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Pan-European Geological Data Infrastructure***

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1. Report March 2013

EGDI-Scope Status Document

Proceedings and main issues

March 5th 2013

Discussion paper for General Meeting EGS

March 19th 2013

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Summary/main issues for general meeting

This status document describes the current status and main proceedings of the EGDI-Scope project. The EGDI-Scope consortium will be pleased to receive feedback from the General Meeting and will take notice of this within the next stages of the project. Generally, the requested feedback concerns the following questions:

- What are the **main expectations** and do you expect the project to fulfill these expectations?
- Does the project have the **right focus**? Is there something missing?
- Does the project follow the **right process** (involvement of stakeholders, network, representatives of the surveys, etc.)?
- Are there any other **suggestions** or comments?

Some of the main issues to which these question apply:

1. Representation of **stakeholders** in Stakeholder Panel and Stakeholder Forum
2. Selection of relevant **datasets**
3. Scope of EGDI-Scope: to what extent including assessment of current **suitability** of available datasets and models (harmonization/ interoperability, etc.), connected to use cases and user communities?
4. Choice for **3 particular use cases**
5. Position with regard to adoption of generic **GEOSS infrastructure framework**
6. Scope towards the future **governance and funding/ exploitation** of the EGDI

Introduction

This status document is meant to inform the EGS Directors about the current status and main proceedings of the EGDI-Scope project. It describes the main issues and background arguments, to be shortly discussed at the next General Meeting of March 19th. The EGDI-Scope consortium will be pleased to receive feedback from the General Meeting and will take notice of this within the next stages of the project, in order to develop scenarios that will be proposed to the EGS Directors for the EGDI development. Generally, the requested feedback concerns the following questions:

- What are the **main expectations** and do you expect the project to fulfill these expectations?
- Does the project have the **right focus**? Is there something missing?
- Does the project follow the **right process** (stakeholder involvement, network, representatives of the surveys, etc.)?
- Are there any other **suggestions** or comments?

The following contents of the document describe the more specific issues to which these questions apply.

Stakeholder Involvement

Status

The project consortium has established a Stakeholder Panel and a Stakeholder Forum. (Invited) members of the Stakeholder Panel are supposed to link with the policy-making bodies in the EU and to represent wider ranges of use cases and potential user communities of the (future) EGDI. The Stakeholder Forum is open to any participant who is interested in the EGDI from a user or provider perspective. At present, candidates are nominated for the Stakeholder Panel representing the following institutions:

- European Environment Agency (EEA)

- DG Enterprise and Industry (DG ENTR - Unit F/3 Raw Materials, Metals, Minerals and Forest-based Industries)
- DG Enterprise and Industry (DG ENTR – GMES/Copernicus)
- DG Joint Research Center (DG JRC)
- Insurance Europe

Recently it was decided to invite also the European Federation of Geologists (EFG), because they represent a large community of professional geologists in a number of European countries. Furthermore, representation for the domain of infrastructure construction/ urban development is explored.

The Stakeholder *Forum* represents a wider range of participants from relevant European and international programmes and initiatives (EPOS, EMODnet, GeoSeas, PanGeo, EFG, GEOSS, etc.), also including chairs/ members from EGS Expert Groups, and representatives from DG RTD and ESA.

On November 14th, 2012 a Stakeholder Workshop was organized for both Panel and Forum members, including a special meeting with the Panel. Together with the preceding EGDI-Scope progress meeting on November 13th, 21 surveys were represented. The Workshop was visited by the abovementioned representatives, and received positive responses from other representatives who were unable to attend, including DG RTD, ETP-SMR (European Technology Platform on Sustainable Mineral Resources), UNESCO, UNECE, OAGS (Organisation of African Geological Surveys) and GSAF (Geological Society of Africa). The program included (necessary) exchange of information about the (future) EGDI and the current scoping project; the afternoon breakout sessions delivered valuable information on use cases, user communities, availability of information and datasets, and user requirements, with regard to 3 broad thematic domains: earth resources, geohazards and 'other' (environmental/ groundwater/ marine,...).

Based on the experience of the Workshop and its preparations the envisaged role of the Stakeholder Panel has been revised: instead of a pro-active advisory role, more or less as a general steering committee representing comprehensive stakeholder communities for the EGDI (for which e.g. DG ENTR was not able to commit), the Panel members will represent the interests of their own departments, and review the results from the scoping study on specific request.

Two related documents have been delivered:

- D2.1 Stakeholders and Plan for Stakeholder Consultation;
- EGDI-Scope Stakeholder workshop; report from breakout groups (Brussels, November 14th, 2012).

Main issues

- Representation of Stakeholder Panel and Stakeholder Forum
- Role and position of Panel and Forum: best ways of organizing input and (future) commitment

Upcoming

- Elaboration of 3 concrete use cases (see paragraph 'Use Cases' further below) and exchange with stakeholders;
- Bilateral meetings with members of Stakeholder Panel: DG ENTR, EEA, EFG, JRC;
- Report on user needs for datasets and services;
- Preparations next Stakeholder Workshop (September 10th, Malta); focus on:
 - (for a number of key use cases:)
 - Required content (information/ (derived) datasets);

- Required services and functionalities of the EGDI, and specifically the infrastructure.

Datasets: inventory and prioritization

Status

A main inventory has been made of 80 pan-European (or multiple countries involved) geological projects. The associated investment (EU plus co-financing) is estimated 400-700 Million Euros. There are 26 associated portals. Main topics are Geohazards and Economic/ mineral resources (for further breakdown see table 1 below). (Reference document: D3.1 Review of previous and ongoing projects).

