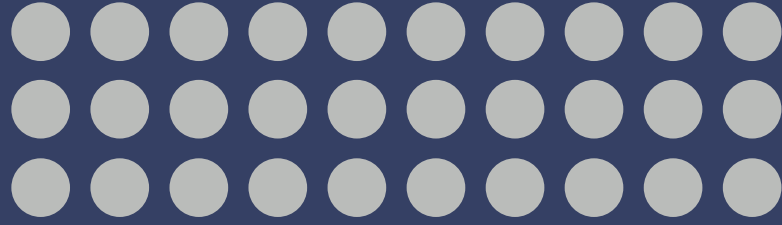




THE SMART DIGITAL STRATEGY FOR THE CITY 2018 - 2023

DELIVERING
CONNECTED
INVESTMENT





1. STRATEGIC CONTEXT

1.1 The Smart Digital Strategy is founded upon the City Plan which is the city's Community Strategy. The City Plan articulates the aspiration to build on the expertise of the private and other sectors, to bring the whole community together to make Hull a place that is brimming with culture, enterprise and opportunity; a place where people want to live, work, play, study and invest; a place where those in the greatest need are valued and supported; a place that people within their communities are proud to call home.

The City Plan provides a shared collective vision, demonstrating a shared approach to meeting the challenges and seizing the opportunities within our growing economy. The Plan incorporates the aspiration for Hull to become a Smart City, exploiting Hull's ultrafast connectivity to unleash the potential for local innovation across the rapidly developing and expanding technology sector exemplified in the Centre for Digital Innovation (C4Di). It seeks to build on the unique strengths of a compact digitally connected city with ubiquitous ultrafast fibre to the premises, Fixed Wireless Access connectivity and capacity to support 5G mobile data.



1. VISION

2.1 The Smart City Vision is that public services in the city build upon the availability of ubiquitous ultrafast connectivity to enable the community to assist deliver efficient public services and the expansion of opportunities for digital growth aided by transparent sharing of information that public services hold on behalf of the community.

The 8 key themes which assist realise that vision are articulated below:

Theme 1: Encouraging the expansion of digital connectivity across the entire city to facilitate opportunities for development of smart technologies for which connectivity is essential.

Theme 2: Delivering improved public services through digital means developed around the needs of users.

Theme 3: Share and open up the use of non-personal data to support new digital initiatives and businesses to develop.

Theme 4: Establish a facilitative procurement environment in which digital technology industries can flourish.

Theme 5: Establish a digitally supportive environment for Hull business sectors to become digitally mature.

Theme 6: Focus education and training on expanding the pool of digitally skilled and capable job candidates.

Theme 7: Promote digital inclusion to avoid isolating citizens from digital opportunities.

Theme 8: Ensure the delivery of services to the citizens of Hull is cyber resilient and secure.



3. GOVERNANCE OF THE SMART DIGITAL STRATEGY

3.1 The British Standards Institute formulated a Smart City framework (PAS 181) which provides guiding principles for the development of a Smart City. The guidance emphasises the need to collaborate with city stakeholders to develop and agree a set of shared guiding principles for a smart city.

The guidance emphasises the need to:

- 1) Establish a clear, compelling and inclusive vision for the city.
- 2) Take a citizen-centric approach to all aspects of service design and delivery.
- 3) Enable a ubiquitous, integrative and inclusive digitization of city spaces and systems.
- 4) Embed openness and sharing in the way the city works.

3.2 Central to this approach is the requirement for leadership and governance arrangements that:

- a) Bring together city leaders on a cross-sectoral basis at both the strategic and delivery levels.
- b) Provide broad-based leadership.
- c) Provide a focus on accountability.
- d) Deploy formal programme management disciplines.
- e) Encompass the right skills mix.
- f) Manage organizational evolution.
- g) Are open and transparent.

3.3 Strategy development and implementation.



3.4 In Hull the city has developed two key leadership Boards to drive the development of unified strategic approach for the city:

The Business Leadership Board

The Business Leadership Board brings together public and private sector organisations within the city to facilitate the development and ownership of a shared City Plan. Through this approach the city has developed a City Plan which was approved in updated form as the city's Community Strategy by the council on 18 January 2019. The board has established a sub-group to identify the opportunities for digital transformation with a focus upon the health and social care.

The Place Based Board

The Place Based Board was originally created to take forward the city based elements of the NHS Sustainable Transformation Partnership facilitating the development of a shared strategy for transformation across Health and Social Care. The board comprises the leaders of

all public sector bodies in the city together with leadership from the Voluntary Sector and is chaired by the council's Chief Executive. The board has established a sub-group chaired by the city's Assistant Chief Constable Communities and Partnerships (temporary) to take forward the themes within this Smart Digital Strategy for the city.

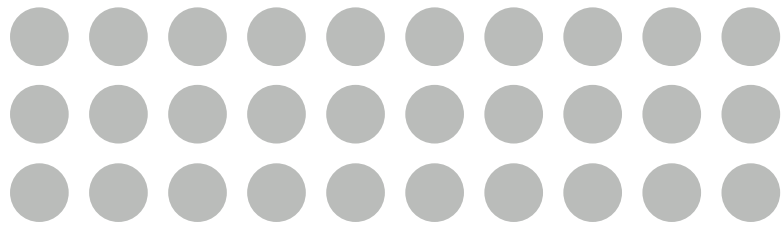
3.5 In support of the development of an integrated approach to the delivery of public services in the city the executive bodies of both Hull City Council and the NHS Hull Clinical Commissioning Group have aligned their budgets and established a Committee in Common to facilitate co-ordinated decision making between executive decision makers within the council and the health sector (weblink).

3.5 In support of this approach in conjunction with the C4Di developer community a private/public sector Smart City Board has been established to progress ideas. In addition a Community Interest Company has been developed by the developer community to provide a public/private interface to take forward shared projects.



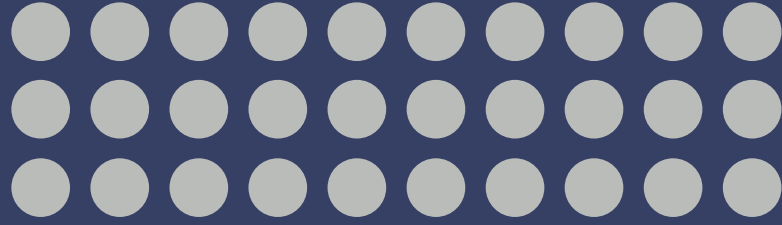
4. STRUCTURAL FRAMEWORK FOR THE DEVELOPMENT OF THE SMART DIGITAL CITY STRATEGY

- 4.1** The Smart Digital Strategy for the City builds upon the availability of ubiquitous Ultrafast Connectivity and the development of an integrated approach to data management and data analysis.



