

Eurostars: A Romanian company is looking for companies/research centers, experienced in precision agriculture, to be partner for research and development of a modern viticulture management platform

POD Reference [RDRO20180803001](#)

Summary

The Romanian SME with research, innovative and development activities in the IT & C industry has important experiences in public-founded projects. The aim of the proposal is to develop a telemetry and telemonitoring modern viticulture management platform for monitoring vineyards and the productive cycle of high-quality wine in cellars. R&D organizations, active in precision agriculture domain, are sought to be partner or coordinator for research cooperation, within an Eurostars project.

Description

The Romanian company, a R&D performing SME, is one of the main suppliers for telecommunication equipment and IT & C business services in Romania, with an experience since 1991, in more than 5000 commercial projects. Also, the company is involved in many FP7 / H2020 / Eureka research projects.

The proposed project is to develop a telemetry and telemonitoring modern viticulture management platform for monitoring vineyards and the productive cycle of high-quality wine in cellars.

The agro station consists of a remote telemetry unit (RTU) plus appropriate sensors and can be utilized in all areas of agriculture, water management & environmental monitoring. The station allows measurement of necessary parameters for irrigations management, such as precipitation intensity, total rainfall, evapotranspiration and soil moisture. Also, provides other valuable data for precision agriculture. The station collects through appropriate sensors and transmits to a central processing server data such as air temperature and relative humidity, leaf wetness, precipitations intensity, wind speed, solar radiation intensity, soil moisture etc. With reliable data, efficient decisions can be made regarding management of the growth cycle for crops, such as planting, irrigation and fertilization.

This project lies on deployment of a sensor networks (SN)-based system for monitoring the productive cycle of high-quality wine in a winery. Besides providing the means for monitoring of the cultivated area, the project is aimed to support the producer in ensuring the overall quality of their production, in terms of accurate planning of interventions in the field and preservation of the stored product. SN are employed as the sensing infrastructure of a distributed system for the control of a productive chain; RTU have been deployed both in the field and in the cellar, where wine aging is performed and data is collected at a central unit in order to perform inferences that suggest timely interventions that preserve the grapes' quality.

In the present project, the company proposes the use of two networks, one for the vineyard, and another for the wine cellar, in order to monitor the micro-climate at the grapevines and to provide some traceability capabilities.

The quality of wine depends on many elements. In particular, influencing factors are the local and global environmental parameters and the cultivation techniques performed in the vineyard. The microclimate of the grapevine is thus affected by the environmental conditions of a limited area along each of the poles, where the vine grows; it is typically measured by

monitoring the parameters that affect the growing and ripening of grapes, such as air temperature, relative humidity, solar irradiation, soil moisture and soil type.

One of the goals of the project is to gain insight on potential relationships among the macro-climate of the entire vineyard, and the micro-climate on each vine in order to support the agronomists in deciding on the most appropriate interventions to be taken during the growing phase of the plants.

The Romanian company will collect and process the data from the field - climate conditions, will manage the risk of culture illness and record the fertilizer used; also, inside the wine cellar will be monitoring some parameters, as well as temperature and fermentation in the tank.

The partner should be from any Eureka eligible country with experience in wine process production and his contribution will be focused on an application development for production management and manufacturing process control from the grapes acceptance up to bottling for the cellar market.

Also, the partner involved in the Project should have specialists in the viticulture domain and wine-making, farmers, oenologists, mathematicians.

Deadline for EOI: 31 January 2019

Deadline for Call: 28 February 2019

Project duration: 104 weeks.

Advantages and Innovations

This innovative solution will integrate very different technologies, communication protocols and a large variety of sensors to solve the connectivity requirements that are needed in areas like Precision Agriculture (wine, fruits, vegetables, cereals), water management, environment monitoring, cybersecurity, smart building, smart city, smart energy.

blockchain technology will be used for big data management in precision agriculture, allowing different farmers & winegrowers to be integrated into the blockchain without losing data consistency. Once data is recorded in a block, the record cannot be corrupted retroactively without affecting all of the subsequent blocks and risk the collusion of the network, while cyber attacks are very difficult to be performed due to the distributed nature of the blockchain architecture.

Some other benefits:

- increasing the productivity in agriculture, the solution will prevent the plant diseases, will contribute to the efficient use of water irrigation and sustainable use of pesticides.
- scalability, reliability and a very low energy consumption.
- smart connectivity with existing networks and context-aware computation using network resources.