Planning SMART Places

Unlocking Growth and Place-Making through Innovation

November 2017

ADEPT

Association of Directors of
Environment, Economy, Planning & Transport

Executive Summary

SMART Places: Unlocking Growth and Place-Making through Innovation

The way that we use places, infrastructure and key resources, such as our time, has seen a huge change over the last thirty years. Changes to the nature and role of the family, with widely dispersed patterns of family and kinship networks, significant advances in digital capabilities and infrastructure, the widespread use of big data, and the impact of the internet on the way we work, shop, communicate and use our leisure time, are just a few examples of these. The world has changed, almost beyond recognition, and is continuing to change at pace.

The Association of Directors of Environment, Economy, Planning and Transport (ADEPT), which represents Place Directors from county, unitary and metropolitan local authorities (LAs), together with Local Enterprise Partnership (LEP) and Corporate Partner members, recognised the importance of not just observing or following this rapid change as a sector, but being at the forefront of it – contributing to the body of knowledge and creating new, innovative SMART approaches. As a result, ADEPT and its partners commissioned a research programme to explore the opportunities that SMART Places and digital innovation in place-based services can bring, to stimulate innovation and to encourage collaboration across the sector in prototyping new ideas; delivering 'Live Labs' at scale and sharing best practice.

> "We have a bright future ahead, which will be very different from today. The future will be connected, ubiquitous, use big data intelligently, and will give people even more choice and opportunity across our global village"
>
> *Neil Gibson, Executive Director - Transport, Economy, Environment, Buckinghamshire County Council.*

This report specifically relates to digital innovation in planning SMART places, a key area of research within the overall programme. This research would not have been possible without the support of two core sponsors, Kier, and Atkins who is a member of the SNC-Lavalin Group. Senior leaders from these global organisations led the projects alongside ADEPT, through a Project Commissioning Board, and were deeply engaged in the research, which included a literature review, interviews with Place Leaders and prominent leaders from the business community, Innovation Labs and engagement in workshops with the Future Cities Catapult, the Department for Transport (DfT) and the Department for Communities and Local Government (DCLG).

Key Findings

- **ADEPT Members, partners and central government have a clear ambition to create SMART Places**, where digital innovation and innovative approaches are adopted to shape places that are sustainable, accessible and promote well-being. They recognise that adopting SMART approaches has the potential to be a game changer to the delivery of strategic outcomes and, at the same time improving efficiency and effectiveness whilst reducing costs across the public sector.

- Much of the research, thinking and innovative action to date has been focused on SMART Cities. In addition, the spotlight has largely been on digital infrastructure and the opportunities presented by 'big data'. **ADEPT and its partners want to stimulate a broader dialogue and inclusive, innovative action that supports SMART Places.** This dialogue will not only focus on digital enablement and economic benefits, but also encourage greater community engagement in shaping the places where they live alongside greater innovation and investment in social and natural capital.

- **The ADEPT Members and partners interviewed feel that SMART approaches being taken in the UK, whilst driving change, are often piecemeal and service specific.** They feel that examples of strategically planned approaches that address system-wide issues, strategic outcomes or whole places do not exist.

- **Local authorities and their partners are experiencing some real challenges in bringing forward innovative proposals.** There are a number of reasons for this, including challenges in:

  1. Understanding what is possible, accessing models of good practice and sharing learning.
  2. Creating the leadership and cultural environment in which innovation, taking risks and learning from failures as well as successes is truly valued.
  3. Taking a strategic, plan-led approach that is both agile and conforms to existing development planning framework requirements.
  4. Developing successful business cases where the economic, social value and natural capital benefits are clearly demonstrated.
  5. Developing new forms of partnership where there is shared risk and shared resource.

They want to work together, and gather wider support, to overcome these.

- **Place Leaders from across the public and private sectors are keen to explore the opportunities, and start an on-going dialogue** across the sector and with government about the 'art of the possible'.

- **They want to challenge and stretch their own leadership**; creating SMART, digital leadership competencies and increasing capacity through new forms of partnership.

- **They also want to innovate and take managed risks; prototyping new approaches to test things out in practice - Live Labs at scale.**

Conclusions and Recommendations

Increased leadership focus and capability is needed if local authorities are to develop and deliver SMART Places and digital innovation. Without this, progress will be slow and the investments we commission and facilitate are likely to be piecemeal, lack strategic coherence, and will not deliver their full potential.

ADEPT will need to influence policy makers, disrupters and funders to expand their thinking and move beyond a City-centric and digitally driven focus. For ADEPT and its partners*, SMART Places are places where increased citizen engagement, insight and intelligence, hard infrastructure, natural capital, social capital and digital technologies make places more liveable, workable, resilient and better able to respond to challenges.* This is a broader focus than that which is currently adopted by many organisations.

ADEPT's dialogue with others about SMART Places and digital innovation will need to be ongoing. The concept and best practice around SMART Places are not static outcomes. They are constantly evolving, adapting and reinventing themselves.

Prototyping SMART approaches and digital innovations will provide real opportunities to develop collaborative 'Live Labs' that assist the sector understand what is possible, create models of best practice and share the lessons learnt. These 'Live Labs' should:

- Engage a range of partners across councils and the private sector in new forms of partnership, where resources, risks and rewards are shared.

- Take place in urban and rural environments, to develop learning from these different physical environments and the communities they serve.

- Take place in new settlements (new build) and existing settlements (retrofit) and ideally prototype at scale or provide the ability to scale up innovations at pace.

- Take a strategic, plan-led approach that is agile and uses best practice and innovative planning frameworks.

- Include a leadership development programme to create a Learning Cohort; creating the leadership and cultural environment in which innovation, taking risks and learning from failures, as well as successes, is truly valued.

- Develop successful business cases where the economic, social value and natural capital benefits are clearly modelled and demonstrated, using and creating models that can be replicated across the sector.

A range of other opportunities to support members and partners in accessing and sharing good practice and learning exist. ADEPT should consider these, which include:

- The collation and sharing of good practice, case studies illustrating lessons learnt, toolkits and 'thought pieces'

- ADEPT facilitating a proactive dialogue across the sector and with government, through a series of round tables and workshops to disseminate the SMART Places and Digital Innovation Research Programme

- Encouraging ADEPT Members to more actively engage in existing forums that bring the private and public sector together to innovate and learn, such as the *Future Cities Catapult* and the *Crowd Forum,* who host events such as their December event on Crowdsourcing and Digital Innovation for Sustainability, and

- Creating opportunities for self-organised networking and the dissemination of good practice by openly sharing information and, with the permission of its Members and participants in events, circulating contact details amongst the peer groups.

Next Steps

ADEPT and its innovation programme partners are considering taking forward a third phase of research, which will build upon their first two phases. This Phase Three will be led by the Joint Public and Private Sector Commissioning Board. The membership of this Board will be dependent upon the commitment and contribution that Members can bring, but it is anticipated that it may include ADEPT, Atkins, DCLG, DfT, EY, Kier, 02 and Ringway.

