

Cllr Introduction to... Smart Places

Resources Pack

Purpose of this Pack

- On 28th January 2021 the LGA ran a session speakers on the topic of Smart Places
- This pack provides a range of resources relating to that event to help both those who attended at the time and those who didn't
- It contains
 - Links to videos of the speaker sessions
 - Notes from the day
 - Other relevant resources for the topic.

The scope of this issue – for the council

In recent years, whilst most councils have been preoccupied with handling austerity and other local challenges, there have been real advances in the state of the art of so called “smart” technological devices, connected via the internet (sometimes referred to as “the Internet of Things”).

These devices range from the prosaic – smart public bins which can tell when their contents contain lost of sugar and so may attract wasp swarms, to the very personal – unobtrusive sensors which an older person can have in their home and which can alert family members in the event of potential difficulties. Some of these technologies address issues of great significance for universal services such as making parking easier as so reducing congestion, giving information to help people to make public transport journeys or more active travel. They can also highlight issue such as air quality. Many of these technologies are based on things that people are already bringing into their homes, eg Alexa-enabled devices, smart phones.

Thinking about these possibilities reveals that whilst these technologies can be implemented stand-alone there is tremendous power in looking to implement these things together, in a coordinated way across a council, so that for example smart street lighting (that knows to shine brighter if there is a reported incident) can also carry air quality monitors, and masts for 5G connectivity

The scope of this issue – for the place

Smart technologies are transforming far more than the possibilities for council services.

Across citizens' lives as consumers, activists, volunteers smart technologies are steadily transforming how people live and work.

For businesses, the internet connectivity in a place becomes as important as ease of transport, and the potential to innovate may depend upon infrastructure such as 5G which the council has a vital role in facilitating.

Councils can play a vital role in connectivity as “anchor tenants” of investment in faster fibre services.

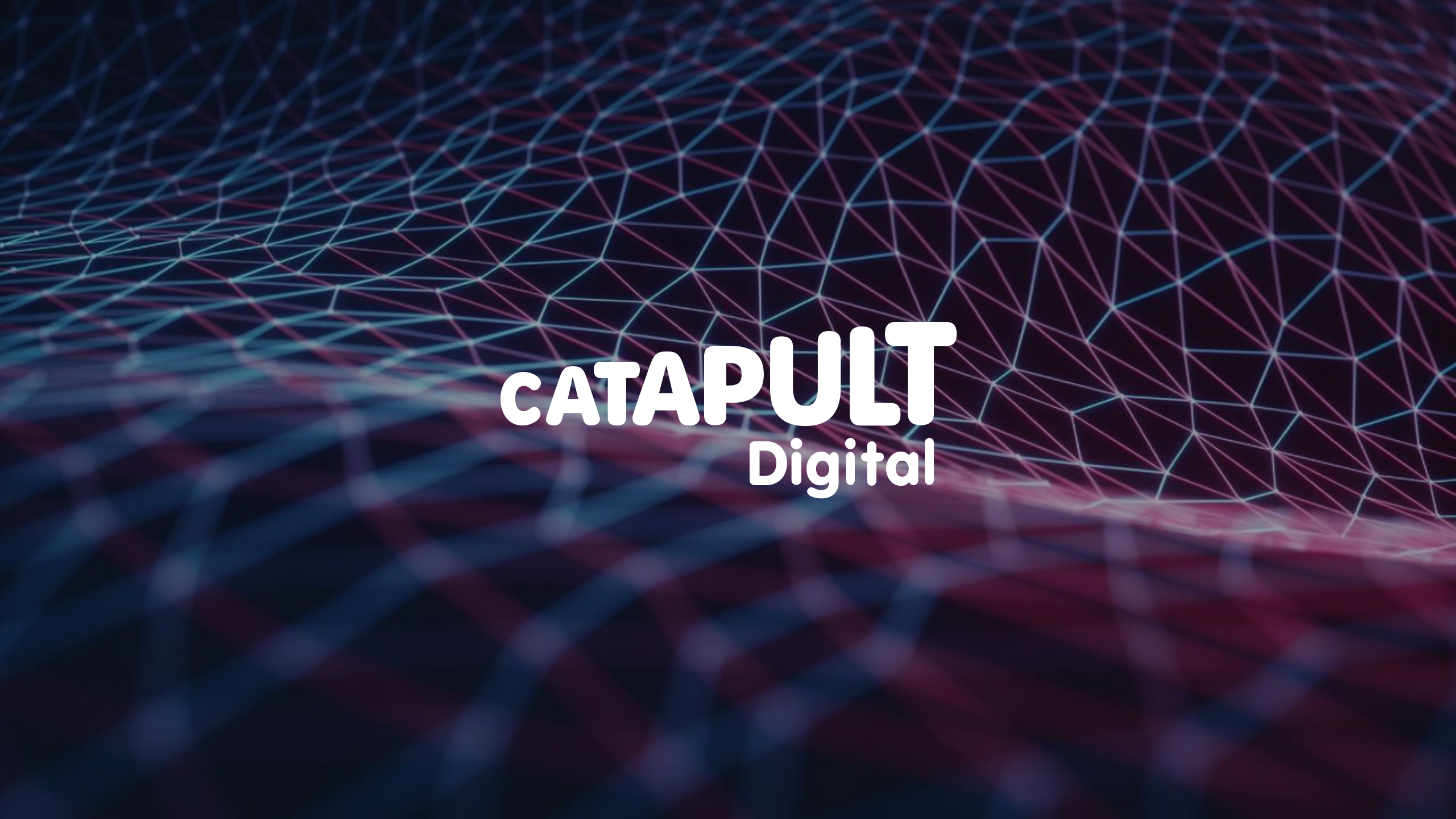
Because of work done by a growing number of innovator councils, these technologies are increasingly proven, and lower risk to implement. As such, it's a good time for each council to review its approach towards these technologies.

In our session, and in this resource pack, we hear from an organisation established to promote successful digital development in the UK – The Digital Catapult, and from a councillor who is leading this thinking in one of the most advanced parts of the UK – Sunderland.

Introduction to Smart Places

[John Pattinson](#) and [Rukmini Prasad](#) from the [Digital Catapult](#) gave an introduction to the technological possibilities.

This is the [video of the Digital Catapult talk](#), and the slides they used follow in this pack.



CATAPULT
Digital



Digital Catapult Introduction to Smart Places

John Pattinson & Rukmini Prasad

28/1/21

Who is Digital Catapult ?

Digital Catapult accelerates the early adoption of advanced digital technologies.

