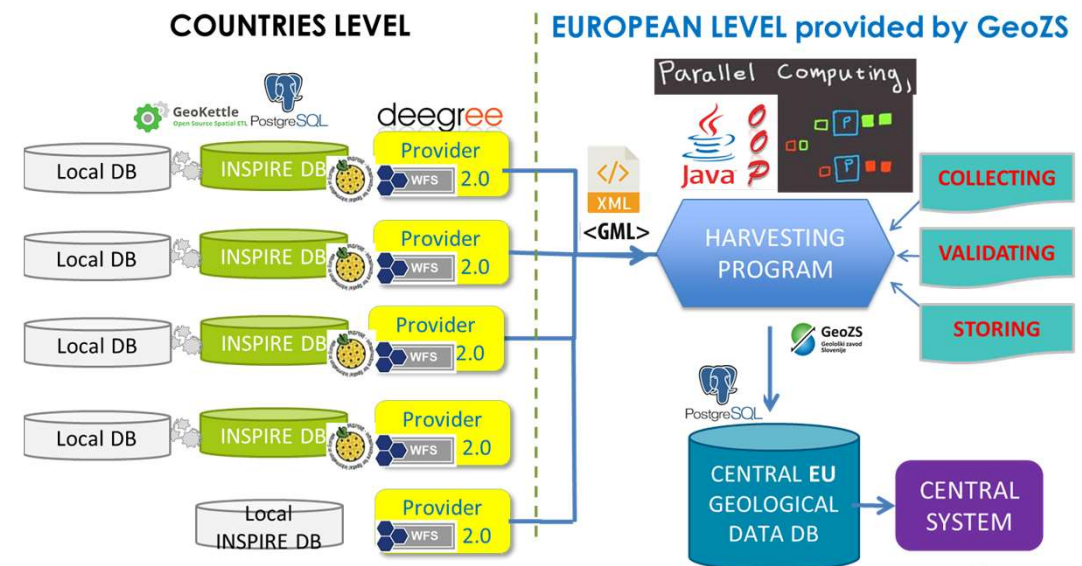


## Extending the existing harvesting system

- Collecting and validating data
- Automatic extraction from web services
- INSPIRE solution as a common standard
  - For occurrence description
  - For information exchange
  - Basic data models are extensible
- Technical routines
  - Count report
  - Geometry check
  - Log files
  - Warning/error files
  - SQL command files



### Harvesting System Architecture



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## Example of Web Service Result



**[http://minerals4eu.brgm-rec.fr/deegree/services/m4eu?request=GetFeature&service=WFS&version=2.0.0&typeName=prosum:Product\\_Extension&srsName=EPSG:4258&outputFormat=text/xml;%20subtype=gml/3.2.1](http://minerals4eu.brgm-rec.fr/deegree/services/m4eu?request=GetFeature&service=WFS&version=2.0.0&typeName=prosum:Product_Extension&srsName=EPSG:4258&outputFormat=text/xml;%20subtype=gml/3.2.1)**

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  xmlns:gml="http://www.opengis.net/gml/3.2" xsi:schemaLocation="http://www.opengis.net/wfs/2.0 http://schemas.opengis.net/wfs/2.0/wfs.xsd
  http://www.opengis.net/gml/3.2 http://schemas.opengis.net/gml/3.2.1/gml.xsd http://www.prosum.org http://minerals4eu.brgm-
  rec.fr/deegree/services/m4eu?
  SERVICE=WFS&VERSION=2.0.0&REQUEST=DescribeFeatureType&OUTPUTFORMAT=application%2Fgml%2Bxml%3B+version%3D3.2&TYPENAME=prosum:Product_Extensi
  timeStamp="2018-09-06T16:43:06Z" numberMatched="unknown" numberReturned="0">
  <script/>
  ▼<!--
    NOTE: numberReturned attribute should be 'unknown' as well, but this would not validate against the current version of the WFS 2.0 sche
    -->
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    ▼<prosum:Product_Extension xmlns:prosum="http://www.prosum.org" gml:id="M4EU.PSPR_5487">
      <mr-ext:product xmlns:mr-ext="http://inspire.ec.europa.eu/schemas/mr-ext/3.0" xmlns:xlink="http://www.w3.org/1999/xlink"
        xlink:href="http://inspire.ec.europa.eu/codelist/ProductType/1"/>
      <mr-ext:grade xmlns:mr-ext="http://inspire.ec.europa.eu/schemas/mr-ext/3.0" xsi:nil="true" nilReason="unpopulated"/>
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        </swe:Quantity>
      </mr-ext:production>
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```



