

#HYPERCATCITY

IN PARTNERSHIP WITH

BRISTOL IS OPEN & MILTON KEYNES

**COLLABORATIVE
SMART CITY
INNOVATION**

SUPPORTED BY

MAYOR OF LONDON



**ACCELERATE
INNOVATION &
ENGAGEMENT
TO CREATE
NEW VALUE**



Merlin, Lord Erroll
Chairman #HyperCatCity

**“SMART CITIES ARE
URBAN ENVIRONMENTS
WHERE INFORMATION
TECHNOLOGY IS COMBINED
WITH INFRASTRUCTURE,
ARCHITECTURE, OBJECTS
AND PEOPLE TO ADDRESS
SOCIAL, ECONOMIC AND
ENVIRONMENTAL PROBLEMS.**

VISION FOR THE UK

“Smart Cities strive to optimise resources, from energy to water, but they also strive for participation, democracy and novel social interactions. Cities need to be secure, but not at the risk of becoming surveillance chambers. They need to be efficient, but preserve opportunities for spontaneity, serendipity and sociability. There are trade offs between these goals.

“According to BIS Research Paper (October 2013), the global market for Smart City technology solutions and the additional services required to deploy them will be \$408 billion by 2020. The UK has particular strengths in design, research, finance, and engineering services, which could account for 25% of the global technology Smart City market.

“There is great potential for UK business to take leadership of this fast growing market. The benefits to UK cities and citizens of deploying smart solutions will also propel UK companies into burgeoning export markets.”



SMART CITIES ARE **GREAT** BRITAIN

Work with UKTI to develop a
Smart Cities are GREAT campaign



INTEROPERABILITY BETWEEN TECHNOLOGIES IS ESSENTIAL IF THEY ARE TO BE TAKEN TO SIGNIFICANT SCALE.

University College London (2014)

To exploit advances in technology, Smart Cities need to be built on open foundations, not foundations that lock a city and its citizens into proprietary technologies and standards.

These foundations should be built from interoperable building blocks delivered by innovative companies, creative developers and cities working together.

They should utilise secure and interoperable Internet of Things technologies, ensuring: resilient, competitive, innovative services and products for citizens.

**OPTIMISE RESOURCES
& REDUCE FRICTION
FOR CITIZENS**



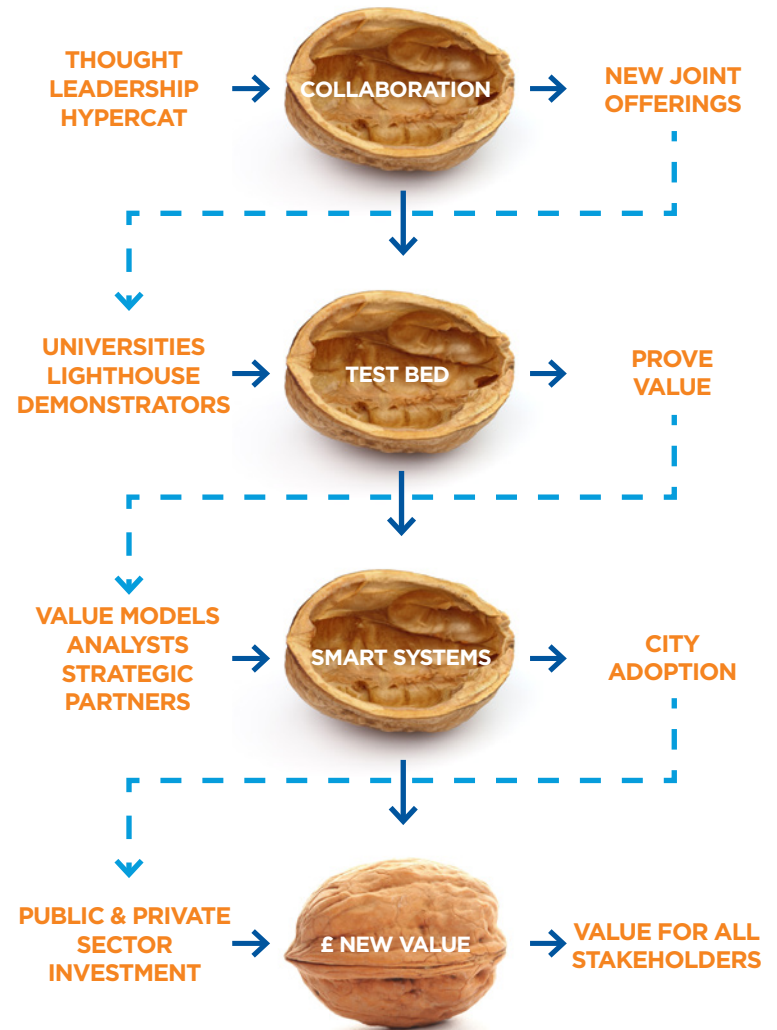
IN A NUTSHELL:

COLLABORATIVE SMART CITY INNOVATION

#HyperCatCity is a collaborative programme creating an innovative new value chain across the private and public sector. It is building an open & interoperable framework in order to:

- Create interoperable solutions to address Smart City challenges across key thematic areas including: energy, water, waste, transport, safety & security.
- Prove economic and environmental value to UK cities and position the UK as a Smart City leader.
- Improve the quality of life for citizens in UK cities.