The inventory of EU-projects also reveals two main user requirements for the EGDI:

1. **Sustainability** and continuation: in most cases there is no sustainable platform, organization or funding model available for continuous delivery and maintenance of the project results.
2. **Suitability** of (derived) datasets/ models to meet the requirements of use cases and related users: in most projects interoperability, coverage, resolution and harmonization issues are not yet (fully) solved.

Discussion: EGDI-Scope concentrates on the sustainability issue; the suitability issue has to be resolved in specific projects.

#	Theme	Total projects	%
1	Soil/Climate/Environment/Health	6	7.5
2	Water/Hydrogeology	1	1
3	Natural risk/Geohazard	27	34
4	Oceanographic/Marine	7	7.5
5	Economic/Mineral resources/Energy	10	12
6	Data infrastructure/Spatial information	11	14
7	Carbon Capture & Storage	3	4
8	Environmental chemistry/Geochemistry	8	10
9	Geophysics	1	1
10	Geology	7	9

Table 1 Thematic breakdown of EU-projects

Main issues

- Selection, categorization and prioritization of relevant datasets;
- Connection with policy and research domains at international level;
- Suitability of available datasets and continuation

Upcoming

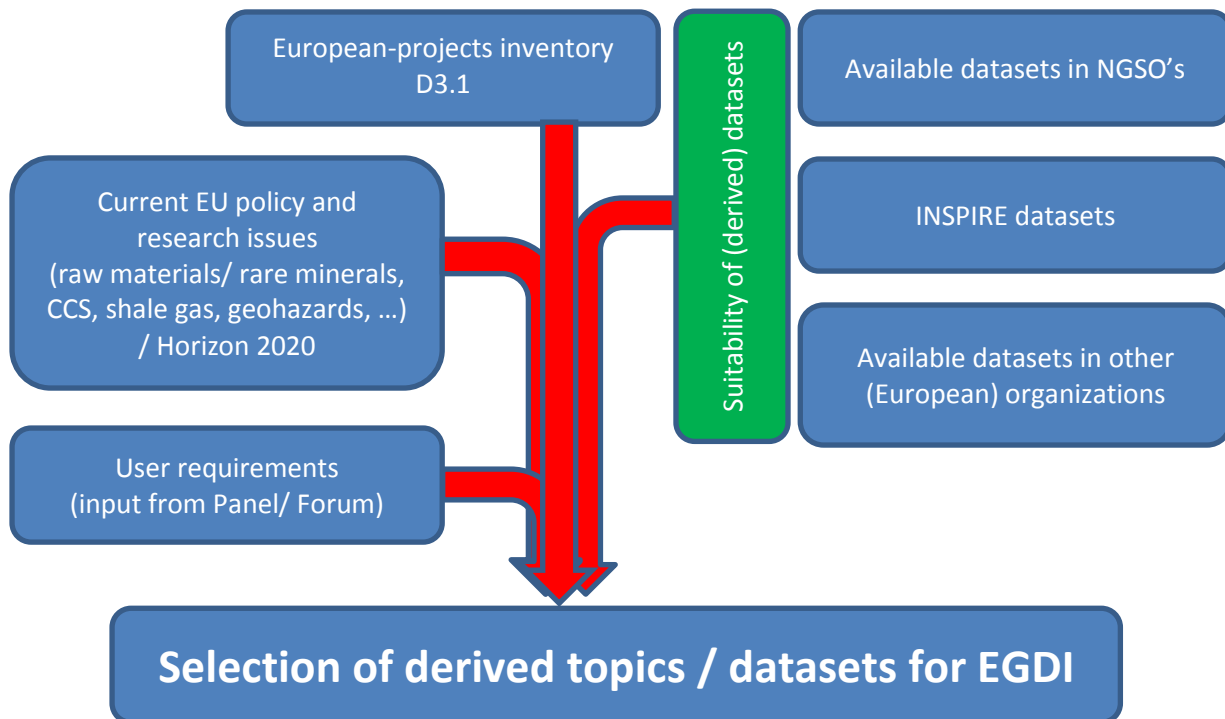


Figure 1 Schematic workflow for selection of relevant datasets

Figure 1 above represents a general framework for selection of relevant topics and connected datasets for the EGDI. In addition to the inventory of pan-European projects the project will generate overviews of relevant INSPIRE datasets and available datasets at the surveys and other European organizations. These selections will be guided by overviews of current European policies and research issues (e.g. based on official documents connected to Horizon 2020/ Multiannual Financial Framework 2014-2020), and user requirements based on input from the Stakeholder Panel and Forum.

The selection of datasets will be more or less comprehensive for the relevant (research and policy) domains. There is no relevance for EGDI-Scope to *prioritize* at the level of policy and research topics (e.g. flood risk management has no priority over earthquake hazards or mineral extraction and so on). At lower levels within specific domains the actual relevance of datasets can of course vary, taking into account certain political or research priorities, or their suitability for certain applications, e.g. in case of the availability of pan-European interoperable or derived datasets. This will of course be regarded.

At the last project meeting it was decided not to exclude at this stage **any domain where geologic information is relevant on a European or cross-border-level**. One of the consequences is that also the **oil & gas exploration** is within the scope of the EGDI, because a number of surveys are quite involved and also industry partners have expressed their interest in the EGDI (probably exclusively the confidential information).

In a later stage of the project prioritization may be needed from a pragmatic perspective: the realization of the EGDI will probably follow a roadmap starting with building infrastructures for certain topics.

Use cases

As a consequence of the approach with regard to stakeholder involvement, user requirements and selection of datasets the EGDI-Scope team has decided to select **3 particular use cases** that will be elaborated to a fuller extent. The team concluded that there are far too many different relevant use cases in different domains to explore in more detail, but on the other hand the EGDI-Scope project needs some very concrete cases to explore the different aspects and steps of the realization of the EGDI into more depth. Therefore, the choice for these cases – however certainly relevant - is not representing a prioritization, but they cover at least 3 quite different domains. The proposal is to formulate concrete use cases concerning:

- Information about **rare earth elements** that is relevant for connected EU-policies (reference: EU-project EURARE);
- A use case on **geohazards**; specific topic not yet decided (earthquakes; flooding; subsidence; etc.);
- A use case connected to an environmental issue, e.g. **environmental impacts of (potential) shale gas exploration**.

