

24 September 2018

Wards: All Wards

Digital Smart City Strategy

Report from the Town Clerk

Forward Plan Item No: 0032/18

This item is not exempt
Therefore exempt reasons are not applicable

1. Purpose of the Report

- 1.1 Existing investment in digital assets over the last 10 years has largely been driven by individual Service need without co-ordination of the investments that have been made into a single linked Strategy. Over the last 18 months the Council's digital asset base has been reviewed to ensure that investments are being effectively used and co-ordinated across services, to identify gaps in what exists and identify the appropriate route to address those gaps.
- 1.2 To inform this process an ICT Strategy was developed in 2017 and a process of re-structure of the ICT Service commenced and then implemented. The ICT Strategy recognised the Service had primarily been inward focussed and sought to move the Service to a position that was based upon developing effective partnership working.
- 1.3 Consequent upon this work the need to progress to a citywide focus was recognised to facilitate the development of the city as a Smart Digital City.
- 1.4 Within the review a number of projects have been initiated and either completed or are well on the way to completion as enablers toward the realisation of that ambition. The review has incorporated renegotiation or replacement of existing contracts to ensure that they are fit for purpose for the future requirements and to ensure that the Council asset base will deliver value to the city supported by appropriate contractual arrangements.
- 1.5 In the implementation of the recommendation in the report to Cabinet in July 2017 to digitise the City's Traffic Light System an over-arching platform is being procured to support co-ordinated management of the city's assets as a Smart Digital City.
- 1.6 This Report sets out the developing strategy to facilitate the progression of Hull as a Smart Digital City and seeks agreement to the developing Strategy

and the next steps required to position the city to realise its potential.

- 1.7 The proposals have been informed by the National UK Digital Strategy¹ and the British Standards Institute PAS 181 (2014) Smart Cities Framework², consideration of which has led to the development of a series of key themes for the Smart Digital City Strategy supported by an Action Plan to progress realisation of the ambition.
- 1.8 Finally to support the approach the report seeks authority to establish a Dynamic Procurement System for the procurement of assets complementary to the platform that will support the achievement of the ambition.

2. Recommendations

- 2.1 To approve the outline Smart Digital City Strategy as a basis for consultation with partners and stakeholders, and delegate final approval of the Strategy to the Portfolio Holder for Corporate Services;
- 2.2 To support the proposals that leadership in relation to the strategy be developed through the City Leadership Board and the Place Based Board;
- 2.3 To agree to the establishment of a Dynamic Purchasing System to meet the present and future needs of the Council for Smart City functionality.

3. Reasons for Recommendations

- 3.1 To provide co-ordination to the activity being undertaken to develop Hull as a Smart Digital City;
- 3.2 To support the development of appropriate governance across the city to support that development.
- 3.3 To provide a procurement framework to support that aspiration.

4. Background

- 4.1 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.

¹ <https://www.gov.uk/government/publications/uk-digital-strategy>

² <https://www.bsigroup.com/en-GB/smart-cities/Smart-Cities-Standards-and-Publication/PAS-181-smart-cities-framework/>

- 4.2 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.

- 4.3 The guidance articulates 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.

- 4.4 Key themes which need to be addressed 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; and
- 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.

- 4.5 In Hull the city has established through the City Leadership Board, the Health and Social Care Committee in Common and the Place Based Board structures for *Leadership and Governance* across the city.

The City Leadership Board brings together public and private sector organisations within the city to facilitate the delivery of the shared City Plan. Recognising the importance of cross Health and Social Care integrated digital development, the Board has established a sub-group to identify the opportunities for digital transformation with a focus upon the health and social care sectors.

The Place Based Board brings together the Leaders of all Public Sector organisations across the city to enable joint planning of the delivery of transformation across the Health and Social Care sectors chaired by the Council's Chief Executive. The Board have commissioned support to assist develop a single integrated approach based around an integrated data management and performance reporting using Power BI analytical dashboard tools.