#HyperCatCity is led by an Advisory Board, chaired by Lord Erroll, consisting of thought leaders from leading technology companies. Secretariat services and programme management is provided by Flexeye.





BUILDING ON THE HYPERCAT STANDARD

#HyperCatCity will build on the core HyperCat IoT specification (see www.hypercat.io) for open and interoperable Internet of Things technologies that ensure systems are able to work together.

The specification is supported by over 250 organisations and multiple standards bodies, including the W3C.

HyperCat is being turned into a Publicly Available Specification by the British Standards Institution to sit alongside PAS180, PAS181 & PAS182 Smart City standards.

According to Andrew Mulholland, VP Constellation Research, ex CTO Cap Gemini:

“HyperCat can substantially reduce the costs of systems integration and make the process of procurement many times easier for a city”.



bsi.

DRIVING STANDARDS

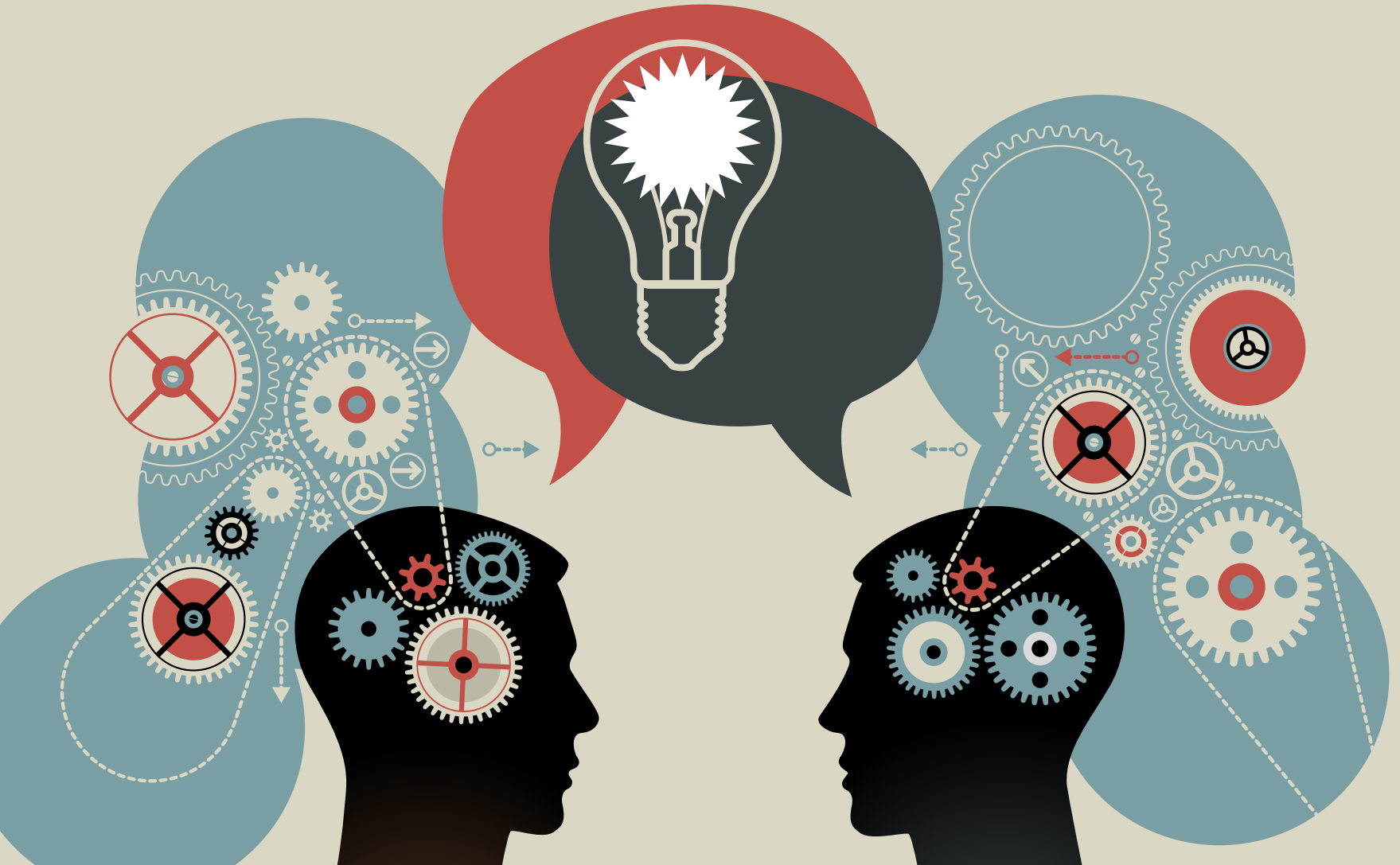
Working with the Future Cities Standards Institute and the BSI, we will sponsor and help drive the development of a standardisation work programme to give buyers increased confidence and help the Smart City market flourish.

