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Robotics for raw material: the importance of data collection in the design of the appropriate equipments for exploring abandoned mines

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In Europe there are a lot of abandoned mines that could be reopened with the use of innovative techniques; this is one of the aims of the ROBOMINERS project.

The use of the mining robots will especially be relevant for mineral deposits that are small or difficult to access.

Knowledge of type and dimensions of this mines is fundamental aiming to design and plan on-site tests of this robot.

In this article are explained the selection criteria of some mines in Italy among all the abandoned mines available at national level that could be investigated with robot miner.

In Italy there are about 3000 abandoned mining sites. Among these, eleven sites distributed throughout the national territory were selected.

Starting from a national public database containing all the abandoned mining sites and using an *ad hoc* KPI-matrix, some pilot sites were selected that met the required features.

The selection was carried out, according to the objectives of the project, preferring mining sites in urban areas, located at great depths or considered not economically relevant by traditional mining.

Among these, preference was given to metal-bearing ore deposits that could be better excavated with robot.

In order to characterize the selected sites, the following data have been collected for every site:

- Geographic informations;
- Historic time range of exploration ;
- Deposit type;
- Commodities available;
- Main host rock.

Data collection was performed starting from the national database and subsequently integrating the informations with further data from bibliographic sources.

Data collection for the selected mines is of primary importance because the type of deposits can affect the correct functioning of the robot.

In order to design robot tools correctly is therefore essential to know in advance the geographic and geological features of the mine in order to carry out on-site tests.