5. CONNECTIVITY

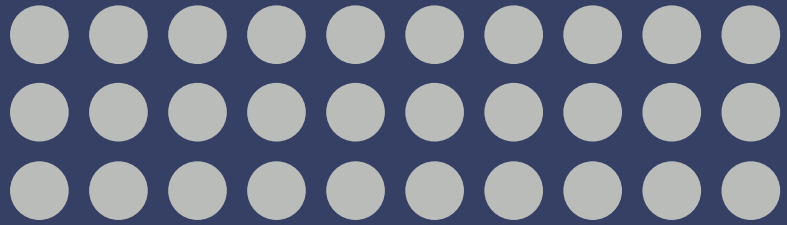
- 5.1** The city is in the fortunate position of having a significant advantage in terms of all forms of connectivity.
- 5.2** Hull is the only city in the UK where ultrafast broadband is rolled out as standard by fibre to the premise. Almost all of the city already has access to ultrafast broadband. KCom have committed to enabling ultrafast fibre optic connectivity to every home in the city by March 2019 providing the connectivity to ensure that any resident in the city can access ultrafast fibre at 250 Mbs at home.
- Business broadband access provides up to 1Gps download speeds and 250 Mbps for uploads. Full fibre energy use is significantly lower than copper, contributing to the City Plan aim to establish the city as a low energy city.
- 5.3** KCom also facilitate citywide access to their wifi network for domestic customers.
- 5.4** Beyond KCom the unique market place for broadband in the city has stimulated the development of competition through the offer of alternate 1 Gbs fibre from local suppliers MS-3 and Pure Broadband (in partnership with CityFibre).
- 5.5** Connectivity to ultrafast fibre to premises broadband the market has given rise to the development of wireless competition, with local companies Connexin, Pure Broadband and Quickline developing wireless broadband alternatives offering 60 Mbps download speeds for 80% of the city. This contrasts with the rest of the UK where fixed-wireless access provision is minimal.
- 5.6** In 2015 Connexin won a tender for a concession contract from the council to facilitate wireless connectivity across the city.
- 5.7** Fixed wireless connectivity is now available across a significant proportion of the entire city opening doors to the city staking its claim to become a leader in 5G wireless connectivity.
- 5.8** In 2018 Connexin partnered with Actility to create a turnkey low power wider area core network and operations support system in Hull to facilitate secure management of communications between connected objects, base stations and applications using LoRaWan.
- 5.9** In addition the city has a number of access point to the Things Network facilitating community use of LoraWan network capacity. A LoraWan network allows communication through low energy use sensors where the requirement is to send and receive small amounts of data—a few tens or hundreds of bytes per day generated by low power using and low data-producing IoT devices. LoraWan sensors can send small packages of information to a LoraWan connection communication point on a single battery lasting for up to ten years.



6. Data Management and Analysis

- 6.1** A co-ordinated approach to data management and analysis on a city wide basis is being developed through the Place Based Board.
- 6.2** The intention is that data that can facilitate greater strategic application of the public resources that exist within the city by bringing together real time data both within a smart city platform and through integrated 'data warehouses' building on the existing individual 'data warehouses' for Geographical Information, health information and Council information.
- 6.3** To this end the council is procuring a smart city platform which can receive and present citywide sources of data and subsequently initiate strategies for the management of city wide resource.
- 6.4** A data and information team has been established within the restructure of the council's ICT service to take forward the management of data with a focus upon facilitating this citywide approach. With partners Astun Technology the team has developed the new Geographical Information System (GIS) for the city as a citywide resource built with QGIS Open Source code to allow for a cohesive public sector approach.
- 6.5** The Place Based Board has established a pilot project for a part of the city (the Beverley Road corridor) where integrated cross organisational working can be tested.

To support that programme a cross organisational team of data analysts is being developed to co-ordinate city wide data analysis using Microsoft Power BI tools with the support of consultants engaged by the council and the NHS Hull Clinical Commissioning Group.
- 6.6** In conjunction with this initiative an Open Data Platform is being developed to enable public data sources to be made accessible to developers on an Open API basis to facilitate enhancements to
- 6.7** This structural approach is aimed at enabling the delivery of a Smart Digital Strategy for the city organised around a series of strategic themes which follow.
- 6.8** A diagram has been developed which seeks to articulate the relevant data flows:



VISUALISATION AND ANALYTICS

(Power BI, SSRS, Interactive Dashboards, Reporting, Alerts, Scenario planning)

CITIZENS

Smart Data Engine (Rules, Policies, AI, Machine Learning modelling, messaging)

Data Warehouse

MDM

GIS

Apps for Public & Professional

Integration, API management, Extract, Transform & Load (ETL)

Open Data Platform for Public and Devs

External Data Sources (Gov.uk, NHS/Health, Police, DoT, CitiLogik, University)

Wired, Fibre Beoadband

Celluar 2,3,4,5G Wirless

Low-power wide-area Network (LPWAN)

Data passed to and from Back Office Applications

Back Office Applications public access via portals

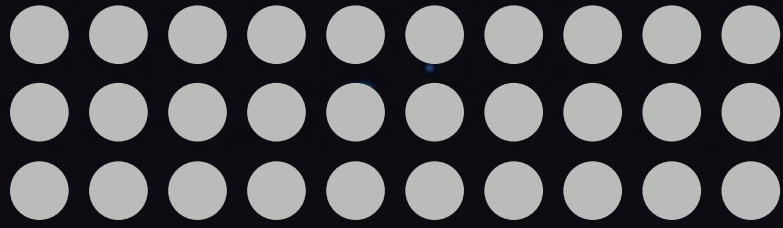
Mix of Cloud & on Premise

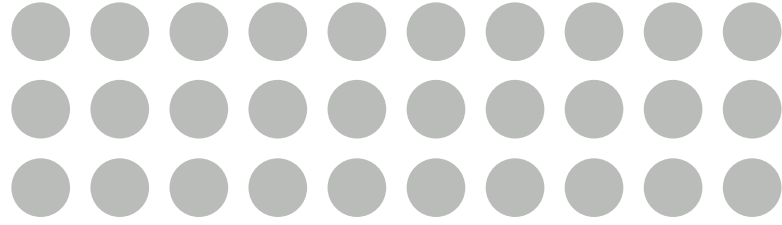
Internal Hull CC Applications (lighting, traffic, parking, Planning, CRM, Customer Account, Waste, Social Care, Housing)

7. THEME 1

Encouraging the expansion of digital connectivity across the entire city to facilitate opportunities for development of smart technologies for which connectivity is essential.