We will build on the HyperCat specification and work with BSI to develop standards in this area including building on: PAS 180 on smart cities terminology; PAS 181 a smart cities framework; PAS 182 a smart cities data concept model; PD 8101 around planning of future city developments; and PD 8100.

INNOVATING FOR CITIES

CATAPULT
Future Cities

OPEN INNOVATION



THEMATIC SOLUTIONS

#HyperCatCity will focus on creating showcase solutions in the following thematic areas:

- Smart Energy
- Smart Water
- Smart Transport
- Smart Waste
- Smart Security & Resilience

These areas are anticipated to provide substantial value to cities and solutions have the potential to scale globally to address these areas in all urban environments.



SMART ENERGY

Energy systems around the world are seeing increased demand as populations rise and energy consumption per capita increases.

Energy systems (from generation to transmission to distribution) in developed economies are facing increasing maintenance and upgrade costs to keep up with demand and ageing infrastructure, whilst those in developing countries are racing to keep up with exploding energy demand.

These factors drive the need to improve energy management in order to build up energy efficiency and resilience.





SMART WATER

The demand for fresh water and the cost of treating water is increasing, whilst reducing supply of water means most cities are now facing huge challenges in managing and delivering safe supplies of water to those living and working in cities.

The United Nations predicts that global water demand will rise by 40% between now and 2020 and that this will be 50% higher in developing countries. In the UK, utility companies are experiencing losses of up to 27% of treated water due to the poor condition of the water network.

Smart water management solutions are a means by which water companies use technology to optimise performance, minimise disruption, manage disaster resilience and conserve water.

SMART TRANSPORT

Increasing urbanisation means cities are facing more congestion and associated carbon emissions and pollution, whilst still needing to provide good quality of life.

In particular, congestion costs the UK economy £15.3 billion a year in lost production.

The growing demand for smart transport solutions to address congestion from city authorities and commuters means that the global 'Smart Transport' market, including digital and physical infrastructures, and associated design and advisory services, is expected to be worth over £60 billion by 2018.





SMART WASTE

The global waste management industry has annual turnover of £170 billion and around 40 million workers. It is estimated that 60% of all waste generated in Greater London is currently exported for treatment or disposal outside of the area.

The smart waste management is a nascent market and includes reducing the costs of waste collection, waste recycling and converting waste to energy. Its true economic value and wider environmental benefits require further research in order to be fully determined.

Waste is a by-product of economic activity and the smart management of waste will have economic implications.

However waste has never seen the same level of research, innovation, product development or investment as the water or energy sector.

SMART SECURITY & RESILIENCE

Public safety and security is becoming increasingly challenging as more of us choose to live in cities.

Natural disasters, bio hazards , international terrorism, state-sponsored cyber security, and crime against citizens all present serious threats to a city.

Resilience at a city and infrastructure level and the ability to protect both citizens and organisations from threats and disruption of services, are both fundamental to any Smart City project. More than a quarter of cyber targeted attacks are aimed at governments and energy/utilities companies, while governments and healthcare institutions are the target of a quarter of all identity breaches.



INNOVATION LEADERS STRATEGIC PARTNERS

Innovation leaders, with complementary Smart City technologies and services, will drive a collective narrative for the programme. They will collaborate to combine their capabilities and deliver new joint solutions.

The collaboration will be managed by Axillium Research. They will coordinate activities with a set of strategic partners to support and validate: go to market strategies, market research, test bed & demonstrator locations.

Strategic partners include: Arup, BIS, Bristol is Open, BSI, Future Cities Catapult, InnovateUK, Gartner, Milton Keynes, NESTA, techUK, University of Surrey & the UKTI.



LONDON INFRASTRUCTURE PLAN

In July 2014, Boris Johnson, Mayor of London, launched London's first long-term infrastructure plan, a consultation about London's growth and how we can make the city bigger and better for everyone – the greatest city on earth.

