

Smart Cities Innovation Accelerator at Las Vegas

Mobility and Safety in City Innovation

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Mobility in Our Cities

With populations on the rise, mobility is one of the major focus areas for all smart city projects. How can cities make transportation more fluid and efficient? How can they reduce congestion and pollution from gasoline engines? What alternatives to the traditional personal automobile should cities explore – and how do they get their citizens and communities on board with the new options? At the Harvard Smart Cities Innovation Accelerator at Las Vegas, a session entitled *Mobility in Our Cities* was held to address these questions. Here are some key insights from the expert panelists.

Transportation Problems

Before moving forward, it is important to look at the current problems that cities are facing with transportation. The Washington D.C. metro system was used as an example by one panelist, who noted that upgrades and upkeep of the system were neglected for a long time because of lack of funding, which ultimately led to a series of sparks and fires within the tunnels.

These issues caused the city to have to shut down whole sections of tracks for months and months in order to handle repairs—which made it even more difficult for city residents to get around. As commuters started to rethink transportation methods and explore alternatives, problems compounded. Not only was the metro system facing its original issues, but it was suddenly facing reputational problems and lower revenue too.

Across the globe, city transportation systems are encountering these and other dilemmas. The big question is what can city leaders do about it now?

Many Parties Involved

A discussion of what to do about transportation problems leads to the question of whose job it is to fix these problems. As it turns out, many parties are involved. Although city leaders are called on to fix the city's transportation system, in actuality, very few cities are in charge of the transit agency in their city; they typically don't have ultimate authority because it is run by some other public agency.

Many parties have a role in fixing broken urban transportation systems. Businesses, the community, academia, the government, utility companies—all have a hand in solving the big question of how we move people and goods around the city. This requires collaboration of all parties—from idea generation to project implementation—and finding the right player to handle each element of the project.

Don't Reinvent – Reimagine

When looking for solutions to city mobility issues, one panelist put forward an interesting point: that many 'solutions' cannot actually solve problems because they are just reinventing systems and ideas that are already around and have shown that they don't work.

For example, the company Chariot, a commuter shuttle service, received \$3 million in seed funding and was later acquired by Ford for \$65 million, but the idea then fizzled away. Why? Because their whole idea was simply *mass transit reinvented*. It is a smaller, cooler bus with Wi-Fi, but in the end, it is still just a mass transit bus. Reinventing the old will not solve our mobility problems. City leaders must think outside the box to reimagine transportation and come up with different solutions.

So Many Options

There are a lot of possible transportation ideas that could improve movement in the city—possibly even too many. A hundred years ago when the automobile came out, the choice was easy: purchase a horse or purchase a car. Today we have so many different options, including app-based services, ridesharing, bike sharing, scooters, public transit, and more. How do we make sense of all these things?

City officials may be tempted to place their bets on a particular transportation method and go all-in—but panelists urged leaders not to take this approach. It is not settled yet what the main transportation technologies will be in the future. If a city goes all-in on one specific technology and then that technology disappears, the results could be devastating for the city.

One trend that is gaining popularity is the idea of Complete Streets, where it is acknowledged that no one knows what transportation methods people will gravitate to, so all sorts of technologies are explored as potential options. This means that even if the main method of transportation currently is a personal automobile, alternatives will be made available in the city, such as bicycle lanes, pedestrian lanes, a rapid transit bus, a flex lane, and so on. If the car ever goes away or becomes autonomous, the city can swiftly adapt.

One downside is that these alternative methods of transportation may not be widely adopted. Take, for example, bicycling, which is only 0.6 percent of commuter traffic on average in the United States, and at the highest reaches a peak of 2.3 percent in Portland. A lot of time and resources have been spent to get more people to adopt bicycling as the method they use to commute in the city, but the efforts haven't really moved the needle. That said, if a city can work to take 3 to 5 percent of cars out of rush hour traffic, this small gain will produce measurable results.

Generational Transportation Preferences

Several times during the session, panelists mentioned the fact that we don't really know what forms of transportation will gain popularity in the future, so it is best to diversify. That said, they seemed to agree that transportation norms will change, and that change will be largely due to younger generations who have different transportation preferences as compared to older generations.

