

# UK Smart Cities Directory



 **TECHNOLOGY  
IS  
GREAT**  
BRITAIN & NORTHERN IRELAND



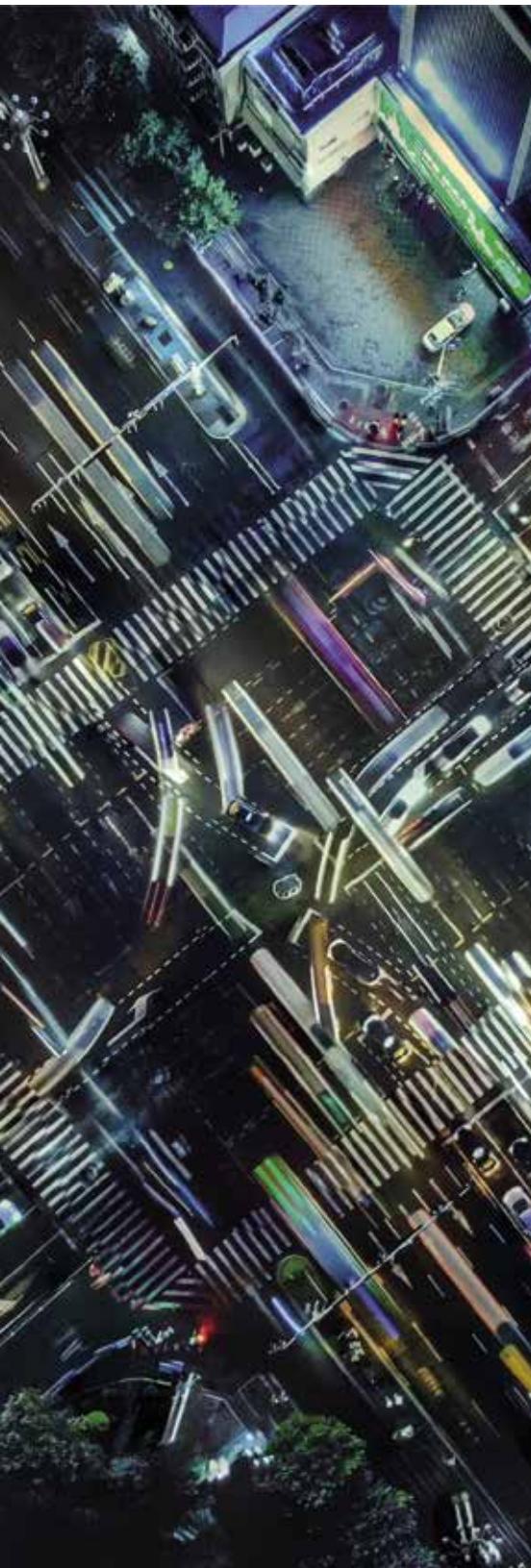
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# Introduction

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Urban population growth coupled with climate change present new challenges for densely populated city environments. While these challenges are substantial, they also present a unique opportunity for companies that develop, service and sustain our urban areas.

The UK is recognised as a global leader in smart cities primarily because of its creativity and the technological expertise of its human capital. As a result of this, UK companies are regularly solicited by international partners at the highest level to counsel, advise on and implement smart city developments and innovations.

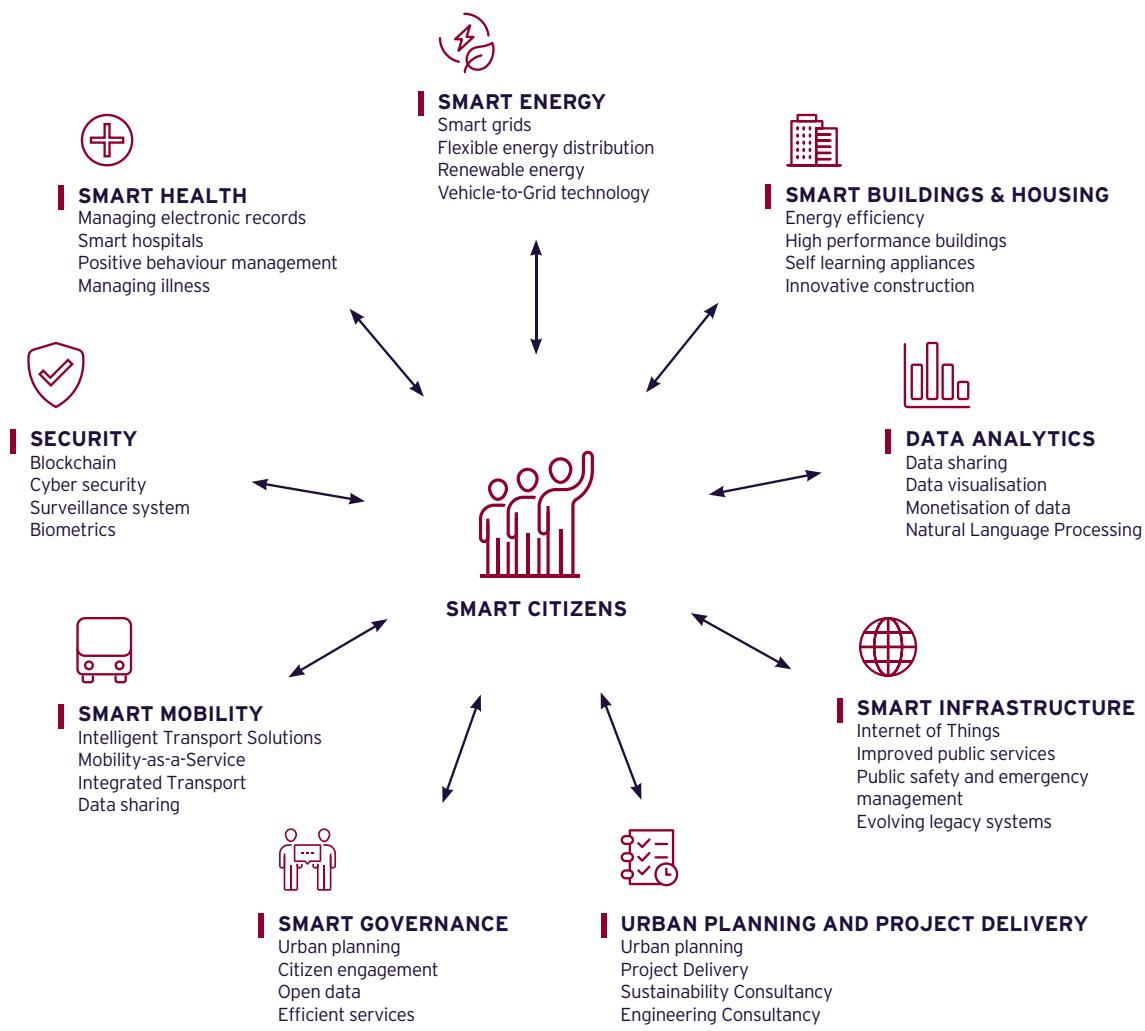
The UK technology companies' leading edge in this field has been built on five key pillars namely access to a growing market - both domestic and international, consumers/users receptive to adopting new technology, high quality infrastructure, a strong regulatory environment and targeted innovation support.

Cities in the UK such as London, one of the earliest innovators through its Oyster Card ticketless transport system, Birmingham, Manchester, Cambridge, Bristol, Glasgow and Edinburgh are now recognised by industry for their ground-breaking initiatives and thriving technology clusters and ecosystems. This makes the UK a major smart cities market opportunity for international firms.

World class assets like the Connected Places Catapult in London, Sensor City in Liverpool and the Open Data Institute in Leeds, combined with projects like Bristol is Open and testbeds like the Digital Health Living Lab in Brighton support the UK Government's continued investment in its smart cities nation.

Smart cities are all about innovation and here the UK leads the way with a strong track record in developing and commercialising solutions. The UK has also fostered substantial new innovations in digital technologies such as IoT, AI, 5G, sensors and electronics systems, geospatial and blockchain, all of which underpin future smart city developments.

UK smart cities strengths lie across the board from world leading design, engineering and consulting companies to internationally recognised standards bodies and highly innovative SMEs in key fields such as infrastructure, transport, communications, security, energy and healthcare.



UK companies have been involved in smart city projects across the globe such as Boston's MBTA in the US, India's Dholera City in Gujarat, South Korea's Daejong Smart City and are keen to partner with international companies to develop business opportunities in the UK and international markets.

Collaboration is critical in smart city projects given their complexity and here the UK excels. For example, Cambridge based Telensa has recently partnered up with Samsung SDS on smart street lighting projects in South Korea and the US, as well as on the Urban Data Project. This is a cloud platform that creates a trust infrastructure for urban data, enabling cities to collect, protect and use their data for the benefit of all citizens<sup>1</sup>.

Citizen centricity and governance, especially around data - privacy, security and transparency - is at the heart of UK smart city design. UK designed and developed technologies are supported by the UK Government in their commercialisation, enabling organisations and companies to enhance productivity and for individuals to ultimately lead better lives.

The UK Government through the Department for International Trade supports UK smart cities companies to achieve their export ambitions. We have chosen a cross-section of high performing UK smart cities companies to demonstrate the opportunities available for you and your local partners, in sharing the UK's knowledge and expertise for mutual benefit.

