



SMART IPSWICH



IPSWICH
BOROUGH COUNCIL



In July 2012 Ipswich was one of 30 successful UK cities to secure a relatively small amount of Technology Strategy Board (TSB) funding to run a Future Cities feasibility study. This report describes the findings of that study.

Those cities that won through the first round of the competition were also able to submit a bid for a £24m TSB grant to run a full future cities demonstrator project. This report also outlines the basis of the bid Ipswich has submitted.

The TSB expects the demonstrator to:

- show the integration of multiple city systems in novel ways
- tackle specific challenges in the host city
- have the potential for a large impact on the economy, quality of life and environmental impact of the city
- combine recent or current investment in city infrastructure with the demonstrator funding to create a more effective test environment
- provide a platform that allows innovative companies, particularly SMEs, to test their ideas
- offer the potential for innovations in how services are delivered; and
- have the potential for further development and use beyond the initial two years of funding.

While Ipswich is not formally a city it is considered one under the terms of the TSB competition and the terms 'city' and 'town' are used quite interchangeably in this report.

Our process of investigation has been inclusive and involved a high level steering group, a major conference, many individual engagements, a set of four, half-day workshops and a technology working group.

We are extremely grateful for the very significant contribution, in terms of time and expertise, that we have received from many local individuals, organisations and businesses. Particular thanks go to: AECOM, BT, HTK, Innovation Martlesham, John Helleur, John Patman and University Campus Suffolk.

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Executive Summary

This feasibility has established the potential, opportunities and challenges for Ipswich to exploit smart technology and systems to become the UK's first smart, small city.

Reasons for choosing Ipswich

There are a number of reasons why Ipswich is suited for development as a smart future city:

- it is highly representative of many UK cities, yet small enough for the Demonstrator to make a big impact
- it has a very strong presence of ICT companies including FTSE 100 corporates and BT R&D Centre
- University Campus Suffolk plans to become an internationally recognised centre for smart city research and teaching; a collaboration between academia and industry
- the New Anglia LEP, with its Green Pathfinder, is highly supportive of this bid and links to the City Deal
- there is a broad coalition of support across the public and business sectors

Our challenges are reflective of those facing other towns and cities; and are characterised by three broad areas:

Social Care and Health
Businesses and Growth
Education and Skills

Our solutions are innovative and deliverable, scalable and responsive, intelligent and commercially exploitable. We have discussed and developed our proposals with over 40 local businesses and organisations; ranging from local authorities to dynamic technology SME's to world ICT players like BT to the business community and user groups.

It is clear that Ipswich has the appetite and drive to produce solutions that could provide:

- an innovative I-loyalty scheme that will champion pride in Ipswich, deliver business growth and incentivise behaviour change

- a robust and dynamic technology platform with high density city Wi-Fi
- integrated city systems that drive transformational change and efficiencies into city systems and community decision-making
- a prototyping lab in which to scope, model, assess and mentor projects, ideas and business proposals
- access to businesses, local SME's and UK cities to test their ideas that can then be run on a virtual test facility running alongside the live technology platform
- creation of skills, high value jobs and new smart technology business ventures.

Community is central to Ipswich as a smart small city. There is evidence of the need and benefit in consolidating public sector data to provide clearer information to businesses, residents, and visitors in the Ipswich urban area. Building on this there is demand for better communication systems that extracts value from this data. Importantly there is the ability for residents and businesses to interact in an intelligent iterative way to enhance and develop city-wide systems to improve public systems and reduce costs to the Council taxpayer. Key benefits of a smart Ipswich are:

- 1 helping people move around Ipswich a lot more smoothly by all means of transport
- 2 providing easy and consolidated system for two-way communication with citizens
- 3 to be inclusive and accessible to all regardless of age or ability
- 4 increasing spend and footfall in the town centre
- 5 delivering efficiency improvements in excess of its cost
- 6 reducing environmental impacts
- 7 increasing resilience.

Future-proofing

This feasibility study has identified that there is potential for the development of the infra-structure and implementation to make Ipswich a smart, future city. The evidence is that we can develop a self-sustaining business model in two years. Within this initial period we will be able to demonstrate and showcase more efficient access to health services, economic savings; increased spend and footfall in the town centre; high value job creation; improved skills, and environmental benefits.

In addition to this further opportunities have been identified that require further investigation - data analysis and visualisation to reduce impact and cost of crime, crime analysis, flooding and other threats.

1 Foreword from Ipswich Borough Council

Ipswich is a dynamic, vibrant and growing town. Its people are proud of its heritage and its development into a modern regional centre. They believe it's a great place to live in, work in and enjoy.

Economically, Ipswich has gone from strength to strength, and now has significant businesses in the retail, insurance, logistics and technology sectors. The presence of BT Adastral Park and numerous small agile technology companies ensure this is an urban centre that will not sit still but will develop and grow further and become a magnet for investment and jobs.

Educationally, the presence of University Campus Suffolk on the regenerated Waterfront means that Ipswich can develop fast moving education and research facilities to deliver improvement at all levels, and attract international recognition for its integration of new technologies into developing worldwide solutions.

We believe there are opportunities for Ipswich as a smart, small city. It is adaptable, flexible and exciting and it's can-do attitude will deliver more success and turn problems into opportunities.

The feasibility study shows that Ipswich and Suffolk have a real chance to transform lives, communities and create an innovative technology and communications infrastructure that helps drive out new businesses and create high value jobs for the region and UK.

The neighbouring three local authorities are supportive of the bid and are keen to be involved in the development of the detailed delivery components if the Ipswich bid is successful. And the County Council has been represented on the steering group that delivered the project. The five authorities have a strong track record of working together on economic development and planning matters at both professional and political level as can be exemplified via the joint working via the Ipswich Policy Area Board.



We are pleased to support this bid and are looking forward to Ipswich being the first smart small city in the UK.

Cllr David Ellesmere, Leader

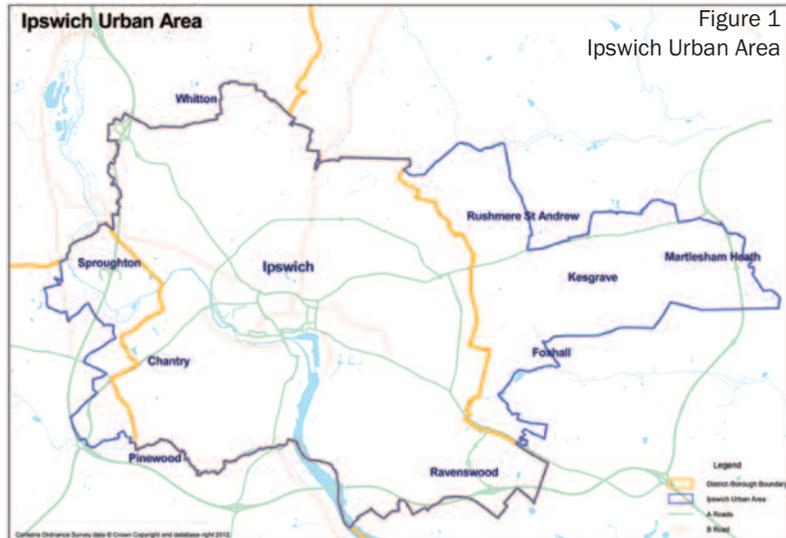
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Russell Williams, Chief Executive

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2 Background and Context

Ipswich is the county town of Suffolk and is one of the fastest growing urban centres in the east of England. In 2011 the Borough of Ipswich had a population of 133,400. The Ipswich urban area outlined in blue, and the focus of this report, had a population of around 164,000. Ipswich has been identified as a key centre for development and change within the sub-region.



Originally established as an important trading port in Anglo-Saxon times, Ipswich retains a working port at the head of the Orwell estuary, handling several million tonnes of cargo each year. Today the original town dockside has been transformed into a vibrant waterfront and is home to the new University Campus Suffolk (UCS), businesses, restaurants and a hotel.

