

GeoAI-Territory Use Case

Use Case: Spatial Planning with UAV, GIS, and AI

Project Context

In this simulated pilot project, the objective was to build a modern spatial planning model for a rural community using UAV imagery, GIS-based cadastral data, and AI-driven interpretation techniques. This approach allows for a dynamic and informed territorial development framework.

Data Acquisition with UAV

High-resolution aerial imagery was obtained via UAV to capture the actual land use conditions. The photogrammetric data serve as the visual foundation for identifying unregistered or unauthorized land use areas.

AI-Assisted Interpretation

Large Language Models (LLMs) like GPT-4 were used to interpret unstructured planning documents. This helped extract zoning categories, buffer constraints, and infrastructure plans, transforming qualitative data into actionable layers.

GIS Integration & DEM Simulation

GIS tools were used to overlay drone data, zoning boundaries, and simulated elevation models (DEM). This integration supports urban planners in understanding terrain dynamics and optimizing land use allocations.

Results & Recommendations

The resulting system provides a lightweight digital twin of the planning area, helping decision-makers to:

- Visualize and monitor land use
- Detect zoning violations
- Adjust strategies based on real data

This open-source framework is scalable and adaptable to other territories.