WHEN ALL THE CHATTER MATTERS: GEORGIA'S LIGHTNING-STRIKE CHATBOT PROJECT

NASCIO 2021 State IT Recognition Awards

gta GEORGIA TECHNOLOGY AUTHORITY

CATEGORY: Digital Services: Government to Citizen

STATE: Georgia

CONTACT: Calvin Rhodes, State CIO
(404) 463-2340
calvin.rhodes@gta.ga.gov

PROJECT INITIATION DATE: April 2, 2020

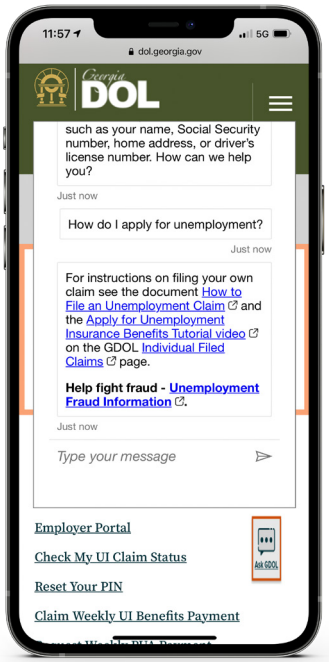
PROJECT END DATE: September 30, 2020

EXECUTIVE SUMMARY

When citizens need information from a government agency, they shouldn't have to jump through hoops. It ought to be simple to get answers. Timely answers. Accurate answers.

That principle has long guided Georgia's efforts to improve citizen interaction with state government. It steered development of the state's award-winning digital platform, and it influences the way state agencies present information on their websites and through other channels.

But no one planned for this.



In early 2020, the COVID-19 pandemic took hold. Georgians had questions. Lots of them.

"How do I know if I have COVID-19?"
"Where can I get tested?"
"I've lost my job – how do I apply for unemployment?"
"How long before I might see a benefits check?"
"How long do benefits last?"

They dialed every state agency phone number and emailed indiscriminately. They tried websites and online forms. Forget visiting a state office in person – most employees had been sent home to work remotely. Call centers were slammed with unprecedented volume. On-hold times were measured in hours not minutes, and callers eventually just hung up.

Adding more call center agents couldn't solve the problem. The need was urgent, and the solution needed to be, well, almost immediate.

Agencies asked the Georgia Technology Authority (GTA) for help, and its digital services team mobilized. Their best answer? A new, automated customer service channel – a chatbot able to answer the most common questions with up-to-the-minute information. The challenge? Implement and launch in just four days.

Over a single weekend in early April 2020, the team deployed an off-the-shelf chatbot and then dug into the hard part: adding the most sought-after information. They began by connecting to the CDC's COVID-19 Q&A and then added information about unemployment insurance and other key topics. They prepared to monitor daily logs to get cues for adding other information users were after.

By Monday, April 6, the chatbot debuted on the Georgia Department of Labor website, where it assisted 10,000 users that day alone. By the following week, it was deployed on several other state websites.

Chatbot use surpassed all expectations: In just one year, the chatbot has responded to 7.3 million questions from 4.4 million users. That's millions of Georgians who might otherwise be stuck on hold.

Even before the pandemic, the state's roadmap toward greater digital maturity included chatbot. But it rocketed to the top of the list in 2020. And, seeing the chatbot's early success, the digital services team soon added more on other agency sites, with knowledge bases unrelated to COVID-19. The initial chatbot remains in place, providing needed information, and GTA is developing an enterprise service offering a full-featured, scalable bot to serve even more agencies – and more Georgians.

IDEA

As the pandemic began to surge in mid-March 2020, Georgians, like other Americans, were desperate for reliable information.

Inquiries about unemployment insurance benefits, virus transmission and testing, and online learning for K-12 students jammed state agency call centers. The Georgia Department of Labor (GDOL), Department of Public Health (DPH), and the Governor's Office felt the crush of calls most acutely and struggled to respond to constituents. Bringing on additional call center agents would be no match for unprecedented call volumes. Call centers are expensive to operate, and scaling them up to meet exploding demand didn't look feasible. Adding to the challenges, regular operations were anything but. Agencies had sent employees home to work remotely.

The state needed a smart and automated customer service channel, and it needed it fast: GDOL needed a solution, and the Governor's Office looked to the Georgia Technology Authority (GTA) to deploy it in a matter of days. Adding a chatbot to the GDOL website – and perhaps other state agency websites – held the most promise for connecting citizens with the answers they needed. Information collected in a single knowledge base could be easily updated to keep it relevant and accurate. Equally important, a chatbot could be deployed quickly to help bridge the information gap right away. This new customer service channel could ease the strain of more routine inquiries while freeing up call center bandwidth to accommodate constituents whose needs required personalized service. Further, a chatbot could meet constituents where they were – and they were on state websites in record numbers. On a Sunday in March 2020, the number of users on the DPH site spiked by an astonishing 11,000%.