On the basis of relevant documents and meetings with relevant stakeholders these use cases will be elaborated, concerning:

- What are the societal and policy questions and who are the relevant stakeholders?
- What (geological) information is required and available?
- What are the requirements with regard to access, delivery, performance, functionality, services, etc.?
- How can this be translated to technical requirements?
- How to solve the relevant licensing, trust and authentication issues?
- What is the governance framework to realize, organize and maintain the required services?
- What possible funding and exploitation models are relevant?
- Which types of end users are expected (geologists/GIS-technicians/non-technical officers, ...)?

Infrastructure needs and design

Status

A main inventory has been made of more than 50 projects, programs and initiatives, connected to European, international and global interoperable infrastructures dealing with geological information. This has been reported in D4.1 “Report on evaluation of existing interoperable infrastructures” (also including *developing* infrastructures). This inventory contributes to the assessment framework for designing the architecture of the EGDI.

In January the functional and technical design for EGDI has also been discussed within the Spatial Information Expert Group. As a result, and with reference to the above mentioned inventory (D4.1 report), BRGM- as partner of EGDI-scope - has drafted a discussion paper, preparing for the upcoming EGDI-Scope report on infrastructure needs and providing material for discussion. The paper proposes to take the GEOSS Architecture framework as the generic framework for EGDI (*reference document: D4.3 “Report on Infrastructure needs: Discussion paper”*).

After extensive internal and external discussion the EGDI-Scope team took the following position:

- Decisions about architecture design cannot be taken before a clear vision of user requirements with regard to content, services and functionality;

- Nevertheless, because of the short project time and to make optimal use of capacities, the EGDI-Scope team will continue to work on the elaboration of the architecture framework, parallel to the activities with regard to user requirements and datasets; the project and infrastructure inventories (reports D3.1 and D4.1) and extensive experiences of project partners with relevant European projects provide a solid basis for this.

Main issues

- Connection of infrastructure design with user needs (functionality), characteristics of datasets and models, and mandatory requirements (INSPIRE, other standards).

Upcoming

- The GEOSS framework will be used as a starting point for further elaborations of the infrastructure design, taking into account that this fits into global networks, is well documented and the result of many experiences and work of many organisations.
- The GEOSS framework is sufficiently generic and conceptual: it contains the most relevant elements that can be specified for different options, and is open to any new elements and providers; therefore the framework is also sufficiently generic to leave open different scenarios for infrastructure design.
- EGDI-Scope will specify the various elements of this framework for a number of projects with different infrastructures (e.g. EModnet, eWater, EuroGeoSource, ProMine, InGeoClouds, EURare,...)
- More concrete decisions about infrastructure options will be prepared for the next general meeting of EGS in September, when conclusions about user requirements, datasets and infrastructure needs can better be brought together.

Legal and Governance Issues

Status

- Ongoing: Identification of issues with regard to trust and authentication:
 - Identity management of users
 - Data management
 - Rights management
- Collection and analysis of relevant legislation.
- Ongoing: Inventory of relevant licensing policies. See table 2 below.

Furthermore a start has been made with the exploration of possible **governance models** for the EGDI. This has to fit within the EGS Joint Strategy (under development), under the umbrella of preparing ERA-NET and Article 185 cooperation strategies for the European Geological Surveys. Within this framework, the consequences of different governance models/ strategies will be identified, e.g. ERIC (European Research Infrastructure Consortium) or certain MoU models. Models that are less desired are the creation of a new EU agency, or extension of EGS powers. Different options will have to be discussed.

A very important issue to be addressed in connection with governance models is funding options, in order to enhance any realization options for the EGDI. Unless it is not a formal part of the EGDI-Scope DoW (Description of Work), the EGDI-Scope team therefore decided to explore different **exploitation and funding options**. As a first exploration figure 2a and 2b below show two very generic scenarios that may be relevant for the long term development of the EGDI: will the EGDI mainly depend on EU-investment plus co-financing from national surveys (fig. 3a), or do we explore also other, more commercial and ad-hoc

funding of services and products delivered by the EGDI (fig. 3b)? In short: do we foresee a “dark blue” or “light blue” scenario?

Title	Location	URL
APIE	France	https://www.apiefrance.fr/sections/actualites/des-conditions-generales-pour-la-reutilisation-des-informations-publiques/view
Creative Commons	Global	http://creativecommons.org
ECOMET	Europe	http://www.ecomet.eu/index.php?option=com_content&view=article&id=2&Itemid=3
ESDIN	European Union	
GeoConnections	Canada	http://www.geoconnections.org/publications/Best_practices_guide/Guide to Best Practices Summer 2008 Final EN.pdf
Geo Shared	Netherlands	http://www.geonovum.nl/diensten/gebruiksvoorwaarden
Government Information Licensing Framework	Queensland, Australia	http://www.gilf.gov.au/
INSPIRE basic & specific licence	European Union	http://inspire.jrc.ec.europa.eu/documents/Data_and_Service_Sharing/DSSDraftGuidancedocument_v4.1.pdf
Ministry of Justice	France	http://www.rip.justice.fr/1932-simplified-licence-%C2%AB-conditions-of-the-reuse-of-public-information-that-is-freely-reusable

Table 2 Inventory of relevant licensing policies (frameworks for licensing models for EGDI)

