

# UNDROMEDA

**Underground robotic system for monitoring, evaluation and detection applications**



The aim of the project UNDROMEDA is to develop a robotic measuring system for autonomous 3D mapping and monitoring of underground mines. The system is based on a moving platform, which can be additionally equipped with a flying drone to reach unknown, inaccessible or dangerous areas such as tunnels or sewer systems. This makes it indispensable to integrate sophisticated position and navigation sensors such as laser scanners, radar and inertial navigation as well as innovative algorithms such as laser SLAM, IPS optical navigation and virtual reality control.

UNDROMEDA is a milestone in the current evolution towards an "invisible, sustainable, intelligent, safe and fully autonomous" mine, enabling it to meet the challenges for the mining of the future in terms of social and environmental acceptance and economic efficiency. The autonomous platform and drone will significantly reduce the risk to underground personnel by replacing manual measurements. Automation will greatly reduce the time and cost involved in mapping, while advanced sensors and their integration will greatly improve information density and quality.

A team of experienced project partners will integrate and further develop several existing partial solutions (TLR 5) within this upscaling project into an innovative high-performance system with functions for efficient monitoring, evaluation and detection applications (TLR 7). The project content is shown in Figure 3 (project poster).

The AMT is involved in UNDROMEDA with its experience in the field of automation and underground localization in the form of further development and integration of a UWB localization system for the robot and drone system into hardware and software.

## Project Video

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