



Wrocław  
University  
of Science  
and Technology



# Wrocław University of Science and Technology

GeoLi Networking Event  
BrineRIS project



Faculty of  
Geoengineering,  
Mining  
and Geology



HR EXCELLENCE PROGRAM

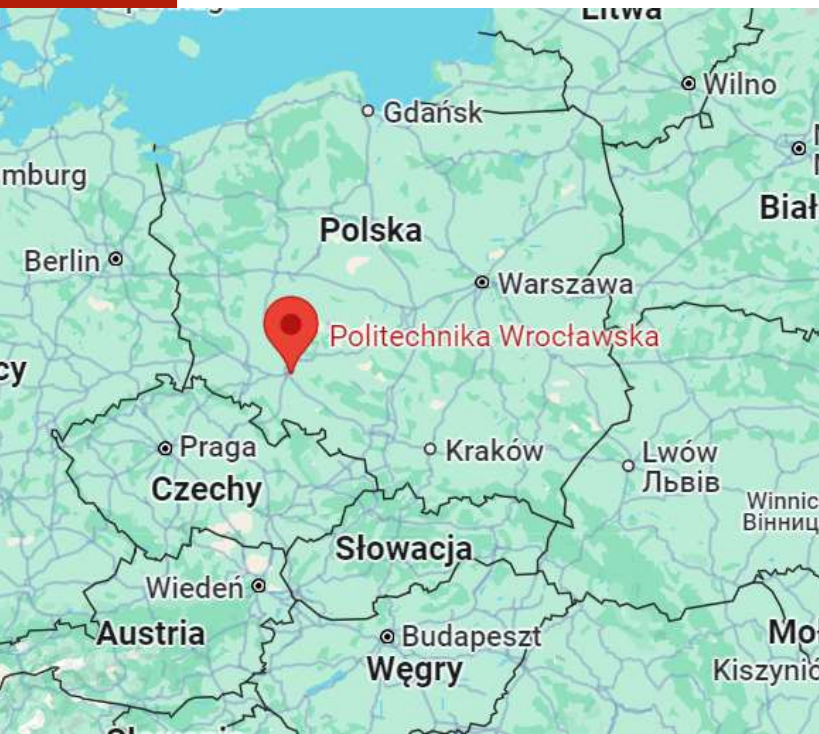




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# Wrocław University of Science and Technology

The University is using its current name since 1945. It was established and organised by scientists from Lviv and Warsaw. Since the very beginning of its existence, it has been an important centre of technical education.



Today it is one the best technical universities in Poland:

24 984 students study here under the guidance of over 2 100 academic teachers, at 14 Faculties in Wrocław and 3 branches in Jelenia Góra, Legnica, Wałbrzych



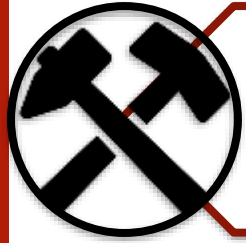
# Discover our Faculty

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- The Faculty was established in 1968
  - In February 2013 we moved to the new Geocentrum building
  - Since November 2019 we have a new laboratory building GEO-3EM beside Geocentrum
  - The GEO buildings are connected with the main WUST campus by a cable car
  - Our campus is close to the city center but it is very green and quiet
- 