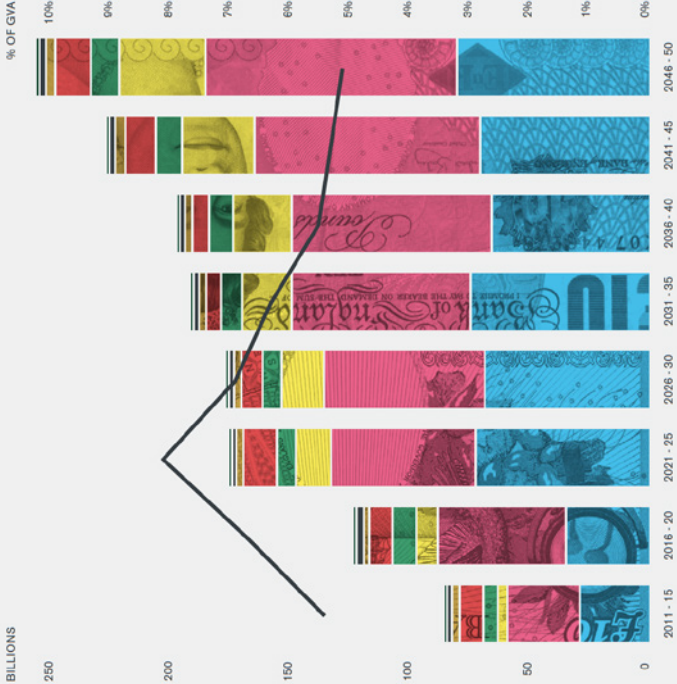
SUPPORTED BY
MAYOR OF LONDON

Infrastructure is fundamental to every Londoner, every day, from turning on the taps in the morning, to travelling to work, to switching off the lights at night. By its very nature, infrastructure underpins everything we do. The document sets out what infrastructure London requires for a population that will exceed 11 million people by 2050. According to the GLA, the total investment in London's infrastructure between 2016 and 2050 could amount to £1.3 trillion.

The Smart London Plan recognises that London must harness new technologies and its creative strengths if the city is to adapt to meet these challenges. This effort will require new forms of collaboration between Londoners, government, businesses and academia to drive change in a way that meets their needs. HyperCatCity will respond to the challenges for London that the Mayor has set out and try to help answer the question:

“How can Smart City thinking and solutions solve London's infrastructure challenges, deliver the plan more efficiently and provide better value for London's citizens?”

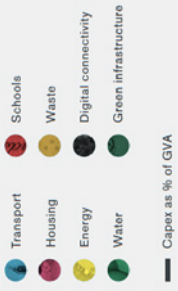
LONDON INFRASTRUCTURE PLAN



Our best cost estimates to meet all our infrastructure needs would almost double expenditure as a proportion of the economy. Housing and transport make up three quarters of the total costs.

OVERALL CAPITAL EXPENDITURE

Population 2050 of 11.3 million, construction cost inflation of 2% per annum above RPI, policy aspirations are achieved

