Digital Education Platform

Sibedge has developed a digital educational platform commissioned by the government of an Eastern European country.

Challenge

In early 2019, the Ministry of Education of an Eastern European country felt the need for a digital transformation of the education system in the country. It turned out that there were no full-fledged educational platforms in the country, and foreign products did not meet the necessary requirements. Some lacked certain functionality, while others did not have the necessary flexibility that would allow them to be used in different educational institutions.

There was a need in an ecosystem which would develop students' skills in a playful way and cover all learning formats: full-time, part-time and distance. The deadlines were tight. First operating version of the platform was planned to be launched in just eight months. Two IT companies were entrusted with this ambitious task, one of which was Sibedge.

Industry
E-education

Key points

- Platform kick-off on time despite tight deadlines.
- Architecture reenvision: a switch from monolith to microservices.
- Elasticsearch implementation.
- User behavior analysis.
- Enabled system fault tolerance.

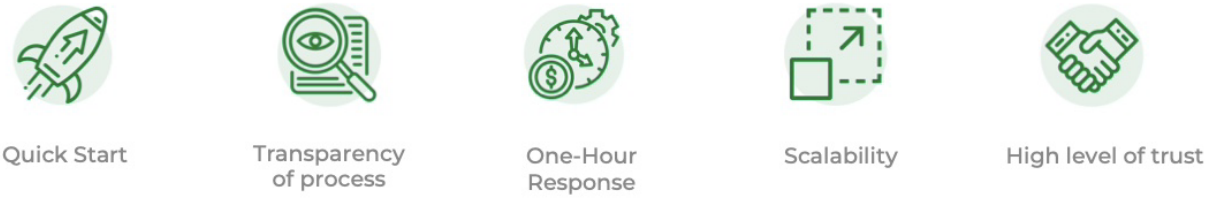
Team
5 — Front-end
4 — Back-end
5 — QA
1 — DevOps
1 — Analyst
1 — Software Architect
1 — Project Manager

Duration
January 2019 - ongoing

Technologies
keycloak, Apollo client, React, styledComponents, MaterialUI, Jest, Enzyme, Spring Core, Spring Boot, Spring Jdbc, Spring REST, Maven, GraphQL, Java 8, TestNG, PostgreSQL, Lombok

\ Approach

Communication with client was based on the following principles:



Architecture

The project began with the selection of the most suitable architecture. The requirements changed on the fly, which made the development process very live. Since the timing was very tight, the first version of the system was made monolithic. Only then did the developers begin to break it down into microservices to provide the platform with greater fault tolerance and simplify future operation.

Users

A system of roles has been implemented, depending on which the user gets certain tools to perform their tasks. Teachers select tasks of various levels of complexity from the methodological database that students must complete, parents monitor their children's learning progress, homeroom teachers monitor their progress, and system administrators support platform seamless operation.

Agile Software Management

Sibedge's project manager responsibility was to manage risks so that development would remain within the original budget and time frame. Their expertise in the field of education helped a lot. The manager promoted a flexible management methodology on the project, skillfully built business processes and established interaction between developers.

Team and Technologies

Sibedge team participated in creating both front-end and back-end components, testing, load monitoring, and system deployment. At various times, a team of three to 16 experts were involved in the project. The technology stack includes Java, React.js, Apollo Client, Keycloak, styled-components, Spring Framework, Apache Maven, GraphQL, PostgreSQL, and many others.

Result

Test run

In early September 2019, the platform was launched in test mode in 15 schools of five regions of the country. Teachers were taught how to use the system to speed up their adaptation. Now the platform is also being tested by one of the universities and several specialized schools.

System capability

Professional methodologists and experts from several countries actively participated in the development of the system. First, the educational platform is unique in its flexibility:

- For every student, an individual curriculum can be selected.
- If a student is not able to cope with the tasks, the teacher can adjust the program to their personal needs.
- If they are smarter than the other students, they get tasks of increased complexity.
- Special emphasis is placed on developing certain skills and competencies.
- Students do not just memorize information, but learn to work in a team, prepare presentations, and manage projects.
- Educational process interactive manner makes learning more attractive, which increases engagement and motivation.

Future of the platform

Platform readiness to cover many new educational institutions is particularly relevant in the light of the situation with the coronavirus pandemic. As of summer, 2020, more than 2,300 schools are connected to the platform. Soon, this number will reach 6,000. Platform optimization and functions scaling activities are planned until the end of 2022. Sibedge engineers continue to work on stabilizing and scaling the system, which is to remain fault- tolerant under heavy server loads.

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