

NASCIO 2016 Recognition Awards Nomination

The State of Missouri



Well Information Management System Online Testing (WIMS OT)

Project Initiation and Completion Dates: 05/14/2015 to 09/29/2015

Category:

Digital Government: Government to Business (G to B)

Nomination Submitted by

Richard Kliethermes
Acting Chief Information Officer
Office of Administration
Information Technology Services Division
Richard.Kliethermes@oa.mo.gov
(573) 751-1506

Executive Summary

The Missouri Geological Survey (MGS), a division within the Missouri Department of Natural Resources (MoDNR), serves its customers and state citizens by regulating and overseeing drilling industry contractors. Citizens who have a desire to become certified well or pump installation contractors must apply and be approved by MoDNR MGS staff. Upon approval the citizens must take an examination or series of examinations based on desired certification levels. After successfully passing the examination(s), applicants receive a license to become a permitted apprentice or a primary contractor within the State of Missouri.

The Well Information Management System Online Testing (WIMS-OT) solution was developed to provide industry contractors and personnel an online testing option along with enhanced features for an efficient user experience. The project was a joint development effort by MoDNR MGS and Missouri's Office of Administration, Information Technology Services Division (OA-ITSD) to partner in utilizing technology to manage the relationship with customers in the most effective manner.

Users can now access appropriate online test(s) anywhere and at their convenience through the entirely web enabled online Java application. In addition, MoDNR MGS now has the ability to process online applications for examination requests, assign awards of application success, assign appropriate examination types, receive and process online payment for examination fees, and provide information for "next steps" after successful completion of the exam. Utilizing the Agile Project Management Methodology, OA-ITSD and MoDNR MGS were able to implement the entire process testing in four months allowing increased productivity for department staff while creating efficiencies to reduce the cost of government operations.

Business Problem and Solution

Business Problem

Before development of the WIMS-OT solution, MoDNR MGS staff performed examination processes manually including grading exams, managing test questions, along with overseeing the monthly examination sessions. Additionally, applicants had to receive and return physical copies of their application(s), schedule the examination by directly contacting MGS personnel, physically travel to MGS headquarters to take the exam, and then wait to receive notification of examination results through traditional means. While stable and well defined, the business processes listed above were inefficient and burdensome for those taking the test as well as MoDNR MGS staff tasked with administering the examination process.

Solution

OA-ITSD partnered with MoDNR MGS staff to design, develop, test and implement the online testing application. Using the Agile Project Management Methodology, the project team worked to meet all minimal viable product requirements to create a “one-stop shop” for online testing capabilities. By meeting the requirements of the product, the new solution has reduced the examination process from 38 to 18 steps.

Industry contractors or personnel previously had to print, complete and then mail an examination application and application fee if they were interested in becoming an apprentice or primary contractor licensed within the State of Missouri. MGS Staff would then review and vet the application and process the fee. If denied, an applicant would receive notification by mail explaining denial and required next steps. Upon application approval, staff would send written correspondence to the applicant with an examination date. Applicants then were required to travel to MoDNR MGS headquarters in Rolla, MO to take the appropriate examination(s). Staff would proctor the test, determine grades manually, and inform the tester of pass/fail results. Upon failure, the user could retake the test one additional time on the same day and upon a 2nd failure, would be ineligible to retake the examination until 30 days had passed. After passing, the examinee would then receive a contractor/apprentice application from MGS. The applicant then completed the application and submitted it to MoDNR with an additional required fee. After receiving all required information, MGS staff manually entered the information provided into the core system of record (WIMS), and finally would issue and mail an approved permit to the applicant.

Using the new solution, an applicant is able to submit an online application for apprentice or primary contractor restricted permits. If approved, an online testing ID is generated and the applicant is directed to the WIMS-OT system where the applicant

logs into WIMS-OT by entering the test ID and other key information for verification. From here, the applicant can pay the application fee online through an internal MoDNR eCommerce system. The applicant may log out and return to the exam anytime within the allotted 24-hour time period. After submission of the allowable exam(s), WIMS-OT provides the user with pass/fail results in real time. If an exam is failed, the system allows the applicant to once again submit online payment and retake the exam immediately. Additionally, if the user does not retake a failed exam within 60 days, the original application is denied. If a user starts and does not finish the exam, or if the 24 window expires while taking the exam, a failing score is recorded. Upon successfully passing an examination, MoDNR MGS staff approves the permit and issues the proper permit cards.

Elements of the Solution

WIMS-OT is a Java based web application that incorporates Java Servlets, a DB2 backend database, and HTML 5. The application meets all State of Missouri security and accessibility requirements. WIMS-OT also includes responsive web design techniques to provide optimal viewing on devices ranging from standard personal computers to mobile phones and tablets.

