

DEVELOPING RESILIENT BIO-INSPIRED MODULAR ROBOTIC MINERS

ROBOMINERS

ABOUT ROBOMINERS

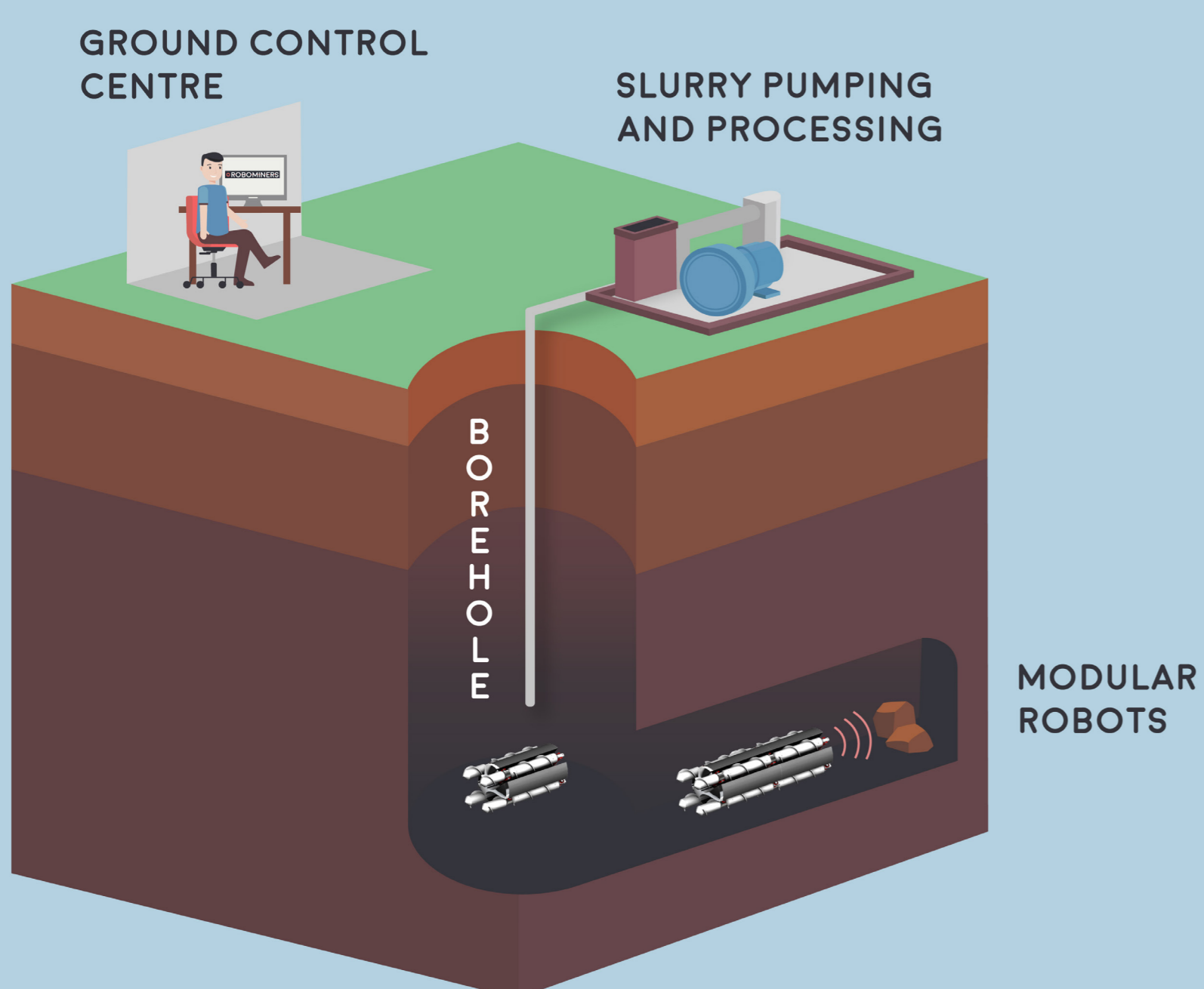
ROBOMINERS is a 54-month Horizon 2020 project funded by the European Commission that started on 1 June 2019. ROBOMINERS will develop a **bio-inspired, modular and reconfigurable robot-miner for small and difficult to access deposits**. The aim is to create a prototype robot that is capable of **mining underground, underwater in a flooded environment**, and can be delivered in modules to the deposit via a large diameter borehole drilled from the surface to the mineral deposit.

ROBOMINERS aims at delivering a proof of concept for the feasibility of this technology line at Technology Readiness Level (TRL) 4. The technology could **enable the EU to access mineral raw materials from domestic sources that are otherwise inaccessible or uneconomic**.