- 7.1** The private sector has invested in establishing in the city the best digital connectivity that exists in the UK. This places the city at a significant advantage when developing a smart city. It provides the infrastructure for developing that potential. The range of ultrafast and fast and low data connectivity provision places Hull at the forefront of connectivity in the UK.
- 7.2** To support wider opportunities for expanding connectivity the council is enabling its rooftop assets in the city to be more effectively marketed to facilitate greater connectivity following changes to the Ofcom Electronic Communications Code introduced under the Digital Economy Act 2017. The act seeks to remove barriers to the use of public assets to promote development of the digital economy.
- 7.3** Low power sensors can communicate data on a regular basis (eg every five minutes) providing information upon for example, whether a parking space is in use or whether a bin is full. The technology is relatively low cost and energy efficient, with battery life typically being 10 years. This contrasts with sensors with mobile phone chips for which the battery discharges relatively quickly and costs are relatively high.
- 7.4** Working with the C4Di community the council is testing the potential of low power devices, for example in relation to measuring air pollution and rubbish bin capacity.
- 7.5** Encouraging the expansion of digital connectivity involves a coordinated approach across public sector bodies in the city to the application of the resource to benefit from the available connectivity.
- 7.6** Actions:
 - 7.6.1** Tender a contract to facilitate wider use of rooftop access from council buildings to promote connectivity.
 - 7.6.2** Build on citywide the Wholesale Cellular Services and Public Wifi Concession Contract to facilitate 5G connectivity.
 - 7.6.3** Identify and promote wider opportunities for expanding 5G connectivity.
 - 7.6.4** Progress the testing the potential of low power sensors to provide data upon projects that will benefit the city.
 - 7.6.5** Work with the public/private Smart City Board facilitated by C4Di to test the potential for community use of low power access points for the city.





8. THEME 2

Encouraging the expansion of digital connectivity across the entire city to facilitate opportunities for development of smart technologies for which connectivity is essential.

8.1 The key components of this area or activity are:

- The Geographical Information System.
- The Smart City Platform.
- The Customer Relationship Management System and its components, the Master Data Management system and integrated Customer Account.

8.2 Geographic Information System Replacement (Astun IShare) – The potential for presenting city wide information on an open basis, shared with wider stakeholders is in the process of being realised. In the last 12 months the council has contracted with Astun Technology to establish an open platform for presentation of geographic information supported by a data warehouse that can draw information from across the public and voluntary sector.

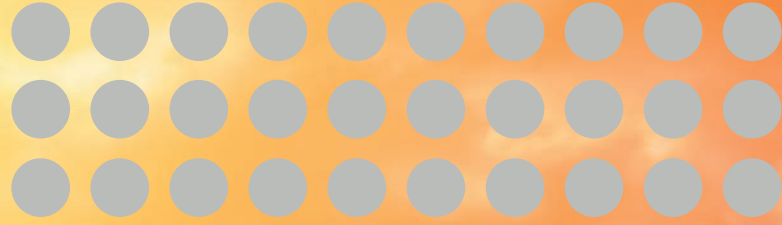
This enables the public to gain access to information about services across the city presented by geographic location drawn from systems in operation locally and nationally.

Integrating the platform with the Customer Relationship Management System and software systems operated by the council to undertake key tasks provides the bedrock for the Smart City infrastructure.

8.3 Local Land and Property and Local Street Gazetteers (Idox Uniform) – The council uses the IDOX Uniform system to operate its Local Land and Property and Local Street Gazetteers. The Gazetteer is the address and street database for the city managed by the council and contributing to the National Address Gazetteer. The National Address Gazetteer brings together local authority data sets with Ordnance Survey, Valuation Office and Royal Mail data. The council is responsible for managing the Street Gazetteer. It is operated to a common national standard and can deliver improvements in service delivery and interoperability when implemented through a city.

The Gazetteer provides the basis upon which geographic data is built.





8.4 City Asset Management System Re-implementation and Transfer to the Cloud (Pitney Bowes Confirm) –

The council operates a system for managing its street assets based upon their geographic location. The system facilitates plotting of all assets by Geographic location and integrated into both the council's GIS and Customer Relationship Management System to enable real time reporting of issues in relation to public assets (eg street lights, highway condition and roadworks, play equipment) and to log and report to services remedial action taken. The system has been transferred to the Cloud, re-implemented, and integrated into the new GIS supported by workflows to facilitate communication of issues and assets geographically.

8.5 City Waste Vehicle Management System Re-implementation (Bartek) –

In similar manner the system for management of the Council's waste vehicle interactions has been re-implemented facilitating integration GIS and the Customer Relationship Management System. Waste Collection & Recycling links to the council's Gazetteer and automatically processes and updates information in relation to domestic bins via a cloud-based database enabling scheduling collection of waste through route optimization. The software enables

managerial staff to always know where crews are, which vehicles they are using and progress with collection and enables the publication of information to customers via the council's Customer Relationship Management system and website so residents know when to expect waste collection.

8.6 Vehicle Fleet Management (Navman) –
The geographic location of the council's vehicle fleet are managed through tracking devices. Data from the system can help the council co-ordinate and manage the vehicle fleet it uses efficiently.

8.7 Traffic management and car park data (Siemens Stratos Manager & CitiLogik) –
Pursuant to the decision of Hull City Council's Cabinet in July 2017 the council re-contracted its relationship with Siemens for the Siemens Stratos Strategy Manager Platform.

The council's contract with Siemens incorporates Stratos Strategy Manager facilitating the delivery of integrated:

- Traffic light management.
- Car park management.
- Information provision to the public upon traffic conditions and car park occupancy.

In addition a contract was entered into with CityLogik for the provision of mobile data upon the movement of vehicles and people within the city to inform the development of the parking strategy and the management of traffic assets.

The intention is to integrate with the Geographical Information System and support the development of a traffic model for the city by the University of Hull.

Consequent upon the contract mobile air quality data units will also be tested to inform transport planning.

8.8 Street Lights

The council operates the street light platform Datek to manage its city centre lighting. An API has been obtained from the platform to support the management of the city centre lights through the Smart City Platform

8.9 CCTV Camera Infrastructure –

The council has 300 ultrafast fibre connections managed by KCom to its CCTV camera infrastructure. At present however, the infrastructure is in analogue format. As such data is not readily transferrable and opportunities to use the data to facilitate wider use beyond CCTV are constrained. The council has set aside a capital sum to invest in its CCTV infrastructure. CCTV cameras can be used to provide data beyond simple images. They can provide rich data in different forms, for example upon the use of parking bays and journey times. In converting the present analogue feeds into digital format the focus will be upon how the infrastructure is able to support the

wider smart city ambition through support services which facilitate effective use of data analytics. Tools exist within the Cloud environment that are able to enrich this process.

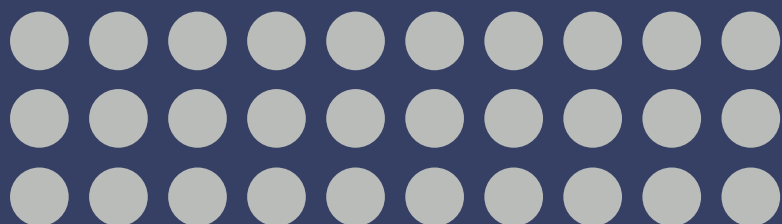
8.10 Smart City Platform –

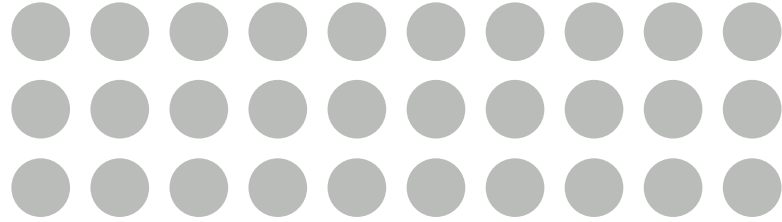
To enable cross organisational strategies to be developed and implemented across the city on a geographic basis. The first step to address this was the establishment of a new open source GIS for the city referred to above. To complement the static presentation of daily updated information, a Smart city Platform is being procured to bring together city wide public data dynamically within a single platform that can facilitate informed decision making and digitally enable the implementation of citywide strategies.

