Innovation potential of the European Geological Data Infrastructure

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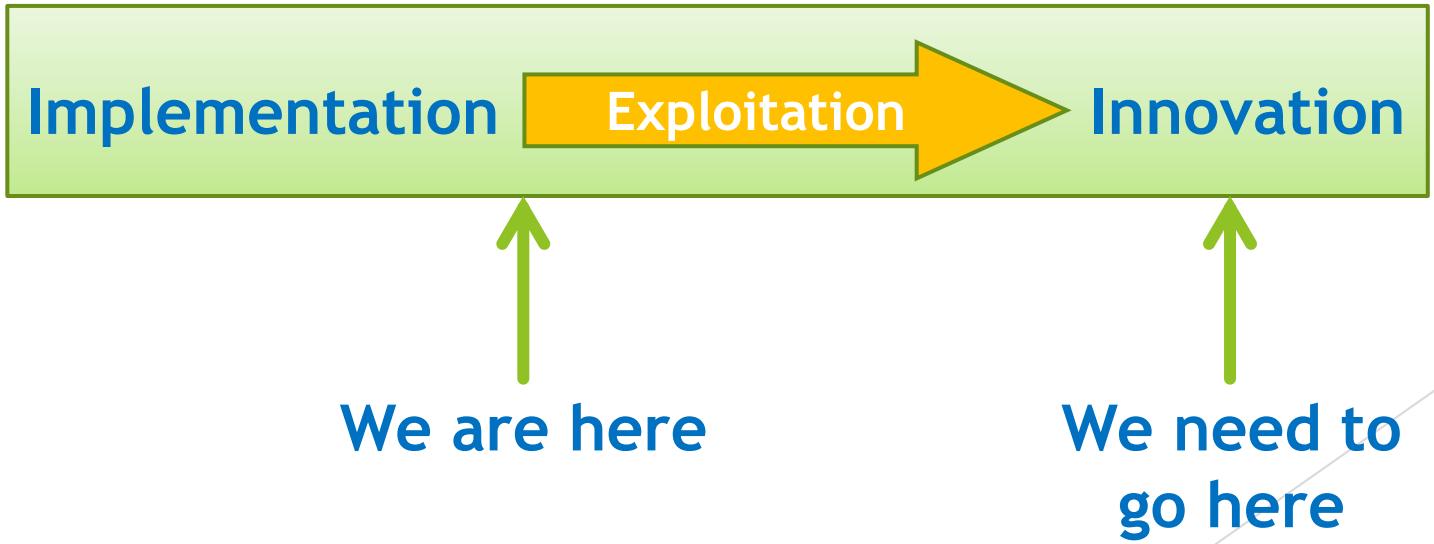
Topics to be Covered

- What is Innovation?
- Who can benefit from EGDI?
- What is the current exploitation potential of EGDI?
- How can the innovation potential be strengthened?
- What could be the future high-impact use cases?

Innovation

The successful **exploitation** of data and data products to produce tangible **benefits** by satisfying real-world **user needs**.



User Needs

User Group	Needs	Benefits
Policy makers	Reliable European overviews	More qualified decision making
Local /Regional Authorities	Comparable baseline data	Better case handling More qualified decision making
Industry	Easy and efficient data access Free and reliable data High-resolution data Downloadable in various formats	Higher efficiency Lower costs Less duplication of data Increased competitiveness
Researchers	Same as for industry	New scientific findings
General Public	Easy access to information	Higher awareness of the subsurface

New Opportunities

- EGDI V.1 enables the combination of more than 500 geological data layers.

  -> Far more than have been possible before

- At present, more than 1800 datasets can be discovered in the EGDI metadata catalogue (MICKA)