We focus on 4 key digital technologies

Immersive

Virtual Reality,
Augmented Reality,
mixed reality
and haptics



“The Immersive ecosystem is conservatively estimated to be £152bn by 2025”

Strictly Confidential

Future Networks

5G,
IoT and
Low Powered Wide
Area Networks
(LPWAN)



“IoT will have a \$6.2tr impact on the global economy by 2025”

Artificial Intelligence

AI and
Machine Learning



“AI has the potential to deliver additional economic activity of ~\$13tr by 2030”

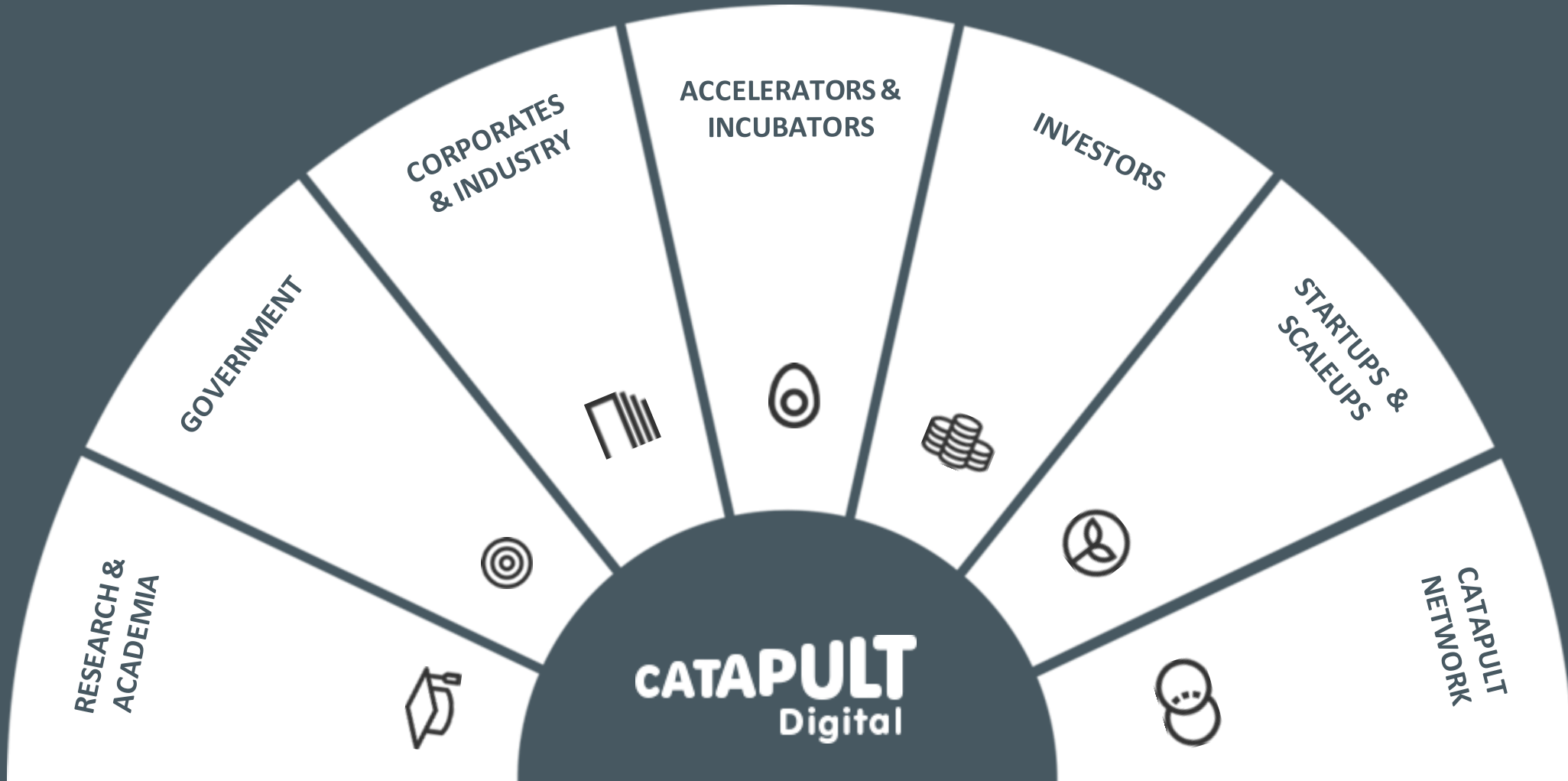
Future Focus

Distributed Ledger
Technology (DLT)
and blockchain



“Smart Ledger tech could boost world trade in goods by at least \$35bn per year”

Digital Catapult occupies a unique position in the economic landscape of the UK



Digital Catapult success story relies on unique capabilities.

**Digital Catapult is
neutral and
technology agnostic**

**Digital Catapult is an
expert in accelerating
tech adoption.**

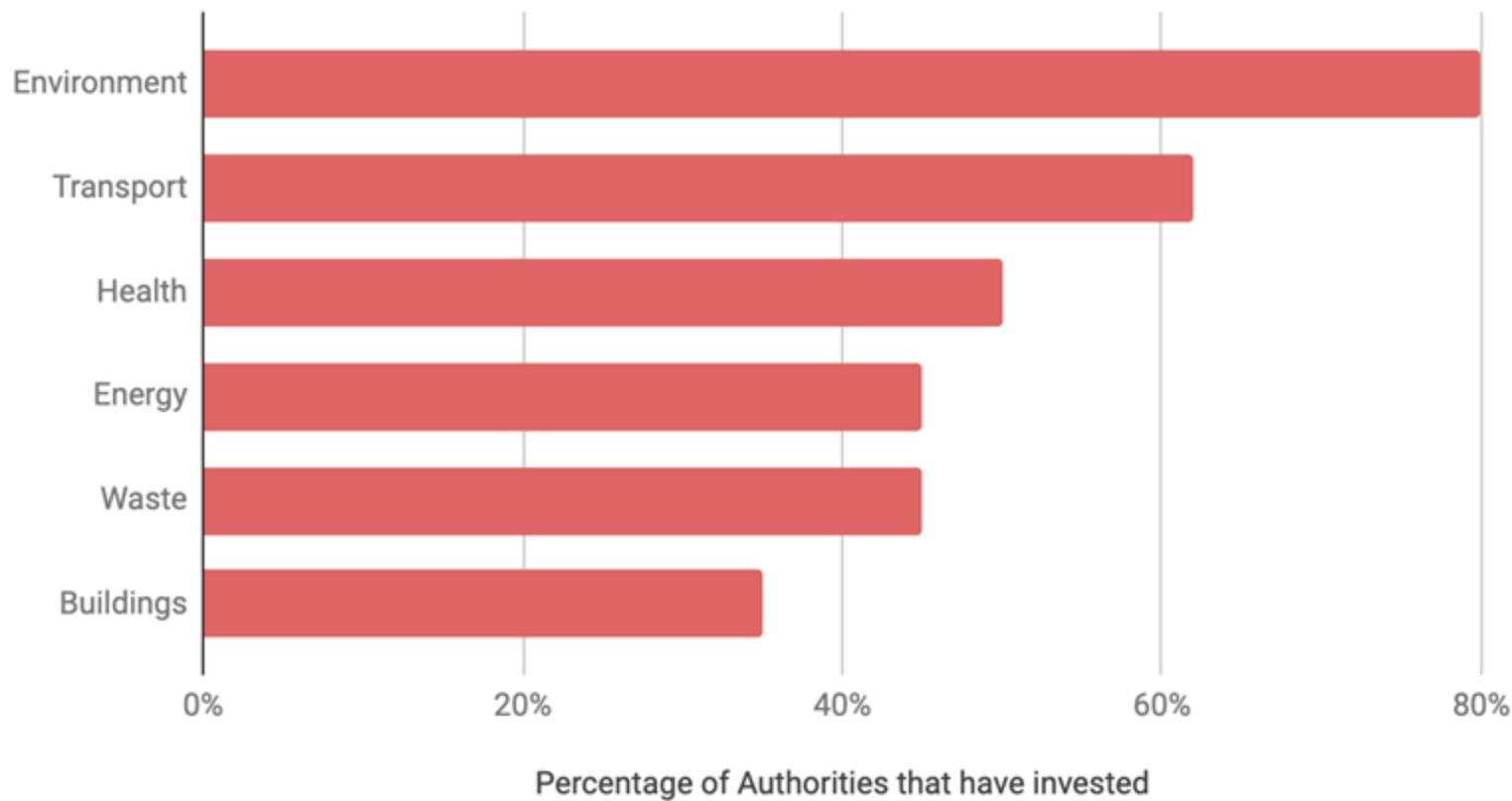
**Digital Catapult
provides access to tech
facilities and tech
experts
for the innovators.**

