UKAuthority
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UKAuthority Smart Places, Smart People 2019

Event briefing note: Approaching the tipping point

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A UKAuthority briefing paper based on the lessons and discussions from UKAuthority Smart Places, Smart People 2019, held on the 12th July 2019.

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Introduction

An increasing number of local authorities are doing more than talk about smart places; they're beginning to invest in projects to prove the value of using internet connectivity to connect organisations, people and places to create new operational models and a more effective public infrastructure.

While most are still watching and waiting to see how the pioneers make things work, there is a feeling that a tipping point has been reached in which smart places are more than a distant aspiration and something for which they can aim to build over the next decade.

This became clear at the recent UKAuthority Smart Places, Smart People conference, at which a handful of local authorities presented details of their initiatives and experts provided some valuable insights into the underlying factors at work.

Two main developments have taken the movement close to that tipping point. Firstly, internet of things (IoT) technology – the array of connected devices that provide the stream of data on which smart places depend – has become less expensive and increasingly reliable, supported by the growth of robust communications network. The emergence of long range wide area networks (LoRaWANs) and the impending deployment of 5G promises to boost the capabilities of organisations to bring together data from a multitude of collection points, providing scope for all those new connections in service delivery.

Secondly, there have been big advances in the provision, management and analysis of data, going down to a granular level with a degree of standardisation and integration to open a wide range of possibilities. Organisations are collecting more data, they have a better understanding of how to manage it, and they are exploring how it can be better used for the public good.

But there are challenges, not all of the solutions have been found, and there is some way to go in scaling up from pilots to widespread deployments, in which local authorities learn from each other and begin to replicate the successful initiatives. Dealing with these is the next step in the development of smart places.

Key factors

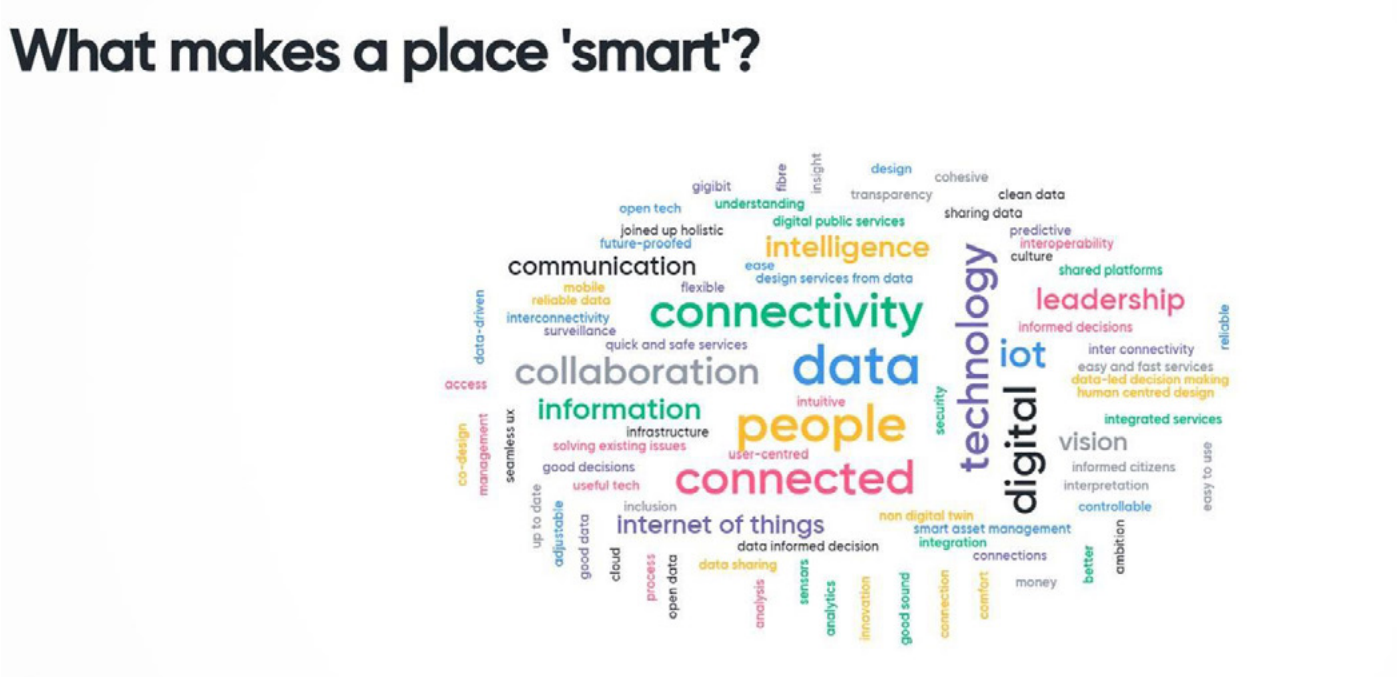
A test of audience opinion found a few common factors coming through in response to the question "What makes a place 'smart'?" The obvious words were prominent, such as 'digital', 'technology', 'connectivity'. 'internet of things' and 'data'. But factors reflecting the softer elements of strategy and management also emerged as important: 'collaboration', people', 'leadership', 'intelligence' and 'communication'.

