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Smart Cities
All-Party Parliamentary Group

Intelligent leadership

How government strategy can unlock the
potential of smart cities in the UK

Foreword

As the Chair of the APPG on Smart Cities and the Member of Parliament for Milton Keynes South, I have experienced first-hand the benefits of smart cities. **Smart cities enhance our quality of life and increase connectivity in all senses – between services, between places, between people. Above all, smart cities are inclusive, empowering us all to strengthen our influence over our surroundings.** I believe that many of the UK's greatest challenges can be met through embracing a 'smarter' way of life; from increasing our productivity, to improving the air we breathe, to aiding mobility, to reducing the pressures on our National Health Service. In short, the smart cities approach will enhance and enrich the lives of all citizens.

So why are we not doing more to promote smart cities?

Scepticism and even concern around the advancement of smart technologies is not uncommon. At best, 'smart' is often equated to expensive gimmicks – at worst, as a threat to the security and livelihood of citizens.

Equally, there is confusion about what a smart city actually is, with the term often alienating those it is meant to benefit; the public. There is a need to demystify and simplify the term to increase understanding of and enthusiasm for the smart cities agenda.

Therefore, central government has a leading role to play in challenging these misconceptions and misunderstandings: the role of smart cities is not to create a society of automation and alienation, but to bring communities together. Indeed, **'smart' goes beyond technology to encompass any approach or innovation that works across industries, departments and other silos to facilitate solutions to citizens' everyday problems.**

The term 'smart cities' refers not to a sector, but to a cross-government and cross-departmental approach that should underpin the way government works at all levels. The private sector leads the way on the smart cities agenda. Their innovation is welcome and must be encouraged. There is also, however, an important role for government to ensure that, as technology develops and becomes embedded in our lives, innovations meet the most pressing needs of our citizens and reach those in society that may benefit most from new solutions.

A coherent strategy from central government is needed to ensure a joined-up approach between businesses and those who work most closely with and on behalf of their citizens – local government. By fully embracing the smart cities approach, central government can empower local authorities to show ordinary people how 'smart' can positively impact on their everyday lives.

This need not be an expensive endeavour: in fact, the economic potential of becoming a leader in smart cities is huge, with the smart approach helping cities become more efficient and with a burgeoning overseas market ready to tap in to. The UK already has an incredible amount of research and expertise at its disposal – a few small changes could allow central government to convene and promote this knowledge, to allow local government and the private sector to work together to develop cities that truly empower our citizens.

Local government need not be intimidated by the need to move towards smart cities. Many UK cities are already on this journey, and it is vital that central government provides them with the tools to make this change, step by step. Becoming a smart city should not be seen as an extra burden forced upon authorities, but as a way to become more efficient operators, to offer better services, to delivering better outcomes, and ultimately to become a better place to live.

Iain Stewart MP

Chair, All-Party Parliamentary Group on Smart Cities

Introduction

This report is the result of an inquiry launched by the All-Party Parliamentary Group on Smart Cities (APPG) at the end of 2017, designed to examine the benefits of developing a UK government strategy on smart cities. Members were invited to submit responses to a call for evidence, from which a number of key themes were highlighted: 32 responses were received from local government, universities, SMEs, large businesses, trade associations and non-profits across a range of sectors.

These went on to form the basis of a series of roundtable evidence sessions in Parliament, hosted by the Chair of the APPG, Iain Stewart MP. Among the key themes were: the importance of a citizen-centred approach to smart cities; the role of central government in facilitating collaboration between cities; how local authorities can achieve their objectives through smart city solutions; and how smart city pilots can be supported to scale up.

This report summarises the findings from the inquiry and makes a set of high level recommendations to government on the role that smart cities can play in solving the biggest challenges facing our cities, and what central government can do to support this. The APPG will then promote these findings to raise the profile of the smart cities agenda, spread understanding of the benefits to citizens of a 'smart' approach, and work with government to deliver our recommendations.

The Secretariat would like to thank all who have been involved with the inquiry for their valuable contributions.

The benefits of smart cities

Smart cities increase connectivity in all senses – between services, between places, between people. Below are just some of the ways in which smart cities can have a positive impact on our quality of life.

Making cities accessible for all

Above all, smart cities are inclusive: a truly smart city is accessible for people of all needs and physical abilities. The smart approach revolutionises the design process; starting from the perspective of those with the most accessibility issues and working up to those with no additional requirements. This makes sure no one is excluded or prevented from using city space. Not only does this approach greatly enhance the quality of life of those with disabilities but, with the UK's ageing population, it also ensures cities are fit for the future, and can continue to be attractive places for people to live and thrive later in life.

