Future City of 2050 by 2025

A Digital Strategy for Gloucester

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Contents

1. Executive Summary

With the development on new technologies there have begun massive changes to the way society and communities are behaving and in the detail of information that is available to businesses, local and national government.

New technologies are facilitating the building new communities based on interests rather that geography, but is also highlighting how place itself is becoming more important as globalisation is leading to a new focus on localism.

As we look towards 2050 it is likely that technology will play ever more important parts in peoples lives. There is likely to be a huge reduction, if not elimination of physical currency, driverless vehicles, robotics and the internet of things (IOT) will change the jobs landscape and "Big Data" will likely change decision making processes for planning, health, security and a whole range of other activities. The continued rise of internet shopping is highlighting the need for town and city centres to develop a relationship with the market of one and that there is a need to offer experiential products for place.

Through its "Future City of 2050 by 2025" programme, the city of Gloucester is positioning itself as a pathfinder and testbed for future city technologies and solutions, developing models and solutions that are scalable and replicable elsewhere. It is believed by the authors of this report that if the programme is fully implemented as envisioned it will generate a huge amount of inward investment, stimulate economic growth, change the way government, business and community interact, empower the disadvantaged and vulnerable, promote digital and social inclusion, improve social cohesion and potentially health.

Work has already been going on in achieving the goal of the city of Gloucester is positioning itself as a pathfinder and testbed for future city technologies and solutions including:

- In 2015 it was the first city in the UK to implement a 3 in 1 solution with BT, with CCTV, free WIFI and 4G combined, an innovation that was driven by the city council based on recommendations from Marketing Gloucester. This innovation won the prestigious Gordon McLanaghan Security Innovation Award and has since been adopted by Cardiff, Glasgow, Nottingham, Leicester and Newcastle with others to follow.
- Gloucester became the first destination outside of the UK and second in the world to partner with Google's Niantic Labs on the FieldTrip™ app, which allows virtual, location based tourism information through cell phone, tablet or Google Glass.
- Gloucester is the first city to implement the Rewarding Visits technology funded through Innovate UK which have invested in projects using the city as a testbed
- Gloucester has both the highest number of and highest density of next generation footfall sensors in the UK in a project run by LDC with UCL
- The City has over 250 ibeacons installed with an open SDK available to developers

The city is ideally suited to solution providers test bedding new technologies. It is a relatively compact city, with a young but representative demographic and a high degree of innovation and good digital infrastructure. It is a city that confirms with many of the norm baselines and so can provide an excellent modelling opportunity. Most importantly there is a team of people operating in the city who have built up a huge group of partners, including the University, private sector, and the local authority, who are happy to speedily adopt innovative products.

The key to the "Future City of 2050 by 2025" programme is to enable innovations to be tested and replicable scalable models to be developed in Gloucester. It is vital to ensure that the city is at the forefront of implementing a pervasive full fibre network offering true gigabit speeds and an early adopter of 5G – ideally being testbeds for full implementation of both of these technologies. This will ensure that the digital infrastructure is in place to create an environment where technologies and solutions can be tested and utilised in real world environment and where the economic and social impacts can be measured.

2. Gloucester Background

2.1 Geography

A Cathedral city, district and county town of Gloucestershire in the South West region of England. Gloucester lies close to the Welsh border, and on the River Severn, approximately 32 miles (51 km) north-east of Bristol, and 45 miles (72 km) south-southwest of Birmingham. The city is centrally located between the Cotswolds and The Forest of Dean

2.2 Demographics

Gloucester has a relatively young, growing population, being the ninth fastest growing city in the UK

• The city has a population of 127,100 (Centre for Cities estimates 2015). It is the most populated conurbation within the county of Gloucestershire and has the highest population density.