The Committee in Common facilitates co-ordinated decision making between decision makers within Health and Social Care at the Member/Board level.

- 4.6 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 have worked together within the Sustainable Transformation Programme initiated by the National Health Service to develop a commonality of approach, through which *interoperability* has been mapped and for which *collaboration* is key.
- 4.7 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 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.
- 4.8 The framework for co-ordinated Leadership and Governance both within the city, and sub-regionally and regionally therefore exists. Through the Humber ICT Leaders Board and YHPSN *interoperability* and *resource mapping* across the Health and Social Care community are being managed.
- 4.9 In support of this approach the ICT Service has been working closely with Health and Social Care Colleagues to co-ordinate health and social care records through the NHS identifier and to allow for a integrated system approach across Health and Social Care. This has proven successful with Social Care staff able to access Health system information and Health staff able to access Social Care information when working together to support clients.
- 4.10 This joined up approach has been successful in attracting national funding. The YHPSN partnership was instrumental in persuading Central Government to select and fund the Yorkshire and the Humber as a region to develop a single approach to a shared Health and Social Care Digital Care Record. The project is now being co-ordinated and managed for the region through the Infomatics Lead at the Humber Foundation Trust.
- 4.11 A further recent success has been a joint Health/Council bid for NHS Digital

funding to support the development of integrated performance management approach across Health and Social Care.

4.12 **Customer Enablement Programme**

The Council's approach to *channel migration and digital inclusion* has been developed within the Customer Enablement Programme. This programme was approved by Cabinet in 2015 and has involved the procurement of a suite of tools co-ordinated around a new integrated Customer Relationship Management System and Citizen Account. A key requirement within the procurement of the new CRM and Citizen Account was that it support wider city integrated service delivery with a focus beyond the City Council. A key requirement in the procurement process 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, in particular Health. Over the last 12 months a great deal of work has been undertaken to prepare for the implementation of the new CRM and Citizen's Account. To support the systems and Master Data Management System has been implemented to ensure that all systems that the Council operates accurately identify individuals. The plan is that the CRM and Citizen's Account be rolled out from the Autumn.

- 4.13 *Digital inclusion* has been and continues to be 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.
- 4.14 The business case for investment in the Customer Enablement Programme was predicated upon an independent report commissioned from Price Waterhouse Coopers to identify the Benefits potentially realisable from investment in the programme. This provided the *Benefits Realisation* framework for the programme. This is currently being re-viewed by the internal Service Transformation Team.
- 4.15 The focus of the Customer Enablement Programme was upon the inter-relationship with citizens. To enable this to operate successfully however, it was necessary to ensure that the Council's back office systems were digitally enabled.
- 4.16 The ICT Review referenced in the introduction to this report identified deficiencies in the existing implementation of a number of core systems. In readiness for the implementation of the Customer Enablement Programme a number of projects have been progressed to address these deficiencies funded from the ICT Capital budget. The details of some of these projects are set out in the paragraphs that follow.
- 4.17 A key aim in Reviewing the existing infrastructure has been the establishment of an *open, service-oriented, city-wide IT architecture*. The procurement of the Customer Enablement Customer Account was on the basis that the Account be useable for other public services, not just those delivered by the Council. The same approach of delivering an open platform has informed the Review.

4.18 **Geographic Information System Replacement** (*Astun IShare*) –

While individual staff within Service Areas have used Geographic Information and used it to specific purposes, the potential for presenting that information on an open basis, shared with wider stakeholders and the public for reporting has not been until recently progressed. 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 which can be shared across the public sector. This enables partner organisations to feed data into the warehouse and for that data to be presented to the public accurately in real time. This facilitates reporting of information by staff, partners and the public on the basis of their location.

Integrating the platform with the Customer Relationship Management System and software systems operated by the Council to undertake key tasks provides the bedrock upon which to build a Smart City infrastructure.

For this reason a specific ICT project was initiated to ensure that the GIS Platform was integrated into systems for which Geographic Information is essential and to ensure that accurate information from partners could be captured in a form that supports public use.