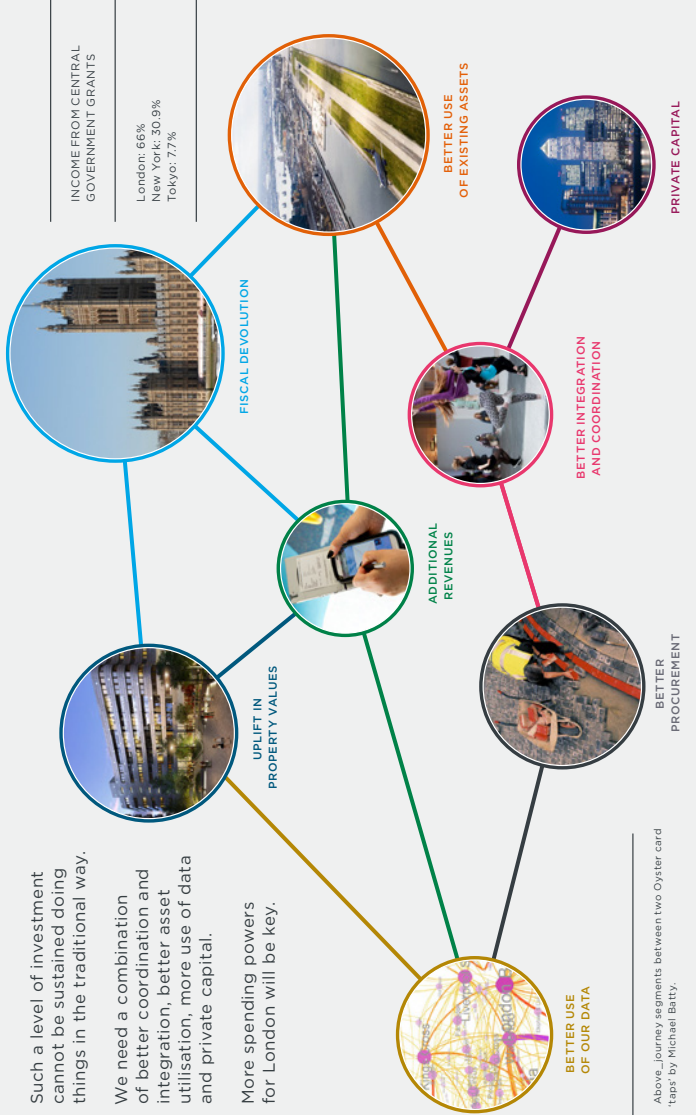


Source: Arup

Such a level of investment cannot be sustained doing things in the traditional way.

We need a combination of better coordination and integration, better asset utilisation, more use of data and private capital.

More spending powers for London will be key.



Above: Journey segments between two Oyster card 'taps' by Michael Betty.



BRISTOL IS OPEN

Mayor Ferguson is creating a joint venture between the University of Bristol and Bristol City Council to operate the world's first Open Programmable City test-bed.

The JV, called 'Bristol Is Open', uses a Software Defined Network City Operating System, and IoT platforms, to deliver smart city solutions.

Bristol Is Open will provide #HyperCatCity with a leading-edge test bed, from April 2015.

"Urbanisation is undoubtedly one of the most significant global movements of the next few decades. I see Bristol as a sustainable and resilient laboratory for change in the way cities are managed.

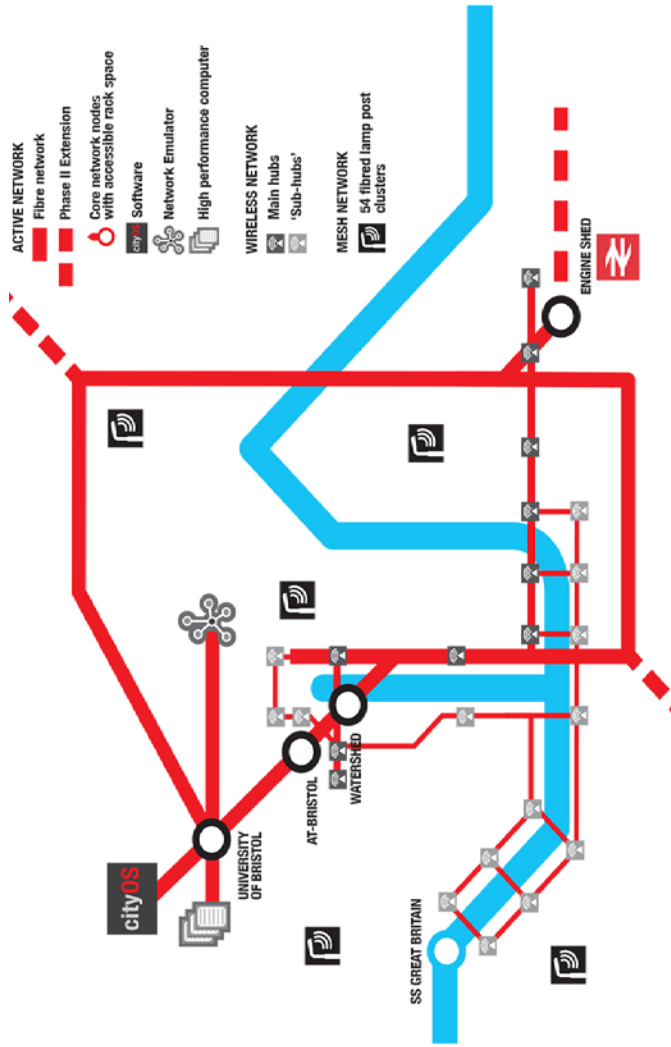
We are one of the most liveable cities in Europe, the European Green Capital in 2015, one of the inaugural 100 Rockefeller global resilient cities, and home of the Playable Cities movement. I look forward to welcoming you, because Bristol Is Open."