• Gloucester will experience the greatest population growth of all county districts, expected to increase by 20.1% or 23,800 people between 2010 and 2035

• Gloucester is a relatively young city with 25% of the population aged 19 and under (highest in the South West) and 39% under 30. The city is expected to experience the greatest increase of Gloucestershire's districts in the number of children and young people between 2010 and 2035, with an increase of 16.4%

• It is a diverse city, the black and minority ethnic population (BME) stands at 9.8% with approximately 100 languages and dialects spoken[1]

2.3 An innovative city

The City has a history of innovation and is a home to home performance engineering and technology companies. It hosts the headquarters for the UK's Nuclear power industry, and is where the UK's first working jet plane was developed. Gloucester was the first city in the UK to implement cable television. Today many local people are employed in companies supplying the aerospace industry

2.4 Economy

• Gloucester is home to world leading advanced engineering companies providing cutting edge technical products and services e.g. Prima Dental

• Gloucester has a strong finance and insurance cluster including being the location for the HQ of the specialist insurance company Ecclesiastical Insurance Group

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[1] http://www.express.co.uk/news/uk/656054/Barton-Street-Gloucester-Matt-Puttock-Reyaz-Limalia-Zohra-Patel

• The city supports a growing cluster of information security, web hosting, CAD/CAM development, defence communications and security, ICT infrastructure development and IT content management businesses

• The creative community has grown rapidly in recent years with the Blackfriars and Westgate Street areas having established themselves as a hub for creative businesses. The city has also hosted some cutting edge arts festivals including JOLT, Crucible and Paint Jam, and other festivals including Tall Ships and Quays events that have driven footfall

• The city has a strong independent retail and leisure sector with over 100 independent city centre shops and nearly 600 herediments paying into the Gloucester BID (TBC)

• Gloucester attracts 5.9 million visitor trips each year. Annually, visitor spend is £207 million

• To date the city has secured over £700 million of private sector investment, weathering the economic recession and now building on the recovery

• Gloucester is a leading destination for business by ranking the city 18th out of 74 UK cities for business Centre for Cities 2014:

• 6th (out of 64 cities) for having the highest number of patents approved (up from 10th in Centre for Cities report 2013)

• 3rd (out of 64 cities) for having the highest employment rate

• 2nd (out of 63 cities) for the highest housing stock growth. Among the top-placed cities, only five (Swindon, Milton Keynes, Gloucester, London, Peterborough) have experienced housing supplygrowth in accordance to their population growth rate

• Gloucester is in the top-ten cities where small businesses are investing in high growth strategies.

3. Threats and opportunities in a changing world

BIG Data, new technologies and methodologies mean that the transition to the way cities are used and the shape of retail in the future will have significant economic and social impact[2]. There is a pressing need for innovation, upskilling and entrepreneurship in the retail sector[3], and to ensure that the UK has globally competitive and high performing cities[4].

3.1 Digital Inclusion

With the puplic sector, private sector and individuals becoming more reliant on the internet there is a growing need to ensure that digital inclusion is a priority to ensure social cohesion and a functioning society.[5]

Research published by the BBC has found that 21% of Britain's population lack the basic digital skills and capabilities required to realise the benefits of the internet. Around a third of small and medium enterprises (SMEs) don't have a website, and when we include voluntary, community and social enterprises (VCSEs) this figure rises to 50%. Independent analysts Booz and Co. estimate full digital take up could add £63 billion value to the UK economy.[6]

"Digital participation – helping everyone to get online and maximise the benefits of digital technology – is arguably one of the great social challenges of our age.

We know the great advantages that being digitally connected can offer – improved employment opportunities, higher levels of educational attainment, cheaper goods and products and better access to public services. However, too often those who are excluded from these benefits are the very same people who are also disadvantaged according to most other social and economic measures. This means that digital technology – the great enabling force of the 21st century – is actually exacerbating rather than bridging long-standing inequalities in our society.

It doesn't have to be this way – and all of us who interested in improving wellbeing have a role in tackling this issue". (Quote Douglas White, Head of Advocacy at the Carnegie UK Trust)

3.2 Retail – Clicks to Bricks or Try offline purchase online?

The report British High Streets: from Crisis to Recovery? A Comprehensive Review of the Evidence by Neil Wrigley & Dionysia Lambiri, University of Southampton says "Town centres and high streets provided highly visible and graphic evidence of the scale of the economic downturn. The crash in consumer confidence was followed by an immediate and abrupt increase in vacancies. Vacancy (see Chapter 2) measured as either a percentage of floorspace in a centre or in terms of the percentage of empty property units (voids) more than doubled over the five years from 2008 – in the case of

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[2]
https://www2.deloitte.com/content/dam/Deloitte/ie/Documents/ConsumerBusiness/deloitte_ireland_changing_face_retail_2014.pdf