Ipswich's economy is strongest in the service sector, particularly in financial services and the ICT industry. It is home to a number of big financial service sector companies such as Willis, AXA, RSA and Swinton. BT has also had a major presence in the town for over 40 years, with more than 3,500 people now employed by a wide range of companies on the Adastral Science Park, the largest ICT research and development centre in the UK. There are also a significant number of SME financial and ICT companies located in and near Ipswich.

The economy of the Ipswich urban area has a GVA of £2.7b.

The town has good transport connections. The A12 gives access to London and the M25, and the A14 links the Midlands with the Port of Felixstowe. There are three airports within 50 miles of Ipswich: Stansted, Norwich and Southend. Regular train services from Liverpool Street connect Ipswich to London in about an hour.

The town is steeped in history, with handsome buildings representing 800 years of heritage, and medieval churches jostling for position with Lord Foster's famed Willis building. The Willis Faber & Dumas headquarters dates from the early seventies and was a pioneering example of energy-conscious design that challenged accepted thinking about the office building.

The proximity of the East of England Energy Coast means that 20% of all UKs electricity will soon pass through Ipswich. New Anglia, the Suffolk and Norfolk Local Enterprise Partnership (LEP) has been designated by central government as the Green Economy Pathfinder. A focus on smart technology is also part of the LEP's Green Economy Manifesto objectives, as is a recognition that the East Coast is going to be at the forefront of climate change with some parts of East Anglia already experiencing rainfall levels more typical of the Middle East.

Ipswich Borough Council and neighbouring district councils (Suffolk Coastal, Babergh and Mid-Suffolk) cover services such as refuse collection, housing and planning, while Suffolk County Council covers services such as transport, education and social services. The biggest hospital in Suffolk is in Ipswich, and the Ipswich and East Suffolk Clinical Commissioning Groups is responsible for the Ipswich urban area. The Suffolk Police headquarters is also sited in the area.

The countryside surrounding Ipswich is a great attraction for visitors. There are old fishing towns such as Aldeburgh, the Saxon burial ship and National Trust visitor centre at Sutton Hoo, and many areas of outstanding natural beauty such as the RSPB reserve at Minsmere and the world famous "Constable Country".



3 Vision for the City

Building on the formal strategy and development plans for Ipswich an exciting articulation of the town's future is summarised below, followed by an evaluation of the opportunities this presents and the main challenges to its delivery.

3.1 The Future of Ipswich

Our vision is to improve the quality of life for all who live in, work in, study in and visit Ipswich by delivering growth to create jobs and opportunities while ensuring that development takes place in a sustainable way.

By 2020, Ipswich will be:

Economically vibrant, active and an attractive regional hub – a true focus for Suffolk and beyond with high employment levels. In addition to retail and tourism, its main economic sectors will be knowledge based - finance, ICT and biotech.

Delivering higher attainment, skills and lifelong learning - achieved through the Education Quarter on and around the Waterfront, with an expanding university campus and new further education college, along with new academy schools.

Healthy, caring and safe - we will deliver more coherent and efficient health and social care services with housing that meets the changing needs of all residents; encouraging independence in our safe community.

Connected - we will have an improved integrated transport and communications infrastructure.

Engaging - as a sports town, building on the legacy of 2012, we will encourage fitness for all ages and abilities through a wide range of sporting facilities, travel options and by making full use of the town's open spaces.

Resilient - we will provide solutions for residents and businesses so that they can easily make choices to maximise business efficiency, reduce environmental impact and increase resilience against flooding and emergencies.

Distinctive - as a result, by 2020 Ipswich will be a more vibrant, active and green regional centre, combining its rich heritage with modern development, acting as a magnet for investment and learning as well as an attractive tourism destination.

As the fastest growing centre in the region, Ipswich offers an ideal urban model for the rest of the country. It is big enough to help drive the local economy forward and small enough to be flexible to change.

Wherever possible we will achieve our vision by exploiting smart technology and expect that by 2020 Ipswich will be proving itself as the UK's first smart, small city. It will be a centre of excellence in innovation, known as a place that listens to its residents and where technology is embraced by all. A place that both rewards and incentivises those who are here and those who want to be here.



3.2 Opportunities and Challenges

*"A pessimist sees the difficulty in every opportunity;
an optimist sees the opportunity in every difficulty."*

Sir Winston Churchill

3.2.1 Challenges

Ipswich faces similar challenges to other towns and cities across the UK. These include the effects of an aging population, skilling and re-skilling, raising educational attainment, growing the economy and the number of sustainable full-time jobs, challenges to the traditional high street, growing levels of obesity, traffic congestion and the need to reduce environmental impacts.

We focus here on three of the most important city systems:

Health and Social Care
Economy and Business Growth
Education, Skills and Learning

Health and Social Care

There are nine pockets of severe deprivation in the city where life expectancy can be up to six years lower than other parts of Ipswich. Amongst the adult population, 14.5% are currently registered with GPs as suffering from depression. Around 7,000 residents claim Disability Living Allowance, representing over 8% of the working age population. The percentage of people over 65 is predicted to grow from 16% to 23% by 2033 with a proportionate increase in demand on public services unless offered assistance in order to maintain their independence. 25% of the population are obese and participation in sport is relatively low. Traffic congestion has resulted in four areas being directly affected by poor air quality. Throughout Ipswich there is a low level of feeling safe: over 60% of Suffolk's robberies occur in Ipswich, with Ipswich accounting for 31% of the total recorded crime for 'violence with injury' in Suffolk.

Economy and Business Growth

The Ipswich unemployment rate is 6.3%. Over 30% of employment in Ipswich is in public administration, education and health. Suffolk County Council is targeting a £60m cut in its £470m budget over two years. Currently 7,425 children live in households where no one works. Nine areas

of the town are ranked within the top 10% most deprived areas nationally. The number of households in Ipswich in receipt of either Housing Benefit or Council Tax Benefit has increased to over 15,700 in the last three years. The face of retail is changing with more out-of-town and online shopping which is affecting the traditional high street. A study for the East of England Development Agency in 2008 showed that by 2021 congestion will cost the Ipswich economy about £17 million per year. Many manufacturing industries have been lost.

Education, Skills and Learning

Nationally Suffolk is ranked 121st out of 150 local authorities for educational attainment at age 16, with Ipswich lowest in Suffolk. There is an increasing need to develop new skills in the workforce to match rapidly changing demands of modern businesses.

Important challenges relevant to other aspects of the vision include resilience and greenhouse gas emissions. Despite having one of the lowest per capita emission levels in the East of England, Ipswich has still set itself a target to reduce its CO₂ emissions by 60% by 2025. The latest (2010) official figures for Ipswich Borough Council's "CO₂ emissions within the scope of influence of Local Authorities" gives an annual emission of 628,000 tonnes. Under the current run rate Ipswich is projected to fall short of its target by about 100,000 tonnes. In addition, the changing climate means that Ipswich is also vulnerable to flooding (North Sea surge, river and flash flooding) and drought.

3.2.2 Opportunities

We firmly believe the application of smart technology presents Ipswich with a real opportunity to address its key challenges through systems integration which is why our proof of concept themes focus on: (i) **Health and Social Care**, (ii) the **Economy and Business Growth**, and (iii) **Education, Skills and Learning**. The bid follows this clear thread from the vision, through the challenges, to the Demonstrator itself and ultimately to the benefits quantified in later sections.

We know Ipswich is extremely well placed to lead the UK adoption of smart, integrated systems thinking and, for the following reasons, host the Future Cities Demonstrator:

- Ipswich is a big town/small 'city'. It is both big enough to offer a representative trial across typical city systems, while being small enough for the Demonstrator to make a big and highly visible impact
- Ipswich is highly representative of many UK cities
- Adastral Park is the largest ICT research facility in Europe and can provide the project with many relevant support facilities; Ipswich has a strong presence of other ICT companies
- University Campus Suffolk has also been actively engaged in our bid and plans to become an internationally recognised centre for smart city research and teaching
- the importance of the Green Economy to Ipswich is recognised by the status of New Anglia LEP as the UK's Green Economy pathfinder and the pioneering work by the County Council in delivering Suffolk - The Greenest County, and Ipswich - The Greenest Town and
- the application has a broad coalition of support across the public and business sectors.

