Virginia Department of Transportation Customer Service System

Enterprise IT Management Initiatives

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Executive Summary

The Virginia Department of Transportation (VDOT) operates a 24x7 customer service center (CSC) where citizens can report road problems, ask questions and request services. The CSC receives approximately 250,000 customer contacts annually. Sixty percent are service requests that must be interfaced to VDOT work order management systems and tracked to resolution.

Prior to implementation of a new system, the CSC technology was outdated and did not adequately support high-volume, customer-critical services. There was no integration between the interactive voice response (IVR) system and the service request tracking system. Web submissions for repair or service requests were made via a hypertext markup language (HTML) Web form. Web and telephone were the only contact channels supported. There were no automated features to give citizens updates on the problems they reported.

To address these problems, VDOT replaced and modernized the 24x7 CSC with a suite of tightly integrated new systems. The suite includes a new IVR system, a customer relationship management (CRM) system, a citizen self-service Web portal, and an upgrade of the network and hardware. The project launched on Jan. 24, 2014, and met the goal to be in production by June 30, 2015.

The new systems provide many benefits.

- Citizens can contact VDOT via multiple channels including telephone, email, text, Web chat, and the Web-based mobile-enabled self-service portal known as myVDOT.
- When a contact moves to the top of the agent queue, the system "pops up" the citizen's contact history and details of any requests in process, along with a full-screen map where the agent can immediately locate the problem. The system provides automated status updates to citizens by email, text or telephone, based upon their preference.
- Using a rules engine, the system automatically assigns work to VDOT work groups based on location, road type and the type of service requested.
- For telephone callers, the system has a "call-back" feature allowing citizens to provide a telephone number to which the system can call back automatically when an agent becomes available.
- The myVDOT citizen portal provides "single sign-on" so that accounts on myVDOT and the Virginia 511 website can be accessed with the same credentials. Comprehensive reporting and an interactive dashboard provide real-time information to CSC and VDOT management teams to handle the requests.

Description of the Business Problem

Prior to implementation of the new system, the CSC technology was outdated and did not adequately support high-volume, customer-critical services.

- There was no integration between the interactive voice response (IVR) system and the service request tracking system. The IVR only served to control which calls were routed to which agent. It provided no information about the customer's name, previous contacts or whether the customer had requests in process.
- The HTML-based Web submissions form was cumbersome to use and could not be used on mobile devices. Web submissions were periodically downloaded into the service request system in bulk. There was no real-time response. Customers could not see the status of their request on the Web or confirm whether it was received by VDOT.
- Web and voice (telephone) were the only contact channels supported. In the age of proliferating email, text, chat and mobile devices of all kinds, this did not enable customers to contact VDOT through the channel of their choice.
- There were no automated features to give citizens updates on the problems they reported. Web customers received no confirmation that their request was received or a tracking number to refer to in follow-up communication. Voice customers could request a tracking number, but their only option for checking status was to call the CSC and talk to an agent.
- The process for assigning work involved entering the customer request into the service request system, which then routed the request to one of 30 "residency" offices located across the state. Someone in the residency then would make the final work assignment. This process took up to two business days for the assignment to get to its final destination. This process of re-assigning 150,000 service requests annually used up valuable hours of staff time in the residency offices every day.

Solution

VDOT replaced existing CSC technologies with a new suite of tightly integrated systems.

At the foundation of VDOT's CSC solution are commercial off-the-shelf (COTS) platforms including Avaya Elite Multichannel (EMC), Microsoft Dynamics CRM (CRM) and ESRI ArcGIS. Many of the solution features are based on configuration of these COTS platforms. They are significantly augmented with customization, notably by the fully custom myVDOT citizen portal and extensive custom integration with other internal and external systems.

VDOT did not have available resources or the skill set required for the planned solution. VDOT engaged SingleStone Consulting Inc. to deliver the solution. SingleStone sub-contracted with several specialty firms to achieve the right mix of experience and skills for the project. Integration to VDOT legacy systems was handled by the existing VDOT IT staff.

Goals established at the beginning of the project were:
- Improve accessibility to all VDOT information, internally and externally.
- Demonstrate better and more efficient service to internal and external customers.

- Enable self-service with better customer follow-up.
- Offer additional communication channels to customers.
- Facilitate the ability to track history of customer interactions.
- Provide the ability to proactively communicate with customers on updates to service requests.
- Expand management reporting to enable better decision making.
- Establish better system availability.

Significance of the Project

The key features of the solution include:
- Contact channel of preference - VDOT now encourages citizens to make contact by email, text or Web chat in addition to the previously available channels of telephone and Web portal. VDOT leased a branded short code (4ROAD) to make it easy for customers to remember how to send texts.
- Automatic call-backs - When there is a lengthy wait in the queue, citizens who prefer telephone can elect to have the system automatically call them back. Their phone will ring when their call gets to the top of the queue and an agent will be on the line ready to speak with them.
- Automated status updates - Citizens can elect to receive automated updates on the status of their service requests via the channel of their choice: phone, email, text or Web portal. This includes an automatic email acknowledging submissions through the Web portal. Other updates notify the customer of their tracking number, changes in status and completion of the requested work.
- Enhanced citizen portal - A new customer service Web portal was created as a mobile-friendly Web site that provides the ability to geo-locate problems on an interactive map. Customers can create an account on the portal where they can see their full history of requests, whether submitted by Web or other means, and check status of requests online.
- Efficient routing of customer contacts - Contacts from all channels are routed into a queue where VDOT agents respond to them on a first-come, first-served basis. Some channels require a higher level of agent training. These are automatically routed to agents with appropriate skills via the IVR.
- Comprehensive view of customer profile/history - When a contact moves to the top of the agent queue, the system "pops up" the citizen's name, contact history and details of any requests in process, along with a full-screen map where the agent can immediately locate the problem. The contact history includes every incoming and outgoing contact with the customer by any of the communication channels. The agent can easily navigate to any requests in the requests history to update a request or respond to customer questions. The agent also can easily add a new request from the history screen.
- Fast and accurate assignment of work - Using a rules engine, the system automatically determines the correct VDOT work group based on location, road type and the type of service requested. The work assignment interfaces automatically to the work management system, and goes directly to the group that will do the work. The rules engine makes this determination from more than 300 active VDOT work groups.

