Predictive analytics saves retailer £ 1M in fulfilment costs

Our client, a worldwide operating retailer, was spending £350M per year on the fulfilment and delivery of groceries solely in the UK. VirtusLab created a single source of truth and has helped the retailer to lower fulfilment costs by £1M and increase order delivery by 0.2% with predictive analysis.

The challenge

The worldwide operating retailer fought with the lack of data definition (metadata) and various data sources. Legacy systems prevented the client from joining multiple sources into a single source of truth. Moreover, the need for more strategic and automated ingestions and limited data history restricted a data-driven decision process.

Our client also worked with an incomplete data set required for valuable big data analytics and predictive analysis. The retailer needed to calculate the workforce and routes for the next day to decrease expenses and increase positive fulfilment. At that point, the retailer reached out to VirtusLab.

The solution

VirtusLab (VL) leveraged Hadoop and Hive technology to integrate with the client's system. In cooperation with our client, creating a reliable data platform was the base for more advanced predictive analytics. VL integrated data such as van weight, van trap

capacity, time of travel, time at the door, and the optimal routing of delivery vans. Yet, we saw the need to integrate more data sources and collect relevant data to make efficient predictions.

Since depots held frozen, fresh, and ambient products, the fulfilment structure needed to be considered. National and regional locations of depots meant cheaper and more successful operations. As a result, the analysis had to consider the time and costs of delivering from a depot to a store.

The results

VirtusLab made impressive cost cuts every year by reducing the spent-on transport, and operational costs, thus achieving a solid ROI for our client through predictive analytics. For instance, we developed a graph processing framework to compute complex predictions about the delivery speed of grocery vans at any time and day, using the van's tracking data and delivery schedules.

We **improved** the client's delivery schedule accuracy and, therefore:

- **Saved £ 500k** with a prediction of the driver's way from store to store, or customer to customer
- **Saved £ 500k – £600k** with a prediction of a driver spending time at a door
- **Increased** order fulfilment by 0.2%

The tech stack

LANGUAGES	SCALA, PYTHON, BASH
DATABASE	HIVE, HADOOP
EVENTING PLATFORM	KAFKA
INFRASTRUCTURE	SPARK, OOZIE, SPLUNK, ANSIBLE, JENKINS, GIT

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