The opportunities are not confined to Ipswich. Our Demonstrator will directly contribute to a number of the central government objectives. In particular showing: how access to open data drives innovation; how greater transparency on performance in the health, social care and education sectors can provide more informed citizen choice and drive improved results; how an integrated reward and recognition system can 'nudge' relevant behaviour change; and how city system integration and the convergence of the real and on-line worlds can directly address issues raised in the Portas review .

3.3 Integrating City Systems

Any large urban conurbation is a complex mesh of interconnecting systems. It's about flows of people, materials, energy and money. It's about relationships between people and the built, cultural and natural environments. It's about governance, responsiveness and security. It's about happiness, fun, community and participation. It's about collaboration and competition; freedom and compliance. It's about specialism and interconnection.

Naturally a working city needs a raft of specialist sub-systems to operate such as schools, police, shops, hospitals, buses and rubbish collection, etc. None of these are simple to deliver, and each often comprises a hierarchy of sub-systems. There's no doubt that in Ipswich, like most cities, each sub-system can undoubtedly be run more efficiently than it is today, and information and communication technologies (ICTs) are already playing an important part here.

This feasibility study takes a step up from the sub-systems and asks the question: could Ipswich, as a system in its own right, use smart technologies to become a better place through stronger integration of its component parts?

In answering this question it's important to recognise that technology is not a silver bullet, and that city system optimisation will be need to be achieved through a combination of ICT, physical infrastructure improvements and innovative working arrangements requiring far more extensive inter-departmental and inter-organisational working.

While the technical challenges associated with interlinking different IT systems are not to be underestimated, the cultural challenges are likely to be just as great, if not greater.



4 Integration Options

Since the silicon transistor was invented in 1954 much of the transformational change we have experienced in our lives has been driven by the digital revolution. Today a telecommunications network connection with broadband capability allows the user, often simultaneously, to: make a call; receive an email; order the shopping; access an encyclopaedic knowledge base; download a film; socialise with friends; listen to the radio; catch up missed TV; and bid in auctions. In fact the list is almost endless.

A number of related factors make it very timely to consider the application of the digital revolution to a whole city. These include:

- the ubiquity of mobile and fixed line broadband connectivity
- the growing take up of smart phones - over half the UK population
- the increasing availability of multiple data streams - many in real time and
- the advent of cloud computing.

The concept of a smart city is to deploy this digital technology across the whole city, with an ambition to make it a better place. For existing cities this will not be achieved overnight and is likely to be a gradual transition over a period of 10 to 20 years.

For many cities the starting point has been the introduction of a smart electricity grid, reflecting the urgent need to tackle climate change and update aging power generation and distribution infrastructure. With the amount of renewable electricity being generated around Ipswich this is an important aspect to consider. However, whilst a very important aspect of a smart city, it does not require extensive city system integration and is not covered in detail here.

This feasibility study has two roles: the first is to scope out everything that would be involved in Ipswich achieving its ambition of becoming the 'UK's first smart, small city'; the second is to narrow down the wide range of smart city possibilities into some first step actions that demonstrate the benefit of systems integration.

Achieving a smart city vision involves leadership, technical infrastructure, deployment, engagement and an enabling environment that encourages innovation and develops the necessary skills.

Our process of investigation has been inclusive and involved a high level steering group, a major conference, many individual engagements, a set of four, half-day workshops and a technology working group.

4.1 Existing Projects

Existing Ipswich projects are aligning an additional £93m with Smart Ipswich.

There are a number of important projects already underway in Ipswich that are integral to this bid.

Foremost of these is the **£22m** 'Travel Ipswich' transport project to be implemented over the next two years. This is an integrated scheme designed to deliver a step change in travel behaviour. It addresses smart traffic management, real time passenger information and e-ticketing. It directly links into the existing **£1m** Walk Ipswich and Fresh Ways to Work projects. Spare capacity on a fibre ring being installed as part of the Travel Ipswich project will be utilised as part of the WiFi roll out.

Suffolk County Council's Better Broadband Project Board will oversee a **£23m** public sector investment in superfast broadband over the next three years. This will include around 8% of Ipswich premises that are not already covered by BT and Virgin Media roll out plans. As part of the broadband plans a smart technology demonstrator will be opened to the public.

Ipswich Borough Council runs a number of sports centres across the town with an annual revenue of **£1.4m**. The central booking system is being updated next year. This will be one of the first full system integration opportunities.

The Suffolk Observatory is an existing **£0.2m pa** initiative that acts as a single repository of existing, non-real-time data sets relevant to the county. Many have significant geographic granularity associated with them. As part of our background research we have identified these and other additional current and projected data sets that would support a FCD project.



Raising the Bar is a Suffolk wide response in partnership with the RSA to tackle the low educational attainment levels at age 16. It is also about linking the jobs on offer in Suffolk with the skills needed by improving connections between employers and schools and colleges in Suffolk. This is part of a **£3.6m** annual spend in Ipswich on learning and improvement services.

The East of England Transport Initiative, whose members include Suffolk County Council, BT and Suffolk police, are receiving **£1.1m** from DoT to fund a project to help resolve traffic incidents on the major trunks routes surrounding Ipswich (A12 and A14). This will be able to link directly to the Smart Ipswich platform.

The Environment Agency is currently investing over **£40m** in new flood defences.

The Cura-B project is a European collaborative assistive technology and telecare project worth **£0.3m** to Suffolk. Its main focus is to drive down the cost of improved healthcare and well being by supporting SMEs in delivering innovative solutions to the current model of service.

Ipswich is one of 20 places across the country that has been invited to submit a proposal for Wave 2 of City Deals. Whilst we are at an early stage of the City Deal process there will be a clear link between the two bids in terms of helping to drive forward and transform the economy of the town. However, neither bid will be dependent on the success of the other.

4.2 A smart city baseline for Ipswich

A city can be subdivided in many different ways and six key sub-system areas were selected for deeper investigation: consumption, business, education and skills, resilience, transport and well-being. For each sub-system we described how smart technology could benefit the city and asked the following questions:

- What is the current **status** of smart technology application in Ipswich?
- What relevant **data** sets are available?
- Are the key players **engaged**?
- Would the sub-system benefit from wider **integration**?
- Is it a strong candidate for the TSB **demonstrator** project?

The results of the analysis are summarised in Table 1. Appendix A holds the full analysis and Appendix B provides a view of Ipswich data sources.

	Status	Data	Engagement	Integration	Demonstrator
Consumption: energy, water	Red	Orange	Red	Orange	Orange
Economy: retail, business	Orange	Orange	Green	Green	Green
Education and Skills: schools, university	Red	Red	Orange	Orange	Green
Resilience: floods, emergency	Orange	Orange	Orange	Green	Green
Transport: flows, modes	Green	Green	Green	Green	Green
Well-being: health care	Red	Orange	Green	Orange	Orange
Well-being: lifestyle	Orange	Orange	Green	Green	Green
Well-being: social care	Orange	Orange	Orange	Orange	Green

Table 1
Smart City sub-system assessment

The conclusions drawn from this baseline assessment, combined with Ipswich’s vision, challenges, opportunities and existing projects, all fed into the following demonstrator proposal. It places special emphasis on the benefits that could accrue from a special focus on three of the most important city systems:

- Health and Social Care;
- Economy and Business Growth;
- Education, Skills and Learning.

The remainder of this report describes the proposal Ipswich has submitted to host the FSB Future Cities Demonstrator.

5 Systems to Integrate

Our intention with the Demonstrator, and its sustained delivery over the following years, is to create an Ipswich where smart technology becomes a seamless and straightforward part of: living in, working in and visiting the city.

