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Department of Technological Innovations

Event: 4 Networks Conference, 28. - 29.09.2023 Rome, Italy

Speaker: Michal Kortiš

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Topics

- introduction to the Slovak Environmental Inspectorate
- IMPEL NPRI implementation
- introduction to the Department of Technological Innovations
- already acquired technical equipment
- examples of activities
- plans and challenges
- positives / negatives

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Slovak Environmental Inspectorate

- founded in 1991
- HQ in Bratislava
- General Director: Mr. Ján Jenčo
- 250+ employees
- specialized supervisory authority providing the state supervision and imposing fines on the matters concerning environment protection and carrying out the national administration in the field of integrated pollution prevention and control
- professional control body and inspection authority of the Ministry of Environment of the Slovak Republic, IED permitting authority of the Ministry of Environment

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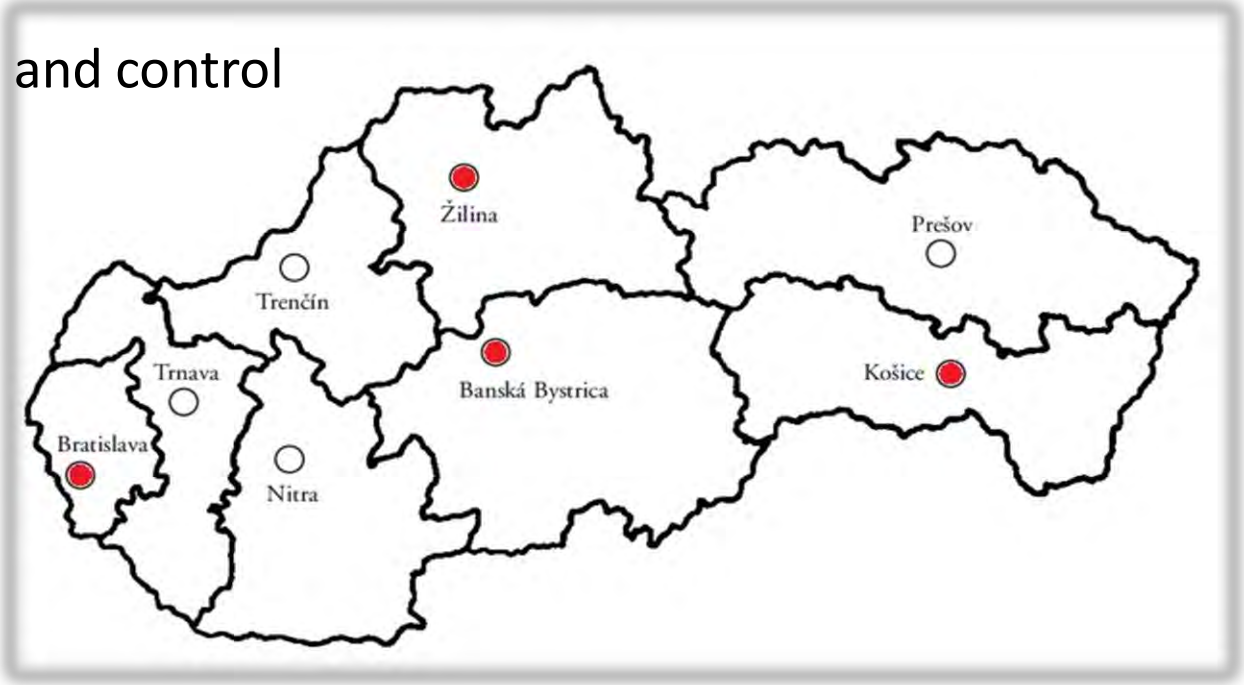
Slovak Environmental Inspectorate

- performs environmental policies in the following fields:
  - waste management
  - water management
  - IED – integrated pollution prevention and control
  - air protection
  - nature protection
  - biosafety

- regional inspectorates:
  Bratislava, Banská Bystrica, Žilina, Košice



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European Union Network for the Implementation and Enforcement of Environmental Law

