EUROSDR INTERNATIONAL WORKSHOP

# Romania's National Geospatial System and VGI

Crowd-sourcing for updating national databases

**PhD. Eng. Ileana Spiroiu** · ANCPI · National Centre for Cartography · Paris, 30.08 – 01.09.2026

# Agenda

01 National geospatial infrastructure

02 VGI for updating national databases

03 Institutional development

04 Conclusions

# 01

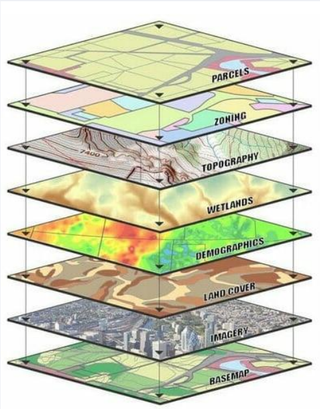
# National geospatial infrastructure

# ANCPI and CNC

- Integrated cadastre and land-registry system for Romania
- INIS Council presidency — INSPIRE implementation across 34 spatial data themes
- Geoportal — central hub of the National Spatial Data Infrastructure
- CNC produces and maintains the geodetic and cartographic datasets, including TopRO5

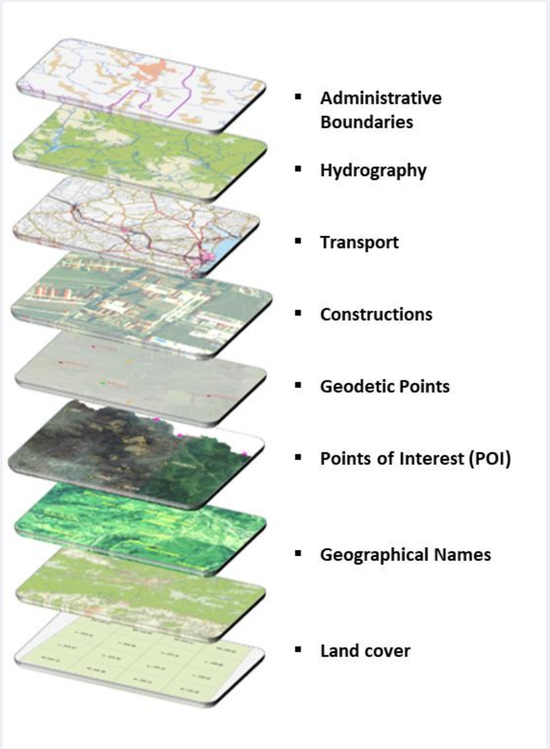
# The INIS Geoportal

- National SDI access point, federated with the European INSPIRE Geoportal (CSW / OGC)
- Full INSPIRE network services — WMS, WMTS, WFS and ATOM, with ISO 19115/19139 metadata
- All datasets in the national reference system EPSG:3844 (Stereo 1970)
- Specialised modules — download engine, INIS Viewer, cadastral viewer, utilities, project register



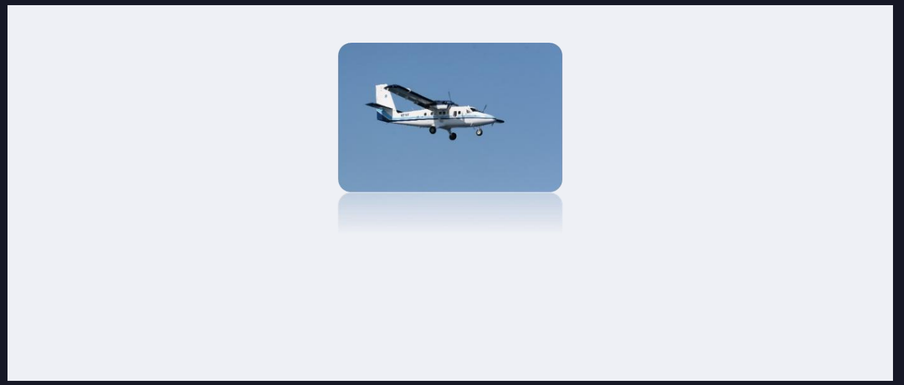
# TopRO5 — the national cartographic base

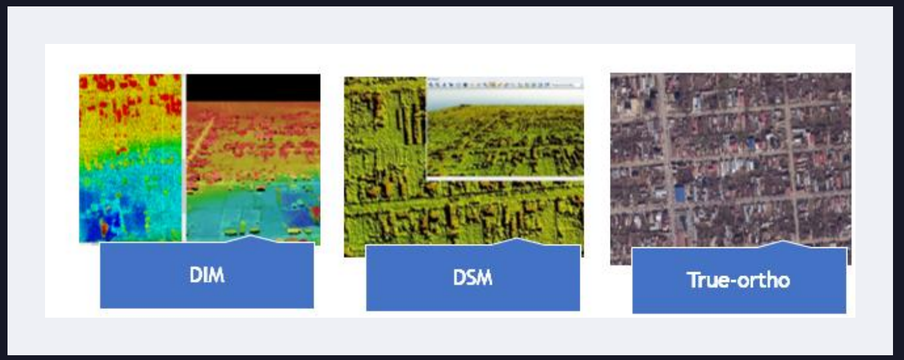
- National topographic dataset at 1:5000 scale, produced by CNC
- Cartographic base for the Geoportal and the eTerra system
- Eight thematic layers — from administrative boundaries and hydrography to geographical names and land cover
- The reference layer against which volunteered data can be validated



