

Making the Smart City a reality

INVESTIGATION BY **LEE WOODCOCK**

As another ITS World Congress approaches, I thought it'd be a good idea to get the views of leading experts. So in this Investigation, we caught up with Transportation leaders in the Tampa-St.Petersburg region of Florida, who have recently formed the Tampa Bay Smart Cities Alliance with the purpose of finding ways to address the region's mobility challenges through the use of technology and innovation

Q **What does a Smart City mean to you?**
Kenneth Spitz For me the smart part is the integration of real time data with technology to address issues, whether they are social or economic or otherwise. And the city part is really just a geographic placeholder, it could be smart community, region, state, it could be smart space. It has more to do with the level of the infrastructure system that you're building.

Ed McKinney It's a city that leverages available technology to improve something. It could be transportation, sanitation, waste water or something. The critical element is that technology advances so quickly you need to have a system in place that allows you to capture new ideas and technologies more rapidly rather than being in a responsive mode. We should be creating ideas and opportunities for smart thinkers around the world to look at our problems and be ready not only to act on it, but to implement it.

Jean Duncan Smart City is one of those terms where you could ask a lot of different people and get a lot of different answers. For Tampa it's about being pro-active with

technology to deliver better services. I'm proud that the city has a lab approach. We want to pilot new things so we can have better information to lead us to better decisions. It's also really building on collaboration. We not only want to manage our data but have strong relationships based on common goals.

Robert Bertini A smart city has a high quality of life driven by data and analytics with the advancements of communications, computing power and sensors. There's also the concept of equity, the city needs to be accessible and the resources need to be distributed fairly. When we think about smart cities we need to be cognisant of the digital divide and finding ways of making sure all citizens are at the table, and the smart cities movement is focussed on all those things.

Q **Tell me about the Tampa Smart City Alliance and how did it begin?**

RB Back in 2012 the US DOT launched the smart cities competition and the city of Tampa and others put forward a programme. When I arrived here two years ago the city of Tampa made it clear they wanted to build on that momentum and take part in other federal or state competitions. We built a partnership between the university and the

city and we worked with Metrolab housed at Carnegie Mellon University as a spin-off of that competition. The excitement just kept moving and the bottom line is that the City of Tampa, USF and Florida DOT established the Alliance.

We are now part of the Metrolab partnership and we are quite an open organisation of public and private partners. You can think of any neighbourhood as a city, you don't have to be living downtown, it's any community where you are trying to bring people together and make better decisions about the future. We don't want to be too prescriptive, we are taking things step by step.

EM I was involved in the early conversations when this was being discussed and it really was a nebulous thing that nobody really understood. We knew we were interested in it, we'd heard some presentations about some things going on around the world. There were a lot of ideas floating around but nobody in the Tampa Bay region was really collecting them and developing strategies. The city of Tampa was looking at something, we were, I'm sure private companies were but nobody was working collectively to leverage those ideas into a single strategy. So that's how the Smart Cities Alliance was formed, realising that with the university also had interest, we needed to



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Planning and Environmental administrator for FDOT District 7 in Tampa



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VIK BHIDE
Smart Mobility Manager for City of Tampa



DR ROBERT BERTINI, Ph.D., P.E.
Director of the Center for Urban Transportation Research and a professor of civil and environmental engineering at the University of South Florida

get all the ideas collected and focussed in the same direction.

KS The alliance is a loose framework of folks from public, private and academic sectors that have realised that no single player can solve the issues that we're facing and that we have to come together. Plus the recognition that we all have different perspectives and that may open up some solutions.

Q **The strategy of the alliance is to address a series of challenges facing the region, what do you see as the biggest challenge and why?**

EM We're a growing region. Congestion is always an issue. We have an ageing infrastructure and a diverse economy where people don't live in a centralised area and work in a centralised area. We're a large region with a lot of destinations and so what I see as our biggest challenge is how do we connect all those attractions – employment, tourist, airports? We have to find a better way to connect them but at the same time preserve the history and what's important to people. We think technology can help us afford all those goals. Hopefully through these discussions we will learn some things and take those ideas and thoughts and put them into actions that help us accomplish all our goals – preserving communities, moving people and goods, and connecting our destination areas.