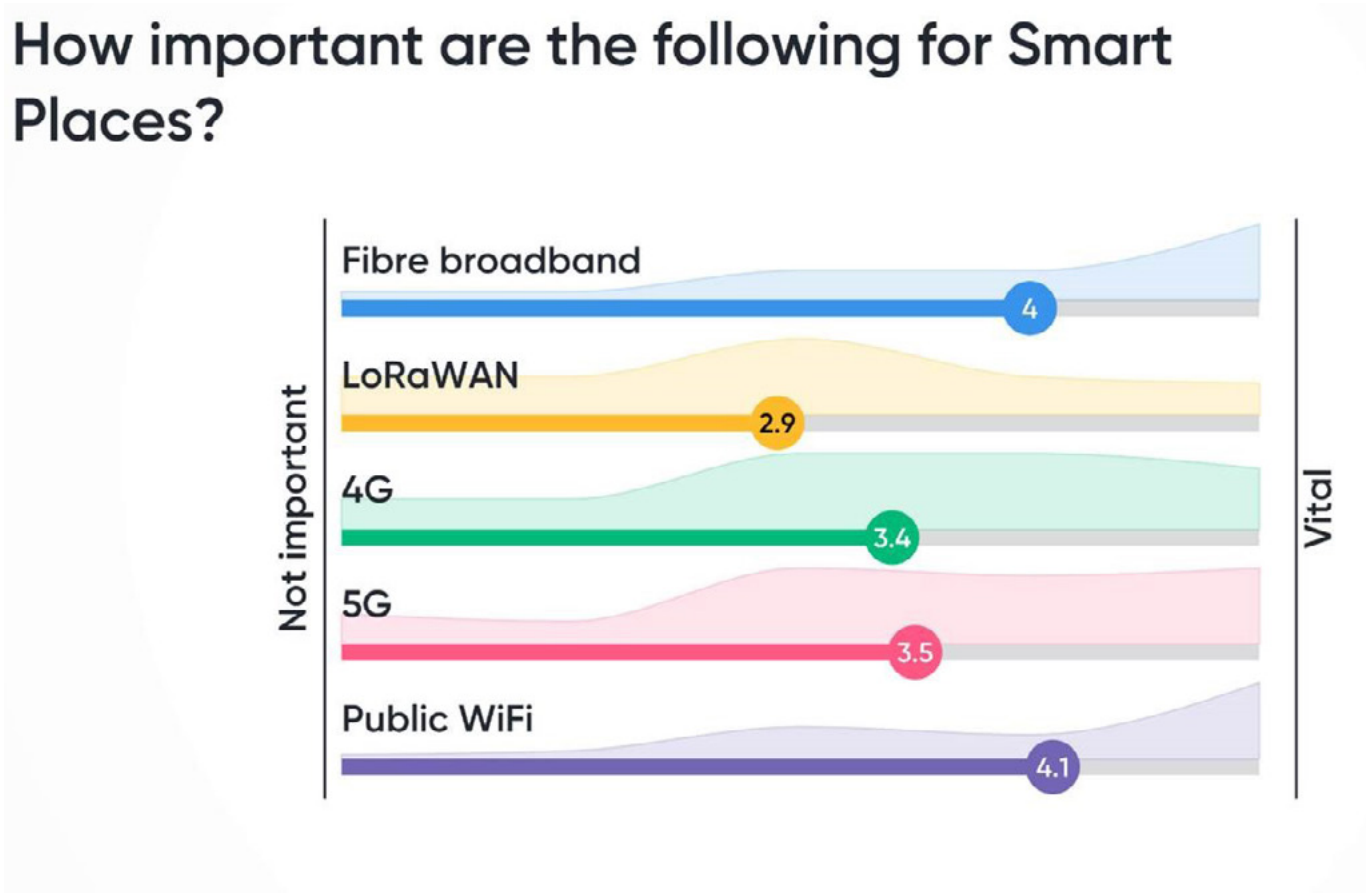
It indicates that people see the need, as with any major initiative, to get the relationships right inside and between organisations. It is necessary to ensure there are shared understandings about what they are aiming to achieve and how they are meant to do so.