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## Mintell4EU Quality Control Application - quality check of data stored in the Minerals Inventory

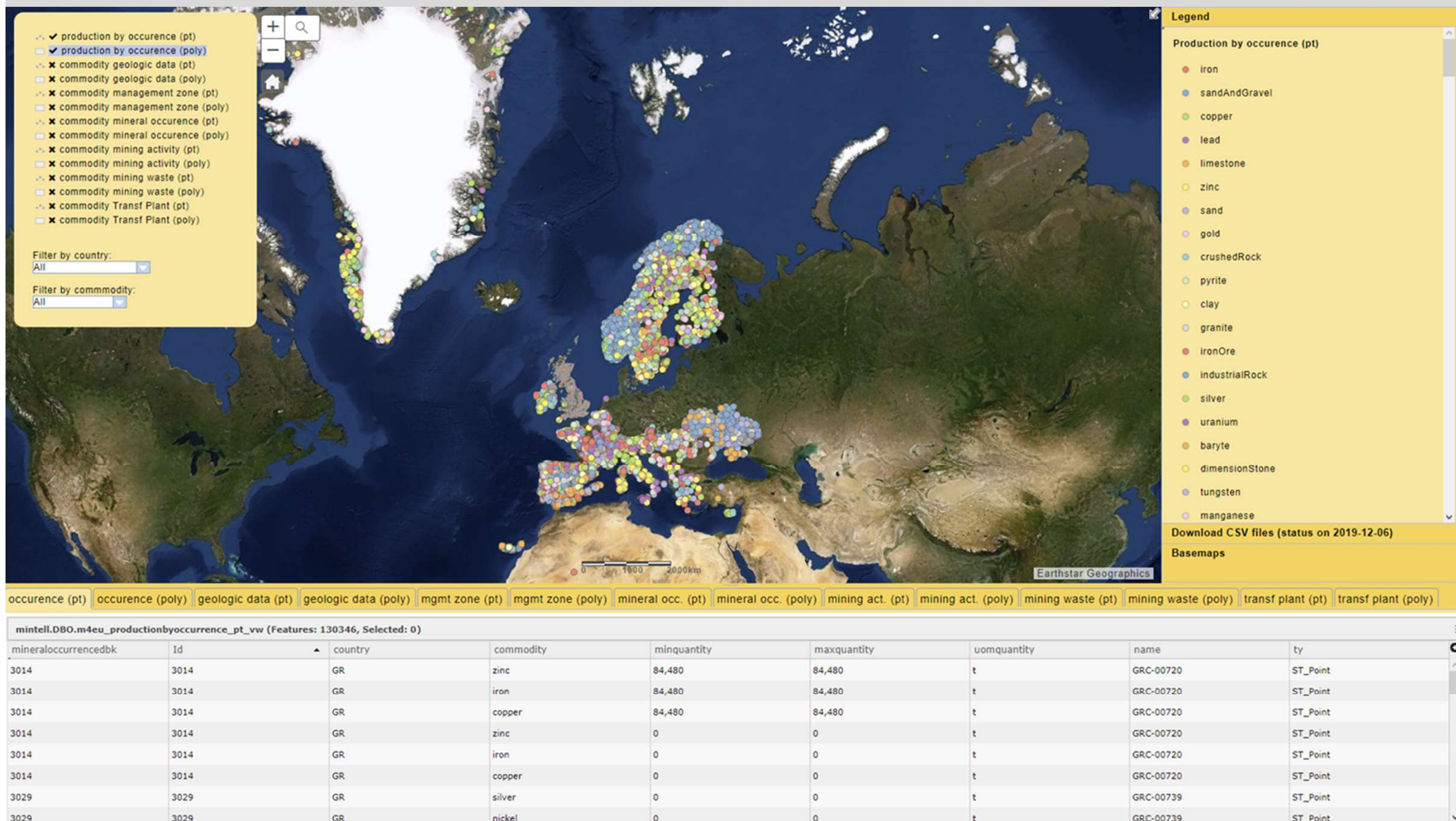


- The Mintell4EU QCA is temporary **running on a GeoZS server** to enable higher stability, security and optimal connection to harvesting system.
- Status of the data corresponds to the **latest reported data** from data providers.
- **Constant modification** due to new data updates and improvements in the harvesting system.



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<https://mintell4eu-qca.geo-zs.si/>



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## Mintell4EU Quality Control Application



All **commodities** in the DB are related to mineral occurrences (location data and occurrence type).

**QCA displays information on commodities** such as:

- production;
- geological data (including end-use potential);
- management zones;