This phase would have four key elements:

PHASE 3	
1	**Living Labs at Scale** - prototyping two areas of research that would bring together the work-streams at programme level: • Big data, insight and intelligence: using behavioural economics to stimulate modal shift, and; • Transport Futures: Autonomous Vehicles and Digital Transformation of the Highways Asset The detailed scope for these prototypes will include leadership development support and a joint learning set to support participants to stimulate innovation and lead the change needed
2	**Facilitating a proactive dialogue across the sector and with government** through existing forums and, potentially through a series of 'round tables' or workshops to disseminate the SMART Places and Digital Innovation Research Programme
3	**Better develop links with existing Catapults and/or create a Centre of Excellence** to establish a specialist knowledge exchange capability. A new Centre of Excellence could be a 'Hub' akin to a 'What Works Centre' and a Technical Advisory Unit. The hub would focus support on innovation, the scale up of technology and digital transformation
4	**Develop other opportunities for ADEPT Members and Partners to access and share good practice, and create collaborative networks, supported by digital tools.** This could include producing a series of good practice / 'how to' guides and toolkits to reduce capacity and capability deficits

Once this Phase has been scoped, councils and private sector partners will be asked to express their interest in taking part.

About ADEPT and Project Partners

The Association of Directors of Environment, Economy, Planning and Transport (**ADEPT**) is a membership based voluntary association. It comprises around 75 'Place' Directors from county, unitary and metropolitan local authorities (LAs), together with 15 Local Enterprise Partnership (LEP) and 14 Corporate Partner members. The LA members of ADEPT are responsible for the maintenance of the local road network.

ADEPT represents members' interests by proactively engaging central Government on emerging policy & issues, promoting initiatives aimed at influencing Government policy, and through the development of best practice.

ADEPT undertakes research projects on key questions of policy and practice. ADEPT commissioned its SMART Places and digital innovation research programme in 2017 alongside its key research partners.

Kier Group plc is a leading property, residential, construction and services group that invests in, builds, maintains and renews the places where we work, live and play. We operate across a range of sectors including defence, education, health, housing, industrials, power, transport and utilities. Listed on the London Stock Exchange, we are a constituent of the FTSE 250 Index.

With a head office at Tempsford Hall in Bedfordshire and a network of 88 UK offices, Kier offers national coverage across all of its core activities. Employing over 20,000 people, with a turnover in excess of £4bn, Kier has the financial strength and technical expertise to undertake some of the most significant construction, civil engineering and service contracts in the country.

Atkins (www.atkinsglobal.com) is one of the world's most respected design, engineering and project management consultancies, employing some 18,300 people across the UK, North America, Middle East, Asia Pacific and Europe. We build long-term trusted partnerships to create a world where lives are enriched through the implementation of our ideas. You can view Atkins' recent projects on our website.

SNC-Lavalin
Founded in 1911, SNC-Lavalin is a global fully integrated professional services and project management company and a major player in the ownership of infrastructure. From offices around the world, SNC-Lavalin's employees are proud to build what matters. Our teams provide comprehensive end-to-end project solutions – including capital investment, consulting, design, engineering, construction, sustaining capital and operations and maintenance – to clients in oil and gas, mining and metallurgy, infrastructure and power. On July 3, 2017, SNC-Lavalin acquired Atkins, one of the world's most respected design, engineering and project management consultancies. www.snclavalin.com
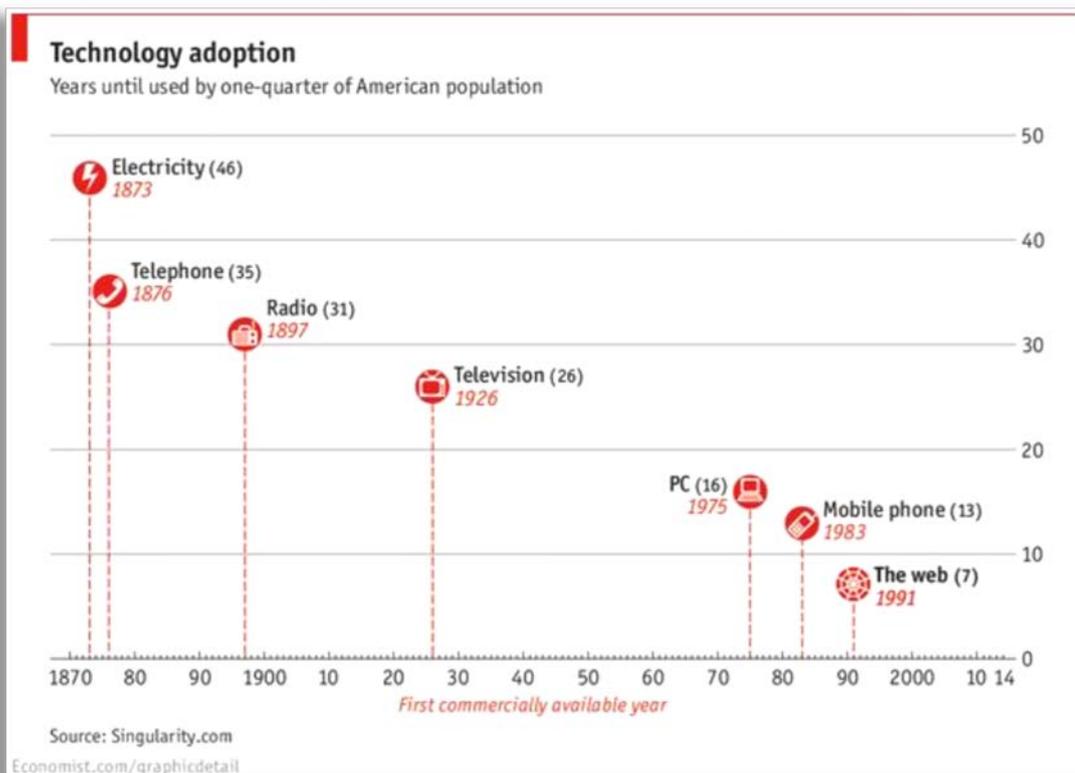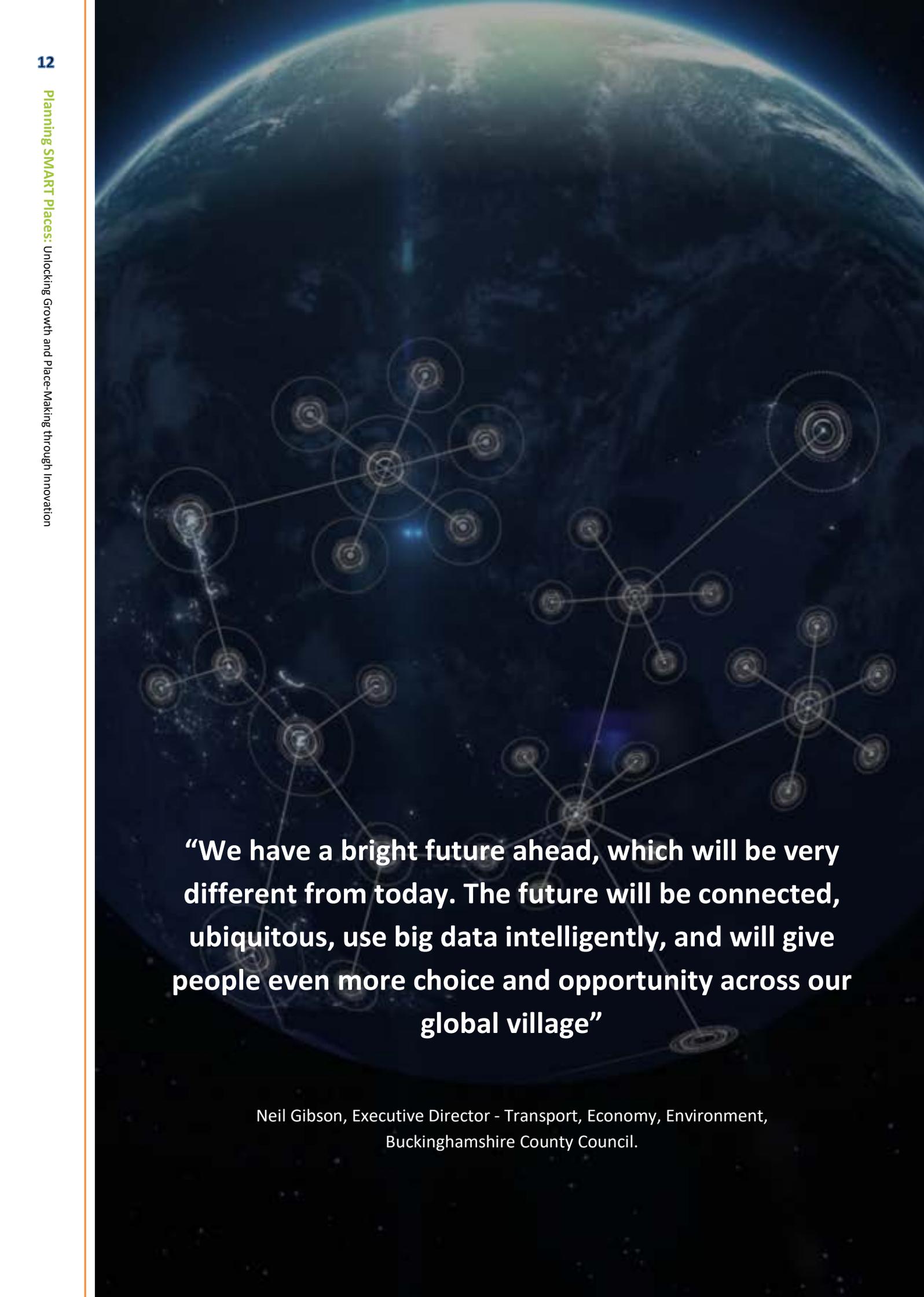
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Chapter One:

Introduction

The way that we use places, infrastructure and key resources, such as our time, has seen a huge change over the last thirty years.
Changes to the nature and role of the family, with widely dispersed patterns of family and kinship networks, significant advances in digital capabilities and infrastructure, the widespread use of big data, and the impact of the internet on the way we work, shop, communicate and use our leisure time are just a few examples of these. The world has changed, almost beyond recognition, and is continuing to change at pace.

Customers' needs and expectations, markets and services have changed as part of this. Customers and service users expect to access services, travel or enjoy their leisure time, in ways that are accessible, swift and agile. We now live and do business in a global marketplace, which is connected digitally and where big data is a precious commodity used to leverage competitive advantage and directly market goods and services tailored to personal preferences.

The very principles on which some markets and services are being commissioned and delivered have been revolutionised. Some of the world's largest and most successful businesses provide platforms and connections, but own no stock and limited physical assets. Facebook, one of the world's most popular media owners, creates no content. Alibaba, the world's most valuable retailer, has no inventory. Uber, the world's largest taxi company, owns no fleet, and Airbnb, the world's largest accommodation provider, owns no property.

Technology adoption
Years until used by one-quarter of American population

Technology	First commercially available year	Years
Electricity	1873	46
Telephone	1876	35
Radio	1897	31
Television	1926	26
PC	1975	16
Mobile phone	1983	13
The web	1991	7

First commercially available year

Source: Singularity.com
Economist.com/graphicdetail

"We have a bright future ahead, which will be very different from today. The future will be connected, ubiquitous, use big data intelligently, and will give people even more choice and opportunity across our global village"

Neil Gibson, Executive Director - Transport, Economy, Environment, Buckinghamshire County Council.

Any sector where there are multiple players has huge potential for digital disruption. This includes the public sector, which is complex, seeks to deliver challenging outcomes such as economic growth and improved public health and, at the same time, increase efficiencies and significantly cut costs. Further, if the public sector doesn't engage and modernise, there is a real risk it will be left behind and that the opportunities to make savings through efficiency, new forms of partnership and new revenue streams will be limited; resulting in an even stronger focus on service reductions in order to manage increased demand with ever decreasing core budgets.

> "SMART Places and digital innovation can offer great opportunities to improve outcomes for communities and help us deal with some of the really complex, challenging issues we face as a society, such as our ageing population. ADEPT needs to be at the forefront of the SMART Places agenda. We need to bring people together from across the public and private sector, including central government and elected members, to talk about the issues and, most importantly, we need to try things out to demonstrate what can be done on the ground and the impact SMART approaches can have."
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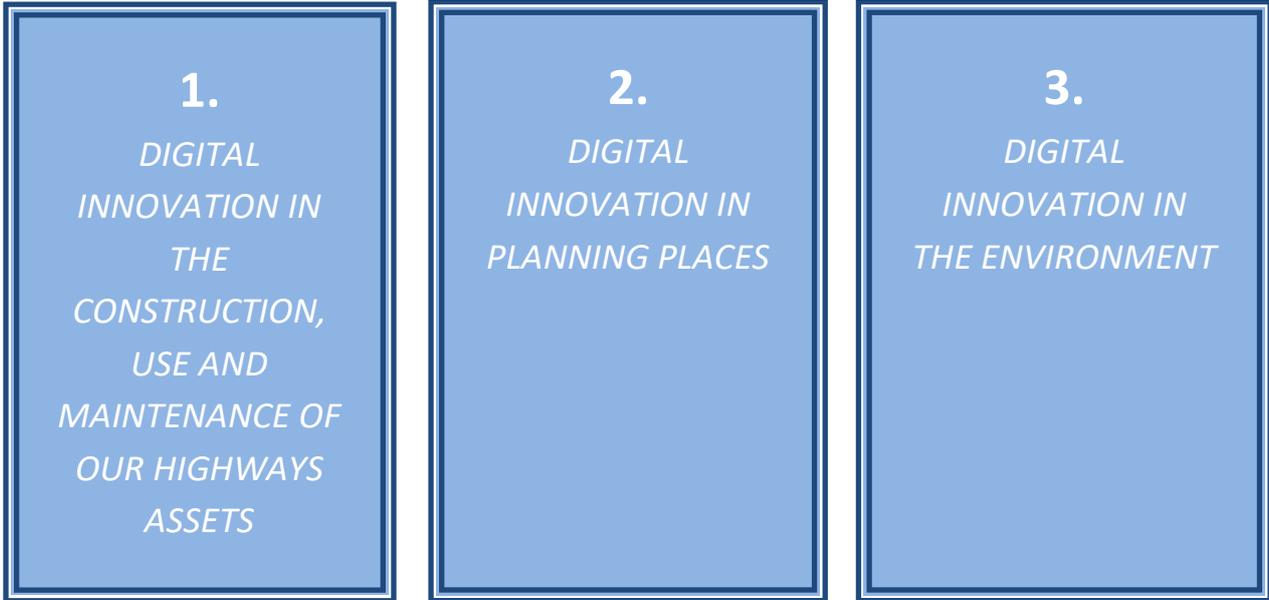> **Simon Neilson, Executive Director, Economy & Environment, Walsall Council.**