There was also a surprise in how delegates saw the network priorities. When asked to rank the importance of different types of network those coming out on top were the more traditional elements of fibre broadband and public Wi-Fi. Those that have often been flagged up as integral to harnessing the IoT such as 4G, 5G and LoRaWAN were seen as important but not as much so; and it was notable that LoRaWAN came in bottom of the five. This may be because it is not as well known as the others, but it suggests that plenty of authorities will be more eager to invest in the better established technologies.

Underlying all this was a recognition that smart places run on robust flows of data, and a structure that makes it possible to pull it from different streams into smart interactions.

Nick Chapallaz, managing director of GeoPlace, made the case for geographic information being at the heart of smart places, with the National Address and Street Gazetteers providing an important element of the data infrastructure. He pointed out that they are crucial to a multitude of processes, including those such as street works, utilities





and transport operations that are often seen as areas for smart place improvements.

It is essential that this data maintains a high quality level, and he drew on work by the Smart Cambridge partnership to identify the six dimensions of this: timeliness, completeness, integrity, accuracy, consistency and a conformity to widely recognised standards. He said organisations should question whether any of the data they hold lacks any of these elements, and whether there are any impediments to linking it with other datasets when needed.

Beneath this is a need to recognise that high quality data does not come for free; there is a need for continual investment to ensure it is fit for purpose; standards and guidelines are important, along with a willingness to co-operate with other organisations; and streets and addresses will be a critical factor.

The theme was taken further by Dr Marc Adams, senior analyst at the National Audit Office, speaking about how location data can provide a deeper understanding of place-based levels of accessibility to services. He pointed to the potential of spatial interaction models in policy making, which is heavily used in retailing and could also be used in the reorganisation of the public sector estate. It could also be used in stress testing the sustainability of some public services.

This is an often undervalued but always important element of the smart places agenda, as there is nothing smart about a place in which a significant segment of its people are unable to access key services. When the data is used effectively it can lay the ground for providing better outcomes for those people.

Initiatives in smart cities

While there is plenty of potential to extend solutions into non-urban areas, most of the pioneer initiatives have been taking place in cities. Those that presented at the conference showed the diversity of ambition, emphasising different elements of public services.

London – Nathan Pierce, head of the Smart London programme, outlined the potential of installing smart sensors on lampposts,

developing new parking solutions, integrating smart mobility with the increasing use of e-bikes and mobility-as-a-service, and the provision of an infrastructure to support electronic vehicles.

The vision for the future includes a network of connected street furniture, quiet and clean streets in which nobody owns a car, and a city with a positive energy balance. And he highlighted the contribution of the London Datastore in providing a focus for the use of data analytics to underpin service improvements throughout the city.

Newcastle-upon-Tyne – Jenny Nelson and Paul Armstrong of Newcastle City Council emphasised its suitability as a testbed city, being a manageable size but with the features of a large city – notably a port, airport, light rail system and universities – and the beginnings of a strong communications infrastructure. In 2018 Cisco Networks led in the installation of a smart street in the city as a demonstrator for IoT technology.