JD Transportation is very underfunded in our region. Our gas tax is not indexed so as cars become more efficient, our money goes down. Our impact fees tied to developments have not increased in 30 years so developers pay for their site impacts and little more. Development is not paying for itself, gas taxes are not supporting the maintenance of the system,

and anything new we do is through grants from the DOT. Therefore, we have to be as creative as we possibly can with our technology to keep up with growth, safety and congestion issues. I feel the Alliance can come up with good projects that we can promote such as supporting our Downtowner – a point-to-point shuttle service – that's free to anyone in the downtown area, or supporting an AV shuttle which is another downtown pilot project. We're hoping a grassroots movement that's going on for the public to be more supportive of transportation funding would be supported by some of the projects we're doing when folks see the sort of projects we're doing.

KS As a transportation planner, of course I think transportation is the biggest issue. And it's certainly the most obvious regional issue that we have in the Tampa Bay area. Really we should call it mobility, as opposed to transportation because it involves all the modes.

RB We need to be ready – to take advantage of opportunities that emerge. We want to solve problems and compete on a national or state-wide stage because there's a lot of exciting things happening in Tampa Bay. We tend to think of transportation, moving people and goods, but smart cities are more than just that, including water and energy. We're on the frontline of climate change so we're thinking of clean and renewable energy. There are also public health challenges – access to food, clean drinking water, and exercise – should be considered and transportation has a major role in the conversation.

Q **Flipping that around, what do you see as the biggest opportunity?**

RB I think that's safety. We need to take advantage of the moment we're in now and we

can become the leaders by exploring ways that technology and innovation can help reduce accidents and fatalities.

KS Thousands of people die every year from transportation-related accidents and smart cities have a role to play in reducing or even removing the tragedy.

JD Strategic partnerships with others is a huge opportunity. Typically, our counties and our cities have worked in silos even to the point of competition which gives great headlines for the newspapers but doesn't get things done. Partnerships are already helping in a number of ways. Working with our local electric company, we have smart LED street lights that allow us to monitor our traffic signals remotely and can be dimmable when it's quiet to reduce energy consumption. We can also use these as sensors which have a variety of possibilities. To have this infrastructure built from the beginning rather than looking for money and technology to retrofit is a huge positive so the strategic partnerships have already shown positives.

Q **Technology and data play a key part of any Smart City, what do you see as the biggest technology change that will occur in the next 10 years?**

Vic Bhide I think the first is proliferation of CAVs that will change the way we move around and conduct business and also how we consume transportation services. The other place technology is going to change is in our ability to use biological processes in our lives. For example haptics – voice-activated technologies or even biometrics. That will expand for businesses the consumer base so children and the elderly will be able to consume products that were not otherwise possible and the consumer will be the winner because they will be able to participate in activities that weren't previously possible. Think about blind people using special apps or beacons along the right of way to help them move around.

RB We're on some trajectories of technological change that are obvious to some if not all. For example wireless communication is a trajectory we've been on for a while now. I'm not sure where we are on the S-curve of wireless but people are saying it'll be bigger, better, faster, greater in the future and that everything will be done wirelessly.

The trends in automation in transportation, we're already on that trajectory whether it is trucks or transit or private vehicles, we're automating the movement of people and goods with platooning and use of drones, although that's a little bit out of our control ▶

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because things that the private sector are doing, we don't have lenses into the research so we need to consider what the effects will be and how are we at the table? We don't want to be victims of the advancements and so need to help decide what communities we want to live in. Meanwhile sensor and computing costs are falling and are getting close to zero that allow us to do things we couldn't have thought of before.

KS I'm going to quote the urban theorist Yogi Berra who once said "Prediction is difficult. 'Cuz the future ain't what it used to be." I have to agree with him on that. Probably the biggest thing that will happen is something we're not even aware of right now – it hasn't bubbled up into the mainstream consciousness. I'm sure somebody has some ideas I haven't even considered that prove to be the light bulb moment.

