



Grain Balance Management Application for MHP

Client: MHP Industry: Agriculture, Food Location: Ukraine

Employees: 32,000+ Website: www.mhp.com.ua



Client Background

Founded in 1998, MHP is a large international food and agro-technical company comprising more than 30 enterprises and having more than 32,000+ employees throughout Ukraine and other countries. MHP is the leading producer of poultry products not only in Ukraine but also in the Balkans (Perutnina Ptuj Group).

Business Challenge

MHP's business is based on two fundamental pillars – poultry breeding and the production of grain and oilseed crops. Every year MHP plans a large-scale sowing campaign that spans 350,000 hectares of crop fields across 11 regions in Ukraine. This is a complex and time-consuming process, where a team of agronomists estimates the future crop yield and plans the required grain operations, such as harvesting, grain transportation, and storage, as well as measures the amount of the grain to be sold and preserved as poultry feed.

During the planning stage, large volumes of diverse data are entered into the client's ERP system and then transferred into a DWH for further processing. Consequently, an advanced mathematical model performs 100+ calculation scenarios to determine an optimal grain balance, number of required elevators, transportation routes, etc.

To achieve better agricultural productivity, MHP decided to perform grain balance calculations on a regular basis. The client's primary objective was to rapidly build a mobile business application that would:

- Include 30+ interfaces covering grain production, procurement, sales, transportation, as well as nutrient and damage control
- Operate the data related to crop turnover and residues from an existing ERP system
- Update source data in the ERP system and apply custom parameters and filters to it
- Implement 100+ calculation scenarios
- Enable the editing of calculation scenarios and initiate new calculations with updated parameters
- Conduct versioning calculations and allow users to access and analyze any version.