8.11 Customer Enablement Programme –

The council has invested in a suite of tools co-ordinated around a new integrated Customer Relationship Management System and Citizen Account to facilitate citizens' digital access to services operated by the council and partner bodies.

8.12 This programme involved the procurement of a suite of tools co-ordinated around a new integrated Customer Relationship Management System and Citizen Account. A key requirement was that the new CRM and Citizen Account support wider city integrated service delivery with a focus beyond the Hull City Council through the establishment of an open, service-oriented, city-wide IT architecture. The council's approach to channel migration and digital inclusion has also been developed within the programme.





8.13 A further requirement was for single sign-on so that citizens' were enabled to access information in relation to the range of interactions that they have with the council and partner bodies. To support the systems and Master Data Management System has been implemented to ensure that all systems that the council operates accurately identify individuals.

8.14 Engagement Channels – Beyond this the need to establish the digital communications network to effectively engage with citizens where they are. To this end the council has established a newsroom site complimented by a twitter feed: <https://twitter.com/hullnewsroom> . However, development of the potential for automated web chatbot technologies such as 'Alexa', 'Polly' and 'Siri' to inform the technologies with which customers interface.

8.15 The police have established a neighbourhood alert platform for Hull to enable swift engagement with and feedback from with communities, with supplier Visav Ltd: www.neighbourhoodalert.co.uk

8.16 It is important that young people in the city are engaged with this approach. The Got Your Back Hull, <https://gybhull.com/> initiative supported by the Place Based Board is providing a digital channel of communication accessing many thousands of young people across the city.

8.17 The council are seeking to pursue an Innovation in Democracy Project supported by digital civic technology tools to facilitate engagement on issues of local concern.

8.18 Actions:

8.18.1 Establish a city wide media communications platform for Public Sector information to facilitate access to good, timely information about public service delivery through channels of communication with which citizens engage.

8.18.2 Enhance and develop digital means of engagement with the community. Establish a Community Layer within the GIS enabling Voluntary Sector and Provider Organisations to share data on what is available in communities.

8.18.3 Complete the procurement of a smart city platform and apply that platform to facilitate effective resource planning and city wide management strategies

8.18.4 Build upon the work to develop effective community digital engagement channels.

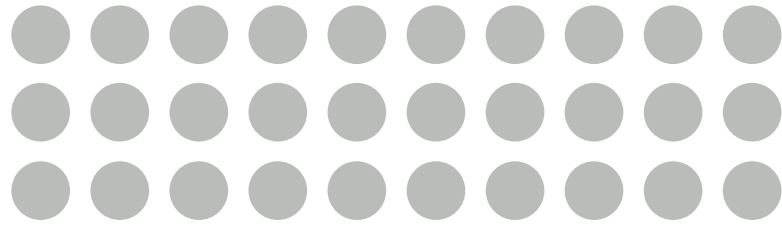
8.18.5 Procure the transition of the analogue CCTV infrastructure to a digital format to enable expansion of its use applying available digital and Cloud technologies.



9 THEME 3

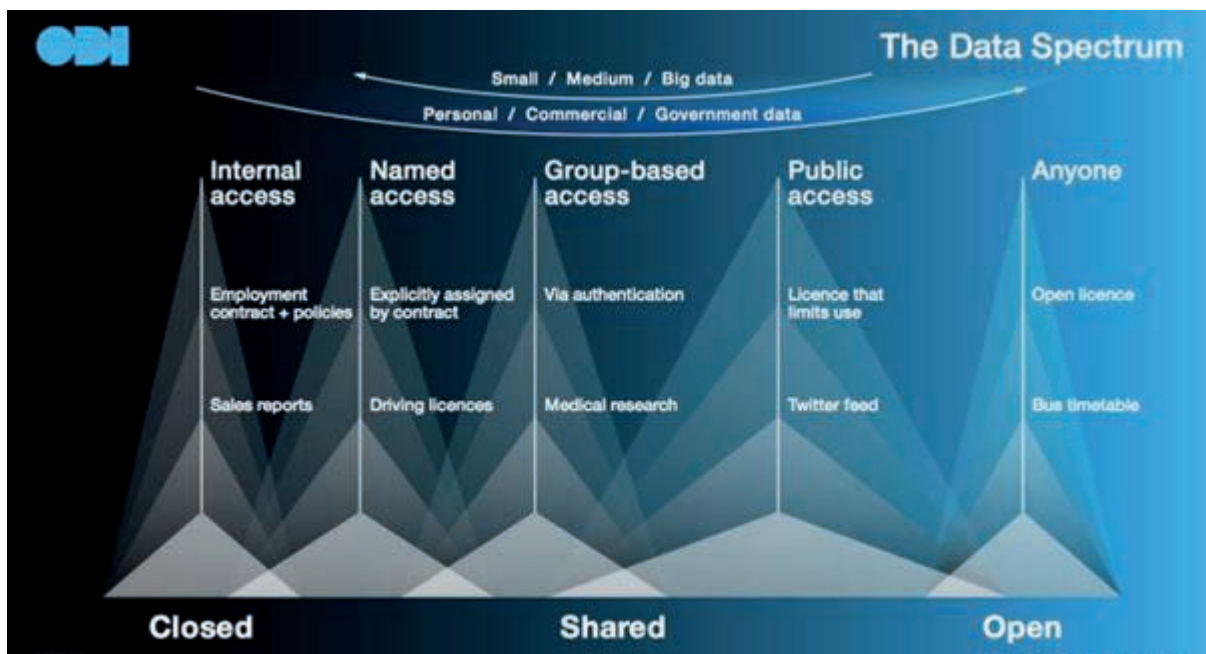
Share and open up the use of non-personal data to support new digital initiatives and businesses to develop

- 9.1 On behalf of the community, Public Sector partners in the city hold significant data which can facilitate improved service delivery.**8.21** This data is a resource that has to date not been organised on a city wide basis to facilitate informed decision making.
- 9.2 Yorkshire and Humber has been selected for the development of a single Yorkshire and Humber Care Record to assist health and social care to work together on a joined up basis.
- 9.3 Beyond this it is important that data held is organised and managed to enable a comprehensive understanding of the city. As is apparent from Theme 2 an individual cloud data warehouse draws daily data from existing systems to populate the city Geographic Information System. Furthermore, it is necessary to manage that data in accordance with the ODI Data Spectrum (page 19).
- 9.4 However, data is not pulled together in realtime from different systems that exist across the city to provide a co-ordinated viewpoint. While the council's social care Liquid Logic system provides data into a data warehouse that enables the presentation of data from that one system, there has been no structure to enable that data to be pulled together with other information, on a dynamic basis, for example from education and passenger transport systems to facilitate co-ordinated decision making. Establishing a cross organisational data warehouse from which reports and dashboards can be developed upon a city wide basis is the intended approach.
- 9.5 To that end existing contracts have been reviewed to enable, where appropriate, data held in individual systems to be accessed and applied to facilitate greater public value and access, for example as an opportunity for innovative app development.
- 9.6 A project has been initiated to enhance the use of Microsoft Power BI to enable joined up use of data on a cross organisational basis.
- 9.7 An established data sharing agreement platform has been implemented to enable joined up decision making both within the city and more widely within the sub-region:
<https://www.informationsharinggateway.org.uk/>
- 9.8 Bringing extracts of that data together in real time within data warehouse structures is being progressed through the council's data and information team on a council wide and city wide basis in support of the Place Based Board.



