

Oxford Smart City – Proposal to Develop a Vision and Strategy

Executive Summary

The smart city concept is mostly concerned with the variety of ways in which the management of urban environments is assisted by information technology. A large part of the concept hinges on the potential for information technology not only to collect and process data but to transform it into intelligence and to integrate it across services.

On 9 October 2013, the Government announced the creation of a Smart Cities Forum. The Government is already supporting Smart Cities through investment funded by Research Councils UK, the Technology Strategy Board, and other initiatives such as the future city demonstrators. Accompanying the announcement of the Smart Cities Forum was the publication of a background paper that sets out the Government's ambitions for smart cities, the opportunities for the economy and businesses and how it hopes local government will help realise them.

Arup estimates that the global market for smart urban systems for transport, energy, healthcare, water and waste will amount to around \$400 Billion pa. by 2020¹. On the basis of the UK's share of OECD tradable services, it conservatively estimates that the UK should aim to secure 10% of this global market, worth \$40 Billion pa.

A number of projects are already running or being developed in and around Oxford that can come under the Smart City banner – these include the Oxford Super Connected City Project, UrbanData2Decide Project, Oxford Transport Laboratory, Low Carbon Oxford and OxFutures. In addition we have a number of businesses and our two universities at the forefront of research and innovation and the recently agreed City Deal will see major infrastructure investment and innovation centres.

Some cities, including Birmingham, Milton Keynes, Liverpool, Peterborough and Bristol are leading the way and have developed a smart city vision and strategy with buy in from all key partners and stakeholders. To maximise opportunities in and around Oxford and to be at the forefront of development we need a Smart City Vision and Strategy that can be adopted by partners and stakeholders and that will drive forward smart city development and delivery.

Recommendation

Through the Oxford Economic Growth Steering Group we commission the development of a Smart City Vision and Strategy. Discussions to be held with "Core Organisations" to lead - Oxford City Council, Oxfordshire County Council, University of Oxford, Oxford Brookes University and the Oxfordshire LEP.

Funding and resource to support this development will be requested from each core partner. As a starting point, £10,000 will be requested from Oxford Strategic Partnership funds through the City Council.

¹ BIS Research Paper No.136, "The Smart City Market: Opportunities for the UK" October 2013

1. Introduction

On 9 October 2013, the Government announced the creation of a Smart Cities Forum chaired by David Willetts and Greg Clark, with representatives from cities, business, and scientists.

Accompanying the Smart Cities Forum announcement was the publication of a background paper, (available at <https://www.gov.uk/government/publications/smart-cities-background-paper>) that lists a number of challenges to which 'smarter cities' must respond. They include:

- Economic restructuring and high unemployment, particularly youth unemployment
- The piecemeal growth of the urban infrastructure in response to rising urban populations, putting pressure on housing and transport
- Climate change: cities have a key role in improving energy efficiency and reducing carbon emissions, while promoting energy resilience in terms of security of supply and price
- The shift towards online entertainment and online retail and consumer services is changing the nature of high streets
- An ageing population, placing an increasing burden on adult social care
- The pressures on public finances which have seen local authority budgets reduce drastically.

Government states that it considers future success depends on three main elements:

- An innovative and demanding customer in the form of local authorities: Innovation by local authorities requires vision and leadership; a real focus on the key challenges they face, such as congestion, care in an ageing society, and economic growth; an openness to new approaches/new business models; and the ability to manage risk. A key barrier to progress is that, under current financial conditions, town halls are focused on maintaining statutory services and the internal bar to innovation is set quite high. The actions we have proposed therefore relate to lowering the bar and fostering user driven innovation by:
 - providing cities with greater autonomy to achieve the outcomes which meet their own particular needs through City Deals;
 - helping UK cities to develop a vision for city regeneration by promoting a better understanding of developments in global cities at the forefront of the smart city agenda (e.g. Chicago, Boston, Barcelona and Stockholm);
 - helping cities, through the Future Cities Catapult, to understand the opportunities offered by city-integration, to test and prove the business case, to collaborate with business and academia to innovate solutions, and to tackle the barriers – such as procurement rules or lack of investment, which stop new solutions going to scale.
- Continuous development of capability: This constitutes a wide range of activities, including:
 - Establishing a Smart Cities Forum, comprising representatives from cities, business, OGDs and the research base, to develop a shared perspective, identify barriers to progress and advise Ministers on strategic priorities, global developments/opportunities, and to co-ordinate Government policies in areas related to smart cities;
 - Maintaining UK thought leadership through the Foresight Programme;