# Traditional data acquisition

- 1:5000 orthophotomaps & digital terrain models — AIGA, every 3–5 years
- 100,000 km² of high-resolution DTM & DSM — LAKI II & III, EEA funds
- 150 cities — high-resolution imagery, CNC ORTO project
- 55,000 km of watercourses — Water Cadastre, ANAR, PNRR funds





# 80,000 km

of waterways in ANAR's care — alongside 9,000 km of seawalls and 400 dams.

A vast patrimony, and a moving target for traditional updating cycles.

# High-resolution products for cities

- High-resolution orthophotomap over 150 cities — CNC ORTO project
- Bucharest: 6 cm true-ortho at ±15 cm accuracy; 10 cm DSM at ±20 cm
- 3D mesh of Bucharest — building inspection directly in the model
- Foundation for the 3D cadastre and building-height measurement

High-resolution true-orthophoto — Bucharest

# 02

# VGI for updating national databases

# Volunteer contributions

- Mapping roads, trails, buildings and addresses
- Adding points of interest — schools, hospitals, transport stops, water sources
- Reporting landscape change — new roads, bridges, landslides, floods
- Collecting GPS coordinates and geotagged photographs
- Validating and correcting existing geospatial data

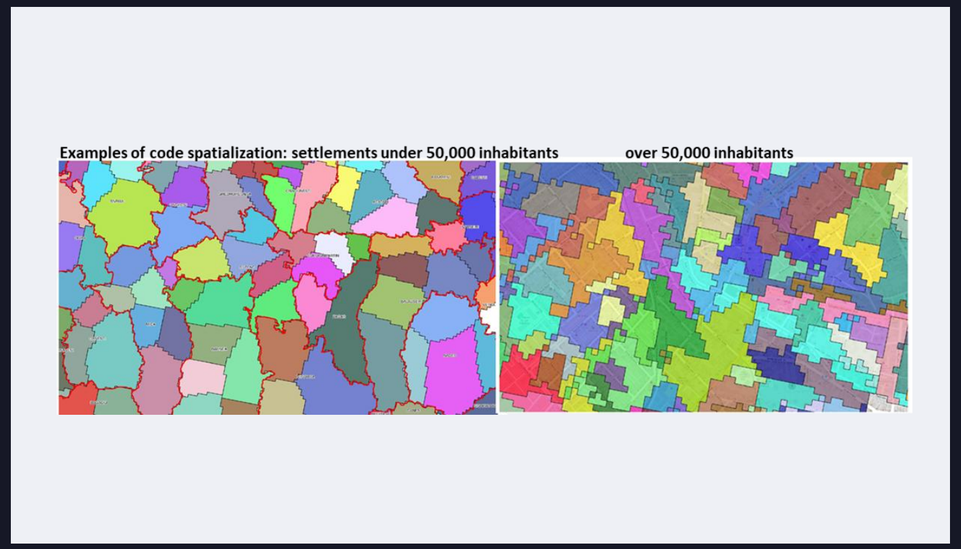
# Postal-code spatialisation hackathon

Static, tabular address data transformed into interactive geographic models — volunteers working from ANCPI's trusted reference baseline.

**33,533**
postal codes spatialised

**84.44%**
matching success

- Trusted national reference data as the starting point
- Volunteers add local knowledge and rapid capacity
- Outputs are practical, visible and reusable




