



CASE

ForFarmers optimises the food chain with smart data products

ICT Group builds data lake in cloud based on Azure

The world's population is growing. People need to eat enough protein, which is why dairy and meat play an important role. At the same time, animal feed production creates CO₂ and nitrogen emissions. ForFarmers' ambition is to contribute by helping to solve these challenges through better animal nutrition and guidance for farmers. To help make this possible, ForFarmers uses insights gained from data.

Can we digitalise knowledge about the impact of ingredient changes on recipes so that we can predict the impact on feed quality even more efficiently? Can we help farmers to determine even better when piglets, calves or chicks should switch to other feed that better suits their growth phase? It was these and other business questions that prompted the development of a data storage and analysis platform in the cloud. A DevOps team from ICT Group's Industrial Automation division realised the platform, develops predictive algorithms and is responsible for managing the environment.

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Digital innovation

Digital innovation is a key pillar for ForFarmers. It needed a platform to bring together data from a variety of sources. And that was a challenge, as the company has traditionally been organised in a decentralised way. This was the reason that the initial focus was on centralising the fragmented IT landscape.



Data lake in the cloud

The next step was to bring data from different applications together on a single platform, making it possible to analyse them coherently. As ForFarmers does not have this expertise in-house, the company issued request for information for a future-oriented data platform that could not only store structured data from its own systems, but also unstructured data provided by external parties. Think, for instance, of weather forecasts or camera images from inside the barn. That automatically means that you have to migrate to the cloud, because if you were to build such a platform on premise, you would already spend a lot of money upfront and you would quickly run into the limits of scalability. The choice was made for Microsoft Azure.

Big step from PoC to practice

One of the suppliers developed a Proof of Concept (PoC), which resulted in tremendous enthusiasm. But it also turned out that translating the PoC into a secure production environment was no mean feat. How do you securely link existing on-premise data centres to the Azure cloud? What connections are needed given the uptime, bandwidth and security requirements? How do you ensure that you remain compliant with the AVG/GDPR at all times? Hence the choice was made for ICT Group because of its right approach and the technological know-how required for these complex challenges. Initially, seven sources were opened up on the data lake. Presently, that number has already grown to 20. And in the future it might even grow to just under a hundred sources.

Advanced analytics

The environment consists of storage, a data ETL layer (extract, transform and load) and smart algorithms that perform operations on the data, also called advanced analytics. An example of such an algorithm: the quality and nutritional value of ingredients is constantly changing. For example, one batch of soy

contains more protein than another. ForFarmers naturally wants to produce a constant quality of feed and that means they have to constantly fine-tune their recipes and preparation. This knowledge used to be in people's heads. It takes years and years before you understand the complex interplay of ingredients, processing steps, storage conditions and other factors that influence quality. This knowledge is now unlocked and captured in an algorithm. The algorithm uses data from various systems: data on ingredients, on recipes, on treatments and the procedures the ingredients undergo before they are processed, on storage conditions and even information on the weather. After all, weather conditions help to determine storage conditions. Production managers now only need to enter data about the ingredients and then the algorithm calculates what quantities of which ingredients should be used, which treatments they should undergo, et cetera.

Predictive algorithms

ForFarmers has now developed several algorithms of a predictive nature. Some of them were developed together with ICT Group and ForFarmers developed some algorithms on their own. One algorithm relates to countering so-called rush orders. There are farmers who order feed when the silo is empty, which is not convenient. So an algorithm has been developed that uses the past ordering behaviour and animal information to predict when the feed will run out. Those farmers now receive a text message two weeks in advance, saying: 'please note, your silo is almost empty, would you like to order the next batch?' These are the first steps towards vendor-managed inventory. And also the first steps towards better demand planning.

Giving space to new insights

When you start working with data, there's no point in making a fully completed business



case beforehand. You just have to start from the confidence that you will gain new insights that will contribute something to your business. The trick is to go into it with an open mind. Because business-sensitive data was used, there was a lot of focus on security. In close cooperation with ForFarmers' security specialists and Microsoft, ICT Group set up a 'security by design' environment and had it pen-tested.

Optimising the chain based on data

The aim of bringing together information from the chain is to be able to optimise the chain. That optimisation lies in many different areas: smarter dealing with ingredients, reducing CO2 emissions, recognising animal diseases at an earlier stage,


fine-tuning feed to an individual cow or pig so it grows even healthier. Innovation opportunities abound. The data platform in the Azure cloud is a prerequisite for faster innovation, because almost all new insights are data-driven. With data, you suddenly see opportunities you didn't see before.

If you would like to receive more information about the options and solutions ICT Group has for your specific issue, please contact:

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