

Deliverable 2.3.1

Extensions to EGDl

Authors and affiliation:

Martin Hansen

GEUS

E-mail of lead author:

mh@geus.dk

Version: 16-04-2019

This report is part of a project that has received funding by the European Union's Horizon 2020 research and innovation programme under grant agreement number 731166.



Deliverable Data		
Deliverable number	D 2.3.1	
Dissemination level	Public	
Deliverable name	Mapping and describing the needed extensions to EGDl directly related to the task 2.2	
Work package	WP2	
Lead WP/Deliverable beneficiary	RBINS/GEUS	
Deliverable status		
Submitted (Author(s))	16/04/2019	Martin Hansen
Verified (WP leader)	16/04/2019	David García Moreno
Approved (Coordinator)	29/04/2019	Jørgen Tulstrup



GENERAL INTRODUCTION

This document describes the extensions that needs to be added to the EGDl platform to fulfill the requirements of GeoERA projects. This document relies heavily on deliverable D 2.2.1: "Describing the requirements to the Information Platform by the GeoEnergy, Groundwater and Raw Materials themes".

EXECUTIVE REPORT SUMMARY

The GeoERA program comprises a number of projects dealing with multiple aspects of geosciences. These projects will thus be generating a variety of products, which will require specific functionalities to be developed within the GeoERA Information Platform project in order to store, show and share them properly. A list of functionalities required by the GeoERA projects was gathered in D 2.2.1 by WP2 based on feedbacks from the projects. This list was transmitted to WP6 for evaluation.

The present report evaluates the feasibility of the functionalities required by the various GeoERA projects that are not currently supported by the EGDl platform.



TABLE OF CONTENTS

1	INTRODUCTION	5
1.1	The EGDI platform version 1.1	5
2	FURTHER EXTENSIONS TO THE EGDI PLATFORM.....	5
2.1	Standard web GIS functionality	5
2.2	Extended searching functionality.....	7
2.3	Document related functionality	8
2.4	3D functionality.....	8
2.5	Other functionality.....	9
3	REQUIREMENTS THAT CANNOT BE DEVELOPED WITHIN THIS PROJECT	10





1 INTRODUCTION

This report describes and evaluates the feasibility of the necessary extensions that should be implemented within the EGD platform in order to meet the specific requirements of the various GeoERA projects. The different functionalities required by the projects were firstly described in deliverable D 2.2.1. The EGD extensions discussed in the present report come from the information contained in that report.

1.1 The EGD platform version 1.1

The EGD platform has been already extended within the framework of deliverable D 6.2. This extension consisted in the development of a management tool and a 3D database.

The management tool allows registered users to create/edit maps and layers, as well as to upload and thematise shapefiles and documents. The 3D database permits uploading and displaying 3D models in a simple web-based viewer. Note that the architecture of the 3D database is based on the GEUS 3D database.

2 FURTHER EXTENSIONS TO THE EGD PLATFORM

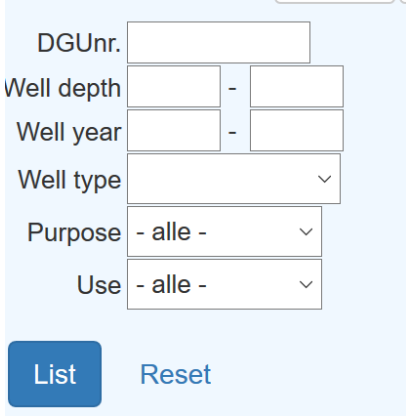
D 2.2.1 contains several functionalities that, at the present, are not supported by the EGD platform. In this chapter, we describe these functionalities and assess the size of the task required to implement them within the EGD platform. The tasks are evaluated as “small”, “medium” or “large” according to the foreseen time consumption and complexity of the tasks.

2.1 Standard web GIS functionality

The current platform supports most of the standard web GIS requirements. There are however some functionalities that are not yet supported. These are listed in the table here below.

Requirement	Comment	Size of task
Go to location by typing city or coordinates (lat. / long. in decimal degrees) in the search field	When a user types the name of a city or the coordinates of a point, the map moves and zoom to that location. This functionality could use something similar to Lucene (http://lucene.apache.org/core/) to index place names.	Small
Small overview map	A small overview map located in one corner of the main map to show where in Europe the user is.	Small
Legend with hierarchy / tree view	The layers of a map must be organised in a tree view, so that layers can be combined into meaningful groups.	Small
Switching layers on / off	It should be possible to turn all layers on / off	Small
Display data in different projections	The portal will show the maps in EPSG:3034. This means that WMS must be delivered to	Small



(e.g., area and angle true)	the EGDI platform in EPSG:3034 to avoid online transformations of bitmaps. Data delivered to the EGDI platform as georeferenced images, tabular data, shapefiles, GeoPackages, etc. can be delivered in any other projection as long as its conversion to EPSG:3034 is straightforward. The use of multiple projections for visualizing data in EGDI is not recommended. Otherwise, all projects delivering data to the platform as services (e.g. WMS) would be forced to support all projections used.	
Export current view as a high-resolution image for publication	For this to be possible, external WMS services (those set up by each thematic project) must be able to deliver high resolution images.	Medium
Multi scaling; showing more and more details when users zoom in to an area	This can be done by the various WMS/WFS delivering data to EGDI. If the visualization of the different layers is set to be scale-dependent, the user will see more details when zooming in on an area. This can also be done for WMS/WFS exposed by EGDI.	Medium
Transparency of layers	Can be implemented with a transparency slider for each layer.	Small
Create simple queries and filters from the web GIS interface	<p>Can be done by adding selection boxes, intervals from the data fields. This can be done on data sets stored in the EGDI database. For data delivered as WMS, there exists different nonstandard ways to do this. We must select one of those.</p> 	Medium
Projections	The portal will show the maps in EPSG:3034	
Searching for maps	With time, many thematic maps will be defined. It should thus be possible to search among the maps. When a map is selected	Medium



	from the search tool, the map will open with a selection of predefined active layers and with a predefined zoom level.	
--	--	--