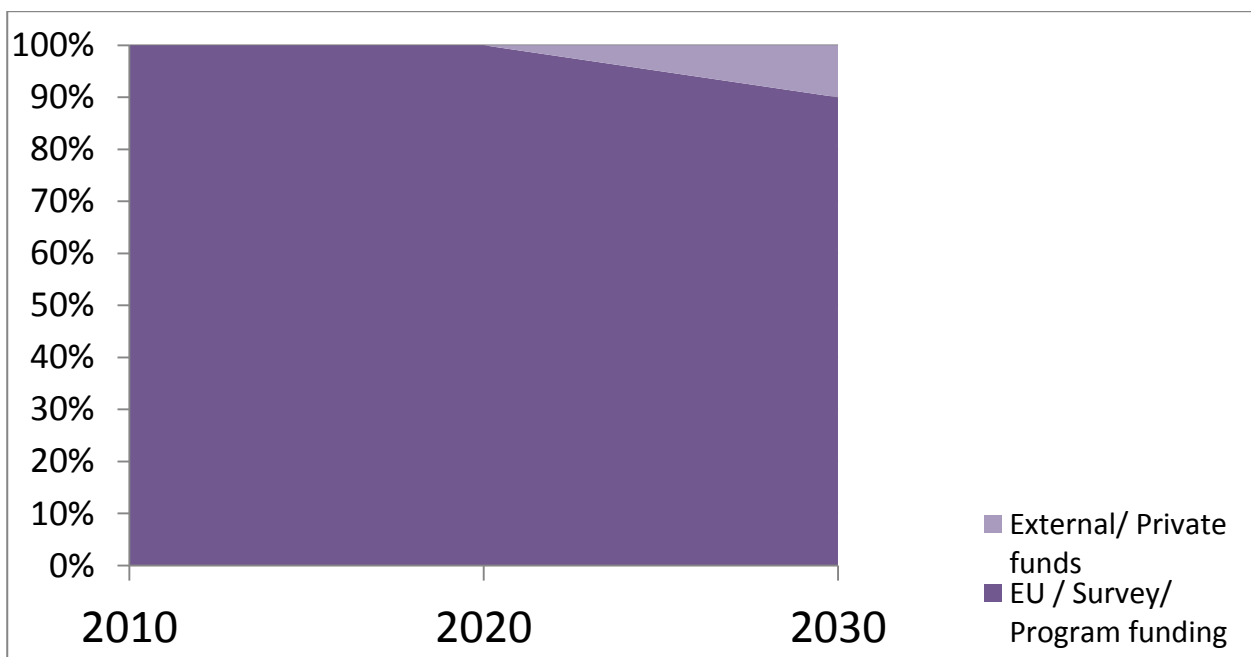


Figure 2a Generic funding scenario EGDI “dark blue”

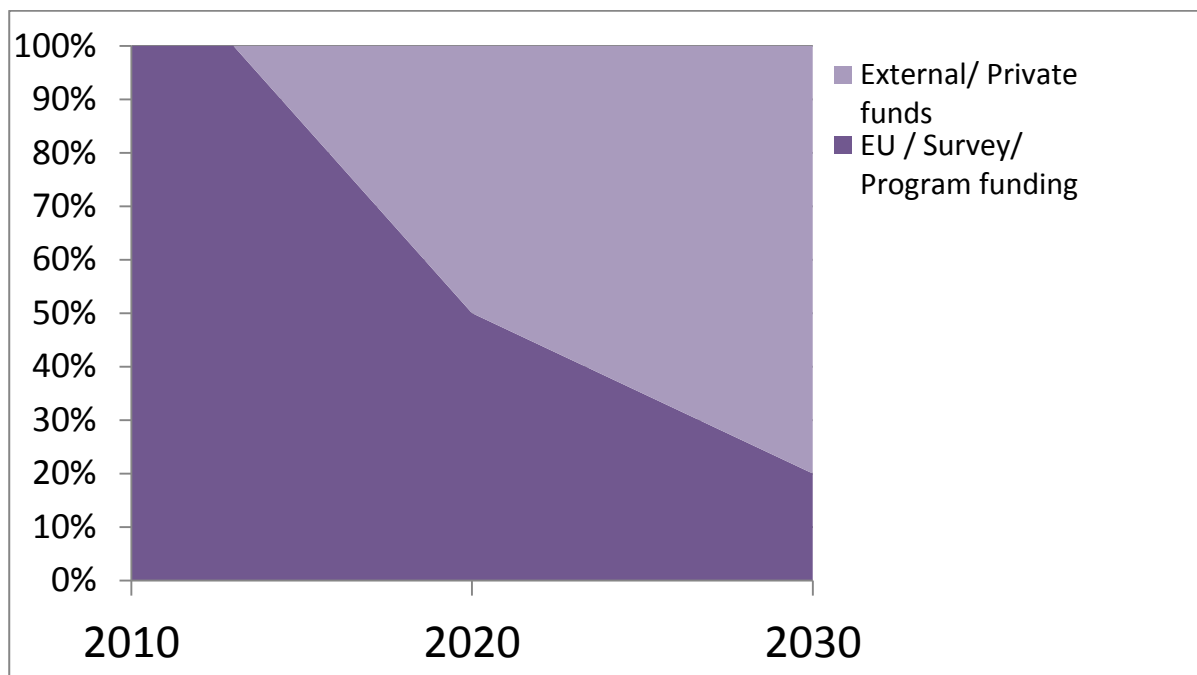


Figure 2b Generic funding scenario EGDI “light blue”

Main issues

- Trust and authentication models for EGDI
- Licensing models for EGDI
- Governance *and exploitation* models for the realization, maintenance and ongoing development of the EGDI

Upcoming

- Report on trust and authentication issues (D5.1)
- Assessment of licensing models and their pros and cons, also linked to datasets analyzed and use cases
- Exploration and assessment of governance scenarios (under umbrella of EGS Strategy);
- Exploration and assessment of funding/ exploitation scenarios;
- Presentation of governance and exploitation scenarios at next EGS general meeting (October, Russia).

