

# DESIGNING THE SMART CITY



**Rob Jowett**

**B**uilding smart cities that serve their citizens well will mean focussing on finding the best applications for new technological innovations in order to address urban challenges, rather than on using technology for the sake of using it.

Finding innovative ways to apply new technologies to solve city problems was the goal of **Stantec's** Idea Hackathon, the first-ever hackathon hosted by the company at the **Globe and Mail** headquarters at 351 King Street East in Toronto June 25 and 26. The event brought together public and private sector employees, university students and academics, who worked in 10 teams of four to six members to develop innovative ideas for using emerging technologies to build livable, equitable, sustainable and resilient communities to improve the lives of residents of Toronto and beyond.

“For us, smart cities is something that’s important,” Stantec urban places vice-president **Nancy MacDonald** told *NRU*. “And a lot of people will think about smart cities as... all about the technology, and it’s all about infrastructure and buildings. But really, it’s the outcomes [that are] the important piece. And so,

how do you make a city, a community, a neighbourhood more livable, more equitable? How do you use technology to achieve that outcome?”

She says a hackathon was chosen over a traditional conference because it permits a lot more interaction and collaboration than a traditional conference. Beyond the structured search for concrete solutions and ideas, the format forces participants to

interact with each other and breaks down silos between professions, giving people perspectives they may not have encountered before.

“Conferences are very linear,” says MacDonald. “And one of our participants... said that we have all these great experts and people come together in a room... and they get a whole bunch of information and that’s it, they’re gone. So the hackathon

is bringing that same, really talented group and team together into a room for two days... it’s very iterative, and it’s very much groups of people that are not necessarily working together all the time—different kinds of thinkers.”

Ideas developed by the teams were evaluated by a panel of five judges, who determined the top three pitches. The winning idea was a proposed technology the winning team called ‘PowerWalk.’ PowerWalk would use panels that capture energy from footfalls to generate electricity and to collect data about pedestrian movements. The captured energy would be used to light the immediate area, while offering insight on how many people walk through a specific area at a given time and in what direction they are travelling.

“We can use that data for a variety of different things, such as to help government agencies better quantify their economic-impactive pilot projects,” freelance designer and UX/UI consultant, and PowerWalk

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Teams participate in Stantec’s hackathon in Toronto June 25 and 26. The event sought new ideas for building smart cities.

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team member **Melissa Morgan** told *NRU*. “It can optimize investment in pedestrian infrastructure. It can quantify fare evasion. And you can even use it to evaluate lane needs for urban trails, which ultimately improves security and overall uses.”

For example, she says, if the TTC installed PowerWalk panels near subway entrances, it would be able to determine how many people used the subway in a given time period. By comparing that data with how many fares had been paid during that period, the number of fare evaders could easily be determined. Morgan adds that the panels cost about \$1,100 per square metre, but businesses would quickly recoup their investment from reduced electricity costs.

MacDonald says while it was difficult to pick a winner given the strength of all 10 teams’ submissions, she believes PowerWalk was chosen due to the depth at which it considers solutions to problems and the versatility of its applications. MacDonald was not one of the hackathon judges.

“Part of what we look at [in the development of smart cities] is how to improve that livability, and obviously walking is going to be one of

the chief modes of movement, especially in Toronto,” she says.

The second-place idea was ‘3WeeksOld,’ a proposed social media platform for newcomers to Toronto to connect them to services and resources such as banks, housing, education, and health care. While services exist currently to help new residents settle, they are often disconnected and new Torontonians are often unaware of all of the resources available to them.

“One of the challenges in any big city with all sorts of different immigrants, different cultures coming together, is people not really understanding the systems and how to get around and how to get the help they need and how to find job and where... [to] live,” says MacDonald. “So this tool is really one that was really interesting in that it was creating this access to that network of information to help support a community and help create a more livable experience for people coming into a community by using a social networking platform.”

The third-place idea was a proposed network of small weather stations and sensors placed across the city, called ‘Litmus.’ Toronto has only three weather stations across the city, and with climate change,

weather events are becoming far more localized and can miss those existing stations entirely. Litmus proposes that a broader network be created to aggregate environmental data to allow for better responses to extreme weather events and to help resilient city-building.

“That real-time data would be important for building operators who have... some of their internal systems adapt as the weather changes. And so, that increased ability to understand what was happening and when... it’s coming would make a big difference in terms of how to operate some of these facilities,” says MacDonald. “It’s an interesting component in terms of how we think about smart cities that it doesn’t necessarily have to be terribly complex, but it is really how... you apply the technology and how you use the tools to come up with solutions.”

Other ideas included integrating transit systems across the GTA, creation of a smart hub that would connect retirement community residents with services such as health care, creating weather sensor kits for people to install in their homes, and developing apps that would simplify

pothole reporting, encourage public participation in building flood resilience, allow residents to leave augmented-reality messages and notes anywhere in the city, and integrate traffic congestion data.

MacDonald says the hackathon was a major success, and that Stantec is looking to host more of these events in the future. She says date, time, location and focus of the next event will be determined over the next few months, but that it will take place somewhere in North America. 🌸

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- Melissa Morgan