- Supporting research in areas germane to the smart city concept, including the Internet of Things, secure technologies, intelligent search, supercomputing, and systems modelling and analysis;
 - Promoting new applications of technology through the Technology Strategy Board (TSB) and through the use of SBRI in the smart city context, to capitalize on the innovative capacity of SMEs;
 - Promoting supply chain initiatives in complex utility service systems;
 - Developing interoperable standards to facilitate systems integration;
 - Analysing the impact on communities of making Government data (Trading Funds as well as local data) freely available in two cities and training officials in its effective release.
- Staying abreast of global developments and seizing opportunities:
 - Working with international standards bodies to ensure that UK solutions are marketable worldwide;
 - Working constructively with the EU Commission and member states on proposals to develop a European capability, and securing UK participation in future programmes;
 - Delivering, via UKTI, a strategic approach to promoting and exploiting UK capability overseas; and
 - Supporting UK participation in leading global city networks, such as C40 and the City Protocol Society.
 - Establishing the Future Cities Catapult, a global centre of excellence on urban innovation, which will help cities, academia and business collaborate to produce exportable innovations, help grow the market share of UK business and reinforce the UK's world-class cluster.

2. What is a Smart City?

There is no absolute definition of a smart city, no end point, but rather a process, or series of steps, by which cities become more “liveable” and resilient and, hence, able to respond quicker to new challenges. Thus, a Smart City should enable every citizen to engage with all the services on offer, public as well as private, in a way best suited to his or her needs. It brings together hard infrastructure, social capital including local skills and community institutions, and (digital) technologies to fuel sustainable economic development and provide an attractive environment for all.

There are five key aspects to smarter approaches, which are strongly information driven:

- a modern digital infrastructure, combined with a secure but open access approach to public re-useable data, which enables citizens to access the information they need, when they need it;
- a recognition that service delivery is improved by being citizen centric: this involves placing the citizen's needs at the forefront, sharing management information to provide a coherent service, rather than operating in a multiplicity of service silos (for example, sharing changes

of address more effectively), and offering internet service delivery where possible (at a fraction of the face to face cost);

- an intelligent physical infrastructure (“smart” systems or the Internet of Things), to enable service providers to use the full range of data both to manage service delivery on a daily basis and to inform strategic investment in the city/community (for example, gathering and analysing data on whether public transport is adequate to cope with rush hour peaks);
- an openness to learn from others and experiment with new approaches and new business models; and
- transparency of outcomes/performance, for example, city service dashboards to enable citizens to compare and challenge performance, establishment by establishment, and borough by borough.

A sixth has been added following BIS consultation - that the leadership has **a clear and consistent vision of what the future city offers its people**, with a commitment to deliver the necessary change. It is a vision which has been developed in consultation with its citizens, **creating an attractive environment for business across the city, so that the quality of life of all its citizens is enhanced by anticipating their needs and meeting them**, such that firms and people embrace the vision and want to locate and live there.

3. Smart City initiatives and projects in and around Oxford

Oxford is a Super Connected City

Oxford is one of only 22 [super connected cities](#) in the UK. With funding awarded through the Urban Broadband Fund the City Council is working with partners at the County Council and the two world class universities to uplift business broadband speeds and provide free wireless broadband across the city through a wireless concession and wireless hotspots in all free to enter public buildings including our museums and galleries. In addition, funding has been secured to enable all buses operating in the Oxford Smart Zone to provide free wireless to all passengers and park and ride sites.

Oxford’s City Deal

Oxford and Oxfordshire has negotiated a [City Deal](#) with Government that will be worth over £1.2 billion. The City Deal will see major improvements in local roads and public transport specifically tailored to link universities with the city’s major industrial and research areas. A network of 4 new innovation centres will give Oxford the tools to really make the most of its **world-renowned knowledge economy, science and research, creating jobs and driving the local economy** for years to come.