Exploring smart places

Current context

A blurred, low-angle view of the same network structure seen in the top header, with glowing blue and red lines and nodes against a dark background.

Smart places investment within local authorities



This graph highlights the most common areas of investment in local authorities currently across 'smart places' use cases.

Local authority current smart places landscape

Common use cases for councils include some of the following:



Social care



Waste



Street lighting



Smart



Fleet management

Innovative technology to support local authorities during the COVID-19 crisis

Example use cases to support Local Authorities through the use of innovative new technology



Social distancing



Crowd



Air quality



Traffic



Medication delivery

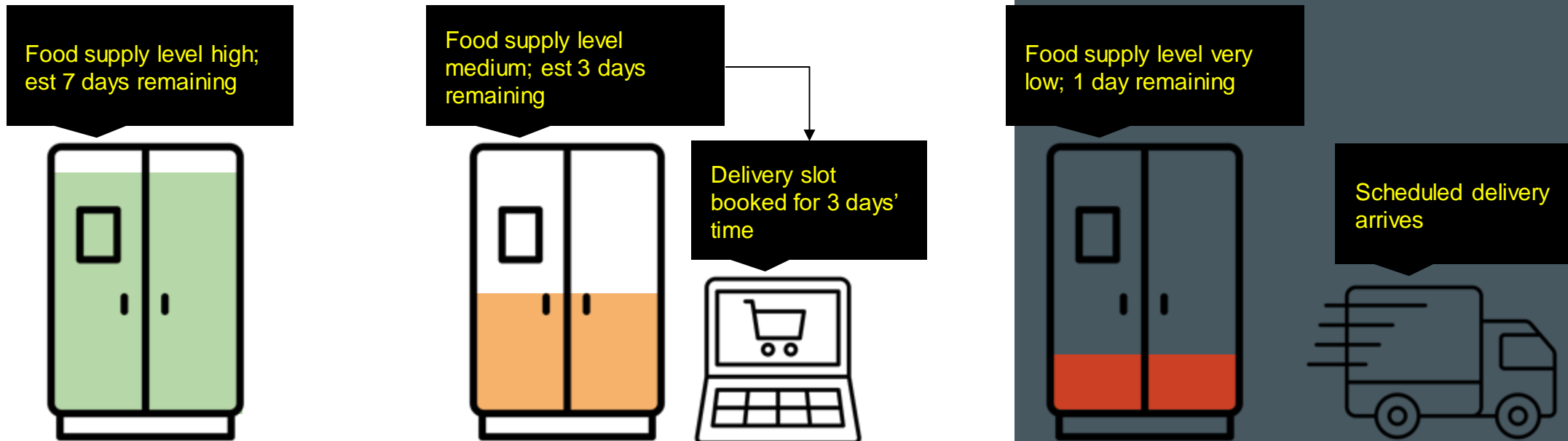


City

Use cases - examples

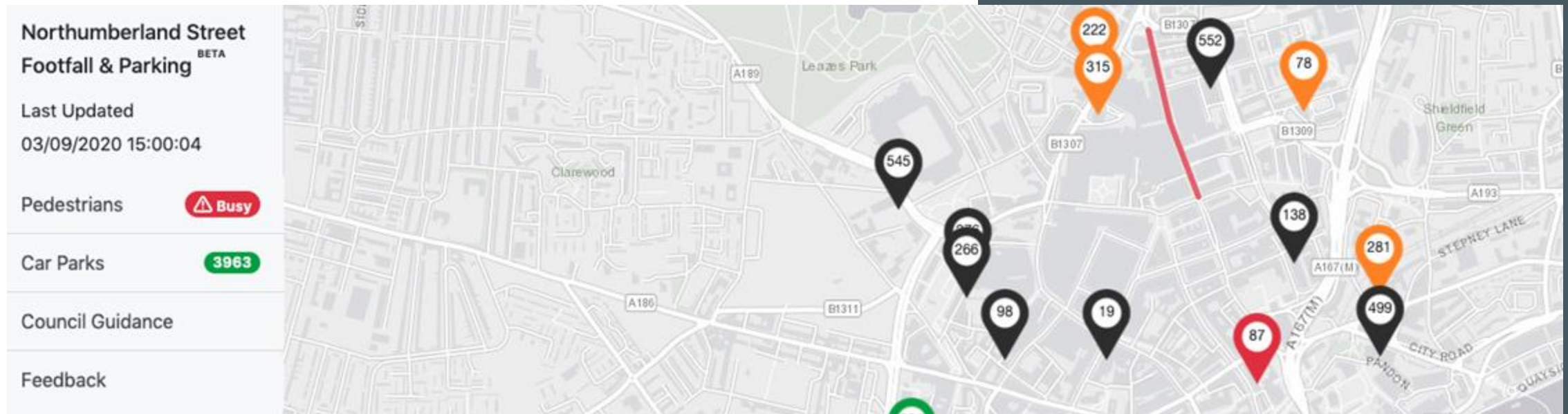
Innovative technology to support local authorities during COVID-19

Concept: How might councils use smart technology to manage the delivery of supplies



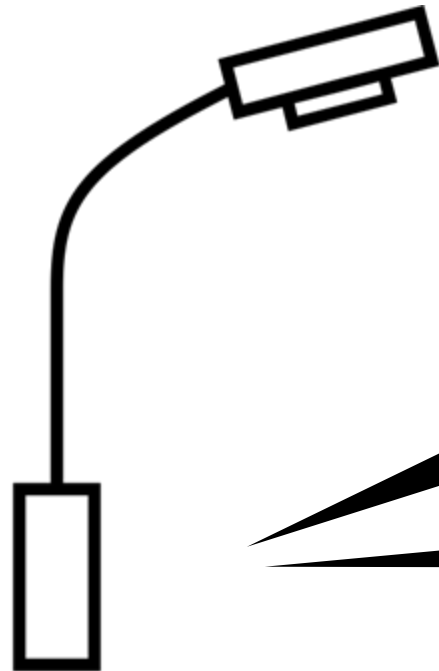
Innovative technology to support local authorities during COVID-19

Case Study: Newcastle - using computer vision to track footfall and inform residents a



Innovative technology to support local authorities during COVID-19

Concept: How might councils use smart technology to facilitate and understand the impact of pavement widening schemes to facilitate social distancing?



