Is there a Role for Geomatics in Smart Cities? - Smart Cities Summit 2016



The Smart Cities Summit focused on the concept of "Smart" for cities, homes and industry. The foundation for smart is surely location but was this appreciated at the summit? Prof. Ian Dowman reports.

Location is an essential component if data is to be analysed, visualised and presented in order to make cities smart, but if the papers and discussion in the Smart Cities Summit are to be taken as an indicator, to the developers and decision makers involved in making a city smart, location is taken for granted.

The Smart Summit held in London on 21st and 22nd September had three tracks: SMARTCITIES, SMARTHOMES, INDUSTRIAL INTERNET and an exhibition which was

concentrated on devices for smart homes. This report concerns only smart cities. The key messages to come from the conference were: 1) that user requirements should be the driver for applications, i.e. a bottom-up approach; 2) a holistic approach is necessary so that different ICT packages are interoperable and departments can work together, and 3) that there is a passion and will to succeed amongst the top decision makers. In the September/October issue of GW, Simon Navin explained that there is a lot more to smart cities than "deploying tech to the right places" and this was borne out by the speakers at this event. Your correspondent hoped to find examples of implementation relevant to geomatics at the conference, but this proved a little difficult.

The case for smart cities in the UK was made by the Department for Business, Innovation and Skills in a background paper on smart cities published in 2013: "Growth opportunities lie, no less, at home through smarter approaches to transport management, healthcare and energy. On the back of better connectivity and better access to public information, we can manage cities more effectively, anticipate and solve problems more cost-effectively, and raise the economic prospects and the quality of life in every British town and city. In so doing, the UK can strengthen its position as a global hub of expertise at a time when cities throughout the world are seeking innovative solutions to the challenges of urbanization."

The main application areas that could be addressed by smart data emerged clearly from the conference as:

- Transport: management of transport infrastructure; finding parking spaces; managing congestion; programming pay-as-you-go autonomous vehicles; programming deliveries to construction sites using BIM.
- Energy: providing users with information and advice on how to use energy efficiently; energy sharing.
- · Health and well being: identification of areas of risk; scheduling appointments at hospitals and clinics.
- Pedestrians: providing routes and warning of crowded areas, smart street furniture.
- Environment: waste disposal, air quality, flood monitoring.
- Water: managing water use.

Speakers presented information on progress in cities including Liverpool, Bristol, Peterborough, Moscow, Ghent, Amsterdam and Milton Keynes, and although there were differences in the themes selected, the issues were common to all. The speaker from Liverpool looked beyond the specific themes mentioned above and put forward overarching themes of food (feeding the city, which included transport and agricultural statistics) and health and wellbeing.

There was some discussion on the sensors used to collect data and one speaker listed satellites as a source of data. There was a presentation from Flock, a company specialising in big-data driven risk analysis for drones which discussed issues in operating these UAVs. Another speaker emphasised that systems need to include analytics that would give the user information on which to make decisions – there is little value in simply providing information. All of the cities which were featured included innovation as a reason for developing a smart city; they see this as a means of attracting new tech companies and hence expanding the commercial base of the city.

In the July/August issue of the RICS Land Journal, Tony Mulhall discussed the relationship between BIM and smart cities. It was clear from the Smart Cities Summit that BIM could be an important strand in a smart city but at the moment neither smart cities nor BIM are at a sufficient stage of maturity to allow integration. Once a building is completed the data within a BIM could provide a large amount of information related to energy, parking, air quality security etc. The technology presented at the Summit – sensors monitoring energy use, air quality and security for example – will all be included in the BIM, together with location, and can be connected to the city infrastructure. During the construction stage the timeline of the build could be used to manage deliveries and site management in an efficient and sustainable manner, which would benefit the city. Smart solutions can involve refurbishment, which in turn may involve BIM and hence

geomatics. Mulhall also puts forward the case for a City Information Model (CIM), which could be the engine of a smart city and within which the geomatics community with its knowledge of 3D could play a major role.

A major problem that was mentioned many times in presentations is the resistance to integrating systems and information within a city. Departments have their own ICT systems and their own culture and are reluctant to break out of their silo and share data and allow interoperability between systems. Open data and open source software and a very fast network are also essential components.

Several speakers stressed the need for standards, but one speaker expressed reservations as standards can slow development. Issues of privacy, security, archiving and storage were also raised.

Opportunities for Geomatics?

In conclusion, we can ask, what is the role of geomatics in smart cities? Navin (GW September/October 2016) argues that the geomatics community can use their data management skills and introduce less familiar disciplines to the mix, but this argument has been used many times in the past and does not seem to materialise as jobs for surveyors. We can however emphasise the need for accurate and rigorous solutions in the form of authoritative data, correct use of datums and up-to-date maps. We can use our expertise in 3D to enhance city models. If higher resolution data is needed we can argue for the introduction of Lidar for example. We can argue for the integration and efficient use of BIM and point out the advantages of holistic solutions, but there is little we can do to encourage departments to break out of their silos and ensure that there is interoperability between ICT systems.

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