[3]
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/466694/151008_Retail_SLMI_ES_edited.pdf

[4] http://www.centreforcities.org/press/uk-cities-lag-behind-european-competitors-skills-productivity-innovation/

[5] https://www.carnegieuktrust.org.uk/carnegieuktrust/wp-content/uploads/sites/64/2016/09/v3-2697-CUKT-Digital-Participation-summary.pdf

[6]

voids rising from 7% in 2008 to a peak of 16.3% in 2012, before trending downwards as the economy began to recover, falling to 15.1% by October 2013, and again to 13% by April 2014" [7]

Gloucester itself suffered some highest number of empty shops in England, according to a study in 2010 commissioned by the BBC's Inside Out West programme from The Local Data Company.

The figures showed a vacancy rate of 21% in the city.[8]

The same report highlights some areas that have applied pressure to the high street and are likely to continue to impact on towns and cities as a response to future technologies and social trends brought about by technological changes:

1. The progressive rise of online shopping – which had increased to more than 10% of UK retail sales by 2011 and was beginning to have marked substitution and modification effects on both consumer behaviour and certain types of high street retail After a decade in which Amazon had risen progressively to become the UK's eighth largest retailer, and with many retailers of the view that **total online sales would lie in the range 25 to 30% by 2020** – the shift to the era of the digital high street is deepening and accelerating.

2. Progressive, highly complex, and often underestimated shifts in consumer behaviour and cultures of consumption towards what has been referred to as 'convenience culture' had been taking place for over a decade. Consumers were seen to be not only rapidly embracing online shopping, but also re-evaluating the costs versus benefits balance of one-stop out-of-centre facilities, and increasingly seeking convenience at the local/neighbourhood level. The latter was particularly the case if businesses could supply either a 'choice-edited' neighbourhood version of the range and quality of the out-of-town offer, or **alternatively if they could provide something specialist** and/or rooted in the local community.

The H1 2015 Openings and Closures Report by the Local Data Company quotes the following

- Independents - **Independent shops are in decline as more shops close than open for the first time since 2012**
- Multiples - **In the first six months of 2015, 2,634 shops closed on Great Britain's high streets**, a rate of 14 stores a day

Local and national governmental organisations around the world have recognised the challenge and are attempting to address this with reports such as those produced by Mary Portas and by establishment of The Future High Streets Forum. Gloucester has been at the forefront of testing new technologies and methodologies that will measure consumer trends and will soon be home to the UK Digital Retail Lab

3.3 Economic Impacts of Full Fibre Networks and 5G

In 2007 the OECD published a ministerial report on the effects of broadband on the economy[9] this clearly shows the significance in terms of effects on innovation, inward investment and productivity. This same report states that impact on productivity could be as much as an increase of 5.8%

3.4 Other Economic impacts of future city technologies

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[7] http://www.riben.org.uk/Cluster_publications_&_media/BRITISH%20HIGH%20STREETS_MARCH2015(V2).pdf
[8] http://www.bbc.co.uk/news/uk-england-gloucestershire-11925423
[9] https://www.oecd.org/sti/ieconomy/40781696.pdf

The UK Digital strategy[10] states that if we want to increase our overall prosperity, to enjoy higher real wages, and if we want more opportunities for young people to get on, we have to raise our productivity. In a digitally-driven economy, that means ensuring that everyone has the skills they need to flourish, with nobody left behind.

We need to support everyone to develop the skills they need to participate in the digital economy and help all businesses harness the productivity benefits of digital innovation. To do this, we will ensure adults in England who lack core digital skills will not have to pay to access the basic digital skills training they need, mirroring the approach taken for adult literacy and numeracy training. And, as jobs and whole industries are disrupted by digital innovation, we need to make sure those affected have the support they need to adapt. UK government will establish a new Digital Skills Partnership, working together with partners who are passionate about making a difference and who share our ambitions to tackle the digital skills gap. The Partnership will play a crucial role in helping people access digitally-focused jobs at a local level, bringing together technology companies, local businesses, local government and other organisations to identify digital job vacancies and take action to help people move into these jobs.

We also need a strong pipeline of specialist skills - from coding to cyber - to support the tech industry and drive productivity improvements across the economy.