Generation Z is the first generation to grow up in their formative years with apps and smartphones. Older members of Generation Z may own a car, but they use it a lot less than other generations who have always used a personal automobile as their main (or only) mode of transportation.

Generation Z members also work and socialize differently. They tend to socialize in the virtual world and thus take fewer trips requiring an automobile. The number of people who work remotely is growing too, which means fewer people need a car for their 9 to 5 commute. Scheduled socializing, such as Friday night happy hour, is less popular as well, and the 'catch-if-you-can' lifestyle means greater acceptance and usage of many different modes of transportation. In summary, there are a lot of conflicting things happening in the space of transportation right now, but city leaders should be prepared to see a noticeable shift as the future plays out.

The Importance of Data

While panelists suggest that there will be a shift, they were also careful to reiterate that at this moment in time we don't know what forms of transportation will be dominant in the future. Because of that, city officials shouldn't try to make guesses and go all-in on a particular mode of travel. Each city should determine its course of action by reviewing the data and listening to its community.

To illustrate this, one panelist brought up the example of Crystal Pepsi, a product released in the 90s that ended up being a flop. Company executives thought they knew what people wanted and needed—that consumers were looking for something clean, cool and clear, so they could repackage their traditional carbonated beverage to have these characteristics. However, Crystal Pepsi died because it actually wasn't what the people wanted at all. The company thought they knew what the people wanted, but they were absolutely wrong.

City officials are cautioned not to follow in the same footsteps. Most leaders don't exactly understand the patterns and behaviors of people today, and the way that they want to live. Creating smart city mobility options that will resonate with the community will require understanding their attitudes and behaviors then adjusting city systems to make them work better for the people.

As such, city officials can use smart city technology (sensors, smartphones, etc.) to gather insights on mobility within the city, such as road conditions, patterns, how many people move through intersections, what modes of transportation are being used, etc. As cities explore different projects and pilots, they should also not be afraid to fail, but instead fail fast, learn from it, and iterate. The key to success is exploring many possibilities, and making these new transportation options open and available to the community so people can try them out and provide feedback.

As cities review their unique transportation issues and brainstorm possible solutions, there are three things to keep in mind when embarking on mobility projects. First is the importance of access: what transportation methods exist and can citizens easily access them? Second is assurance: will the transportation always be there and is it reliable? Finally, city officials should consider attitude, namely, how can the city help to inspire and invigorate the community to embrace new technology and change their behaviors?

As one Accelerator attendee noted, "A smart city is one that has equitable access to smart technology." When city officials consider access, assurance, and attitude in their mobility plans, they must take into account all members of the community in order to create an intelligent transportation system that positively impacts the quality of life of all citizens.

"Mobility is the great equalizer of the 21st century."



Strategic Solutions for Cities

By Nathan Giles, Accenture and Franco Amalfi, Oracle

In 2018, representatives from Accenture and Oracle began an important conversation at the Smart Cities Innovation Accelerator at Dublin, Ireland, an event that was held to bring together city officials and leading experts to discuss all aspects of smart city projects, including how to overcome challenges and find a pathway to success, and, in particular, how large companies who have relationships with a wide array of partners can help further smart city efforts. After the event, the companies moved from conversation to action. Here they report on their approach and thought process to enabling smart city solutions with city partners.

Identifying Smart City Challenges

They began with an examination of all the successes and failures in the smart city space. What followed were countless discussions with city leaders about what things were going wrong and why they weren't able to take their pilot projects to scale at speed, since success requires the ability to do things at scale where the ROI actually works.

Many city problems emerged from these discussions with city leaders, and some of the main issues identified included:

- Not having enough money to innovate and carry out smart city projects.
- Not having enough skills in-house to evaluate vendors and make the right selections.
- Fear that they may be doing something that might not work or that they might regret (and then being blamed for that failure).
- Not trusting vendors, who typically approach the city with the main incentive of selling their products.

