



SCS Case Study

Application Mapping Functionality

Solution Snapshot

Business Situation: A large organization that facilitates the removal of trees that have been condemned, as well as the payment for that service, needed an efficient and cost savings system update.

Multi-Point Solution: SCS implemented a major workflow change using GIS mapping capabilities while leveraging Esri's ArcGIS platform and moving from a desktop application to a web based solution.

Technologies Used: Esri ArcGIS JavaScript API, Angular Framework 5.0, .NET Core 2.1

Benefits: The SCS solution increased productivity by enabling real time data input and allowing the ability to track changes along the way. The improvement deleted multiple steps of the original manual process.

The Client

Our client is a large organization that facilitates the removal of trees that have been condemned, as well as the payment for that service. When we met them, they were utilizing 20-year-old software for tracking information throughout the removal process from initial inspection of the trees, to contracting out the work, to receiving payments from property owners.

The Challenge

As mentioned, the client was using old software to track information throughout the tree-removal process. Many of their procedures were still recorded on paper forms, significantly slowing down the process of getting the information into the system.

When a field inspector found a tree requiring condemnation, they would gather as much information as they could about the tree and the property, recording it on paper. These records would then be delivered to office workers, who used various websites to gather additional property information before finally entering all the information into their software. This process continued whenever the field inspector was required to go back to reinspect the tree: They would receive a form from the office workers on what task needed to be done, they would perform said task and record the information on paper, and then they would return that form so an office worker could enter the information into their system.

While this process was working, it was time-consuming and inefficient. The client came to SCS for an overall rebuild of the application using modern technologies to leverage the capabilities of

web applications. During this rebuilding process, the client wanted SCS to completely rework the tree removal workflow utilizing modern GIS mapping functionality and various web APIs to more effectively collect the necessary information.

The Solution

Because the client had already contracted SCS to implement a complete rebuild of the application, it made sense to also rethink their workflow at the same time, utilizing the GIS mapping skills provided by SCS consultants. The application that SCS built for the client was created using the Angular 5 framework and .NET Core 2.1 and was hosted internally on the client's server.

To implement the major workflow change – the GIS mapping capabilities – SCS leveraged Esri's ArcGIS platform, which offers extensive mapping capabilities in a variety of technologies. More specifically, SCS utilized Esri's ArcGIS JavaScript API to match the modern JavaScript framework being used. This API gave SCS the ability to quickly implement the mapping capabilities offered by Esri while designing a custom mapping application. To meet the data-gathering needs of the client, SCS also implemented several publicly available GIS APIs to gather parcel and neighborhood information and to display detailed satellite imagery. SCS also worked with the client's technical staff to incorporate their existing private GIS data into the maps.

While the custom GIS mapping solution was ultimately the biggest change to the workflow, there were several other smaller changes implemented to increase workflow efficiency. The change from a desktop to a web application enabled the application to be accessed from anywhere through a VPN. This gave field inspectors the ability to perform data gathering in real-time - no longer shuttling paper records to the office workers. Because field inspectors now gather information in the field in real-time, we implemented the ability to capture and save photos of the trees to their server as well, adding another level to their data tracking.

The Result

All the solutions SCS implemented culminated in a more robust application that utilizes modern web and GIS mapping technologies. These solutions allow the workflow to transition from primarily paper to digital, through the application. With the ability for field inspectors to access the application on tablets, all the data is gathered and entered in real-time. Through the mapping interface, the inspector can easily visualize the tree, the properties and neighborhoods surrounding it. With a simple click on the map where the tree is located, a new tree record is automatically created. This tree record already contains the property information, neighborhood information, the inspector's information and other private information that must be tracked. All that is left is for the inspector to fill in the tree-specific information, take some pictures and click Save. There is no longer the need for an office worker to collect further information. It is all retrieved in real-time through the APIs.

This mapping interface carries over to the reinspection process as well. As previously mentioned, an inspector would be notified by an office worker and given the necessary forms to fill out whenever the reinspection of a tree was required. These papers were then

turned back into the office workers to record the information in their software. SCS automated this process in the application with the introduction of a tasks page for the field inspectors. Various data events now trigger a tree to show up on this field inspector tasks page automatically, stating the reason it is on the list and highlighting it on the map. The inspector can then travel to that tree, perform the necessary tasks and enter the new information in real-time.

The end result of these improvements means a more robust application that better suits the client's needs. We removed paper data collection, eliminating mundane and costly data entry for office workers. Our improvements also allow for more accurate real-time data collection by the inspectors, including photos of the condemned trees. On top of the data entry, our client benefits from an automated reinspection application. Field inspectors no longer need to be notified about work they are required to perform for that day. Most importantly, it allows our client's workers to leverage modern GIS mapping capabilities.

The final application has been implemented at the client's site for five months, and the client has been greatly impressed with the capabilities of the GIS maps and the increase in productivity brought about by the new workflow. Their workers are now able to more quickly enter data and track changes along the way. The improvements have also reduced the amount of time their workers spend doing repetitive mundane tasks, allowing them to focus on more pressing issues.

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