Please note that the companies included in the following pages represent a cross-section of the UK smart cities ecosystem and that the information shared has been sourced from the public domain.

<sup>1</sup> [www.telensa.com/news/samsung-sds-and-telensa-partner-for-smart-city-infrastructure-and-data-solutions/](http://www.telensa.com/news/samsung-sds-and-telensa-partner-for-smart-city-infrastructure-and-data-solutions/)

# Connected Places Catapult

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[info-ldn@cp.catapult.org.uk](mailto:info-ldn@cp.catapult.org.uk)  
[www.cp.catapult.org.uk](http://www.cp.catapult.org.uk)

As well as boasting a diverse and innovative supply chain of Smart Cities companies, the UK has a network of 9 world leading 'Catapult' centres designed to transform and accelerate the UK's capability for innovation and future economic growth.

The Connected Places Catapult (CPC) supports UK businesses develop innovations in mobility services and the built environment that enable new levels of physical, digital and social connectedness.

As a result, the CPC operates at the intersection between public and private sectors and between local government and transport authorities. They convene the disparate parts of the market to help innovators navigate the complexity of doing business, creating new commercial opportunities, improving productivity and socio-economic and environmental benefits for citizens.

The CPC's objectives out to 2023 is to drive growth through the application of innovative products and services in the emerging market of connected places.

They will do this by:

- Increasing the SUPPLY of innovative products and services that meet market demand by helping companies to commercialise innovation through demonstration, testing, development of standards and market exposure.
- Boosting DEMAND for innovation from intelligent customers by improving methods of modelling demand, and supporting tools, resources and platforms that cultivate confidence and capability among buyers.
- Identifying new areas for MARKET MAKING and DISRUPTION by stimulating richer engagement between academics and businesses, access to data and partnerships with government and regulators.

# The British Standards Institution



[saviour.alfino@bsigroup.com](mailto:saviour.alfino@bsigroup.com)  
[www.bsigroup.com](http://www.bsigroup.com)

The British Standards Institution (BSI) is a global thought-leader in the development of standards of best practice for government, business and industry. BSI is also the UK's standards body representing UK interests at ISO, IEC and the European Standards Organizations.

BSI has developed an international projects consulting practice with a strong track record of assisting key bi- and multilateral donor organisations. They have recently set up a dedicated consulting practice to help organisations better unlock and realise the value from standards, helping them apply best practice standards to their specific contexts and challenges.

With offices in over 100 countries, BSI is in a unique position to offer tailored advice and services, based on their expertise, to help clients achieve excellence as they seek to reach their objectives.

**BSI's Smart City Transformation Programme and Capacity Building**  
BSI is at the forefront of developing smart city standards to reflect the identified needs of stakeholders, addressing urban challenges and creating common markets.

Future cities and communities require agencies that collaborate across sectors. BSI has developed, in close co-operation with strategic partners, the 'Smart City Transformation Programme'. The programme is a holistic approach and framework, underpinned by standards, to help city leaders understand how innovation can help them address the challenges they face, and achieve their Sustainable Development Goals.

As part of early engagement, BSI co-creates and delivers a smart city strategy programme with the public, private, not-for-profit and academic sectors in a region, to collaborate on shared challenges. The programme is delivered over three to four specific phases with distinct types of activities for each phase. The number of phases and timeframe depends on the level of complexity, the scope of city/community functions covered and the number of stakeholders.

Through the programme, BSI helps shape outcome-led strategies leading to a roadmap and an action plan for enabling capabilities and transforming services which ultimately deliver social, economic and environmental outcomes.

# UK Ecosystem Overview

## Glasgow

Building from the Future Cities demonstrator, Glasgow now has the infrastructure in place to support larger projects, and the capability to be more proactive in managing public services. Noted strengths include urban transport and energy performance. Glasgow's role as lead partner in the Scottish Smart Cities Alliance is providing the city with more opportunities to build on its experience.



## Peterborough

Peterborough has transitioned from its Peterborough DNA initiative to a fully-fledged smart cities programme focused on integrating and scaling up successful initiatives. The city's focus on a range of environmental programmes, particularly its development as a Circular City, provides an important and unique perspective on city innovation.

## Bristol

Having established a strong strategic and technical basis for smart city development, Bristol is increasingly focused on the deployment of innovative, cross-cutting pilots and the integration of successful projects into city operations. The Bristol Is Open project, provides a 30Gbps connection while the City Operations Centre provides an evolving platform for the integration of existing and new services. Bristol continues to lead the way in areas such as open data access, energy innovation, and community engagement.

# UK Smart City Case Study - Glasgow

## DIGITAL OFFICE

Scottish Local Government

Glasgow is the largest city in Scotland and has set a goal to become one of the most innovative and pioneering smart cities in the world.

In 2013 it became the UK's Future Cities Demonstrator. This £24M investment by Innovate UK provided a large-scale demonstration of smart city approaches and technologies. During the programme, Glasgow established a state-of-the-art city operations centre to better coordinate city services, established a cloud-based city data platform to improve access to city data, and delivered a range of smart city demonstrations such as intelligent street lighting, smart energy, and smart mobility.

Since delivering the Future Cities Demonstrator, Glasgow has been scaling up its smart city infrastructure. Every streetlight within the city centre is now an IoT-enabled Intelligent Street Light. The city has established a Centre for Data Analytics to accelerate the use of data to transform city services, and established a Centre for Civic Innovation to engage with business on urban open innovation challenges, which is located within one of the city's new Innovation Districts. This is located alongside Innovation Centres and Catapults such as CENSIS, The Data Lab, and Digital Health and Care Institute, the Connected Places Catapult, and the Scottish Centre of Excellence in Satellite Applications.

Glasgow has an excellent academic sector, producing more graduates in digital technologies than any other UK city outside of London. The University of Glasgow is the UK's Urban Big Data Centre and the University of Strathclyde is home to the Institute of Future Cities.

Glasgow has set an ambitious target to be carbon net zero by 2030 and continues to drive smart city innovation. The University of Glasgow is transforming its campus to become a "smart campus", a major canal in the city has become Europe's first "smart canal", and a major street in the city is being converted to a "smart street" with a range of smart energy applications such as district heating, demand-side management, electrical vehicle charging (including from intelligent street lighting), and renewable energy.

Glasgow will be the host city for COP26 in 2021.

# UK Smart City Case Study - Peterborough

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Opportunity Peterborough

The city of Peterborough is one of four UK Future City Demonstrators and was designated World Smart City in 2015. It places a significant emphasis on sharing its smart city experiences with, and learning from, others.

It was actively involved in the development of BSI's suite of Smart City standards and, in collaboration with BSI and UrbanDNA, used this as the basis for the development of the Smart City Leadership Programme (SCLP). Initially tested in Peterborough, it was subsequently delivered in two Indian cities, bringing together leaders and experts and drawing on UK guidelines and standards, to develop a strategy, investment portfolio and long-term roadmap for each city.

The programme can be replicated and adapted for delivery in other cities across the world to support smart, sustainable urban development. BSI's tiered smart city portfolio of international guidance material and standards is central to the SCLP methodology and approach including the PAS181 "Smart City Framework" and PD8100 "Smart City Maturity Matrix".

The SCLP ensures that planned investments in urban infrastructure and services are aligned to a clear vision, strategy and roadmap with the full support of a pan-city leadership cohort and as a result are far more likely to deliver sustained value. It brings together a cohort of pan-city leaders in each municipality to survey and research smart city solutions for their specific needs and develop a long-term roadmap that transforms their city into a smarter, more resilient and sustainable city for all stakeholders. This provides a solid foundation for a de-risked, joined-up and high quality portfolio of projects.

The SCLP capitalises on the UK's growing expertise in developing sustainable and smart city policies and standards by sharing this with other cities worldwide, resulting in the establishment of a wider market that will benefit domestic and international companies. In addition, the output roadmaps from the programme can be made available to UK companies (with the candidate cities' permission), providing them an opportunity to engage where appropriate.

# UK Smart City Case Study - Bristol



Bristol's smart city innovation adopts a challenge-led approach - tackling the real-world problems of citizens and the city, using the latest technology. This approach is most easily demonstrated by some current projects:

## **Smart Homes - saving energy and reducing carbon footprint**

People in areas of Bristol are trialling new technologies to help save energy and explore new ways of travelling. The project is researching how the intelligent use of smart white goods can help to reduce households' energy demand and how to rethink travel choices via the use of app-connected electric cars and bikes.

## **Harbourside safety via thermal cameras and 5G**

Bristol has seen the regeneration of the harbourside, creating new areas for homes, work, leisure and entertainment. This has brought with it more risks to the safety of residents and visitors; incidents of falling into the water have a significant impact on emergency services, operational control rooms and the people involved - and the number of such incidents has increased significantly over the last few years.

Thermal imaging cameras have been introduced, beaming a "software virtual barrier line" that triggers an alert when crossed. Alerts are relayed back into the city's operation centre using trial 5G network technology - this provides high bandwidth, low latency connections, so that incursions can be monitored and controlled in real time. This technology has been hugely successful, with a life being saved in its first trial.