The council is looking at a series of initiatives, including the use of air quality monitors and the development of a streetworks toolkit, and is building the Newcastle Innovation Partnership with consultancy Urban Foresight. It is based on three principles: to focus its work on real life challenges; and on outcomes to improve lives; and to be open to all suppliers with the intent of finding the best solutions.

Bristol – The city has been part of the EU Horizon 2020 Replicate programme, exploring the use of new technology for smart places for the Ashley, Easton and Lawrence Hill areas. Programme manager Hayley Ash explained it has taken in energy efficiency measures in homes and support for electric vehicles on smart streets, supported by an energy demand management system and the FIWARE smart city ICT platform.

Working with the Knowle West

Media Centre, it has also developed the Bristol Approach for running a community project involving IoT technology, which has helped to build understanding and provided opportunities for research. Among the steps taken has been the provision of damp sensors – imaginatively cased inside plastic frogs – and wearable air pollution sensors.

Cambridge – Dan Clarke, strategy and partnerships manager of the Smart Cambridge programme, pointed to the breadth of its work.

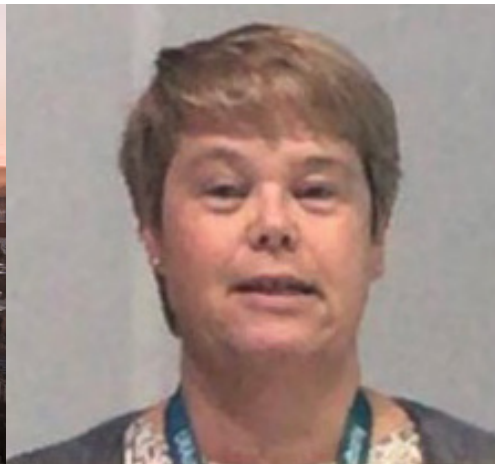
This includes the Urban Data Project, developed by smart city applications company Telensa and aimed at improving the use data collected from sensors and other sources. It has been built on the Microsoft Azure cloud platform to create a trust infrastructure for the relevant data

It has also formed an alliance with spatial big data company GeoSpock to develop a data-first smart city strategy, using the firm's platform-as-a-service on the Amazon AWS Cloud and supporting the work of the Greater Cambridge Partnership to provide improvements in traffic flow and mobility and strengthen environmental initiatives.

Other efforts include early stage research on building a digital twin of the city and a joint venture between Cambridgeshire County Council and the University of Cambridge in setting up the Light Blue Fibre company to share duct and fibre networks more widely.

Manchester – The Manchester Local Care Organisation (MLCO) has been harnessing IoT sensors in the integration of health and social care, working with Microsoft on the development of a platform for a control centre. This enables staff to spot when an individual needs support, pull up the information to understand what form it should take, and assess how best it can be delivered in good time.

The city council's director of business change and transformation, Nicky Parker, said the pilots have provided the proof of concept and a single portal will provide the supporting team with access to the information they need to make the right decisions in providing emergency care or longer-term support. She emphasised the importance of a business case showing a return on investment, saying the MLCO initiative is expected to bring in an RoI of £3 to the £1 in its early days but that this can rise.



Overcoming the obstacles

Despite the ambition and early achievements of these projects, the question came up of why there has not been more momentum nationwide. Nathan Pierce of the GLA raised the question of why smart cities are not smarter by now and pointed to a handful of factors: lack of leadership; the innovation is seen by many authorities as a side project rather than a central element of what they do; a need for more boldness in trying things that may not succeed at first; and a demand for more consistency in the approach.

Other challenges were identified identified by Scott Corfe of the Social Market Foundation (SMF) thinktank. These include the need to find funds for investment in infrastructure and the upfront costs of deployments, and whether local government has the skills in its workforce to understand and get the best from the IoT and other new technologies.

There are questions around how these technologies might have secondary effects on local government, such as an increase in homeworking reducing the demand for office space and thereby eroding revenues from business rates. Similarly, reducing car journeys would have environmental benefits but could also reduce the revenues from parking charges.