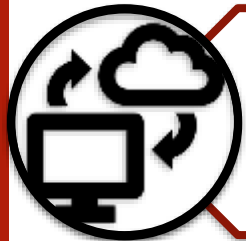
# Fields of studies



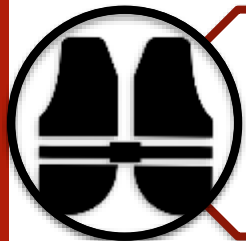
Mining and Geology



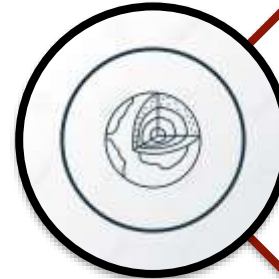
Geodesy and  
Cartography



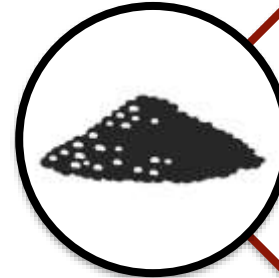
Geoinformatics



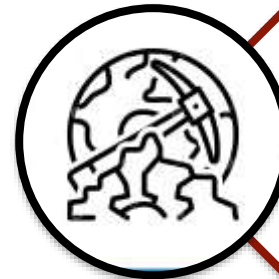
Occupational Health and  
Safety



Geoenergy  
Engineering



Raw Materials  
Engineering



Applied Geology

# Master programs in English

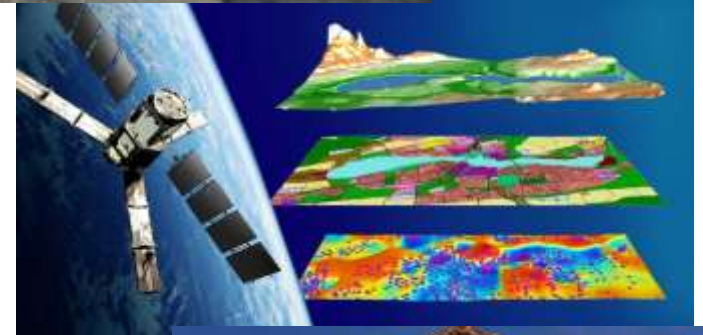
## ***Field of study: Mining and Geology***

Specialisations:

- Mining Engineering
- Geotechnical and Environmental Engineering
- Geomatics for Mineral Resource Management
- Mineral Resource Management (TIMREX) -  
Partners: University of Miskolc, University of Zagreb, Lulea University of Technology
- Master in Entrepreneurship, Innovation and Technology Integration in Mining (MEITIM) -  
Partners: Technical University of Madrid, Lappeenranta-Lahti University of Technology

## ***Field of study: Geodesy and Cartography***

Specialisation – Geodata Engineering



# Understand Experience Share Discover



High proportion of **active classwork hours** (projects, laboratory classes, seminars, calculation classes)



Good cooperation with the mining industry in Poland - **internships, technical excursions, MSc project topics**



**State of the art computer software for the Mining industry**

Datamine Studio, Datamine 5DP & EPS, Geovariances Istatist, Minesatis, Statsoft Statistica, FlexSim, Geovisionary (VR), : RS3 v.2.0, Dips v.7.0, RocTopple v.1.0, RS2 v.9.0, Slide v. 7.0, RocData, FLAC3D v. 6.0, PFC3D, 3DEC v. 5.2, Rhino, Griddle, ExaMine, SIMCENTER3D, NASTRAN, ARC GIS, Geostudio, GMTSAR, and more



**Industry specialists employed**

# Faculty of Geoengineering, Mining and Geology in numbers

**STUDENTS IN TOTAL: 720**

- Full time students app. 90%
- Part time students app. 10%
- Diploma issued 120 (in 2022)

**ACADEMIC TEACHERS: 82**

Professors 27 (+ 3 Visiting professors)  
Assistant Professors 55

## Student admission 2019-2023

Geoenergy Engineering (GEN)

