LOCATION

Germany

PARTNERS

2.2

# Automated Documentation of Arable Crop Farming Processes

CHALLENGE

Today, agricultural processes are often documented with a considerable time lag after they are carried out, leading to inaccuracies. In addition, the cost of a job depends on various factors like the fuel consumption of a machine, labour time, and the efficiency of the job with regard to the weather conditions. Due to these influences, and others, occurring over a period of several months, farmers and contractors cannot assess the total cost of a job. Most farmers mainly rely on themselves and their resources for documentation, impairing the quality and quantity of the outcome.

AIM

This pilot will develop an automated job identification and documentation, and job cost calculation for fertilisation, tillage, seeding, and spraying applications. This will largely eliminate the need for manual documentation.
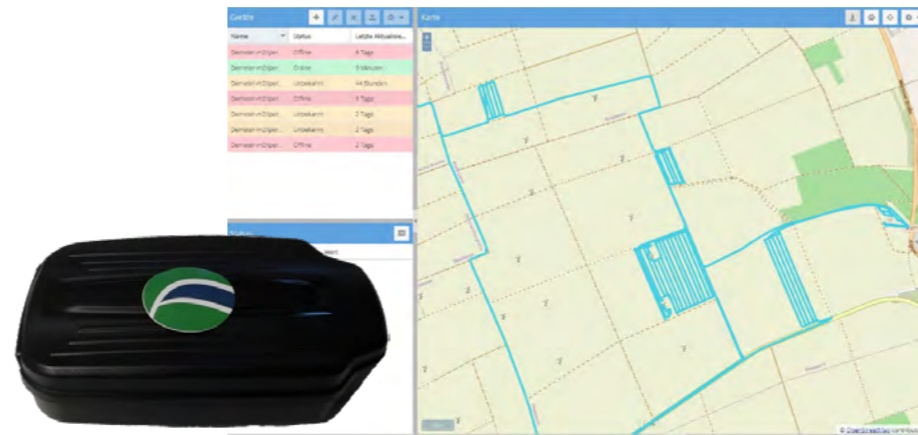
HOW

The focus of the job cost calculation element of the pilot will be on fertilisation and spraying applications for winter wheat. These jobs are done several times in the year and will therefore deliver more data than seeding or harvesting, which are only executed once per field.

For the development of an automated documentation tool, the detection of the difference between fertilisation spraying, tillage and seeding jobs will be the most challenging part of job identification. It is based on sensor data from machines and external sensors such as satellites (e.g. sentinel) and on data from weather stations.

Position and movement data are analysed for automatic process identification. Other external data like the seasonal date of measurement for estimating the relevant process season and weather data or satellite images for checking the plausibility of processes are added. This system is to make process forecasts for automated documentation.

Furthermore, this pilot will make use of data quality assessments to support the development, and to further increase the quality, of these data-driven services.

BENEFIT

Given the many factors influencing a profitable job application, the abovementioned approach delivers three major benefits. On one hand, job cost prediction has the potential to increase farmers' and contractors' productivity. In addition, the automated job documentation and collected weather information will improve decision support. Finally, automated documentation will help in terms of time efficiency and precision of the process.