Minister for Cities Greg Clark said “As international centres of innovation go, it is difficult to think of a better pedigree than Oxford. The City Deal provides the tools for those who know Oxford best – business, local authorities and of course the universities – to forge their own path to success, using the area’s strengths to create tens of thousands of jobs and bring in hundreds of millions in inward investment.”

Oxford University and the Oxford Internet Institute

The OII and University of Oxford cover key areas of expertise. These include study of the role of models and data analyses in policy-making, barriers to governmental innovation (Breaking Barriers to e-Government (MODINIS)), the development and computational analysis and visualization of big data, including social media, digital personhood, issues of trust, privacy and cybersecurity, the effectiveness of open data initiatives in civic engagement, citizen use of data for governmental accountability, and the critical evaluation of digital research.

The UrbanData2Decide (UD2D) project has recently had funding confirmed and is planning, with the support of the City and County Councils, to focus on identifying sources of data about urban areas, including open government data and data from other governmental jurisdictions, data arising from social media, as well as academic and journalistic sources. Urban data will be aggregated and organized in datasets that enable the analysis and visualisation of current patterns of activities as well as change over time, in, for example, transportation, housing, and the environment, to support urban decision-makers. UD2D will work directly with urban jurisdictions (Oxford and partner cities across Europe) to ensure that the analyses are geared to contemporary problems and issues facing decision-makers. Within the scope of UD2D, the OII will focus on collaboration with the Open Data Institute to work with cities in the UK, including Oxford, in order to critically examine the value of this approach as a proof of concept.

Supporting innovation and economic development

Both local authorities and the universities are committed to supporting economic development and growth, innovation and job creation in and around the city. The [Oxford Economic Growth Strategy](#) was adopted in 2013 that tasks the local authorities to work alongside businesses and public sector partners to deliver the aspirations of the strategy. Large employment and retail development sites across the city at Northern Gateway, Oxpens, Churchill Hospital site, Rail Station and Westgate are progressing through the planning and development process.

The **Oxfordshire Strategic Economic Plan** submitted to Government on 31st March 2014 builds on the success of our City Deal and puts our knowledge economy, innovation and smart growth at the heart of our plans.

Innovation is essential to support the development of local authority services and manage infrastructure. The SEP included the development of a local “Catapult” or living lab approach to encourage the development of smart solutions and provide both a virtual and physical place open to testing innovative solutions. The approach would provide a central point through which initially Oxfordshire County Council and the City Council can use partnerships with Universities and business to develop innovative approaches and technology that will enhance services, manage infrastructure more efficiently and also provide a basis for local business to solve problems thus reducing burden on public sector finances.

Building on partnership work already conducted and being established through the likes of TSB projects, Transport Systems catapult, CDEC, Future Cities Catapult and other supported research projects, it is suggested that Transport systems and Personal Data should be the initial focus – developing to broaden the scope over time. It is also envisaged that a joint Open data hub which will compile big data and real time feeds e.g. transport congestion, can be hosted, which will provide a basis for local business to utilise information to develop platforms to solve “problems”. Problem identification could also provide a direct interaction with public using public facing web presence, learning from early innovation in this area such as “Shift Surrey”.

The initial ambition is to develop a basic Open Data Hub by 2015 with the further development supported through further partnership project bids for funding via route such as TSB, Horizon 2020, UK Research Council. With the potential ambition to develop into a physical centre to establish a place where local business can be incubated and get direct support from the core team/experts while also working on tech/solutions that can be applied in a real “living laboratory” within Oxfordshire.

The output will be innovative SME business development, new IP for both local business and the partnership, while providing economic benefit through efficiency savings to things like the local transport system.

Delivering effective and efficient services

Both the City and County Councils are committed to delivering high quality services in the most efficient and effective ways. The City Council’s ambition is to be a flexible and accessible organisation, delivering high-quality, value-for-money services. Oxford City Council has achieved £8.5 million of efficiency savings over the last four years and is on track to make a further £1.3 million savings this year, without the need for compulsory redundancies. Our ability to continually improve the way we do things means we have been able to invest in new projects and infrastructure which are critical to delivering the Council’s vision: building a world-class city for everyone. The financial constraints which government has imposed on local authorities present us with the significant challenge of doing more with less while still ensuring

that our residents receive a world-class service. We will do this through our ongoing efficiency programme and by delivering new and increased income streams, requiring a more commercial and innovative approach from all employees.