- mineral occurrences (including UNFC);
- mining activity;
- mining waste (data collected in the ProSum project);
- transformation plants.



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## Mintell4EU Quality Control Application



**Not all attributes**, connected to commodity within selected layers, are displayed on the QCA, only **the most relevant** (marked green in Appendix I of this report). Why?

- **to ease control** of data for data providers,
- **to achieve higher transparency** of the data themselves and
- **to speed the process** of displaying data on the QCA.

“export to csv” per country



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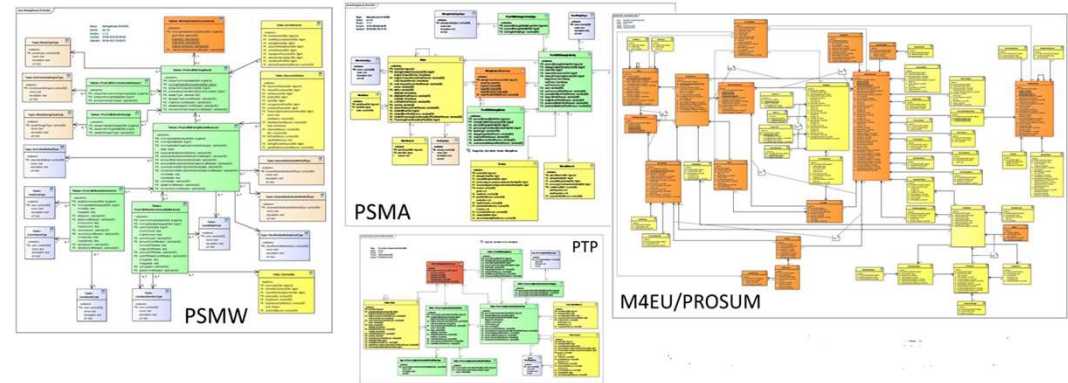


## Currently 30 data providers for M4EU DB

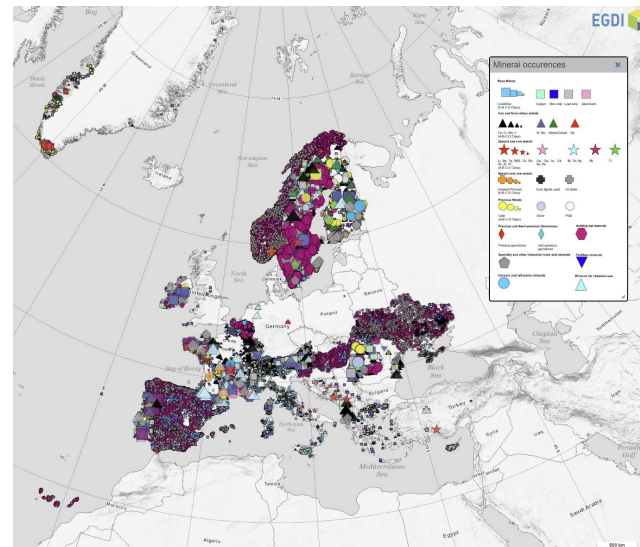


New data providers marked in red, some via cooperation with the RESEERVE project, and a German State (Regierungspräsidium Freiburg) in Mintell4EU