## **World leading Operations Centre**

The Bristol Operations Centre opened in October 2017 and operates 24/7 every day of the year. A large part of the facility's role is managing the city's traffic network and monitoring the traffic flow around Bristol. The teams provide an emergency response service through alarm, security and lone worker monitoring. They also deliver telecare monitoring which enables people to remain independent in their own homes by providing person-centred technologies. In order to manage the range of services provided, the centre has been built around an advanced communication platform that links into the city's high-speed fibre network.

# The UK Government's Industrial Strategy



The Industrial Strategy sets out how the UK Government are building a Britain fit for the future. The UK's Industrial Strategy identified four Grand Challenges; AI & Data, Clean Growth, Ageing Society and Future of Mobility. These were strategic choices, based on UK strengths, that set a vision for future economic growth and aim to energise a collective national endeavour with business, society and government to tackle these challenges and build UK global competitiveness.

The needs of smart cities align closely with the challenges of AI & Data, Clean Growth and Future of Mobility outlined in the industrial strategy.

## AI and Data

AI and Data technologies are the key enabler needed to build and operate a smart city. From smart energy systems to manage renewable energy for electric vehicles, businesses and homes to utilising health and transport data, AI & Data are essential to delivering more efficient city services for all.

## Clean Growth

For the world to meet the aims of the Paris Agreement, cities will have to become zero carbon, and be efficient and non-polluting while remaining productive. The UK is aiming to have world's first 'net-zero carbon' cluster by 2040 and is investing more than £2.5bn on clean growth innovation between 2015-2021. Decarbonising cities and geographical areas will only be possible through a whole systems approach and the grand challenges will ensure transport, heating and power systems work together in one place to achieve low cost, low carbon energy.

## Future of Mobility

A smart city needs efficient transport, enabled by new technologies. The UK government has already invested £1.5bn into the electrification and automation of road vehicles. UK companies are global leaders in trialling and demonstrating mobility-as-a-service through £90m Future Mobility Zones, stimulating the development of new and improved modes and services, frictionless payment options, and utilising mobility data making journeys greener, easier, safer and more reliable.

More information on the UK's industrial strategy can be found here:  
<https://www.gov.uk/government/publications/industrial-strategy-building-a-britain-fit-for-the-future>



*Big data*

# Governance and Standards

## Overview:

Smart governance is the intelligent use of technology to improve decision-making through better collaboration among different stakeholders, including government and citizens. By utilising comprehensive, real-time data, government agencies and private sector institutions are better able to understand citizen demand patterns and are thus able to respond more quickly and cost-effectively.



## Case Study

Capita Software provides specialist enterprise software solutions which support the education sector, local government, the emergency services, the health sector, utilities and other private sector markets. In the UK Capita support 210 local authorities with software solutions to ensure that 5 million residents a year can claim the benefits they need.

In the London Borough of Bexley, Capita have worked with the local council to achieve its fastest ever processing time of housing benefit new claims and change of circumstances. During the partnership Capita have invested over £6.5m in new technology which has increased automation of manual processes and redesigned the way individuals access the housing benefits service. Users can now also upload evidence online, making the turnaround time even faster.

This investment has led to processing time of 10 days in 2019/20, which is an improvement of three days on the previous year. New claims are processed significantly below the national average of 22 days.

# Governance and Standards companies

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- 1. BSI
- 2. Capita Software
- 3. CitizenMe
- 4. CS Transform Ltd
- 5. Data Performance Consultancy
- 6. Datactics
- 7. Filament
- 8. KeyOptions
- 9. Privitar
- 10. Resilience Brokers
- 11. Space Syntax
- 12. Spend Network
- 13. Symphonic Software
- 14. UrbanTide
- 15. Yoti

**BSI**

Location: London

Global thought leader in development of standards and best practice for government, business and industry. Clients range from high profile brands to small companies that operate locally.

[www.bsigroup.com](http://www.bsigroup.com)

**Capita Software**

Location: London

Capita Software provides specialist enterprise software solutions which support the education sector, local government, the emergency services, the health sector, utilities and other private sector markets.

[www.capita.com/our-services/software](http://www.capita.com/our-services/software)

**CitizenMe**

Location: London

CitizenMe enables organizations to solve problems and build closer relationships with the public, through ethical, GDPR-compliant user data and research tools.

[www.citizenme.com](http://www.citizenme.com)

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**CS Transform Ltd**

Location: London

A complete consulting and technology solution for benchmarking cities and developing a transformation road map. This includes dealing with cross-silo and cross-sectoral partnerships.

[www.cstransform.com](http://www.cstransform.com)

**Data Performance Consultancy**

Location: North West

Data Performance Consultancy are building a digital process map of cities' functions, which is embedded into a unique Process Classification Framework, to benchmark these processes and facilitate collaboration with a smart ecosystem.

[www.dataperformanceconsultancy.com](http://www.dataperformanceconsultancy.com)

**Datactics**

Location: Northern Ireland

Self-service data quality, matching & AI platform provider, helping global financial services firms and governments to get value from their data, avoid costly IT roadblocks, common in data management, and reduce the risk of being fined or sanctioned by regulators.

[www.datactics.com](http://www.datactics.com)

## Filament

Location: London

Filament are experts in Applied AI. With a host of world-class clients, they build bespoke AI solutions ([filament.ai](http://filament.ai)) with use cases in governance and standards, health, smart buildings and data analytics. They also own and distribute EBM ([enterprisebotmanager.com](http://enterprisebotmanager.com)), the UK's leading Chatbot CMS to build, monitor & continuously improve chatbots programmes at scale.

[www.filament.ai](http://www.filament.ai)

## KeyOptions

Location: London

KeyOptions innovates, designs and develops solutions for government, defence, security, urban, commercial and retail industries. Their 'In-Motion' solutions and services coupled with real-time analytics for IoT brings a new way of integration that provides simplified integration with the Machine Learning and dashboard results organisations need.

[www.keyoptions.com](http://www.keyoptions.com)

## Privitar

Location: London

Privitar work with the world's leading organisations to enable them to use 100% of their data for insight. The Privitar Data Privacy Platform enables organisations to protect sensitive data, making it accessible for analytics and data science and used in compliance with laws and regulations.

[www.privitar.com](http://www.privitar.com)

## Resilience Brokers

Location: London

A consultancy with a new, phased approach to working with cities, designed to demonstrate the value of a systems thinking approach to planning, in the context of specific project's challenges and policies.

[www.resiliencebrokers.org](http://www.resiliencebrokers.org)

## Space Syntax

Location: London

Space Syntax provides digital urban master planning services, including the construction of Integrated Urban Models that forecast the social, economic and environmental impacts of development on the lives of people.

[www.spacesyntax.com](http://www.spacesyntax.com)

## Spend Network

Location: London

Spend Network provides insight and analysis for public sector spending, working with public procurement and finance data to help suppliers and government forge lasting partnerships.

[www.spendnetwork.com](http://www.spendnetwork.com)

## Symphonic Software

Location: Scotland

Symphonic Software, headquartered in Edinburgh, is an industry leader in dynamic authorization software helping organisations with the challenge of complex policy decisions across multiple channels, meeting regulatory compliance, sharing data securely and protecting critical assets and IP.

[www.symphonicsoft.com](http://www.symphonicsoft.com)

## Terraquest

Location: West Midlands

TerraQuest is the UK's largest specialist provider of land referencing services to private and public sector clients.

[www.terraquest.co.uk](http://www.terraquest.co.uk)

## UrbanTide

Location: Scotland

UrbanTide use IoT and AI to identify and map assets helping cities and organisations to meet legislated targets and improve service delivery and citizen well-being.

[www.urbantide.com](http://www.urbantide.com)

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## Yoti

Location: London

The Yoti platform spans digital identity verification, credential management (eg Covid test results), age verification, e-signatures, biometric authentication and access control. This enables governments and businesses to onboard their users securely across their apps and websites, at a fraction of time and cost compared to traditional methods. Sectors: cyber security, health, financial services, aviation, retail, government, access control.

[www.yoti.com](http://www.yoti.com)



# Energy and Environment

## Overview:

Smart energy is linked to the need for greater use of low carbon sources of energy, either through generation or more efficient use of resources. For example, residential and commercial buildings in smart cities can be made more energy efficient through improved construction techniques, new business models, and innovative use of energy data.



## Case Study

OVO was founded in 2009 to transform the energy market with cheaper, greener and simpler energy. Its mission is to use smart technology to enable 5 million customers to decarbonise their homes.

In 2018 OVO started a two-year trial to use smart technology at people's homes to charge electric cars and trade electricity from the battery. The project increases the availability of electric vehicle charging infrastructure and promotes positive behaviour change by enabling owners to save enough money to cover the annual cost of charging an electric car.

The pilot project was made possible through the support of Innovate UK, the United Kingdom's innovation agency, along with the Office for Low Emission Vehicles and the Department for Business, Energy and Industrial Strategy.