*Mayor
George Ferguson*

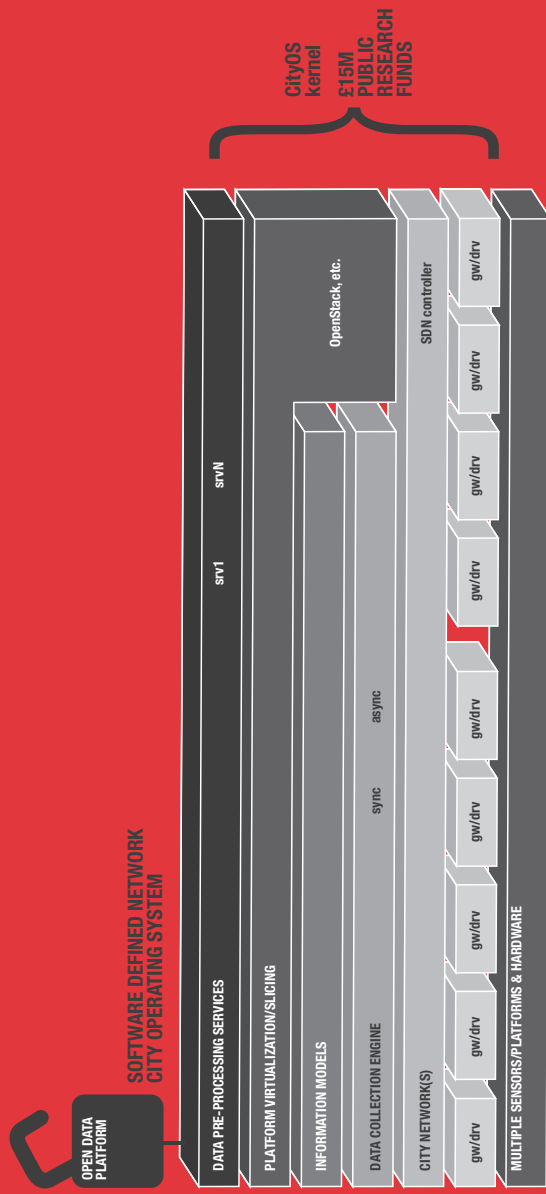


BRISTOL CITY CENTRE PHASE 1 LIVE Q2 2015

The Open Programmable City will provide #HyperCatCity with a leading-edge test bed, from April 2015.



THE OPEN PROGRAMMABLE CITY USES A CITYOS BUILT ON A SOFTWARE DEFINED NETWORK



SHAPE PROPOSITIONS WITH MK

“#HyperCatCity will help me navigate the Smart City jungle and ensure that Milton Keynes is involved in shaping the future of smart city systems and services for citizens”.

Geoff Snelson,
Director of Strategy Milton Keynes Council

Milton Keynes Council has established a Future City Programme to support economic growth and enable the city to scale business and service innovation.

Within the programme is the MK:Smart data hub project (led by the Open University in partnership with BT and the council) and the implementation of a city-wide internet of things network.

The city will link these leading edge capabilities to #HyperCatCity and help shape propositions from the perspective of the UK's fastest growing city and its communities. It will help validate value models, bring R&D projects into the city, and explore new funding models.





Flexeye partners with industry leaders to build Smart Systems on their dynamically configurable Urban Fabric frameworks.

Flexeye is a British technology company with offices in the USA and India.

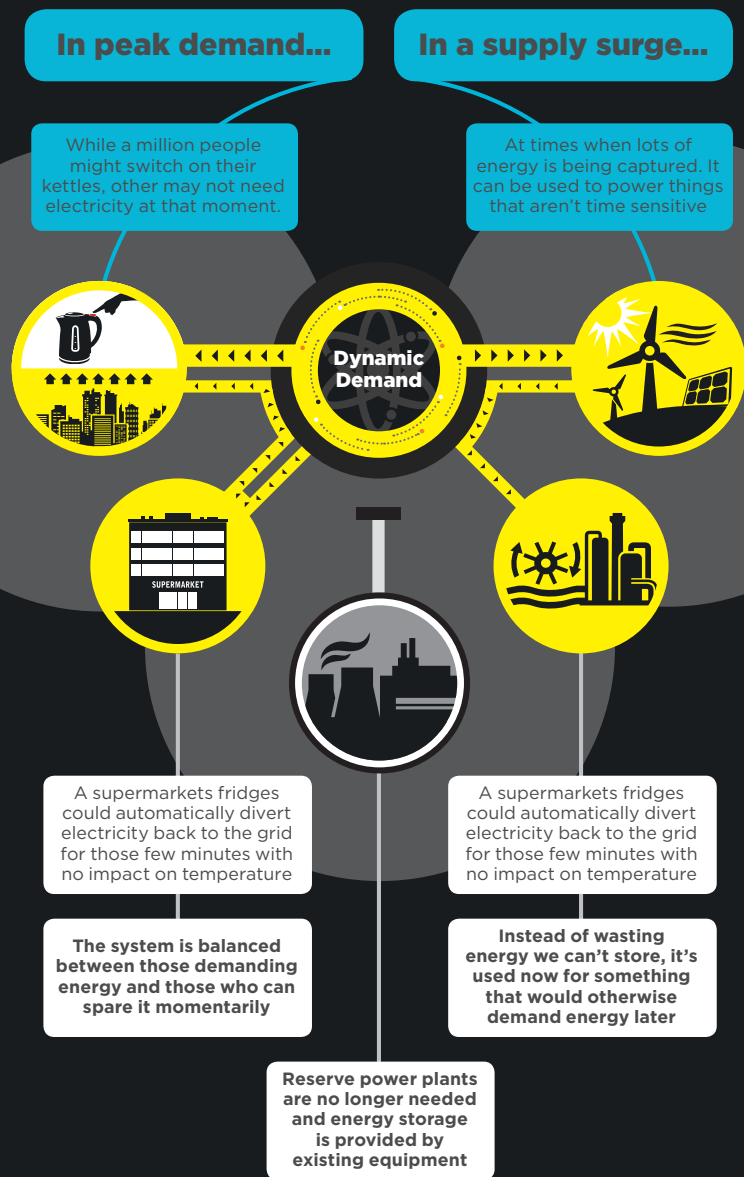
Flexeye has been recognized by Gartner as a Cool Vendor for Eyehub, its IoT solution for Smart Cities and identified as 'One to Watch' in their report: Digital Business Opportunities in Smart Cities Need IoT Foundations (July 2014).