There are a number of important enabling systems that we will focus on first:

- The consolidation of the multiple citizen communication portals that already exist in Ipswich. Most of these are currently one way – ie either communicating out to the citizen, or receiving information from the citizen. And most are specific to a single agency.
- As nearly every single city system involves the movement of goods and people, we will incorporate smart transport systems as a cross cutting enabler at an early stage.

The second phase will focus on a Proof of Concept approach that:

- Builds applications and infrastructure designed to support the Ipswich economy including enhanced employment opportunities, the retail experience and energy efficiency
- Delivers applications to help schools interface with each other and the world of business and employment;
- Applies the Demonstrator to improve the business/education interface and improve skills
- Supports cross departmental working with a special focus on the isolated elderly
- Builds and deploys a prototyping lab that exploits the cloud based test platform.

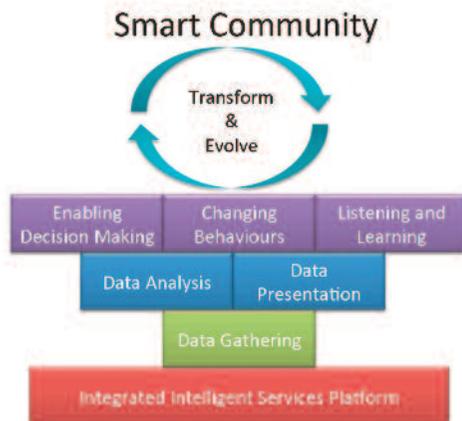


Figure 2
The Smart Ipswich community



Our starting point in developing the applications will not be technology, but the community: first understanding how people thought Ipswich could be improved and then thinking through how technology can help achieve this.

We begin with a view that ultimately all Ipswich systems will use and benefit from the central platform. The core of the Demonstrator will therefore be built with all city systems in mind.

The benefits delivered will be through: the consolidation of currently fragmented information sources; geo-spatial specificity; personal relevance; timeliness; collaboration; efficiencies; economic growth; and, via the Ipswich I-Loyalty scheme, through reward and recognition.

6 Approach to Integration

Our approach to integration of the city systems is to provide a stable, but innovative, data platform which is accessed and linked with people, places and businesses.

Our discussions with established industry leaders such as BT and key SMEs have clearly identified the opportunity to bring together data that is managed in a secure manner but optimised in an innovative way. It is this combination of utilising established world players with small, fast moving SMEs, and linking with University Campus Suffolk that will ensure we have a dynamic and innovative way of delivering services to people and provide technology growth opportunities.

Our data architecture platform is illustrated in Figure 3, but this must be taken in the context that it will only be effective through integration of technology with human behaviour. This combination provides challenges and emphasises the iterative process of consultation, communication and technology development throughout the Demonstrator.

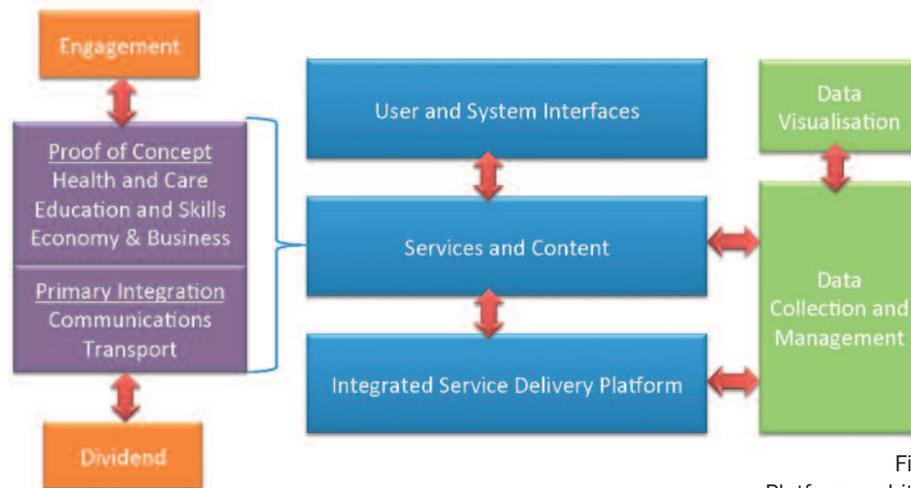


Figure 3
Platform architecture

6.1 A Cloud Based Platform

We will build a highly flexible platform that allows new applications to be produced without having to design and establish a whole new set of data flows and interconnections every time. To achieve this the central technology platform will sit on the cloud providing multiple applications running on multiple types of devices.

6.2 User and System Interfaces

Our Demonstrator will also ensure the services can be delivered and accessible through a variety of devices, such as mobile phones (basic and smart), computers and tablets, and possibly TV; and a variety of communication services, such as Wi-Fi, cellular, landline. The user interface will also be carefully designed to be simple, easy to access and engaging.

The system will incorporate features to enhance everyone's experience of being in, and getting around, Ipswich. Building on the £22m Travel Ipswich project currently being deployed, we will introduce additional mobility flow information based on cellular network information, GPS enabled smart phone applications and WiFi connectivity data. Whenever possible information delivered to users will be location relevant - for example notification of events and offers (shopping, entertainment and eating-out), often linked to the I-loyalty scheme.

6.3 Services and Content

Core content will be provided from existing data stores - public sector organisations, businesses and transport providers (see Appendix B for examples). Data interpretation and analysis is essential to provide appropriate, targeted information, filtered to specific end-use applications. This will enable filtering and geo-presentation of data and delivery according to the user-specified channel.

6.4 Security

It will be important for users to feel secure and confident so they share as much information as possible. We will build in specific control measures that protect privacy and be open to public scrutiny in this respect. Our goal is that people derive sufficient value from using the system that they are then willing to share information. The willingness to share will be a key measure of success for the overall demonstrator

6.5 Data Collection and Management

A 'Communication Exchange' will securely broker information between the user's own systems. It will run on a 'policy managed' basis, meaning that a high level of governance will be put in place to restrict access as appropriate, and to ensure that information security protocols are properly considered.

The platform will work hand-in-hand with social platforms like Facebook, Twitter, LinkedIn and Photo Bucket. Social-media monitoring - for example to hear what people are saying about Ipswich, the community and the way that public services are being delivered - will be combined with advanced algorithms for information analysis, to

derive 'sentiment' (what people feel emotionally) and to draw meaning from the wealth of structured and unstructured data that will be collected.

A key focus of the project will be to create a 'self-learning positive feedback loop', so that the system continually adapts to better meet the needs of all stakeholders. The more information the platform acquires, the more focused it will become – the model is very much in tune with the current vogue for 'big data' (and the opportunities it creates for analysis, research and commercial exploitation) and is highly sustainable, continuing to gain efficiency over time.

6.6 Open Data/Access

Application programming interfaces (APIs) will be provided as 'Open Services', enabling existing platforms and application developers (commercial, academic and even the home-hobbyist or community group, such as a local church) to discover, access and add-to the rich vein of content.

We will also make the platform available to other UK cities so they can try out their own ideas and data in a virtual environment.

6.7 Engagement

Users are anyone that interacts with the Demonstrator in any way and derive benefit from it. Each user will have their own individual set of interactions with Smart Ipswich, this being some combination of: information provider, information receiver, I-Scheme awarder, I-Scheme receiver and I-Scheme redeemer.

Our approach starts with the people of Ipswich. Smart Ipswich needs to be accessible to all, with special attention placed on those who may find new technology daunting, such as the elderly. We will work hard to make sure there are no barriers to using the service. We will consider: culture, language, abilities, skills and interests.

