



Building a Truly Smart Community

Principle Two: Invest in IoT

GOVTECH SOLUTIONS SERIES

Governments are increasingly being tasked with creating smart communities. In this Solutions Series paper, we continue to examine what it takes to build a truly smart community. Calytera's last paper discussed the first smart community principle. Today's paper explores the second principle about investment in Internet of Things devices.

A community must invest in Internet of Things devices to generate real-time data.

Internet of Things (IoT) is a concept that describes how everyday objects are connected to the Internet using an IP address. IoT sensors are increasingly small and flexible allowing them to be connected to almost anything – for governments, this includes public infrastructure like traffic signals, street lights, air and water quality sensors and much more.

To illustrate, consider an infrastructure staple which most all of us (and certainly most citizens) come into contact with daily, the traffic light.

Equipping a traffic light with an IoT device and camera instantly makes considerably more data available about a lot of things including traffic flows, wait times, back-ups, accidents and more. The IoT device didn't suddenly make the traffic light smart – that requires collecting, analyzing and actioning the data in near real-time. Doing that spots patterns near instantly and can anticipate and therefore avoid back-ups and long wait times, help reroute traffic to avoid accidents and emergency vehicles, and even strategically plan maintenance to minimize the effect of having an intersection blocked and/or detour routed. The key to unlocking that potential started with the installation of the IoT device.

Traffic signal timing is often discussed when considering smart community solutions, but the potential transformation is extremely significant. Consider the average commute in Central Texas (the 11th largest metro area in the U.S.) is just under 30 minutes. That means the area's population spends a collective six thousand days-of-time commuting to work – each and every workday. Imagine smart signal timing reducing a few minutes from the average commute and the potential of even a fraction of that time being returned to invest more productively. Not to mention, less idling of cars protects our air quality and public health. And smart traffic systems



can get emergency vehicles to accidents and back to hospitals more quickly – which can help save lives.

IoT is a fast-growing and fast-developing technology. Gartner estimates there are more than 14 billion connected things in use this year and predicts there will be 25 billion by 2021 – just 18 months from now. IDC predicts that \$745 billion will be spent worldwide on IoT technology in 2019 and that number will continue to increase, surpassing \$1 trillion in 2022.

There are several reasons for this strong growth. Businesses, governments, and consumers are already reporting benefits from the deployment of IoT technology including increases in efficiency. Meanwhile the cost of sensors is low and becoming even more affordable. In 2020, the average cost per sensor will be 38 cents – that’s a 75 percent decrease in cost over 10 years.

One of the primary benefits to governments from using IoT technology in the building of smart communities is the generation of real time data that can help power decisions that improve public safety, economic opportunity, and quality of life. Governments have already invested in devices to control everything from monitoring street lights, to the health of trees in city boundaries, to tracking fish and wildlife, to preparing for earthquakes. In many cases, investments were made long before today’s concept of IoT – but often for significantly more cost per sensor than what is available to governments today.

These trends all benefit governments. The lower cost per sensor makes securing budget to invest in the technology easier and allows governments to put sensors in greater “spans” of infrastructure. As more and more benefits are reported by early adopter governments, the justification for the technology investment is easier to make. And of course, citizen expectations only grow over time because consumers are increasingly exposed to the potential and benefits of smart devices in their everyday lives.

In fact, research show that investment in IoT is actively underway or being examined by governments of all sizes and types. A recent study from the Center for Digital Government found that all surveyed governments were actively considering IoT. One quarter of those were already implementing IoT solutions, one quarter were actively planning deployment of solutions, and the remaining half were aware of the benefits and actively considering IoT technologies. Eight-one percent of U.S. cities are planning their technology strategy and spending with IoT in mind. IDC forecasts that IoT adoption rates in cities could reach 80 percent by 2025.



What is the best strategy for today's government CIO or technology professional, ready to invest in IoT to make their community smart?

First, be prepared to dedicate part of the overall technology budget to investment in IoT devices. The decreasing costs of devices makes this easier, but government budget tradeoffs will have to be made. An investment in IoT may mean deferral of other capital investments – including investments in hardware, data management, and more. Tradeoff decisions are not easy to make, but the potential benefits of IoT investment should easily justify the investment decision.

That directly leads to the second part of a strategy – having a clear vision and plan for how IoT devices will be deployed and used, and how the results of that effort will be measured and reported. This technology can be deployed in most any type of infrastructure – from streetlights, to building monitors, to sidewalks, to environmental quality monitors. Because an investment tradeoff has been made, it's important to have a clear plan for deployment and expected outcomes. Starting with one small pilot project is an excellent strategy for a government CIO who needs to collaborate with many government stakeholders in the effort. The success of a trial helps pave the way to buy-in and approval of additional projects.

Third, make sure there is a plan to capture and use the data that will be generated by the new devices. In Calytera's previous paper, we explored the critical need to collect all data into a standard data set. The deployment of devices will dramatically expand the amount of data generated. Not only do governments need to be prepared to capture that data, it needs to become part of the same common dataset already created. To illustrate, consider a traffic light. Putting an IoT device on the light isn't what makes it "smart." The key to "smart" lies in the data that device generates and using it to make real-time decisions that allow that traffic light to make things work "better" at its intersection.

An additional benefit of carefully planning for capturing and using data is that any department within the community can potentially access and use that data to make improvements – some of which may be add on benefits to the original project. For example, a traffic light equipped with an IoT sensor that is continually rerouting traffic flow because of accidents could trigger the department of public works to investigate how to re-engineer an intersection to avoid those accidents in the first place.

Creating a smart community can be a rather easy commitment, but achieving it is a challenging, involved process for today's government CIOs. Technology trends and developments are making it easier for government technology professionals to invest in IoT



devices. It's likely we'll continue to see significant IoT centric projects deployed by governments in the next couple of years, and the success of those projects will lead to continued growth in IoT initiatives and help today's government CIO get closer to making their community truly smart.

In our future GovTech Solutions Series articles, Calytera will examine the next two principles 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.