For more details about this project you can email [v2g@ovoenergy.com](mailto:v2g@ovoenergy.com)

# Energy and Environment companies

- 1. Acoustic Sensor Networks Limited
- 2. Advizzo
- 3. Air Public
- 4. AirSensa
- 5. Anaeko
- 6. Bboxx
- 7. BT
- 8. Earthsense
- 9. Energy Gain
- 10. Fabriq
- 11. heatboss
- 12. IMGeospatial
- 13. Informatis
- 14. LightFi
- 15. Microcab
- 16. Open Energi
- 17. OVO
- 18. Pavegen
- 19. PowerOn Technologies Limited
- 20. Qbots Energy
- 21. Real World Visuals
- 22. Rezatec
- 23. Ricardo Energy & Environment
- 24. SEaB
- 25. Signol
- 26. Skyroom
- 27. SteamaCo
- 28. SustainIQ
- 29. Sycous Limited
- 30. Transport for London
- 31. Utterberry
- 32. VRM Technology Ltd
- 33. Wirth Research
- 34. ZPN Energy

## Acoustic Sensor Networks Limited

Location: South East

Acoustic Sensor Networks Limited develop distributed noise monitoring solutions using low cost MEMS microphones and IoT hardware. Data sets generated by these solutions allow the application of advanced analytics to provide new insights in environmental noise, leading to better understanding of how noise impacts the health and experience of citizens.

[www.acousticsensornetworks.co.uk](http://www.acousticsensornetworks.co.uk)

## Advizzo

Location: London

Advizzo has developed a software which monitors and analyses the utility consumption patterns of consumers and provides tips and insights on how to reduce it.

[www.advizzo.com](http://www.advizzo.com)

## Air Public

Location: London

Mobile sensor networks to produce air quality data that reflects the movements and lives of everyday people.

[www.airpublic.eu](http://www.airpublic.eu)

## AirSensa

Location: South East

AirSensa builds and operates hyperlocal environmental sensor meshes at city scale, providing rich, real-time, actionable data to help reduce pollution, protect citizens, reduce costs, accelerate towards SDG goals, and improve public health.

[www.airsensa.com](http://www.airsensa.com)

## Anaeko

Location: Northern Ireland

Anaeko is a trusted data partner of large public and private sector organisations. The company provides the following services: Agile & DevOps, data optimisation, integrated analytics, hybrid cloud Integration and has a focus on the health sector and smart cities including a number of smart water analytics solutions.

[www.anaeko.com](http://www.anaeko.com)

## Bboxx

Location: London

Bboxx is a next generation utility, transforming lives and unlocking potential through access to energy. Bboxx designs, manufactures, distributes and finances innovative plug & play solar systems to improve access to energy across Africa and the developing world.

[www.bboxx.co.uk](http://www.bboxx.co.uk)

**BT**

Location: London

Sensors solutions to show traffic hotspots and help cities make changes that lower carbon emissions and improve air quality.

[www.iot.bt.com/industries/cities](http://www.iot.bt.com/industries/cities)

**Earthsense**

Location: West Midlands

EarthSense deliver products that enable the world to visualise and manage its air quality issues. With EarthSense's air quality sensors and advanced pollution modelling and API, the company create critical components in smart systems, inform major investments, assess historic exposure and future risk to make a real difference to people's lives.

[www.earthsense.co.uk](http://www.earthsense.co.uk)

**Energy Gain**

Location: North West

Energy Gain UK consult, design, execute, maintain and arrange funding for energy efficiency projects within the UK and global marketplace. Their innovative finance packages are designed on or off-balance sheet with no up-front costs.

[www.energygain.co.uk](http://www.energygain.co.uk)

**Fabriq**

Location: London

The Fabriq OS platform allows users to track any metric, for any building type, from any source. Save costs, cut carbon, and improve health & wellbeing. Share the results and engage all building stakeholders from landlords to tenants.

[www.fabriq.space](http://www.fabriq.space)

**heatboss**

Location: Northern Ireland

Energy efficient heating controls for commercial & public buildings, enabling web-access to room-level control of the building's heating via a wireless retrofit, to achieve typically 30% reduction on heating energy consumption & associated costs & emissions.

[www.heatboss.co.uk](http://www.heatboss.co.uk)

**IMGeospatial**

Location: South East

IMGeospatial use machine learning, AI, location based and remote sensed data to provide Automated Business Intelligence. This allows users to increase effectiveness and enhance their customer's experience across a wide range of industrial and commercial sectors.

[www.imgeospatial.com](http://www.imgeospatial.com)

## Informetis

Location: East of England

Robust and scalable Smart IoT platform designed and developed in-house, which collects and stores data from Informetis' smart energy sensors, as well as various third party IoT sensors. Informetis also provide world class AI based energy disaggregation and other data analytics services from the same data.

[www.informetis.com](http://www.informetis.com)

## LightFi

Location: London

LightFi develops retrofit technology that can analyse how often indoor spaces are used, reducing lighting levels accordingly in order to improve energy efficiency.

[www.lightfi.io](http://www.lightfi.io)

## Microcab

Location: West Midlands

Microcab design and build zero emission, highly efficient, hydrogen fuel cell electric vehicles to provide the health benefits of clean urban air.

[www.microcab.co.uk](http://www.microcab.co.uk)

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## Open Energi

Location: London

Open Energi is an advanced technology company that use machine learning principles automatically to optimise and trade power from distributed low-carbon resources such as energy storage, electric vehicles, and demand-side response. This paves the way for a low cost, net-zero emission power economy, for everyone.

[www.openenergi.com](http://www.openenergi.com)

## OVO

Location: South West

OVO is the UK's largest independent energy technology company and supplier, serving nearly one million customers with intelligent energy services and other home services.

[www.ovenergy.com](http://www.ovenergy.com)

## Pavegen

Location: London

Pavegen is a smart floor tile that connects communities, inspires wellbeing and behavioural change, while generating clean energy and analytics from every footstep. This helps power applications such as lighting and monitors the real time metrics of the amount of clean energy citizens produce, creating a sense of well-being that allows them to contribute back to their local communities.

[www.pavegen.com/smart-cities](http://www.pavegen.com/smart-cities)

## PowerOn Technologies Limited

Location: Northern Ireland

PowerOn Technologies Limited aims to bring cheaper, cleaner and smarter electricity choices to customers through battery storage and data analytics. They have designed and built their own software platform (PARIS) that analyses data accurately to predict future energy usage within the home. Combining that with battery storage will facilitate delivery of a new service Energy Flexibility as a Service.

[www.theelectricstoragecompany.com](http://www.theelectricstoragecompany.com)

## Qbots Energy

Location: North West

Qbots Energy use IoT and Artificial Intelligence technologies to solve challenges in the energy industry and accelerate renewable energy adoption. Qbots provides a smart energy management system to be used by building owners and energy managers to optimise electricity consumption by utilising battery storage. The system also uses Artificial Intelligence based algorithms to adapt to specific businesses energy needs.

[www.qbots.ai](http://www.qbots.ai)

## Real World Visuals

Location: South West

Real World Visuals reveal the invisible, turning data into meaningful imagery and playful interactive tools that help everyone make sense of twenty-first century environmental challenges.

[www.realworldvisuals.com](http://www.realworldvisuals.com)

## Rezatec

Location: South East

Rezatec's geospatial analytics help business leaders in the water, agriculture, infrastructure and forestry sectors to prioritise investment, multiply asset value, optimise resources and super-charge productivity.

[www.rezatec.com](http://www.rezatec.com)

## Ricardo Energy & Environment

Location: London

Ricardo Energy & Environment helps cities and organisations to identify and implement smart solutions to their environmental focus areas. Their internationally respected technical experts provide the capabilities needed to address today's most pressing challenges - climate change, energy efficiency and security, air quality, water and resource scarcity, waste management, wealth creation, competitiveness and sustainable growth.

[www.ee.ricardo.com](http://www.ee.ricardo.com)

## SEaB

Location: South East

SEaB has patented the innovative Muckbuster® and Flexibuster™: compact, easy-to-install, turnkey Anaerobic Digestion (AD) systems which turn waste into energy.

[www.seabenergy.com](http://www.seabenergy.com)

## Signol

Location: London

Signol helps employees improve their performance through a software platform that analyses performance data and provides behaviourally informed feedback. By providing the right nudge at the right time they improve efficiency, reduce waste and emissions, and cut operating costs.

[www.signol.io](http://www.signol.io)

## Skyroom

Location: London

Skyroom is an award-winning urban development company, partnering with major landlords to create high-quality, low-cost, eco-friendly homes for key urban workers on disused rooftops in London.

[www.skyroom.london](http://www.skyroom.london)

## StamaCo

Location: North West

StamaCo is a technology company that enables its customers to sell energy anywhere on the planet. StamaCo enables effective, scalable operations in unserved areas of the world. For end users, StamaCo offers convenient, reliable access to modern utility services

[www.stama.co](http://www.stama.co)

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## SustainIQ

Location: Northern Ireland

SustainIQ is an innovative new software platform revolutionising how companies manage their sustainability performance. Their customers use SustainIQ to increase efficiency and win new business by improving their productivity and bottom line.