After identifying the biggest challenges that were causing smart city projects to fail or not to scale, it became clear that the current system is not working as well as it could. Something more needed to be done.

In the months that have followed, Accenture, Oracle, and a whole assembly of large companies that have joined the efforts, have developed an innovative model for smart city projects. "The Dream Team" as they affectionately refer to it, has been working with cities across America to set up the structure they need for success.

Creating a New Smart City Model

The team's model for smart city success looks a lot different than the current system in most cities. It is designed to help cities get out of "pilot hell" and to create the right environment where scalable, sustainable projects can come to fruition. Here are a few of the considerations within their smart city model.

Saying Goodbye to Vendor First Mentality

“Vendors don’t play well in the sandbox,” says Giles, a fact that had to be addressed directly in this new model. Vendors come to the city wanting to sell their own products, and when multiple vendors with competing products are all beating on city doors in an effort to sell, it can be overwhelming for city officials. Giles summarizes the approach in the new smart city model as “This isn’t about you. This isn’t about selling your stuff. We are vendor agnostic.” He explains that Accenture manages the conversations with the different vendors from a pure standpoint of evaluating products to find which will best solve a specific city problem.

Identifying Use-Cases

Gathering data to understand the needs of the customer (citizens) is the first step in identifying use-cases. The goal is to be proactive about solving city problems, not reactive. When potential use-cases are found, it is then important to evaluate why they should go forward and what the value is to the city.

Plotting Out the Ecosystem

Understanding the city ecosystem is critical because it gives leaders and decision makers a full view of the city and how the smart city projects will fit in. In creating the proposal for a potential partnership in Kansas City, Giles sought a map of the entire city so he could understand the scope, current status, and potential future opportunities for solutions. For example, where are all the streets, light poles, and traffic signals? The map allowed him to layer on the various use-cases, as he and the team contemplated questions such as what is the density for the 5G antennae that would be put up around the city, where are the poles that will support that, what is the electrical usage, and so on. In the end, all use-cases were plotted out on top of the engineering diagram of the city, giving them a model of how it could all work together.

Sustainable Planning

Funding smart city projects is a huge issue for city officials. “Different cities will have different approaches,” says Amalfi, but in this new smart city model, there is always a solution to the big funding question. For example, in Kansas City, the money could come from private funders—financial institutions that specialize in civil infrastructure and traditionally finance airports. In Tampa, the city is looking for Use Case examples from a newly stood up commercial project on the water front that has received significant investment from Jeff Vinik and Bill Gates. And in other cities, the funding might come from telecom or private financiers that finance telecoms. In terms of financing, the model also allows for the highest ROI use-cases to pay for non-fundable use-cases. For example, by using take-outs from profitable use-cases, a city can also solve its digital equity problems, which would be harder to fund on its own.

Setting Up a Governance Model

There is an assortment of governance models used around the world for smart city projects, from the extreme case of places like Singapore and Dubai where the government puts up all the money, to the other extreme where you have places like Austin, TX that have a robust, innovative environment but may not capitalize on this as well as they could for new smart city projects.

As a solution to this, the team proposed a governance model to Kansas City that would be based around an innovative company called Think Big Partners, which would serve as the host to the program. The fiduciary would be the Economic Development Council, which already has the ability to handle money and move programs forward. The governance model includes other elements as well, including a program management office, initiative teams, and strategic advisors from industry and academia. Similar models have been put forth in other cities, although each is a little different depending on who the players are there that have relationships and reputations. One thing that spans all of these governance models is absolute, complete transparency in every dollar that flows through.

Forming a Partnership

Finally, a big component of this new model for success is the team itself which, in proposals to Kansas City, comprised approximately 40 partners who have committed to work together to solve city challenges rather than simply pushing sales of their technology. This group works together to make sure that the right solutions are on the table for the city. “We have Oracle, Amazon, Microsoft sitting at the same table together,” says Giles, “Talking about how they can work together for the best interest of the client. It’s mind-boggling.”