CONCEPT

- Robot parts (modules) are sent underground via a borehole
- They self-assemble to form a fully functional robot
- Using specialised sensing devices, they detect ore
- Using ad-hoc production devices, they produce slurry that is pumped out
- They can re-configure on-the-job

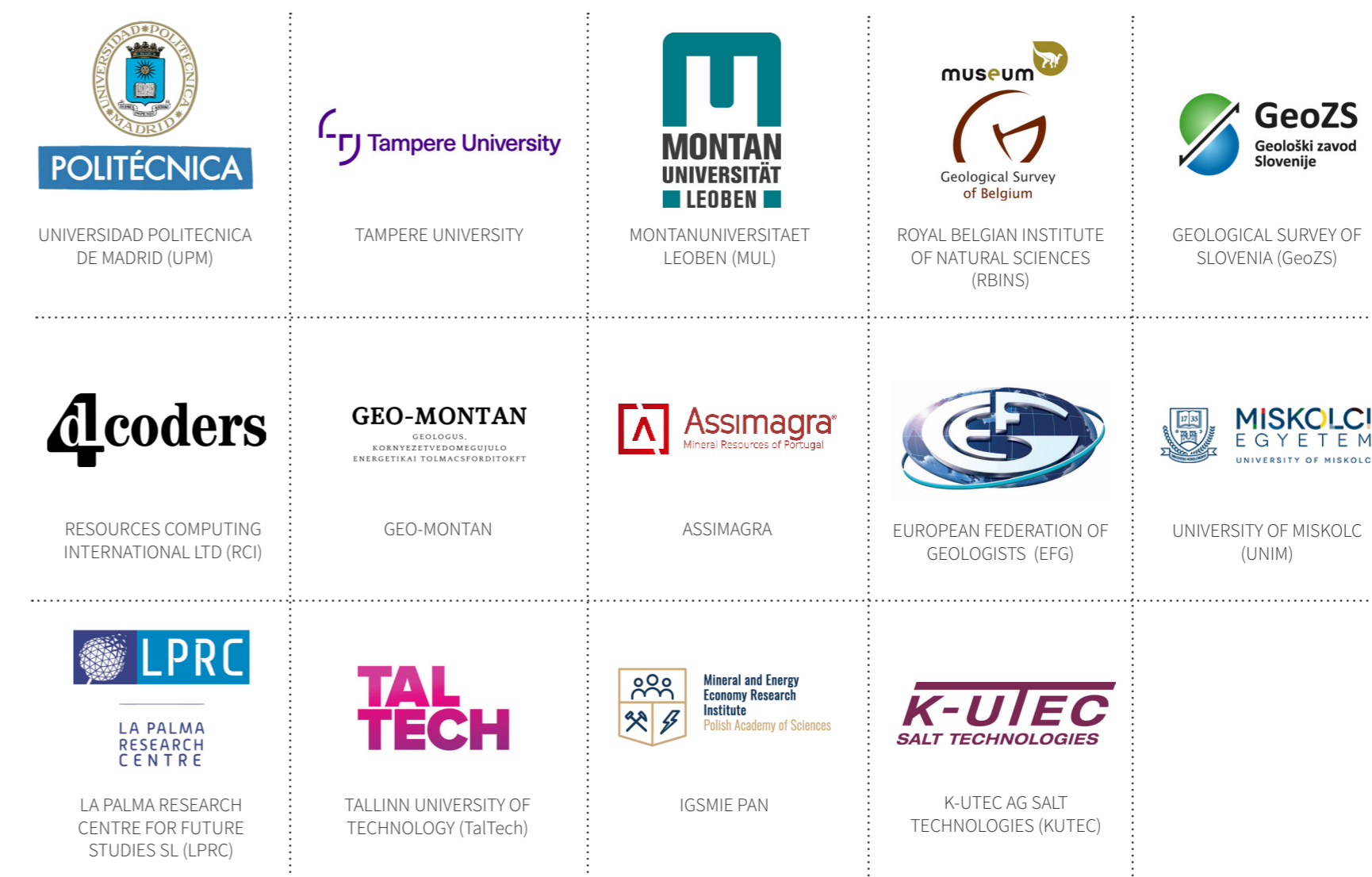
VISION



IMPACT

- Opening new exploitation scenarios for Europe's domestic mineral resources
- Supporting the transformation of mining into a high-tech digital industry, capable of attracting young scientists and engineers and reducing the gender gap
- Increasing domestic supply of raw materials, especially for Critical Raw Materials (e.g. Li, Co, graphite etc.)
- Environmental benefits, such as no dewatering needs, no personnel in the mine, less waste, reduction of necessary groundworks on surface
- Enabling small-scale and artisanal mining, promoting the development of small and very small mining businesses
- A number of over 1500 potential mine sites for ROBOMINERS technology have already been identified
- Investments in the development of a new mining project will be much smaller compared to conventional underground mining, at the benefit of quick return on investments
- Potential to be adapted to extra-terrestrial environments

PARTNERS



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