Communication

Status

Preparation and production of:

- Website
- Intranet
- Logo, templates
- EGDI Banner
- D6.1 Communication plan
- 2x newsletter contributions

- Brochure

Upcoming

Next meetings:

- Executive Board: 13-14 June, Copenhagen
- Executive Board: 9 September, Malta
- Progress meeting: 9 September, Malta
- 2nd Stakeholder Workshop: 10 September, Malta

Options for end meeting with participants and stakeholders:

1. Event combined with EGU 2014 (End April)
2. Event in Brussels (May 2014)
3. Combining 1. (mainly for participants from surveys and Geoscience community at EGU 2014) + 2. Smaller event for stakeholders, team + representatives from surveys and EC-officials in Brussels (May 2014)

2. Report September 2013

EGDI-Scope memo

Update

September 16th 2013

Statements for General Meeting EGS

October 1-2, 2013

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Summary/main issues for EGS General Meeting

This memo summarizes the main proceedings of the EGDl-SCOPE project. Generally, the following topics are relevant for the General Meeting in St. Petersburg:

- Headlines of **work plan** for the implementation of the EGDl;
- **Governance** topics for different stages or parts of the EGDl;
- **Thematic areas** of main interest for implementation of the EGDl.

The EGDl-SCOPE consortium will be pleased to receive any feedback from the General Meeting with regard to the chosen directions and focus of the scoping project and will take notice of this within the next stages of the project.

Especially regarding the **governance** topics the General Meeting will be requested to develop or comment on *general guidelines*, because the governance of the (future) EGDl is of strategic importance for European activities of the NGSO's, connected to the EGS Strategy and relevant larger international projects and programs.

The following paragraphs will give some background and a concise explanation to these topics.

Introduction

The EGDl-SCOPE project is just over halfway and will conclude by the end of May 2014. It's main deliverable will be a work plan for concrete implementation of the European Geological Data Infrastructure. At 9th and 10th September in Valetta (Malta) a number of relevant topics and challenges have been presented and exchanged with representatives from 24 National Geological Surveys, experts from EGS Expert Groups, and various stakeholders (European Environment Agency, JRC, EFG (European Federation of Geologists), project coordinators from Minerals4EU, EMODnet, GeoMol, European Location Framework (ELF) and others). Additional exchanges with representatives from GEO/GEOSS and EPOS have been scheduled. A few days before, these meetings have been introduced and discussed shortly at a meeting from the EGS Strategy Task Force (5th September) and the EGS Delegates Forum (6th September), both also in Valetta (Malta).

The framework for further development of the EGDl (see figure 1) has been discussed along 4 main parts:

- Scoping: covered by the current scoping study EGDl-SCOPE and intermediate results;
- Design & Implementation: the expected follow-up of the scoping study covering the actual implementation of the EGDl;
- 'Maintenance' structure: acknowledgement that together with the implementation of the EGDl a certain (permanent) structure will be necessary to maintain and sustain the relevant datasets and results at European and international level;
- 'Extensions': this concerns any past, ongoing or future European project or program in which National Geological Surveys participate, and which produces cross-border or European geological datasets. It is most relevant to develop guidelines to connect the relevant results to the EGDl.

