



Data. Demand More.

3Soft delivers an AI-driven platform to provide sales forecasts and automatic replenishment for a global grocery retailer

How to predict sales in an unstable market environment? How to ensure optimal stock levels in stores? To find answers to these questions, 3Soft created an advanced analytics platform for a leading global grocery retailer that transforms large data sets into valuable information to support strategic business decisions.

Overview

[3Soft](#) has been helping companies implement a Data-Driven Business approach for over 18 years. The knowledge, experience and passion of its nearly 100-people-strong team allows 3Soft to carry out technologically advanced projects, extracting business value from large data sets. The company supports the most renowned enterprises across Europe in gaining and maintaining a competitive advantage through the use of dedicated IT systems. It specializes in providing solutions for financial and retail sector clients.

3Soft designed and implemented an advanced analytics platform for a leading global food retailer, which provides individual product-store-level sales forecasts for 5,000 products in over 6,200 stores in 14 European countries. This AI-driven platform enables a timely and accurate response to any changes in demand and supply, automatically generating reliable forecasts that are used as the baseline for replenishment commands and orders for suppliers. Additionally, it makes detecting anomalies and real-time reporting possible as well.

Challenge

The global grocery retailer collects billions of sales data and a plethora of information about its customers' shopping preferences every single day. Aware of the huge business potential of this data, it has decided to use it to support sales forecasting and store replenishment. The main goal was to ensure optimal inventory levels based on reliable sales forecasts and to automate the process of ordering products to stores. Business executives wanted to make decisions based on facts, not intuition or individual experience.

In response to this challenge, 3Soft created a dedicated Big Data platform based on Artificial Intelligence and advanced statistical analysis solutions, exploiting the large amount of internal data (e.g. sales receipts, shelf capacity, marketing campaigns) and external attributes (e.g. weather, seasonal sales) available to support strategic business decisions and supply chain management. This makes it possible to ensure that the retailer always has the right products at the right store and at the right time.

Solution

The platform created by 3Soft was originally based on HDP and is currently being migrated to CDP. The sales data and external information, e.g. weather forecasts, are ingested into the system by sophisticated NiFi flows supported by data buffering in Kafka. From a data-at-rest perspective, cloud-based object storage with geo-redundancy provides high data availability and enables complex AI-based computation to be decoupled from storage on dedicated ephemeral clusters with a relatively short lifetime, equipped with Spark and H2O. The storage-compute decoupling, considered as the most

essential cornerstone of the system's architecture, is a massive advantage regarding parallelization of the sales forecast time-critical computations. It also enables proper costs allocation and ease of rolling out the system to new countries.

The heart of the system consists of individual AI models designed by 3Soft's Data Scientists to provide product-store-level forecasts. The Cloudera stack is used to operationalize the model execution at scale by executing it every day in almost 100,000,000 instances. The calculations include data pre-processing (cleansing, imputation, etc.), model execution and result post-processing (quality measurements, correction factors, quick trends, etc.).

Business Impact

The AI-driven platform created by 3Soft for a global grocery retailer ensures automation of key business processes and full usage of any relevant information contained in the data available. The platform helps to significantly improve the ordering process to cover demand more effectively. As a result, it makes it possible to increase sales from 5% to 7%, minimize out-of-stocks and decrease losses from 3% to 7% by reducing overstocks. Moreover, it enables a 30% to 50% reduction of average out-of-stocks in stores. As a result, the company obtains real business benefits with a concrete impact on building a competitive advantage with relatively low outlays required.

Why Cloudera

'Creating a model capable of providing accurate individual sales forecasts is an inherently difficult task, especially considering the different characteristics of sales of various products in multiple stores in many countries. However, executing it at scale and in a specific timeframe makes the system truly impactful in terms of real business benefits. It would be very hard – if not outright impossible – without the use of Cloudera technology, which was used to support our processes running initially on-prem, and now in the cloud.'

Kamil Folkert, PhD, Member of the Board, Chief Technology Officer at 3Soft

Key Highlights

100M

INDIVIDUAL FORECASTS CALCULATED EVERY DAY

30% to 50%

REDUCTION OF AVERAGE OUT-OF-STOCKS IN STORES

Category

Artificial Intelligence, Data Management, Business Automation

Solution Highlights

HDP, Spark, Kafka, NiFi

Data Sources

transactional systems, model-generated additional factors, external data

Big Data Scale

100,000,000 individual forecasts calculated every day

Impact

- 5% to 7% increase in sales by minimizing out-of-stocks
- 3% to 7% decrease in losses by reducing overstocks
- 30% to 50% reduction of average out-of-stocks in stores