We have invested resources to drive channel shift and have achieved an over 20% level of self-service transactions that are carried out using the Council's website. But we need to drive this further as significant savings can be made if we drive people to on-line delivery and "single account" transactions and personal data ownership.

Successful partnership working

The [Low Carbon Oxford](#) partnership has been established since 2010 and includes 32 pathfinder organisations including the BMW MINI plant, Unipart, local authorities, health authorities, universities, colleges and businesses across the city working to reduce carbon emissions and working together on low carbon projects linked to energy, transport, food and community action.

In Oxfordshire we have the highest level of bus usage outside of London and the newest bus fleet in the country – with the majority of buses using hybrid technology – Oxford's Low Emission Zone has helped to drive innovation adoption in this field. We also have strong partnership working with the public transport operators – both bus and rail – who understand the scale of our growth ambition and see this as an opportunity for investment.

TSB Oxford Transport Laboratory - The Local Authorities are working with Universities and local innovative businesses on Integrated Transport Solutions TSB feasibility study with potential to lead to a pilot this year. The work challenge is focused around managing potential issue of reduced parking during construction phase of Westgate when Oxford parking reduces by 1/3rd - Feasibility stage is using a "Use Case" approach to establish key overlapping touch points where a pilot project could have largest impact and commercial development opportunities - The project would have clear linkages with a CDEC personal data project and will undoubtedly make use of the Local Authorities ambitions for an Open Data platform and an ability to utilise personally derived transport data.

4. Open Data informing Smart Cities

Government is continuing to support the development of Open Data. The establishment of the Open Data Institute and work on developing open data standards is helping to guide interested parties on how to develop data sets so they are of use and how to ensure personal data is appropriately protected.



SOURCE: McKinsey Global Institute analysis

Open data sets—whether big or small—can come from the government or other institutions and enterprises, and from individuals. Open data initiatives in the public sector, in which governments release data, are some of the most prominent examples of this trend, with the Census data probably the most established, well known and used government open data source, many more UK datasets are now provided through www.data.gov.uk website.

The open data concept is associated with personal data or “MyData,” which involves sharing information collected about an individual (or organization) with that individual. For example, councils providing people with online access to their Council Tax payment history. Providing aggregate statistics (a form of open data) alongside MyData allows useful comparisons; some utilities show consumers how their energy use compares with that of neighbours to encourage conservation. In some cases, individuals are allowed to modify or correct the data provided to them, which improves the quality of the data.

Open data sets vary in scope and source. They can be local, national, or global and can be obtained from both government and commercial sources.

5. Government Policies and Programmes Supporting Smart Cities

There is a wide range of Government policies and programmes which are relevant to developing the UK’s capabilities in smart cities. They fall within five main areas:

- Encouraging and empowering city authorities to develop the vision and leadership to provide solutions to their own problems

- Promoting open data and the capacity of organisations to improve access to open data, to share and to use it, including the development of open standards
- Programmes to develop underpinning technologies and to demonstrate their efficacy
- Departmental programmes to encourage the adoption of new approaches and technologies, to transform both the service systems and consumer behaviour
- Participating actively in EU programmes.

A sixth key area of policy is helping UK firms to exploit their capabilities in global markets.

City Deals are described at some length as a key mechanism in the empowerment of city authorities.

The Government has promoted Open Data as a means of holding Government to account, improving the quality of public services, and creating new opportunities for business. The 2012 Open Data White Paper (http://data.gov.uk/sites/default/files/Open_data_White_Paper.pdf) set out its vision and strategy. Among the initiatives developed so far is the establishment of a Public Data Group consisting of the Ordnance Survey, the Met Office, the Land Registry and Companies House, collaborating to improving access to public data, drive best practice, and develop new activities. The Cabinet Office is proposing to work with one or two cities to create an environment that allows for experimentation on pooled public data linked to social media and commercial data.

The concept of smart cities, it is noted, involves data from a wide range of sources and systems. This requires a focus on protocols for data sharing, a lengthy discussion on which is set out in an annex. One of the main barriers to effective information sharing is that different organisations collect information for different purposes and attach a different meaning or interpretation to it. The aim should be to rationalise information governance regimes across services and to address the semantics, or context, of information. Several examples are given of where local authorities are attempting this.