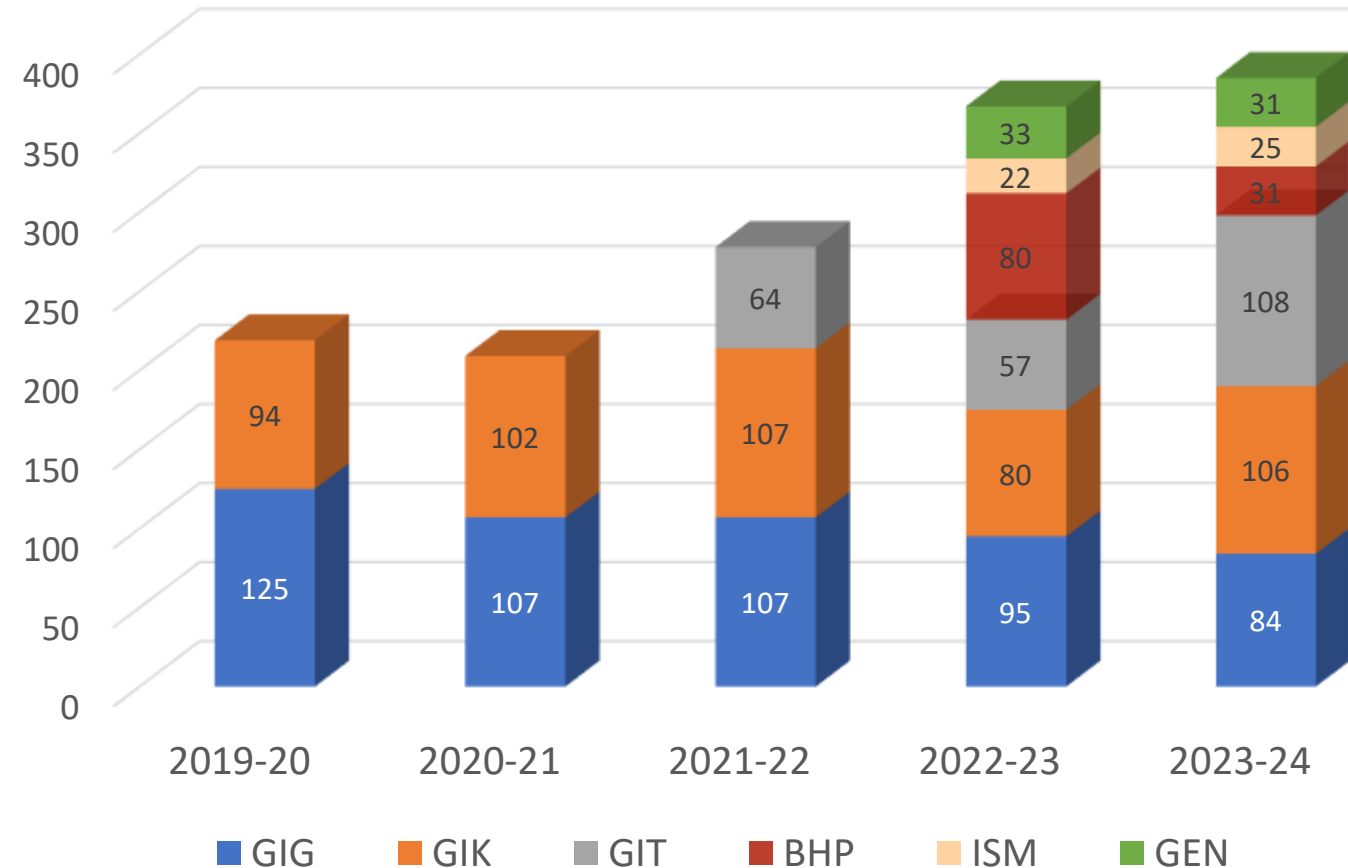
Raw Materials Engineering (ISM)

Occupational Health and Safety (BHP)

Geoinformatics (GIT)

Geodesy and Cartography (GIK)

Mining and Geology (GIG)





# Student Activity

*Mining traditions*



# Student Activity

## *Student research groups:*

- *“THE MINER”*
- *GROUP OF YOUNG GEODESISTS*
- *GIS RESEARCH GRUP*
- *“REVIMINING”*
- *“SAFETY TEAM”*
- *GEOSCIENCE RESEARCH GROUP*





# Faculty Structure

## Faculty of Geoengineering, Mining and Geology

### Department of Mining

### Department of Geodesy and Geoinformatics

[kg.pwr.edu.pl](http://kg.pwr.edu.pl)  
+48 71 320 48 76

[kgig.pwr.edu.pl](http://kgig.pwr.edu.pl)  
+48 71 320 68 75

#### Department of Mining

Head – **Prof. Robert Król**, DSc, PhD, Eng.

Deputy head – **Urszula Kaźmierczak**, PhD, DSc, Eng.

Deputy head – **Zbigniew Krysa**, PhD, Eng.

#### Department of Geodesy and Geoinformatics

Head – **Jan Blachowski**, PhD, DSc, Eng.

Deputy head – **Justyna Górniak-Zimroz**, PhD, DSc, Eng.

Deputy head – **Anna Kopeć**, PhD, Eng.