The Association of Directors of Environment, Economy, Planning and Transport (ADEPT), which represents Place Directors from county, unitary and metropolitan local authorities (LAs), together with Local Enterprise Partnership (LEP) and Corporate Partner members, recognised the importance of not just observing or following this rapid change as a sector, but being at the forefront of it – contributing to the body of knowledge and creating new, innovative SMART approaches.

As a result, the ADEPT Innovation Research Programme for 2017/18 is focussed on 'SMART Places: Innovation in the Use of Digital Technology in Place Based Services'. It aims to:

- Stimulate innovation amongst ADEPT Members, their stakeholders and partners, and

- Encourage collaboration on new ideas to harness the opportunities that SMART approaches and digital innovation can bring to improve outcomes and make both cashable and non-cashable savings.

The programme is being delivered through three work streams:

| 1. DIGITAL INNOVATION IN THE CONSTRUCTION, USE AND MAINTENANCE OF OUR HIGHWAYS ASSETS	2. DIGITAL INNOVATION IN PLANNING PLACES	3. DIGITAL INNOVATION IN THE ENVIRONMENT

This report relates to the second work stream, digital innovation in planning places.

Two Core Sponsors supported the project - Atkins and Kier. Senior leaders from these global organisations led the projects alongside ADEPT through a Project Commissioning Board and were deeply engaged in the research.

Chapter Two:
What are
SMART Places?
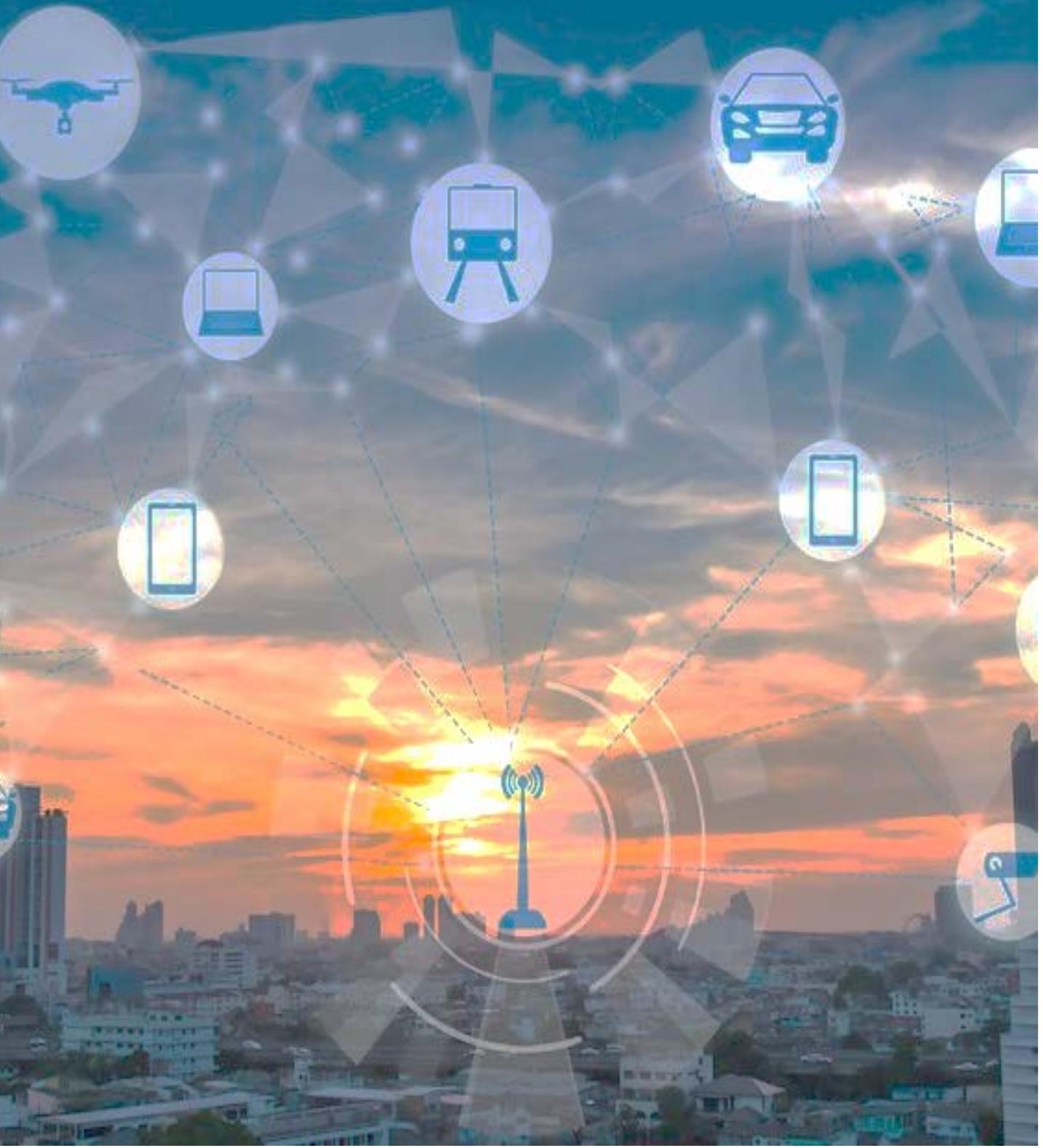
Key questions exist regarding the definitions of SMART, SMART Cities and SMART Places. These questions, together with the need to research what opportunities exist and begin to explore best practice, were the focus of Phase 1 of the research programme.