Supporting the most vulnerable members of society

Smart cities can support some of the most vulnerable and least affluent members of our society. Individuals who typically stand to gain the most from the advancement of smart cities can be difficult to engage. Many third sector workers don't realise the value of the data they hold and how it can be used to empower both themselves and the people they are trying to support. For example, information held by social workers could be used to identify people's energy needs and lead to changes such as the installation of smart meters, helping to reduce energy costs for that individual.

Reducing the strain on our health service

Opening up data sharing in healthcare can help to provide more joined up services and lead to higher standards of care – as well as helping to identify ways of encouraging people to live healthier lives. Open records, whereby citizens have access to their individual records, including in health, have proven successful in places such as Estonia, with great potential for encouraging citizens to take greater responsibility for their own health.

A more efficient, flexible transport system

Transport can be made quicker, cheaper and more efficient through the introduction of smart technology, such as smart ticketing and joined up transport services.

Smart technology can also lead to the better utilisation of the information we need to plan our journeys. Providing citizens with enhanced levels of information can make journeys more efficient, for example when selecting the mode of transport that best suits us. Londoners will be familiar with the introduction of the Oyster card, and how this technology led to a reduction in queues at ticket barriers and therefore increased the efficiency of transport.

Creating a cleaner environment and enhancing air quality

Smart technologies and innovations are vital to addressing pressing environmental issues and helping to create healthier, sustainable cities - from the decarbonisation agenda to overcoming the air quality crisis. At the APPG's roundtables, we heard numerous examples of projects that have helped improve the flow of traffic in cities, leading to a reduction of harmful emissions in heavily congested areas.

Empowering citizens in democracy

The sharing of data and the opening up of networks empowers citizens to actively participate in decisions which affect their neighbourhoods and their lives. Smart cities should give citizens access to and ownership over their own data, so they can be empowered to make informed decisions about how their data is used, as well as the ways in which they use and access public services. In Amsterdam, a cross-sector platform, 'Amsterdam Smart City', allows citizens to participate by connecting them to businesses, academics and municipalities so that their ideas can be properly examined.

An export opportunity

The global smart cities market was valued at USD 529.55 billion in 2017, and is forecasted to reach USD 1944.67 billion by the end of 2023. If the UK Government becomes an early adopter of the smart cities agenda, there is huge potential to tap in to the growing smart cities market, both domestically and overseas. Beyond this, the smart city approach offers the chance to use resources more efficiently, reducing waste and saving money.

Local authorities that are closest to their citizens

Local authorities, and the new combined authorities, have a lot to gain by 'thinking smart' across their functions and interactions with the public. Combining the examples above with truly digital services could revolutionise the way in which people interact with this important level of government. For example, ensuring all relevant council functions can be taken forward digitally would enhance the experiences of those living and working locally through less paperwork and a quicker, more flexible service.

Recommendations

A summary of these recommendations can be found on page 11.

In order to most effectively drive forward the smart cities agenda and deliver tangible benefits for citizens, central government's role should be threefold:

1) **Leading the way in promoting a smart culture**
   By promoting a smart culture, central government can legitimise the importance of smart cities, thereby encouraging local government and businesses to prioritise the adoption of smart solutions.

2) **Convening smart standards and data**
   By acting as a central convenor for key information and guidelines regarding smart cities, central government can ensure that both the private and public sectors have access to the resources necessary for developing and implementing a smart city framework.

3) **Facilitating smart exports**
   By promoting the UK's smart city expertise overseas, central government can ensure the sector benefits from the burgeoning international market for smart solutions.

Promoting a smart culture

In order to demonstrate the importance of smart solutions to the public and private sectors, the government should consider promoting the following messages around what a smart culture involves:

- **Smart communities**
  The role of smart cities is not to create a society of automation and alienation, but to bring communities together. Citizens are at the heart of the smart cities agenda: emphasising the human factor will help demonstrate the potential of smart to strengthen our influence over our surroundings, increase our quality of life and enhance connectivity in all senses.

- **Outcomes focused**
  Smart technology should be seen as a means to an end, rather than an end in itself, facilitating solutions to citizens' everyday problems – as outlined in 'The benefits of smart cities' (see p.5).

- **Think horizontal, not vertical**
  It is essential to think horizontally, not vertically: smart cities should be presented as an essential function, breaking down silo thinking and linking departments in both public and private sector organisations.

- **Data sharing improves the delivery of public services**
  Highlighting how data held and shared by the public sector facilitates the delivery of public services will go some way towards countering concerns over privacy and security risks. Empowering citizens to take ownership of their data will also be key to gaining public buy-in for open data.