   NASCIO state CIO priorities addressed include:

- Legacy modernization – VDOT CSC enhancements replaced two silo systems providing multiple internal and external improvements. Business process improvements also resulted from the application upgrades and systems integration. Citizens now have real-time information for roadway and transportation systems inquiries.
- Consolidation – Through the identification of various barriers to adequate customer service, the implementation of commercial off-the-shelf (COTS) platforms with VDOT CSC launched enterprise-wide communication that delivered more comprehensive services for citizens.
- Enterprise vision and roadmap for IT – The VDOT CSC upgrades represent a critical component of reliable, real-time innovations to better serve citizens. The solutions achieved support for Gov. McAuliffe's policy agenda on transportation issues. The system leveraged multiple existing enterprise technology services in lieu of creating custom services just for the CSC. They include:
  o VDOT enterprise geographic information systems (GIS) – The agent map leverages more than 50 VDOT enterprise GIS layers including CSC requests in process, dynamic highway signs, bridges, traffic cameras, traffic signals, rest areas, toll facilities, speed limits, VDOT projects, and much more.
  o VDOT traffic operations centers – The CSC system automatically notifies the Traffic Operations Center if a citizen reports a dangerous traffic situation.
  o VDOT SharePoint knowledgebase – The agent knowledgebase is accessible and searchable from within the CSC system.
  o VDOT severe weather system – During severe weather such as snow storms, the CSC system interfaces citizen reports of weather problems directly to the system that is used to manage snow plowing and other weather emergency activities.
  o Virginia 511 Web – Traffic conditions displayed on the 511 website also are displayed on the agent map so they can give real-time traffic condition updates to callers.

The project addresses the governor's priorities in the "government and citizens" category:
- Innovation - Explore and pursue innovative strategies to increase government efficiency or to reduce government costs for needed services.
- Upgraded technology - Enhance current technology platforms and infrastructure while protecting all data.
- Customer service - Deliver high-quality products and services in a timely manner.
- User-friendly online services for citizens - Improve citizen access to government data and decision-making processes.

Benefits of the Project

The new system returned many demonstrable benefits:
- Calls to the CSC to request status updates dropped from 9 percent of total calls to just 5 percent after three months of system operations. This is attributed to customers using automated status notifications or self-service checks on the Web portal. This is a direct work savings to CSC staff.
- Customers like the new automated status updates. In the first month of operation 14 percent of customers requested automated status updates. This grew to 59 percent by the ninth month, and the trend indicates further growth to come.

- Use of the new communication channels is changing how customers interact with VDOT. Within three months of system operations, telephone or agent-created contacts decreased from 87 percent of total contacts to 84 percent. Increased use of the Web portal was responsible for most of the change, followed by email and text.
- The rules engine for work assignment has eliminated the need for every work request to be handled by a second person for re-assignment after the agent processes the request. This has saved an estimate 16,900 staff hours of work per year in VDOT residency offices. It also has reduced the time for the work group to receive the assignment to minutes from up to two business days.

In addition to achieving the goals mentioned above for the benefit of citizens, VDOT staff and other agencies, there were several quantitative, qualitative and operational benefits as a result of the project. Quantitative benefits include:
- The system went live two weeks ahead of the planned implementation date.
- The budget established after the detailed planning phase did not require any adjustments during execution.
- The project finished 4 percent under budget.
- The full original scope was delivered with replacement of a legacy system.
- The system is currently in use by more than 200 VDOT staff members.
- Economies already are being realized.

Status updates coupled with the ability for citizens to check status on the web has yielded dividends already. Comparing the first month of operations to the same period last year, total contact volume was up 8 percent annually. However, contacts for the purpose of checking status decreased by 1,086 calls for the same period. VDOT anticipates savings will increase over time as more citizens become aware of the automated status update feature.

Qualitative benefits include:
- Minute-by-minute traffic reports – The agent map includes real-time status about roadways affected by traffic conditions.
- Weather deployment status – During inclement weather, the agent map color codes jurisdictions with significant weather emergencies.
- Service request status – Significant expansion of the interface between the CSC system and the work management system enable the agent to see detailed information about work in process without leaving the CSC system.
- Identifying issues – There are efficiencies for VDOT representatives in identifying transportation or roadway issues whether in local jurisdictions or roadways maintained by VDOT.

This project solves identified needs within commercial off-the-shelf (COTS) platforms. VDOT staff realized the overall gains from cross-departmental collaboration. Other state agencies and local governments benefitted from the enhancements. The system upgrades and streamlined project are significant because they improved system integration and customer service.

All in all, the CSC enhancements significantly improved interactions with citizens and responses to their concerns.