SMART'; Self-Monitoring Analysis and Reporting Technology solution is a term that can be applied to any asset. For example, a SMART bridge or building has the ability to alert us of its changing condition by using standard technologies. This is becoming possible because the physical and digital worlds are converging, bringing greater efficiency and new opportunities. For example, new buildings equipped with connected energy management solutions, such as heating and lighting systems, could operate autonomously according to how many people are in a room at a given time.

The focus of research, government thinking and funding to date has been on SMART Cities.

"The SMART Movement is very city-centric. ADEPT has a broader interest and a broader reach. The SMART Movement needs to be sophisticated and evolving to give people the same products and services in rural hinterlands as those enjoyed by people in big cities."

Neil Gibson, Executive Director - Transport, Economy, Environment, Buckinghamshire County Council

The former Department of Business Innovation and Skills (BIS) described approaches to SMART Cities as:

"A process rather than a static outcome, in which increased citizen engagement, hard infrastructure, social capital and digital technologies make cities more liveable, resilient and better able to respond to challenges."

BIS also identified five key aspects to smarter approaches, which are strongly information driven:

1	A modern digital infrastructure, combined with a secure but open access approach to public reusable data, which enables citizens to access the information they need, when they need it
2	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)
3	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)
4	An openness to learn from others and experiment with new approaches and new business models
5	Transparency of outcomes/performance, for example, city service dashboards to enable citizens to compare and challenge performance, establishment by establishment, and borough by borough

And they go on to talk about the sixth, critical criterion:

6	'Cities and firms we have consulted agree that the key attribute for a SMART City – the sixth and critical criterion - is 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'

BIS (2013), SMART Cities Background Paper, London: Department for Business Innovation and Skills.

"Recruiting, developing and retaining the right leaders, with the right behaviours and competencies, is incredibly important for every business. Good leaders are able to develop and articulate a compelling vision for the future, get people behind it, and deliver. They lead by example and are not afraid to take calculated risks"

Sir Peter Rigby. Chairman & Chief Executive of Rigby Group PLC.

The importance of leadership to delivering SMART Places and digital innovation is recognised across sectors and is articulated in a number of research papers, guides and webcasts including those produced by the Future Cities Catapult, the New Local Government Network, NESTA, SOCITIM and the World Bank.* It's the vital ingredient to stimulating innovation and change.

*Links to useful resources are provided in the Appendix.

"As Place Leaders, we need to be open to adapt and develop our own leadership in order to lead the change we want to see and that our communities deserve."

Andrew Ross. Director of Infrastructure and Highways. Cheshire East Council.

Chapter Three:
SMART Places
An ADEPT Perspective

ADEPT Members and the strategic partners interviewed as part of the SMART Research Programme were interested in looking beyond SMART Cities, to consider how less urban areas could benefit. For them,

> *SMART Places are places where increased citizen engagement, insight and intelligence, hard infrastructure, natural capital, social capital and digital technologies make places more liveable, workable, resilient and better able to respond to challenges.*
>
> *A SMART Place isn't a static outcome. It's constantly evolving, adapting and reinventing itself.*
>
> *The principles create more efficient systems, assets, ultimately better informed customers, and better outcomes if we take positive action to respond to the insight we have.*

This broader focus is different from conventional SMART Cities thinking in three key areas:

1	2	3
It focuses on Places, including rural areas, market towns, polycentric settlements and city hinterlands; seeking to ensure that SMART approaches and the benefits of digital innovation are accessible to all	There is a focus on how people use Places – the outcomes of SMART approaches such as improved liveability, along with the increased engagement of citizens	Natural capital, social capital and the use of insight and intelligence are considered to be essential alongside the more traditionally considered levers of digital technologies and hard infrastructure

"SMART Places are where people are SMART – where people have access to and use insight and intelligence, where technology is used effectively as a tool and where people and places come together in SMART networks."

Nigel Riglar. Commissioning Director: Communities & Infrastructure, Gloucestershire County Council.

Chapter Four:
Planning SMART Places

The adoption of SMART approaches to planning places can play an important role in supporting public sector innovation and modernisation.

Taking a plan-led approach that considers whole places and the systems that support them is essential to fully understanding the complex inter-dependencies between outcomes and the interventions needed to support their delivery. It is also more likely to support decision-makers to understand and prioritise those investments that will reap the highest rewards in terms of both outcomes and cashable benefits.

SMART approaches can also reap significant economic benefits, providing an offer that is attractive to business, residents and the leisure market, and making a major contribution to the UK's success in the global economy.

'The UK economy has the highest proportion of gross domestic product (GDP) from its digital economy of all EU countries, with a value approaching £200 billion. The UK also has the highest percentage of internet users of any G7 economy.'

The House of Commons Business, Innovation and Skills Committee
The Digital Economy Second Report of Session 2016-17

'By 2020 the Smart Cities industry will be worth an estimated $400bn globally. Of this, a substantial share ($40bn) is expected to be allocated to the UK Smart Cities industry, including Smart Ticketing and Smart Transit – core elements of an effective Smart City. '

Ernst and Young – accessed November 2017
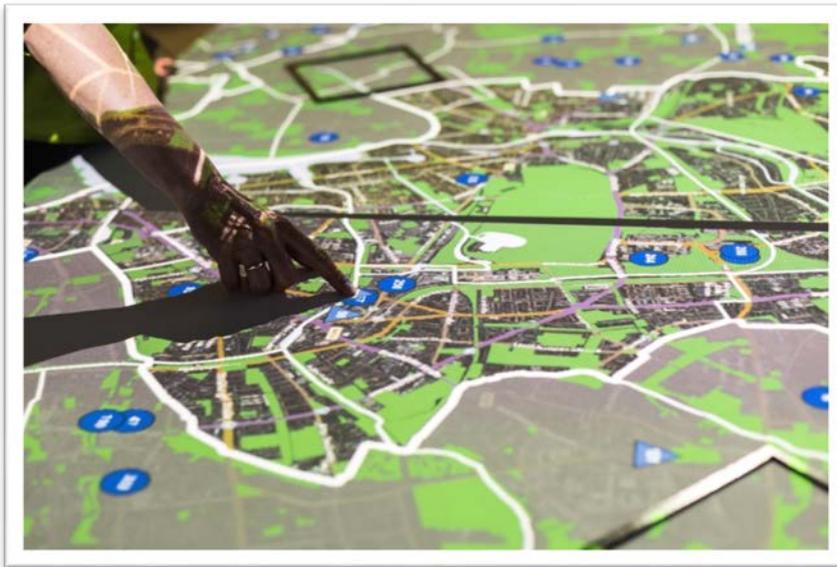
"Changes in customer needs are creating a paradigm shift across the industry, from planning to service delivery. These are enabled by advances in technology. And as industry and technology converge, it makes way for new innovations such as the development of Connected and Autonomous Vehicles and Mobility as a Service"

Jason Pavey. Market Director – Local Transport, Atkins.

