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MICA Minerals Intelligence Capacity Analysis

The European Raw Materials Intelligence Capacity Platform (EU-RMICP)

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BRGM, EGS, GeoZS, GEUS, GTK, JRC and UJF/LIG





PERT DIAGRAM: GENERAL ORGANIZATION







WP6 OBJECTIVES: A BRIEF SUMMARY (1/3)



1 – A statement of fact:

If specialists have – at least for some facets or sub-domains - the necessary knowledge on how to efficiently use all the data which are available to perform various studies, most of the stakeholders do not have the essential skills allowing such an efficient use of these data for solving problems they may meet. Actually:

(i) they neither have a clear and global vision of all the methods and tools that can be used,

(ii) nor know how to implement these methods and tools, their limits of use (requisite characteristics of the initial dataset, scale, accuracy...),

(iii) how to choose the best available technique (BAT) to obtain the expected result(s) and/or, if necessary,

(iv) how to combine or link together several of these techniques.







2 – The objective of the MICA project is:

→ to fill this gap in the chain of use of data and to allow the end user to select in a seamless way the best available bunch of technologies for answering his/her question(s)/problem(s).

 \rightarrow to reach this objective WP6 will create a database of methodologies and tools descriptions with an ontology-based interface to visualize the database content and the relationships between the different techniques, and to search for the most appropriate method(s) and tool(s).







- **3 How it will work? The concepts of FACT & FLOW SHEETS**
- WP2 will provide a **MAPPING** of stakeholders' needs /expectations.
- From this, WP4 and WP5 will deliver detailed descriptions of several methods and tools which are named here "FACT SHEETS". From each fact sheet, WP6 will generate an inventory of the "functionalities" which can be seen as a fact sheet metadata.
- WP6, with the assistance of domain experts from WP3, WP4 and WP5, will set up a series of pre-established scenarios called here "FLOW SHEETS" (+ metadata) which will describe the sequences of operations (data, methods and tools needed) to answer complex queries. Metadata related to structured, semi-and non-structured data served by the IKMS (EURare), the EU-MKDP (Minerals4EU), the EU-UMKDP (ProSUM) and the Minventory website will also be used by the EU-RMICP.















THE CORNERSTONE OF THE EU-RMICP



The Search interface will be developed as a

Dynamic Decision Graph (DDG)

allowing:

(i) to visualize and navigate in the database content,

(ii) to refine the initial end user query and,

(iii) to identify the most appropriate flow sheet(s).



The graph will be based on a **multidimensional ontology** composed of domain and sub-domain ontologies, representing the 'field of questions' of the end users and which will be established in WP6 following the results of the survey made in WP2.





THE MECHANICS BEHIND (1/2)



The DDG will allow answering complex queries such as: "Could recycling play a significant role in future metal availability?"

This will generate the following sequence of operations:

Behaviour of the stakeholder	Click on	
Logically looks for 'Recycling', main term of the initial question and specifies the question	🗥 Concept Recycling / Urban mine	
Specifies the question, introducing the term 'Metals'	ී Sub-concept Recycling / Urban mine / Urban mine (metals)	
Specifies the question, taking into account the forward- looking dimension	ී Concept Economics / Forecast	
Identifies the adapted flow sheet(s)	igodoldoldoldoldoldoldoldoldoldoldoldoldol	



THE MECHANICS BEHIND (2/2)



The Dynamic Decision Graph mechanics principles are the following:

At the inception:

- 1 All domains and all super concepts are visible (activated)
- 2 All flow sheets are activated but not visible

A click on a concept:

- Leaves all ontologically-related concepts visible and
- Leaves all flow-sheet-related concepts visible and
- Makes visible related sub-concepts (if any) and
- Switches off (disables) all other non-related concepts and
- Disables all non-related flow sheets
- At each stage, remaining activated flow sheets can be visualized in a new window. These
 flow sheets are ranked by relevance, in function of the series of selected concepts / subconcepts.
- A (sub-) concept may remain visible (activated) because it inherits the properties of the super (father) concept.



B Flow Sheet 2 Flow Sheet 1 Flow Sheet **DDG** Dynamic 3 **Decision Graph** Same view showing all the flows sheets indexed (with flow sheets relation) with the concepts of the domain ontologies, and activated (not visible inside the graph interface).





DDG Dynamic Decision Graph (User's view)





highlighted (activated) because the selected sub-concept inherits the properties of the super concept (or 'father' concept) located above.

(User's selection)



matches with the end user request.



WHO WILL DO WHAT?



WP6 tasks / sub-tasks	Leader	Supporting Team	Contribution from other WPs
T6.1 Synthesis of stakeholders requirements and analysis of methods functionalities	GTK	BRGM, EGS, GeoZS, GEUS, LIG	
- T6.1.1 Synthesis of stakeholders requirements	GTK	BRGM, GeoZS, GEUS, LIG	WP2, 3, 4, 5
- T6.1.2 Analysis of methods functionalities. Creation of FACT & FLOW sheets + metadata	GTK	BRGM, EGS , GeoZS, GEUS, LIG	WP3, 4, 5
T6.2 Ontologies	LIG	BRGM, GEUS, GTK	
T6.3 Development of the Dynamic Decision Graph (DDG) for visualization, navigation & selection	JRC	BRGM , LIG, GEUS, GTK	
T6.4 Search and ranking	LIG	BRGM	
T6.5 Development of the central database of the EU-RMICP	GEUS & GeoZS	BRGM, GTK, JRC, LIG	
T6.6 Integration to the EU-MKDP / EURMKB	BRGM	GeoZS, GEUS, GTK	







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