

OneGlobe has built a culture of continuous learning within our company so that we can deliver the best modern technologies to our customers. We focus on enterprise mission systems and big data platforms that bring information to decision makers and the ability for them to take action. OneGlobe culture encourages continuously learning and solving problems. One method we do this is through our OneGlobe Tech Talks. We have been able to solve problems and deliver greater value to our customers by growing this culture within our organization and sharing it with our clients. The experience of this case study was the first of several similar experiences where our extra efforts directly supported the success of the mission.

OneGlobe held a Tech Talk devoted to Javascript reporting libraries where our presenter, a mid-level developer, had researched and then presented D3.js, Crossfilter.js, Chart.js and DC.js as well as a few other libraries. The presentation was great and had been met by an audience of developers ready to learn something new. A few months later, during a project stand up for our customer project at a large federal government agency, an opportunity arose where that mid-level developer was able to make a recommendation and present a demonstration of an idea for a reporting solution. He was able to quickly leverage his OneGlobe presentation and make the solution come to life in his production system and led his team and himself to great success.

Modern large-scale case management systems move data constantly and have many process steps that interface and interact with humans and other systems. This means the application's data is dynamic, likewise the solutions for operational reporting and monitoring of the system must be dynamic too. When there is an exception, a business need or some reason to find out what happened, it is imperative to be able to find and analyze the desired subset of data quickly. Without some forethought or mechanism in place it takes time and knowledge of the data model to create individual reports and running ETLs nightly cannot help you out with the concerns of the day. As the modernization of one of the country's many critical case management systems was occurring it became apparent that these types of operational issues may become a problem they were not ready to deal with and that a solution was needed for monitoring and reporting in an easy to use application that could be used by operational staff.

In this instance our federal case management system, FCS for short, was a large system helping to safeguard US processes and procedures. The system enables efficient processing of forms to provide benefits to its user base. Requests are received and tracked as cases through the business processes. Each case can have numerous open tasks requiring completion before the business process can continue. Each case has various states that it can be in and tasks that must be completed by an employee, an external system, or by FCS itself. The FCS had existing reporting capabilities, but the customer sought to improve those capabilities to increase their operational visibility and effectiveness. As the release of a major milestone approached, concerns were raised about the capability of the system to handle the increased load of cases that may become stuck in the process. The existing reporting process lacked the ability to; discovery cases that had were stalled or stuck, report on data from today rather than yesterday, and allow users to make their own discoveries about the data. When working to release a new

module, there was a call from leadership to examine the FCS reporting processes and to make improvements. Some of the desired changes included:

- Increasing the rate of data refresh
- Add the ability to discover and diagnose stalled cases
- Add ad hoc report creation and export
- Create an intuitive data visualization that would allow drill-down

In addition to the operational requirements of the new reporting and monitoring capability we were asked to develop the new functionality using only open source tools and the existing production database without harming performance. Using only open-source solutions excluded several marketing leading products. We also did not want to increase the frequency of updates to our current data mart because under the existing method this would run during working hours and the additional load would slow the transactional system. As the requirements became clear, it became apparent that the solution presented at the OneGlobe Tech Talk fit and could be considered. Our developer, given his new-found confidence having already presented to a room full of his peers, decide to propose his solution to the customer.

The proposed solution was to create an application to run operational reports that would make simple queries to the database and leverage JavaScript libraries on the front end. The libraries like D3, and Charts.js are good at creating singular charts but with some design and engineering work external to the libraries, they would allow the interactive nature to discovery of stuck cases and the ability to create ad hoc reports to highlight the oldest cases, unassigned tasks, and more.

The new application is an application containing numerous charts, graphs, and tables created using the dc JavaScript library. DC.js is a charting library that uses both D3 and Crossfilter, giving charts the ability to bind together to create interactive dashboards that allow users to navigate and filter through various datasets. The user interface that was created allows users to experience the data in a form that puts them in the driver seat, allowing them to filter and find data visually to solve operational issues quickly that would otherwise take months to resolve. The new functionality included ad hoc reports and the ability for users of the system to track down stuck cases and guide themselves to the answers they seek rather than be reliant on a technical resource without the operational knowledge to find the answers.

Data is the key to solving these problems, so having timely data is vitally important. We decided to use materialized views, that would refresh frequently and at any duration needed for that type of data. This would increase the frequency of data refreshes from the previous ETL, did not overly tax the transactional database and allow the dashboard to respond quickly.

These dashboards proved to be quite successful in giving users insight to the current operations of FCS. They were used to catch problem cases, keep track the movements of the field test cases, and get reports for other business purposes. The tables in the dashboard allow data to be downloaded in various formats as well as link data directly to the case in the FCS application. The dashboards have become a useful tool, that could

answer straight forward questions, but it has also been “a tool for the curious” as it could find a vast array of different information about cases within FCS.

As the new dashboard application grew, more functionality has been built into it. Thresholds and Key Performance Indicators were established that corresponded to task steps in the work queue showcasing all tasks that were taking longer than usual and that might be stuck for one reason or another. The dashboard became a tool used operationally as well as during development and testing. As support for other forms was added into the application, the dashboard was used by both the development teams and the agency to informed them about the status of development and transition. The business analyst who worked on the new product said that the dashboard had helped in “catching issues and gave leadership higher confidence in the product line.”

As word gets out about the new dashboard, usage and adoption is growing throughout the agency. There are training sessions occurring, teaching employees on how to use and get information about their field office or region from the dashboard. We have created dashboards with drill down capabilities that improve performance and efficiency for our larger datasets as well as adding new capabilities and additional datasets regularly. As FCS continues to safeguard the integrity of our country’s vital case management system this dashboard will help to make sure it operates smoothly and efficiently.

At OneGlobe we think that continuing to learn and grow with our field is important for our people and for our customers. The events described above may seem to describe a scenario of being in the right place at the right time but without the forethought, hard work, and encouragement it may not have happened. We continue to find new methods of solving problems and to learn the latest and greatest tools available so that we can apply these skills to the issues our clients face daily.