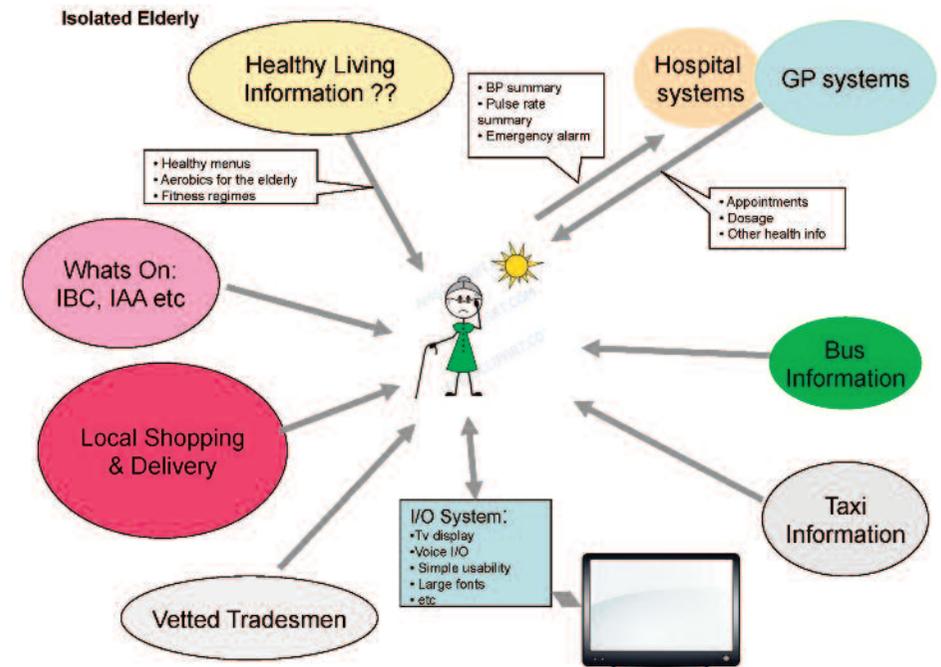
6.8 Proof of Concept

To sense-check our ideas for the Demonstrator we created eight user case studies each with a specific persona profile. The personas were designed to cover a wide range of ages, employment status, income and ethnic groups. They were then narrowed down to three user case studies: a frail 82 year old living alone; a sole-trader plumbing business; and a 13 year-old child. Appendix C describes a day in the life of 82 year old Sally who travels into Smart Ipswich to do some shopping and meet her daughter for lunch.

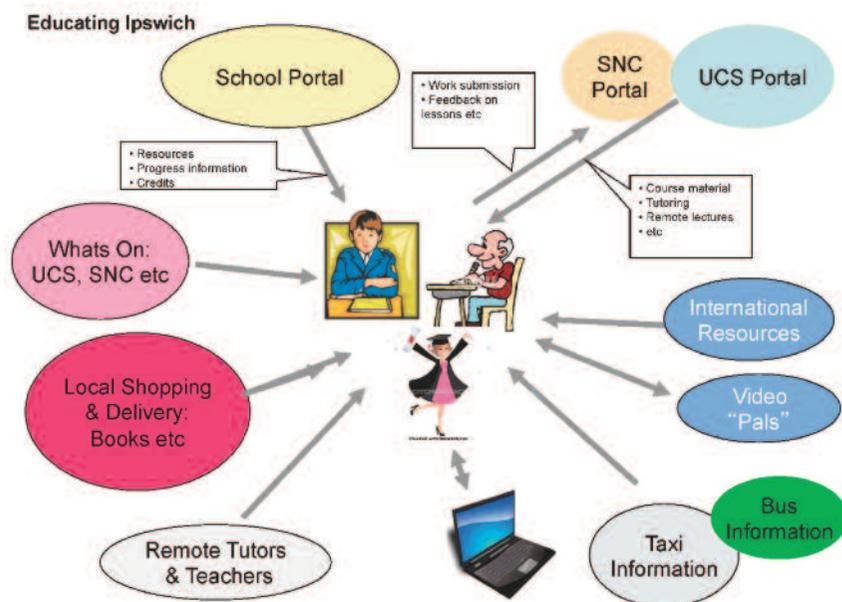
Proofs of concept will focus on the three key city systems of: i) the **Economy and Business Growth**; ii) **Health and Social Care**; and (iii) **Education, Skills and Learning**.

The '**Economy and Business Growth**' strand will use the integrated systems platform to match: people of all ages with jobs, apprenticeships and internships; and entrepreneurs with mentors and business angels. It will also support small businesses, including retailers, in using the I-loyalty scheme and offers portal; provide smart technology SMEs with a facility for prototyping and testing new ideas; introduce click and collect and smart home delivery services for shoppers using the town centre; a centralised booking service for restaurants; and develop commercial property energy benchmarking using data from smart meters.

The '**Health and Social Care**' strand will focus on a single proof of concept project covering 100 isolated elderly, selected to be a representative cross-section of this demographic. This will not only involve technology in the home, but also connect into the transport, I-loyalty scheme, and offers aspects of the platform, as well as involving many important agencies including the NHS and social services.



The 'Education, Skills and Learning' strand will build on the above careers application and incorporate information on education, skills and professional certification courses. The integrated systems platform will be used to: interconnect schools across Ipswich to drive collaboration; introduce greater and more granular public visibility of school performance; and used to enhance STEM skills in the classroom. UCS will establish a centre of smart city learning and research.



6.9 Primary Integration

We know from our own experiences of marketing and customer service, that 'personalisation' is vitally important. As individuals we also want to be in control of what we receive. Information sent to users needs to be timely, wanted and valued. This will be achieved through a well-developed management and governance infrastructure within the platform and specific personalisation options.

6.10 I-Loyalty scheme

The I-Loyalty Scheme is about building pride in, and loyalty to, Ipswich by saying "thank you" and/or "well done". There will be (1) a capability for individuals to accrue and redeem points and (2) a concept of 'recognition' such that people, traders and other organisations can be visibly recognised and applauded for their contribution towards the social wellbeing and other stated goals of the city.

With (1) we are, in effect, creating the benefits of a local currency with minimum, if any, actual financial transactions. We generally expect redeemers of points to see commercial value (such as footfall) from accepting them. In this way they can be 'spent' on offers without a formal banking infrastructure sitting behind them.

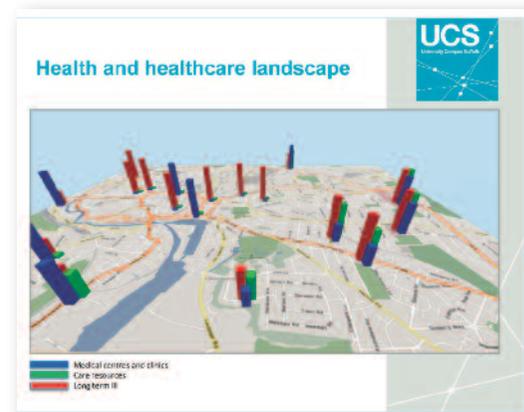
The I-loyalty scheme will enhance and capitalise on a relationship between different users to encourage smart behaviour change and improved outcomes for smart city partners and users.

6.11 Moving Around

We will support all modes of transportation, including walking, cycling, car, bus, train and taxi, with an emphasis on encouraging the most ecologically sound and healthiest options whenever possible - promoting walking, cycling and public transport over car journeys where individual needs and preferences allow. Where car journeys are unavoidable, the system will provide optimised route planning and parking opportunities taking into account likely traffic conditions.

6.12 Data Visualisation

As part of the feasibility study UCS have already started to build capability on 3D city



modelling, virtual representation of architecture and maps with super-imposed data sets, and real time city dashboards. The Demonstrator aims to integrate 3D GIS modelling of the city with Building Information Modelling (BIM), real time and historical data from a broad range of sources/city systems, high fidelity analytical and simulation models, and visualisation technologies.

This will allow a broad range of city related risks and associated impacts and costs to be accurately assessed. What-if scenarios will optimise decision-making, and simulated and complex data presented via a context sensitive Smart Dashboard. The framework will thus provide visualisation of long-term data trends for city planning and real time data feeds for incident management.

6.13 Engaging the people of Ipswich and its business community

Engagement will form a crucial part of the project delivery. There are four key themes:

- Engaging citizens
- Engaging businesses
- Engaging schools, students and education
- Engaging public sector stakeholders

As all are potential users of the systems requiring comprehensive engagement and communication further consultation with stakeholders will be carried out to optimise the core system design, to finalise the specifications of the additional components and to confirm the 'proof of concepts'. This will commence as soon as the project funding is confirmed and project implementation begins.