  -> This number will continue to grow

- New functionality facilitates search and filtering within individual datasets

  -> New functionality will be continuously be adopted

- Thematic maps

  Different users can be targeted from the same infrastructure

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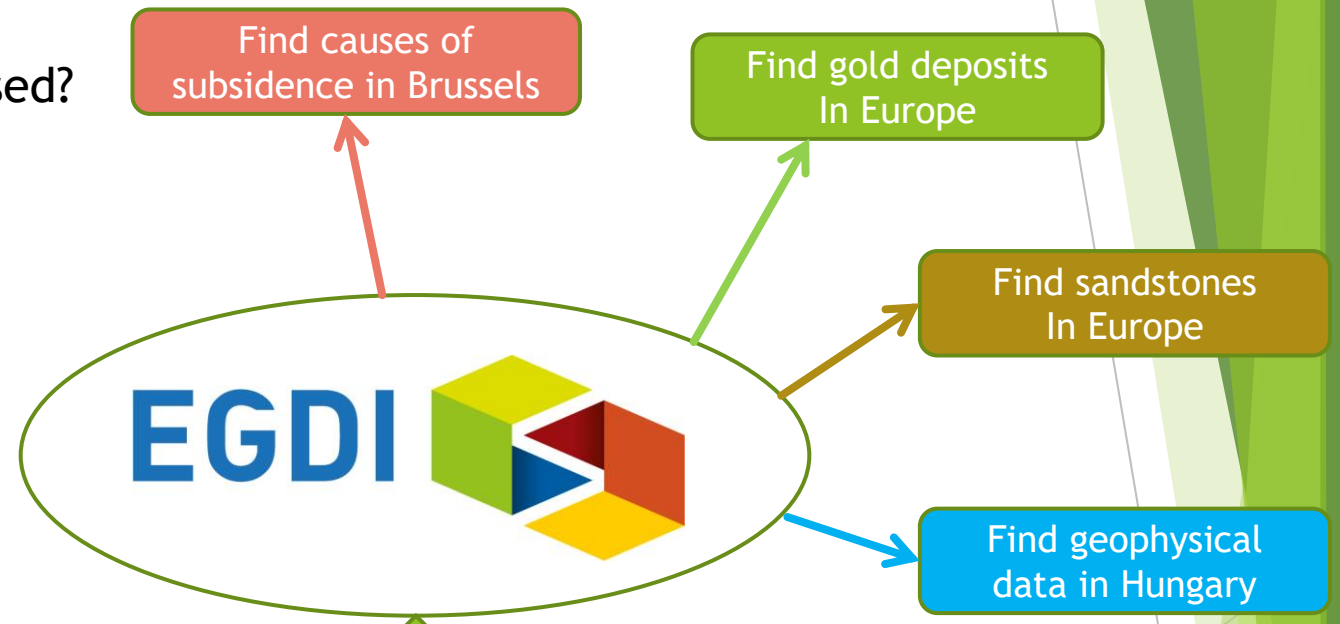
Implementation Approach

Top-down:

- How can it be used?
- Use cases -> demonstrators



Bottom-up:

- What do we have?

Implications of Use Case Implementation

- Have impact on the data and service architecture.
- Challenges standard INSPIRE principles.
- User requests on a truly distributed architecture have difficulties in
  - ensuring response from all nodes
  - ensuring appropriate performance
  - ensuring appropriate search and filtering options
- Therefore, harvesting mechanisms were implemented in some cases.

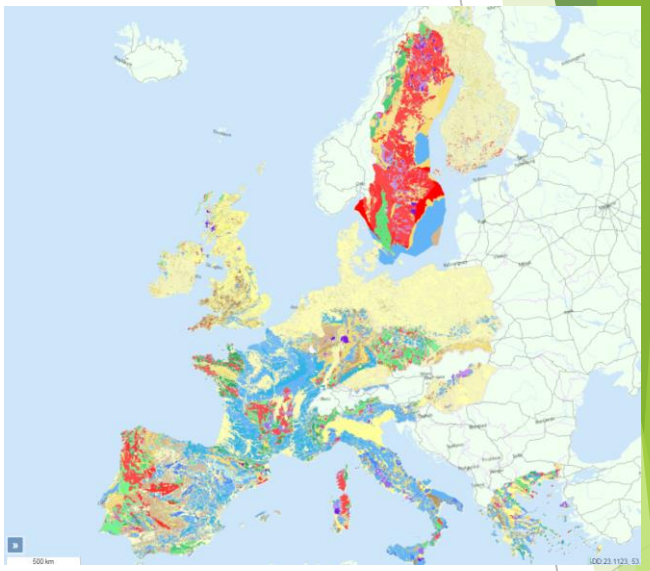
Use Case Example

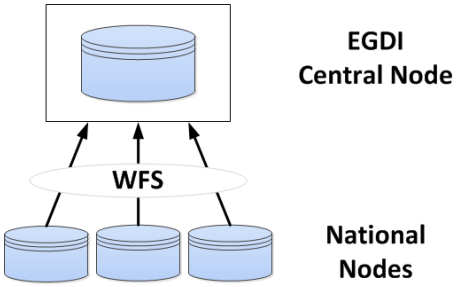
- **Case:**

  An archaeologist wants to find sandstone occurrences in Europe.