[www.sustainiq.co.uk](http://www.sustainiq.co.uk)

## Sycous Limited

Location: Yorkshire and the Humber

Sycous provide solutions for metering and billing of utilities, including data importation, management, validation and consumer billing. Sycous' software is designed to work seamlessly with conventional AMI systems, as well as cutting edge IoT technology for smart utilities and cities.

[www.sycous.com](http://www.sycous.com)

## Transport for London

Location: London

Transport for London uses a range of environmental initiatives - the world's first ultra-low emission zone, active travel, embracing renewable energy - to improve air quality, reduce private vehicle journeys, and achieve a zero-carbon city. TfL Consulting shares this expertise internationally.

[www.tfl.gov.uk/info-for/business-and-commercial/commercial-consulting](http://www.tfl.gov.uk/info-for/business-and-commercial/commercial-consulting)

## Utterberry

Location: London

Wireless smart sensors that use AI technology to collect environmental data, for use in the development of smart cities.

[www.utterberry.com](http://www.utterberry.com)

## VRM Technology Ltd

Location: London

VRM Technology Ltd is a London based software firm that helps building stock owners to monitor, optimise and significantly reduce energy costs, carbon emissions and improve the health of their buildings.

[www.vrmtech.ie](http://www.vrmtech.ie)

## Wirth Research

Location: South East

Wirth Research provide innovative energy saving technologies and services for the refrigeration (shelf edge technology), built environment and transport sectors.

[www.wirthresearch.com](http://www.wirthresearch.com)

## ZPN Energy

Location: West Midlands

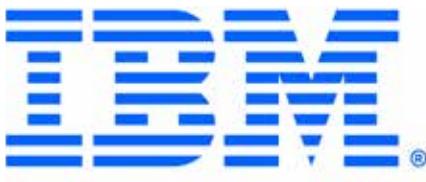
ZPN is a leading British, fast-growing Energy Technology (EnTech) provider headquartered in Coventry (UK) that design, develop and produce technologies to enable green smart cities. ZPN encompasses a unique intellectual property portfolio within its energy management system.

[www.zpnenergy.com](http://www.zpnenergy.com)

# Health

## Overview:

Smart health can tackle the treatment, management and prevention of illness. It uses the connectivity of a smart city to link patients to their health provider, taking advantage of more efficient communication methods and sensor/smartphone data. Combined with the power of data analytics and AI, health data can be analysed to extract valuable new insights about the patient and overall health of the city.



## Case Study

Alder Hey Children's Hospital and a team from the Science and Technology Facilities Council (STFC) Hartree Centre, are collaborating with IBM Watson AI technology to make hospital stays for children welcoming, not daunting.

Using IBM Watson technology to analyse any feedback that is voluntarily and securely provided by the patients, Alder Hey is able to greatly enhance patient experience by identifying patient anxieties and providing information and reassurance; whilst giving insightful feedback to clinicians based on the tone and sentiment of these interactions.

Using this valuable insight, clinicians at Alder Hey will be able to make a hospital stay for a child less daunting, by providing a more personalised service for a child while also being able to identify clinical trends more quickly that could affect patient flow and effectively make significant cost savings.

The future for Alder Hay envisages Watson technology as the brain of the new 'Living Hospital' with sensors and the Internet of Things acting as the senses that provide information back to this brain. In addition, the hospital will interact with the public through chatbots and robots.

# Health companies

- 
- 1. Anaeko
  - 2. AVATR (Inavya Ventures)
  - 3. Babylon Health
  - 4. Filament
  - 5. IBM
  - 6. iPLATO Healthcare Ltd
  - 7. Kinsetsu
  - 8. The Phoenix Partnership
  - 9. Skyports
  - 10. Vertical Future Ltd
  - 11. Yoti

## Anaeko

Location: Northern Ireland

Anaeko is a trusted data partner of large public and private sector organisations. The company provides the following services: Agile & DevOps, data optimisation, integrated analytics, hybrid cloud Integration and has a focus on the health sector and smart cities including a number of smart water analytics solutions.

[www.anaecko.com](http://www.anaecko.com)

## AVATR (Inavya Ventures)

Location: London

AVATR provides research and development services to start-ups working within the spheres of machine learning, MedTech and cyber security.

[www.avatr.ai](http://www.avatr.ai)

## Babylon Health

Location: London

Babylon has developed an app that enables a patient to book and conduct a remote video consultation with a GP and send prescriptions to their specified location. The app also employs artificial intelligence, enabling patients to talk to a virtual nurse about symptoms.

[www.babylonhealth.com](http://www.babylonhealth.com)

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## Filament

Location: London

Filament are experts in Applied AI. With a host of world-class clients, they build bespoke AI solutions ([filament.ai](http://filament.ai)) with use cases in governance and standards, health, smart buildings and data analytics. They also own and distribute EBM ([enterprisebotmanager.com](http://enterprisebotmanager.com)), the UK's leading Chatbot CMS to build, monitor & continuously improve chatbots programmes at scale.

[www.filament.ai](http://www.filament.ai)

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## IBM

Location: London

Technology which enhances communication and engagement between clinicians, young patients and their families. The technology analyses anonymized data provided by patients to uncover insights that hospitals can then use to improve their patient care.

[www.ibm.com/industries/  
healthcare](http://www.ibm.com/industries/healthcare)

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## iPLATO Healthcare Ltd

Location: London

iPLATO's purpose is to simplify access to healthcare. iPLATO's platform - myGP - connects over 6,500 primary care practices with 24m patients and carers.

myGP is the most downloaded medical app in the UK. The platform enables 'digital first' healthcare by supporting digital patient engagement, appointment booking, prescription ordering, health tracking, care navigation and telemedicine.

[www.iplato.com](http://www.iplato.com)

## Kinsetsu

Location: Northern Ireland

Kinsetsu works in multiple sectors creating and enabling IoT strategies. Kinsetsu help organisations to build a digital bridge between their critical assets and existing business systems. They provide powerful digital mapping, geofencing and visualisation to enable pinpointing of assets in any location globally.

[www.kinsetsu.co.uk](http://www.kinsetsu.co.uk)

## The Phoenix Partnership

Location: Yorkshire and the Humber

The Phoenix Partnership (TPP) is a leading healthcare technology provider, specialising in national shared Electronic Health Records (EHR), Patient Apps and Artificial Intelligence solutions.

[www.tpp-uk.com](http://www.tpp-uk.com)

## Skyports

Location: London

Skyports is a mobility company based in London developing and operating landing infrastructure for electric air taxis, as well as operating end-to-end cargo drone deliveries.

[www.skyports.net](http://www.skyports.net)

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## Vertical Future Ltd

Location: London

Vertical Future is a London-based technology start-up focused on improving health in cities, highlighting how urbanisation impacts on health and identifying and tackling specific issues through different urban initiatives.

[www.verticalfuture.co.uk](http://www.verticalfuture.co.uk)

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## Yoti

Location: London

The Yoti platform spans digital identity verification, credential management (eg Covid test results), age verification, e-signatures, biometric authentication and access control. This enables governments and businesses to onboard their users securely across their apps and websites, at a fraction of time and cost compared to traditional methods. Sectors: cyber security, health, financial services, aviation, retail, government, access control.

[www.yoti.com](http://www.yoti.com)



# Infrastructure

## Overview:

Smart infrastructure makes cities work more smoothly, efficiently and sustainably. It provides better co-ordination across essential services such as sanitation, public safety and emergency management. City infrastructure is also increasingly becoming digital as well as physical, opening new opportunities for the public and private sector.



## Case Study

Ordnance Survey is supporting governments to lay the foundations for safe, secure and sustainable smart cities with geospatial information. It drives effective policy making, economic growth and robust national infrastructures, helping government organisations to become smarter, collaborate better, reduce costs and improve public services.

Complex data, from multiple sources, can be integrated into geospatial frameworks and used to inform smart decision-making and technology. In Singapore, Ordnance Survey implemented best practice data capture requirements, creating a comprehensive, standards-based 3D data model for the 3D geospatial data of Singapore, representing the city's key themes.

In Dubai, OS are working with the Smart Dubai Government Establishment (SDGE) on developing a strategy to create world class smart solutions through the effective use of geospatial information. The project has revealed how accurate and current geospatial information is a critical component of any Smart City strategy, underpinning the enablement of services such as energy and mobility; and helping Dubai achieve its aspiration to be the happiest city in the world.

# Infrastructure companies

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- 1. Accucities
- 2. Agility3
- 3. BICO AI Ltd
- 4. BT
- 5. Cascoda
- 6. Cityzenith
- 7. Connected Kerb
- 8. Connected Space
- 9. Corrosion Radar
- 10. Geolytix
- 11. GlobalReach Technologies
- 12. Hello Lamppost
- 13. Hugslock
- 14. Joule Group
- 15. JustPark
- 16. Loqiva
- 17. nPlan
- 18. nquiringminds
- 19. Ordnance Survey
- 20. Pavegen
- 21. Pointr
- 22. Pupil
- 23. Ranplan Wireless
- 24. Red Ninja
- 25. Resilience Brokers
- 26. See.Sense
- 27. Sensat
- 28. Sensoteq Ltd
- 29. Space Syntax
- 30. Telensa
- 31. The Lava Group
- 32. Transport for London
- 33. UBIPOS UK Ltd
- 34. Utterberry
- 35. Velocity RDT
- 36. Vodafone
- 37. Vortex IoT
- 38. Vu.City

## Accucities

Location: London

3D city models used for city-wide analysis, which provide a cornerstone dataset for smart city apps as a display medium and/or to position sensors accurately.

