

## ANNEX A – REQUIREMENTS IN TERMS OF DATA FORMATS, DATA DELIVERY AND FUNCTIONALITIES.

### 1. Spatial data

Table 1: data formats and delivery methods chosen by the various GeoERA projects to submit spatial data to EGDI. UD: under discussion; i.e., projects are still discussing whether they will use that format, delivery method, projection and/or vocabulary.

\*HIKE will produce 3D data, but these are not to be shown in EGDI webGIS portal. The 3D data (or the contact information from where to get them) should just be accessible through the 2D fault geometries for downloading (e.g. as zip file).

\*\*3DGEO-EU will use HIKE's vocabulary, which might be extended with 3DGEO-EU specific terms in a later stage of the project.

Requirements		Groundwater				Raw materials				Geo-energy					
Product types, formats and delivery methods		RESOURCE	VoGERA	HOVER	TACTIC	EuroLithos	FRAME	MINDeSEA	Mintell4EU	GeoConnect3d	HIKE	3DGEO-EU	MUSE	HotLime	GARAH
Data formats	Attributes in separate Excel files	X						X							
	Shapefiles	X	X	X	X	UD		X	X	X		X	X	UD	X
	GeoPackages			UD	X					X	X		X	UD	
	NetCDF			X											
	WMS			X	X	X	X	X		X				UD	
	WFS				X	X	X	X	X		X			UD	
	WCS				X		X								
	JSON				UD										
	Raster graphics			X	X		UD			X		UD			
	2.5D ESRI Grids (ASCII)			X	X		UD			X		X			X
	Georeferenced images and ZIP files									X	X				
	XYZ datasets in Access format			X											
	XYZ datasets in Excel format			X											
	3D Shapefile				UD					X					
	3D voxet models									X		X		UD	UD
	3D - OBJ format				X										
2.5D & 3D Gocad ASCII (Tsurf, PLine, VSet, Solid, Voxet, SGrid)										X*	X		X	UD	
CPS3 ASCII											X			UD	
VTK ASCII											UD			UD	
3D volumes in DXF format													UD		
Projection	EPSG: 3034	X	X	X		X	X		X	X	X		X	X	X
	EPSG: 3035	X		X						X		X			
	EPSG: 4326			X	X			X							



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Documents linked to spatial data or to a location	X	X	X	X	X	X	X		X	X	X	X	X	UD
Direct upload into EGDl repository	X	X	X	X	X	X	X	X	X	UD	X	X	X	X

### 3. Functionalities

Table 3: Functionalities required by each project. UD: Under discussion; i.e., projects are still discussing whether they need those functionalities.

Requirements		Groundwater				Raw materials				Geo-energy					
Functionality		RESOURCE	VoGERA	HOVER	TACTIC	EuroLithos	FRAME	MINDeSEA	Mintell4EU	GeoConnect3d	HIKE	3DGEO-EU	MUSE	HotLime	GARAH
2D, 2.5D, documents	Search based on location			X	X	X	X	X	X				X		
	Search Documents		X	X	X	X	X	X	X	X	X	X		X	
	Searching for maps	X		X											
	Interface to upload and thematize Shapefiles and GeoPackages	X	X	X	X			X	X	X	X		X	X	X
	Interface to knowledge base and related documents										X				
	Web page with all services	X	X	X	X	X	X	X	X	X	X		X		X
	Overview panel	X	X	X	X	X	X	X	X			X			X
	Legend with tree view/hierarchical on/off switching	X	X	X	X							X	X		
	Export map	X		X	X	X	X	X	X	X		X	X		X
	Download data with or without access control	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Identify + follow link	X		X	X	X	X	X	X	X	X		X	X	X
	Specific projection	X									X				
	Handling Time component			X							X				
	Display a graph with time series data				X										
	Multiscaling			X	X						X	X	X	X	
Transparency			X	X						X		X			



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A common legend should be applied to all datasets based on attributes given in the fault attribute tables. The default colouring of subsurface faults will correspond to the colour coding of the International Chronostratigraphic Chart v2018/08.											X				
Functionality to show statistical data of the yearbook in EGDI									X						
Visualizing the data according to UNFC classification									UD						
Annotation and explanatory notes referring to web data layers shown via pop-up windows.													X		
Linkage to Semantics/Project Vocabulary (link from the map to the project vocabulary and vice versa).						X	X	X		X	X	X	X	X	UD
Customizing classification and legend to certain purpose. For example, show proven faults in solid lines, assumed faults in dashed lines and/or a certain depth as line thickness.											X				

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	Predefined views with predefined classifications (time slices)										X					
3D	Handling and displaying 3D models			X	X			UD		X		X		X	X	
	Transparency of 3D models			X						X		X				
	Virtual borehole			X				UD				X	X	X		
	Virtual cross section				X			UD				X		X		
	Virtual (horizontal) slice											X		X		
	In 3D viewer: "getfeatureinfo" tool that displays information on each layer when the users click on them.														X	
	Handling and displaying uncertainty									X		X				
	Visualization of data with scalar uncertainty, using 2D colour maps.											X				
	Visualization of different representations of an object (e.g., a surface) showing different realizations; for example, the mean surface and additional 90% and 95% confidence envelopes as transparent surfaces.												X			
Storing data with uncertainty in 3D database												X				

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	Compass											X			
	Colour / Alpha mapping functions to render attributes											X			
	Glyphs for data representation											X			
	Visualization of different models at the same time											X			
	Possibility to display objects											X			
	Grid lines											X			
	Exploded views of detailed part of 3D model											X		X	
	Show camera direction											X			

#### 4. Functionalities too complex to be created within GeoERA timeframe

Table 4: Functionalities that will not be available at EGDI.

Requirements		Groundwater				Raw materials				Geo-energy					
Functionality		RESOURCE	VoGERA	HOVER	TACTIC	EURILITHOS	FRAME	MINDeSEA	Mintell4EU	GeoConnect3d	HIKE	3DGEO-EU	MUSE	HotLime	GARAH
3D	API to extend the viewer											X			
	Fly through (recordable)											X			
	Steering camera via geocoded locations											X			
	SQL query directly to the database									X					
	Predefined viewpoints											X			