The team is now working towards a similar approach in their proposal to Houston, which will involve getting approval, setting up a safe harbor and fiduciary, putting the governance model into place, and getting all players at the table. Similar discussions are being had with the Washington DC Greater Board of Trade (BOT) as well as government leaders in Puerto Rico. Having modified this model for about eight different cities, many of the common roadblocks have been overcome by leveraging the ideas from other city proposals and partners.

“Our goal is to move away from just talking about Smart Cities to actually doing things and creating what a lot of other parts of the world are doing,” says Amalfi. Accenture, Oracle, and the other partners in the team see this model as a way out of ‘pilot hell’ and into a position where US cities can do smart city projects at speed and at scale.

*“Any objection
you bring
forward, we
believe we have
built a solution
for that into
this model.”*



Smart & Healthy Cities

By Ted Smith, University of Louisville

“What if I told you that cities were the important unit for health, and there’s \$3 trillion coursing through the veins of the healthcare industry and none of that today is rolling through cities in any meaningful way?” In his session titled *Smart & Healthy Cities*, Ted Smith, a former CIO for the city of Louisville who now works for the University of Louisville, told the story of how diverse parties joined forces on a mission to solve a health mystery plaguing the city. Although this story is unique to Louisville, it demonstrates the interconnectedness of city problems and why city leaders should consider tackling health problems using smart city technology.

The Healthcare Problem (And Why Cities Should Care)

The cost of healthcare in the United States is a serious problem. It currently accounts for 24 percent of GDP, and will likely reach 30 percent within the next six years. These large costs are largely due to chronic diseases that are poorly understood in terms of where they come from and how to get ahead of them. Healthcare expenses have ballooned because these are expensive conditions that must be managed over decades.

That said, is health a problem that cities should tackle? Many city leaders might say no. Of course, there is such a thing as ‘public health’ but that’s not about keeping people well—it’s about protecting the public from epidemics. When you consider chronic diseases, public health departments are largely ineffective because they’re not paid to solve those problems. These diseases are the concern of the healthcare industry, which largely believes that health is a matter of chemicals interacting in the human body.

In actuality, *place* is an important factor for human health and well-being, and this makes cities critically important. Things such as how the city is designed and what chemicals are in the city environment will impact the health of residents. As this story about Louisville demonstrates, cities have the power to alter these factors and, therefore, to greatly impact health outcomes.

City leaders may believe that health issues are outside of the city’s scope, but individual and community health is connected to other city priorities. In Louisville, the subject of health came up when business leaders in the community told the mayor that they were having a hard time moving mid-level managers to the city because either they, their spouse, or their kids have asthma or some other breathing issue—they didn’t want to move to the city because Louisville is known as one of the worst places to live if you have breathing challenges. While health may not have been a top priority for the Louisville at that time, economic stability certainly was, and a disaster would happen if these large companies decided to leave the city and set up headquarters elsewhere. In response to their concerns, CIO Ted Smith said he’d do what he could to investigate the problem.

The Initial Pilot

The first thing Ted did was to ask people in public health the reason why people can't breathe in Louisville. The best answer they had is that it's because the city is located in the Ohio River Valley. He then went to medical professionals, but for them, the breathing issues weren't about location. To them, breathing problems like asthma are simply physiological problems. Asthma isn't any different in Louisville than it is in New York City, Oklahoma City, or anywhere else. It's just asthma, and you treat it with drugs.

Not satisfied with the answers, Ted and his team designed an 18-month pilot study that was funded by money raised privately. They rolled out 300 smart inhalers and got 300 city residents to volunteer. The inhalers would allow the city to get a snapshot of when and where people were when they had to use the rescue inhaler.

The pilot study found that these asthma events were indeed clustered. Heat maps showed two areas in particular that were associated with increased asthma incidents. This made the team question the relationship between space and health. What was going on in these places?

The pilot soon got the attention of the Robert Wood Johnson Foundation, which was interested in funding a \$1 million expansion of the project. The one requirement they had was that 30 to 40 percent of the 1000 people who would take part in the study must come from the city's largest employers. Why? Because these employers were responsible for large healthcare expenses, and that vested interest may persuade them to fund future studies to find solutions and lower their healthcare burden.

