Luxoft
A DXC Technology Company

A 'store digital twin' solution for a global retail giant

Case study

Client:
One of the world's largest retailers, with over 100 years of success on the market, and with more than 5,000 stores in its global network

Technologies and tools:

Store digital twin

Proof of Concept   MVP

Luxoft is a trusted partner for the world's largest retailers

Our team is always ready for new technological challenges

Challenge

Our client — one of the world's largest retailers, with over 100 years of success on the market, and with more than 5,000 stores in its global network — decided to standardize and optimize its store operation processes, reduce customer waiting times, all with the aim of increasing customer loyalty. The client decided to create a 'store digital twin' solution that would help run simulations and test many hypotheses before being field tested in actual stores. The first step was to create a Proof of Concept for the product (MVP), knowing our abilities in this area, the client turned to us for help.
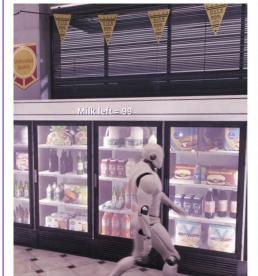
Solution

The client provided a huge set of historical data (2 days of complete operations in a couple of stores) which was the basis of a working simulator. The request for an MVP was to demonstrate the mathematical calculations and the chosen range of possibilities for minimizing queues in these stores for the days presented (e.g., to see if additional cashiers or self-service terminals would help to minimize the lines or if there were other possibilities that were previously unknown).

The Luxoft team, which is always ready for new technological challenges, studied the provided data and then presented the results for two areas over a 2-week period:

- **Backend.** All the provided data was normalized and cleaned, a mathematical model using machine learning was developed to perform the required experiments

- **Visual part.** A 3D model of the store was created for the simulation. The model takes into account the average time spent by each customer in a store, the average number of customers per unit of time, the amount of goods on the shelves, the number of cashiers as well as many other criteria

The potential scope of the digital twin solution is extremely wide, and depending on the needs, it is possible to fine-tune the mathematical model according to the client's specific requirements. Possible examples:

- Arrange the goods on the store shelves for different purposes (e.g., you need the customer to spend more time in the store, or vice versa, you need the client to quickly find what they need and leave, placing seasonal products in highly visible areas)

- Determine the quantity of each product item for stores, depending on their location, etc.

Results

The ability to reduce operational costs, but improve the accuracy and efficiency of a store's optimization changes

Ability to anticipate potential problems that may arise in the future

Improvement and optimization of operational processes through actual information

Opportunities for continuous improvement through simulations, identifying failures and inefficiencies

Technologies

Machine Learning, Unreal Engine, C++

About Luxoft

Luxoft is the design, data and development arm of DXC Technology, providing bespoke, end-to-end technology solutions for mission critical systems, products and services. We help create data-fueled organizations, solving complex operational, technological and strategic challenges. Our passion is building resilient businesses, while generating new business channels and revenue streams, exceptional user experiences and modernized operations at scale.

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