[www.accucities.com](http://www.accucities.com)

## Agility3

Location: East of England

Transport and infrastructure development interactive 3D visualisation applications that improve communication, understanding and engagement amongst the stakeholders involved.

[www.agility3.co.uk](http://www.agility3.co.uk)

## BICO AI Ltd

Location: London

BICO AI is the global leading provider of First and Last Mile Distribution SaaS Technology for Micromobility Operators. BICO AI's innovative, autonomous Artificial Intelligence technology addresses the critical pain points in micromobility by assessing various environmental, resource, performance and usage data to optimise, automate and visualise available resource for operators.

[www.bico.ai](http://www.bico.ai)

## BT

Location: London

Cities can place critical infrastructure, shops and amenities in the optimal location through catchment area and citizen footfall analysis.

[www.iot.bt.com/intelligent-iot-solutions/data-analytics](http://www.iot.bt.com/intelligent-iot-solutions/data-analytics)

## Cascoda

Location: South East

Cascoda is a leading semiconductor company, providing certified solutions to solve range, interoperability, security, power & scalability issues for IoT. This is achieved through improved device receive-sensitivity, IPv6 mesh-networking and public key infrastructure security, based on strong open international standards.

[www.cascoda.com](http://www.cascoda.com)

## Cityzenith

Location: London

Cityzenith is a software development organisation that makes software services for the built environment, assisting people designing, constructing, and managing complex, large-scale building projects, real estate portfolios and cities. The company's SmartWorldPro2™ Digital Twin platform helps forward-thinking architects, buildings owners, and property managers leverage data across every phase of the building lifecycle, from design through demolition.

[www.cityzenith.com](http://www.cityzenith.com)

## Connected Kerb

Location: London

Universal power charging and data port console for electronic vehicles. Smart cities platform integrates both power and data at kerbside to support electric and autonomous vehicles, and the application of advanced IoT technologies.

[www.connectedkerb.com](http://www.connectedkerb.com)

## Connected Space

Location: London

Technology innovation company, building solutions across multiple sectors with a focus on smart cities, mobility, govtech and urbantech.

[www.connected-space.co.uk](http://www.connected-space.co.uk)

## Corrosion Radar

Location: East of England

Corrosion RADAR is a novel distributed sensing technology for detecting and predicting corrosion under insulation. Comprised of a long thin flexible sensor, it can detect and locate corrosion and moisture in the most inhospitable and inaccessible locations.

[www.corrosionradar.com](http://www.corrosionradar.com)

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## Geolytix

Location: London

Geolytix are location planning experts providing data and consultancy for infrastructure and retail industries across the globe and using extensive retail and demographic data to help find the right network expansion or consolidation strategy solution for customers.

[www.geolytix.com](http://www.geolytix.com)

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## GlobalReach Technologies

Location: London

GlobalReach provide carrier class Wi-Fi services and solutions to design, build and operate secure Wi-Fi networks for major international cities and brands.

[www.globalreachtech.com](http://www.globalreachtech.com)

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## Hello Lamppost

Location: London

Hello Lamppost bring cities to life, allowing people to interact with their built environment whilst collecting data and insights to better inform the development and planning of future cities.

[www.hellolamppost.co.uk](http://www.hellolamppost.co.uk)

## Hugslock

Location: South East

Smart manhole covers, incorporating sensors to protect against tampering and featuring remote lock/unlock capabilities.

[www.hugslock.com](http://www.hugslock.com)

## Joule Group

Location: Northern Ireland

Joule Group is an independent firm of fire safety designers, engineers, consultants and technology solutions specialists. Their digital solution can streamline processes with paperless app-based inspections, automated reporting and audits, as well as provide actionable insights to prioritise maintenance tasks and effectively manage fire safety inspections.

[www.joule-group.com](http://www.joule-group.com)

## JustPark

Location: London

JustPark provide access to a vast network of parking spaces, they aim to tackle the pain points in parking and increase efficiency and revenue by using data insights to facilitate a more effective use of space.

[www.justpark.com](http://www.justpark.com)

## Loqiva

Location: London

Through Loqiva's IoT connected smartphone application, they intelligently find the most relevant information for citizens in any given location and present this on their device in engaging and meaningful ways.

[www.loqiva.com](http://www.loqiva.com)

## nPlan

Location: London

Machine learning software that predicts the outcomes of development projects to help understand complexity and risk.

[www.nplan.io](http://www.nplan.io)

## nquiringminds

Location: South East

Nquiringminds allow cities to centralise data assets, IoT data streams, open and confidential data records, and workflow records. Their TDX product family provides the tools to secure, share and analyse data.

[www.nquiringminds.com](http://www.nquiringminds.com)

## Ordnance Survey

Location: South East

Britain's mapping agency providing geographical data for the delivery of many public services in Great Britain and countries around the world.

[www.ordnancesurvey.co.uk](http://www.ordnancesurvey.co.uk)

## Pavegen

Location: London

Pavegen is a smart floor tile that connects communities, inspires wellbeing and behavioural change, while generating clean energy and analytics from every footstep. This helps power applications such as lighting and monitors the real time metrics of the amount of clean energy citizens produce, creating a sense of well-being that allows them to contribute back to their local communities.

[www.pavegen.com/smart-cities](http://www.pavegen.com/smart-cities)

## Pointr

Location: London

Pointr is a mobile navigation app providing location information inside large buildings such as airport terminals.

[www.pointr.tech](http://www.pointr.tech)

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## Pupil

Location: London

Pupil are a spatial data company. They capture and publish highly accurate 3D information about real world interiors on a global scale and use their AI scene-understanding system to automatically learn what is most important about any space.

[www.pupil.co](http://www.pupil.co)

## Ranplan Wireless

Location: East of England

Ranplan offers a coordinated approach to planning indoor and outdoor networks and has been used to plan outdoor Wi-Fi networks in dense urban environments supporting traffic management.

[www.ranplanwireless.com](http://www.ranplanwireless.com)

## Red Ninja

Location: North West

Optimising traffic flow in cities through real-time artificial intelligence-controlled traffic light systems.

[www.redninja.co.uk](http://www.redninja.co.uk)

## Resilience Brokers

Location: London

Resilience.io is a pioneering systems modelling platform that combines computer representations of human and business activity, resource flows and infrastructure of a city region.

[www.resiliencebrokers.org](http://www.resiliencebrokers.org)

## See.Sense

Location: Northern Ireland

See.Sense helps cities around the world improve the safety and quality of cycling, increasing its appeal as a sustainable mode of transport.

[www.seesense.cc](http://www.seesense.cc)

## Sensat

Location: London

SenSat use drones to provide high resolution land surveys for the engineering and construction sectors. Simulated realities replicate real-world locations in real time, bringing clarity to complex visual and spatial data, and allowing smarter, faster and safer decisions based on real world information.

[www.sensat.co.uk](http://www.sensat.co.uk)

## Sensoteq Ltd

Location: Northern Ireland

Sensoteq Ltd design and manufacture bespoke low power wireless sensors for remote machine health monitoring, providing continuous measurements of critical parameters such as temperature and vibration. Fully internet connected, the sensors gather data from systems positioned all over the world. Users can be alerted of faults ahead of time to help with predictive maintenance to reduce downtime.

[www.sensoteq.co.uk](http://www.sensoteq.co.uk)

## Space Syntax

Location: London

Space Syntax provides digital urban master planning services, including the construction of Integrated Urban Models that forecast the social, economic and environmental impacts of development on the lives of people.

[www.spacesyntax.com](http://www.spacesyntax.com)

## Telensa

Location: East of England

Telensa makes wireless smart city applications, helping cities around the world save energy, work smarter and deliver more joined-up services for their citizens. Telensa PLANet is the world's most deployed smart streetlight solution. Urban IQ builds on the compelling business case for smart street lighting to provide cities and utilities with an open, low-cost platform to add multiple sensor applications.

[www.telensa.com](http://www.telensa.com)

## The Lava Group

Location: Northern Ireland

With over 20 years' experience in software development, electronic design, and biometric integration The Lava Group provide IoT solutions that increase the security, efficiency, control and accountability within customers' environments. This specialist knowledge, coupled with its continual investment in R&D, has positioned the company at the forefront of the industry.

[www.thelavagroup.co.uk](http://www.thelavagroup.co.uk)

## Transport for London

Location: London

Transport for London's Consulting arm provides expertise of delivering some of the world's largest infrastructure projects. Drawing on skills throughout the project lifecycle from concept and feasibility, procurement and project management, to commissioning and operational planning and delivery.

[www.tfl.gov.uk/info-for/business-and-commercial/commercial-consulting](http://www.tfl.gov.uk/info-for/business-and-commercial/commercial-consulting)

## UBIPOS UK Ltd

Location: East Midlands

UBIPOS UK Ltd's sectors of technological innovations include structural health monitoring of super long-span bridges and major critical infrastructures, connected and autonomous vehicles in the Intelligent transportation system/smart cities and precision agriculture and smart animal husbandry management.