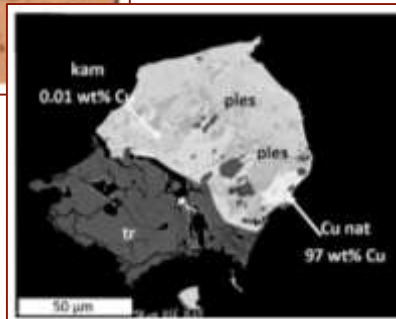
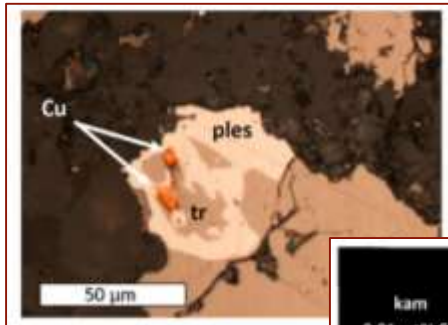




# GEO-3EM - ENERGY ECOLOGY EDUCATION

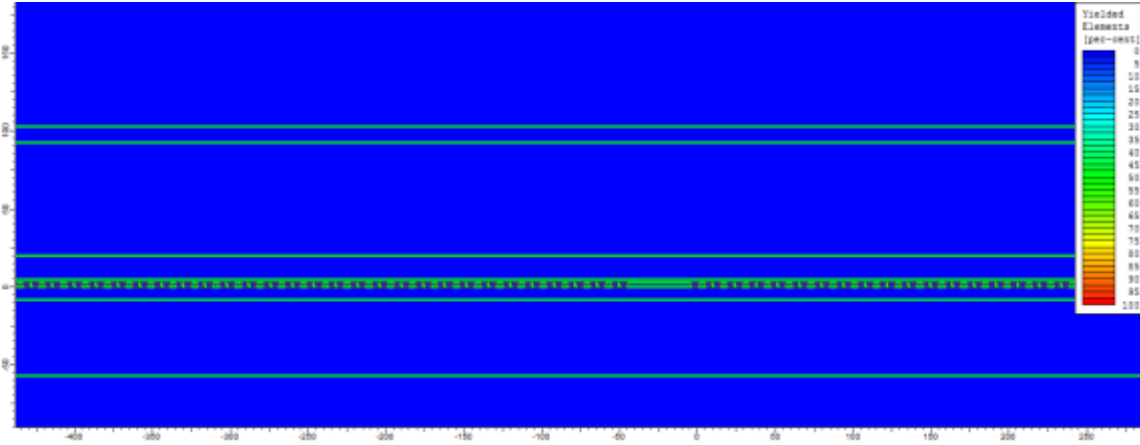
Laboratory of Earth Sciences and Mineral Engineering  
Laboratory of Modelling Technology in Mining  
Laboratory of Machine Systems in Mining  
Accredited Belt Conveying Laboratory  
Accredited Work Safety Laboratory