Chapter Five:

Models of Good Practice
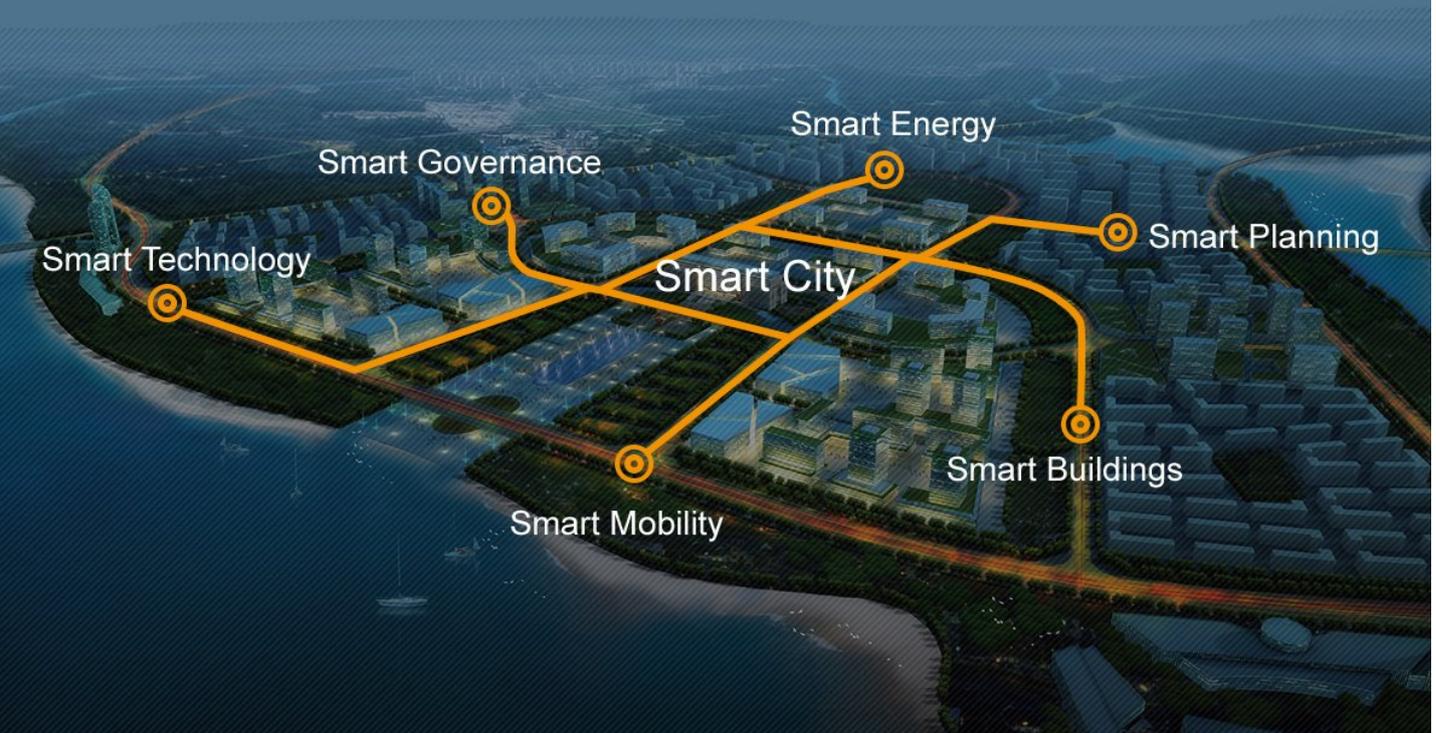
Many SMART approaches and the supportive technologies to drive this transition to SMART Places already exist, and some are already deployed in cities around the world such as Barcelona, Copenhagen and London, which highlight the opportunities available and provide models of good practice.

CASE STUDY:

BARCELONA

Barcelona was named European Capital of Innovation in 2014 by the EU and hosts the annual SMART City Expo World Congress. It has more than 100 active SMART city projects ranging from SMART traffic lights, telecare services and electric cars to ubiquitous public WiFi. Barcelona's SMART city platform, known as the Urban Platform, brings together data from the open-source Sentilo sensor network, the city's information systems, as well as social networks and web 2.0, allowing it to solve urban challenges across silos.

The city is a global leader in its extensive use of the Internet of Things (IoT). SMART LED streetlamps activate only when movement is detected, producing 30% energy savings, and are equipped with sensors to collect data from the environment. Over 70,000 elderly and disabled people are connected to the city's Telecare service that proactively checks on residents. Sensors monitor rain and humidity to determine how much water is needed to irrigate parks. Municipal SMART bins monitor waste levels and are cleared only when they are full, optimizing waste collection operations. Digital bus stops provide bus arrival times, free WiFi and USB charging ports, while a SMART parking system guides vehicles to available parking spaces, reducing congestion and emissions.

CASE STUDY:

Copenhagen is considered to be the greenest capital city in the world and is a centre for clean technology innovation. It is committed to being carbon neutral by 2025. Since 1995, Copenhagen has reduced carbon emissions by 50 percent.

One billion DKK (£119m) have been invested in bike lanes and super cycle highways and 45% of residents cycle to work or school every day.

COPENHAGEN

An intelligent traffic management system optimizes traffic flow and remedies road congestion, while a dynamic RFID-based road pricing system is used to nudge citizens towards green transportation.

Copenhagen sends less than 2% of its waste to landfill. Half of the waste is recycled and most of the waste is used to generate heat for the city's district heating network.

 Its highly efficient district heating system connects 98% of all households, while in the summer months, a district cooling system relies on cold sea water abstraction to save 70% of energy compared to traditional air conditioning.

CASE STUDY:

London also often appears in top SMART city rankings. It is a global centre for entrepreneurship and is known for pioneering the use of open data to create innovative solutions and solve city challenges on the ground. Launched in 2010, the London DataStore is one of the first open data platforms in the world.

With 50,000 visitors every month, its 500 datasets have resulted in transport apps, interactive maps, population and demographic projections and urban planning projects. Almost 400 smartphone apps were created after London's transport data was released to the public.

LONDON

To address London's chronic congestion challenges, the city has implemented congestion charging through number plate recognition, SMART parking systems and intelligent traffic lights that prioritise public transport.

The Town and Country Planning Association advocate that a smarter approach to living can be created by adopting its Garden City Principles:

A number of UK Garden Settlements are being designed and developed based on these principles:

• A pilot project for sustainable living is already under way at **Northstowe**, a former RAF base in Cambridgeshire, with the capacity for 10,000 houses. That would make it the largest planned town since Milton Keynes.

