

STREETWISE

Up to £25tn is expected to be pumped into the development of smart cities across the world, but what is a smart city and what do they mean for project managers?

We speak with Bechtel's **James Denton-Brown**, civil infrastructure planning manager, to find out more.

If you stand in a modern city centre, you will likely see examples of technology that a decade ago would have been difficult to fathom. There is no doubt that cities are being made to be increasingly 'smart', but that doesn't mean they are 'smart cities'.

A smart city is efficient; it uses information and communications technology (ICT) to enhance the quality of life of its residents and visitors. The recently released *Smart Cities Readiness Guide*, published by the Smart Cities Council, outlines in simple the three main elements of a smart city. According to the report, all smart cities will:

- COLLECT** information about current conditions across all responsibility areas – power, water, traffic, weather and buildings
- COMMUNICATE** information to other devices or to a control centre, or even to servers running powerful software
- CRUNCH** analyse data and present information to perfect (optimise) operations and to predict what might happen next.

James Denton-Brown, Bechtel's civil infrastructure planning manager,

has helped create the Smart Cities Readiness Guide, which is designed to act as a blueprint to help navigate those involved in smart city developments, including project managers, through what's required in potential future city projects.

He says: "One of the main things this guide is going to do is help city governments and project managers understand their goals about applying new technology in the right way. Most cities don't have a single department or city agency that is focused on all of the different key elements of a smart city, which can be anything from the application of computer software analytics, the placement of sensors in different utilities to provide a constant flow of data, to a transportation network that can process information in a central location, which can then be acted on."

"This guide crosses all the different categories of a smart city, meaning there is now a single blueprint of information that investigates the different ways technology can be applied to a city."

MARKET ACCELERATOR

The guide's publisher, the Smart Cities Council, was set up around 18 months ago as an advisor and market accelerator. It comprises 12 of the



James Denton-Brown, civil infrastructure planning manager at Bechtel, a lead partner of the Smart Cities Council.

largest organisations in the world including Microsoft, Mastercard and Cisco. Bechtel was asked to join the council and took up the offer straight away because of the benefits membership presented.

James explains: "The council gives focus to what had been a loose understanding of how technology is playing an increasingly important role in the development of cities and how it offers some very impressive advantages to citizens as well as to the operations of a city. One of the things we saw with the council was the chance to not only focus on smart cities, but also to interact with like-minded companies. The guide was the output of that collaboration."

"The power industry was one of the leaders in understanding how to apply and take advantage of technology in power systems and grids. This is where the smart city vision spurred from. It then expanded into many other areas, from water and transportation, to the architectural environment and how all those pieces came together."

He adds: "I think the council is taking on a broader vision beyond technology

and going into areas of smart planning and smart engineering now."

For its part in the guide, Bechtel provided information related to the construction of smart city elements from some of the major projects it has been involved in across the world, including the Channel Tunnel, Hong Kong International Airport and the Athens Metro System.

Its case studies offered a sense of reality to the concept of the report. One case study was from a project closer to home – Crossrail. James says although a travel system on its own doesn't constitute a smart city, it is often a key part of it.

"A smart city is made up of many things and it even includes a transformation in the way people think about a city, in this instance, London. It changes the perception of travel and distance thanks to how quickly or effectively one can travel. London is one of the best examples of a smart city in the making," said James.

READINESS TO INNOVATE

Ultimately, the guide will allow city officials to assess their readiness to innovate. It will aid them in identifying a critical path, taking next

steps and measuring progress.

It is a conceptual roadmap to address growth strategies by focusing on universal principles that unite key areas. This, explains James, will empower project professionals to make confident and informed decisions in smart city projects. It lays out simple and powerful technology 'targets' for cities to achieve.

Although the guide is expected to go a long way in helping managers to create the perfect 21st century city, James says to expect changes. "Managers will have to broaden their skillset and understand all the processes that are in place," he says. "There must be an expansion of attitude and acceptance to be able to navigate the world of public engagement. A coherent project management approach must be adopted in a new world where everyone has a voice."

"Finding that right mechanism and attitude where you're open and dealing with things in a new way is important. The core of this guide is empowerment at the user level, there will be guidance in it and everyone picking it up will have a good feel of what's required."

James believes effective project management is essential to the development

of smart cities, describing it as "extremely important" in order to understand the whole process of a smart city project – from concept to realisation.

"Project managers operating in these areas will need to have a good grasp of technology and should have experience of working across various areas – from IT to communication – depending, of course, on their assignment and the particular mandate."

"Practitioners are often an extension of the client or government in these projects. The ability to use the guide as a blueprint applies if you are a project manager taking on a major development project. It allows you to have a much broader perspective and understanding of the specifics of how different technology will be applied in a future city. Project managers can use this across various areas to help them push the boundaries."

The guide will be updated annually to keep up with any new technological developments. The current guide is version 1.0, while version 2.0 is already under way.

The Smart Cities Council has decided on a continuous update and improvement approach to the guide.

A SMART CITY: BARCELONA

In October 2013, in collaboration with Arup, the Department for Business, Innovation and Skills published a report, which analysed six global cities that are paving the way in smart city investment. The International Case Studies on Smart Cities report outlines the increased understanding of smart city technologies while acknowledging the challenging realities involved in trying to implement them.

Barcelona, Spain, was one of the cities highlighted in the report – a compact city where the smart cities movement continues to expand rapidly. It is seen by officials as an enabler for:

- Efficient and sustainable urban mobility
- Environmental sustainability
- Business-friendliness and attracting capital
- Integration and social cohesion
- Communication and proximity with people

- Knowledge, creativity and innovation
- Transparency and democratic culture
- Universal access to culture, education and health.

In Barcelona, it is hoped the investment in smart cities projects will create a sustainable city, and also work towards fostering citizen participation, mobility, and other fields. Officials describe it as a 'transversal approach'.

The city's smart city conceptual model has three layers – people, information and city structure. There are more than 100 projects considered to be part of the smart cities work in Barcelona, and this number is growing. Below are some examples of the projects under way:

- **NEW TELECOMMUNICATIONS NETWORK** – Integration of different fibre optic networks, boosting Wi-Fi network, reduced operating and maintenance costs, new business models.

- **SELF-SUFFICIENT ISLANDS** – Creating energy self-sufficient islands, to improve practices related to consumption and production of energy.

- **ELECTRIC VEHICLES** – Development of electro-mobility in the coming years.

- **TELEMANAGEMENT OF IRRIGATION** – Remote management system for centralised control of the automated irrigation infrastructure, in order to control the duration and frequency of irrigation in each area.

- **0-GOVERNMENT** – Implementation of an 'Open Government' strategy and a roadmap to develop tools and websites in specific areas of transparency, open data and civic participation.

- **SMART PARKING** – Network of sensors and displays of parking availability across the city.

- **BARCELONA IN YOUR POCKET** – Barcelona contactless and mobile apps.

Barcelona is sharing its experiences in developing smart city projects with other cities across the world, academia, and industry. Officials see dialogue as central in spreading learning and maximising the benefit and value of their work.

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