- **Collaboration before competition**
  Devolution is central to the development of smart cities: however, the focus on competition between cities has often been counterproductive. Although some competition is inevitable and healthy, examples such as the Scottish Cities Alliance show the benefits of promoting a culture of collaboration, with cities sharing best practice and taking ownership of different specialisms.

- **Can't afford not to innovate**
  Smart solutions can transform business models and lead to considerable efficiency savings – but innovation can be slow due to the perception that it is too expensive. Government should therefore promote the message that both Whitehall and local government simply cannot afford not to innovate. In the private sector, government can encourage the appointment of designated non-executive directors to promote the integration of smart solutions.

- **Permission to fail**
  Encouraging a culture of 'permission to fail' is essential for empowering local authorities to take risks and innovate. By legitimising the testing of smart solutions and projects, government can help mitigate against smart 'failures' being exploited for political capital.

- **Industrial Strategy Challenge Fund**
  Government should promote awareness of how businesses and researchers can capitalise on the Artificial Intelligence and data pillar of the Industrial Strategy Challenge Fund.

Convening smart standards and data

While government should not prescribe one size fits all solutions to local authorities and businesses which may operate in very different contexts, it does have a role to play in bringing together key information and guidelines so that the public and private sectors can make informed decisions about selecting and implementing smart solutions.

This will also help better facilitate dialogue between private sector and local authorities, so the former can better identify market demand.

- **Ministerial responsibility**
  Strengthening ministerial responsibility for smart cities will greatly help drive forward the government's convening role in the smart agenda. Options include:
  - Introducing a Minister for Smart Cities
  - Introducing a Minister for Interoperability (recognising that the issue of smart cities spans many different sectors, such as transport, education, health, energy, digital)
  - Reinstating a Minister for Cities
  - Creating a cabinet committee, to ensure all departments are working to this objective
  - Forming a dedicated civil service team
  - Revisit the role of the Smart Cities Forum

- **Central library of key data**
  Local authorities and the private sector have indicated that it would be useful to access a library of data including:
  - Case studies of best - and worst - practice. A national forum or conference could also help incentivise and normalise the sharing of worst practice
  - Robust economic analysis, including data on Return on Investment of smart city patents
  - Design patents
  - Points of contact (for queries/collaboration purposes)

- **Governance: setting foundational principles and rules**
  By presenting a framework for smart cities and setting foundational principles and rules, central government can provide a useful starting point for local authorities which may not have the resources to begin from scratch. A useful framework may include:
  - Developing and promoting awareness of smart cities standards and guidelines – whether this be through marketing or through mandating their take-up
  - Setting common standards for procurement
  - Providing guidelines to enable more strategic and focused investment, particularly regarding the industrial strategy
  - Considering the merits of a national target
  - Setting centralised standards for measuring smart cities
  - Examining the potential of the role of Local Enterprise Partnerships and catapults as auditors of smart city capacity and activity.

- **Enhanced digital capacity**
  Smart Cities require government to have digital capacity fit for the 21st century. At a local level, the UK government should encourage and support local authorities and combined authorities to appoint Chief Information/Digital Officers, and seek to establish a national forum of these officers. At a national level there is potential to form a central body of these officers from each government department.

- **Return on Investment models which recognise interoperability**
  Neither smart policy nor the benefits of smart can fit within one department budget. As a result, Return on Investment models which measure the benefits within (and not across) departments can be prohibitive to the take up of smart technologies. The government can help overcome this by developing ROI models that recognise this bigger picture, in order to demonstrate the impact of smart solutions to Treasury members at both central and local government levels.

Facilitating smart exports

- **Showcasing UK smart technology and knowledge overseas**
  Smart Cities have large export potential and the government should play a role in promoting UK smart city technology and knowledge abroad. This could include taking representatives from UK cities on trade missions to showcase UK innovations.

Summary recommendations

Promoting a smart culture

1) Smart cities need to be driven by citizens' needs, strengthening our influence over our surroundings, increasing our quality of life and enhancing connectivity in all senses.

2) Smart technology should be seen as a means to an end to deliver outcomes, rather than an end in itself.

3) Smart should underpin the approach of all central government departments, and likewise be a cross-departmental function of organisations.

4) Help support progress towards a culture of open data, held and shared by the public sector, in order to improve the delivery of public services for the benefit of the citizen.

5) Encourage a culture of collaboration between cities – collaboration is more effective than competition in driving smart cities.

