



NEXT GENERATION INTERNET PLATFORM BASED ON 5G AND UAVS FOR PRECISION AGRICULTURE

Scope of the project

- To develop and implement a monitoring and prevention platform for precision agriculture, platform designed using the current 5G specifications and UAVs (Unmanned Aerial Vehicle) for Smart City and Smart Neighbourhood use-cases.
- The role of the platform resides in the soil, air and crop monitoring for communities that want to implement urban farming and/or precision agriculture in or close to residential areas, for both safer food production and air quality improvement.

NGI-UAV-AGRO

Specific Objectives

O1

Technological concept projection and development of basic principles of a NGI mobile platform for precision agriculture starting from the already existing terrestrial telemetry system developed by UPB and BEIA Consult.

O2

Integration of a dedicated wireless sensors network in the NGI 5G-based platform developed during O1 to observe the behavior of all modules. New sensors for crop and soil monitoring, as well as plant diseases observation and analysis will be incorporated in the NGI platform.

O3

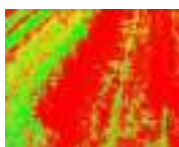
The integration of UAVs for image capturing of crop and soil state in the NGI platform developed represents O3. Team will approach data and image processing in a novel manner using complex databases and Cloud options to store the gathered information from sensors and UAVs.

O4

Extensive experiments will be performed to highlight the accuracy and efficiency of the NGI platform based on 5G and UAVs for precision agriculture in different use-cases. The outdoor measurements will take place in a larger agricultural area in order to extend the database and identify new challenges.

Multispectral image - DJI Phantom 4

Using Multispectral drone, flights were made to collect multispectral images based on which coverage maps were made. The generation of these maps is useful to easily identify the areas of the vineyard where there is viable crop (green vegetation) and where there is no viable crop (area covered with other plants not of interest for monitoring or weeds).



Coverage map - multispectral images



Based on ODM (Open Drone Map) specialized software, the initial processing of the orthophotos was performed using the WebODM interface, achieving thus a single image that shows the entire area covered by the drone's mission, an image called an image mosaic (Orthomosaic).

Consortium:

- UPB - University Politehnica of Bucharest
- BEIA Consult International