



## Demonstration of FOODIE specification on Czech pilot implementation

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The agriculture sector is a unique sector due to its strategic importance around the world. It is crucial for both citizens (consumers) and economy (regional and global) which, ideally, should make the whole sector a network of interacting organizations. Rural areas are of particular importance with respect to the agri-food and environmental sectors and should be specifically addressed within this scope. The different groups of stakeholders involved in the agricultural and environmental activities have to manage many different and heterogeneous sources of information that need to be combined in order to make economically and environmentally sound decisions, which include (among others) the definition of policies (subsidies, standardization and regulation, national strategies for rural development, climate change), development of sustainable agriculture, ensure crop and animal food production, , pests and diseases detection, etc. In this context, future agriculture knowledge management systems have to support not only direct profitability of agriculture or environment protection, but also activities of individuals and groups allowing efficient collaboration among groups in agri-food industry, consumers, public administrations and wider stakeholders communities, especially in rural domain.

Nowadays a various data could be obtained by common farm management. Traditionally, in a plant production this such data brings comprises information about fields, soil conditions and crop treatments. Moreover, data for a plant production also includes, but also sensor data are recorded from a variety of stationary and mobile devices such as farm machines, crop sensors, weather stations, etc. A cloud platform for collection, storage, sharing and analysis of large quantities of spatially and non-spatially referenced data is being developed In the European project “Farm-Oriented Open Data in Europe” (FOODIE) is developed a cloud platform for collection, storage, sharing and analysis of large quantities of spatially and non-spatially referenced data.

For data integration of agriculture data FOODIE introduced the open data model. The open data model supported the evidence of all treatments that were used in a certain place as well as (where appropriate) to store relevant information on the application of those treatments. The stored data should together answer the questions like “What amount of which treatment was used in a certain place?”, “When it will be safe to apply another treatment?” or “Is the treatment registered and allowed in the European Union/Member State?”

The FOODIE data model is based on INSPIRE specification for Agricultural and Aquaculture Facilities., The FOODIE data model is based on the Activity Complex model.. Within INSPIRE, “Activity Complex” denotes a generic name agreed across thematic domains trying to avoid specific thematic connotations such as “Plant”, “Installation”, “Facility”, “Establishment” or “Holding”. Such scope may be identified for this paper as the Nitrate Directive or Water Framework Directive

A Collection of data was verified on within the FOODIE Czech pilot farm with 1’214 ha of arable land to obtain information about farm machinery management and agro-meteorological observation. Selected tractors and implements were equipped by telemetry units to record vehicle trajectory in the fields and a wireless sensor network was established to observe meteorological conditions within a two fields with cereals. For these such purposes, a novel data model was developed to manage both sensor data and farm records within one platform simultaneously with the client application, which allows end-users to make visualization and analysis of farm data.

The Czech Pilot is addressed to improve management and logistic of farms and agriculture service companies, introducing new tools and crop management methods for reduction of environmental burden while maintaining production level. In The Czech pilot machinery and meteorological data has been collected almost 7 months and the data collection process continues. As the first part of project is called proof-of concept stage, we have been experimenting with various settings of monitoring units to find the most suitable values of parameters affecting data collecting frequency. At this moment the volume of collected data is sufficient for purposes of testing FOODIE data model, tools and services. We are now starting to use FOODIE data model to connect the collected data with other farm related information and to define analysis focused on evaluation of economic efficiency of crop production on different fields.

Results are now available on <http://foodie-data.wirelessinfo.cz/>