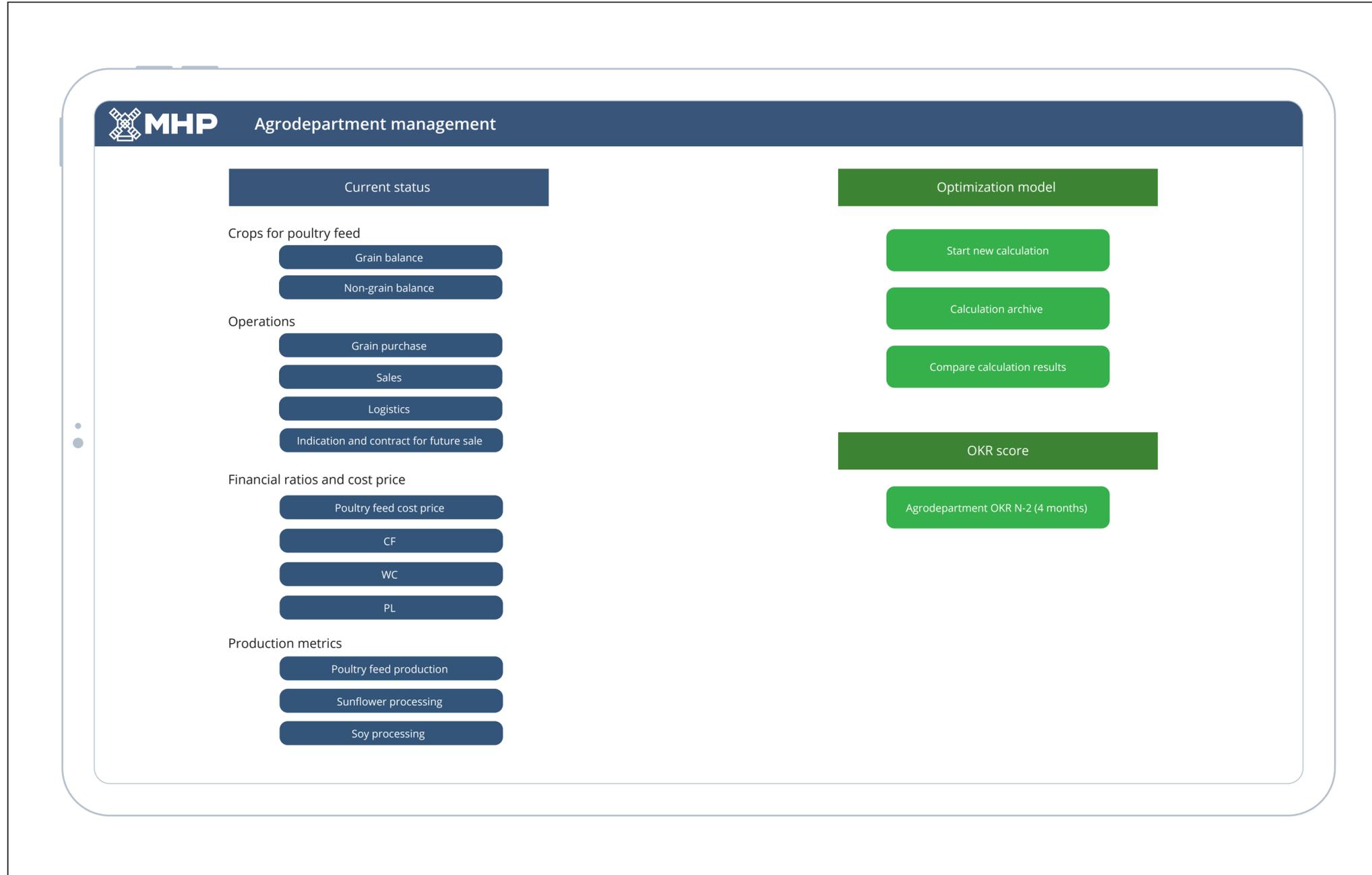
Solution

With a view to our long-term collaboration, MHP approached Infopulse to develop the solution. As a significant part of the client's infrastructure is built on Microsoft Azure and a swift pace of development was the key project requirement, Microsoft Power Apps was the perfect platform to engineer the grain balance app.

After assessing the client's supply chain flows, our experts designed the required interfaces that covered all grain operations segments, such as purchasing, sales, logistics, production, etc. Each interface covers a specific segment and includes all the relevant data, calculation parameters, and scenarios. Users can quickly access any interface to perform calculations and make planned or ad-hoc changes to the parameters (in case of altered crop yield predictions).



Calculations Start Screen



To ensure that the app can perform 100+ calculation scenarios, our team transferred the calculation logic to Power Apps by connecting Canvas to the client’s DWH. The data processing flow is based on Azure Data Factory. After clicking “calculate”, the data is processed in the client’s DWH, it is then transferred into an Azure Data Bricks cluster where the mathematical model conducts the calculations. The results are sent back to the DWH and can be viewed via custom reports and dashboards created with Power BI.

Another imperative project requirement was to enable versioning calculation. Infopulse designed a solution architecture that saves all versions of previous calculations across any agricultural segment. Users can access any calculation version to analyze, check, and compare the data. Moreover, filters and calculation logic may be adjusted to initiate a new calculation based on a certain version. The results of all previous and new calculations are showcased in convenient Power BI reports.

Grain Sales Calculation Parameters

The screenshot displays the 'MHP Agrotech' application interface for 'Agrodepartment management - Sales Section - Volume and prices'. The interface is titled 'Strategic 2020 v47' and features a navigation bar with 'Sale volume' and 'Sale price' tabs. The 'Sale price' tab is active, showing several input fields for configuring sales parameters:

- Select crop type: Search crops (dropdown)
- Select period: (calendar icon)
- Select destination of a sale: (dropdown)
- Select sales channel: Search sales channel (dropdown)
- Select incoterms: Search incoterms (dropdown)
- Enter % of increase/decrease in sale price: (input field)
- Enter new sale price per ton/month: (input field)
- Select sales channel: (dropdown)
- Select incoterms: (dropdown)

Below the input fields is a table with the following data:

Destination of a sale	Crop Type	Period	Incoterms	Sale price	Sales channel
EU Border Checkpoint	Soy	03.2021	CPT	327.04	Export
Grain Production LLC	Wheat	07.2020	CPT	173.00	Export
Southern Sea Port	Wheat	02.2021	CPT	200.68	Export
Grain Production LLC	Sorghum	09.2020	CPT	150.00	Export
Southern Sea Port	Rapeseed	08.2020	CPT	408.99	Export
SME Agro Products LLC	Soy	08.2021	CPT	334.72	Export
MSE Agro Service LLC	Wheat forage	08.2021	CPT	169.34	Export
MSE Agro Service LLC	Barley	03.2021	CPT	179.17	Export
Grain Production LLC	Wheat forage	07.2020	CPT	168.00	Export

Technologies



Power Apps



Azure Functions



React (PCF)