Development activities conducted by OA-ITSD included:

- Creation of an application tool and test question bank to administer randomized questions for multiple versions of each exam type.
- Development and implementation of a front-end, public facing web application using the Java J2EE development platform. The application allows users to apply, take, pay, receive pass/fail notice, and process information to WIMS. The application automates WIMS testing, permitting, and payment processes to eliminate or reduce staff time required for proctoring, grading, reviewing, or entering contractor applications, or manually maintaining the open-book exam.
- Creation of processes to add new and updated test questions regularly by MGS staff.

The project development personnel cost was \$76,309.00 with 597.50 staff hours allocated over the 4-month project duration. Since the launch date of 09/29/2015, there have been 48 online tests administered by MoDNR MGS staff.

Significance of Business Process Improvements

The significance of WIMS-OT in business process improvement cannot be overstated. By re-engineering a manually intensive process to one that automates and streamlines dozens of workflows, the WIMS-OT solution has created both internal efficiencies and the overall customer experience.

The application is actively aiding users who want to gain contractor status through the State of Missouri. As a testament to the business process improvements the application has made for its users, MoDNR MGS staff and a new system user provided the following feedback.

- Lead SME Sheri Fry at MGS noted, “We were excited to begin the WIMS-OT project knowing the benefit it would bring to the well drilling industry as well as department staff. MoDNR MGS and ITSD formed a great team and work flowed smoothly between all members involved in the project. The project has allowed immediate cost savings to those industry members who no longer have to travel to our location to take the exam. We were eager to start advertising the WIMS-OT system to the general public and the feedback has been great”.
- Clinton Wyatt, of Kennedy/Jenks Consultants of Mission, Kansas recently took the online-restricted monitoring well exam and had this to say about the application, “The Missouri DNR well installation contractor online permit test is clear and user friendly. The convenience of taking it online saved valuable project time”.

Application Features:

WIMS-OT is a mobile responsive public facing application that allows user the following functionality:

- Online application entry, application approval and payment processes
- On-demand examinations for approved applicants for all types of driller and installer permits
- Randomized test questions from approved test banks for each type of examination
- Online scoring of examinations and real-time test results
- Secure examination administration functions for MoDNR MGS staff
- Online permit payment processes
- Ability to re-apply, gain approval, re-take and pay for any examination upon initial or subsequent test failure

With the ability of administering the examination process remotely being the pillar of the application, applicants and business partners wishing to become private contractors now have the ability to apply, take, and pay for exams online, rather than traveling to a single location (Rolla, MO) during a scheduled period of time. This provides the opportunity for MoDNR to address issues concerning individuals not permitted by the State of Missouri due to burdensome processes. This in return improves the relationship between MoDNR and citizens, stakeholders and business partners.

Benefits of the Project

WIMS-OT benefits a variety of users and interests by allowing a powerful but intuitive online application testing process. As stated multiple times, previous workflows were manually intensive to all individuals taking part in the process. Whether a customer is an up and coming private contractor with a desire to gain approved contractor status through the State of Missouri or a current apprentice working to become a private contractor, WIMS-OT provides the ability to quickly apply (anytime), take examinations and receive pass/fail notices of those examinations.

- An example of cost savings for applicants would be, if a business in Kansas City, MO needed to send an employee to take the test to become an apprentice, the following costs would incur*:
 - 7 hours of FTE time for traveling to and from Kansas City, MO to Rolla, MO to take the test.
 - The company would save approximately \$150.00 in lodging and per diem expenses for the trip to Rolla, MO.
 - The company would save approximately \$35.00 in fuel for travel to and from Kansas City, MO to Rolla, MO.

*Cost savings only include one employee taking the test one time.

OA-ITSD and MGS have eliminated all costs provided in the examples above by implementing the WIMS-OT application in addition to:

- Industry partners and personnel can gain approved contractor status with little to no turnaround time.
- Enhancing the Department's image and working relationship with the regulated community by showing government efficiency in action.

Innovation Approach

OA-ITSD first began concept development for this project by reviewing 3rd party applications and COTS solutions. Minimal viable product requirements were not a match so staff additionally researched other states to determine if a similar solution had been developed. Once again, a solution was not found. ITSD then began gathering input from MoDNR MGS staff within various areas of the division as well as the user community. By researching and implementing the integration capabilities of the needed web based tools to complete tasks related to taking the required examinations, WIMS-OT became the “one-stop” shop to present the required information.

Utilizing the Agile Project Management Methodology to complete tasks surrounding the application development project, OA-ITSD provided the ability to take well or pump installation contractor permit tests online, in a four month project duration. Based on previous projects of similar scope, complete project life cycle was estimated at nearly 11 months. During those additional seven months, MoDNR MGS would have continued to lose continuity with their business partners by requiring them to complete a laborious process for permit approval.