This second study followed 1200 participants, and when it was over, the map of asthma incidents looked a lot like the original one with 300, only with better resolution. The data was analyzed, taking into account many possible variables, including race, household net worth, age of housing, amount of greenness versus development, and proximity to roadways, the airport, and industrial polluters. In the end, a constellation of things helped to predict where asthma attacks were occurring, but some of the most powerful predictors were proximity to roadways and lack of green spaces—in other words, ambient pollution factors.

Assembling a Team of Collaborators

If the problem of asthma attacks is related to air pollution, the solution is simple—get rid of air pollution. Of course, that is easier said than done. Ted and his team decided that instead of complaining to the EPA they would try to do something about it on their own. Knowing that greenness (the presence of trees, bushes, etc.) is associated with cardiopulmonary health, they decided to try a little experiment to see if they could create “urban biofilters” – vegetative buffers of trees and shrubs strategically arranged to help filter the air. However, their efforts were stalled because the city didn't have the money to pay for the trees.

Partnering with the University of Louisville, the city went to the National Institutes of Health to try to secure funding for the project, but that proved difficult too. At the time there were no controlled trials that demonstrate that planting trees has a causal relationship with health outcomes. When they proposed their experiment to the NIH, they were rejected—twice. On the third attempt, the NIH finally agreed, but under one condition—they couldn't use NIH money to buy trees.

Having solved half of the funding dilemma, the city then talked to the Nature Conservancy, an organization that has been concerned about urban ecology and the fact that people in cities care less about conserving nature because they never see it. They agreed to commit \$10 million to buy trees—under the condition that that money would not be used for health expenses such as collecting blood and urine from test subjects.

With collaborators on board, a section of the city that corresponds with asthma incidents was chosen, an area with 22,000 people impacted by air pollution from the nearby expressway. 700 people joined the clinical study, agreeing to be measured periodically on aspects of cardiovascular health, and 8,000 immature trees were planted. The city also set up sensors from the University of

Louisville on telephone poles to monitor the community, including air monitors, noise monitors, sewer analysis, and more.

The hypothesis of the study is that green interventions will mediate ambient air pollution. The pollutants can be measured in blood, urine, toenails, and hair to see how much air pollution the trees are processing. If the hypothesis is correct, the study will also find improvements in the cardiovascular health of the clinical subjects. The study is ongoing, but if the results are promising on clinical markers, Humana, located in Louisville, has agreed to rally the mayor and other major employers in the area to create a community fund to pay trees and bushes to be planted in other areas of the city.

This smart city example demonstrates that successful smart city projects require collaboration from a diverse number of stakeholders. “We’ll be more powerful if all the vested parties that care about health are at the table,” says Ted. He and his team worked to make that a reality, and similarly, all cities working on smart city projects should plan and run those projects in partnership with local businesses, universities, funding agencies, and the community as a whole.

The story of Louisville working to solve health problems in the city should also inspire other city leaders that they can do something about problems impacting the health of their residents. When it comes to health, *place matters*. City leaders can use smart technology to understand health in their communities and improve outcomes.

*“This isn’t about
Louisville doing
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different things.”*



Fireside Chat: Accelerating Growth

By Michael Sherwood, Director of IT, Las Vegas

Michael Sherwood has been the director of Information Technology for the city of Las Vegas since 2016, and in that time he has worked on hundreds of smart city projects in an effort to bring new technology and new possibilities to the city. During the Harvard Smart Cities Innovation Accelerator at Las Vegas, attendees got to see these smart city solutions on display, including a ride on Vegas's autonomous shuttle and demonstrations of smart city projects related to traffic and public safety. On day 2 of the Accelerator, attendees had an opportunity to pick Michael's brain in a Fireside Chat session. Although his answers are specific to the unique city of Las Vegas, they outline some of the major areas that all cities should be contemplating as they embark on the path to becoming a smart city.

Defining Goals

Although there are specific goals related to each smart city project or pilot, each city should have overarching goals that steer the ship forward. In Las Vegas, Michael says that the real goal is economic development. While the city is known as an adult getaway featuring gambling, shopping, entertainment, and nightlife, Michael wants to expand that and also make it known as a place of innovation.

