Digital public services for water

Smart water distribution for agricultural land using satellite imagery, weather data, and machine learning

Drought - A challenge for agriculture and the environment

Following the drought years of 2018 and 2019, farmers continued to face major challenges in 2020 due to insufficient rainfall. As well as causing agricultural land to lose its value, droughts also have a direct impact on humans, animals, and the environment: the lack of water leads to drinking water shortages, an increased risk of wildfires, a threat to species, and the decline or absence of crop yields.

These problems are particularly acute in areas where crops depend on a continuous supply of water. More frequent and prolonged droughts dry up the soil of various ecosystems, making land unusable.

Due to this ecological and economic damage, public services are faced with problems that require decisions and legal regulations for the fair distribution of water.

Overview

Application: Farms and public institutions

Industry: Agricultural sector

Region: Germany

Challenge: The country and municipal authorities face major challenges, as the consequences of drought will increase enormously in the coming years. This requires decisions on fair water distribution, so that public and agricultural land can be irrigated in a resource-efficient manner.

Solution: Decision-making processes can be simplified by AI-based data analysis and soil moisture forecasting. Predictive and prescriptive analytics therefore help to ensure optimum water distribution so that agricultural land can be sustainably irrigated.

Additional benefits:

- Lasting contribution to public services through fair water distribution
- Sound decision-making and planning basis for farmers
- The data used can be correlated with farms' financial results

Smart and fair distribution of water with the help of AI

To support public and private water management and regulation, Capgemini is developing a decision-making tool that uses data analysis to provide soil moisture forecasts and recommendations for water distribution on agricultural land.

The digital farming tool deploys AI-based analysis of satellite images and intelligently links this to existing environmental data. By analyzing weather data and soil changes over the past 20 years, and by recording the current status as well, the soil moisture conditions can be determined and the amount of irrigation calculated.

This way, predictive and prescriptive analytics create a reliable and comprehensive foundation for decisions regarding the irrigation of agricultural land. The data derived from the tool can also be correlated with farms' financial results to gain further insights.

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