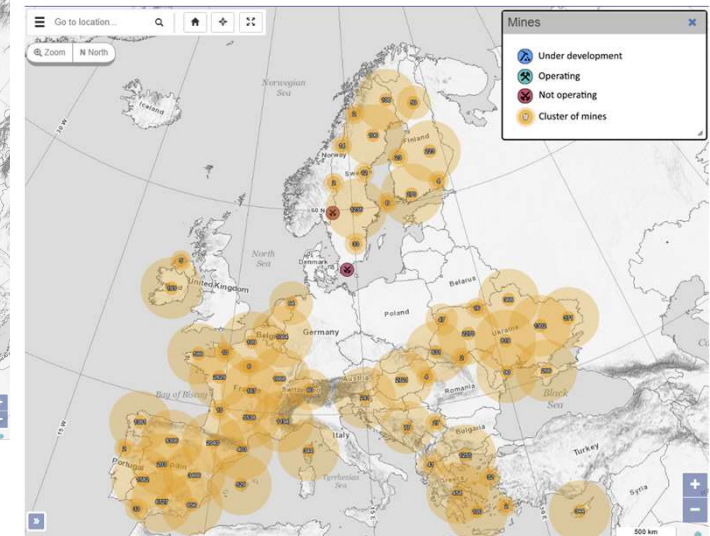
1. Albania
2. Austria
3. Belgium
4. Federation of Bosnia and Herzegovina
5. Bosnia and Herzegovina – Republic of Srpska
6. Croatia
7. Cyprus
8. Czech Republic
9. Denmark
10. Finland
11. France
12. Greece
13. Hungary
14. Ireland
15. Italy
16. Montenegro
17. Netherlands
18. Norway
19. Poland
20. Portugal
21. Romania
22. Serbia
23. Slovakia
24. Slovenia
25. Spain
26. Sweden
27. Switzerland
28. Turkey
29. Ukraine
30. United Kingdom



Consolidated view on the EGD platform



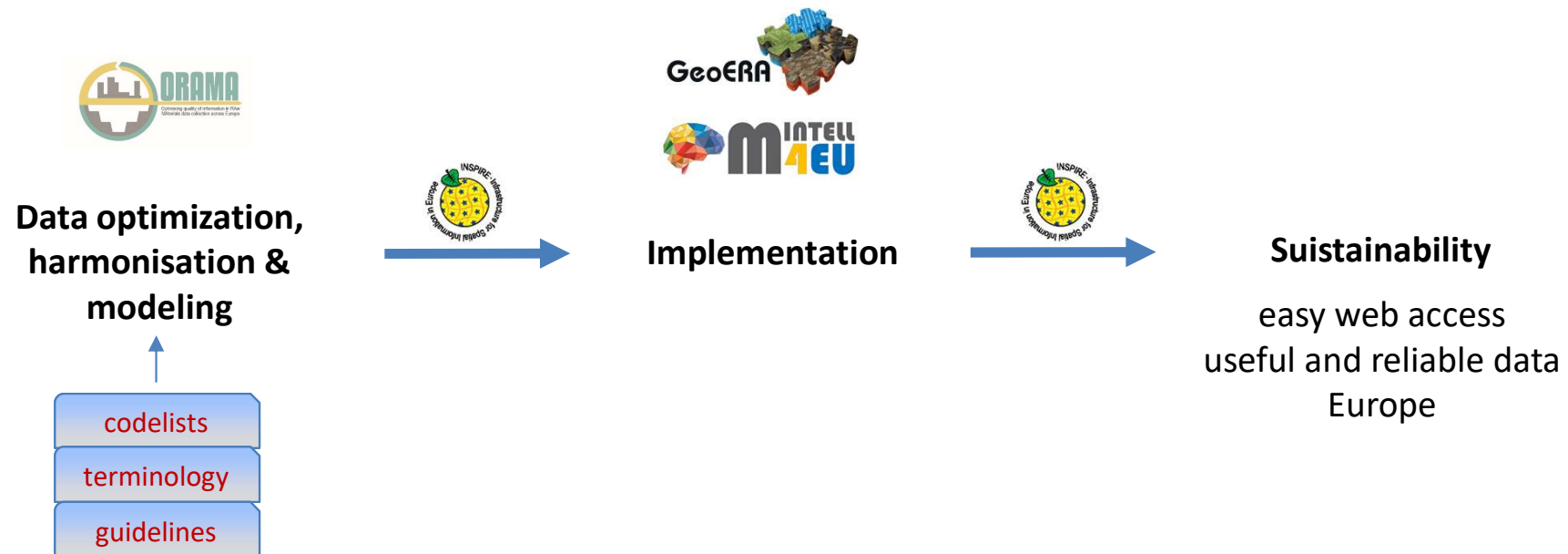
<https://geoera.eu/projects/mintell4eu7/>