“The city has no capability to survive another downturn like it has in the past without a resilient base of some other type of economic stability,” says Michael. “And that means diversifying the environment.”

While boosting efficiency, improving public safety, and lowering economic costs are important parts of employing technology in the city, the main goal for Las Vegas is to drive and respond to economic development. Similarly, all leaders who are taking on smart city ventures should consider what main goal they are seeking to achieve, and choose projects that help them move closer to that goal.

Recognizing Context

Las Vegas smart city projects are big, bold, and broad in scope, and during the Fireside Chat, some Accelerator attendees noted that what was happening in Vegas may not be accepted in their own cities. In response to this, Michael made it clear that context is important and will impact how your smart city projects play out.

Over the last decade or two, Las Vegas has been in a state of constant change. The city started out being known as an adult playground, then began to market itself as a family destination, and eventually migrated back to being an adult playground once again. The focus on table games has shifted over time to an emphasis on sports. The city even blows up buildings after 10 years when they are no longer deemed fun or useful. When change is the norm, there is less backlash when technology officials like Michael want to try new things.

The community also understands and accepts technology perhaps more than people who reside in other cities. Casinos have all sorts of higher level technology that citizens have accepted. Acceptance of technology is even part of state culture, as Nevada was the first state to issue autonomous drivers licenses and to have autonomous vehicles running in mixed flow traffic.

The community's wide acceptance of change and new technology means that Las Vegas can experiment with smart city projects that would be hard to get off the ground in other cities. That said, every city has its own unique culture and context. City officials can use that knowledge to their benefit to choose smart city projects that will be embraced by the community.

Using Sales and Marketing

Seeing all the incredible smart city developments happening in Las Vegas led some Accelerator attendees to wonder, "How do you pay for all of this?" Michael's response was simple. "I am a good salesman."

When asked to elaborate, Michael explained that he is constantly getting out there and talking to companies, selling hard and fast by urging them that they can go from MOU concept work to signing an agreement in 60 days, then jumping right into setting up the infrastructure needed to make it happen. "I think why we have the edge is that we are willing to do whatever it takes to get these companies to be here and showcase the technology because when we showcase it, we are showcasing Las Vegas as a whole. It goes back to economic development and marketing."

Speaking of marketing, Michael's sales pitch to prospective companies highlights the fact that working in Vegas means getting your product out there fast and making a huge splash doing so. Why wait a year to bring your product to CES when it can be showcased all year round in videos, events, and other marketing endeavors with the city? By marketing products, Las Vegas itself also gets the spotlight, and that attention makes city council members more likely to approve future smart city projects too.

As a result, Michael says his department has spent a modest budget to work on all the various smart city projects, most of which has been spent on infrastructure—laying fiber, putting up boxes on signal poles, etc. Most of what they have done has been within budget, and when they save money, they reinvest the savings into new companies and products.

With limited IT budgets, all cities have to be mindful of how they can fund smart city projects. Michael's approach highlights the fact that when working with private companies that make smart technology, city leaders should create a win-win situation and pitch it with confidence.

Thinking About Sustainability

In a lot of cities, pilots that show promise end up flopping because when the money goes away (and it eventually does), there is no sustainability model put behind it. In Las Vegas, Michael builds sustainability into every project from the start.

First, Michael is very careful about selecting pilots. He says the first question you should ask is "Can I trust the company?" Las Vegas doesn't do many pilots with small start-up companies because it's harder to have faith that they will be around long enough or that they will put in the time and energy needed to make the project succeed. Larger firms tend to be more trustworthy, and they also have deeper pockets.

If a company has passed the trust test, cities must then ask, "What is this pilot going to do for the city?" "Try never to do a pilot just to do a pilot," says Michael. He chooses projects that will make some kind of change internally, or which will educate the staff and provide them insights into a new technology or endeavor they haven't done before. When choosing pilots, all cities should likewise be mindful to select those that move the city closer to its main goals.