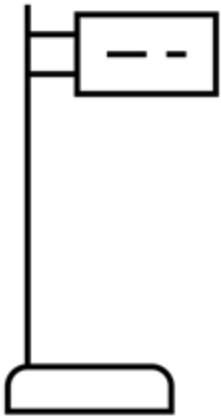
Busiest times for visitors in the last 2 weeks were 11-3pm and 6-10pm

10% more visitors on average during pavement widening schemes

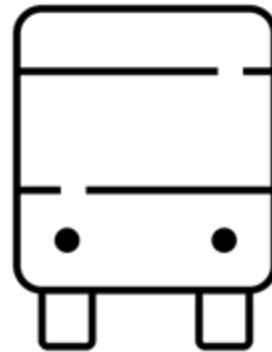
Innovative technology to support local authorities during COVID-19

Concept: How might councils use smart technology to ensure that as people return to distancing and understand busyness of public transport systems?

Total 10 people waiting at bus stop.
Estimate 3 people about to board 40A

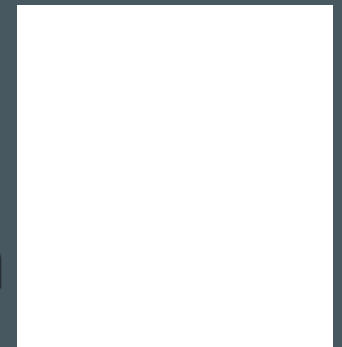


Currently 32 passengers.
3 boarders will bring total passenger count to 35, very difficult to maintain 2m distancing



Distancing likely to be very difficult on arriving 40A.

Suggested alternatives:



Taking this forward..

IoT4LA - A Digital Catapult programme to support local authorities in adopting smart technology

Summary - IoT4LA

Internet of Things (or IoT) is about connecting devices in the physical world to the digital so that we can track, monitor and manage them remotely and more efficiently.

The IoT4LA is a programme run by the Digital Catapult which enables Local Authorities and supporting organisations to benefit from Internet of Things (IoT) adoption in their region and to access deep technical expertise through a challenge-led approach.

The programme will enable Local Authorities to:

- Explore the opportunities offered by advanced technologies
- Tackle real challenges that cohort members will nominate
- De-risk investment and deployment costs
- Enhancing collaboration with innovator and start-up communities in your region and nationally

The IoT4LA Programme

The IoT4LA Programme has been developed by Digital Catapult to support Local Authorities in successfully deploying advanced digital technologies and IoT in order to solve challenges faced by these authorities.

The Programme will run as follows:

- Digital Catapult will support Local Authority attendees in shaping a challenge and understanding salient points of tension faced by the region.
- Following challenge scoping, Digital Catapult will run an open-call to the start-up and innovator community to find those who are best placed to solve this challenge.
- Through a rigorous down-selection process run jointly by Digital Catapult and the Local Authority, a successful innovator will be selected who will progress to building a solution to solve the challenge.
- Digital Catapult will work closely with the innovator to support in the technical deployment of the solution on the ground in the Local Authority and ensure that all the needs of the challenge set are met.
- The Programme will culminate in a showcase event hosted Digital Catapult

The IoT4LA programme - Timeline

IoT technology introduction & challenge scoping 4 weeks

- Educational workshop around IoT and challenge definition for LAs
- LA: Submit challenges/topic areas for consideration

Kick off Event and Discovery Day 2 weeks

- Startups meet with LAs to better understand their challenges
- LA: Attend the event and spend time with start-ups at relevant facilities, showing them the problems, working site etc.

Challenge definition phase



Challenge resolution phase

Open Call & Application review 10 weeks

- Reach out to startups and innovators
- Evaluation of quality of applications
- LA: Work collaboratively to shortlist/downselect start-ups who answer open call

Deployment 16 weeks

- Successful
- Technical s
implementa
- LA: Be on h
start-ups in
- LA: Engage
period and

-
-
-
-

The total cost for this programme is £35,000.00 plus VAT

Phase	Stage	Outcome
1	IoT technology introduction & challenge scoping	<ul style="list-style-type: none"> Local Authorities fully informed about IoT and its impact. Challenge is fully scoped
2	Open Call & application review	<ul style="list-style-type: none"> Open Call for challenges is run and applications from startups are submitted and reviewed by Digital Catapult and Local Authorities.
3	Kick off Event and Discovery Day	<ul style="list-style-type: none"> Startups are fully informed on the challenge and learn more about the region and issues faced Startups visit region and challenge spots
4	Deployment	<ul style="list-style-type: none"> Successful startup is selected and deploys solution
5	Show case and impact assessment	<ul style="list-style-type: none"> Impact assessment is undertaken to ensure key KPIs for deployment are met Showcase event to present solutions and share learnings

- We will charge VAT on these fees
- The programme will begin in 2021
- This proposal is valid for 30 days

Parking in designated bays for taxis and permit holders

In Watford, 6,500 resident parking permits & 18,000 visitor permits are issued every year. Additionally, 500,000 taxi journeys are taken annually. This is all managed by 15 civil enforcement officers (CEOs).

In early 2018 Watford Borough Council set out to find a way of obtaining reports on unauthorised use of resident parking and taxi bays and the real-time status of parking spaces and taxi rank queues. The solution had to meet specific criteria - be simple to deploy and integrate with existing enforcement systems.

Solution

Winning technology solution provider, IoT Solutions Group, worked closely with Watford Council to disparate data sets were brought together to provide CEOs the information about not only if a parking spot was full or vacant, but whether the vehicle there was parked illegally.

The battery powered parking sensors use LPWAN to send information back to a centralised software dashboard and provide alerts to CEOs on infringements. The system integrates data from RingGo with visitor permit information.



Outcome

- The project promises to deliver significant financial / efficiency benefits by transforming the enforcement approach, as CEOs will have information to target where they operate based on a knowledge of potential contraventions.
- Additionally, through the provision of information to those driving in Watford about the availability of vacant spaces, this is expected to deliver a number of social benefits:
 - less wasted time for drivers looking for spaces
 - reduced congestion and emissions
 - economic benefits through easier access to parking in small High Streets
 - potentially reduced parking contraventions, due to the more efficient enforcement model being a deterrent.

Smart street lighting and air pollution

South Kesteven District Council (SKDC) want to create a network of intelligent street lights to save cost (i.e. light up when needed rather than on at all times) and in turn, improve the experience for citizens. SKDC also want to track pollution levels across the region at different points of the day as well as count the number of people and cars on the streets. SKDC has an ambition to reduce its carbon footprint by 30% before 2030.