[www.ubipos.co.uk](http://www.ubipos.co.uk)

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## Utterberry

Location: London

Smart sensors specifically designed for smart infrastructure. This miniature ultra-low power wireless technology provides intelligent Big Data with unrivalled precision. The patented in-built artificial intelligence and machine learning capability enable the UtterBerry™ system to form the core technology required to build Smart Cities and IoT devices.

[www.utterberry.com](http://www.utterberry.com)

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## Velocity RDT

Location: South East

'Fatigue-vision' is an affordable smart wireless sensory network that predicts structural change and fatigue across multiple environments including, rail infrastructure, bridges and the built environment.

[www.velocityrdt.com](http://www.velocityrdt.com)

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## Vodafone

Location: London

Vodafone delivers reliable, city wide network coverage and smart communications infrastructure - fixed, mobile, WiFi and IoT solutions.

[www.vodafone.com/business/industry/public-services-smart-cities](http://www.vodafone.com/business/industry/public-services-smart-cities)

## Vortex IoT

Location: Wales

Vortex IoT build sensors and mesh network systems for harsh environments where conditions are hostile, power supply is often limited, AI is needed & data security is critical. Vortex IoT focus on developing scalable and repeatable solutions for known business challenges in smart infrastructure, heavy industry, and rail.

[www.vortexiot.com](http://www.vortexiot.com)

## Vu.City

Location: London

Vu.City develops software which creates 3D simulations of real city spaces for use in planning and architecture.

[www.vu.city](http://www.vu.city)

**High Speed 1 (HS1)**  
*St Pancras International*



# Transport and Mobility

## Overview:

Smart mobility is environmentally friendly, integrated, automated and personalised travel on-demand. It is bringing together the automotive industry with technology and engineering firms. As connected cars increasingly communicate with the urban environment it also opens up new business models and revenue streams.



## Case Study

Vauxhall station is Britain's busiest station by passenger use. On the 5th May 2016, a fire at the station caused major disruption across the Capital. As a result, Rail network planners wanted to examine the impact of the fire on commuting patterns, to plan for similar events in the future.

Citi Logik provides insight into the way people move on foot, in a vehicle or by train, applying analysis to complex spatial challenges in the sectors of Transport, Intelligent Mobility, Smarter Cities, and the Built Environment.

Using anonymised Mobile Network Data, Citi Logik was able to create a representative view of passenger movements on the day of the fire and the company was able to demonstrate disruption free solutions without installing any physical infrastructure or having any interaction with passengers.

The results enabled Station platform planners to add additional resources and manage passenger flows in a timely manner.

Today the technology has evolved to providing real-time occupancy rates on trains with accuracy of over 90%. One of many applications on the Citi Logik's Rail Analytics platform which is providing comprehensive understanding of passenger journeys which in turn is transforming route and station planning and the rail operator's opportunity to prepare and mitigate for incident and major events.

# Transport and Mobility companies

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- |                                 |                           |                          |
|---------------------------------|---------------------------|--------------------------|
| 1. A2O Innovation Solutions     | 18. Cycle Land            | 35. RingGo               |
| 2. AGD Systems                  | 19. Dynniq                | 36. See.Sense            |
| 3. Alchera Technologies         | 20. FiveAI                | 37. Siemens (Rail)       |
| 4. The Algorithm People Ltd     | 21. Gaist                 | 38. Siemens (Road)       |
| 5. AppyWay                      | 22. Grid Smarter Cities   | 39. SLAMcore             |
| 6. Aurrigo                      | 23. Humanising Autonomy   | 40. Spark EV Technology  |
| 7. BARO Vehicles                | 24. IBM                   | 41. StreetDock           |
| 8. BICO AI Ltd                  | 25. Littercam             | 42. StreetDrone          |
| 9. BlockDox                     | 26. Locpin                | 43. Telensa              |
| 10. Chipside                    | 27. Loquiva               | 44. Transport API        |
| 11. Citi Logik                  | 28. Masabi                | 45. Transport for London |
| 12. Connexin                    | 29. Microcab              | 46. Unmanned Life        |
| 13. Conigital                   | 30. Mulitpass             | 47. Vivacity Labs        |
| 14. Connected Kerb              | 31. Ovon Technologies Ltd | 48. Vortex IoT           |
| 15. Corethree                   | 32. Oxbotica              | 49. What 3 Words         |
| 16. CrowdVision                 | 33. Perpetuum Ltd         | 50. Yellow Design        |
| 17. Cubic Transportation System | 34. rFpro                 | 51. Zipabout             |

## A2O Innovation Solutions

Location: North West

A2O Innovation Solutions develops technology for autonomous vehicles using advanced composite materials, with the intention of improving vehicle safety and reducing carbon emissions.

[www.a2ois.com](http://www.a2ois.com)

## AGD Systems

Location: South West

AGD Systems develops intelligent traffic systems that aim to improve the safety, efficiency, and the carbon footprint of transport environments.

[www.agd-systems.com](http://www.agd-systems.com)

## Alchera Technologies

Location: East of England

Alchera Technologies develops cameras that track and analyse the movement of pedestrians and vehicles.

[www.alcheratechnologies.com](http://www.alcheratechnologies.com)

## The Algorithm People Ltd

Location: North East

The Algorithm People are the developer of My Transport Planner, the UK's first pay-as-you-go route optimisation platform.

[www.thealgorithmpeople.co.uk](http://www.thealgorithmpeople.co.uk)

## AppyWay

Location: London

AppyWay develop digital tools to map, standardise and manage kerbside regulations. This includes a mobile app and an API designed to highlight parking restrictions and facilitate rapid payment of parking fees.

[www.appyway.com](http://www.appyway.com)

## Aurigo

Location: South East

Connected Autonomous Pods for first and last mile journeying in areas such as airports, city centres, sports venues, science parks, university campuses and shopping centres.

[www.aurigo.com](http://www.aurigo.com)

## **BARO Vehicles**

Location: West Midlands

BARO Vehicles designs and develops a range of autonomous and semi-autonomous vehicles.

[www.barovehicles.com](http://www.barovehicles.com)

## **BICO AI Ltd**

Location: London

BICO AI is the global leading provider of First and Last Mile Distribution SaaS Technology for Micromobility Operators. BICO AI's innovative, autonomous Artificial Intelligence technology addresses the critical pain points in micromobility by assessing various environmental, resource, performance and usage data to optimise, automate and visualise available resource for operators.

[www.bico.ai](http://www.bico.ai)

## **BlockDox**

Location: London

BlockDox makes spaces smarter using artificial intelligence, machine learning and the Internet of Things.

[www.blockdox.com](http://www.blockdox.com)

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## **Chipside**

Location: South West

Chipside is a specialist software development company providing products and services to around a quarter of local and regional government traffic authorities in the UK. This means that Chipside works with over 130 local government authorities throughout the UK, delivering smart city initiatives to villages, towns, cities and regions.

[www.chipside.com](http://www.chipside.com)

## **Citi Logik**

Location: London

Citi Logik provides data analyses derived from anonymised UK mobile phone data, especially regarding people's journeys and transportation use.

[www.citilogik.com](http://www.citilogik.com)

## **Connexin**

Location: Yorkshire and the Humber

Connexin is the UK's first Smart City Operator. Delivering IoT connectivity across their purpose-built UK network. They provide a central CityOS software platform for device and data management. Connexin design, build and deploy end-to-end solutions on top of this platform to enable businesses and government to make faster and smarter decisions by utilising IoT and the power of data.

[www.connexin.co.uk](http://www.connexin.co.uk)

## Conigital

Location: West Midlands

Conigital are transport infrastructure integrators developing Mobility-as-a-Service, IoT sensors and Artificial Intelligence solutions for the next generation of zero emission driverless vehicles.

[www.conigital.com](http://www.conigital.com)

## Connected Kerb

Location: London

Universal power charging and data port console for electronic vehicles. Smart cities platform integrates both power and data at kerbside to support electric and autonomous vehicles, and the application of advanced IoT technologies.

[www.connectedkerb.com](http://www.connectedkerb.com)

## Corethree

Location: London

Corethree are Global leaders in mobile ticketing and commerce, taking advantage of the single biggest opportunity to create direct communication to the customer: the intersection of mobile and data.

[www.corethree.net](http://www.corethree.net)

## CrowdVision

Location: London

CrowdVision is a pioneer in the video analytics space and, with its recent acquisition of iinside, it now offers both 'vision' and 'lidar' solutions through a unified user interface. The CrowdVision people tracking solution has evolved considerably and is now used extensively in airports, stadiums, exhibition centres, transportation hubs and large-scale resort hotels/casinos.

[www.crowdvision.com](http://www.crowdvision.com)

## Cubic Transportation System

Location: South East

Leading integrator of payment and information solutions and related services for intelligent travel applications in the transportation industry. Cubic manages Transport for London's Oyster Card payment system.

[www.cubic.com/solutions/transportation](http://www.cubic.com/solutions/transportation)

## Cycle Land

Location: South East

Cycle Land provide a bike sharing platform, connecting people who are passionate about cycling, sharing, and travelling.