Flexeye is the leader of the HyperCat Consortium, an international group of companies driving secure & interoperable Internet of Things for Industry and Smart City applications, building on a specification for discovery and interoperability funded by InnovateUK.

Flexeye will support the #HyperCatCity programme with a multi-disciplinary team, led by the Chairman of its Advisory Board, Merlin, Lord Erroll and its CEO, Justin Anderson.



Justin Anderson
CEO Flexeye



open energi

BUILDING A NEW ENERGY ECONOMY

Energy security is becoming a big issue with risks of blackouts being predicted by Ofgem. Peaks or troughs in supply and demand can initiate a domino effect leading to regional and ultimately national outages or failures.

Automated demand response technologies are an integral part of a 21st century smart grid which can add resilience to the National Grid and accelerate our transition to a zero carbon economy. The technology harnesses two-way interactive M2M capability and flexibility in energy demand to build a demand-side power station at a fraction of the cost of traditional sources of energy supply.

“Demand response can transform how we use and deliver energy. By providing greater flexibility and control over energy demand we are helping National Grid to integrate intermittent renewables and displace the need for additional peaking generation capacity.”

David Hill, Business Development Director

QinetiQ

**QINETIQ PROVIDES
INDEPENDENT TECHNICAL
SERVICES TO GOVERNMENT
AUTHORITIES TO HELP
DEVELOP SMART CITY
STRATEGIES AND MANAGE
COMPLEX PROGRAMMES**

SmartCityServices@Qinetiq.com

QinetiQ's Independent
Services include:

- Strategy, Planning & Integrated Modelling across the Smart City Enterprise.
- Innovation Incubator Design and the Provision of Decision Support Systems & Services.
- Technology Roadmap Design with Procurement Management.
- Technical Assurance including Independent Test, Evaluation and Integration Oversight.





SMART CITY REINVENTS URBAN ARCHITECTURE

The urban infrastructure network universally connects a city's user equipment and application terminals; the cloud-based urban data center stores, shares and integrates the entire sector and subsystem data services; and the urban information sharing platform carries various smart applications, such as Smart Government, Smart Transport, Smart Enterprise, Smart Education, Smart Health and Internet of Things.

Building a Smart City Information Highway Ubiquitous Broadband, Agile Business, Hardened Security, Information Sharing.

Huawei's Smart City Solution consists of Smart Industry and Smart Life. The ubiquitous network covers city management, enterprise development, and citizens' daily lives. The solution fully utilizes communications network, cloud computing, and information collaboration technologies to achieve stable, sustainable city development and boost public satisfaction.