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# Workflow schema



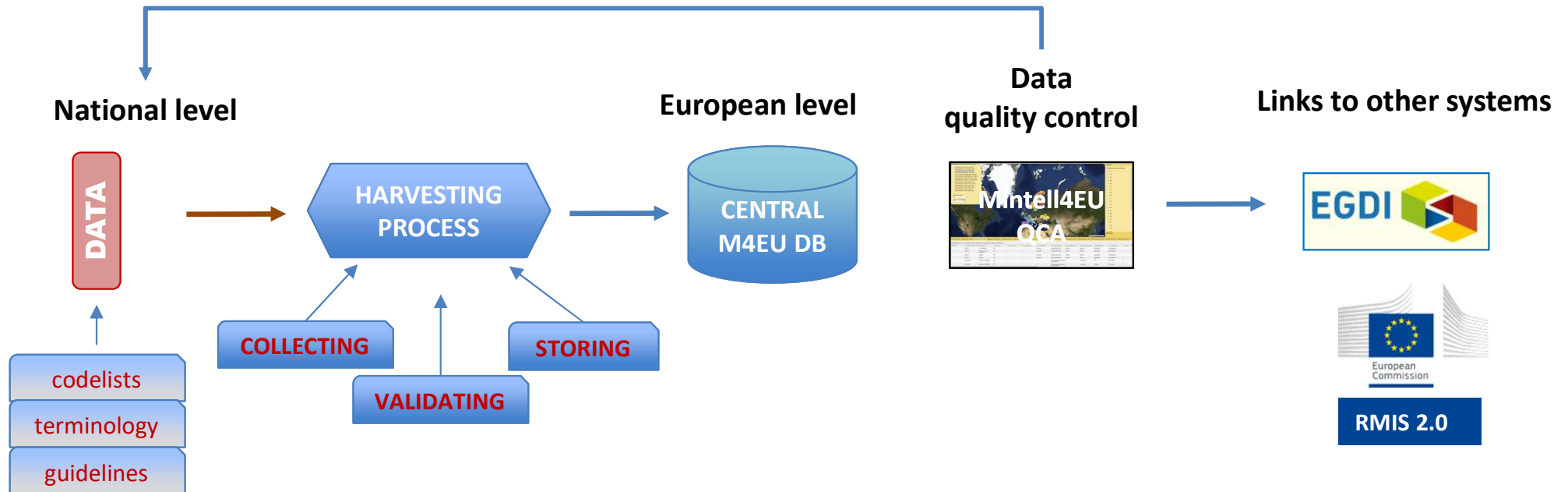
Optimising quality of information in raw materials data collection across Europe was a huge job done by ORAMA project, which serves as a strong basis for data harmonization in Mintell4EU, where implementation takes place (in compliance with INSPIRE Directive).



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## How is it done for M4EU?



For the purpose of refining the M4EU we have developed an automatized harvesting system for collection, validation and storing data into one, central DB.

We are integrating new and existing (modified) data into EGDI and RMIS to achieve sustainability of the data in the future.



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## More info:

Any questions, please contact:  
Špela Kumelj [Spela.Kumelj@GEO-ZS.SI](mailto:Spela.Kumelj@GEO-ZS.SI)  
Geological Survey of Slovenia



**Please also pay attention to presentation no. 721**



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