

Agrodat.hu: supporting precision agriculture with data solutions

Thursday, 21 May 2015 16:15 (20 minutes)

Precision Farming in agriculture is a special method of crop management that allow farmers to decide on (among others) which areas of land/crop within a field can be managed with reduced levels of fertilizer, chemicals, and irrigation water depending on e.g. the yield potential of the crop in the given area. There are benefits of the method; the cost of producing the crop can be reduced and, on the other hand, the risk of environmental pollution can be also significantly smaller at the same time.

In general, for implementing precision farming and related methods a vast amount of data is to be collected and analyzed from the fields. Wider scale projects including national level projects, such as Agrodat.hu from Hungary, require even more sophisticated ICT and big data solutions starting from the sensor level, through the applied communication network, and by ending with the data processing/storage facilities, and knowledge centre. The ultimate aim of AgroDat.hu project is to create such knowledge centre based on the local sensor data and also integrating data from international repositories.

Concerning the sensors, more than 1000 newly developed complex sensors are under deployment at various selected locations in Hungary. The complex sensors have modular structure with facilities to measure environmental factors (weather, soil moisture, etc.) and later phenotypes and other parameters continuously at least for 3 years. The communication network is based on GSM network and M2M communication enabled SIM cards.

For processing and storing data and also for providing services for researchers, farmers, decision makers, etc. a new big data server farm is under deployment with hierarchical storage with noSQL database, GPGPU cluster for processing the raw data (images), Hadoop servers, etc. Open Stack with Ironic is responsible for providing an elastic and flexible cloud framework for the higher level software services; (among others) aggregation, processing, and decision support systems. The aggregation of related scientific and other data from international repositories relies on the integrated workflow-oriented services of the agINFRA project. The new Agrodat.hu solution with AGROVOC and HP Autonomy (IDOL) tools enable the data managers and researchers to access and use for data mining and analytical purposes more than 1000 international repositories registered in the CIARD RING (supported by Global Forum of Agricultural Research and FAO).

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Session Classification: Towards an Open Data Cloud (<http://go.egi.eu/data>)