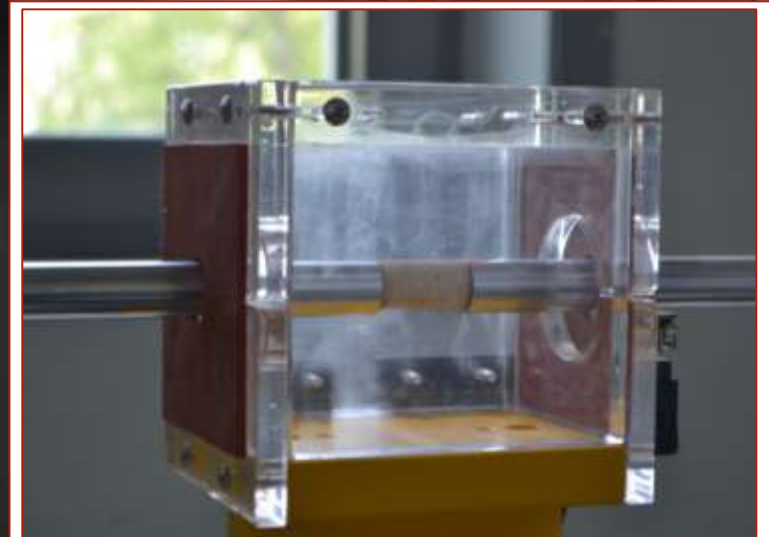


# Laboratory of Earth Sciences and Mineral Engineering

# Laboratory of Modelling Technology in Mining

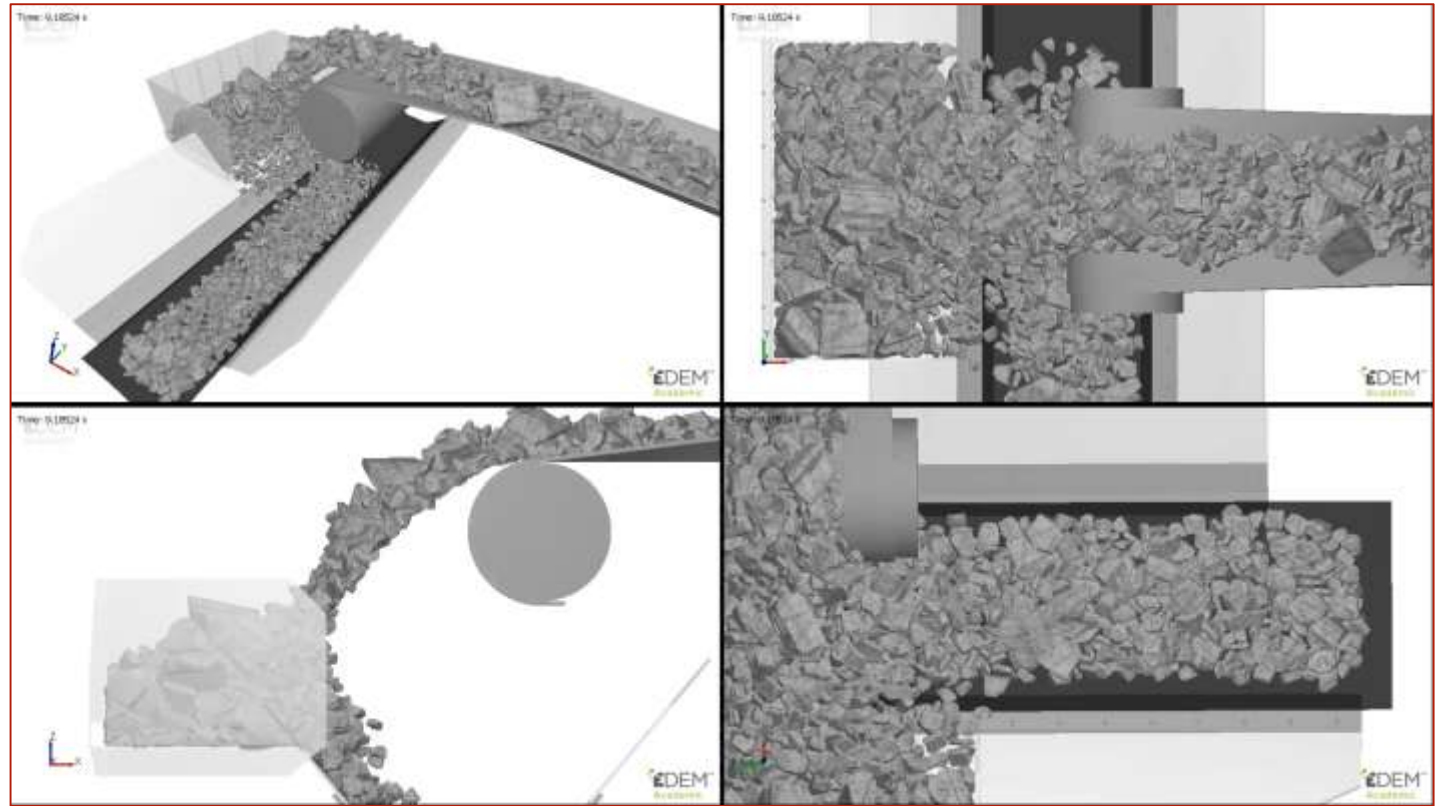
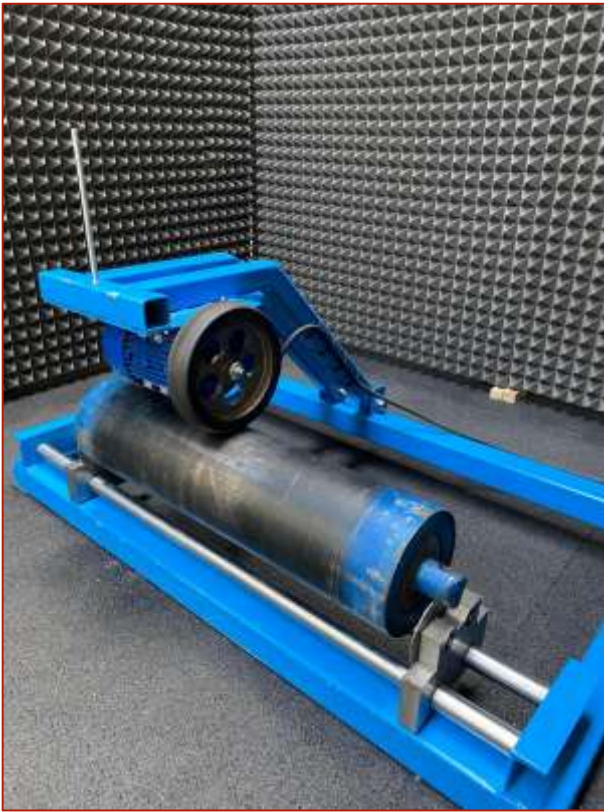