IMPEL NPRI

IMPEL NPRI implementation

- IMPEL decided to support its members in **developing capabilities in carrying out peer reviews, autonomously, at national level** with different aims, e.g.:
  - improve homogenity of behaviour inside a nation,
  - discuss and find solutions, in respect to country specificities, to overcome the EU legislation implementation issues,
  - share best practices as answer to the challenges faced, etc.
- Peer Review:
  - a discussion among equals, not a hearing by a superior body,
  - a flexible tool,
  - it does not commit to a rigid position or obligatory course of action

The specific project having this aim is named:

National Peer Review Initiative - NPRI

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European Union Network for the Implementation and Enforcement of Environmental Law

IMPEL NPRI

IMPEL NPRI implementation

- The NPRI Project Team: 14 countries, 20 organisations, 33 officers
- Leaders: Fabio Carella (Italy) – Pieter-Jan van Zanten (Netherlands) – Giuseppe Sgorbati (Italy)

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European Union Network for the Implementation and Enforcement of Environmental Law

IMPEL NPRI

IMPEL NPRI implementation

- Slovak Environmental Inspectorate proposed an innovative field of application for the Peer Review methodology:
    - *Peer Review as a tool to support the development of a new part of its organization – the Department of Technological Innovations*
- this proposal allowed to implement NPRI in another very important field: **Organization**
- the legacy of this project will be very important in IMPEL Community
- challenges:
    - determining the priorities of the organization as well as the inspectors, balance their needs to align the development of technical and innovative resources with the needs of the organization,
    - creating a need among stakeholders (internal, external), as there may be a tendency to stick to the more traditional approach

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Department of Technological Innovations

- new department established in 2022
- 3 employees based in the headquarters in Bratislava (1 has UAV pilot's license)
- 1 employee located in the regional inspectorate Košice
- 1 employee located in the regional inspectorate Banská Bystrica
- our plan is to have 4 + 4 employees (HQ + regional inspectorates)
- the department provides technical support for our inspectors in the area of using technological innovations (HW, SW, specialized tasks)
- the main goal of the department is to apply the latest techniques and technologies in the area of environmental protection

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Using of GNSS devices

Illegal logging identification by the UAV

UAV training in Bratislava

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NPRI Oradea, cross-border point

Visit in „ZEVO Plzeň“ in Czechia

LAPIA project meeting (ESA participation)

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Acquired equipment

- Drone DJI Mavic 2 Pro
- Hunting cameras
- RTK GNSS survey devices
- QGis software

QGIS

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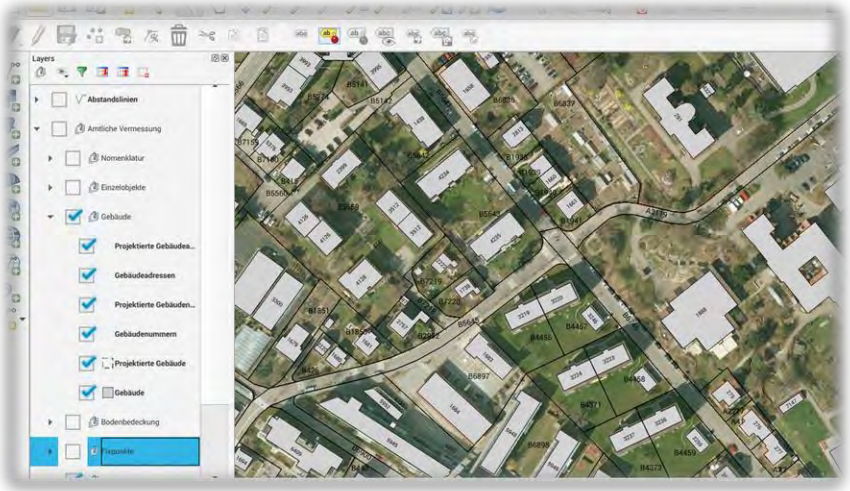
Examples of activities



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Using of GNSS survey devices in practice