• **Ebbsfleet, Kent**, was the first Garden City to be announced and receive funding from the UK Government in almost 100 years. It will provide a significant level of infrastructure including an initial 15,000 homes, a major new commercial centre, improved public transport and seven city parks. It is being led by a new Ebbsfleet Development Corporation. By 7 August 2017, 174 homes had been started against a target of 94, and 120 homes had been completed against a target of 121.

• The UK's first Eco Town under the Government's Eco Towns Policy Planning Statement (PPS) is under construction in **north-west Bicester**. The first phase of houses, in Elmsbrook, will be completed in 2018 and the first residents have already moved into the development.

"Garden Settlements, including Garden Towns, present a fantastic opportunity to create a SMART and sustainable legacy – one where people can be sustainable and self-sufficient, and where connections, technology, big data and natural capital work in harmony."

Paula Hewitt. Lead Director for Economic and Community Infrastructure & Director of Commissioning, Somerset County Council.

ADEPT Members and partners have delivered a range of planning and service-level SMART approaches, including:

Planning policy that requires the use of renewables – Merton Council introduced a policy in 2003 that required new commercial buildings over 1,000 square meters to generate at least 10% of their energy needs using on-site renewable energy equipment. Developed and implemented by innovative policy officers, this led to wide scale adoption as the 'Merton Rule'.

Street lights replaced with LEDs and WiFi hubs – Southend, Essex, London Olympics, Gloucestershire

Sensors in household waste bins – Manchester City Council

Sensors in street bins – Glasgow City Council. SMART Street Bins

Piloting 5G – Basingstoke and Deane Council, working with Surrey University, are piloting 5G in a central business district. Buckinghamshire County Council are also working with Surrey University on 5G.

SMART Meters in homes – adopted widely across the UK to measure energy usage. Home energy usage and the ability to monitor and manage devices such as heating, lighting and plugs remotely is also widely available through hardware connected to apps such as Hive (a remote home appliance monitoring and management device). Additional devices such as Amazon Echo provide voice-activated controls (users speak to Alexa who provides information and remote management capabilities such as turning appliances on and off).

Using Big Data, real time information and transport apps to provide transport information, support an integrated transport approach and encourage modal shift – Transport for London, project in development at Essex County Council, and Buckinghamshire County Council

Integrated transport and SMART ticketing – Transport for London

Natural capital planning – supporting the creation and use of green spaces, and encouraging modal shift – Somerset County Council and Essex County Council

Supporting charging points for electric vehicles – Somerset County Council and Bristol City Council. Gloucestershire is developing a project to introduce solar powered charging points for electric vehicles.

Investing in and supporting renewable energy infrastructure – Somerset County Council and Essex County Council

Smart Infrastructure Plans providing an enhanced development framework to guide investment and implementation of existing projects – Atkins Global supporting Pune, India

Smart motorways using innovative technology and variable speed limits to actively control traffic flows and improve overall journey time and experience. The hard shoulder is used as an extra lane during busy times. Keir and Carillion delivering for Highways England (Contracts worth up to £475m)

The ADEPT Members and partners interviewed and who participated in two Innovation Labs felt that, whilst a number of councils and partners have adopted innovative SMART approaches, examples of strategically planned approaches that address system-wide issues, strategic outcomes or whole Places do not exist. They felt that ADEPT Members could take a lead role with this.

"We have a unique position. Because ADEPT Members work across the built environment and place-making we can take a strategic view and look at SMART Places comprehensively. It's an exciting time, with exciting opportunities, and we need to step forward and take a lead"

Peter Geraghty. Director of Planning & Transport, Southend on Sea Borough Council.

In addition, local authorities and their partners are experiencing some real challenges in bringing forward innovative proposals. It was felt that there are a number of reasons for this, including challenges in:

1	Understanding what is possible, accessing models of good practice and sharing learning
2	Creating the leadership and cultural environment in which innovation, taking risks and learning from failures, as well as successes, is truly valued
3	Taking a strategic, plan-led approach that is both agile and conforms to existing development planning framework requirements
4	Developing successful business cases where the economic and social value and natural capital benefits are clearly demonstrated
5	Developing new forms of partnership where there is shared risk and shared resource

These Place Leaders from across the public and private sectors are keen to explore the opportunities, and start an on-going dialogue across the sector and with government about the 'art of the possible'.

They want to challenge and stretch their own leadership.

They also want to innovate and take managed risks; prototyping new approaches to test things out in practice, creating Live Labs at scale.

"There is definitely a role for us as leaders and for ADEPT to create SMART Places. We are already doing a lot, such as using drones, big data and our market-leading social value model, but there is much more to do. We need to come together as a leadership community to do this."

Jim Harker. Business Transformation Director. Kier.

Chapter Six:

Accelerating Innovation and Value Propositions

Phase Two of the research programme aimed to identify why best practice is not mainstream practice, what needs to be done to change this, and to identify stakeholders' priorities for action.

Innovation Labs were held to accelerate work on innovation and to develop value propositions. A range of tools and techniques were used to creatively support leaders from across the public and private sector with this, including Theory U, developed by Otto Scharmer, and Value Proposition Mapping.

Innovation Lab One identified opportunities, barriers to success and key areas that participants wished to work on together in the future.

Innovation Lab Two was then used to define the key research areas and problem statements associated with these key areas. Participants were also asked to prioritise the research areas that were most pertinent to Members' and partners' work, and that would have the greatest impact on outcomes if prototypes were to go forward.

A wide range of prototype research areas were identified. Participants were eager to get involved and have the opportunity to work together as a leadership community in the future.


Workshop participants and interviewees recommended that ADEPT and its partners undertake Phase Three of the research programme, which is an optional phase that is subject to an additional commission and additional funding. Phase Three aims to prototype new approaches to using SMART approaches, new technology and digital innovation with UK councils.

It was felt that prototypes in both urban and rural settings, and in new settlements (new build) as well as existing settlements (retrofit), would provide the greatest opportunities for learning. It was also felt that opportunities exist to do this at scale by shaping existing initiatives for garden settlements and large urban extensions, and working with the Department for Transport (DfT) and the Department for Communities and Local Government (DCLG) to prototype new approaches in existing settlements, where interventions would be retrofitted.

The challenge of developing winning business cases to take innovative work forward was a key issue raised at the Innovation Labs. Demonstrating benefits, including cashable savings, economic impacts, social capital impacts, natural capital impacts and wider strategic outcomes, was felt to be particularly difficult. This concern was also reflected in interview responses. Members and partners therefore recommended that approaches to developing this evidence base and creating winning business cases that would secure funding from councils and other funders, such as DfT and DCLG, should be an integral element of prototype scopes.