The Government has established a Foresight Project on the Future of Cities (see <http://www.bis.gov.uk/foresight/our-work/projects/current-projects/future-of-cities>). The project will focus on how UK cities can best contribute to economic growth over the coming decade, but placing this within a wider view of prosperity which includes good quality of life, wellbeing, equity and social inclusion. Given that cities compete with each other for private finance and investment, the project will consider the opportunities for UK cities within a national and global 'system of cities'.

While there is not a Smart Cities research programme as such, there are a number of activities funded by RCUK which underpin the concept. One example given is a five-year Engineering and Physical Sciences Research Council (EPSRC) funded programme (Liveable Cities) which aims to develop a method of designing and engineering UK cities which are low in carbon consumption, resource secure, and which maximise citizen wellbeing. It is stressed that there is an important role for universities in supporting city development. An example given is Birmingham City

Council's appointment of a Smart City Commission which included representatives from the city's universities.

The Future Cities Demonstrator Programme is a £33m Technology Strategy Board (TSB) project which will demonstrate at scale, and in use, the additional value of integrating city systems. Glasgow City Council won the funding through an open competition for a project that aims to develop integrated services across health, transport, energy and public safety, and to enable UK businesses to test new solutions that can be replicated around the globe (see <http://futurecity.glasgow.gov.uk/>). Bristol, London and Peterborough were each awarded £3m in April 2013 to deliver an element of their original proposals. It is expected that the four Future Cities Demonstrator projects will work closely together to maximise collaboration and learning. It is also expected that the Glasgow Demonstrator project will work with the TSB DALLAS (Digital Assisted Living Lifestyles at Scale) project, already underway in Glasgow.

The Future Cities Catapult, it is claimed, will be a global centre of excellence on urban innovation, a place where businesses, universities and city-administrations come together to develop solutions to the future needs of cities (see <https://futurecities.catapult.org.uk/>). It is stressed that the TSB has already invested heavily in the elements which comprise a Smart City. Examples given include collaboration with the Department of Health in developing assisted living technologies and, more recently, in deploying these technologies in the Whole System Demonstrator and DALLAS. Its Knowledge Transfer Networks have also focussed on smart applications of technology for transport and energy and it has recently announced Catapults in relation to Transport Systems and the Connected Digital Economy.

The Energy Technology Institute is a public private research partnership, involving six companies whose funding of projects is matched by the public sector, in particular from the EPSRC. Its Smart Systems and Heat (SSH) Programme aims to design and test a commercially viable Smart Energy System in the UK, facilitating improved heat management and low carbon energy services across the country. There is a very lengthy list of Departmental initiatives that can potentially underpin smart city development. Examples given include the Department of Health's launch of a Whole System Demonstrator programme (WSD) in 2008, claimed to be the largest randomised control trial of telecare and telehealth in the world. The Department for Transport (DfT) is developing further the substantial amount of smart ticketing schemes already operating across the UK, and is investing £17m in the Transport Systems-Catapult Centre (TS-CC) to develop new applications.

Transport data is amongst the most popular for re-use by application developers for mobile applications, such as real-time train and bus information services and applications around road congestion and traffic information. It is claimed that the UK is a world leader in Intelligent Transport Systems (ITS).

The Department for Culture Media and Sport (DCMS) is investing £150 million to create 22 super-connected cities to help provide homes and businesses with ultrafast Broadband – Oxford is one of the 22 cities.

Various initiatives in energy efficiency and carbon reduction for which the Department of Energy and Climate Change (DECC) has lead responsibility for. These include the Low Carbon Pioneer Cities initiative which is part of DECC's contribution to City Deals. The Government is establishing a new Heat Networks Delivery Unit within DECC, meant to support local authorities to develop heat networks projects to the point that they can attract capital investment. DECC is managing a roll-out of both gas and electric smart meters, which, in addition to allowing meters to be read remotely, will allow new methods for optimising the demand for and use of energy.