For example, while integrating the platform with the Geographic location of health facilities provides some value, greater value can be delivered by adding which facilities are in use for weekend care, urgent treatment and walk in X Ray care. Providing information in a co-ordinated manner can help manage the demand for Health and Social Care pressures by encouraging users to access alternate channels of access to the hospitals, thus reducing pressure on Accident and Emergency.

4.19 **Traffic Regulation Mapping** (*Buchanan Computing ParkMap*)

In this manner, the opportunity has been taken to re-implement the existing ParkMap software on an *open* Cloud basis. The system has been used to capture city centre traffic regulation orders. Ensuring that information held on the system in relation to Traffic Regulation is current and accurate for the entire city, enables the presentation of reliable real time information to the public and stakeholders upon proposals for change, and the current system. This both facilitates inter-active consultation on proposed changes, and allows for communication of the position in the city to users. Vehicle manufacturers are presently developing systems within cars that allow for data to be exchanged with public data systems which enable the development of self-driven vehicles. Ensuring that the Council is able to share accurate current information provides the opportunity for the city to be considered for such initiatives.

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

The Council's public assets have until recently been largely stored as flat information on spreadsheets with fairly limited use of Geographic Information to

capture locational data. Review and re-implementation of the Confirm system on an *open* Cloud basis supported by the provision of hand held units to service gangs across Street Scene, Highways and Hull Culture and Leisure allows for real time reporting of issues and action upon such issues. For example, play equipment has been reported by HCAL staff by completion of a paper form and submitting it through service structures for resolution. Reporting information by hand held units in real time both enables awareness of issues that need to be addressed to all and recording of the resolution of those issues on a public format. Integrating this with the Customer Relationship Management System enables awareness across the public, the call centre and service areas of actions that are required and which are being taken. The project has now been significantly progressed and integrated with the GIS system to this end.

4.21 **City Waste Vehicle Management System Re-implementation** (*Bartek*)

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In similar manner the system for management of the Council's waste vehicle interactions has been re-implemented facilitating full integration with the Customer Relationship Management System and Geographical Information System.

4.22 **Traffic Management Data**

Pursuant to the decision of 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, and
- 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.

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

4.23 **Open Data**

The ICT Service are in the process of establishing an Open Data Platform using Open Source software CKAN to facilitate the publication of open data.

4.24 **Video Wall**

To enable the management of activity to be co-ordinated effectively based on the Geographic Information System it is essential that the hardware in place supports this. To this end a location was identified at the Stockholm Road depot to enable

viewing of the city infra-structure on an interactive large video wall. This is in implementation presently and will be in place in September.

- 4.25 The approach to *procurement* pursued in relation to the establishment of the Customer Enablement Programme, to pursue solutions on a city wide basis, is proposed to be pursued for the procurement of future components of Smart Digital Structure. That is to seek solutions that can be applied across the public services in the city. As the market is dynamic, it is proposed to establish a Dynamic Purchasing System that can adapt to changes, through which smart city requirements can be purchased by public services across the city in a consistent complementary form. Co-ordinating activity through the Place Based Board which includes the officer leads for public sector organisations operating in the city is the proposed approach to achieve this.

4.26 **Stakeholder Engagement**

The City benefits from the Centre for Digital Innovation (C4Di) which acts as a catalyst for the development of technical Industries in the city and provides support to incubate developing technological businesses. Through C4Di a Smart City Project Group has been established to explore the opportunities that exist to build on the city's strengths.

Engagement with key providers in the city has informed the developing strategy.

5. **Developing Smart Digital City Strategy**

- 5.1 The essential components of the the development of a Smart Digital City are connectivity and Data Management and Analysis.

5.2 **Connectivity**

- 5.3 The City is in the fortunate position of having a significant advantage in terms of all forms of connectivity.