2.2 New functionalities for the administration module

Requirement	Comment	Size of task
User management	Must be extended to support the different projects to edit their own (and only their own) maps and layers	Medium
Enhanced interface to upload and thematise Shapefiles and GeoPackages	The rather simple Shapefile uploader in EGDI 1.1 must be extended with tools to thematise the layer and add metadata.	Medium
Interface to MICKA	To make searching better, layers defined in the EGDI portal must also be stored in MICKA.	Medium
Interface to upload documents and metadata to a document repository	The solution we choose might have an impact on the amount of metadata necessary to create the interface. E.g. the type of document repository and the searching function from EGDI might have a requirement for the metadata content.	Medium
Interface to upload 3D models and metadata	Depending on the number of importers and on how many metadata can be extracted	Large

2.3 Extended searching functionality

Requirement	Comment	Size of task
Search through metadata, datasets and documents directly from the EGDI portal	Require a document handling system	Large
Ranking of search results based on relevance		Large
SQL query directly to the database.	Unsafe. We do not recommend opening up the databases for users to execute SQL directly from the user interface. This can however be done when setting up the	



	layers that query data stored in the EGDI database.	
--	---	--

2.4 Document related functionality

Requirement	Comment	Size of task
Search through documents.	These reports must be stored in a document repository. It must be possible to search for words contained in the titles and/or in the documents.	Medium
Interface to knowledge base (existing from HIKE)	Needs to be further analysed	

2.5 3D functionality

There is a list of wishes for the 3D viewer. Descriptions provided in D 2.2.1 for some of the 3D functionalities were not enough to assess their feasibility within the timeframe of GeoERA. We have labelled these functionalities as “Needs to be further analysed” in this section. The feasibility of these functionalities is currently being assessed in collaboration with the projects that required them. The present report will be updated with the results from that collaboration as soon as more information is available.

The GeoERA projects utilize a number of 3D modelling software, such as Move, GoCad, Petrel, GeoModeller (BRGM), GeoScene3D, etc. To display these models in EGDI, importers for these tools are required. For this, projects should provide a list to WP6 containing all the modelling software/formats they will be using to create the 3D models. Note that for some of these systems, it will be possible to extract the geometries, but not the metadata. Hence, in order to extract metadata from 3D models, it might be necessary to create a web form, where the models’ metadata can be inserted when uploading each model.

Requirement	Comment	Size of task
Handling and displaying 3D models	The 1.1 version of EGDI uses GEUS 3D database as storage for 3D models	Large
Quasi 4D viewer	Needs to be further analysed	
Displaying virtual logs through models		Medium
Virtual cross section		Medium
Virtual (horizontal) slice		Medium
Handling uncertainty	3DGEO-EU has a specific task (4.2) to define how the uncertainty will be handled. They will produce deliverables (D4.2– 4.4) with specifications on this between M12 and M36. We will evaluate the feasibility of this functionality based on 3DGEO-EU feedbacks.	
Compass		Small



Colour / Alpha mapping functions to render attributes		Small
Glyphs for data representation	Needs to be further analysed	
Visualize different models at the same time	Needs to be further analysed	
Possibility to display objects	The EGDI 3D model database can store points, surfaces and closed volumes. We need however to have examples of what the projects will generate and how they expect to have them visualised. Needs to be further analysed	
Grid lines		Small
Exploded views of detailed part of 3D model (like the Polish viewer)		Medium
Create virtual cross section through models		Medium
Transparency	Change transparency for layers / surfaces in the 3D viewer	Medium
3D model importers	Functionality to load 3D models into the 3D model database. We must develop importers for each of the modelling tools delivering models to the platform.	Large
3D model exporters	To let the users download the models, exporters must be developed in a few standard formats (depending on the geometry of the models; e.g., point clouds, grids, surfaces...)	Medium

2.6 Other functionalities

Requirement	Comment	Size of task
Web page with a list of all services comprised in the platform, including both the services directly available from EGDI platform and those drawn from the thematic projects.	This might be drawn from the monitoring system to be set up and hosted at IGME. In this way, it can be possible to monitor the current state of the services (up and running, down, down for a prolonged period)	Medium
Handling of time component	If data are delivered as WCS services with time component the user interface can select which time step to show	Medium
Download data with or without access control		Medium



Display graphs with time series data (piezo levels, rain....)	It is possible to include links to external services that can deliver time series	Medium
Creation of statistical diagram, rose diagrams, histograms...	Needs to be further analysed	
Metadata compatible with other EU inventories	EGDI use MiCKA as metadata database, which follows INSPIRE standards. Metadata uploaded to EGDI must follow MiCKA standards. MiCKA can also harvest from other metadata databases. If some of the projects plan to use other metadata databases, they must make data available on a format readable by MiCKA. Needs to be further analysed.	
Integration of the KINDRA thesaurus	Needs to be further analysed	
An upload system for the static data		Medium

3 REQUIREMENTS THAT CANNOT BE DEVELOPED WITHIN THIS PROJECT

The following requirements are too complex to be developed within the scope of the GIP-P project.

Requirement	Comment
Fly through (recordable)	This requirement lies outside the scope of a simple 3D web viewer. It can however be possible to upload videos showing models generated by professional modelling tools
Steering camera via geocoded locations	This requirement lies outside the scope of a simple 3D web viewer
Predefined viewpoints	This requirement lies outside the scope of a simple 3D web viewer
API to extend the viewer	This requirement lies outside the scope of a simple 3D web viewer