- 9.9 Through this approach it is anticipated that better informed decision making can be advanced, and through the publication of non-personal data the city's growing creative industries provided with the opportunity to provide products that enhance the quality of life of citizens.
- 9.10 However, beyond public sector data sharing the opportunity exists for the

developer community to make use of public data to support the community to help themselves. Establishing a CKAN Open Data Platform to facilitate access to public data both enables the community to identify the most effective way that public data can be used to benefit the community and provides an opportunity for businesses to develop making use of that data.



- 9.11 Actions:
 - 9.11.1 Establish a council and city wide data warehouse infrastructure to enable access to dynamic real time data to inform decision making.
 - 9.11.2 Enhance the current data sharing agreements across the public sector to facilitate more dynamic information sharing using the

structures of the Information Sharing Gateway.

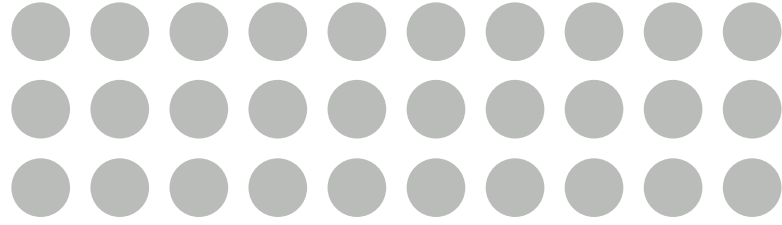
- 9.11.3 Develop a CKAN Open Data Platform to provide access to council held raw data.
- 9.11.4 Establish an Open API to facilitate developer engagement in creating solutions.



10. THEME 4

Theme 4: Establish a facilitative procurement environment in which digital technology industries can flourish.

- 10.1** The council has tendered for a smart city platform to provide the basis for the establishment of a Dynamic Purchasing System to enable easier access for the purchase of the products and services that the council will require to support the city's smart city aspirations. Establishing that framework for contracting provides a basis through which new requirements can be added and updated on a regular basis as innovation develops. It avoids the risk that equipment and software is bought piecemeal as a bi-product of capital projects which encompass smart city functionality. It provides a swift means of access to the market place for new ideas and for the public sector to access such ideas.
- 10.2** Tendering contracts on a basis that the authorities in the Transport for the North area can access provides the opportunity for a joined up approach within the cities that comprise the Northern Powerhouse.
- 10.3** Actions:
- 10.3.1 Complete the procurement of a smart city platform to provide the technological framework for applying existing data sources in a co-ordinated manner.
 - 10.3.2 Establish a Dynamic Purchasing System (DPS) for the procurement of the components that will be required to advance smart city functionality.



11. THEME 5

Theme 4: Establish a facilitative procurement environment in which digital technology industries can flourish.

11.1 In the Fruit Market EU funding was secured and the council provided land to facilitate the establishment of the Centre for Digital Innovation (C4Di) as a springboard for digital innovation in the city, providing a low cost seed bed for small ICT businesses to be co-located and begin the journey to grow new businesses. Some of the businesses already developing at C4Di are developing products and services that contribute to a developing smart city. This ranges from smart boilers to car parking Apps to health products.

In addition the council facilitated support for ICT businesses in the city through voucher schemes to enable businesses to take up broadband services. The city had the second highest level of take up in the UK for the voucher schemes to stimulate take up broadband services.

Further grant funds are accessible through the ICT Business Support Project for which the council is the lead in the Humber area. The programme will provide grants of up to £15k (or 40% of cost) as a contribution toward equipment for Small and Medium Enterprises establishing themselves in the region.

The first data centre in the city is being constructed by the University of Hull

in partnership with KCom providing access to secure off premises data storage supporting new businesses and mature businesses to move to off premises secure server maintenance, avoiding the costs associated with establishing individual data centres for business.

The University of Hull have invested in the Viper High Performance Computer providing access to public and private sector customers to some of the highest speed data processing available in the UK by within the city.

Through its Leisure Company, Hull Culture and Leisure, the Central Library has been adapted to incorporate “MakerSpace” supported by funding from the James Reckitt Library Trust and the Arts Council. This provides a resource for the development of people of all ages who wish to make, think, invent, explore and exhibit. This creative hub will have state-of-the-art digital and electronic equipment, skilled staff providing support, and workshops to encourage learning.

The city now has a rich environment of small ICT companies. Digital development in the city will require long term engagement.

³ www.wearesauce.io/projects
⁴ moodbeam.co.uk/how-it-works

11.2 C4Di have partnered with Barclays Bank to establish a Digital Eagles Lab in Hull to provide access to investment funds and business advice for new business start ups. At C4Di there is now a continuing presence from Barclays Eagle Labs.

11.3 The University of Hull have established the Lampada Digital Solutions to take to the marketplace commercial concepts.