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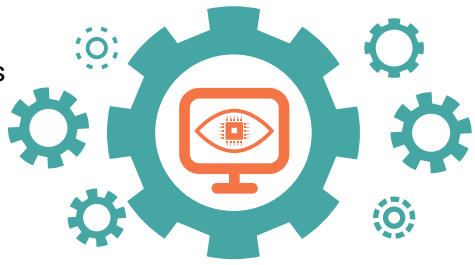
Georgia is not the only government entity to deploy a chatbot, so how is this effort different? Lightning-quick action and strong collaboration on content. The Georgia Technology Authority's digital services team immediately joined forces with vendor partners Microsoft and Unisys to deploy a chatbot for the state's digital properties. The ability of the selected tool, Microsoft's QnA Maker, to read FAQs from web pages and ingest set FAQs into a knowledge base was key to the quick implementation. That didn't mean that content was turn-key. GTA and agencies combed through reports to capture topics, set strategy for formatting questions and keywords, and added prompts on some topics to better gauge the constituent's intent.

With a tight timeline, the initial focus was on the launch of the chatbot, but cultivating it as a useful tool called for a plan extending past the go-live date. The GTA team and state agencies worked out responsibilities, agreeing that agencies have editorial control over chatbot content, and the GTA team manages product maintenance, quality assurance, and data reporting. GTA and agencies collaborate on continuous (typically daily) tuning of the chatbot – monitoring and evaluating queries and updating topics and the knowledge base based on analytics and constituent vocabulary.

The scramble for answers during the pandemic, particularly at the start, was universal. Every state likely faced some version of the challenges Georgia experienced in trying to meet citizens' need for information. The situation fits squarely into the NASCIO State CIO Top 10 Priorities for 2021 – in fact, it very nearly tops the list at #2: Digital Government/Digital Services.



Deploying a chatbot wasn't a new idea for GTA planners. It was already on the team's digital roadmap, but a suitable use case had not arisen. That was before COVID-19.

IMPLEMENTATION

The pandemic effectively fast-tracked GTA's development of chatbot service. When the GDOL contacted GTA for help as inquiries from constituents overwhelmed its call center, chatbot catapulted from longer-term plan to today's plan. The idea of deploying a chatbot gained widespread buy-in from the start. GTA leaders green-lighted the project and associated costs (an estimated $10,000 per month during peak use), and vendor partners Unisys and Microsoft began the quick-turnaround implementation: The call from GDOL came on Thursday, April 2, and the implementation target was the following Monday.

With no time to spare, GTA adapted work already underway on a chatbot solution for the Department of Public Health and tuned it for GDOL. GTA worked closely with GDOL to assemble the solution in a staging environment and develop an action plan for deployment in the state's Azure cloud environment. To prepare the chatbot to respond to constituents, they worked together to identify and code questions and answers. Over that weekend, GTA, GDOL, DPH and the Governor's Office tested the chatbot and contributed additional content to the knowledge base.

The call for help from GDOL came on Thursday, and the chatbot implementation target was the following Monday.

By Monday, the chatbot was live on the GDOL website, answering questions from Georgians like, "How do I apply for unemployment insurance?" Just a week later, it was deployed on additional websites, including the Department of Public Health, the Governor's Office, and Georgia.gov, the state's primary website.

That's the short version of the story, but it doesn't give a full picture of the process, challenges, and lessons.

The tight timeline demanded speed. The team's project manager oversaw an accelerated Agile methodology, using an iterative approach to propel the project forward. The technical aspect of deployment was fairly straightforward: Install the off-the-shelf product and tune its performance over time based on traffic patterns. The content part of the equation proved much more challenging: What questions should the chatbot be equipped to answer? With reliable information hard to come by in the early days of the pandemic, the team looked to the U.S. Centers for Disease Control and Prevention and connected to the agency's COVID-19 Q&A as a starting point for content. The team then turned its attention to adding critical information about unemployment benefits: How do I qualify? How do I apply? How soon will I receive a check? Information supplied by GDOL was coded, and the agency was given the ability to monitor analytics and update content on the fly after launch.

As the chatbot was deployed on a handful of other agency websites a week later, the team kept a close eye on daily logs to see what kinds of questions users submitted and how they phrased them, as well as the sort of information they needed. With a single knowledge base serving the chatbot on multiple websites, they quickly learned of potential mismatches on questions and answers, resulting in confusion for users. For example, a question about one agency's business hours or locations could yield an answer giving *another* agency's hours and locations if the chatbot misunderstood the user's intent.