6) Encourage a culture of 'permission to fail' - empowering local authorities to take risks and innovate.

7) Transform the traditional business model by showing how neither the public nor private sectors can afford not to innovate.

8) Drive the development of smart solutions through the Industrial Strategy Challenge Fund.

Convening smart standards and data

9) Strengthen ministerial responsibility for smart cities, with this minister having responsibility for driving forward the government's convening role in the smart agenda.

10) Create a central library of key data, including case studies and robust economic analysis, helping cities to choose the right solutions for them.

11) Create a framework for smart cities and set foundational principles and rules, to provide a useful starting point for local authorities which may not have the resources to begin from scratch.

12) Appoint Chief Digital or Information Officers at all levels of government - ensuring the UK has a digital capacity fit for the 21st Century.

13) Develop Return on Investment models which recognise that smart solutions apply across departments and silos.

Facilitating smart exports

14) Work to promote the UK's smart city expertise overseas - central government can ensure the sector benefits from the burgeoning international market for smart solutions.

Case studies

Case Study 1: Scottish Cities Alliance

A common theme from the evidence sessions was that Whitehall does not have to look far for a good example of collaboration between cities. Respondents pointed to work north of the border that has been achieved through the Scottish Cities Alliance.

The Scottish Cities Alliance is a joint initiative between Scotland's 7 cities (Aberdeen, Dundee, Edinburgh, Glasgow, Inverness, Perth and Stirling) and the Scottish Government. It was facilitated by Scottish Council for Development and Industry.

Scotland's 8th City – the smart city, is currently trying to drive collaboration between these cities in these areas, and is encouraging the take-up of new technologies designed to improve air quality, traffic flow and cut pollution.

Case study 2: Data Sharing in Estonia – Citizens in control of their own data

A number of participants pointed to Estonia as an example of best practice in data sharing, and delivery of digital services. In particular, Estonia serves as a prime example of providing citizens with control over their own personal data.

Having been described as "the most advanced digital society in the world", Estonia allows its citizens to easily view their education, medical and employment records through an online portal and to request changes – giving citizens power and control over their own data.   Furthermore, the whole process is transparent, with citizens in Estonia easily able to see which officials have viewed their data, allowing them to be in control of their privacy and data.

Case study 3: Singapore - Creating a coordinating body and embedding a smart culture

A number of respondents noted that the creation of a coordinating body would help facilitate a cohesive approach and help advance the smart cities agenda.

One example that was cited here was the Singapore model, where the "Smart Nation" initiative acts as a coordination point.

Smart Nation describes its goal as a "whole-of-nation movement to harness digital technologies to build a future Singapore", designed "to improve living and build a closer community, empower citizens to achieve their aspirations through good jobs and opportunities, and encourage businesses to innovate and grow".

One aim of the smart nation programme is to create a culture supportive of smart cities. This includes creating support for open data, and ensuring all public agencies have made their data available and accessible through an online portal. Likewise, there is a commitment to make Singapore a 'living laboratory', with a clear commitment to carrying out the research and innovation necessary for developing smart city technologies and concepts.

Contributors

- Association of Chartered Certified Accountants
- Accenture
- Amey/ Ferrovial Services
- Arup
- British Parking Association
- British Standards Institution
- Cisco
- City of Leeds
- Core Cities Smart Cities Policy Hub
- Digital Greenwich
- Ecological Sequestration Trust
- E.ON
- Flying Binary
- Future Cities Catapult
- Glasgow City Council
- Grid Smarter Cities
- Guide Dogs
- Holophane
- Horizon State
- IHS Markit
- Innovate UK
- Itron
- Lighting Industry Association
- London Legacy Development Corporation
- Milton Keynes Council
- Mott Macdonald
- Open University
- Opportunity Peterborough
- Ordnance Survey
- Oxfordshire County Council
- Smart Oxford
- Peterborough City Council
- Richmond upon Thames London Borough Council
- Rushmoor Borough Council

- Smart Energy GB
- Space Syntax
- Tech UK
- UK Atomic Energy Authority
- Urban DNA
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About the APPG on Smart Cities

The All-Party Parliamentary Group (APPG) on Smart Cities was established in 2014 and aims to inform Parliamentarians about how the digital revolution can benefit our cities and identify ways that the UK could take the lead and seize a substantial share of the international "smart cities" market. To do this we provide a platform for Parliamentarians, business, academia, think tanks, trade bodies, NGOs and local government to debate, collaborate and share best practice.

Contact Us

If you would like to suggest topics for discussions or sponsor future events please get in touch with Newington, the Secretariat, using the details below.

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