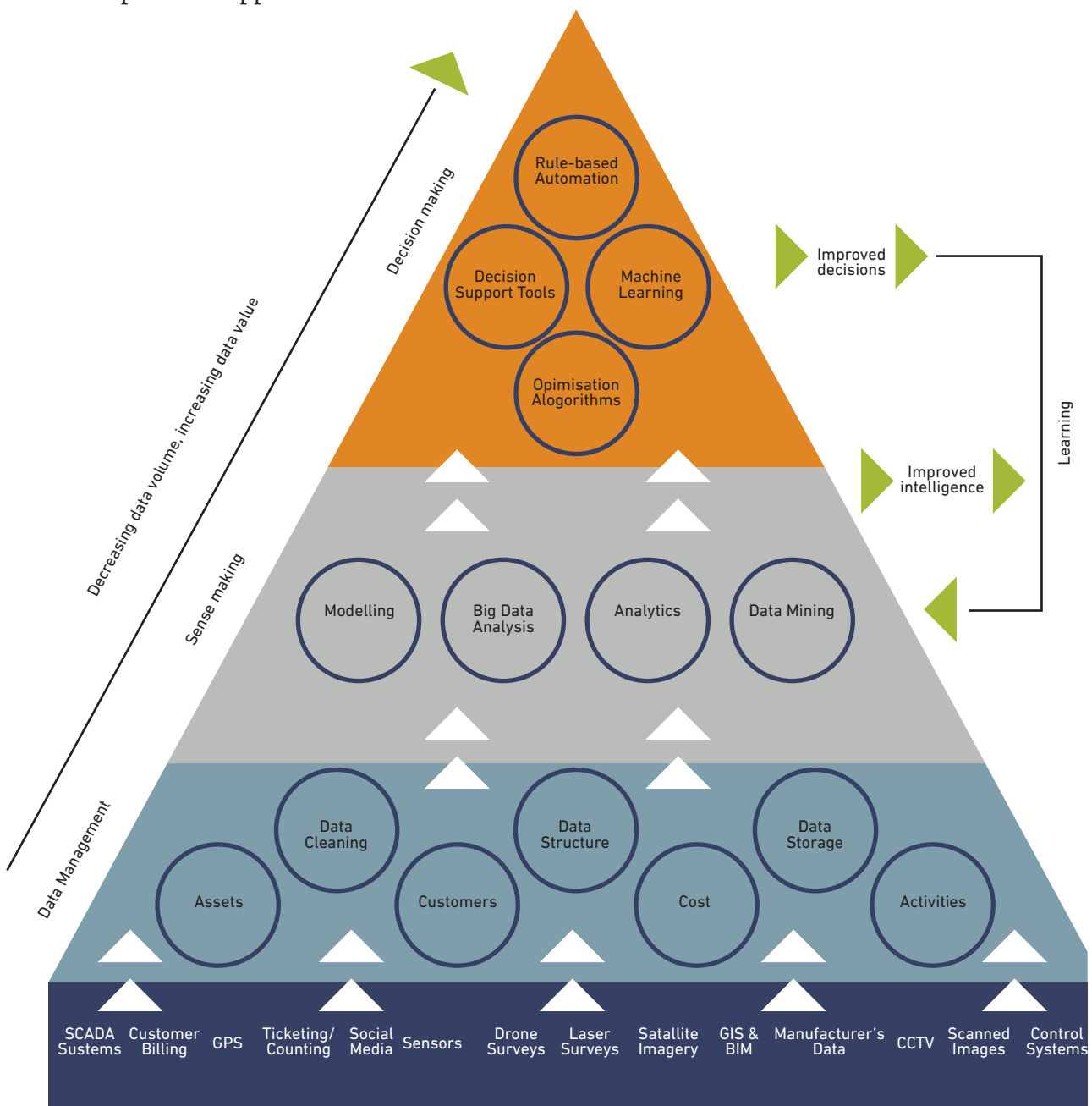
11.4 Actions:

To provide the purchasing framework through the DPS to support the development of opportunities for

expansion of the digital industries within the city.

11.4.1 To facilitate opportunities to progress the expansion of technological company development.

11.4.2 To engage with the C4Di Connected Humber Community Interest Company in its role as a bridge between the public and private sector, to facilitate use of shared resources and development training for the wider benefit.



⁵ <http://hpc.wordpress.hull.ac.uk/>

⁶ [http://jreckittlibrarytrust.co.uk/news/success-for-hull-libraries-makerspace-bid 7](http://jreckittlibrarytrust.co.uk/news/success-for-hull-libraries-makerspace-bid-7)

Cambridge University Smart City Infrastructure

Report: [https://www-smartinfrasture.eng.-](https://www-smartinfrasture.eng.-cam.ac.uk/files/the-smart-infrastructure-paper)

[cam.ac.uk/files/the-smart-infrastructure-paper](https://www-smartinfrasture.eng.-cam.ac.uk/files/the-smart-infrastructure-paper)

⁸ Tech Nation: <https://technation.io/insights/report-2018/hull/>

12. THEME 6

Focus education and training on expanding the pool of digitally skilled and capable job candidates.

12.1 Digital industries provides a major opportunity to the city. In the era of artificial intelligence, Deloitte have predicted the creation of significant numbers of high end jobs, but with a continuing flat lining of opportunities and salaries for unskilled workers. As the most connected city in the UK Hull has seen an increase in growth in the Tech Sector, achieving turnover of £133K per employee exceeded only by London, Bristol and Plymouth ⁸.

To ensure that people growing up in the city have the opportunity to benefit from the burgeoning ICT opportunities it will be essential to the develop people for the required jobs through the education sector.

This will require a joined up approach between the council, Ron Dearing University Technology College and the University of Hull with a focus on retaining people with the requisite skills to drive innovation within the city.

The city benefits from the Centre For Digital Innovation (C4Di) which provides a focal point for ICT talent and the development of new ICT businesses. In their role as facilitator they have established a Smart City Steering Group to help bridge private sector/public sector innovation. They have also established annual Digital Awards at which leading local technological businesses in the area are able to demonstrate their successes.

These initiatives will need to be embedded to continue to provide a spring board from which new technology businesses can thrive. The Public/Private Community Interest Company provides a framework for the facilitation of shared training and the development of enthusiasm and interest in the sector for the young and not so young.

12.2 The Ron Dearing University Technical College has a focus to develop young people's skills in digital technology and mechatronics in the age range between 14 and 18.

12.3 The University have established a programme through which graduates can be taken on and supported into the business community.

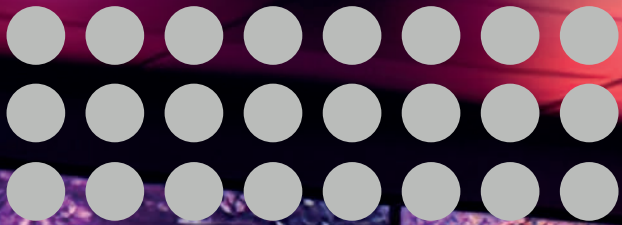
12.4 Employment agencies have developed in the city to support staff into career opportunities

12.5 The Council is working together with Education organisations to establish Conferences

12.6 Actions

11.6.1 To work with the Educational and Employment sectors in the city to facilitate a joined up approach, supporting the facilitation of learning events and conferences.