Solution

Winning technology solution provider, ARBNCO worked with SKDC to select twelve street light heads across different parts of the region - four on a public footpath, four in a bus station and four in a car park.

These street lights were fitted with light sensors, integrated air quality sensors and video monitoring; all lights are fitted with timing and dimming controls to reduce energy consumption overnight. Furthermore, dimming can be controlled based on motion-detection via in-built cameras. Data collected by the lights is streamed in real time to a control dashboard allowing the Council to make data-led decisions and interventions.



arbnco

Outcome

- At night, the street lights were reduced from 70W to 5W and brightened again when they detect movement.
- This led to a saving of 56% on energy, cost and carbon since implementing the arbnco solution.
- They are also able to simulate natural daylight with a Colour Rendering Index (CRI) of 95, bringing a new level of safety to drivers, cyclists and pedestrians.
- SKDC able to track air pollution e.g. levels of So₂, No₂, and make planning and transport decisions based on this.

Impact monitoring of construction work in cities

Over the next 5-10 years, Croydon town centre is undergoing a massive £5.25bn regeneration programme. The increase in construction sites due to the regeneration is expected to have a negative impact on air pollution in the town centre. In particular, Croydon would like to understand how air pollution from construction sites varies across the different stages of construction – from the initial demolition right through to the final building work.

Solution

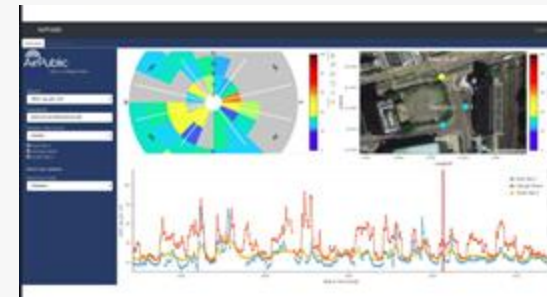
Winning technology solution provider, AirPublic, worked closely with Croydon Council to deploy air quality sensors across a number of key construction sites across Croydon town centre.

Using AirPublic low-cost IoT air pollution monitors connected to the LoRa network, AirPublic can produce much more granular data and give insights to inform decision making. Local authority officers are also connected to the AirPublic dashboard, through which they are able to access and manipulate the data themselves.



Outcome

- Data has shown that pollution outside the hoardings of one site is regularly lower than monitoring inside the hoardings. This appears to indicate that this mitigation method is effective in protecting the public from some of the construction site emissions.
- Other insights are set to support the enforcement of the sustainable construction measures.
- An alerts system for when levels exceed acceptable levels of pollution is now being iterated and deployed across the Council



Q&A

Q	A
<p>Is there an effective cost-benefit analysis/measure/study that has been done to prove the efficiency savings from the investments? Capital investment?</p>	<p>JP: At the start of the programme, we start a challenge training exercise. First think about what the key challenges and strategic objectives are. Then, think about some solutions to overcome these challenges and how to have a clear return of investments. This really allows you to justify the case for investment.</p>
<p>What sources do people use for the capital investment?</p>	<p>JP: It varies depending on the council, we speak to teams, it may be a specific innovation team or transport teams and hubs.</p>
<p>Is there funding that the government can give to local authorities that can be put towards implementing smart places technology?</p>	<p>JP: Various funds available. Start to use a programme like this to show that you are innovating in the specific area. This can be proof that this concept can deliver value and it will be easier to apply for funds. However, Digital Catapult are happy to arrange meetings or workshops to create a proposal for funding.</p>
<p>Will there be an app for smart parking as people approach towns? How can all of these apps get to the people that need to know about it?</p>	<p>JP: One is mobility hubs, helping people to understand and think about how they travel and the impact it has on the environment.</p> <p>Also, smart parking, helping people to understand where people can park. There are great SME's in the UK that are developing solutions. However, the key is trying to draw together all this data that is already available to councils. Digital Catapult works with councils to see how and create a road map on how this data can be used to benefit the local people.</p>
<p>How would councillors sell this to the colleagues, officers and the community?</p>	<p>JP: Matching them to real challenges that we all face in our towns and cities. Councillors need to help and present information to change behaviour to thinking in a more sustainable way that will improve and optimise services. Digital Catapult are keen to help councils to understand and identify these challenges</p>
<p>Do you have any case studies on care homes or housing associations that relates to the Internet of Things?</p>	<p>RP: We will share this in the resources pack. But one example is giving care home residents a pendant with a sensor that sends a direct alert to a carer if a resident has fallen. Another example is using technology to look at medication and making sure people have access to the medication and that its stored in the correct way.</p>

Case Study: Sunderland City Council

Cllr Paul Stewart, Deputy Leader, supported by his Assistant Director of Smart Cities Liz St Louis, gave an overview of the work that Sunderland have been doing to promote successful manufacturing innovation in their city, how they are improving connectivity for everyone, and how they are using smart devices to improve services across the council.

This is a [video of Councillor Stewart's talk](#). The slides he used follow in this pack.



SUNDERLAND
oursmartcity

Councillor Paul Stewart
Deputy Leader
Sunderland City Council



**A SUPER-CONNECTED
CITY WHERE PEOPLE
AND BUSINESSES THRIVE**


Sunderland
City Council

Sunderland, Our Smart City - Background and Context

- Our City Plan – By 2030 Sunderland will be an connected, international city with opportunities for all
- Digitally connecting people and places is vital to deliver the aspirations of the city plan under of three key themes of Dynamic City, Healthy City and Vibrant City
- Next generation fibre and mobile infrastructure underpins the connectivity required so we can deliver a whole range of benefits for Sunderland residents, businesses and visitors
- Our Smart City is a city wide partnership involving the Health, the Education and the Business Sectors and has the full support of Cabinet
- The partnership is already starting to deliver significant improvements to health, care, education and enterprise
- Importantly this is about delivering social and economic good – leaving no-one and nowhere behind