Engagement with citizens, whether resident or visitors, in terms of customer requirements and satisfaction will be essential and integral. It will be achieved whenever possible, by their use of the Smart Ipswich platform. A range of communications channels, including social media, will take place to raise awareness of the Demonstrator and offer opportunities to get involved.

Stakeholder engagement events with businesses and public sector will be put in place. This will ensure that the Demonstrator is designed from the outset to create a long-term legacy. This is not about a two year project, but how it will transform Ipswich into the UK's leading smart city: training, attracting and incubating smart businesses and professionals.

University Campus Suffolk (UCS) and education provision will be at the heart of an enabling environment with a cross-departmental focus on the smart city. Early engagement will include skills development and multidisciplinary degree courses and research activities to cover:

- Smart city system technology and architecture
- The business case for smart cities
- Creating and marketing applications
- Management and visualisation of large scale data
- Application of digital creative techniques to the citizen interface
- Long term sociologic studies into the role of the citizen and the local administration in smart cities
- Advanced digital city modelling and data visualisation.



The Smart Ipswich project will also directly connect with the existing Raising the Bar initiative and Ipswich schools will be integral to the enabling environment, with representatives from UCS and local businesses engaging with students. Opportunities will be created for students to learn appropriate skills including application production by exploiting the Ipswich open data portal.

New businesses aiming to exploit the growing smart city market will be incubated through Innovation Martlesham, UCS and the Enterprise Hub. The Ipswich based Smart Anglia initiative has already won a small amount of funding to initiate this process. Active support, such as hack-days, will also be given to exploit the Demonstrator open data portal to stimulate innovation.

7 Benefits and Risks

7.1 Benefits

The principal beneficiary of Smart Ipswich will be its citizens. This will arise indirectly, because it has helped drive efficiencies into city systems, and directly, because it has improved the lives of the residents of Ipswich on a day-to-day basis.

From the city system perspective we see the key benefits to be:

- improved collaboration and working within the major public sector constituencies namely Ipswich Borough Council, Suffolk County Council, District Councils, the NHS, the Police, etc.
- a data resource that has commercial value to Ipswich based businesses
- a demonstration that action is taken when public sector investment in one 'silo' can provide significant savings in another
- improved timing in responding to everything from fault reports to major incidents
- greater engagement between the citizens and decision makers of Ipswich
- better informed strategic planning for the future of the city

From the citizen perspective we see the key benefits to be:

- A greatly improved experience of moving around
- A greater sense of belonging, empowerment and loyalty
- Personal reward and recognition from supporting Ipswich's goals.

7.2 Risks

The demonstrator will be a complex project with far-reaching implications for Ipswich. Under the terms of the TSB funding the investment has to be made in a relatively short timeframe - by 31 March 2014. As a result the project will need to be tightly focussed with, on the one hand, very little opportunity for delays or change in overall specification, whilst on the other hand, keeping a degree of flexibility to adapt as experience builds. The governance structure of the project has been designed to ensuring a timely and cost effective delivery.

Table 2 Project Risk Register

	Risk	Mitigation
1	Lack of buy in across the city service sector at any point (public and private)	Engage senior people from before the start. Leverage existing relationships. Agree specific objectives among partners with obligations by all parties. Measures of success.
2	Under resourced, wrong resource or under-appreciation of project complexity.	Early recruitment. Resource levels based on guidance from appropriate experts. Thorough planning.
3	Technical problems with multiple system interoperability.	Early identification of systems to integrate
4	City leadership not behind project	Leaders and chief executives of council own the project. Personal objectives in city executive leadership team. Clear business and benefits case in place.
5	Slip of delivery timescales	Professional project management. Ipswich team has broad experience with similar projects. Tightly controlled project plan, well defined deliverables
6	Actual and perceived data/system security covering: privacy, fraud, hackers, misuse, etc. Leading to adverse publicity.	Embed latest security principles, communicate benefits of data sharing, oversight by project Board
7	Delays in starting project	Procurement arrangements and governance process initiated in December if shortlisted.
8	Over-bureaucratic governance process	Management by exception, with people empowered to take decisions at right level. Project Board has representatives with appropriate credentials.
9	The system is not scalable	Built on the cloud.
10	Loss of focus due to inflexibility of approach or specification creep.	Clear project management principles. Sign off. Business case driven.
11	Citizens take-up is slow or not sustained.	Flexible approach, psychologists part of the team, focus groups, stakeholder consultation, piloting with representative sample of users, constant user feedback.

Table 2 Project Risk Register cont.

Risk	Mitigation
12 Impacted by delays in other projects	Identify inter-dependencies early on. Constant dialogue with other projects. Contingency plans in place.
13 Lack of availability of data.	Clear articulation of value to data owners for providing data. Broad range of platform capabilities means no exclusive dependency on single data sources.
14 No self-financing business model beyond the TSB funding.	Key objective of project is to develop a sustainable business model from the outset. Key objective of the Board. Work with other cities from outset. Cost/benefit metric measured from outset.
15 Data not released by owners.	Security protocols in place. MOU between project boards.
16 Demonstrator not replicable in other cities	Ipswich challenges common across many cities, common system architecture, engagement with other cities/TSB/ Catapult throughout project.
17 Commercial model insufficiently appealing for business to contract in	Project run as a business in its own right from day one.
18 The technology is not future proof	Open platform, constant review of architecture, modular approach.
19 Quality assurance is not frequent enough.	Frequency built into project management plan.
20 Project raises expectations higher than can be delivered.	Clear, realistic communications.

7.3 Measuring Success

We will monitor and measure our progress at three levels: (i) Project Delivery - a set of project implementation metrics covering: build and service performance; (ii) System Utilisation and User Satisfaction - metrics covering usage and satisfaction levels for: information providers, system users and application developers; (iii) Outcomes - a set of metrics that track the benefits derived by the city and its citizens, including return on investment.



In terms of citywide outcomes, metrics will be associated with: citizen satisfaction; extent of cross “system” access; and outcome measures including:

- Reduction in CO² and NO_x emissions
- Rise of educational standards in Ipswich
- Number of schools collaborating over Smart Ipswich Platform
- Improvement in Quality of Life of participants in Proof of Concept trials
- Reduction in public sector costs arising from Proof of Concept trials
- Increase in sports participation across Ipswich
- Reduction in unemployment rate and rise in apprenticeships
- Numbers of new business moving to Ipswich
- Number of town centre retailers engaging in the Ipswich I-loyalty scheme.

8 Next Steps

This report articulates a description of the possible and a vision of the future.

The ideas presented here have formed the heart of our submission to the TSB Future City Demonstrator competition. An important part of the bid has been to start thinking about how we will keep the project running after the initial TSB funding has ended. We will aim for the project to be financially self-sustaining after year two and to facilitate this we will aim to run the project so far as we can, as a business from the outset. This will reduce the risk of it being unsustainable in due course and make the experience valuable to other cities and the companies involved.

We will aim to share as much as possible with the TSB, the Future Cities Catapult and other interested parties across the UK, taking account of any constraints imposed by privacy protection, security risks and/or commercial confidentiality.

We intend to offer much more than access to data:-

- During the course of the project we will host a number of knowledge transfer networking events that will be open to other cities and interested parties. We will use these events to explain what we have been doing and to share useful learning points
- The platform includes a test facility and this would also be made available to the other FCD short listed cities on an at-cost basis
- Similarly the visualisation platform could also be made available to the other FCD short listed cities on an at-cost basis.

During this study we have identified a number of important first steps but there is much more that could be done.

Given the increasing amount of renewable power generation in the Ipswich area, we strongly believe that, parallel to the city integration work, there should also be a strong focus on the deployment of smart grid technologies. We will be discussing this further with the utility companies to create a suitable project running alongside, and linking to, the Demonstrator.

