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PIGNOLETTO – ADVANCED SYSTEMS TO MAP THE SOIL AND THE ENVIRONMENT

Develop soil and environment precision analysis systems to be installed on remotely piloted devices such as drones or satellites to monitor and study the land with the innovative approach of precision agriculture: this is the central idea of the Pignoletto project, which aims to create a technological hub in Lombardy integrating the skills of the aerospace and agri-food sectors, stimulating and enhancing synergies between the scientific and industrial stakeholders present in the Region. The project is supported by a consortium consisting of INAF, INFN and Milan Bicocca University (departments of Biotechnology and Biosciences, Environmental and Earth Sciences, Systems and Communication Information Technology and Physics) for the research world and six Lombard companies for the industrial sector: Antares, Else Nuclear, Fem2 Ambiente, Aermatica 3D Blu Electronic and Redcat Devices.

The project, selected from the 33 winners of the "Research and Innovation Hub" call launched by the Lombardy Region, aims to implement a multi-scale system for the analysis of soil and environment characteristics, based on the combination of traditional geophysical field measurements with measurements obtained from airborne sensors (i.e. gamma-type ionizing radiation, optical hyperspectral and thermal multispectral sensors), satellite information (PRISMA and Copernicus) and proximity surveys. The project is focussed on a specific area and aims to respond concretely to a series of socio-economic and environmental needs of the Po Valley and, in particular, to the needs of agriculture, a sector constantly looking for innovative solutions to ensure production standards and product quality.

Pignoletto falls within the context of precision agriculture and aims to develop a soil and agroecosystem management system capable of measuring the intensity of human action according to specific needs. Achieving this objective requires a profound and precise knowledge of the soil and its spatial and temporal variables, through detailed survey and monitoring methods and efficient data analysis and interpretation systems.



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Pignoletto is a project that is both highly multidisciplinary and territorial. Indeed, it requires the integration of skills ranging from the development of avionic and satellite systems to the physics of particle detectors and new materials, from the study of innovative strategies in the agricultural and environmental fields to the development of sophisticated computational technologies for the processing, analysis, and interpretation of Big Data and the management of remotely-driven vehicle fleets. The proposed HUB will make it possible to acquire this knowledge and also to respond to other needs, such as the sustainability of forestry systems, the planning of compensatory measures and, more generally, it will support the technological renewal of Lombard companies following Industry Plan 4.0.