- 5.4 Hull is the only city in the UK where Ultrafast broadband is rolled out as standard. 79% 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. This means that by March 2019 Ultrafast connectivity in Hull will rival connectivity in South Korea and Japan. For Businesses Broadband the access available provides up to 1Gps download speed and 250 Mbps for uploads. Beyond ultrafast connectivity Full Fibre energy use is significantly lower than copper, thus contributing to the City Plan aim to establish the city as a low energy city.

- 5.5 However, the fibre marketplace in Hull is not exclusive to KCom. The unique market place for Broadband has stimulated competition with local 1 Gbs fibre offers from local suppliers MS-3 and Pure Broadband (in partnership with CityFibre).

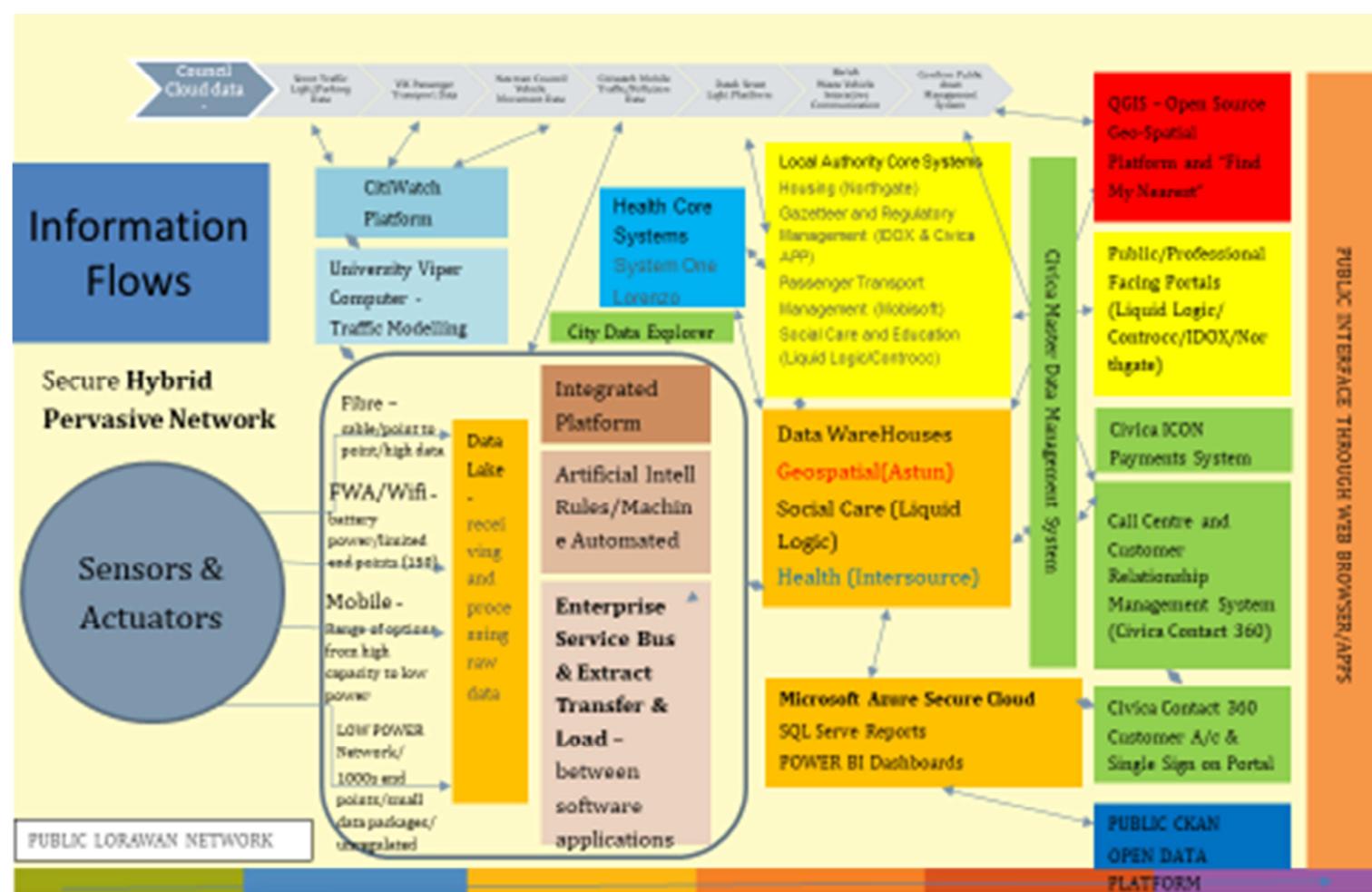
- 5.6 In addition connectivity to Ultrafast Fibre to Premises Broadband the market has given rise to the development of wireless competition, with local Companies

