UNDERCOVER

Redefining deep-earth exploration



UNDERSTANDING THE SCIENCE

MAKING MINERAL EXPLORATION MORE SUSTAINABLE AND RESPONSIBLE

Reducing uncertainty and improving exploration decisions through smarter, more targeted approaches.

OVERVIEW

Exploring for CRMs can involve significant costs, uncertainty, social and environmental considerations. UNDERCOVER investigates new approaches that could make deep-earth exploration more targeted by improving the understanding of where resources may be located before extensive investigations take place. By combining geological knowledge, geophysical methods, modelling and data analysis, the project aims to support more efficient and responsible exploration approaches. Engaging with locals and communicating about the project, its activities and aims and the importance of CRMs, raises public awareness of geosciences and reduces potential opposition.

Why does it matter?

- **Reducing unnecessary activities** – Better understanding of the subsurface can help focus exploration where potential is greatest.
- **Using resources efficiently** – More targeted approaches can reduce uncertainty, costs, and unnecessary investigations.
- **Supporting responsible access** – Improved exploration knowledge can contribute to more sustainable CRM supply.

UNDERCOVER INNOVATION

UNDERCOVER investigates how improved geological understanding and advanced exploration approaches can contribute to more targeted and responsible mineral exploration. By combining different sources of evidence, including geological, geophysical, and geochemical information, the project aims to reduce uncertainty before exploration decisions are made. The integration of advanced modelling and AI supports the identification of areas that may have greater potential for deeply buried CRMs. Through these research activities, UNDERCOVER explores how better knowledge of the subsurface could help reduce unnecessary exploration efforts and support approaches that consider both resource needs and environmental impacts.

OUR PARTNERS

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How does it work?

UNDERCOVER aims to improve exploration efficiency by developing a more complete understanding of the geological systems that may contain CRMs. The project combines geological knowledge, geophysical observations, geochemical information and advanced data analysis to better identify areas with exploration potential.
By improving predictions before field investigations take place, the research explores how exploration activities could become more targeted. This could help reduce unnecessary drilling and investigations while supporting more informed decisions about where exploration efforts should be focused.

Key technologies

- Mineral Systems Concept
- Geophysical exploration methods
- Geological and geochemical analysis
- Advanced modelling
- Artificial intelligence
- Mineral prospectivity modelling

BENEFITS

For exploration

- More targeted exploration strategies
- Reduced uncertainty before field investigations
- Improved prioritisation of exploration areas
- Potential reduction of unnecessary drilling activities

For society

- Potentially reducing unnecessary exploration activities
- Supporting more responsible use of exploration resources
- Contributing to approaches that consider environmental and social impacts
- Supporting Europe's efforts to access CRMs more responsibly

Funded by the European Union

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