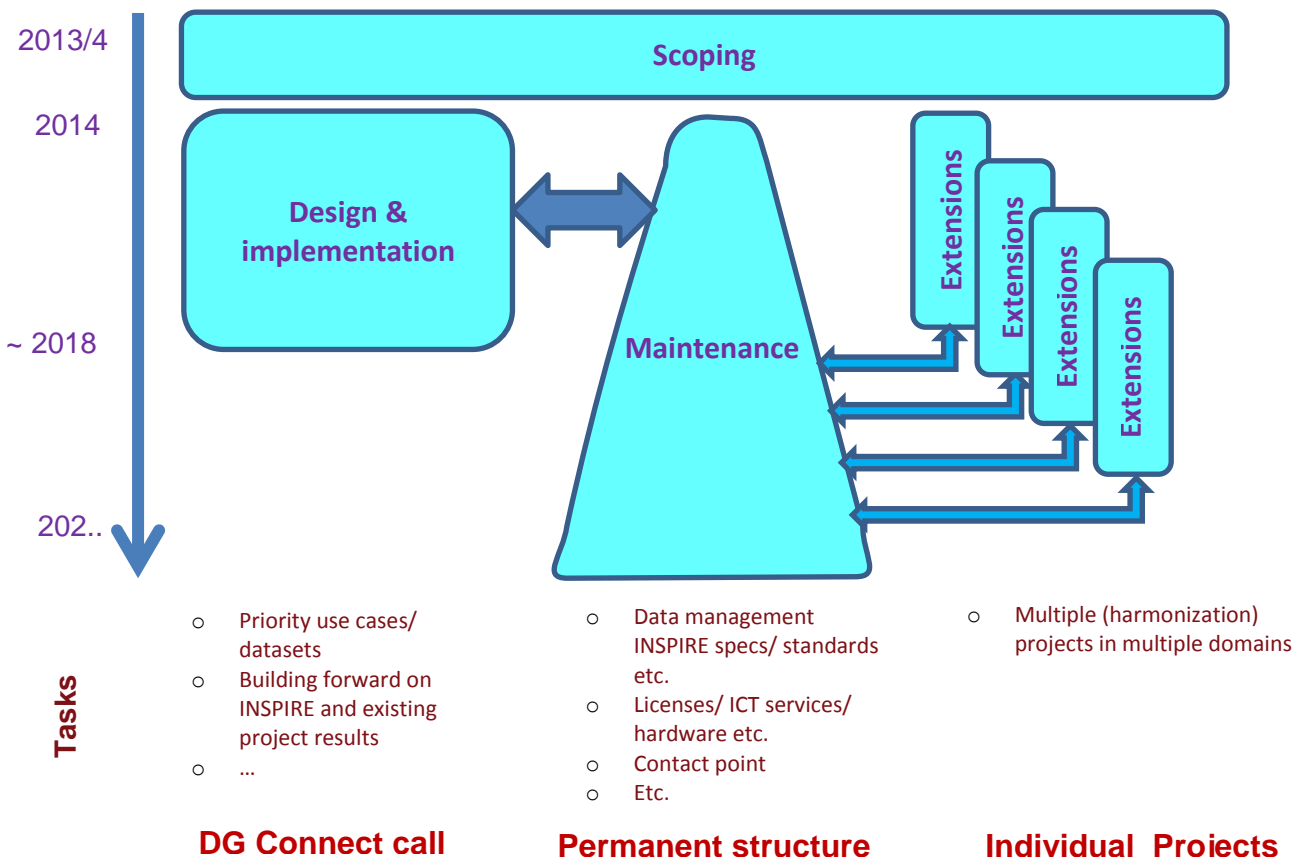


Figure 1 Framework for EGDI development

Work plan for the implementation of the EGDI

At this stage, the most concrete opportunity for follow-up of the EGDI-Scope study are the expected 1st or 2nd call within Horizon 2020 from DG Connect. The 1st call can be expected around December 2013, the 2nd in the second half of 2014. As soon as the relevant work program of DG Connect is finalized it will be clear which call is relevant for the EGS community to submit a project proposal on the EGDI. In addition, there may be also other opportunities within the framework of Horizon 2020, but this needs more investigation. Such indications are for example the mentioning of a European Geological Data Infrastructure as one of the promising e-infrastructures in an assessment report of DG RTD ('Consultation on possible topics for future activities for integrating and opening existing national research infrastructures; Assessment Report', February 2013).

In Malta we have been discussing the possible contents of a project proposal for the DG Connect call, representing a work plan for the design and implementation of the EGDI. This includes such items like:

- Data harmonization and integration (in EGDI)
- Data management and maintenance (including INSPIRE- geology)
- Implementation 'permanent structure/ organization'
- System architecture (implementation, management)
- Technical infrastructure
- Service layer development
- Front end development and management
- Quality and validation

- Legal & Licensing issues
- Communication, dissemination

After further elaboration, these items will have to be translated into work packages, tasks and deliverables.

Governance

The main governance issues can be connected to the 4 elements of the EGDI development framework (Figure 1). Of course this is already covered for the current scoping study. For the design & implementation this is depending on the setup of the follow-up project connected to the DG Connect call and/ or other project opportunities (Horizon 2020 and other). For 'extensions' the governance will depend on the specific context of the project, the involved thematic domains and related communities, regulations and institutions. However this could involve a variety of structures, a lot of these activities will be framed by the requirements of Horizon 2020 and to a certain extent be comparable to the 'common practice' of EU projects. The most important governance issue for the EGDI will be how to organize the integration and sustainability of project results into the EGDI system.

From inventories of tasks and requirements that are connected to maintaining and sustaining geological (and derived) datasets at European level, there is a large consensus among the community that this requires a 'permanent structure'. For example to manage standards and specifications (INSPIRE, OGC, ...), licenses, hardware/ ICT services, service layers, quality management, helpdesk and contact, et cetera. Connected to further analysis of possible tasks and requirements, EGDI-Scope will investigate possible models for the governance of this structure. Because of its strategic importance for the EGS community and the connection with the EGS Strategy it is important to assess guidelines and requirements for the governance of this permanent EGDI-structure under the umbrella of the EGS and its decisive bodies, also taking into account funding opportunities and financial and legal responsibilities.

Thematic areas of main interest for the EGDI

To implement the EGDI, after finalizing the scoping study, it will be necessary to prioritize a number of datasets to start with. From this basis a more comprehensive integration of additional datasets (and derived products) from many thematic domains (and subsets) like geohazards, minerals, water resources, environment and energy resources can be organized over time. Figure 2 below represents a framework for selection of relevant topics and connected datasets for the EGDI. In addition to the inventory of 80+ European projects EGDI-Scope has produced a comprehensive overview of the relevant INSPIRE datasets and available datasets at the surveys. European policies and research issues (e.g. based on official documents connected to Horizon 2020/ Multiannual Financial Framework 2014-2020), and user requirements based on input from the Stakeholder Panel and Forum deliver additional guidance for development of use cases and selection of relevant datasets.