**NO ONE AND
NOWHERE LEFT
BEHIND**

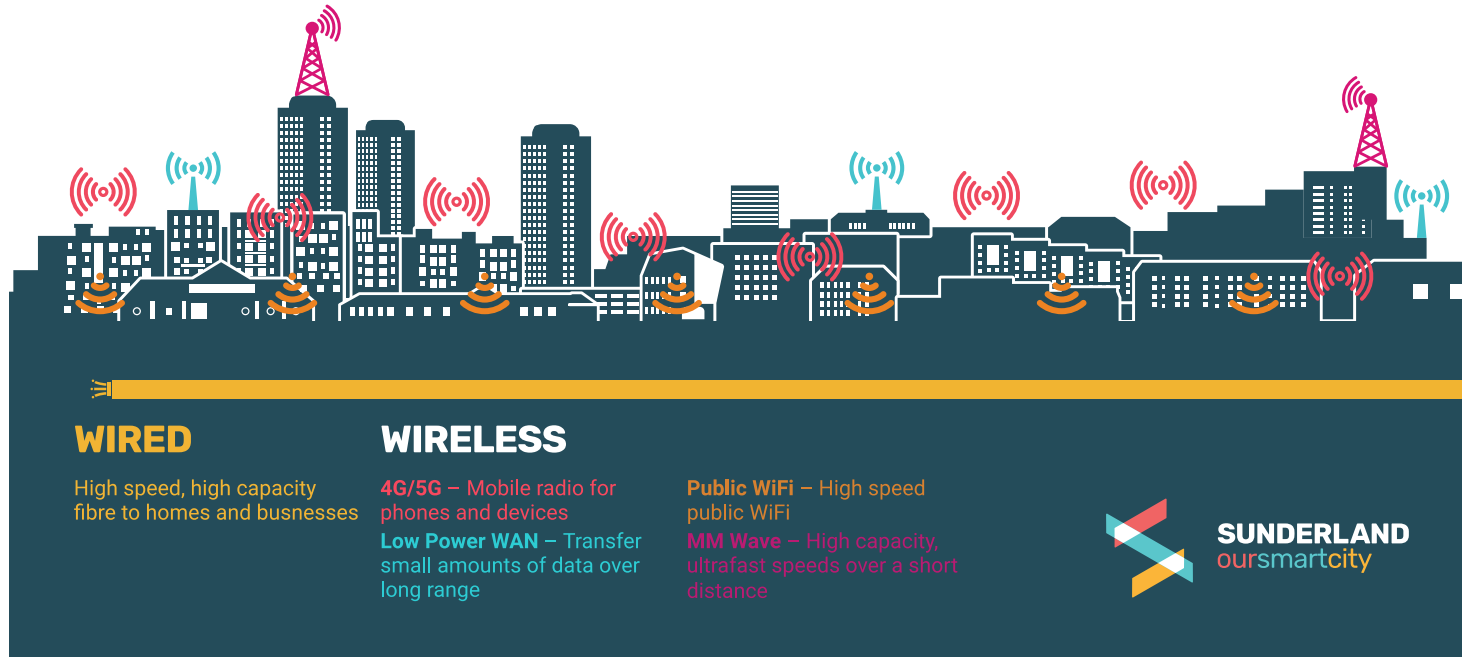
Smart City Developments - Connectivity

- 5G Ready Communications Ring launched Dec 2019 – delivering free, ultrafast wi-fi to a number of city centre locations;
 - delivering a significant uplift in connectivity at Hudson Road Primary school – has opened up a world of opportunity for the school and a free parental wi-fi service
 - delivering free wi-fi into three of the Gentoo tower block community rooms
 - delivering free wi-fi into a number of outdoor spaces, parks, the seafront, the High St etc.

- Successful 5G Create bid to DCMS in July 2020 attracted over £4.8m to Sunderland; looking at 5G's ability to boost productivity at the Nissan plant and supply chain (employing of 30,000 people locally)
- Successful MHCLG, Getting Building Fund in Aug 2020 attracted £4.5m to Sunderland to implement 5G in the City Centre and Riverside alongside a city-wide Low Powered Network to support the Internet of Things

DIFFERENT LAYERS OF CONNECTIVITY

Providing ubiquitous connectivity, wired via fibre in the ground and wireless across the airwaves

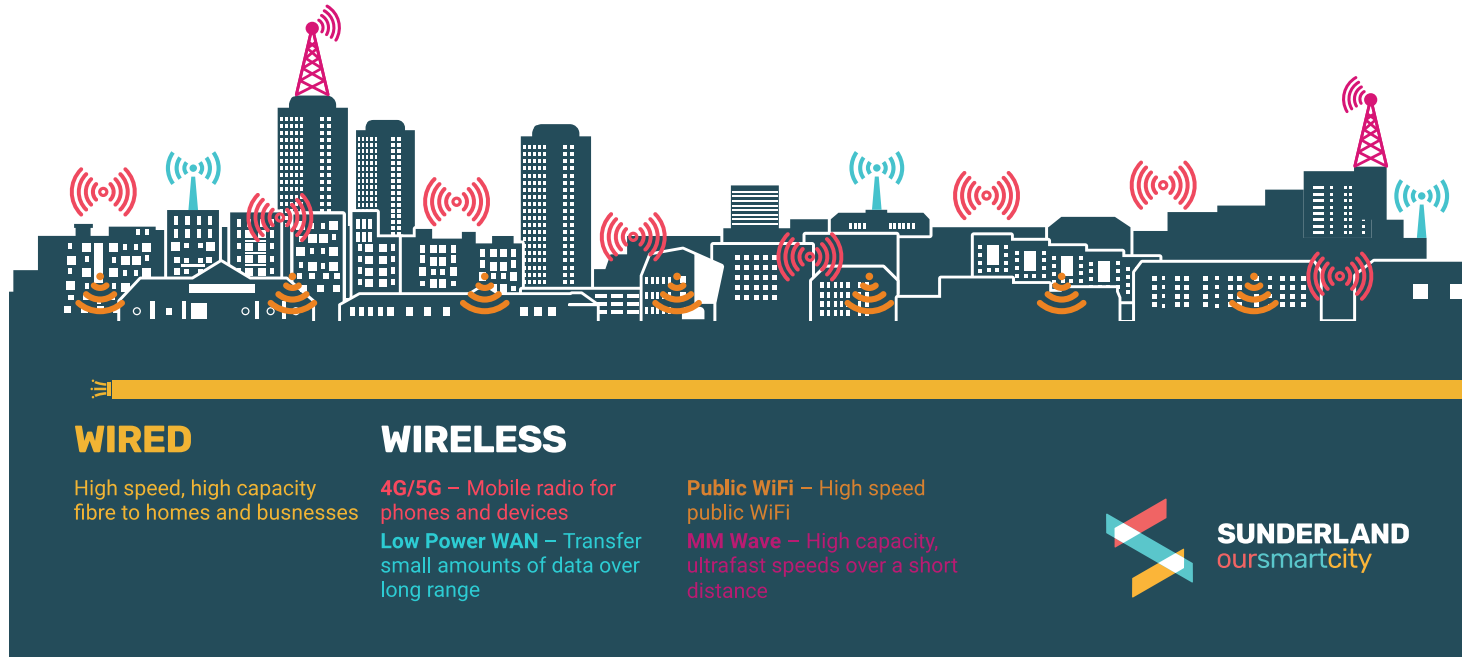


Smart City Developments - Connectivity

- Award of a £2.9m contract to CityFibre in November 2020 as an anchor tenant to upgrade the Council's network – will provide a significant uplift in connectivity for several schools, community settings and Council buildings
- This award led to CityFibre investing over 62m in the city providing gigabit-capable full fibre connectivity to over 90% of premises – significant social value for the city;
 - Creation of 90fte jobs across the life of the contract for local people
 - Creation of 24 apprentices
 - Commitment to work with NEET and long-term unemployed residents
 - £4 million spend to local supplies (£2.5 million to businesses with less than 250 employees)
 - Will bring competition and a choice of Service Providers – our aim is to provide affordable connectivity for our residents

