The State of Missouri

Gateway for Community Assistance

(GCA)

Project Initiation and Completion Dates: 07/15/2016 to 04/28/2017

Category:

Innovative Emerging Technologies

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Executive Summary

For years, the Missouri Department of Natural Resources (MoDNR) struggled with providing Missouri communities with online access to tools and resources that can help address their environmental and infrastructure planning needs.

The Missouri Department of Natural Resources and the Arizona Division of Environmental Quality (AZDEQ) both saw the need for improving online access to their states local communities. Therefore, both states teamed up to apply for an Environmental Protection Agency (EPA) Exchange Network E-Enterprise grant, which the EPA awarded to the partner states. E-Enterprise is a joint action of states and EPA to improve environmental outcomes and enhance services by the use of technology, enhancing operations, and increasing transparency. The states agreed to develop a template of a scalable state agency portal, consisting of shared web-based services and tools, packaged as a "one-stop-shop" for local communities hosted on a state agency website.

The Gateway for Community Assistance (GCA) provides communities with precisely what both Missouri and Arizona communities need. Any government entity can host the transportable, configurable model application on any agency website to provide communities with streamlined, customized access to tools and resources. Highly configurable, the application's administrative function allows new host entities to change as much as possible to suit their community needs, without Information Technology staff involvement.

To meet the grant funding requirements of creating a scalable web-based service for other government entities, MoDNR asked for help from the State of Missouri's Office of Administration Information Technology Services Division (OA-ITSD). This project was a joint effort between MoDNR, AZDEQ, and OA-ITSD. Using the Agile Project Management Methodology, the team designed the application to enable communities to make informed decisions, save staff time, and provide improved services to their citizens.

Business Problem and Solution

Business Problem

Local governments often own and operate wastewater and storm water systems, drinking water systems, solid waste disposal services, and other areas of environmental concern. Local leaders must weigh these investments against other critical public needs. Many small local governments do not have full-time, professionally trained staff committed to environmental compliance or viable development issues. Local government leaders need user-friendly tools and easy access to data to help grasp their role in protecting public health and the environment.

Solution

OA-ITSD and MoDNR joined forces to design, develop, test, and implement an online tool to match user interests, announcements, and an infrastructure and compliance wizard. The team developed a gateway that includes a complete catalog of tools, resources, and services available for wastewater, storm water, drinking water, solid waste, air quality, parks, and recreation, and the hope of more services. The new application removes the need for spreadsheets and mitigates the use of email or direct calls as the primary forms of communication with state entities. The teams designed a highly configurable application, by doing so; the government entities can customize the application in many ways to meet their specific state stakeholder needs.

Elements of the Solution

GCA is a C#.NET web application that incorporates ASP.NET, and HTML5. OA-ITSD used this application for the team to utilize the Microsoft Azure cloud computing service. The team used Azure for building, deploying, and managing the application and the application services through a global network of Microsoft-managed data centers. By using the cloud infrastructure, the team reduced computing cost by providing a single view of their Virtual Machines running on the Microsoft Azure platform. Using Azure, the OA-ITSD team created an application that can run reliably and one that can scale from 10 users to 10 million users, without any additional coding. This scalable infrastructure allows the application to use any number of processers. If the application needs to scale up to meet additional states implementing GCA, the administrator simply requests more resources in a setting menu. Microsoft bases the Azure pricing model on consumption, with a per-hour fee that is dependent on the size of the instance for the computing services. Other government entities can expand the use of GCA without having an existing infrastructure in place, and allows entities to add new services without building and maintaining an expensive addition to their existing data centers. GCA includes

responsive web design technologies, which provides optimal viewing on devices ranging from PC monitors to mobile phones.

The project development personnel cost was $222,182.42 with 5149.95 staff hours allocated over the 17-month project duration.

Significance of Business Process Improvements

The Missouri Department of Natural Resources, Arizona Division of Environmental Quality, and the United States Environmental Protection Agency recognized a need to streamline the process to access resources and tools to the communities in their states. Funded by an Exchange Network grant from the EPA, the parties developed an application that is a fluid, easily configured portal for local governments. Any state agency can host the application on any state agency websites across the nation, which states can provide to communities with the need of accessing environmental compliance and infrastructure planning tools. Tools are compiled within the application by the sponsoring agency's to represent all the state, federal and non-governmental resources pertinent to environmental issues that the state makes available to local governments.