3.4 Safety, Security, Crime and Anti-social Behaviour

Technology can be used to improve safety and security in the physical world and in cyberspace. A safe and secure cyberspace is an essential requirement for an inclusive, prosperous digital economy. It will give people the confidence to be part of the digital world, as well as giving the UK a significant competitive advantage.

In the physical world, digital technologies can be used to aid police and security services – for example the new footfall sensors that are being rolled out in Gloucester are able to accurately model crowds historically and in real time and could be used by police to influence decisions about resource allocation.

3.5 Big Data

The metrics generated by Big Data projects will have real effects on how cities are planned and run, services provided, investments made and how residents, visitors, public sector, voluntary and private sector organisations interact and will affect decision making

3.6 Health

Gloucestershire's health and care community fully supports the EOI for full fibre networks across Gloucester City. This technology would be significant enabler in supporting the delivery of One Gloucestershire's Sustainability and Transformation Plans particularly those focused on helping our population to live healthier lifestyles and to better manage their health needs. Full Fibre Networks would support the greater use of new smart technologies such as wearables, electronic medical devices and other assistive technologies supporting people in their homes. In addition greater connectivity would allow GP practices to collaborate further and give greater resilience across our health system.

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[10] https://www.gov.uk/government/publications/uk-digital-strategy/uk-digital-strategy

4. Work to date

4.1 As part of the programme to develop Gloucester to be a testbed for Some of the innovations that have taken place in just a few years have included Gloucester becoming one of the first in the world and the first city in the UK to adopt a three in one integrated solution with CCTV over IP, Free high-speed WIFI across the whole city with 4G being installed simultaneously. This model has since been adopted by Cardiff, Glasgow, Nottingham, Leicester and Newcastle with others to follow.

Gloucester Councillor Jenny Watkins was instrumental in driving through the provision of this three in one solution and said "Once it was evidenced to us by Marketing Gloucester that we could leverage the funding we had budgeted for CCTV to also provide a step change in WIFI and 4G digital infrastructure, it become obvious to me that we should seize the opportunity especially since it would allow us to pursue our goals for digital inclusion and to be a connected city."

4.2 A recent survey of the City centre wifi showed that over 10 million people per annum had potential access to this annually with speeds regularly being reported of up to 130 mbps – which equates to faster download speeds than most people achieve at home or at their place of work.

In 2015 Gloucester became the first destination outside of the UK to partner with Google's Niantic Labs on the FieldTrip™ app, which allows virtual, location based tourism information through cell phone, tablet or Google Glass. Whilst Google Glass may have come and gone, the relationship between Marketing Gloucester and Niantic labs has shown real dividends during the recent Pokemon Go™ craze.

Pokemon Go™ is also produced by Naintic Labs and since much of the location data for Pokestops and Gyms was based on existing information uploaded for Fieldtrip™ and Niantic's app Ingress™, Gloucester has an especially rich environment for Pokemon Go™ players which has attracted players from around the region, boosting the local economy. Marketing Gloucester, were not shy in capitalising on this through social media, and by educating and encouraging retailers to promote their businesses near Pokestops and gyms and quickly trained retailers how to use the opportunities by purchasing and using Pokemon "Lures". Gloucester cafe owner Nick Brookes reported "it was incredible the number of people who came and sat down in the cafe once we started using the Lures"

4.3 Prof. Richard Cuthbertson of Said Business School, University of Oxford has been examining Gloucester's example as part of a European wide study, he has praised the city's approach commenting:

"In our research of European cities with a positive focus towards digital technologies, especially those involving small retailers, Gloucester is an excellent example. This city recognises the need for a independent, third party enabler in Marketing Gloucester, providing a long-term, single point of contact, developing the relevant digital and physical infrastructure with multiple means of access for customers and retailers, while utilising simple tools, all within a strategy for "place" that encompasses the individual flavour provided by local retailers and services."

4.4 Two of the projects that are currently being implemented are those being developed by Rewarding Visits, which was granted £1 million from the UK Government, Innovate UK funding, and Maybe, a solution that is being delivered as part of the DCLG, Great British High Street Project. Both of these are operating within the Digital high Street environment with the aim of encouraging purchasing to me made in bricks and mortar business rather than online.