DIFFERENT LAYERS OF CONNECTIVITY

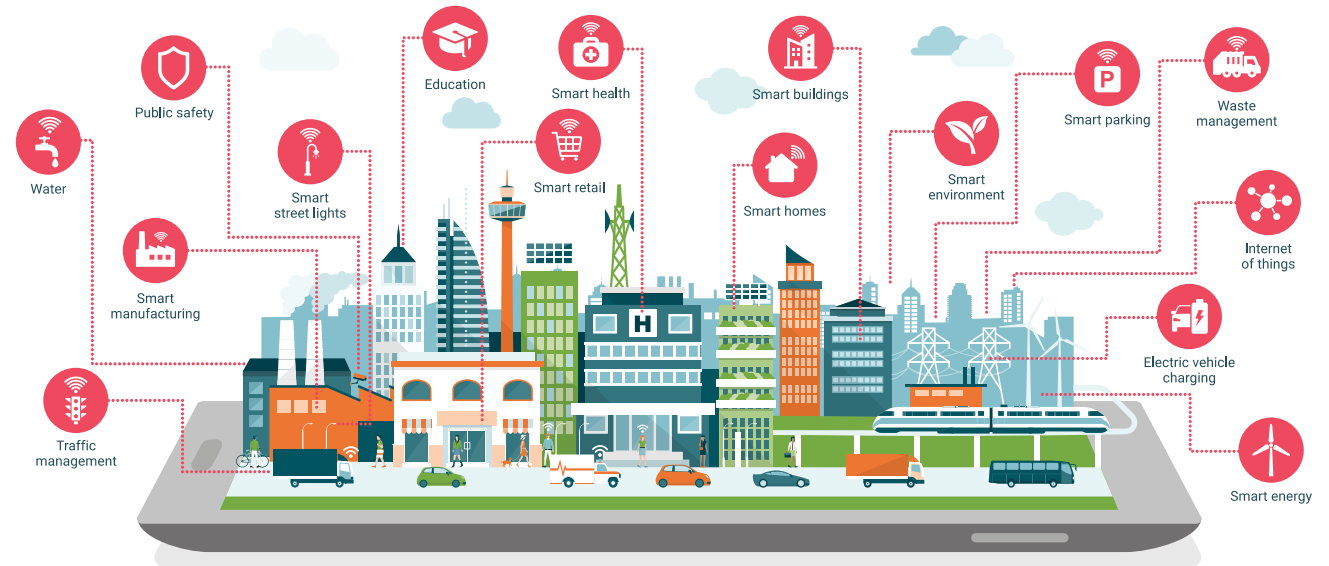
Providing ubiquitous connectivity, wired via fibre in the ground and wireless across the airwaves



Smart City Developments – Benefits for Residents

Delivering a range of initiatives to make a transformational difference to the lives of the people and businesses of Sunderland;

- Assistive Technologies – now deployed to over 650 homes across the city helping to keep people safe in their own homes, supported by an app that allows families, carers and social care professionals to monitor wellbeing
- Smart video sensor devices monitoring vehicle, cycle and pedestrian flows for key routes in the city enabling real time interventions and informing future initiatives and urban planning
- Smart sensors in waste bins are enabling more effective cleansing routes
- Working with Digital Catapult to explore local and regional challenge-led opportunities, initially in the areas of Transport and Carbon Neutral
- New Pedestrian Foot Bridge – showcasing 5G for informational, educational and tourism experiences



Smart City Developments – Education, Skills and Enterprise

Education, Enterprise and Skills working group – driving forward significant opportunities working with Sunderland College, Sunderland University and Sunderland Software City;

- Working with schools and community groups that support young people to raise awareness of the wide range of digital careers and how to access them
- Working with the College and University to further embed a range of digital skills and qualifications within the curriculum
- Looking to establish an acceleration programme and localised challenge fund to encourage 5G-led business creation, innovation and growth
- Working with partners to understand how best to harness the opportunities afforded by next generation connectivity to support our collective and individual digital ambitions



Smart City Developments – Next Steps

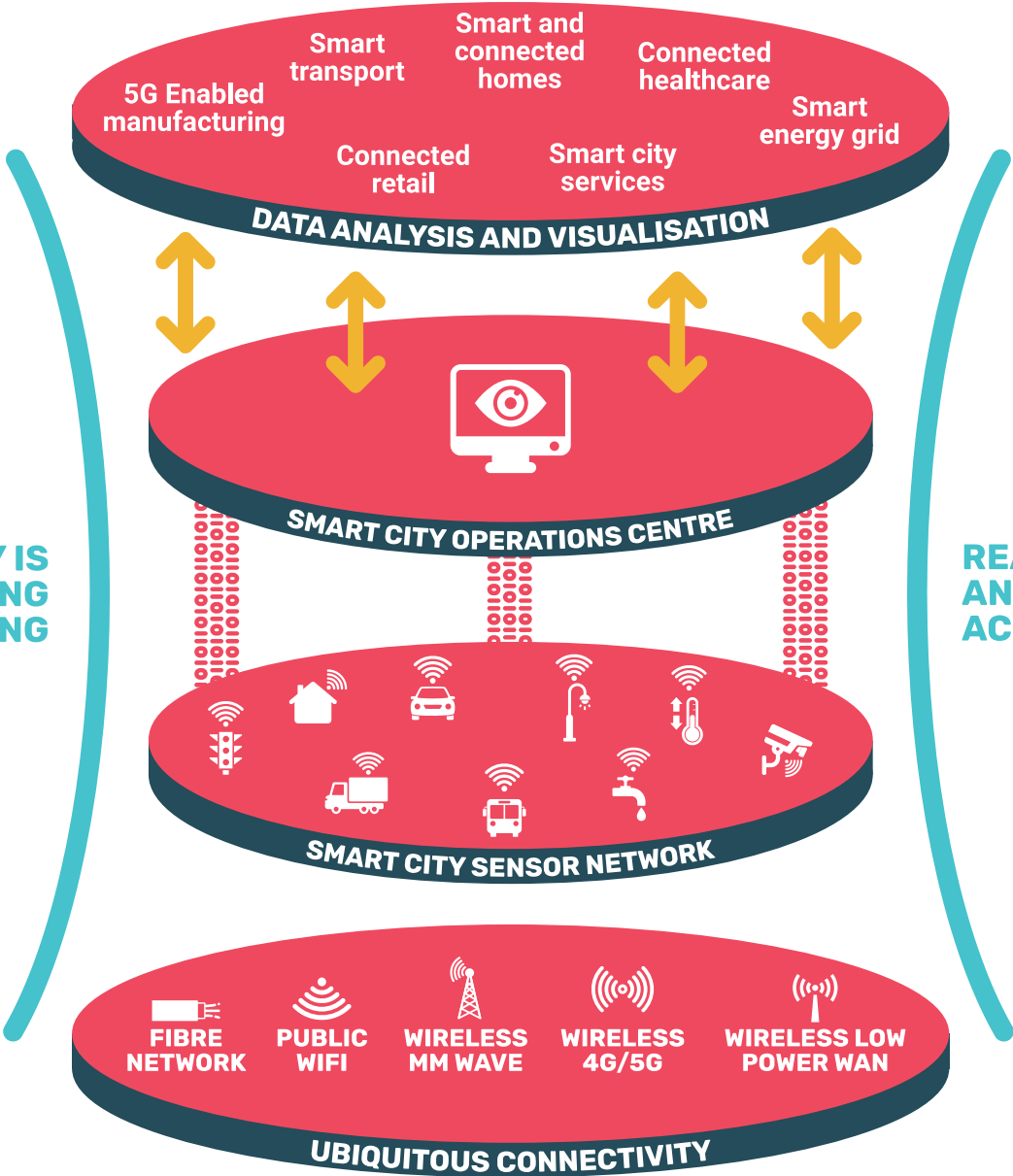
Search underway for a '5G Neutral Host Joint Venture Partner' - 20 year partnership to deliver 5G across Sunderland