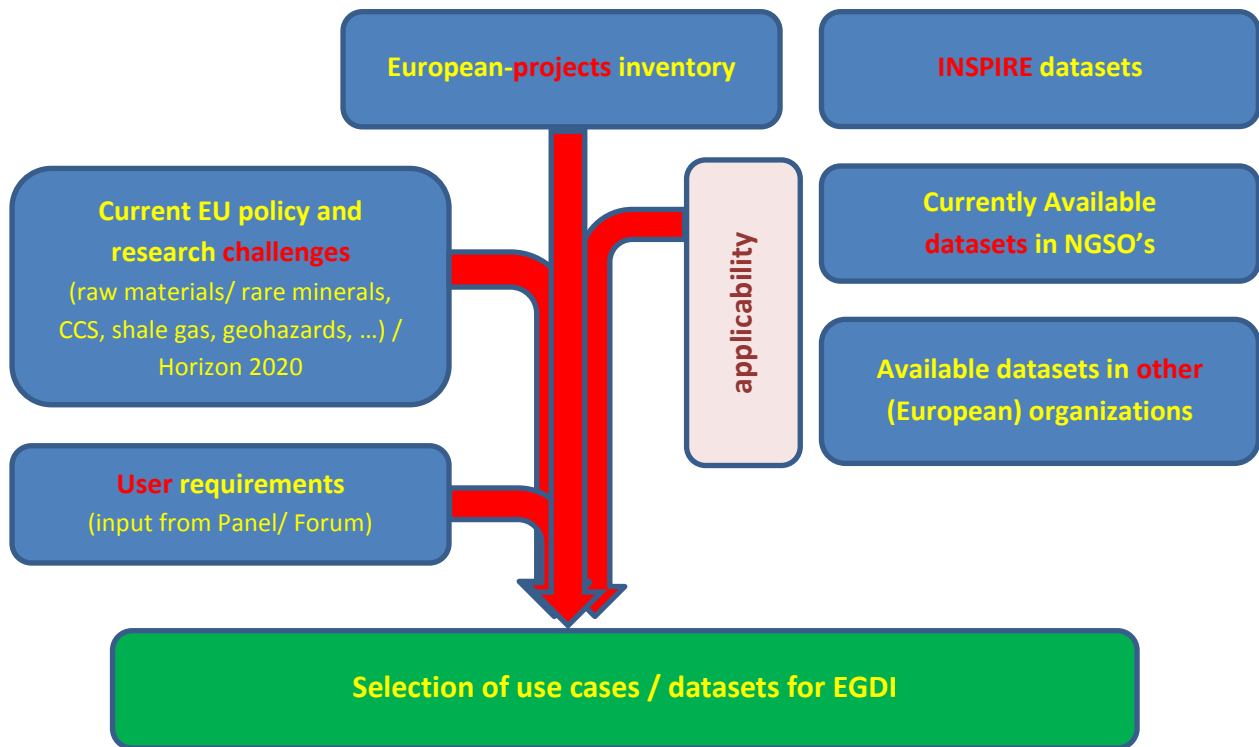


Figure 2 Schematic workflow for selection of relevant datasets

The meetings in Malta have concentrated on the elaboration of four main use cases that could fit into this scheme. Discussions concentrated on assessment of main datasets for EGDI and relevant projects; on infrastructure, service and front end requirements for providing this information at European level; and on INSPIRE and some governance aspects. These use cases were:

1. Mineral resources/ rare earth materials
2. Ground instability in densely populated areas
3. Marine Geology for wind farm development
4. Environmental impacts (soil/ food production)

3. Report March 2014

EGDI-Scope memo

Options for realization of the EGDI

*Exchanged at General Meeting EGS
March 25th, 2014*

(finalized April 7th, 2014)

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Current status on EGDI-Scope

In 2011 the NGSO Directors decided that the surveys would collaborate to create a European Geological Data Infrastructure in the near future. During the course of the EGDI-Scope project the possible added value of a sustainable infrastructure to serve pan-European and cross-border geological datasets for a wide range of users became more clear and concrete. Even more important, the possible advantages and even the necessity of an EGDI for the position of surveys (as data providers) in connection with the ambitions towards a European Geological Service has been increasingly acknowledged by the survey community, which has been confirmed clearly at the last National Delegates meeting at 11th February 2014.

The EGDI-Scope project has addressed all relevant topics and requirements, that – so far - have been reported in a number of separate reports on use cases, user requirements, availability of (EU-)datasets and prioritization, possible technical solutions, and legal issues. At this stage the team is working hard to synthesize these results into the final deliverable of EGDI-Scope, the 'EGDI Implementation Plan'.

Funding and governance, two basic topics for the implementation of the EGDI, need to be further clarified in this last stage of EGDI-Scope. The urgency has increased especially for the (required) immediate follow-up of the EGDI-scope study, because EU-funding options for the short term (2014-2015) are lacking, against expectations in previous stages of the study. On the other hand, representatives from DG's, such as DG ENTR (EU Directorate-General for Enterprise and Industry), have informed the EGS ExCom that they are very supportive to the EGDI-concept, and that they are willing to invest substantially in the near future if the European geological surveys show continued effort towards realization, collaborating at European level.

A few generic options and consequences for governance and funding have been presented to the National Delegates at 11th February 2014. At the request of the National Delegates Meeting these options will be further clarified for the EGS General Meeting at 25th March 2014 in Brussels, in order to prepare for decisions towards the further development of the EGDI. These options need to be assessed from the view that the work process towards synthesis is still ongoing, but on the other hand they provide clear solutions to facilitate the work process in the next period for all survey partners.

Three options for Phase 1 – Implementation of the EGDI

The Implementation plan for the EGDI will describe a roadmap. The first, and most urgent step of this Roadmap is the follow-up of the EGDI-Scope study ('phase 1'). To keep current knowledge, networks and exchanges concerning EGDI, it is strongly preferred to organize this follow-up directly after the end of EGDI-Scope. Therefore the 3 presented options in this memo concentrate on this phase 1, in order for the Directors to take timely decisions.

Option 1 – Limited coordination of current initiatives

Starting point: use established bodies, decision structures and current levels of collaboration between surveys at European and cross-border level.

The EGS, the Expert Groups, with an emphasis on the Spatial Information Expert Group (SI-EG), and surveys collaborating in consortia on EU-funded projects, co-ordinate their efforts towards an integrated approach of the data infrastructures connected to the most relevant EU-projects and resulting datasets. In phase 1 these efforts will concentrate on OneGeologyEurope (-plus), EMODNET, Minerals4EU (including EuroGeoSource, ProMine,...), EURARE and GEMAS (as suggested, not yet elaborated). The collaboration will be organized under the ‘umbrella’ of current and upcoming funded projects, and available capacity within the Expert Groups.