IMPLEMENTATION *(continued)*

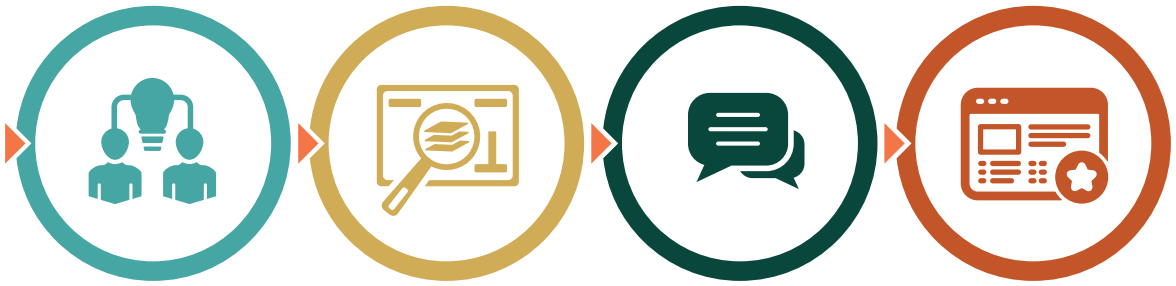
In July, a chatbot was deployed on the Department of Driver Services (DDS) site as well, this one serving as a proof-of-concept for bots not specifically related to COVID-19 content. The team gained important insight for building a chatbot able to serve agencies across the state's enterprise. As the team monitored trends, they realized the complexities of having COVID-19 and non-COVID-19 content residing in the same knowledge base. Some questions received answers that were relevant to key words but missed the overall topic of the question. For example, "Do I need an appointment for a test?" could refer to a COVID-19 test or a test for a driver's license.

Capitalizing on real-world experience and new insights gained as 2020 progressed, the team was able to make foundational changes to content formatting to reduce potential confusion for users.

In some instances, creating a totally separate chatbot was the best approach. The unique information asked of the GDOL and the extremely high GDOL traffic volume (about 10,000 GDOL-related queries for every question about another topic) led the team to place the agency's content into a customized chatbot with its own knowledge base in early September. It worked, minimizing mismatches and cross-ups seen when the chatbot on the GDOL and DDS sites drew from a shared information pool. Further, the GDOL team created 399 alternative versions of questions about the $300 Federal Pandemic Unemployment Compensation, an especially frequent inquiry, as an additional step to see that constituents received the information they were looking for.

A chatbot isn't a "set it and forget it" tool. It must be closely managed and tuned as long as it remains live on state websites. The main objectives are to quickly answer simple questions and direct constituents with complicated queries to the correct state agency or most relevant webpage.

Behind the scenes, agencies manage chatbot responses in an offline spreadsheet which the GTA team imports into the shared knowledge base backend and publishes to the live chatbot. Chatbot content inventory is re-evaluated and updated as needed. Using Google Analytics and Microsoft Azure to monitor chatbot traffic, trends, and user requests, GTA sends monthly traffic and insights reports to state agencies. The chatbot is programmed primarily by QnA Maker pairs, as well as alternative phrases and keywords a constituent may use when asking about a topic. As topics or themes emerge as trends, new QnA pairs are added to the knowledge base.



IMPACT

When you can find a solution to a pressing need, prepare and launch it for use in the span of a weekend, and see immediate benefit for citizens, you've done a good thing. **By all measures, Georgia's chatbot deployment has been a success.**

What created the urgency? In times of crisis, Georgians need to be able to count on their government for reliable, accessible information. As the pandemic unfolded, usual communications channels, such as agency call centers, were no match for the tidal wave of inquiries from constituents. Call volume was so high that systems literally failed, causing users to be on hold for an hour or more only to be disconnected. By far, the majority of inquiries were related to unemployment benefits. With employers limiting operations or closing their doors, even temporarily, the situation was critical. Not being able to get timely answers would only add to the anxiety for thousands of Georgians. In desperation, people tried every phone number, email address, social media channel or online form to try to get their concerns in front of someone. Call center agents served as many people as they could, often repeating answers to the same questions over and over, but they couldn't make a dent in the demand.

If constituents were not getting through on phone lines, they were visiting state agency websites in record numbers. In March 2020 alone, the DPH website served 2.7 million unique users, an increase of more than 1,700%. During the same period web sessions topped 5.6 million, an increase of 2,642%. On Sunday, March 22, there were 659,967 active sessions on the DPH site, a jump of more than 14,950% over Sunday, February 23. Users totaled 447,165 on March 22, an increase of 11,141%. By answering the most common questions, the chatbot relieved some of that pressure. It provided a new express route to critical information, offering vital connection in a crisis. The chatbot provided a way to "get through to someone," even if an automated someone.

How do you know if it's making a difference? Chatbot success is measured in several ways:

Usage: The team tracks both the number of questions asked and the number of chatbot users over time. Peaks in chatbot use that coincide with times of extremely high call volume for call centers provide some assurance that the chatbot is an effective channel for sharing rapidly changing information during times when getting through to speak to someone is especially difficult.