Our vision is clear - that by 2020, Ipswich will have proven itself as the UK's first 'smart, small city'.

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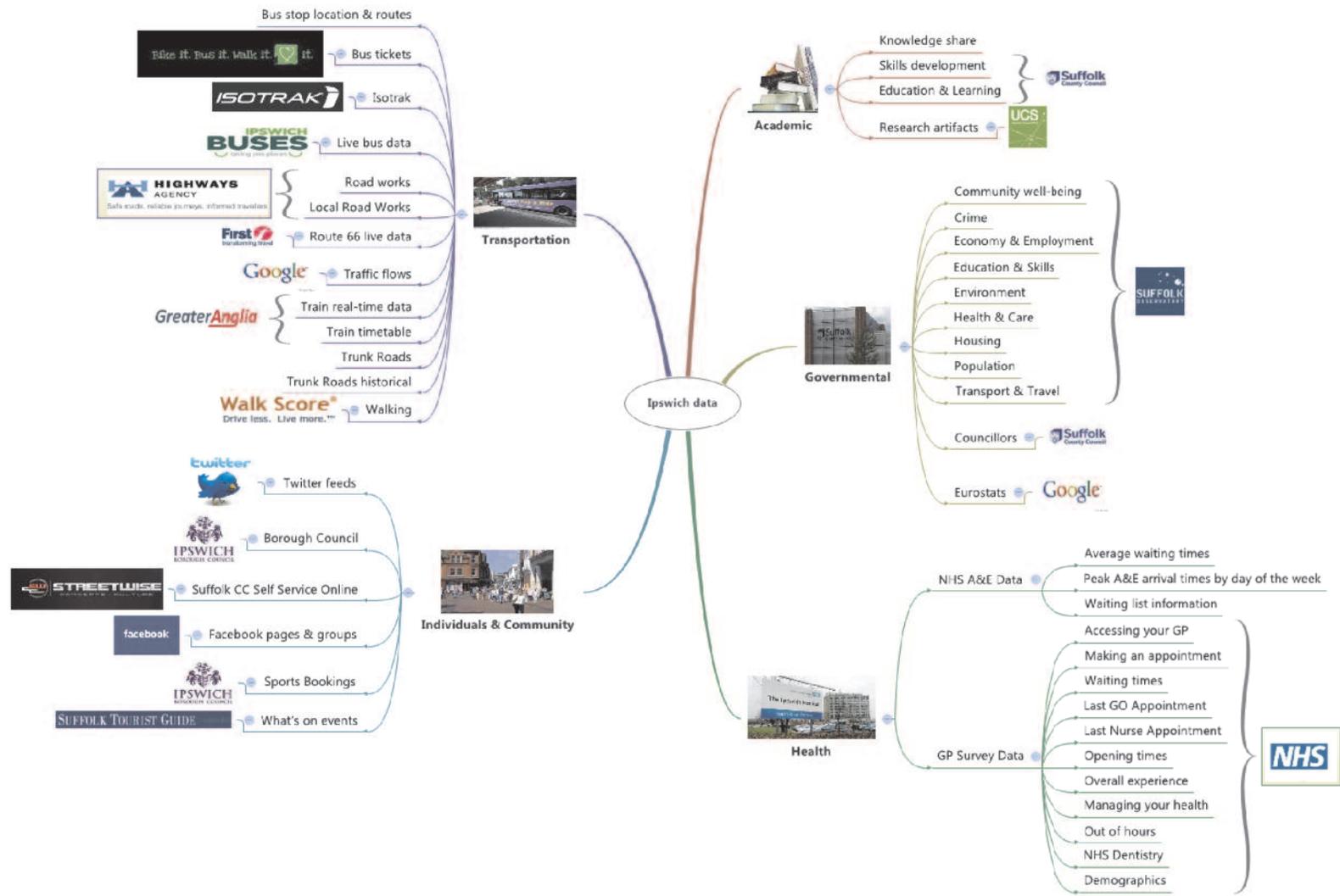


Appendix A Evaluating the readiness of Ipswich sub-systems

	Applications How could smart technology help?	Status Status of smart technology in Ipswich.	Data Data sets available.	Engagement Are the key players engaged?	Integration Benefit from city system integration?	Demonstrator Good candidate for Ipswich FCD?	
Consumption	Utilities (electricity, gas, water)	Smart grids - key enabler to large scale renewable deployment and drives efficiency into distribution system. Smart meters - offer energy / water transparency = public for large users, internal and aggregated at domestic level. = important driver of behaviour change.	Smart grids - none. Smart meters - no special activity identified beyond general role out plans from utility providers. IBC was part of an EU project ANSWER that considered public visibility of energy data but it was not implemented.	Smart grids - none. Smart meters - none. Domestic data is going to be difficult to access directly. Utility companies are the key here. Non-domestic premises with 30min meters could supply data independently of the service provider.	Anglian Water and EON are evaluating the opportunities. UK Power Networks have previously considered, but so far rejected, smart grid investment in Ipswich.	There would be some benefit from connecting into other systems particularly with respect to fault reporting, disruption notification, transparency and behaviour change.	Marginal in first stage. Build, where appropriate, into Ipswich dividend, transparency / engagement. Encourage utilities to become more engaged by accelerating their plans for smart meter roll out. Smart grid will be important if Ipswich is going to achieve smart city ambitions.
Economy	Retail, entertainment, food and drink. All businesses located in Ipswich.	Building links between the online and physical shopping worlds will be critical for successful high streets. Increasing expectation that booking, table / seat availability data for restaurants / cinema etc. is available on line. Contactless payments systems etc.	Ipswich Central have begun work on a coordinated web presence and App. Ipswich Direct* Horizon Online - local SME marketing tool	Large retail chains often have online shopping and home delivery. Ipswich central offers.	Local shops and food outlets have shown keen interest. Extensive interest from the significant ICT service sector.	Definitely - this is about moving people and goods, providing linked benefits and up to date information. Good opportunities for ICT sector growth and improving general skills to create high level jobs.	Yes - very strong candidate.
Education and Skills	Schools, university, apprenticeships, interns, continuous personal development (CPD)	Remote learning. More flexible learning approaches. Improved student-parent-teacher interaction. Greater transparency on school performance.	Limited activity. UCS building student portal in Second Life.	Limited data: some results information and Ofsted reports.	UCS is very interested in the general application of smart technology for remote learning. Schools beginning to engage.	Opportunity to use smart tech in education processes but probably even more in exploiting the FCD to boost skills.	Focus on raising STEM and digital creative skills + inter-school collaboration + linking students to job opportunities.
Resilience	Major incidents such as floods. Traffic accidents. Safety, security and civil unrest.	Detecting where the incident has occurred, its significance, the coordination of emergency services and dispersal of information and guidance.	A14 Highways project Police Direct	IBC - police Suffolk Observatory data on crime rates, broken down by type of crime.	Significant interest from the Env Agency regarding social media intelligence.	Yes - at times of emergency it's important to have as complete a picture as possible of what's happening in real time.	Yes
Transport	Traffic management Modes: walking, cycling, cars, public transport, taxis, freight, work style, parking, park and ride etc.	Efficient traffic flow requires information via various telematics sources to establish levels of congestion and its cause. Intelligent and remote control of traffic signals and displays. Information on how to get around and what to do when there is a problem. Intelligent integration across different transport modes. Flexible work style to smooth / avoid traffic flow.	There is a very active programme to apply smart technologies to the transport infrastructure. This is part of the £20m+ Travel Ipswich project. Ipswich Direct*	SCOOT traffic signal system, tracking, live message signs, CCTV, ATC, Highways agency data, roadworks.org Bus GPS, ticketless payment systems, real time train information.	Strong engagement from Suffolk County Council and its contractor AECOM. A14 transport consortium. Ipswich buses. Greater Anglia.	Yes - an efficient transport system is crucial to nearly every aspect of a city's operation. Important links to air quality and environmental health and fitness.	Yes - very strong candidate.
Well-being	Illness: health care: GP, hospitals, etc. Wellness: Sport, fitness and lifestyle Social Services: community care, care homes, troubled families, etc.	Tele health - remote monitoring, diagnosis, delivery. Admission prevention via instant consultation. Disease prevention through encouragement of healthier lifestyles. Simple atrial fibrillation detection on patient check in. Monitoring personal activity levels - via personal sensors and in sporting venues - e.g. via smart gym equipment. Remote, non-intrusive monitoring in homes to enable independent living. Remote contact to care professionals.	Extensive use of IT for internal NHS use. No extensive applications of telehealth adoption in the Ipswich area. None at present but IBC sport booking system will be renewed next year. I-card sporting venue discounts. I-card provided free in connection with GP referrals for exercise to tackle obesity. Ipswich Direct*	Static data on disease levels, life expectancy, etc. by ward via Suffolk Observatory data. Patient data very sensitive with incomplete and inconsistent data sharing within NHS. NHS performance data. GP survey data. IBC booking system. Static data on disease levels by ward via Suffolk Observatory data. Static data on deprivation, fuel poverty, social benefit take up etc., by ward via 'Facelook' trial in SCDC area to improve care visitor. Cura-B EU project. Ipswich Direct*	Yes - via various members of the local CCGs Yes - via IBC and Healthy Ambitions Suffolk. Ipswich is designated a Heart Town. Mostly via GPs	Yes, particularly with respect to preventative actions, but probably not in first phase. Yes could easily connect to "fitter" travel modes. Extensive opportunity to save costs and improve quality of life in some areas such as support for the elderly living alone.	Given the understandable sensitivity around patient data and the fact that the HNS patient record systems are not yet working consistently across the NHS, it is recommended that the health aspect is build into preventative actions as part of a social care approach. Yes Strong candidate for FCD trial of cross system working involving health care and community engagement.