This will need to be supplemented by the local smart storage of energy to soak up excess supply at times when renewable energy is plentiful. To speed local smart storage technology development, DECC is running a further series of innovation competitions to promote developments in this field. Information about all of DECC's innovation competitions is available <https://www.gov.uk/innovation-funding-for-low-carbon-technologies-opportunities-for-bidders>. The UK supports innovation in smart city energy technologies through a number of funding streams. For example, Ofgem's Low Carbon Networks Fund (LCNF) has made £500 million available to network operators over 5 years (2010-2015) to trial new technologies and approaches. Over 120 innovation projects are now being funded directly by DECC through its Entrepreneurship Scheme. In addition, several government departments invest in the various stages of low carbon energy innovation through the TSB and Research Councils, coordinated by the Low Carbon Innovation Coordination Group (LCICG).

6. The Commercial Potential of Smart City Technologies

The Government commissioned Arup to examine the evolving nature of public service delivery in urban environments, and the design and management of five main service utilities, with a view to identifying opportunities for UK firms in the value chain. The service utilities identified were:

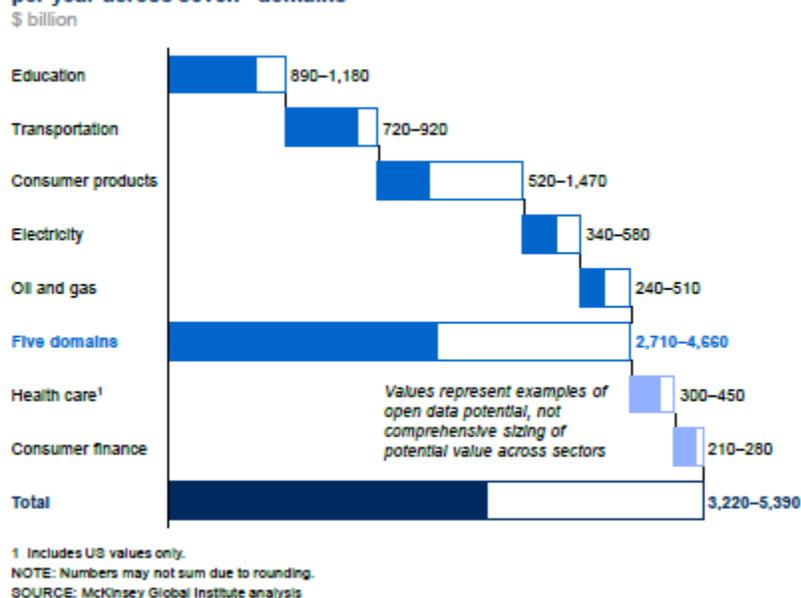
- Intelligent transport systems: Traffic monitoring and management, congestion management, road user charging, emergency response, public information systems, smart parking, and integrated traffic light management;
- Assisted or Independent Living: Telehealth and telecare products and systems, and digital participation services;
- Water Management: Water system upgrades, consumption monitoring, wastewater treatment, environmental safety systems, and flood management;
- Smart grids or energy networks: Demand management, electronic vehicle support, energy efficiency program, and renewable energy integration; and
- Waste management: Waste collection modelling and consistent supply to energy generation.

The global market for smart city technology and associated products and services in 2020 is estimated to reach \$408bn by 2020. Another estimate for global investment in urban ICT and telecommunications over the next 30 years will amount to over \$30 Trillion. Further, there is a much wider set of professional services which are brought into play, as new business models require careful financial appraisal, legal and contracting skills, as well as finance itself, property

services and marketing. Smart cities, it is argued, have further knock-on effects for urban growth. Smart cities attract new firms and professionals and the potential for new clusters of expertise.

A recent study by Mckinsey² suggested that Open Data alone could add \$3+ trillion a year in economic value through a combination of efficiency savings provided and new business development across seven major sectors.

Open data can help unlock \$3.2 trillion to \$5.4 trillion in economic value per year across seven “domains”



This, in turn, provides employment opportunities for a wide segment of the population. Evidence for this is supplied not only by the experience of larger cities such as Boston, Chicago, Stockholm, Barcelona, Copenhagen, Amsterdam, Berlin, London and Manchester, but smaller communities such as Friedrichshafen, Aarhus, Santander, Paredes, Peterborough, and Bristol. An increasing number of cities around the world consider that innovation in the urban environment and in the delivery of public services are central to wider economic growth. The Government’s strategy to help companies in smart city technologies and related activities maximise trade opportunities, comprises:

- Influencing overseas governments and public authorities to integrate smart city solutions into urbanisation programmes whether adapting existing urban centres or building new ones
- Developing awareness of opportunities for UK expertise and bringing them to the attention of UK companies through UKTI
- Again through UKTI, bringing UK companies to the attention of procurers.