- **Input data sets:**
  - INSPIRE compliant 1: 1 million surface geological map of Europe (~ OneGeologyEurope)
  - Minerals4EU: INSPIRE compliant mineral (and aggregate) occurrence dataset.

- **Data provisioning:**
  - Data harvested from national web services to central harvesting/diffusion databases.





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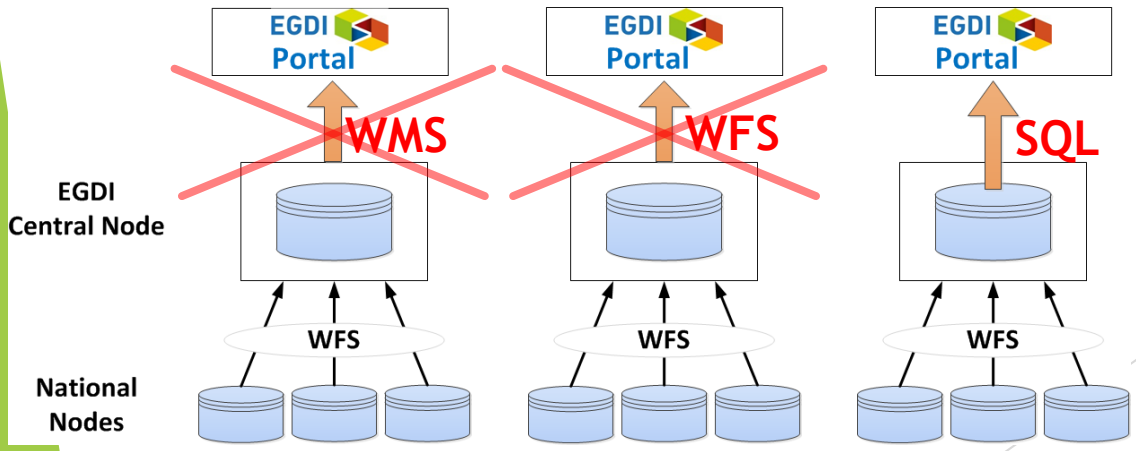
Use Case Example

- **Challenges:**
  - INSPIRE code list for lithology too wide to be user friendly.
  - Mineable sandstone deposits in Min4EU often called “aggregates”, which can also include deposits of loose sand and gravel.
  - Filtering on WMS services only allows one parameter at a time.
  - Filtering on WFS services would not perform good enough.
- **Solution:**
  - Portal queries central database directly.

Possible Sandstone Lithology types
sandstone
genericSandstone
quartzite
sandSizeSediment
arenit
wacke
sedimentryMaterial
sedimentaryRock
clasticSediment
clasticSedimentaryMaterial
clasticSedimentaryRock
ironRichSedimentaryMaterial
ironRichSedimentaryRock



Use Case Implementation

Sandstone features in surface geological map

… where litho.name IN ('wacke','sandstone','quartzite','arenite', 'clasticSandstone','genericSandstone')

Sandstone occurrences in Minerals4EU

… where (lower(commodity) like '%aggregate%' and lower(occurrence) like '%sandstone%'

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Conclusions

- User satisfaction is not guaranteed by INSPIRE compliance.
- Use case considerations extremely important for exploitation potential.
- The future innovation potential of EGDI can be increased by combining data types, data content and functionality with user needs.
- Industrial users have other requirements than policy makers. A good balance between semantic harmonisation and data resolution needs to be obtained to meet industry needs.

Innovation Potential for Industry

- Easy and efficient data access
  - EGDI as one-stop-shop
  - Future governance structure -> reliability and well functioning services
- Free and reliable data
  - All data free
  - Reliability ensured through the future governance structure
- Comprehensive high-resolution data
  - Synergy with EPOS and EMODnet will move EGDI in this direction
  - Future ERA-NET (GeoEra) and other projects will add new content and fill gaps
- Downloadable in various formats
  - To be developed from use cases in future projects

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Envisaged use cases with high innovation potential for industry

In the not-so-far future

1. User go to EGDI-portal.
2. User searches for e.g. available geological maps and shallow boreholes in a specific area.
3. User assesses and filters results.
4. User chooses download format and adds data to basket.
5. User goes to check-out and downloads data.

Further down the road

- All data and information are in English
- Data at all scales and in all European countries are technically and semantically harmonised

Thank you for your attention!

EGDI web portal: http://europe-geology.eu

More information: jtu@geus.dk