(Source: Strech T. Modelling of the Life-of-Mine plan of a lignite surface mine with regard to optional mining costs. Master thesis, WUS&T-2016)  
[educational licenses of Datamine Studio RM and NPV Scheduler]  
Pit advance according to the Life-of-Mine schedule  
Years: From 1 To 3:





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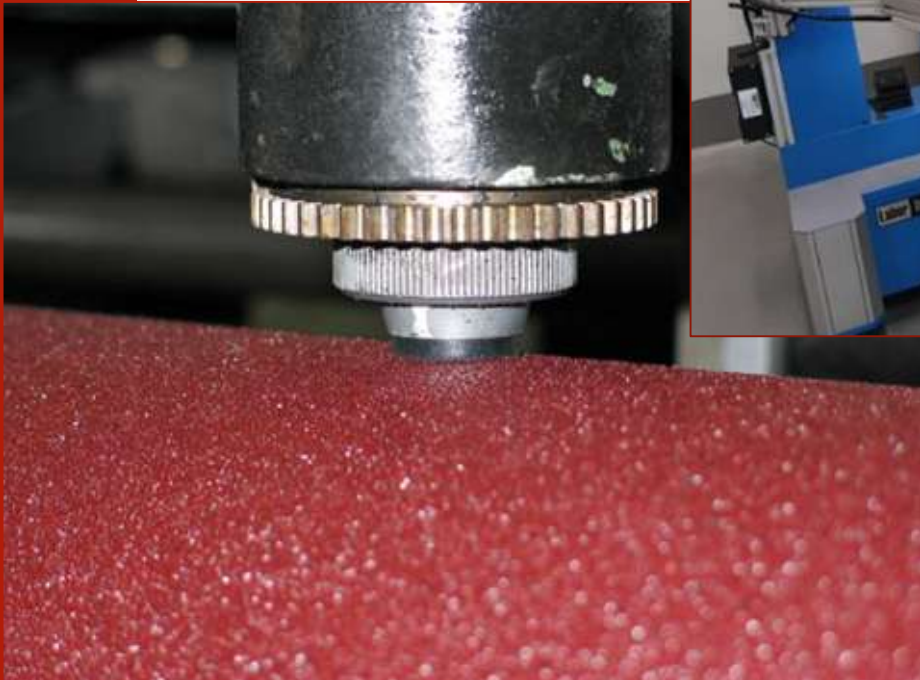
# Laboratory of Machine Systems in Mining



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# Accredited Belt Conveying Laboratory