Participants were very clear that the Innovation Labs provided a valuable opportunity to develop their thinking and creativity. Such opportunities were felt to exist rarely, and many colleagues found it very difficult to create the time and the space to develop their thinking given the pressures of day-to-day demands in the workplace.
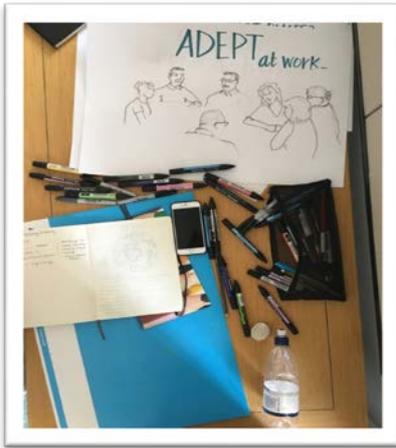
It was also recognised that the leadership skills and capabilities to plan SMART Places, develop SMART approaches and digitally innovate are not strong in most councils. This is a new area of work for many local authorities and such skills and capabilities, and indeed the capacity to create the necessary change, are needed.

Participants and interviewees recommended that leadership development and collaboration opportunities, similar to those at the Innovation Labs, are made available to participants in a third prototyping phase, and that a Leadership Cohort be created.

"This was one of the best, if not the best, pieces of training and development I have ever done."

Richard Wills. Executive Director for Environment and Economy and Monitoring Officer, Lincolnshire County Council.

They also recommended that ADEPT supports its Members to access and understand good practice through:

The collation and sharing of best practice and 'know-how'

Encouraging ADEPT Members to more actively engage in existing forums that bring the private and public sector together to innovate and learn

ADEPT facilitating a proactive dialogue across the sector and with government

Taking a strategic, plan-led approach, which is agile and uses best practice and innovative planning frameworks

ADEPT creating opportunities for self-organised networking and collaboration by openly sharing information and contacts

Chapter Seven:

Conclusions and Recommendations

Increased leadership focus and capability is needed if local authorities are to develop and deliver SMART Places and digital innovation. Without this, progress will be slow and the investments we commission and facilitate are likely to be piecemeal, lack strategic coherence, and will not deliver their full potential.

ADEPT will need to influence policy makers, disrupters and funders to expand their thinking and move beyond a city-centric and digitally driven focus. For ADEPT and its partners*, SMART Places are places where increased citizen engagement, insight and intelligence, hard infrastructure, natural capital, social capital and digital technologies make places more liveable, workable, resilient and better able to respond to challenges.* This is a broader focus than that which is currently adopted by many organisations.

ADEPT's dialogue with others about SMART Places and digital innovation will need to be ongoing. The concept and best practice around SMART Places are not static outcomes. They are constantly evolving, adapting and reinventing themselves.

Prototyping SMART approaches and digital innovations will provide real opportunities to develop collaborative 'Live Labs' that assist the sector to understand what is possible, create models of best practice and share the lessons learnt. These 'Live Labs' should:

- Engage a range of partners across councils and the private sector in new forms of partnership, where resources, risks and rewards are shared.

- Take place in urban and rural environments, to develop learning from these different physical environments and the communities they serve.

- Take place in new settlements (new build) and existing settlements (retrofit) and ideally prototype at scale or provide the ability to scale up innovations at pace.

- Take a strategic, plan-led approach, which is agile and uses best practice and innovative planning frameworks.

- Include a leadership development programme to create a Learning Cohort, creating the leadership and cultural environment in which innovation, taking risks and learning from failures, as well as successes, is truly valued.

- Develop successful business cases where the economic and social value and natural capital benefits are clearly modelled and demonstrated, using and creating models that can be replicated across the sector.

A range of other opportunities exist to support members and partners in accessing and sharing good practice and learning. ADEPT should consider these, which include:

- The collation and sharing of good practice, case studies illustrating lessons learnt, toolkits and 'thought pieces';

- ADEPT facilitating a proactive dialogue across the sector and with government, through a series of round tables and workshops to disseminate the SMART Places and Digital Innovation Research Programme;

- Encouraging ADEPT Members to more actively engage in existing forums that bring the private and public sector together to innovate and learn, such as the *Future Cities Catapult* and the *Crowd Forum,* who host events such as their December event on Crowdsourcing and Digital Innovation for Sustainability, and;

- Creating opportunities for self-organised networking and the dissemination of good practice by openly sharing information and, with the permission of its Members and participants in events, circulating contact details amongst the peer groups.

Wordl Image of Interview Participants Responses

Chapter Eight:

Next Steps

The Commissioning Board, which included ADEPT, Kier and Atkins, considered the findings from the two Innovation Labs and the high level of support from Lab participants and people interviewed to participate in a prototyping phase. They also considered the outcomes and recommendations from Work-stream One, 'Digital Innovation in the construction, use and maintenance of our Highways Asset'. As a result of this, and subject to securing the necessary resources, they decided to **develop a detailed scope to initiate Phase Three**. This phase would have four key elements:

PHASE 3	
1	**Live Labs at Scale** - prototyping two areas of research that would bring together the work-streams at programme level: • Big data, insight and intelligence: using behavioural economics to stimulate modal shift, and • Transport Futures: Autonomous vehicles and digital transformation of the highways asset The detailed scope for these prototypes will include leadership development support and a joint learning set to support participants to stimulate innovation and lead the change needed
2	**Facilitating a proactive dialogue across the sector and with government** through existing forums and, potentially, through a series of 'round tables' or workshops to disseminate the SMART Places and Digital Innovation Research Programme
3	**Better develop links with existing Catapults and/or create a Centre of Excellence** to establish a specialist knowledge exchange capability. A new Centre of Excellence could be a 'Hub' akin to a 'What Works Centre' and a Technical Advisory Unit. The hub would focus support on innovation, the scale-up of technology and digital transformation
4	**Develop other opportunities for ADEPT Members and partners to access and share good practice, and create collaborative networks, supported by digital tools**. This could include producing a series of good practice / 'how to' guides and toolkits to reduce capacity and capability deficits

This Phase Three will be led by a joint public and private sector Commissioning Board. The membership of this Board will be dependent upon the commitment and contribution that Members can bring, but it is anticipated that it may include ADEPT, Atkins, DCLG, DfT, EY, Kier, 02 and Ringway.

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Useful Resources

- https://www.ted.com/playlists/29/our_future_in_cities

- http://www.nlgn.org.uk/public/2014/smart-people-smart-places-realising-digital-local-government/

- http://smartcitiesappg.com/wp-content/uploads/PDF/GlobalMarket.pdf

- http://ec.europa.eu/eip/smartcities/

- http://www.atkinsglobal.com/en-gb/angles/tags/smart-cities

- https://www.socitm.net/smart-places

- http://www.atkinsglobal.com/~/media/Files/A/Atkins-Corporate/group/sectors-documents/urban-development/Atkins%20FPC%20Executive%20Summary%20FINAL.pdf

- https://www.youtube.com/watch?v=uqRXNBTtYMA

- http://www.atkinsglobal.com/~/media/Files/A/Atkins-Corporate/uk-and-europe/uk-thought-leadership/London_Plan_HiRes.pdf

- https://publications.parliament.uk/pa/cm201617/cmselect/cmbis/87/87.pdf