

Vending Machine Software For a Multinational Company

How developing an MVP of a web app for seamless remote management of **1000+ vending machines** entitled a global retail company to prove the **viability of the new product** on the German market and expand their customer base by **14%**.

Industry:
Retail and E-commerce

Duration:
Eight months

Budget:
\$300 000

Context

In the face of ever-changing market needs, especially in the pandemic, our client was looking for business opportunities to expand their product expertise in cash processing to other industry areas.

One of the ideas for a new project was creating a vending machine selling locally sourced organic food. With that solution, farmers and local producers access additional space to sell their fresh products, and city residents get the opportunity to buy their favorite items at any time of the day, especially on weekends and holidays, when grocery stores are usually closed.

Challenge

The vending solution developed for our client consists of several parts, including IoT-enabled hardware, vending machine software based on cloud technology, and an online store.

The main task for *instinctools as a technology partner was to develop a software and web application that enabled the fast and smooth operation of a vending machine in terms of orders, delivery, stock control, payments, and other essential processes.

At the first stage of our cooperation with the client, we conducted a discovery workshop to identify technical requirements for the product and expected results the customer wanted to achieve. After profound research and gathering the requirements, we provided an elaborated project plan with the future software architecture, approach to software development, team composition, and timeline included.



After we created the architecture and a detailed development plan, the market situation had an adverse impact on the client's business, hence the project budget. The real challenge in that situation was to adapt the already designed architecture to new requirements within a reduced budget as soon as possible, saving the primary functionality of the product and its purpose. The task was challenging but at the end of the day - still feasible.

Natallia Chmel
Account Executive

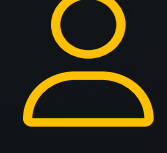
We aimed to build a scalable solution architecture focusing on up to thousands of machines to ensure our client has minimal impact in software work when growing the business.

Solution

An automated vending machine provides customers with fresh produce from local suppliers 24/7, without days off and closed hours. But what's under the hood of this solution and the whole process from product supply to customer purchase?

Each part enables consistent and smooth operation and interaction between all participants in the process. All of them have their own user experience with the software solution built by *instinctools dedicated team.

- Vending machine administrators
- The farmers or grocery store owners
- Delivery managers (or refillers)
- End customers



The machine administrators maintain the work of akin a small plant with a full-fledged management system allowing them to import suppliers, grant or take access, book slots for future products, organize the delivery process.

They have all data in place and can remotely manage all vending machines, the warehouse, product turnover, and suppliers.

With IoT-enabled hardware, vending machine administrators can monitor the refrigerator's temperature remotely, as well as the sell-by dates of the products to ensure their freshness.



The farmers and grocery stores have a flexible schedule of the machine shelves to book available slots for further delivery and placement of organic food.



Customers can visit the closest vending machine or the online store to find, book, and buy fresh organic products 24/7. The users can see the information about the product and its producer and pay for the order online or via vending machine.

Key features



Refill process management of perishable goods with sell-by dates



IoT solution for remote temperature monitoring



Warehouse logistics and product turnover management



Flexible schedule for booking slots in the vending machine



Convenient payment system via the web app or a vending machine



Modern and intuitive client interface for all the stakeholders

Business value

With a limited budget and time, the MVP we built promptly allowed our customer to successfully launch the project and test it on the local German market.

The project's payback for the client was justified by the solution's value for local producers and the demand among city residents to buy their favorite fresh organic food at any time of the day or week and especially on weekends.

Our customer can scale this business project by manufacturing this vending solution for various regional markets, and partnering with local producers enabling easy and safe product sales.

Technologies

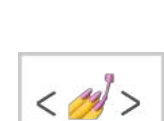
Front-End:



React



Apollo GraphQL client



Styled Components



MaterialUI

Back-End:



GraphQL



NodeJS



MongoDB



VPC



Compute Engine



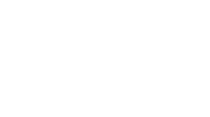
Pub/Sub



Google Cloud



Cloud Storage



IMC

Multiplier effect

Our expertise in the development of this solution can be helpful for businesses and projects related to storage, management, and the delivery of perishable goods, as well as vending or parcel machine providers. Leave us a note if you have a similar project idea and are interested in implementing it in your region. We are committed to delivering top-tier quality solutions for better results in your business model.