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.³

- 5.7 While historically Hull was not well connected in terms of Mobile Telephony, in the last two years mobile operators have invested heavily to provide good connectivity and an infrastructure that is ready to meet the challenge of 5G. Mobile providers are able to offer good coverage across the entire city for services which require high levels of data and Narrowband IOT (NB-IOT) for services which require only Low Power data.
- 5.8 For many Internet of Things Solutions 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. A LoraWan network allows communication through low energy use sensors. LoraWan sensors can send small packages of information to a LoraWan connection communication point repeatedly using the same battery for a period of 10 years. The city has a number of access points to an open platform for Low Power Wide Area Network (the Things Network). A challenge however, is that presently LoraWan is not regulated.
- 5.9 In 2015 Connexin won a tender for a concession contract from the Council to facilitate wireless connectivity across the city. 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. In 2017 the Company secured at £10m investment from Cisco through Digital Alpha Advisors to progress this agenda.⁴
- 5.10 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.
- 5.11 The position therefore is that by March 2019 complete access to all forms of connectivity will exist across the city. The Council has to date procured fibre and mobile network connectivity through YHPSN, the existing contracts expire in August 2019. Co-ordination of the future approach across the whole Public Sector is being progressed through the Humber ICT Leaders' Board. The developing opportunities provided through the connectivity accessible in the city provide a significant opportunity for the city to deliver a Smart City.
- 5.12 **Data Analytics**
- 5.13 A co-ordinated approach to data management and analysis on a city wide basis is being developed through the Place Based Board. The diagram which follows seeks to articulate data flows:

³ www.ofcom.org.uk/consultations-and-statements/category-1/wholesale-local-broadband-access-market-reviews-hull

⁴ www.ispreveiw.co.uk/index/php/2017/10/fixed-wireless-broadband-isp-connexin-boosted-10m-investment.html



- 5.14 Through the ICT Strategy the Council has focussed upon maintaining a Microsoft SQL Serve Database Infrastructure. Systems implemented by the Council on the internal server infrastructure have standardised reporting on SQL Serve Reporting tools.
- 5.15 Data held in relation to the city is held in “data warehouses”. The Astun Geographic Information System has a data warehouse for Street Scene information. Health Services in the city have developed Intersource Data Warehouses. Within the implementation of Liquid Logic Data Warehouses were established for Social Care and within the transition to the new Housing Management System there will be a requirement for the establishment for a data warehouse. Co-ordinated use of these data warehouses make it possible for effective analysis to take place.
- 5.16 Within the ICT Restructure a Data and Information Team has been established to manage data and to take forward reporting to Data Analytics across the Council. Microsoft’s Power BI data analytical engine complements the SQL Serve Database Infrastructure. An initial key task for the Team is to co-ordinate a move to the development of Dashboards using the Power BI engine. A dashboard exists for Children’s Social Care and a similar dashboard is now in development of Adults. KMPG were commissioned through the Place Based Board to develop an overarching Power BI Dashboard to support integrated working across the city.
- 5.17 Bringing together the approach to development of Smart Digital City into a single structure, it is proposed to adopt a strategy based upon the key themes which follow.
- 5.18 **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**
- 5.19 The range of ultrafast and fast and low data connectivity provision places Hull at the forefront of connectivity in the UK. Hull is a location capable of competing with anywhere in the world in terms of connectivity. Examples of the potential advantages that this provides include:
- 5.19.: Car manufacturers are presently developing vehicles which will rely upon communication with wireless access points. This enables real time vehicle communication upon driving conditions, advising vehicle drivers upon the optimal speeds to travel at to reduce congestion, where to park and alternate routes of travel. The infrastructure that exists in the city enables the value in this sort of technology to be realised
- 5.19.: 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.

