Microservices Architecture and Execution

Higher Education Product Suite

INDUSTRY
Education Technology

DURATION
6 months

HEADQUARTERS
West Coast

SERVICES
CTO Consulting, Delivery Acceleration, Architecture Design, Interim VP of Engineering

BACKGROUND

A successful education technology company providing solutions for Higher Education and Research Administration had the goal of modernizing its technology stack by creating a new platform backend that in the long run would support all of its product lines. The company had a history of delays in product releases, and the platform development was stalled, 6-12 months behind schedule. In addition, the company did not have software architecture talent in their team to create a cloud-native microservices architecture. Even though there was pent-up demand for several key products in the suite, because of the sales cycles in the Education market and the development delays, the company was forced to forgo an entire suite launch and release a few key products of the suite by July. If the schedule slipped any further, the company would miss an entire year of sales. The company's executive team recognized these challenges and called in SVSG to help.

This platform backend would in theory incorporate capabilities that are frequently shared by the various products such as: user identification and authorisation, user management, customer onboarding and provisioning, messaging (email, SMS, in-app notifications), calendaring, etc, providing a triple digit gain in engineering efficiency once implemented when compared to the legacy structure of siloed product lines.

GOALS

Taking advantage of the early stage of the design of the platform, the organization requested a review of the architecture of its platform to ensure that it is built using best practices, particularly for the data model, so that this design will support the company's long term product roadmap with only minimal modifications. In addition, the company wanted to ensure that the collaboration between its two teams (platform and applications) led to an optimal design of both the platform and the products, as well as a timely delivery of the products. Architecting products on top of a platform that provides shared capabilities in a consistent fashion is a best practice to develop products at Silicon Valley speed.

PROCESS

SVSG Practice Lead Bernard Fraenkel and SVSG CTO Gil Edelman spent several days on-site with the platform and applications teams to take in the history of product releases, lessons learned, current architecture, current methodology and allocation of resources.

A key discovery SVSG made in the first week the engagement was that changing to a different tier of a third party tool already in use at the organization would allow business analysts as opposed to engineers to create business process workflow templates. This shaved the time to author a new template from several weeks to days. Given the number of templates needed across the product line, SVSG was able to compress the product roadmap by a several months.

With these process changes, SVSG realized that the swift addition of four SVSG engineers focused solely on accelerating platform completion under the leadership of an SVSG CTO with appropriate architecture and cloud experience would allow the organization to launch an entire product suite before the start of a school year, effectively providing an additional year of income for the business (if the suite launched after the school year, it would not be adopted until the following year).

Within two weeks of the initial engagement, SVSG CTO Gil Edelman had completed his review of the platform's architecture plans, and identified modules critical for the next releases but that had been untouched so far. Gil quickly selected and ramped up four engineers from SVSG's ranks to execute the revised architecture plan and to implement key platform functionality. This both provided the long-term scalable platform design the organization needed while freeing up its internal development team to focus on and increase development velocity on the applications which would run on the platform.

ABOUT SVSG

With over 100 years of combined Silicon Valley CTO experience, SVSG provides thought leadership in emerging technology trends, guidance on incorporating innovation into the enterprise and crucial introductions to build strategic partners. Whether sizing up a potential acquisition, developing a go-to-market strategy or building out custom technologies, our CTOs work to bring clients to the forefront of innovation.

RESULTS

During the engagement, the SVSG team consolidated the engineering roadmap, increased visibility to the executive team, designated ownership of key platform components to ensure accountability of delivery, implemented engineering best practices to achieve double digit velocity improvements with reduction of waste and better coordination between teams and departments (e.g. "Swagger First" API development, automated testing and CI/CD pipeline).

As a result, our client's engineering team was able to deliver its initial product within days of its original schedule, and more importantly, plan for the release of an integrated product suite rather than a few independent products for their next sales cycle. By offering a complete solution, rather than point products, our client thus offered a radically improved value proposition to its customers.

The SVSG team made several recommendations that apply to the design and implementation of any software platform:

- The platform needs to be managed as a product - albeit an internal one, whose customers are the internal development team - with its own roadmap, and releases. This roadmap is coordinated with that of the products running on top of the platform
- The platform team must implement, document and enforce, governance rules for the platform: standards for API syntax, request and responses formats, coding standards for data layer access, exception handling, logging, security, etc
- The platform team also needs to implement,document and enforce an automated test strategy, infrastructure and tools, that application teams can leverage
- Code reviews should take place at a sprint cadence to ensure that any divergence by the application team remains contained, and easily corrected
- Code from the application team needs to be merged back into the platform code base as early and frequently as possible (even if it is branched back out immediately), in order to facilitate full integration testing. The merge is predicated on an Acceptance review by the platform team that includes full code review, code coverage of unit and automated tests meeting pre-determined threshold, and successful passing of all tests

RELEVANT SVSG PUBLICATIONS

- Developing Products at Silicon Valley Speed
- Technical Debt White Paper

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