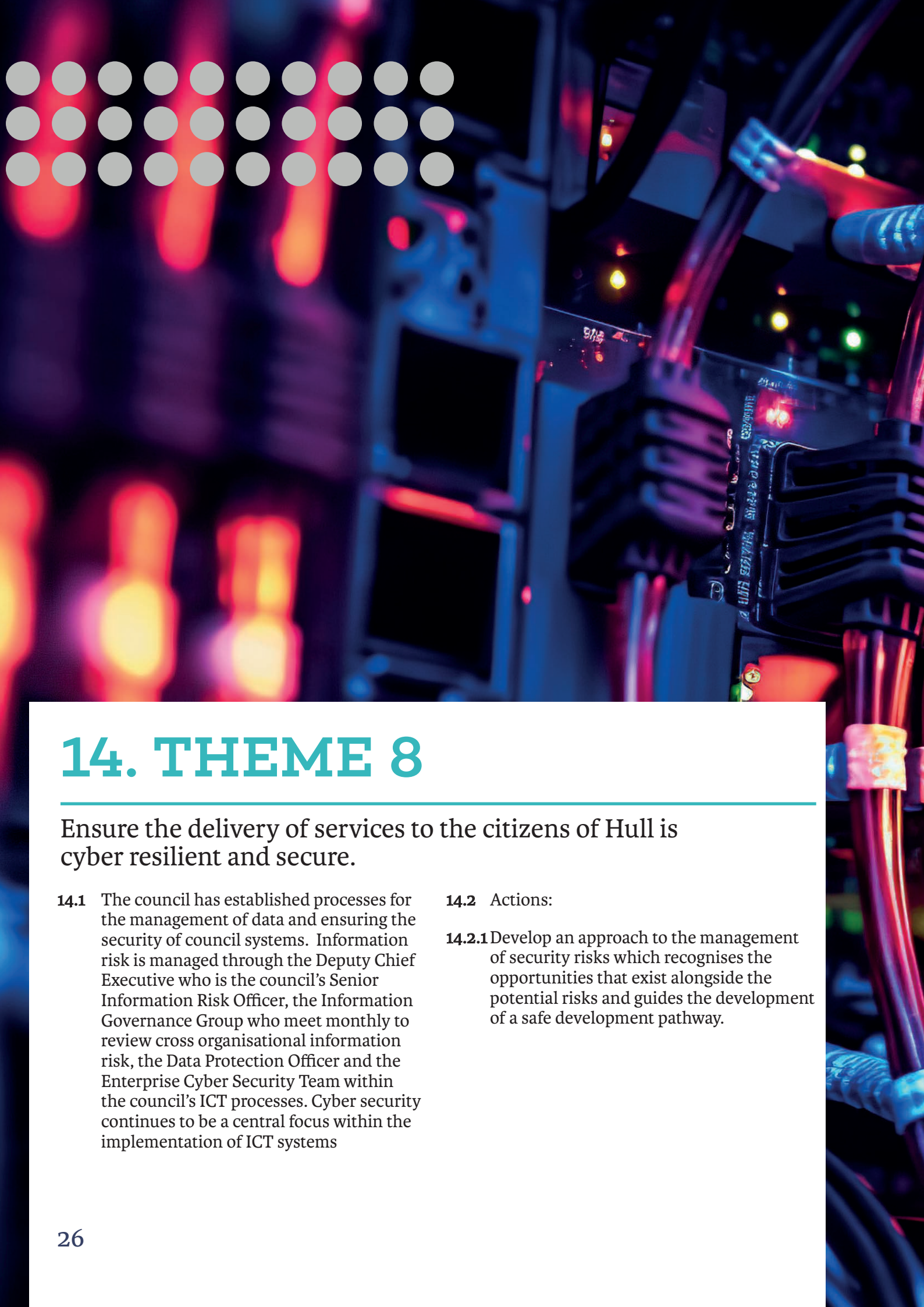
⁸ Tech Nation: <https://technation.io/insights/report-2018/hull/>



13. THEME 7

Promote Digital Inclusion to avoid isolating citizens from digital opportunities;

- 13.1** Digital inclusion has been a key theme within the programme, with trials undertaken in conjunction with KCom and a Voluntary Sector partnership upon engaging hard to reach citizens in transition to digital engagement. In addition the Council's libraries provide a key role in supporting digital inclusivity.
- 13.2** As the Customer Enablement Programme is developed the importance of community engagement in the agenda has grown.
- 13.3** The C4Di Community have established a Smart City Board across the public and private sector to test the potential for Internet of Things devices. A project demonstrating the potential of Low Power technology to engage community interest in the technology by better understanding air pollution has been developed as a means to gain community engagement.
- 13.4** Providing information through media were the public are and in forms that the community can easily access is recognised as essential. Forming a community Layer within the GIS to engage with Community groups is being developed.
- 13.5** Use of blockchain to support the measurement of Social Value is in consideration.
- 13.6** Actions:
 - 13.6.1** Develop the GIS Community Platform supported by bid funding so far as is practicable.
 - 13.6.2** Engage with Blockchain opportunities to develop the potential to measure the delivery of social value.
 - 13.6.3** Support community initiatives that can enhance understanding of the opportunities.
 - 13.6.4** Engage with Voluntary Sector and Commercial Sector initiatives aimed at inclusive an approach to community engagement in digital technologies.



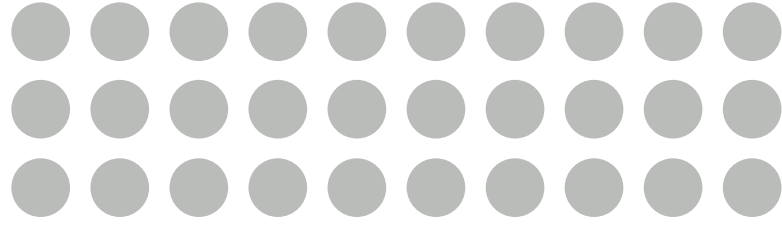
14. THEME 8

Ensure the delivery of services to the citizens of Hull is cyber resilient and secure.

14.1 The council has established processes for the management of data and ensuring the security of council systems. Information risk is managed through the Deputy Chief Executive who is the council's Senior Information Risk Officer, the Information Governance Group who meet monthly to review cross organisational information risk, the Data Protection Officer and the Enterprise Cyber Security Team within the council's ICT processes. Cyber security continues to be a central focus within the implementation of ICT systems

14.2 Actions:

14.2.1 Develop an approach to the management of security risks which recognises the opportunities that exist alongside the potential risks and guides the development of a safe development pathway.



15. NATIONAL GUIDANCE CONTEXT

15.1 The guidance advocates the establishment of a vision of “what good looks like” for a smart integrated city operating model for the city, today and in the future, which is focused around citizen and business needs, that:

- a) Is developed in an iterative and collaborative manner.
- b) Embraces the opportunities opened up by smart technologies, smart data and smart collaboration.
- c) Does so in a way that integrates these with the core socio-economic, political and environmental vision and purpose for the city’s future, rather than seeing them as somehow separate from the city’s core strategic objectives>;
- d) Is supported by a strong measurable business case.