TEST OF STRENGTH  
AND ELONGATION  
OF THE BELT



ABRASION RESISTANCE TEST

TESTING THE STRENGTH  
PROPERTIES OF RUBBER



# Accredited Work Safety Laboratory



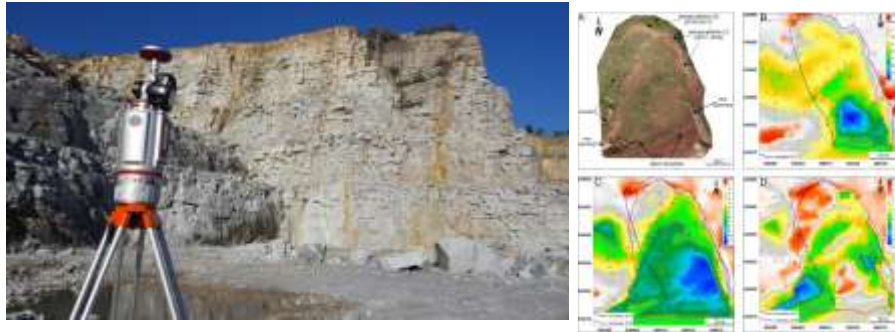


# Modern Geodesy for Mineral Exploration and Mining

Mobile Laser Scanning System (MLS LiDAR)



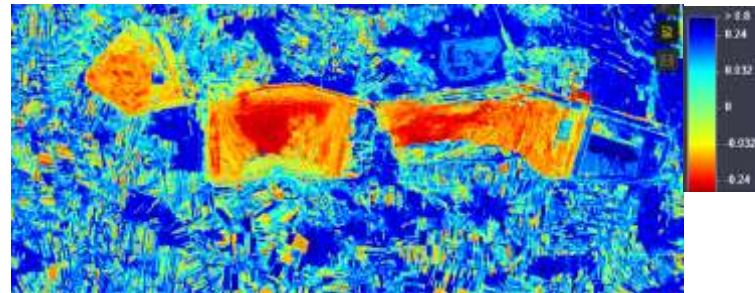
Landslides and quarries monitoring



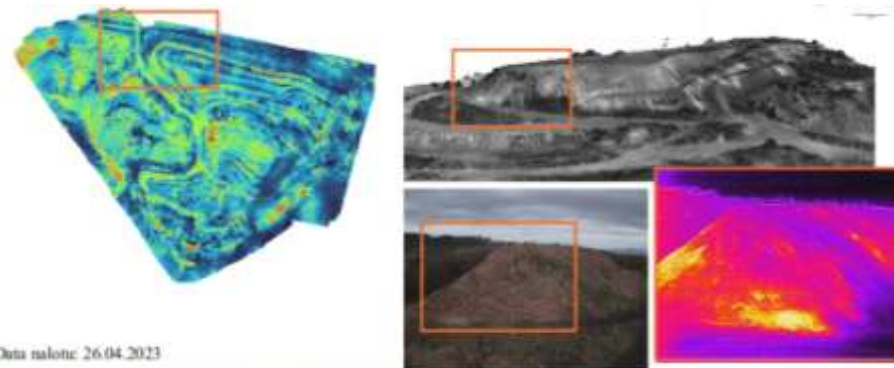
Remote sensing (Sentinel)



Vegetation Index NDVI



Humidity Index



Photogrammetry



Identification and monitoring of post-mining heat islands

# Digital Mining Center

## Mobile Inspection Robotics, Monitoring, Diagnostics and Modeling of Processes, Machines and Environment



# International research projects - currently ongoing

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- Electrical Computerised Hammering Operator (**ECHO**)
- Brines of RIS countries as a source of CRM and energy supply (**BrineRis**)
- Ventilation Optimizing Technology based on 3D-scanning (**VOT3D**)
- Closed-Loop Impact Monitoring for Environmentally and Socially Acceptable Energy Transition in Rural Regions (**CLEAR**)
- New technology for hydrogen and geopolymer composites production from post-mining waste (**H2GEO**)
- Smart Sustainable and Multifunctional Use and Management of Forests (**SILVA NYMPHA**)
- Advancing Post-Mining Waste Dump Safety and Sustainability (**MidSafe**)
- Miniaturized Robotic Systems for Autonomous In-Situ Exploration of Critical Raw Materials In Deep Land Deposits (**MINOTAUR**)



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HR EXCELLENCE IN RESEARCH



# Thank you for your attention