The SI-EG will play an important role to maintain and further develop technical, functional, legal and other standards and requirements proposed by EGDl-Scope, EGS staff will play an important role with regard to communication and dissemination, co-ordination at organizational level, and lobby/ network activities. Main developments regarding EGDl will be decided under the current EGS-decision structure. Possible funding sources: current projects EMODNET2, Minerals4EU, EURARE, OneGeology, (Danube case with JRC/ OneGeology Europe).

Additional capacity for EGDl will be negotiated on a more ad-hoc basis.

Start: mid-2014/ End phase 1: until availability of substantial funding for setup of EGDl work force.

Option 2 – Establishment of EGDl Working Group

Starting point: establishment of an EGDl Operational Working Group. At his stage it is foreseen that this Group will take up the following operational tasks:

Functions/ tasks of EGDl Operational Working Group	Estimation required capacity (in Man Months (MM))
○ Inventorize commitments of surveys and make arrangements	<i>pm</i>
○ Prepare for operational structure: <ul style="list-style-type: none"> ○ Legally: initially to establish legal basis for the Working Group; secondly towards a sustainable operational structure; ○ Personnel (for startup and towards sustainable operational structure) 	<i>pm</i>
○ Build central access portal	<i>pm</i>
○ Provide Technical infrastructure	<i>pm</i>
○ Build/adapt/ update infrastructure from EuroGeoSource	<i>pm</i>
○ Execution of quick-win activities: Integrate 1GE(+), EMODNETGeology, EuroGeoSource, EURARE, GEMAS	<i>pm</i>
○ Setup suitable licensing system	<i>pm</i>
○ Design decisive structure / draw up statutes /bylaws	<i>pm</i>
○ Communication, dissemination	<i>pm</i>

○ Stakeholder involvement	<i>pm</i>
○ Project management	<i>pm</i>
○ Investigate and act on funding opportunities (e.g. DG-Connect call 'Virtual Research Environments')	<i>pm</i>
Travel + out-of pocket costs (incl. licenses, legal contracts, etc.)	€ ----- (pm)
Total	10 - 30 MM + pm out-of-pocket costs

Initially, part of the work concentrates on building a prototype EGDI, based on results from current projects.

Participation in this working group is possible for every geological survey in Europe. Each survey can contribute on a voluntary basis, providing manpower, budget, software or any other relevant contribution. After the General Meeting of 25th March 2014, EuroGeoSurveys will make a request to the surveys to specify their possible commitments. After it has been settled which contributions can be expected, the surveys will collaborate on a project basis. Further organizational and governance arrangements will be developed in exchange with representatives of all geological surveys, within the framework of guidelines and principles from the EGS Taskforce Governance and results of the EGDI-Scope study.

The EGDI Operational Working Group will report to the EGS ExCom.

The estimated total costs for the activities of the EGDI core executive work team are **10 - 30 MM + pm out-of-pocket costs, for 18 months**. (A minor) part of these costs could possibly be allocated from current funding sources: current projects EMODNETGeology2, Minerals4EU, EURARE, OneGeology, (Danube case with JRC/ OneGeology Europe).

The objectives and tasks of the proposed EGDI Operational Working Group will be guided by rules and recommendations according to the Implementation Plan for EGDI, which will be the final result of the EGDI-Scope study (finalized in May 2014). In addition, the (EGS-) Taskforce Governance report will also provide a framework for organizational aspects of the EGDI, e.g. concerning the realization of the required operational structure at European level.

Start: mid-2014/ End phase 1: until availability of substantial funding for full implementation of the EGDI (estimated duration 18 months).

Option 3 – Full implementation of EGDI

Starting point: The NGSO's work together towards the full implementation of the EGDI. For the greater part, funding and coordination is in the hands of the surveys, and will be provided for a number of years.

The start phase is similar to option 2, but on a larger scale. Additional current and recently finalized EU projects and accompanied results will be included in the EGDI Infrastructure, including the co-ordination work. There are several requests for such additional connections to the EGDI, especially from the geohazard and groundwater domains (e.g. PanGeo, SAFELAND, LAMPRE, DORIS, SubCoast, WISE, eWater,

GeoMol...). Also the 'GeoREP' initiative from the Earth Observation Expert Group could fit within this framework.

The associated activities will be taken up by the an EGDI Operational Working Group as proposed also in option 2.

Secondly, option 3 includes the setup of a common operational structure at European level, to be established after this has been properly prepared by the EGDI Operational Working Group. At certain point this common operational structure will take over the tasks and position of the EGDI Working Group.

The activities of the common operational structure include:

- Annual EGDI Workplan
- Maintenance technical infrastructure
- Specify requirements techn. Infrastructure (+tender)
- Data & standard management (maintain, coordinate, influence: INSPIRE, OGC, ...)
- "Central" database management
- Connection EGDI – new projects (#4): technical, process, content
- Portal management (including software tools)
- Quality control (content/ delivery)
- Legal tasks (monitoring, communication, licenses)
- Central contact point
- Helpdesk (technical support, advisory on IT and content)
- Survey contacts EGDI
- Dayly management
- Secretariat/ communication

Start: mid-2014/ End: until operational phase of ERANET/ Article 185 and associated substantial (project) funding, not to be expected before 2-3 years from now.

Very broad cost estimations for option 3:

- EGDI operational working Group: 60 MM + out-of-pocket costs (option 2 + additional projects)
- Annual costs common operational structure (estimations for sustainable data maintenance and development for 8-10 EU projects/ programs) : 100 MM + 7 MM each survey (x31 EGS members)
 - ➔ Total costs $60 + 100 * 2 \text{ (years)} + 7 * 2 * 31 = \text{approx. 700 MM (2-3 years)}$
(of which approx. 450 MM at the level of individual surveys)