To ensure the pilot is sustainable for a longer period of time, they have brainstormed things such as a small increase on parking to pay for infrastructure, but they also choose projects that will be funded outside the IT department. "When we create a solution, we

are selling it to a department,” explains Michael. Michael sees all 21 city departments as private investors, and the IT department’s role is to create services that they can sell to its sister departments.

This model may be useful for other cities who want to ensure that their most successful pilots can scale and stand the test of time. It is also a reminder that all cities must consider sustainability when selecting and designing smart city pilots.

Moving Forward

Las Vegas has seen tremendous success in smart city ventures, so many Accelerator attendees had questions about what is on the horizon for the city. Michael spelled out several plans including:

- Improving documentation as well as governance and community outreach, all of which have taken a backseat as the city has focused on testing technology.
- Working on laws and policies related to personal identifying information, as the city seeks to create an app to give citizens access to all city services, including paying bills.
- Creating a Las Vegas Plan that takes into account the things they have learned throughout the last year and a half of testing, in order to guide future smart city endeavors.
- Working more with internal staff to help them evolve and embrace a future economy that will require new skills.
- Developing a technology embassy so the city can work with companies outside the United States that want to bring products to market and further economic development in Las Vegas.
- Exploring a way to regionalize data, so ‘smart city’ does not end at the Las Vegas city line, but instead, Las Vegas can help the region and eventually the state embrace smart city technology and solutions.

“This is not a conversation about making Las Vegas smarter than any other city. It’s about making our region and making the world a better place,” says Michael. “If we can help further their efforts then we want to share, and we want to help, and we want to learn.” The city of Las Vegas also welcomes collaboration with other cities across the country that are working on smart city projects. All cities, regardless of how advanced their smart city ventures currently are, should have a game plan to move forward too. Collaboration—moving forward together—is a key element of success.

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Data and Privacy Panel

The excitement of smart cities projects comes from their infinite and exciting possibilities. By using technology to make the city smarter, more efficient, and more streamlined, one can begin to envision a future city that looks completely different from the one existing today. What is a little more humdrum about these projects is the data. However, although data is a little less exciting to visionary CIOs, data and smart cities are inextricably linked. Before jumping into any smart city project, leaders must consider how the data will be collected, stored and used in a way that will protect the privacy of citizens from whom that data is gathered.

Data and privacy was the subject of a panel discussion held on the second day of the Harvard Smart Cities Innovation Accelerator in Las Vegas. During that session, one project, in particular, exemplified the importance of having an open and transparent conversation about data collection up front.

Sidewalk Toronto: A Cautionary Tale

Sidewalk Toronto is a joint project by Waterfront Toronto and Sidewalk Labs (a sister company of Google) that seeks to renovate land on Toronto's waterfront to create a mixed-use community that would become a model of sustainability, innovation, and technology. While still underway, the main snags in the project have stemmed from the fact that there were a lot of discussions about the innovative things they could do in the project without properly engaging the community first.

Confronted with the notion they could be tracked (and not knowing how that data might be used), citizens formed an advisory board to oversee the data privacy issues of Waterfront Toronto. As citizens on the board didn't agree with the direction the project was taken, they began to resign and speak out against the project, causing an even bigger ripple of distrust in the community.

“So the lessons learned from Sidewalk Labs is essentially that we are not taking security as kind of the core of the whole proposal versus the cool stuff we could do with this fifty million dollars.”

4 Data Challenges to Consider Alongside Smart City Projects

It is clear that data and privacy concerns must be addressed at the onset of any smart city endeavor, but what specific things should city officials contemplate? During the Data and Privacy session, panel members contributed what they thought were the top data challenges to work out for a successful smart city project.

Data Sharing Inside Government

Smart City projects aim to find solutions for city problems that span a number of governmental departments. Thus, these vertically oriented departments must be able to collaborate to fix problems that horizontally span multiple areas of government. For example, to tackle the problem of crime, one must consider the relation it has to housing, public safety, health, and even trash collection. Integrating datasets from these various departments is a must, and smart city officials must work to boost communication and collaboration to make it happen.