- identification of illegal activities on the ground
- identification of landscape and determination of boundaries in the field and the forests
- surveying of areas where illegal activities take place such as landfills, felling of trees, places of water pollution
- postprocessing of measurement data in the GIS software

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Using of UAV’s in practice

- logging area inspection

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Using of UAV's in practice

- logging / deforestation area identification
- comparision of aerial footage vs. drone footage in basic 3D model

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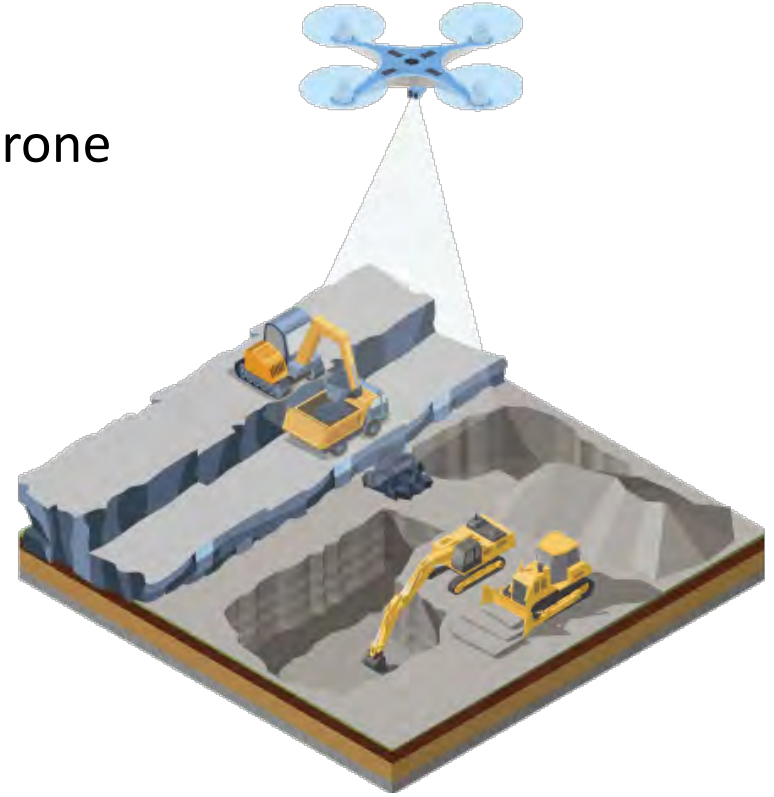
Benefits of UAV's – vision of the department

- current conditions - taking photographs and videos only
- desired status - to acquire surveying drone, inspection drone and photogrametric software
- to streamline the work of inspectors and provide more robust outcomes



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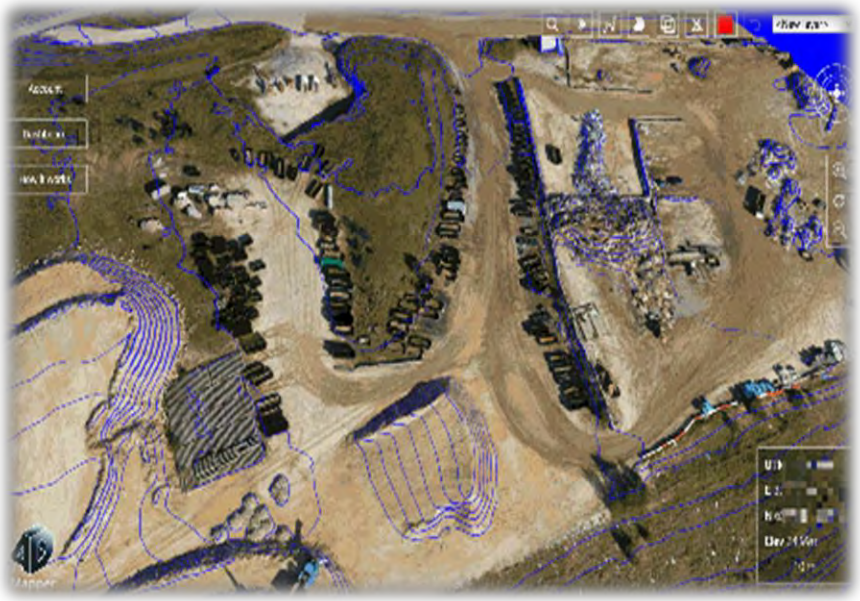
Benefits of UAV's – vision of the department

- to identify spatial changes to the landscape
- control topographic measurements of landfills
- to provide visual area inspection
- search for illegal discharges of wastewater
- etc.