7. Europe

²

http://www.mckinsey.com/insights/business_technology/open_data_unlocking_innovation_and_performance_with_liquid_information

The European Commission has signalled its commitment to developing a European capability in developing smart cities by establishing a European Innovation Partnership (EIP) on Smart Cities and Communities (SCC) (see

http://ec.europa.eu/energy/technology/initiatives/doc/2012_4701_smart_cities_en.pdf).

Themes include:

- Sustainable mobility
- Sustainable digital infrastructures
- Low-energy, connected buildings and districts
- Smarter decision-making in urban planning and in daily life.

It is likely that projects could be funded from a number of sources including Horizon 2020 and the European Regional Development Fund (ERDF). The development of research and innovation strategies for smart specialisation will deliver more targeted ERDF support for smart growth in all regions and cities.

8. Developing a Smart City Vision

To move forward with Smart Cities approach it is clear that a vision, strategy and roadmap is required to ensure there is a local buy in from partners and stakeholders to what smart means to them. Cities such as Birmingham, Liverpool, Bristol and Leeds have provided some good working platforms to develop from. Recently BSI published PAS181³ a smart cities framework, which outlines a good practice approach for Cities to take in establishing a smart city strategy.

The strategies need to encompass the wide ranging partners that will both input and benefit from smart cities and it needs to build upon existing strategies and ambitions.

A recent Centre for Cities⁴ briefing paper recommended that cities Integrate their smart ambitions with their economic development and public services plans and considering how technology or use of data might help them achieve existing objectives more effectively. With the development of the City Deal and then the SEP focused on innovation along the Knowledge Spine and a step change in ambitions for infrastructure across Oxford this smart integration in policy is starting to happen. It was also clear from this and other papers that a partnership approach including business, community and key partners is the only route to successful implementation.

9. Conclusion and recommendation

There are many potential stakeholders with an interest in the smart city concept but it could be argued that it comes under a broad economic development remit.

³ <http://www.bsigroup.com/en-GB/smart-cities/Smart-Cities-Standards-and-Publication/PAS-181-smart-cities-framework/>

⁴ <http://www.centreforcities.org/research/2014/05/29/smart-cities/>

The concept offers more than merely a new technological platform and a means of delivering services more cheaply, but new possibilities for progressive relationships between local citizens and local government, and of constructive partnerships between the public, private, and community sectors.

However, stakeholders in and around the City need to better understand the potential benefits and outcomes of being a Smart City and establish what the ambitions are. It is recommended that we work to produce a Smart City Vision and Delivery Strategy through the Oxford Economic Growth Steering Group. This work would be led by the “Core Organisations” - Oxford City Council, Oxfordshire County Council, University of Oxford, Oxford Brookes University and the Oxfordshire LEP.

Funding and resource to support this development will be requested from each core partner. As a starting point, £10,000 will be requested from Oxford Strategic Partnership funds through the City Council.

Sebastian Johnson
June 2014

References and Further Reading:

Department for Business Innovation and Skills:

- Smart Cities Background Paper - <https://www.gov.uk/government/publications/smart-cities-background-paper>
- Smart city market: UK Opportunities - <https://www.gov.uk/government/publications/smart-city-market-uk-opportunities>
- Global Innovators: case studies - <https://www.gov.uk/government/publications/smart-cities-international-case-studies-global-innovators>

Centre for Cities Briefing Paper - <http://www.centreforcities.org/research/2014/05/29/smart-cities/>

LGiU Briefing Paper - <http://www.lgiu.org.uk/briefing/smart-cities/>

Catapults:

- Future Cities - <https://futurecities.catapult.org.uk/>
- CDEC (Connected Digital Economy) - <https://cde.catapult.org.uk/>
- Transport Solutions - <https://ts.catapult.org.uk/>