EM That's the unknown! There's always an Elon Musk out there looking for the better mousetrap. Our job as a government agency is to be responsive to that. Our system takes so long to get from concept to construction. To really capture the ideas and the thoughts and make Tampa a destination for those technology thinkers, we have to be flexible and to adapt. That's the challenge, to do that in a quick and efficient way.

JD Lately we have been referring the right of ways associated with our roadways, as digital right of way. There may be opportunities for the public and private sector to use these corridors to collect and share data. Our management of the data is going to be critical to how these develop, how energy and information is shared and how the money flows.

Q If you had a magic wand, what would be the solution you would introduce tomorrow and why?

KS I'd say autonomous travel. Because of safety. It's commonly understood that the majority of traffic deaths and injuries arise because of human error. Once we have autonomous travel, hopefully that error goes

away and those deaths don't happen. The second part of mobility is there's a significant section of society, the young, the elderly, disabled or economically disadvantaged who don't have the ability to travel freely. The rest of us take that for granted. Autonomous travel will change things and we don't know how that will affect our society.

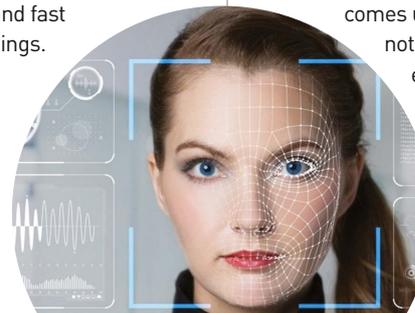
EM I think we can do a better job leveraging existing infrastructure with technology, whether it's connected signals or adaptive technology on Interstates. I would like to see us pilot some ideas and fast forward some of these things. Tampa would be a great location for a laboratory of smart technologies. With the university and all the different private and public sector partners eager for this, I think if I could wave a wand I would have all those things going and have people saying Tampa is the place we want to try out these technologies. We welcome those things and encourage those ideas.

JD One of the things that we don't really appreciate until we don't have it is power. We had a wake-up call with Hurricane Irma last year. We thought we would have a Category Five hurricane at one point. Being at the Emergency Operations Center and bracing myself while we had the biggest mass evacuation of people certainly in the history of Florida and maybe in the US, what we found afterwards was a third of our traffic signals were out, many waste water pump stations were down, and roads did not have traffic signals. So if we could leverage renewable energy and have a game plan that would give us that seamless energy opportunity, we can get back on our feet after something as disastrous as a hurricane or even the everyday things. These big setbacks are lost opportunities because power outages translate to money. We need a resilient

infrastructure built in to prevent outages in our communities resulting in major economic issues. We can avoid tipping that one big domino and provide a safer and more sustainable environment.

VB I think the one thing that stops us delivering MaaS applications in the US is the inability of service providers to resell each others services. For example, the public sector can not sell private products. My magic wand would give us a regulatory change to make that possible.

RB Finding a way for everyone to have a voice and everyone is connected in ways that suit them. A smart city is one in which everyone is as connected as they want or need to be. It could come in different ways – it could be a sidewalk between their front door and the nearby grocery store. It could be a safe bicycle crossing on a major arterial. And for someone else, it is a broadband connection so they could order their groceries. I think it's been a theme of so many conversations where equity comes up almost every time. We're not very good at measuring equity or accessibility – not good at measuring the hard things that involve more than one dimension, we come up with overly simplistic ways of measuring what we're doing.



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Lee says...

I think what is happening in the Tampa Bay region is really exciting and driven by both passion and collaboration and this comes out strongly in the words of the contributors.

The way they have structured alliance to focus on action underpinned by a set of Core Values and Guiding Principles acts as a model for others to follow, alongside their three strategic themes of Mobility as a Service, Common Data Platform and Reimaging Infrastructure.

It has been a privilege to be involved in the Alliance and I am looking forward to the pilot projects and the resulting improvements in safety, reducing congestion, increased mobility options and readiness for new and emerging technologies. ■