5.20 The fact that the private sector has invested in establishing in the city the best digital connectivity that exists in the UK places the city at a significant advantage when developing a Smart City. It provides the infrastructure for developing that potential.

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

5.22 The Council has undertaken investment over recent years in the technology to facilitate improved public services. More recently the focus had been upon the development of a Customer Relationship Management System and Customer Account which are in progress through the Customer Enablement Programme.

However, over the last 18 months key contracts for the delivery of ICT services have been re-visited and re-negotiated to ensure that the back office systems are able to support delivery of a Digital Smart City Strategy for the city. In many areas the Council already had procured contracts in existence. However, until the last 18 months the investment that has been made has not been developed into a co-ordinated strategic approach supportive of the development of a digital smart city.

Investments the Council is able to benefit from on its Digital Smart City journey include:

5.23 **Customer Enablement Programme**

The Council's have invested in a suite of tools co-ordinated around a new integrated Customer Relationship Management System and Citizen Account with single sign-on so that citizens' are enabled to access information in relation to the range of interactions that they have with the Council and partner bodies.

5.24 **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, and
- Information Provision to the Public upon traffic conditions and car park occupancy

(i) **Optimal Traffic Light Management using Artificial intelligence**

The Council's Contract with Siemens includes licensed use of the Transport Research Laboratory's (TRL) SCOOT (Split Cycle and Offset Optimisation Technique) system. The system receives data from sensors at traffic lights across the entire traffic light network which monitor traffic flows. The data is fed into an on-line model, the output from which is used as an input to signal timing optimisers. These optimisers apply Artificial Intelligence to make a series of frequent small adjustments to signal timings to minimise the modelled vehicle

delays throughout the network. The system can be used to develop strategies to prioritise light changes for user groups, for example emergency vehicles or public transport.

(ii) Car Park Management

Sensors are used within Car Parks across the city to monitor vehicles entering and leaving the car parks to identify levels of occupancy. Information upon car park utilisation is then available to be published. At present publication is restricted to including signs positioned at entrance points to the city. The Council uses the system to enable the publication of information in relation its own larger car parks and a number of private car parks. The Council has capacity to deploy the system to more car parks.

(iii) Variable Message Signs (VMS)

This element of the system facilitates publication of the information received by the system. At present this is limited to signs located at entry points to the city, however, the data can be provided to the Council website or WebApps.

5.25 Traveline/Vix Multi Modal Data

All bus, travel and ferry timetable information is submitted to Traveline⁵, a not for profit partnership of transport companies, local authorities and passenger groups aimed at providing routes and times for all travel. There is a weekly run of data so that it is always up to date. The Bus Services Act 2017 enables the Government to require the publication of open data in relation to all services, timetables and routes.

The intention is that live running information and timetables be implemented by 2020⁶

The Council's existing sign supplier Vix already use the Traveline data to feed sign displays in place on a number of bus shelters. The contract is being re-procured to deliver improved display capacity.

However, the Bus Companies (Stagecoach and East Yorkshire) which serve the city have themselves developed their own Apps *Stagecoach Bus* and *EYMS Buses* to enable the public to see the time at which their next bus will be arriving and purchase tickets through their Apps.