Alongside this are the ethical concerns around the use of data, and potential public opposition to some changes, such as using smart bins to impose variable waste collection charges, or sensors to levy dynamic parking charges.

These indicate that the move to smart places could have unpredictable pitfalls and many authorities could respond with a cautious attitude. In response, Corfe suggested a trio of measures to address the challenges.

First is the creation of an innovation fund for local government to implement the technologies and provide an evidence base of the immediate and any knock-on effects. This could provide a more precise identification of benefits and reduce the risk aversion in the sector.

Second is to explore the role of outcome-based contracts in rolling out new technologies, under which service providers are paid according to the outcomes delivered. And third is that any new charges introduced with IoT technologies should operate either on a revenue-neutral basis, or in a way that generates benefits that the public and businesses can see. Alternatively, if the service costs are still covered by council tax, there could be a discount for households shown to reduce their waste or increase recycling.

This is taking local authorities onto new ground and it will take some time to establish the best approach, but it indicates the need for some imaginative thinking on how the structural and financial models for local government could change for smart places.

The conference discussions highlighted similar points. A couple of participants spoke of bureaucratic hurdles in the way of applying new technologies in a public space, as it can impact the planning process and involve meetings before the go ahead.

Not everyone involved could understand the potential and there is always the danger of a

spanner in the works from somebody with a specific agenda that they believe is at odds with the plan.

Authorities will also have to look closely at the return on investment, and with the current lack of a strong evidence base it is difficult to come up with figures. Few of the projects so far can show big cash savings and, as with other IT projects, the investment is often made expecting the benefits to come in other areas.

One participant said that the initial savings from various types of sensors are relatively small, but that much larger benefits will emerge as they prompt people to change their behaviour, such as by reducing waste or using their cars less often. And these benefits are often part of a larger picture in which the local authority is only one of the players, so it will be difficult to assess the full RoI and necessary to acknowledge that other organisations will benefit.

Similarly, any deployments aimed at improving mobility are likely to cross boundaries and have knock-on effects on other types of organisation; and assistive technology for people's homes can do a lot to ease the pressure on the NHS while the costs are usually borne by the local council. Such factors should not prevent deployments but do make it harder to build the initial business case.

Suggestions on how to overcome these issues echoed familiar advice on public sector IT projects: look for the quick wins that can demonstrate the value of a technology and use them as building blocks for further investment; and widely share the lessons, both positive and negative, to emerge from the pilots and early roll outs. A view emerged that authorities could benefit from more formal arrangements to learn from each other, and partnership structures such as the recently launched London Office of Innovation and Technology.

These could add further momentum to the movement.
Discussions also focused on the importance of geospatial data, which underpins a lot of smart places activity. One suggestion was that a centrally mandated 'gold standard' dataset would provide authorities with a valuable tool, and there was a call for a central organisation to take the lead role in making more data available and providing some cohesion to how authorities use it. This could be a role for the Geospatial Commission, which is aiming to reduce the friction for organisations in utilising the data.

The wider context

The overall outlook is positive: the conference made clear that authorities are still finding their way and that smart places remain an aspiration, but they look a lot more achievable than a couple of years ago, and we should begin to see more tangible benefits over the next couple of years.

The total value will take longer to emerge, extending well beyond the immediate effects of the technology. It reflects the whole point of smart places, which is to help solve the big societal challenges around the ageing population, the need for a new type of mobility and to reduce the pressure on the natural environment. Authorities considering deployments to build smart places should always have these near the front of their thinking.

Speakers and their presentations

Click here to visit the Smart Places, Smart People 2019 event hub

Visit the UKAuthority event hub to watch speaker presentation videos and download speaker slides. Speakers and their presentation sessions are listed below:

4IR and local government: opportunities, risks and next steps for policymakers
Scott Corfe, Research Director, Social Market Foundation

The importance of data quality and standards in Smart Places
Nick Chappallaz, Managing Director, GeoPlace

Gaining insights through addressing data
Dr Marc Adams, Senior Analyst and MESH Mapping Lead, National Audit Office

London: Building a smart city through collaboration
Nathan Pierce, Head of Smart London, Greater London Authority