- Initial ask is the MHCLG bid - to deliver a city-wide Internet of Things network and 5G in the City Centre and Riverside Sunderland by March 2022
- Smart District / Smart Campus – progressing opportunities; Smart Transport/Parking/Living/Working etc.
- Develop a Smart City Technology Platform – removing the barriers to the creation of new technology ideas and ensuring the Smart City Platform is sustainable and data is accessible
- Open Data Portal – evidencing challenges and opportunities/new business ideas
- A new Culture House for the city – will accommodate an advanced analytics suite



SUNDERLAND OUR SMART CITY MODEL

HOW THE CITY IS FUNCTIONING AND BREATHING



REAL TIME CONTROL AND ANALYTICS ACROSS THE CITY



SUNDERLAND
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**A SUPER-CONNECTED
CITY WHERE PEOPLE
AND BUSINESSES THRIVE**


Sunderland
City Council

Q&A

Q	A
<p>How long have you been working on this? And what was the first step on this journey?</p>	<p>PS: 18 months in relation to planning. We welcomed a new Chief Executive into the council, and we had clear vision and part of that is digital connectivity.</p>
<p>Did you have very much opposition to the 5G installation on health grounds? And how did you mitigate these objections with rational explanations?</p>	<p>LSL: Yes, we have had a few concerns in the last 2 years. However, it has been very self-contained and pointed to our work all conforms with EU security standards. We've published all of our certificates on our website and we follow government guidance. Our main response to this has been transparency and following up quickly with any concerns.</p>
<p>How you bring the residents of Sunderland along with you on this journey and promote the work locally?</p>	<p>PS: We've introduced, <i>'Let's Talk Sunderland'</i>. This is our communications and engagement strategy launched in 2020. It's an ongoing project in relation to what the priorities are and identifying any concerns that they've raised and ensuring an ongoing dialogue. From a digital perspective, residents are being made aware through social media or via traditional methods like letter to communicate with residents. We make them aware of the digital divide and what we hope to achieve.</p>
<p>How do you keep all the councillors fully engaged across the council?</p>	<p>PS: We use ongoing reporting mechanisms through the council. We also have several working groups on different themes within the city. The work we do on smart cities feeds into these working groups. We have two key working groups where the opposition councillors have members that sit on that and feedback to their respective groups. It's helpful to have opposition councillors, if you get them involved at an early stage, they do get to understand the rationale involved.</p>
<p>Did you have to add council tax money or capital programme in? Also, you mention cost saving, how have you managed to fund all of this?</p>	<p>PS: We have put our own resources in this, with a £10m investment in 2019 to kick it all off. Also, partly funded through government grants. We have an invest to save fund in the council and departments can feed into that. Ultimately, if the savings are going to be more than the potential, then it's a project that may well move forward.</p>

Discussion

- There was Q&A in each of the sessions and a breakout group discussion on this topic, particularly exploring the obstacles to implementation and how they could be overcome.
- A significant factor was cost, and making the case for investment when all resources from capital to management time are scarce. Cllr Stewart's talk illustrated that some of their ground-breaking work is supported by government grant but that it is also supported by the council's own resources because they can see the cost saving potential. The Digital Catapult (and the Connected Places Catapult) exist as neutral experts to help councils understand the potential for these possibilities. John Pattinson emphasized the importance of matching work in this real world challenges.
- Many councillors noted that collaboration and partnership working were key to successful implementation. This applies within the council where a coordinated approach to implementation of technologies across departments is helpful in maximizing the benefits. More generally, for some of the possibilities around smart parking for example, there may be as many as three or four authorities in any place who provide parking and would need to coordinate. There is a significant "place leadership" activity for members and councils to fulfill.
- Another area where councillors can play a vital role is in communications – ensuring that the way this is presented to the population is appropriate and relevant – not techno-speak, and ensuring that all relevant stakeholders are brought along on the journey.

Key Resources

- [The Digital Catapult](#) website has info about [their work with local authorities](#)
- The [Connected Places Catapult](#) website has further info including:
 - Material about the contribution to [Net Zero Places](#)
 - [Their work with Local Government](#)
- [LGA Guidance on Procurement of Innovation](#)
- Some [resources collected by the Society of IT Managers](#) (SOCITM)
- Since Connectivity is so vital for Smart Places you may also be interested in the similar [Resource Pack on Connectivity and Digital Inclusion](#)

Key Resources: Further Case Studies

- Middlesbrough [app to boost the town centre](#)
- [LGA Best Practice Examples \(view the Internet of Things section\)](#)
- A [District council example](#) in Huntingdonshire
- [Belfast City Region](#)
- [Newcastle City Council](#) which has a close relationship with [Newcastle University's City Futures](#) work
- [A range of case examples from the UK Authority publication](#)
- A [LB Sutton and Kingston case example](#) of active travel; other resources on active travel from:
 - [Sport England](#)
 - [Government advice for planners](#)
 - [House of commons library](#)

Summary: Some Questions to Consider Asking

- Do we have a process in our council that regularly ensures that new technological possibilities are considered? (Is it part of our annual budget cycle for example?)
- As a council, do we know which elements of smart place technology are most important to our current and desired future businesses? To our citizens?
- Which other organisations in our place (eg other tiers of council, national parks, public services) are already working in this way or would be crucial to effective implementation; how might we work together?
- How do we keep track of grant opportunities to fund experimentation and development in our place?
- Is responsibility for considering this agenda clear within cabinet or committee responsibilities? Which scrutiny committee is relevant, and have they examined this?
- What support might officer teams such as finance and transformation need in developing capabilities to evaluate and implement schemes of this type?
- Within my group, across all councillors, and within the relevant officer cohort do we have an up to date and sufficient understanding of the potential of these technologies to be able to make informed decisions about the priority for action versus the other demands on our attention?
- How do these possibilities align with our organisational/manifesto/place priorities?
- In short: Do we have a strategy or vision of what we want to achieve as well as budgetary considerations for this agenda.