Quality of answers: While the team tracks the most common questions, they also study questions that stump the chatbot. As trends emerge, content is added to foster fewer unanswered questions and more successful interactions. When is an interaction successful? Only when constituents get the information they need.

Without follow-up information to track user satisfaction (likely to come with the development of a full product offering), the team created a formula for estimating successful interactions as a percentage of answered questions. For the period from the initiation of the chatbot in April 2020 through August 2020:

TOTAL ANSWERED QUESTIONS:

3.96 million – total questions minus unanswered questions (<1%)

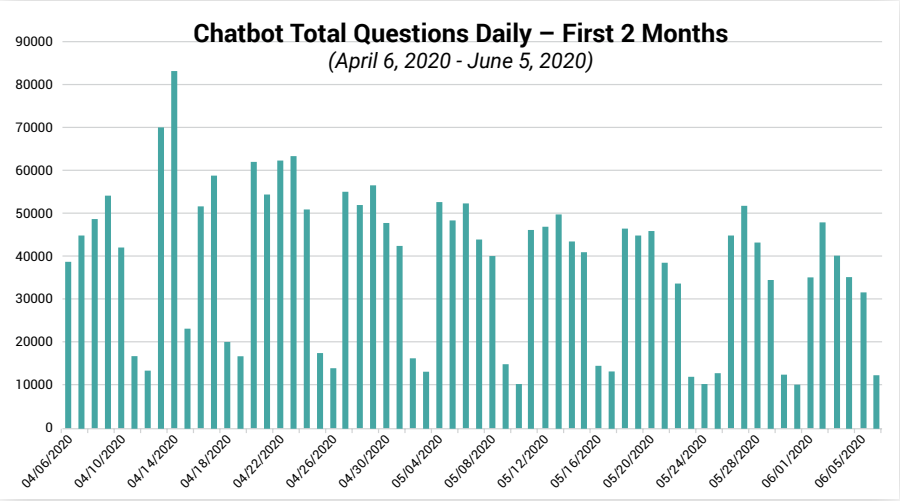
SATISFACTORILY ANSWERED QUESTIONS:

1.2 million – assuming a low satisfaction rate for a perfect answer (30%)

1.6 million – assuming a moderate satisfaction rate for a perfect answer (40%)

IMPACT *(continued)*

Chatbot use took off right out of the gate: The chatbot on the GDOL website assisted 10,000 users on April 6, its first day. As the chatbot was added to additional sites a week later, unique users totaled 202,511 with 413,620 queries. By mid-May, the chatbot had provided 1.6 million answers, and the heavy use would continue.



The chatbot is also well suited to the way users access state agency information. Mobile users represent more than half of state agency website visitors, and an even more impressive 80 percent of chatbot users. The chatbot serves as an especially welcome guide for anyone who might not know their way around state agencies and services: An evaluation of chatbot queries suggested that many users have limited familiarity with available services. Many are serving as caregivers of someone else in need of state support.

Chatbot: The First Six Months

APRIL 6, 2020
Chatbot launched on GDOL website and assists 10,000 users on day one.

APRIL 14, 2020
Chatbot added to more websites: DPH, Governor's Office, Georgia.gov. Queries totaled 413,620 with 202,511 unique users since launch.

MAY 13, 2020
Chatbots have provided 1.6 million answers. Each week, queries average 250,000 with 122,000 unique users.

MAY 28, 2020
Chatbot users reached 1 million.

JULY 7, 2020
Chatbot added to DDS website and serves as proof-of-concept for use not specifically related to COVID-19.

SEPT. 8, 2020
Newly customized chatbot deployed for GDOL website.

SEPT. 17, 2020
Chatbots combined to answer 4.5 million questions and serve 2.2 million users.

In just one year, chatbots on state of Georgia websites responded to 7.3 million questions from 4.4 million users. That's millions of Georgians who otherwise might not have received the help they were looking for. With those sorts of routine, repeated inquiries addressed, state agency staff also had better odds of addressing Georgians who needed personalized service.

It's safe to say that chatbots are here to stay on state of Georgia websites. For crisis or calm, they've proven their worth. With the initial chatbots in 2020, the state has done more than kick the tires; it's gone under the hood to check the engine, get rid of the sputters, and fine-tune performance. The work cycles and repeats. Tracking interactions. Studying analytics. Reorganizing content. Charting traffic trends.

The team has beefed up the chatbot owner's manual, and that extensive knowledge is critical to building a next-phase strategy and architecting a more robust chatbot as an enterprise product offering.

Deploying chatbots doesn't answer every challenge in connecting citizens with government. But in a digital world, it opens an invaluable new channel that allows for immediate communication and often, immediate resolution. And that just may be the kind of answer everyone is looking for.