Data Sharing With Private Parties

Another natural by-product of smart city projects is the fact that the data gathered within the city may be of use and importance to companies in the private sector, who want to take the processed data and transform it into something else for their customer base. Collecting data is tricky for city governments, but creating robust data sharing agreements that respect citizen privacy is even harder.

Navigating Citizen Expectations

When it comes to collecting data, many citizens are inherently suspicious, so open and honest dialog is a must. What types of information are citizens comfortable with the city gathering? Understanding this may require a city to abandon the use of some technologies (such as facial recognition), or carefully negotiate with the community how these technologies will be used. A city must negotiate privacy and data policies that citizens will agree to, and this often involves starting at the bottom to build trust with communities, so citizens believe that the data and data policy will not be abused.

Iteration and Scale

It's an amazing strategy to be able to pilot a lot of possible projects in the city to see what works and what doesn't. However, when a pilot does show potential, what does that actually look like for the rest of the city? And how do the lessons learned from one pilot transfer over to additional pilots in other areas? Key among this is the need to marry the concepts and data from one technology or pilot into an overarching data architecture. Instead of having several segregated projects, city officials have to plan out how the information from many projects can come together in a cohesive way.

"I think the flavor of this discussion has all been about how do you side-step or moderate regulation, rather than thinking that regulation could actually be a huge benefit to the economy of a public authority."

The Various Ways to Think About Data and Privacy

To be successful, smart city leaders must consider more than just what problems in the city need solving and what cutting-edge technology can provide answers; they must also work to build public trust, navigate the expectations of the community, and develop agreed-upon methods to keep privacy safe.

During the Data and Privacy session, panel members also shared examples of how their cities are handling citizen's privacy concerns. As it turns out, there are many methods used.

- Cities like Seattle have decided that they would be completely transparent with citizens. In August 2017, they passed the first ever surveillance ordinance in the United States, which exposes the technology the city is using down to the nuts and bolts, seeks comment from the community on all past and future technology, and requires the council to say yes or no to all incoming technology.
- In cities like Kansas City, they have decided to take the issue of individual privacy out of the equation by automatizing and aggregating all data at the block level (for example, the number of cars that pass through, people, left turns, etc.) This allows them to make decisions at the block level that will help them better manage the city while keeping individual identity safe. Cities like Aurora are being cautious about what technology they deploy and where. Although the city uses about 400 cameras for public safety and traffic control purposes, they have not deployed technology in specific neighborhoods yet (such as underserved neighborhoods), and plan on doing due diligence before adding any technology that may invade individual privacy and cause push back.
- In cities like Louisville, data privacy is less of an issue because the public had previously demanded better surveillance systems after an incidence of civil unrest that disrupted the city. Citizens appreciate that cameras can help find evidence and lead to arrests and convictions, and they are demanding even more cameras in historically high-crime areas.
- Another option that many cities implement is to only keep data for a certain window of time, after which they delete or override the data. Although the window of time may vary (typically between 30 and 90 days), most cities allow the police to get clips of video footage when needed for evidence, and the clips stay on file forever.
- In the wake of GDPR laws, which allow European citizens to ask any institution of business with data what data they have on them and also request to be 'forgotten' (delete that data), a new model may also be on the horizon, whereby the commercial value of data is recognized, individuals and communities have control over their data, and the value can be brought back to the community or to the individual. Instead of trying to side-step or moderate privacy regulations, this model monetizes data and creates an economy out of the growing amount of data that cities are collecting.

"I think it's the city's obligation who are installing these technologies to make it very clear what these things can and cannot do to really establish that trust."

What is clear is that however a city chooses to deal with data and privacy, they must, in fact, deal with it, and the earlier, the better. Going back to the example of Sidewalk Toronto, although the project got off to a rocky start due to lack of transparency regarding how data would be used, conversations are ongoing. Sidewalk Labs has issued a lengthy proposal that would allow for an independent trust to serve as the gatekeeper of data collected from the project, and government officials along with the community are contributing to that discussion to find a solution that everyone can agree to. Data and privacy are important considerations for any smart city project, and success requires trust, transparency, and collaboration.

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