stars insights: 25 January 2019

Moving From "Smart" to "Responsive" Cities

Over the past decade, the technology-centric approach to "smart cities" has dominated conversations about cities around the world. Yet, a city is made of and for its citizens. Therefore Prof. Dr. ***Gerhard Schmitt****, Professor of Information Architecture at ETH Zurich and Director of the Singapore-ETH Centre who will host one of the site visits of the upcoming stars Singapore symposium 2019, calls for a more people-centric approach in the planning, design and management of "responsive cities". Such cities will empower citizens to engage in decisions that affect their daily lives and the rules that govern the city.*

The term "smart cities" has been dominating conversations about cities for a while, with proponents in many parts of the world jumping on the bandwagon in the past decade. In 2015, India launched the Smart Cities Mission and announced that it will transform 100 Indian cities into smart cities.

Thanks to the advent of technologies such as sensors, AI and VR, and the development of new applications, city planners are harnessing new technologies to make the administration of cities more efficient. For instance, the introduction of interactive voice response and chatbots in government call centres and websites is only the tip of the ice-berg where the potential of AI is concerned.

Unsurprisingly, conversations surrounding smart cities tend to focus on technology. Yet, a city is made of and for its citizens. Can we take a more people-centric approach instead of a technology-centric one in the planning, design and management of the city?

The city in your hands
The term "responsive cities" evolves from smart cities, with a fundamental difference: the citizens move from the centre of attention to the centre of action. In a responsive city, citizens are empowered to engage in decisions that affect their daily lives, the spaces they live and move around in, the delivery of essential services, and the rules that govern the city. It puts the city in their hands.

Responsive cities change the way technology is used, whereby responsive citizens use smart technology to actively contribute to the planning, design and management of their cities.

The first smart cities were technology-driven, producing large amounts of data from fixed or centrally controlled sensors. Today, with high mobile phone penetration rates in many cities, citizens are taking the lead in direct data generation, sharing data on multiple platforms, such as reporting faults and incidents through apps. The citizen's ability and willingness to act becomes a foundation of a responsive city.

Tools of engagement
Beyond apps, various tools of engagement are deployed by city planners and administrators. The right tools will ensure that information, which may at times be of a domain-specific or technical nature, can be effectively communicated in both directions. Before even

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beginning to identify the most suitable tool to engage citizens, it would be helpful to first consider a common “language” to communicate with the intended audience. The visual language is a very powerful one. “A picture is worth a thousand words” says it all. Visualization changes or reinforces our perception of everything we hear, taste, smell, see, read, plan or imagine. Design and visualization are intrinsically coupled. This explains the power of design.

At the Singapore-ETH Centre, we place strong emphasis on the visualisation of data and simulation as important means to communicate our research to partners, stakeholders, and the wider public. The visualisation tool “Singapore Views” was recently applied in the Cooling Singapore project to communicate the extent of the urban heat island (UHI) effect in Singapore. In this visualisation of the UHI, the map of Singapore is colour coded with a range of warm to cool colours to depict the extent of urban warming in different districts over the course of 24 hours. This form of visual communication, which is highly accessible to the lay person, spoke to a wide audience and made the call for action to combat the UHI effect even more compelling.

In providing ideas for the design of urban spaces, the citizen may be ill-equipped to express design ideas to architects and urban planners in the language these trained professionals are used to. User-friendly design tools such as qua-kit (Quick Urban Analysis kit) allow a lay person to communicate design ideas visually by placing public parks, residential areas, streets, buildings and infrastructure within a neighbourhood as desired. The citizen, as a lay person uncoloured by political or commercial interests, constraints or conventions, could generate out-of-the-box, or even “disruptive” ideas to spark a paradigm change. The citizen design science team at the Future Cities Laboratory has applied the qua-kit in several design exercises. The tool has proven to be an unconfrontational platform to gather inputs and facilitate constructive dialogues.

At times, even the most advanced tools may be found lacking in collecting complex and in-depth qualitative data. In the Cooling Singapore project, researchers conducted face-to-face interviews to find out citizens’ perception of outdoor thermal comfort. This subjective measure is based on the individual’s response to the current weather condition, such as temperature, humidity, and wind. Given the same conditions measured by instruments, the individual’s perception of thermal comfort could vary with the person’s tolerance for heat, attire, activity engaged in, and where the individual came from (air-conditioned or non-air-conditioned place). Even in this “high-tech” era, using such a “low-tech” conventional tool for data gathering could well be the most comprehensive and effective, but does not make a city less responsive.

The future responsive city

Today, a google search of the term “Smart Cities” yields 600 million search results; a search for “Responsive Cities” 55.6 million results. A lot more needs to be done. Yet, there is a glimmer of hope. Cities such as Zurich, Vienna, Copenhagen and Berlin are already leading role models of responsive cities.

Mayor of the city of Zurich, Ms Corine Mauch, shared her views of the impact of responsive cities in a recently launched massive open online course (MOOC) on “Responsive Cities. “A government administration that wants to be open and transparent will gain the trust and the respect of the people,” she said. “I think what’s most important is that engaging people is the standard in Zurich, as it’s also part of our political system.”

That said, there is no one-size-fits-all formula for successful responsive cities. This is neatly encapsulated in the motto of the Future Cities Laboratory – “Through science, by design, in place”. At the end of the day, responsive cities solutions need to be backed by science, designed with the citizens in mind, and with their active support, implemented in a context-appropriate manner for the specific place.

*Prof. Dr. **Gerhard Schmitt** is Professor of Information Architecture at the Swiss Federal Institute of Technology Zurich (ETH Zurich) and director of the Singapore-ETH Centre in Singapore, where he conducts research as Principal Investigator of Big Data Informed Urban Design and Governance project, Cooling Singapore project, and Digital Underground project. His work focuses on the definition and design of Information Architecture (iA) as the next level of Computer Aided Architecture Design (CAAD). The creation of a simulation, visualisation and interaction platform for the Future Cities Laboratory (FCL) is at the centre of his research, which focuses on the development of intelligent design support systems using artificial intelligence methods.*