15.2 Key themes which are sought to be addressed in the strategy include:

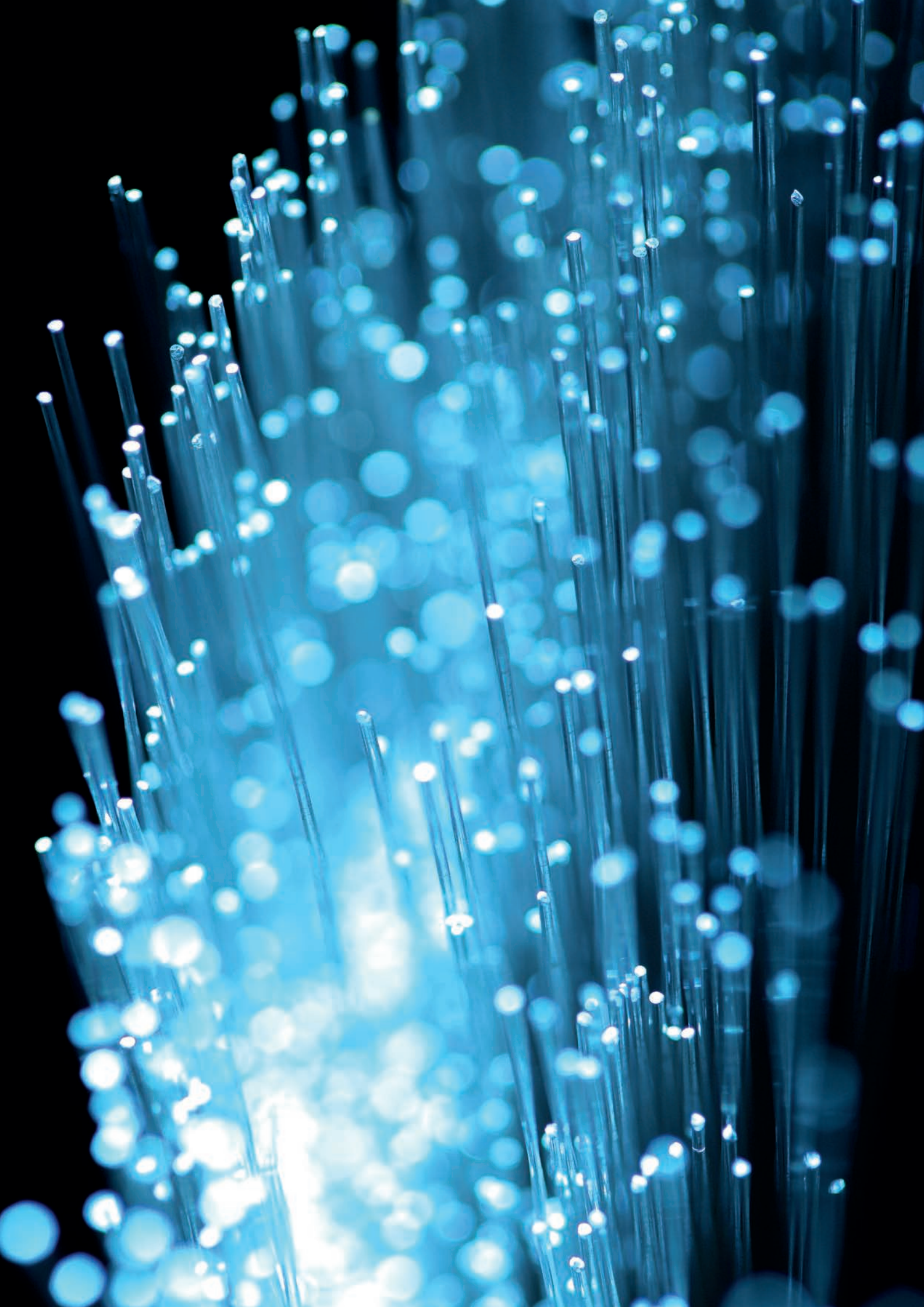
Resources mapping and management - Map major information and ICT system resources across the city and establish

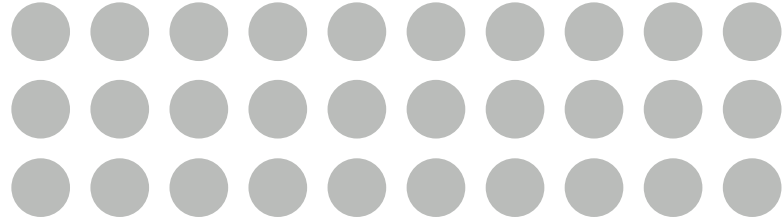
governance processes and usage policies aimed at maximizing asset reuse.

Interoperability – map interoperability to identify key barriers to interoperability in the city and promote commonality of approaches and easier linkages with other cities to ensure this.

Common terminology and reference model – Ensure that all stakeholders have a clear, consistent and common understanding of the key concepts involved and how these concepts relate to each other; how they can be formally modelled; and how such models can be leveraged and integrated into new and existing information architectures.

City-led service transformation – Provide citizens and businesses with public services that are accessible in one stop, over multiple channels, and built around user needs not the city’s organizational structures. Establish an integrated business and information architecture to support this, enabling a whole-of-city view of specific customer groups for city services.





Digital inclusion and channel management

- Establish a digital inclusion and channel management strategy, that includes:

- a) A clear audit of what existing channels are currently used to deliver city services, and the costs and service levels associated with these.
- b) The vision and roadmap for the channel management approach, which:
 - 1) Is centred on the needs and behaviour of citizens and businesses.
 - 2) Identifies the opportunities for current services to be engineered out through the introduction of new smart connectivity directly between city assets and digital devices.
 - 3) Encourages access and use of digital services by stakeholder groups.

Benefit Realization: Establish a benefit realization strategy to ensure the intended benefits from the smart city programme are delivered in practice built around:

- a) Benefit mapping.
- b) Benefit tracking.
- c) Benefit delivery.

Open, service-oriented, city-wide IT architecture - Work with stakeholders to establish an open, service-oriented, city-wide IT architecture.

Procurement and supply management – take an integrated view of the city's procurement requirements toward becoming a smart digital city that nurtures innovation with a focus on outcomes, open data, incentives for innovation and collaboration, and avoidance of lock-in.

Stakeholder collaboration – give a high priority and adequate resources to a managed stakeholder engagement programme.

Empower stakeholder – led service transformation - Empower stakeholders to create new sorts of services and value, by opening up city data via open platforms, and by driving forward the internal culture changes and the external market enablers that are needed to create a flourishing city information marketplace.

A phased smart city roadmap – give priority to changes that can be delivered quickly, at low cost and low risk and establish systems to learn from early customer experience to improve services and drive take up and drive longer term transformation by creating and promoting exemplars and champions.

Identity and privacy management – Embed an approach to identity and privacy management.

16. REGIONAL CONTEXT

- 17** On a regional and sub-regional basis co-ordinated leadership also exists, facilitating a joined up approach across the public sector. Across the Humber, the Humber ICT Leader's Board has been established. Over the last 18 months Health and Local Government bodies together with the University of Hull have worked together within the Sustainable Transformation Programme initiated by the NHS to develop a commonality of approach, through which interoperability has been mapped and for which collaboration is key.
- 18.** Within the region a longer standing partnership of the Yorkshire and the Humber local authorities has existed through which the Yorkshire and Humber Public Service Wider Area Network and supporting service contract was procured. Through that contract over the last 2 years the council has transformed its physical ICT infrastructure to a small number of virtual servers and a virtual desktop network. This has allowed for the recent decision of Hull City Council's Cabinet to re-locate the server infrastructure to a shared secure location, with a significant reduction in energy costs, allowing in turn for the ICT service to relocate. Through the Partnership a commonality of approach and regional collaboration has been promoted with a common set of tools now established to facilitate Information Sharing. A single Care Record for Yorkshire and the Humber is being developed supported by national funding.
- 18.1** Membership of Transport for the North, a devolved sub-national transport body, provides a regional framework within which to take forward in a co-ordinated form initiatives of benefit to authorities within the Northern Powerhouse.