4.5 Guy Chatburn, of Rewarding Visits comments "We chose Gloucester as the partner location for the third phase of the role out of our technology, primarily because alongside a great digital infrastructure, the city had a "can do" organisation like Marketing Gloucester that already had the trust of a wide range number of partners throughout the city which it could rally together relatively easily in order to enable our project to happen. They were especially good at helping us work with other organisations operating in complimentary areas such as Stagecoach and Trinity Mirror. There was also a much lower learning curve as Gloucester has a team with a understanding of the tech and the issues facing towns and cities, and that has definitely lead to us having a much stronger offering in a shorter period of time".

4.6 Polly Barnfield OBE of "Maybe*" backed this up saying "Gloucester has proven to be the perfect place for us to test our digital high street solution #WDYT, and the help from Marketing Gloucester, GFirst Local Enterprise Partnership and Gloucester City Council was instrumental in enabling us to successfully roll out our pathfinder project across the other conurbations in the county and now futher across the country."

4.7 All the above partners are also currently working with the Local Data Company (LDC) who with University of London are developing next generation footfall data collection and reporting, combined with their current retail dashboard. There are plans for Gloucester to have the highest number in the UK of LDC sensors generating data that will help retailers and place management teams intelligently model the city.

4.8 Gloucester City Council Paul James who is justifiably proud of the progress in realising the aims to make the city the go to place for technology providers looking to develop smart city and digital high street solutions. Councillor James is ambitious to build on the successes to date, commenting "The world is just at the beginning of the transformational opportunities presented by digital technologies and its great that Gloucester is being viewed as the ideal place to test these. In fact the city has a history of innovation in digital and high performance technologies, including being the home to Fasthost (UKreg owned by United Internet), Amazon's Print on Demand service, Raytheon's recently opened cyber security division, and Tidal Lagoon Power. We are open to working with those looking for a compact city to testbed their technologies"

5. Gloucester as a testbed and pathfinder for future city technologies

5.1 Gloucester is ideally suited to solution providers test bedding new technologies. It is a relatively compact city, with a young but representative demographic and a high degree of innovation and good digital infrastructure. It is a city that confirms with many of the norm baselines and so can provide an excellent modelling opportunity. Most importantly there is a team of people operating in the city who have built up a huge group of partners, including the University, private sector, and the local authority, who are happy to speedily adopt innovative products.

5.2 The following chart shows some of the elements that will be influenced by the impact of future technologies and that Gloucester would be well placed to be a testbed and pathfinder for. Already as part of the Digital Retail Pathfinder, Gloucester has worked with a number of partners and developed new products and solutions that have been replicated elsewhere
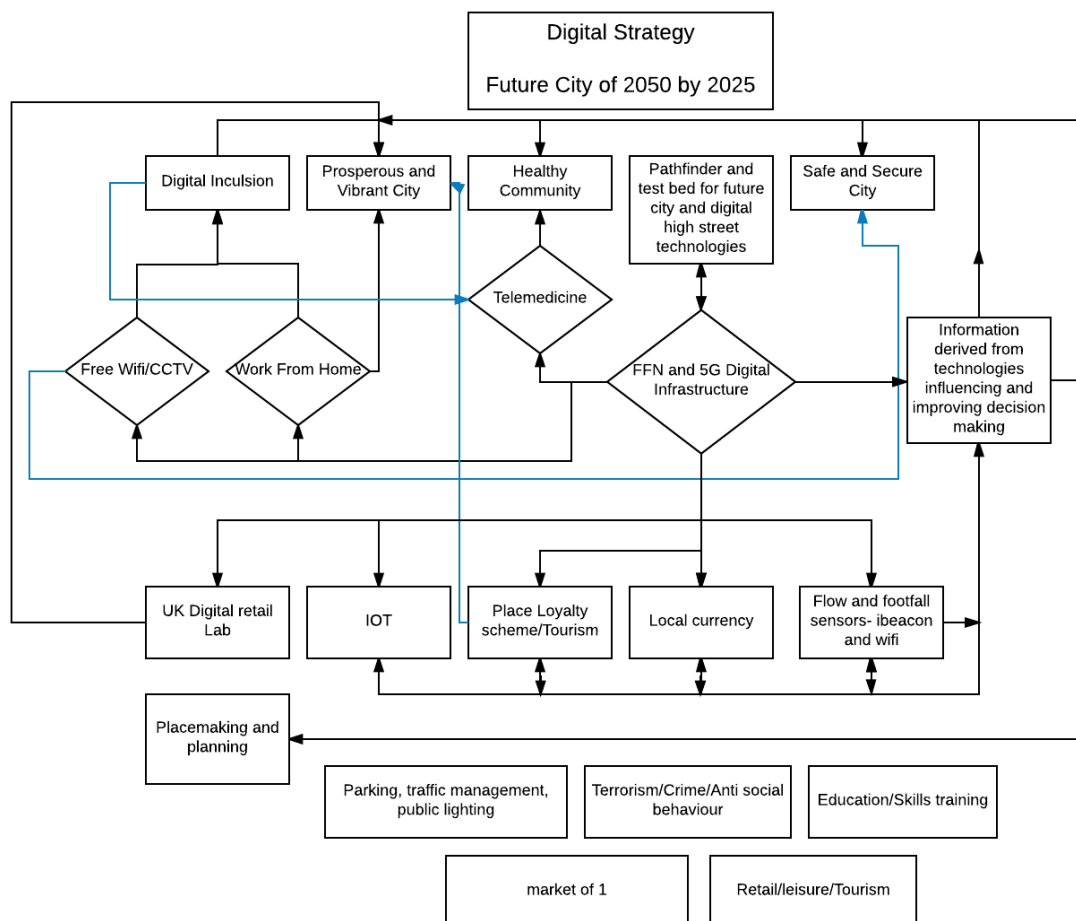
6. Our Digital Priorities

