Building a Truly Smart Community

Principle Three: Analyze and Action Data

GOVTECH SOLUTIONS SERIES

Government professionals around the world are actively working to make their communities 'smart' in efforts to increase prosperity, safety, and well-being of their citizens. In this Solutions Series paper, we thoroughly consider the third principle of creating a truly smart community – analyzing and actioning large amounts of data in near real time to directly benefit citizens and their community.

A community must have a system to analyze data created in the most efficient way possible so that actionable steps can be taken. Importantly, an investment in Artificial Intelligence (AI) is necessary for this.

Most governments already have large amounts of data about nearly everything in their community that can affect citizens' lives – from building permit request trends to roadway use patterns, code violations, and more. In an earlier paper, we discussed the importance of digitizing all of this data so that it is available to help power decisions about where to apply changes or improvements in communities to benefit citizens. Moreover, as governments invest in Internet of Things (IoT) devices , the volume of data they will need to manage and analyze will increase exponentially.

IDC estimates today that there are 33 zettabytes of data in the global datasphere (including that held by governments). One would have to stream HD video for about 53 million years to consume that much data. Further, we add to that every minute, hour, and day. The amount of data in the world will increase by more than five times in the next six years.

That data has the power to help transform communities and power real-time decisions and actions that make communities better – but only if it can be effectively analyzed. Analyzing zettabytes of data may be theoretically possible, but it is not a realistic task for humans to accomplish – we need the help of technology to analyze large volumes of data in anything approaching real time. This is why an investment in AI technology is important.

AI is the development and use of technology to perform tasks that normally require human intelligence – things like visual and speech recognition, answering queries, searching for information, and – importantly – data analysis.

There are many examples of governments using AI today – especially the use of "chatbots" – that is, computer programs that can "answer" basic queries and look up and report information from databases. Los Angeles uses a chatbot to answer business-related questions from residents. The San Diego County Sheriff uses a chatbot that finds and sends critical information to deputies while they are in their cruiser (for example, looking up registration information of a vehicle the deputies need to know more about or are pursuing). North Carolina's state IT helpdesk employed a chatbot to help users reset passwords after finding that more than 80 percent of tickets their IT professionals were managing involved that task – therefore freeing up these same professionals to focus on more complex needs of their internal and external customers.

Many state and local governments' smart community efforts focus on infrastructure – things like better aligning traffic signals to improve traffic flow and cut commute times; monitoring air and water quality to protect citizens and make real-time changes (such as those that can remove extra cars from the road on a low air quality day) when needed; preparing for the potential dangers of natural events like storms and earthquakes to protect citizens; and deciding where best to invest money in future infrastructure so that communities attract growth and provide a good quality of life to citizens.

The value to those governments investing in AI is that it can sift through the vast amounts of data generated by those infrastructure sensors, find patterns in almost real-time, and then alert humans to those patterns so that action can be taken.

Think about a government department that has deployed IoT sensors to warn of and protect citizens from natural disasters such as flooding. The faster an anomaly is spotted – say from quickly rising water levels in tributary creeks after a big rainstorm – the more time there is to take action to move people out of harm's way. A smart community system like this, powered by AI analyzing data from those sensors in real time, could automatically close low-water crossings remotely, re-route traffic patterns to aid with necessary evacuations, and decrease the time it takes first responders to get to where they are needed.

The potential of such use of technology is tremendous. Imagine health departments better able to find the pattern of spreading diseases much earlier to prevent further infections. Or, AI that "listens" to social media to quickly notify fire and rescue individuals to emergencies. Or even better, anticipating infrastructure maintenance needs so that they are planned for in a way that does not disrupt services or traffic flows and avoids big problems like water main breaks.

Importantly, many of the most promising plans for deploying AI help augment, not replace humans. Freeing up government employees from dealing with the mundane and repetitive

allows them to focus on higher value work. And, using AI for effective and near real-time data analysis helps government professionals make data-based decisions that improve citizens' lives. A Deloitte report from 2017 estimated that AI could free up 30 percent of the government workforce's time in five to seven years. That amount of time could be effectively dedicated to high-value, citizen-benefitting work.

There are challenges for governments that are ready to make smart-community and AI investments:

- The adoption rate is slower in the public sector than it is in the private sector. According to a recent Gartner survey, about 20 percent of government CIO respondents reported actively experimenting or making investments in AI. That is compared to a rate of 50 percent of Gartner estimated top performers in various private sector industries. The public sector adoption rate will have to increase to make smart community efforts viable.
- Governments, in general, do not currently employ enough data scientists to adequately plan for all of the smart initiatives they would like to launch. Moreover, the demand for those with data analytic skills – by both the public and private sector – is skyrocketing, making the right data scientist a more expensive hire for the average government. •
- There is some natural leeriness by both the public and government employees toward the use of AI, primarily fueled by the idea that AI will begin to eliminate the need for many jobs that exist today. There is no doubt AI will change some of today's jobs, but the outcomes of the changes may also be beneficial for both government employees and citizens.

How should today's government technology professional approach the third principle of creating a smart community?

First, they should prepare government employees and citizens about the augmentation power and potential of AI. Effectively painting the picture of what's possible using AI and how it can make government employees' jobs better, more interesting, and more focused on benefiting the community can help dispel the myth that AI is here to replace today's government employee. It's important to prepare today's government workforce for the impending changes so that they are adopted and not resisted.

Second, they should have a clear plan for what data will be analyzed and how the analysis will be used to make decisions. A data scientist can serve governments well when making these plans. It may be time for a government CIO to hire skilled personnel into their staff or to make an appropriate investment in using the right consultant to help. A well-planned implementation of AI data analysis can help ensure the success of a key smart community project.

Third, they must consider the investment in AI that will be needed as part of a larger smart community plan. While computing and data storage and IoT sensor costs have all declined rapidly, consider if any investments to a government's current technology stack will be necessary to use AI data analysis applications effectively. In addition to the cost of talent for data analysis and planning, there is likely to be costs associated with building AI programs to analyze data from IoT devices and existing systems – estimates of which vary tremendously based on one's current technology infrastructure and needs. This is an important component of the budgeting process for smart-city initiatives.

Fourth, they should remember the "value payoff" of the investment. While investments in IoT, data scientists, and AI technology may create budget tradeoffs for governments, the value of the payoff of an effective smart community program must be kept in mind. Using smart-community approaches to manage traffic flows effectively with smart signals can take a sizeable up-front investment. However, shaving even minutes off of the average commute time within a community can lead to huge gains in productivity and quality of life, and low commute times can attract more businesses and residents, which helps a community build a sustainable cycle of growth.

Creating a smart community can be an easy commitment, but achieving that goal is a challenging, involved process for today's government CIOs. The huge amount of data generated by smart city projects has real value when it can be effectively analyzed and actioned – especially when that happens in near real time. Well-planned investments in AI are one key in government's efforts to make their communities truly smart.

In a future GovTech Solutions Series article, Calytera will examine the fourth principle necessary for creating a truly smart community. If there are topics you would like to hear about, let us know!

If your government is ready to build a smart community, we would love to help. Contact us today to set up a demo of our Amanda Platform, or to take a preview before we talk, visit our short Amanda product overview video.