5.26 Road Works Data Elgin Data Set

The Council, utility companies and major infrastructure companies (eg Network Rail) contribute data to a national database for England and Wales roadworks.org

⁵ <http://www.traveline.info/>

⁶ https://drive.google.com/file/d/10EfWta2QhGtJQ_9Vm5EALWEGtBkYl1Hw/view

hosted by Elgin. The Council transfers information to the database via its Pitney Bowes Confirm Public Asset Management System. The system has the capability to look up a 10 year archive of historic roadworks data and provide a live data feed of roadworks into the Council's systems. Facilitation of integration of the data into Council systems is underway.

5.27 CityLogik Data Platform

The city has subscribed to a live data service on travel on key routes into the city to help inform the development of the Parking Strategy, the management of key public sector infrastructure changes in the city and Highways Planning.

5.28 LED Street Lighting Platform

Within delivery of the Public Realm the Council procured a Smart City Street Lighting Datek Platform for the control and management of Street Lights. The focus was upon the city centre however, the capacity exist in the system to expand control of street lights outside the city centre.

5.29 Pitney Bowes Confirm Street Asset Management System

The Council has purchased a system for managing its street assets based upon their geographic location. The system facilitates plotting of all assets by Geographic location and in conjunction with a Geographic Information System or a Customer Relationship Management System can be used to report real time issues in relation to street assets and also to log remedial action taken in relation thereto. This system has been under used until recently. In Autumn 2017 the decision was taken to re-implement the system and capture geographically all assets in the city and expand its use to park staff. The system has been transferred to the Cloud, re-implemented, workflows developed to facilitate communication of issues and assets captured geographically integrated into the new Geographic Information System.

5.30 Bartec Waste Collection and Recycling 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.

Again the use of this system had not been optimal. In 2018 the system has been re-implemented and cab equipment installed to facilitate use of the system in conjunction with the Geographic Information System and Customer Relationship Management System.

5.31 Geographic Information System (GIS)

In 2018 the Council contracted with Astun Technology to provide an Open Source

GIS enabling the presentation of locational data in the QGIS open source format. The contractual arrangement allows for data sharing with other public bodies and the public at large. The GIS platform has been developed to capture public sector information and present it to the public in an easy to use form in a form that supports the delivery of public services.

For example “Find my nearest” functionality can help users to identify resources that they require. For example walk in X Ray facilities, chemists which provide treatment services, or in future which GP practice within the 5 groups in the city is open on a weekend. The intention is to make public the platform by the end of the Summer.

The platform links with the Confirm, Bartek and a wide range of other data sets the Council uses to facilitate reporting of issues and the provision of Geographically presented information to the public. Connection with the Customer Relationship Management System will enable in due course direct automated communication with members of the public.

5.32 **CCTV Camera Infrastructure**

The Council has set aside a capital sum to replace its existing 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 re-procuring the CCTV connectivity 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.

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

5.34 It will be apparent from the previous section that at the heart of developing a smart city is management of communal data for the benefit of citizens. A key aim is therefore to develop a structured approach to the management and publication of citywide data.

5.35 To that end existing contracts have been reviewed to enable 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. A platform to enable non-personal data to be published is in progress.

5.36 However, it is important that data held is organised and managed to enable a comprehensive understanding of the city. Individual data warehouses exist – for example in support of the Geographic Information System and the Liquid Logic system. However, a cross organisational data warehouse from which reports and dashboards can be developed upon a city wide basis is not in place.

5.37 Through the Place Based Board a piece of work has been commissioned to initiate the beginning of this process alongside the development of a Place Based Strategy. Complementing this work the ICT Service has commissioned a review upon the Council’s Data Warehouse needs and commenced the development of

structured reporting and dashboard arrangements using Power BI.