The following describe the digital priorities for Gloucester:

1.1 Championing the ongoing creation of an environment where the city is used as a test bed for future city technologies
1.2 Ensuring that digital inclusion is at the heart of all we do
1.3 Deliver the city as an early adopter of world-class digital infrastructure[11] including full fibre networks and 5G[12]
1.4 Making Gloucester a place that has a competitive edge as a place to start and grow a digital business
1.5 Giving everyone access to the digital skills they need[13]
1.6 Assisting every business in Gloucester to be a digital business
1.7 Using digital technologies to deliver a safer more secure city
1.8 Establish the city is a leader in serving its citizens online
1.9 Embedding future city technologies in all regeneration and planning
1.10 Unlocking the power of Big Data at the local level[14]

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[11] https://www.local.gov.uk/building-advanced-digital-infrastructure
[12] https://www.local.gov.uk/our-support/our-improvement-offer/case-studies/facilitating-next-generation-mobile-connectivity
[13] https://www.gov.uk/government/publications/uk-digital-strategy/2-digital-skills-and-inclusion-giving-everyone-access-to-the-digital-skills-they-need
[14]
https://s3.amazonaws.com/academia.edu.documents/32970305/FROM_BIG_DATA_TO_BIG_IMPACT.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1503248743&Signature=aVAApmkWydqp4EaaJjGkdHQgwQA%3D&response-content-disposition=inline%3B%20filename%3DSPECIAL_ISSUE_BUSINESS_INTELLIGENCE_RESE.pdf

7. Benefits

1.1   Inward investment from technology companies and retailers test-bedding technologies with potential further investment through the cluster effect

1.2 Improvements in digital infrastructure making the city a more attractive location for businesses to locate and invest

1.3 Development of a reputation as an innovative connected city raising civic pride and changing perceptions of the city

1.4 Opportunities to accelerate local business community to be amongst most digitally literate in the UK and prepared for the future

1.5 Competitive advantages to local enterprises derived from economies gained from superfast internet and upskilled workforce

1.6 Better communication between public service providers and citizens and visitors providing efficiencies, transparency and empowerment[15]

1.7 A digital infrastructure that is future ready and supports additional bids, including a potential UK City of Culture bid for 2025

1.8 Cost savings and or serive improvements resulting from the implementation of actions based findings from Big Data[16]

1.9 A safer and more secure city[17]

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[15][15] https://gcs.civilservice.gov.uk/wp-content/uploads/2015/09/6.1048_Cabinet-Office_comms-future-document_v2_print_web.pdf

[16] https://www2.deloitte.com/content/dam/Deloitte/fpc/Documents/services/systemes-dinformation-et-technologie/deloitte_smart-cities-big-data_en_0115.pdf

[17] https://cdn.ihs.com/www/Technology/Security/IHS_Markit-Benefits_of_Safe_Cities_WhitePaper.pdf