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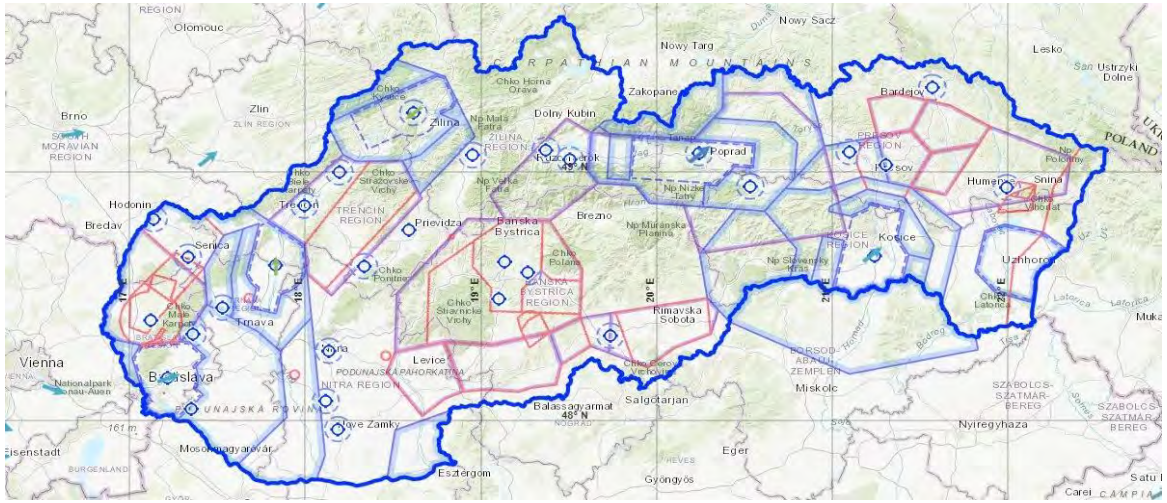
Benefits of UAV's – vision of the department

Expected benefits:

- fast surveying of smaller areas with high resolution
- rich outputs from photogrammetric missions
- surveying in difficult terrain
- increasing the accuracy of outputs by combining aerial surveying and terrestrial surveying
- detection of various leaks
- reduced workload (time savings)

Expected limitations:

- legislative restrictions (fligh zones)
- sensitivity to meteorological conditions
- drone range (battery life)



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Plans and challenges

- to acquire professional inspection UAV's Mavic 3T/3E (RTK module, infrared camera) with the respective software (PIX4Dmapper, PIX4Dsurvey, UgCS PRO)
- Vanta XRF Spectrometres
- professional trainings – using of GNSS devices and UAV's, working with geospatial data, QGis software, advanced geodetic methods and techniques, data postprocessing
- IMPEL NPRI project
- GIEDA project (satellite Earth observation)
- LAPIA project with Slovak authorities (Slovak Academy of Science, Slovak Technical University, Slovak Geodetical Institute) focused on satellite Earth observation

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Positives

- better protection of the environment
- to use modern and innovative methods
- to streamline the work of inspectors and the inspections performed by them
- to set up processes and internal procedures
- to reinforce good practise sharing
- to reinforce outputs based on data and innovative techniques
- professional development of employees
- ..and more ☺

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Negatives

- lack of experience in terms of using new methods
- distrust of new processes and technologies
- unwillingness to accept positive approach towards new ideas
- lack of information about the department and new techniques
- financial resources for the acquisition of HW and SW
- potential legislative / legal barriers to carry out department activities

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THANK YOU

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