- 5.38 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.
- 5.39 **Theme 4: Establish a facilitative procurement environment in which digital technology industries can flourish**
- 5.40 This report proposes the establishment of a Dynamic Purchasing System to enable easier access for the purchase of the required elements that the Council will have for Smart City infrastructure to support major infrastructure change. Establishing such a framework provides a basis through which new requirements can be added and updated on a regular basis as smart city thinking progresses. It avoids the risk that equipment and software is bought piecemeal as a bi-product of capital projects which encompass smart city functionality.
- 5.41 In addition Cabinet is to receive a proposal to enable 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.
- 5.42 **Theme 5: Establish a digitally supportive environment for Hull business sectors to become digitally mature;**
- 5.43 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 spring board 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 boilers⁷ to Car Parking Apps to health products.⁸

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 in

⁷ <https://www.wearesauce.io/projects>

⁸ <https://moodbeam.co.uk/how-it-works>

partnership with KCom to provide 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.

Hull University have invested in the Viper High Performance Computer⁹ 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”¹⁰ 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.

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

5.45 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 ¹¹

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, University Technology College and the University with a focus on retaining people with the requisite skills to drive innovation within the city.

A Humber ICT Leaders’ Board has been established to take forward digital innovation across the Humber area between Health and local government. Emphasis has been placed on developing partnership working with the University and engaging the University in public sector initiatives.

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

⁹ <http://hpc.wordpress.hull.ac.uk/>

¹⁰ <http://jreckittlibrarytrust.co.uk/news/success-for-hull-libraries-makerspace-bid>

¹¹ Tech Nation: <https://technation.io/insights/report-2018/hull/>

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.

6. Options

- 6.1 All cities are seeking to establish their credentials as Smart Cities. In practice, as this report illustrates the key to being a Smart City is how the city uses its communication systems and publishes data and information. Intelligently managed and published information can promote the development of smart city functionality which help improve the quality of life for all.
- 6.2 The city can pride itself upon being the most connected city in the United Kingdom with current access to all forms of digital connectivity in a way that most other cities would aspire to achieve. The city is on a journey to realise the value in the potential that its assets provide. In the 18 months significant progress has been achieved with that journey and will be developed through a Digital Smart City Strategy.

7. Consultation

- 7.1 Consultation has taken place with internal Programme Boards, City Managers, the Council's Corporate Strategy Team, and Finance and Value for Money Overview and Scrutiny Commission upon the development of the Strategy. More widely there has been engagement with the Digital Sector in Hull and the University upon the approach to developing a strategy based upon the identified themes.

8. Comments of the Town Clerk (Monitoring Officer)

- 8.1 The Town Clerk is the author of this report. The proposals are informed by the need to ensure the existence of a comprehensive co-ordinated route to procure the changing requirements that the Council is likely to have to achieve the ambition of becoming a Smart Digital City.
- 8.2 A Dynamic Purchasing System facilitates access to a supply chain that can be updated on a regular basis as new requirements emerge. It is an approved procurement process within EU law identified within the 2015 Procurement Regulations. The nature of digital technology is that it is dynamic and ever changing. Purchasing an over-arching platform separately through the existing Cabinet decision, and enabling that platform to be supported through the purchase of equipment and services from providers who are able to offer complementary solutions is an appropriate route to ensure compliance with Procurement law.

9. Comments of the Section 151 Officer

9.1 The s151 Officer welcomes the report and supports the proposed strategy. The proposals do not require additional funding beyond that included within the existing MTFP and the report highlights the imaginative and positive developments delivered to date within approved funding allocations.

10. Comments of HR City Manager and compliance with the Equality Duty

10.1 There are no direct Human Resources implications arising from this report.

11. Comments of Overview and Scrutiny

11.1 A briefing upon the themes within this report was received by the Finance and Value for Money Overview and Scrutiny Commission at its meeting on 21 July 2018. This report will be presented to the Commission at its meeting on 21 September 2018.

12. Comments of the Portfolio Holder for Corporate Services

12.1 I look forward to receiving the comments of Scrutiny and my Cabinet Colleagues on the proposed Themes within the draft strategy to help me inform my final views.

Ian Anderson
Town Clerk

Contact Officer: **Ian Anderson** Telephone No. **613500**

Officer Interests: None

Background Documents: -
ICT Strategy