Furthermore, the Gateway for Community Assistance application improves state government business processes when states utilize the GCA application. For example, MoDNR expects they will see a large drop in the timethey spend researching questions from local government about compliance and infrastructure planning tools. In addition, MoDNR forecasts the cut of inquiry calls from local governments in half, over the first year of rollout.

The application is actively aiding communities throughout the nation and as a testament to the business process improvements the application provides, MoDNR staff gave the following feedback:

> *"Missouri has an abundance of small cities and towns staffed by citizen mayors and aldermen, part-time clerks, and few professional staff. Assisting these communities is important to the department, and the Gateway helps us assist more communities than our assistance staff can reach individually.*
>
> *We are excited to be able to offer communities an application that streamlines their access to tools and resources for environmental compliance and water/wastewater infrastructure planning. Our goal was to enable communities to spend less time searching for environmental*

assistance and focus more time on effectively providing services to their citizens."

– Hannah Humphrey, MoDNR Community Assistance Coordinator

Application Features

GCA is a mobile responsive public facing tool that allows users the following functionality,

- A broad catalog of tools, resources, and services for wastewater, drinking water, storm water, solid waste, air quality, and parks and recreation
- A highly adaptive administrative function allows states and tribes immense customization to suit their community needs rather than the state requiring IT professional level changes. Building the application consists of states installing source code, then leveraging scripts to configure the application's appearance to match the state agencies appearance, and branding standards. Furthermore, the application allows users to configure labels, content, and assign administrative permission to staff for system upkeep and improvement over time, as a result to their community feedback.
- The user interface features a user profile that establishes user interest by analyzing previous application engagement.
- The customized resource catalog is populated based on user profile, and is staff-compiled for communities to include all state, federal, and non-governmental agency resources. Resources could include tools, templates, training, technical assistance, and financial assistance.
- State agencies can update announcements to share news, upcoming events, new grant opportunities, and new tools of interest to local governments.
- The wizard assesses technical, managerial, and/or financial aspects of the community's environmental systems and creates a document with recommendations and resources based on the community's unique situations.
- A web service shares state and tribe resources with the EPA E-Enterprise portal for their use.

Benefits of the Project

GCA benefits a variety of users and interests by allowing a powerful but simple online portal to improve and assist in communication with local governments. Previously, all of the inquiries needed intensive research by individuals working for the state and federal governments. No matter the size of the community, the application provides the ability to streamline communication and access to resources that can significantly aide local governments.

GCA provides any state agency and their communities a significant amount of cost savings.

- MoDNR expects to save 100-190 hours per year of staff time, to allocate to other priority efforts in the agency. In subsequent years, the agency plans to save 100-350 hours per year, based on a utilization rate of 40% of local governments. This timesaving equals up to, $4,676.91 per year.
- With GCA, MoDNR hopes to reduce calls from local governments in half, from the current phone call rate of more than 10 per day, or 2470 per year, to 5 per day, or 1235 per year.
- By providing access to source code and project documents to other government entities, this application, and all of the outstanding features, will cost states 48-96 hours of implementation time. This time is nearly impossible to replicate without using the shared services provided by the project team.

The mission of the Missouri Department of Natural Resources is to protect the state's air, land, and water; preserve its unique natural and historic places; and provide recreational and learning opportunities for everyone. GCA directly aligns with multiple facets of this mission statement while also aiding the department's constituents and customers in their missions by providing the ability to gain knowledge, and access to tools, resources, and services for wastewater, drinking water, storm water, parks and recreation, and air quality.

Innovative Approach

GCA innovative approach began with input from multiple teams and state agency customers from various areas of the United States. By researching and implementing the integrated capabilities, that local governments continuously ask state agency resources for, GCA is now a centralized location to present and assist communities in finding valuable information.

Utilizing the Agile Project Management Methodology to complete tasks surrounding the application development project, the team provided many communities across the United States access to a massive library of knowledge provided by their state and federal governments. Before, communities could only access that knowledge pool through a phone call and/or vast research.

The team used Azure cloud computing service for building, deploying, and managing the application and the application services through a global network of Microsoft-managed data centers. By leveraging the cloud infrastructure, the group reduced cost by providing a single view of their Virtual Machines running on the Microsoft Azure platform. Incorporating Azure allows the application to function reliably and scale appropriately without any additional IT resources. This scalable framework allows any interested state to adopt GCA and the application will adapt to any number of required resources.