Newcastle: What makes a City Smart?
Jenny Nelson, Digital Newcastle Programme Manager &
Paul Armstrong, Digital Newcastle and Smart Cities Technical Architect,
Newcastle City Council

REPLICATE Bristol, a Citizen Centric approach to the Smart City
Hayley Ash, REPLICATE Programme Manager, Bristol City Council

Population Health and Technology Enabled Care
Nicky Parker, Director of Business Change and Transformation, Manchester City Council

12 lessons for Smart Cities
Dan Clarke, Strategy and Partnerships Manager, Greater Cambridge Partnership

Spatial Networks and Urban Simulation
Jyothi Gupta, Architect, Data Scientist (Smart Cities and Urban Analytics),
University College London

Participants

Where they came from

Adur & Worthing Councils, Advice Cloud, Ashford Borough Council, Basingstoke and Deane Borough Council, Bristol City Council, Cambridgeshire County Council, Canterbury City Council, CIPFA, Colchester Borough Council, Department for Transport, Essex & Herts Digital Innovation Zone, GeoPlace, Geospatial Commission, Government Digital Service, Greater London Authority, Hertfordshire County Council, Leeds City Council (x3), London Borough of Hounslow (x2), London Borough of Islington, London Borough of Newham, London Borough of Tower Hamlets (x2), London of Borough Hackney, Luton Borough Council (x2), Maidstone Borough Council (x5), Manchester City Council, Metropolitan Police (x2), NAO, Natural History Museum, Network Rail, Newcastle City Council (x2), North Herts District Council, Northumberland County Council, Royal Borough of Kingston, Suffolk County Council, Surrey County Council (x2), TechUK, Thurrock Council, University College London, University of Bristol, Warwickshire County Council, Wigan Council and Wychavon District Council

What they do

Architect and Data Scientist, BI Manager (x2), Business Improvement Officer, Business Management Partner, Central Control Manager, Chief Executive, Customer Insight & Information Manager, Customer Service & Information Manager, Customer Service Manager, Data and Innovation Manager, Data Management Officer, Deputy Cabinet Member for IT and Finance, Detective Constable, Digital Access Support Officer, Digital Business Analyst, Director of Services, Director of Transformation, Economy and Culture, Executive Director of Place, Head of Commissioning and Business Improvement, Head of Developing Data, Head of Operational Services, Head of Regeneration & Economic Development, Head of Smart, IT Strategy & Innovation Manager, Lead Officer, Managing Director, Marketing Manager, Operations Assistant, Policy Advisor, Principal Planning Officer, Strategic Planning, Programme Manager (x2), Programme Manager IoT, Project Manager, Public Health Analyst, Reader in Smart Cities, Senior Analyst, Senior Planning Technician, Senior Technology Consultant, Senior Trainer, Service Analyst, Smart Programme, SNN Team Leader / Acting GIS Lead, Solution Architect (IoT Lead), Strategic ICT Business Partner, Strategic Technology Manager, Street Lighting Contract Manager, Technical Support Service Manager, Technology and Information Manager, Technology Policy Advisor, Transport Planner, UX/Service Designer

Forthcoming UKAuthority Events 2019

Data4Good 2019
11 October 2019

How can we use Data for Good in the public sector? Does new legislation make it harder or easier for the public sector to share sensitive information in order to improve service planning and service delivery to our people? What are the benefits on offer? And what are the pitfalls for the unwary?

To register for Data4Good 2019 click here

Bots4Good 2019
23 November 2019

Artificial Intelligence, Robotic Process Automation, Machine Learning and interactive Bots are becoming more commonplace in a public sector still suffering the effects of austerity. How can we harness this power for the public good? Where do the ethical boundaries lie? And is this just the start of an augmented future for the public sector?

To register for Bots4Good 2019 click here

Cyber4Good
5 December 2019

Advances in the internet of things, big data and artificial intelligence are creating immense potential for better public services; but they all come with new risks, especially with the growing array of internet connected devices and new sources of data. Cyber attackers can find new weak points and vulnerabilities, posing a serious threat to the data integrity and operational capabilities of public authorities.

To register for Cyber4Good 2019 click here