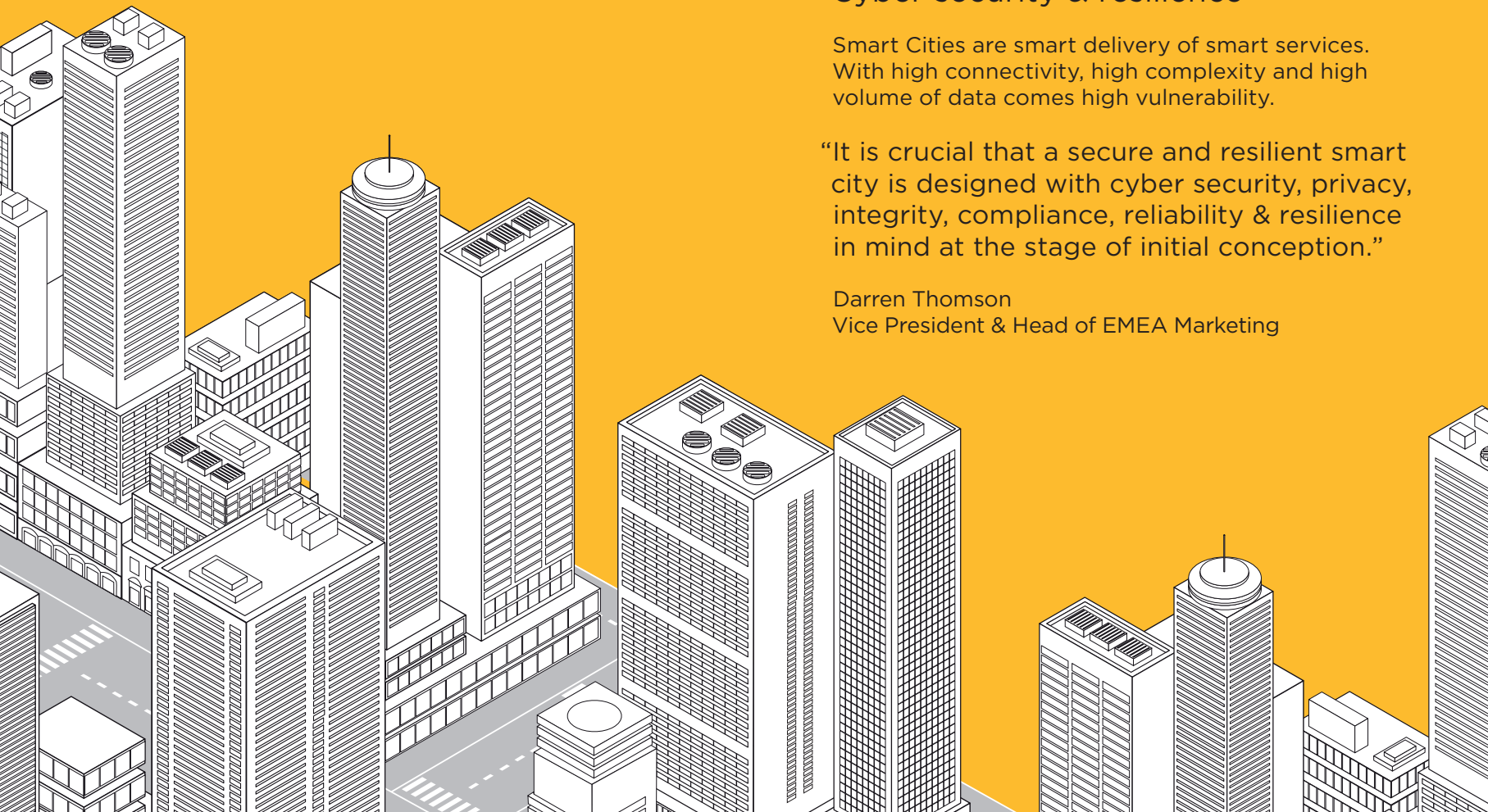
TRANSFORMATIONAL SMART CITY

Cyber security & resilience

Smart Cities are smart delivery of smart services. With high connectivity, high complexity and high volume of data comes high vulnerability.

“It is crucial that a secure and resilient smart city is designed with cyber security, privacy, integrity, compliance, reliability & resilience in mind at the stage of initial conception.”

Darren Thomson
Vice President & Head of EMEA Marketing





Digital technologies are enabling new business models, ways of working, and opportunities to improve the lives of citizens.

#HyperCatCity founding partner, Accenture, has deployed Connected Spaces solutions globally, helping organisations and Cities to reduce energy and maintenance costs, improve buildings and public spaces, promote citizen engagement, transform transportation and improve lives.

“Accenture’s Connected Spaces offerings enable new, innovative Digital services and business models for commerce, for Cities, and for citizens.”

Rajesh Sinha, Director, Connected Spaces





Your things are ready to talk. Are you ready to listen?

Lots of things, from waste bins to smoke alarms, need monitoring and attention. Connecting them improves city and business services, reduces costs and protects property and the environment.

Arqiva is making it possible to communicate with millions of devices. Our new “internet of things” network, operating in ten cities today, will significantly reduce total costs, making many more applications financially attractive.

We're unlocking the promise of the internet of things.



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TOGETHER

...we can create a new value chain for building an open and interoperable framework for the Smart City of the future.

We can prove value and create new solutions to deliver that value for all stakeholders.

By building stronger collaboration between cities and innovators, the UK can take a leadership role in designing and building our urban future.

Drop me an email at:

lord.erroll@flexeye.com if you have any questions.

Merlin Erroll

Lord Erroll, Chairman #HyperCatCity

A stylized, handwritten signature in white ink, appearing to read 'Merlin', with a long, sweeping underline.