*Ipswich Direct
One way information service via email, SMS or phone.

Appendix B Ipswich data map



Appendix C A day in the life of Sally

Nov 2012

Sally

Age: 82

Objective 1: Identify & explore what individual older people with high support need want & value in their lives

I want:

- Social Interaction
- Relaxation
- Sense of achievement
- Mental Stimulation
- To Continue with the past
- To make a contribution to society/community
- More support to adjust to change.
- Adapt to a wider range of changing circumstances
- To be in control of my life

My Problem:

- Is in getting access to the right information, technology, equipment & transport
- Is loneliness
- Dependency even for my basic needs
- Is in making a choice

My Values:

- Are around the basic human needs of social, psychological & physical wellbeing.
- Getting out & about
- Keeping mentally & physically active & having contact with nature.

Reasons for their exclusion/engagement in the past:
Communication issues & a lack of collective voice



Sally is 82 years old, lives alone on Martiesham Heath and has chronic osteoporosis. She finds it difficult to walk much more than 100m and even then uses a wheeled Zimmer frame. Beyond 100m she needs to be pushed in a wheelchair.

She has wifi broadband and a laptop at home but struggles to do much more than email her daughter who lives in Bury St Edmunds. She has just bought herself a smart Samsung television with wifi connectivity. She has a big button GMS phone but generally forgets to switch it on and gets completely flummoxed by texts.

Smart Ipswich

Objective 2: Explore the quality of life issues for older people with high support needs & assess the impact of services & technology can have on Sally's wellbeing.

A Day in Sally's Life

Today, 02/11/2012.

Sally wants to buy some clothes in M&S, visit the market to stock up on fresh vegetables, and meet her daughter (who works in central Ipswich) for lunch in Arlingtons.

SALLY'S DAY	POSSIBILITY (+ existing what can be used)
<p>Sally calls local Taxi company to book her journey. While booking, she has to give her details and explain that she can't really walk for too far and has her Zimmer frame with her. She is concerned will the taxi driver assist her with her frame and will he stop close enough to the M&S entrance – the operator takes appropriate notes and reassures her.</p> <hr/> <p>After that she calls her daughter and confirms that the taxi will pick her up at 10:30 and she should be in M&S before 11. She just needs to get a new cardigan and will head towards Arlingtons after that. Her daughter is concerned will she manage to get on her own and says that she will try to make it earlier to meet in M&S – she reminds Sally to make sure her phone is on so she will be able to reach her. Sally says she can go on her own to Arlingtons as she doesn't want to bother her daughter, although she is a bit concerned that it will take her long, but she should be able to get there on her own. Her daughter confirmed that she made the reservation under Sally's name for 12:00.</p> <hr/> <p>Taxi driver arrives at 10:25 and walks up to her door (as the operator warned him that lady might need assistance). Sally is relieved when taxi driver takes time to help her to the car. She has a pleasant journey and arrives to M&S 30 minutes later due to the minor traffic congestion.</p>	<p>Sally calls local Taxi company. Based on her caller id, the operator is able to pull up her profile, as she has used their service before. It is an extended profile – includes basic info (OAP, needs assistance, uses Zimmer frame) and more personal info (likes John P. as her driver/gave him 5 star feedback last time, needs minimum walking). Taxi firm allocate appropriate taxi for her particular needs.</p> <hr/> <p>Call family member – daughter . As her daughter makes the reservation in Arlingtons, she discloses that herself and her mother Sally will be there. The restaurant staff can link into their profiles and adjust the reservation – e.g. ensuring that the table on the ground floor is reserved.</p> <hr/> <p>Taxi can notify third party - e.g. daughter (or any other family member, based on the profile specification) when arrives to pick up Sally and indicates estimated time of journey.</p> <hr/> <p>Taxi tracking device records route and that data for is used traffic flow analysis and for tracking fuel consumption, while the journey record can be used for journey time prediction. Numbers of journeys with different types of passengers can help determine future taxi type requirements.</p> <hr/> <p>Taxi can text third party if delayed and notify when arrives at destination.</p>

SALLY'S DAY	POSSIBILITY (+ existing what can be used)
<p>Sally finishes up her shopping in M&S about 11:30 and decides to head towards Arlingtons. Her daughter calls her just as she was exiting and they meet in front of M&S. The walk together towards Arlingtons arriving there about 11:45.</p>	<p>Sally's daughter as an approved family member can see the Sally's GPS location and can see that Sally is just about to exit M&S, so she waits for her at the main exit. While they walk together, her daughter's phone is connected to Ipswich WiFi and the app is receiving information and offers (with optional haptic notification) from the stores they pass by. Her daughter sees that there is a 10% offer in Monsoon and decides to get the top in the window (as they still have enough time before lunch). Sally's daughter looked at the Arlingtons' specials for today on the app and Sally told her daughter about her lunch preferences, so their pre-order has been passed to the restaurant.</p>
<p>Sally and her daughter arrive at Arlington's and look at the daily specials and place the order.</p>	<p>They arrive at Arlingtons and order a drink, while waiting for their food to arrive – as they've sent a pre-order, their food is ready within few minutes. Sally's order is kept in her profile and passed on to her health record.</p>
<p>While talking to her daughter, Sally realizes she has left the heating on.</p>	<p>Via the smarthome app, Sally can remotely turn the heating down.</p>
<p>Sally's daughter orders a taxi for Sally to pick her up and the Debenhams taxi stop at 13:00.</p>	<p>Sally booked the return journey with the taxi company this morning and Sally's daughter is confirming the time via the smartphone app</p>
<p>After lunch they head off towards the market so her daughter can help her carry fresh items to the taxi.</p>	
<p>Same driver comes and picks up Sally at specified time.</p>	<p>During her journey home Sally turns the heating up via the smarthome app. She is also able to rate her experiences of the day via the simple star rating capture on the smartphone app.</p>
<p>Sally arrives home and taxi driver assists her with her bags.</p>	<p>Taxi company notifies the daughter that Sally has safely arrived home.</p>
<p>Sally has a cuppa ☺</p>	<p>Sally makes a video call to her friend and retells her day over a cup of tea.</p>