Code spatialisation — settlements under and over 50,000 inhabitants

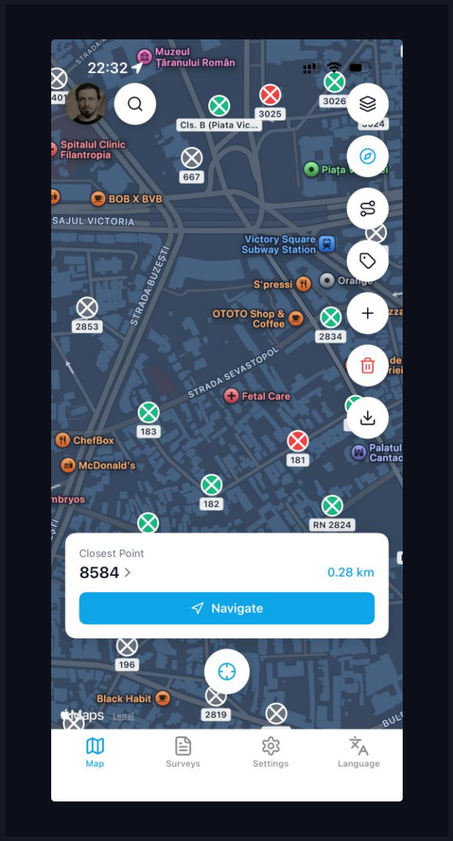
# Community good practice

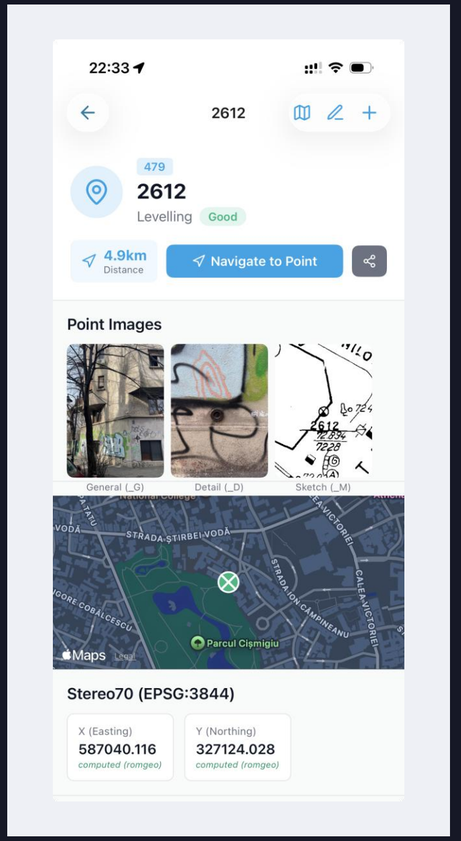
- COVID-19 Romania — volunteer-built open-source dashboard
- Local authority contacts — collaboratively updated open database
- Re-VIBE — students documenting cultural heritage on a national map
- eHarta — collaborative georeferencing of historical maps
- DupaCutremur.ro — seismic-risk awareness through geospatial visualisation

Open data + trusted institutions + volunteer expertise

# GeoReper — crowdsourced geodetic networks

- Field-first platform for geodetic survey points
- Map screen, point coordinates, point status & pictures
- Every field visit becomes a verified observation on the network
- [georeper.app/pitch](georeper.app/pitch)



# 03

# Institutional development

# eTerra and MyEterra

## eTerra — the digital cadastre core

National property records — buildings, land and constructions — with workflows for applications, cadastral documentation and notarial deeds.

Uses TopRO5 as its main cartographic base; notaries and authorised persons already work fully electronically.

## MyEterra — the citizen platform

Land-book and cadastral-plan extracts, free of charge, from a phone or computer — open to mayoralties and county councils since 21 July 2025.

An online application module comes next, including land-use category changes based on local-authority certificates.

# Interoperability registers

eTerra links to three national registers — all built on the National Geodetic Network (RGN) — giving VGI a reliable structure to update.

## RAN

National Agricultural Register — correlates land use with cadastral data for agricultural policy and subsidies.

## RENNS

National Register of Addresses — standardises addresses nationally for emergency response and urban planning.

## RELUAT

National Register of Administrative Boundaries — official delimitation of administrative-territorial units.

# Smart Mapping for Romanian communes

- MoU signed 13 May 2026 — EEA and Norway Grants 2021–2028
- CNC expertise for A.Co.R, the Romanian Association of Communes
- Target: sustainable development of Romanian communes
- First vulnerability addressed — the absence of a digitalised street nomenclature

# 700 Million Points — cartography as art

- Eight years of ROMPOS geodetic measurements turned into works of art by Miluță Flueraș
- Hosted by the National Museum of Maps & Old Books, Bucharest
- Produced by CNC with Intergraph Computer Services
- Geospatial data reaching the public as culture

Exhibition poster — ROMPOS point clouds as artworks

# 04

# Conclusions

# Practical benefits and implications

VGI complements the existing infrastructure when integrated into an interoperable system built on ANCPI registers, the Geoportal and TopRO5.

### Lower update costs

Continuous volunteer input reduces the cost of keeping national databases current between flight cycles.

### Greater transparency

Open, visible contributions and validation build public trust in the national registers.

### Better public services

Fresher addresses, POIs and boundaries improve emergency response, planning and everyday services.

### Stronger digital governance

Validated crowdsourcing within eTerra and INIS supports INSPIRE compliance and sustainable territorial management.

# Thank you for your attention

PhD. Eng. Ileana Spiroiu — Director, National Centre for Cartography

ileana.spiroiu@ancpi.ro · ileana.spiroiu@cartografie.ro