

Robust Autonomous Exploration and Surveillance for mining industries

- **Thematic Areas/Technology/Topic of focus + key elements of the idea/problem:**

The objective of the project is a multi-disciplinary framework and infrastructure to digitize decision making (planning and operations) for mines exploration and surveillance companies. The project aims at giving added values to mining companies leveraging on advanced robust planning and scheduling, predictive maintenance based on deep learning , deep learning on multimodal cues (audio, video, ..), AUV intelligence, remote sensing, image processing, multi-spectral analysis, 3d reconstructions, BIM, and big-data analytics.

- **Expected synergies and complementarities:**

The project respond to Upscaling activities and is strongly involved with KIC strategy.

- It relates two sides of knowledge triangle: research and industry.
- It addresses two of the four target markets: machinery and equipment.
- It is linked with the Exploration and Mining in challenging environments themes.
- It leverages on strong results from KIC EIT Digital.

- **Outcomes:**

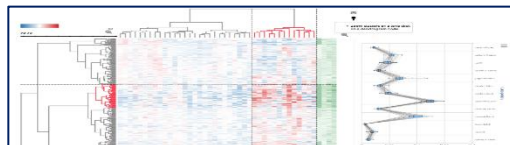
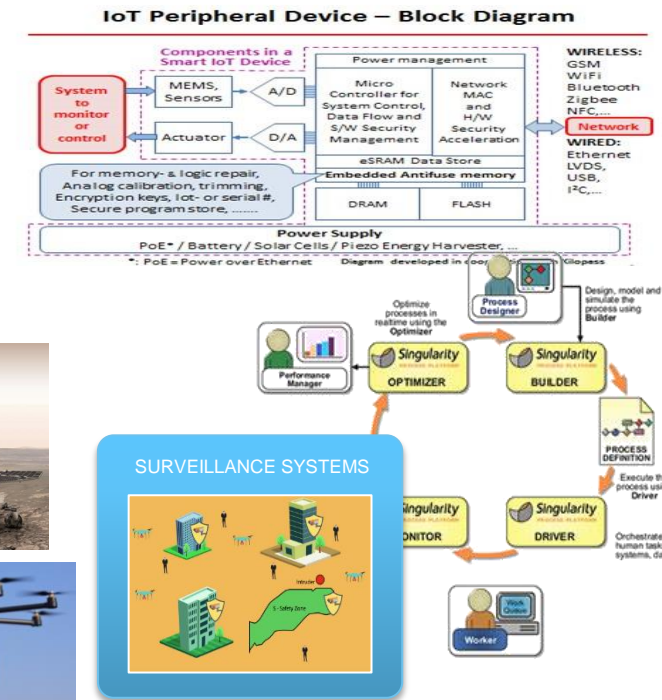
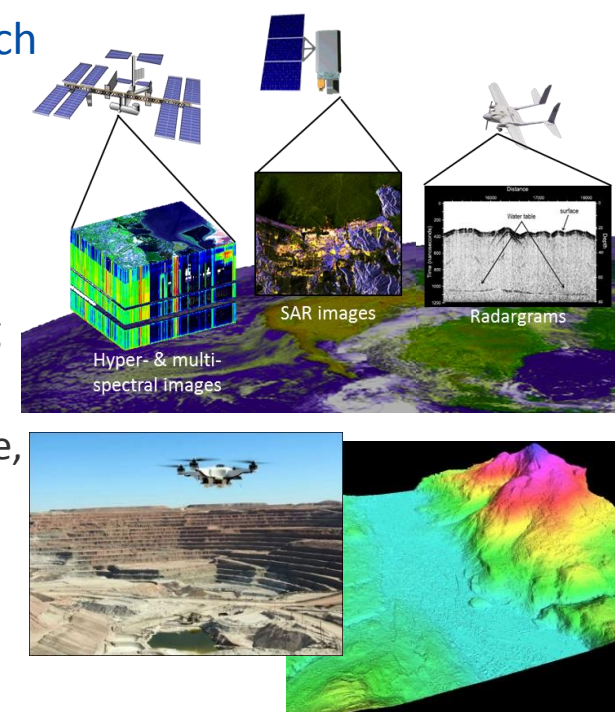
- Infrastructure for digitize planning and operations of mines in challenging environments
- Advanced processing of heterogeneous data (video, sensing, ...) for decision making
- Autonomy infrastructure for mines exploration and surveillance

- **Partners already identified:**

- Initial contacts with interested partners are on-going

- **Wanted additional partners:**

- Mining Companies
- Electronics and software designers companies in the mining sector
- IT Companies
- Research institutes



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• FBK Key competencies

- Planning and Scheduling of complex activities for autonomous systems, Model based autonomy, Formal Verification , Fault Detection, Identification and Recovery, safety assessment.
- Remote sensing image processing, 3D surveying and modeling, metrology, multi-sensors data fusion, spatio-temporal data analysis,
- Computer vision, deep learning, monitoring and video analytics, Visual Pattern Recognition, Semantic Image Labelling.
- Multimodal (audio/video) processing, Speaker verification and identification, Speech analytics.
- Process & Data mining, Semantic Information Extraction.
- Deep Learning from complex data, Data Analytics Infrastructures, predictive models Interactive network-based.
- Internet of Services, Planning for Collective Systems, Gamification.
- Cyber security for IoT data, techniques for accessing and removing authentications, authorizations and security problems.