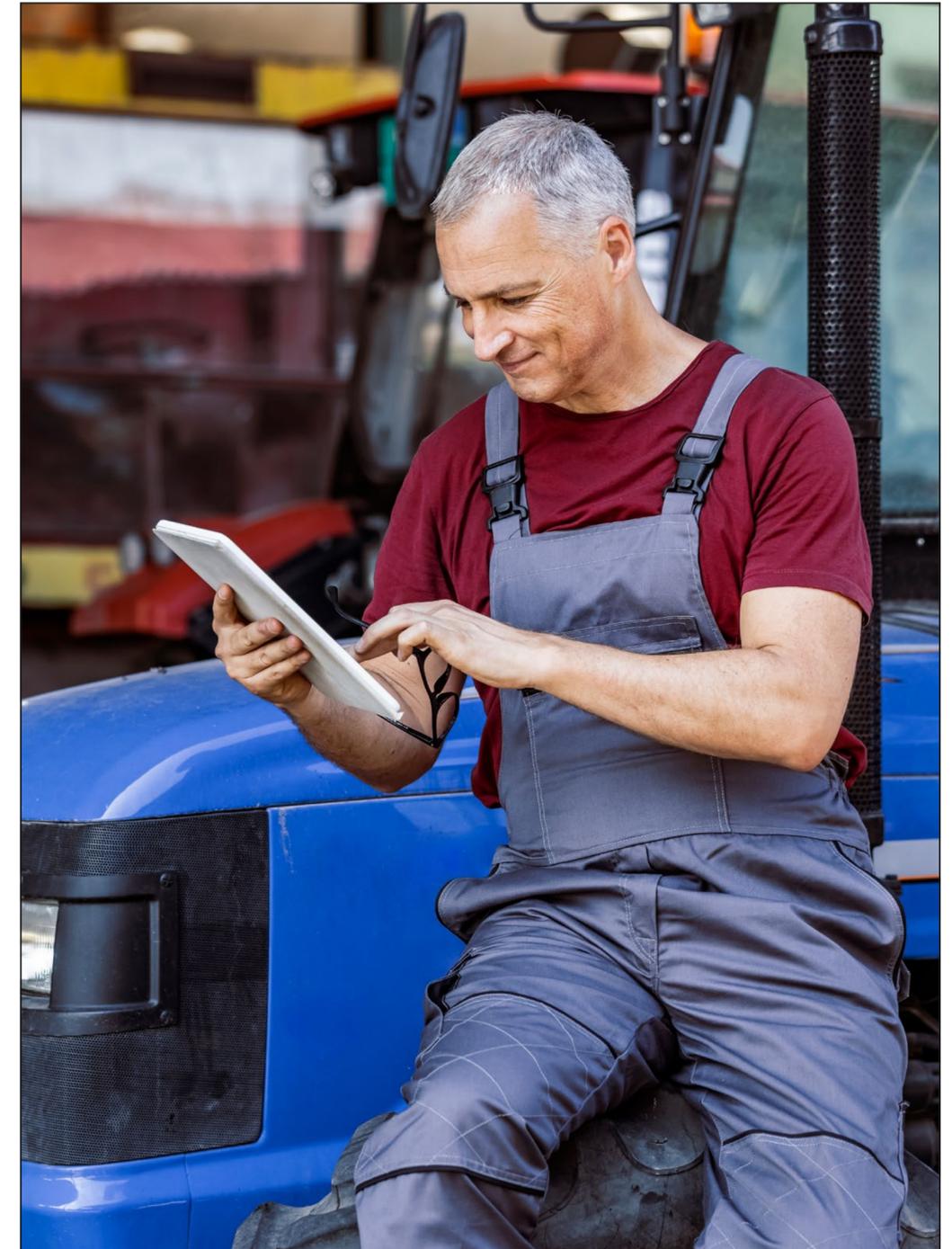


Hohenstein server – custom .NET application server with specific API

Business Value

Infopulse developed an intuitive mobile application with all of the required features and capabilities in just 12 weeks. As a result, the tailor-made grain balance solution helped MHP bring its agricultural productivity to a new level with:

- Convenient anytime/anywhere access to 100+ calculation scenarios that cover the full scope of grain-related processes
- An opportunity to find best-case business outcomes by customizing calculation parameters and checking the data across all previous calculation versions
- Facilitated crop harvesting control and optimized logistics route planning and management
- Precise calculations that ensure a perfectly balanced amount of crops to be sold and preserved as poultry feed
- Improved decision-making with insightful Power BI reports that represent all the calculation results.





About Infopulse

Infopulse, part of the leading Nordic digital services company Tietoevry, is an international vendor of services in the areas of Software R&D, Application Management, Cloud & IT Operations, and Cybersecurity to SMEs and Fortune 100 companies across the globe. Founded in 1991, the company has a team of over 2,000 professionals and is represented in 7 countries across Europe and the Americas.

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