[www.cycle.land](http://www.cycle.land)

## Dynniq

Location: South East

Dynniq has a comprehensive knowledge of managing mobility, parking and energy, using systems engineering approach. Solutions enable the efficient connection of mobility and energy flows that create a vital and strong infrastructure.

[www.dynniq.co.uk](http://www.dynniq.co.uk)

## FiveAI

Location: East of England

FiveAI is developing artificial intelligence software to be used in autonomous driving technology.

[www.five.ai](http://www.five.ai)

## Gaist

Location: North West

Gaist are a multi-award winning international technology company that use digital processes to provide deep insights into road infrastructure and other roadscape data. They provide unrivalled intelligence and analysis of the whole roadscape to underpin planning, design and maintenance of highways and street-side equipment.

[www.gaist.co.uk](http://www.gaist.co.uk)

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## Grid Smarter Cities

Location: North East

Intelligent kerbside management for city authorities, freight and commercial vehicle operators. Managing last mile logistics and access to the kerb.

[www.gridsmartercities.com](http://www.gridsmartercities.com)

## Humanising Autonomy

Location: London

Humanising Autonomy develops software for autonomous vehicles that analyses the behaviour of pedestrians to make them less at risk of accidents.

[www.humanisingautonomy.com](http://www.humanisingautonomy.com)

## IBM

Location: London

IBM offers various technology focussed solutions aiming to transform traffic planning and management through an infusion of data insights, machine learning and cognitive thinking.

[www.ibm.com](http://www.ibm.com)

## Littercam

Location: Yorkshire and the Humber

The complete vehicle-based littering solution for street scene, enforcement and highways maintenance professionals. Improves environmental quality and reduce the risk of litter clearance with Artificial Intelligence.

[www.littercam.ai](http://www.littercam.ai)

## Locpin

Location: London

Locpin's patented SaaS technology helps businesses to reduce cost and improve service reliability by allowing customers to provide their precise service delivery requirements, simply and with GPS accuracy.

[www.locpin.com](http://www.locpin.com)

## Loquiva

Location: London

Apps to help citizens and visitors navigate, access and participate in their city.

[www.loquiva.com](http://www.loquiva.com)

## Masabi

Location: London

Masabi's Justride is a Fare Payments-as-a-Service (FPaaS) account-based ticketing platform. It is suitable for mobile ticketing systems and cEMV bank card transit payment.

It also enables Mobility as a Service (MaaS) incorporating Justride SDK into MaaS applications.

[www.masabi.com](http://www.masabi.com)

## Microcab

Location: West Midlands

Microcab design and build zero emission, highly efficient, hydrogen fuel cell electric vehicles to provide the health benefits of clean urban air.

[www.microcab.co.uk](http://www.microcab.co.uk)

## Mulitpass

Location: London

Multipass have been successfully innovating digital payments and smart mobility since 2014, in partnership with Apple, Google, Mastercard, NXP, Visa and Worldpay. The company's core areas of expertise include biometrics, embedded systems, IoT, mass transit ticketing, mobile wallets, secure payments and wearables.

[www.multipass.co.uk](http://www.multipass.co.uk)

## Ovon Technologies Ltd

Location: North West

Ovon are IoT product specialists who create cutting-edge hardware and software solutions. Ovon takes your product all the way from an idea into a mass-produced product suitable for customers around the world.

[www.ovon.io](http://www.ovon.io)

## Oxbotica

Location: South East

Autonomous vehicle technology company providing full-stack, end-to-end autonomy software that is both vehicle and platform-agnostic, with a mission to bring Universal Autonomy to all industries and transform the movement of people and goods.

[www.oxbotica.com](http://www.oxbotica.com)

## Perpetuum Ltd

Location: South East

Perpetuum are a global leader in the provision of information to maximise the safety and reliability of railways and reduce costs. Perpetuum's award winning, self-powered, wireless sensing technology, combined with vibration engineering expertise and rich analytics, provides real-time information, enabling customers to optimise railway operations.

[www.perpetuum.com](http://www.perpetuum.com)

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## rFpro

Location: South East

rFpro is a simulation environment for the development and testing of Advanced Driver Assistance Systems (ADAS), autonomous vehicles, vehicle dynamics and human factor studies. They deliver unrivalled engineering quality and performance and have an extensive library of digital twins of proving grounds, public roads, test tracks and race circuits. Their solutions significantly accelerate training, testing and validation, saving time and money.

[www.rfpro.com](http://www.rfpro.com)

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## RingGo

Location: South East

RingGo has developed integrated, end-to-end mobility and cashless parking solutions for over a decade. It is in use in more than 450 towns across the UK. From RingGo's award-winning Emissions Based Parking to EV charging and intelligent data dashboards, their services create cleaner, healthier towns and cities.

[www.ringgo.co.uk](http://www.ringgo.co.uk)

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## See.Sense

Location: Northern Ireland

See.Sense develops smart bicycle lights that are equipped with sensors which feature a multitude of functions such as automatically adjusting brightness, theft detection, and collating data on road conditions.

[www.seesense.cc](http://www.seesense.cc)

## Siemens (Rail)

Location: South East

Siemens Mobility Ltd enables operators to shape today's and tomorrow's passenger and freight transportation - with trains, infrastructure, automation and electrification solutions, turnkey systems as well as related services. They work across trams, light rail, metro, commuter and regional trains, high-speed and very high-speed trains.

[www.new.siemens.com/uk](http://www.new.siemens.com/uk)

## Siemens (Road)

Location: South East

Siemens Mobility Ltd leads the market in the design and manufacture of Intelligent Traffic Systems, with proven, scalable solutions deployed in towns and cities around the world.

[www.new.siemens.com/uk](http://www.new.siemens.com/uk)

## SLAMcore

Location: London

SLAMcore provide state-of-the-art spatial AI algorithms and the tools required for developers to build the next generation of autonomous machines.

[www.slamcore.com](http://www.slamcore.com)

## Spark EV Technology

Location: East of England

Software solution for electric vehicles in multiple market sectors, addressing their key challenges and driving greater adoption and increased driver trust.

[www.sparkevtechnology.com](http://www.sparkevtechnology.com)

## StreetDock

Location: Northern Ireland

StreetDock is the world's first micro-hub infrastructure system that is open, adaptable and scalable to any urban environment. Their mission is to make the last-mile of delivery in cities more convenient, efficient and environmentally sustainable, making cities better for everyone.

[www.streetdock.com](http://www.streetdock.com)

## StreetDrone

Location: South East

StreetDrone develops technology intended to help link vehicles with self-driving systems to create autonomous vehicle networks.

[www.streetdrone.com](http://www.streetdrone.com)

## Telensa

Location: East of England

Telensa makes wireless smart city applications, helping cities around the world save energy, work smarter and deliver more joined-up services for their citizens. Telensa PLANet is the world's most deployed smart streetlight solution. Urban IQ builds on the compelling business case for smart street lighting to provide cities and utilities with an open, low-cost platform to add multiple sensor applications.

[www.telensa.com](http://www.telensa.com)

## Transport API

Location: London

TransportAPI is a transport data aggregator that takes multiple transport data feeds and aggregates them into a restful API.

[www.transportapi.com](http://www.transportapi.com)

## Transport for London

Location: London

Transport for London's Consultancy brings expertise from the world's oldest and largest fully integrated transport authority facilitating more than 31 million daily journeys across almost every mode of transport. TfL leads the world in safe, efficient and advanced transport solutions.

[www.tfl.gov.uk/info-for/business-and-commercial/commercial-consulting](http://www.tfl.gov.uk/info-for/business-and-commercial/commercial-consulting)

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## Unmanned Life

Location: London

Unmanned Life develops software designed to provide a platform to autonomously operate aerial and ground vehicles.

[www.unmanned.life](http://www.unmanned.life)

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## Vivacity Labs

Location: London

Vivacity Labs are revolutionising how transport is managed by using award winning AI technology to gather data on transport systems, to capture, classify and track live transport usage, 24/7.

[www.vivacitylabs.com](http://www.vivacitylabs.com)

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## Vortex IoT

Location: Wales

Vortex IoT build sensors and mesh network systems for harsh environments where conditions are hostile, power supply is often limited, AI is needed & data security is critical. Vortex IoT focus on developing scalable and repeatable solutions for known business challenges in smart infrastructure, heavy industry, and rail.

[www.vortexiot.com](http://www.vortexiot.com)

## What 3 Words

Location: London

Navigation platform providing a really simple way to talk about location. What 3 Words have assigned each 3m square in the world a unique 3-word address that will never change. Applications in logistics, ride hailing, ecommerce, navigation, emergency response, government and autonomous vehicles.

[www.what3words.com](http://www.what3words.com)

## Yellow Design

Location: Northern Ireland

A smart city visitor platform has been developed by Yellow Design to gather real-time data insights. Visitors, when using their smart phones, can utilise Augmented Reality experiences, guided by AR-wayfinding and virtual kiosks that integrate within the public transport systems. All interactions that generate data are collated and presented with the AR360 dashboard, providing powerful data visualisation for major city stakeholders.

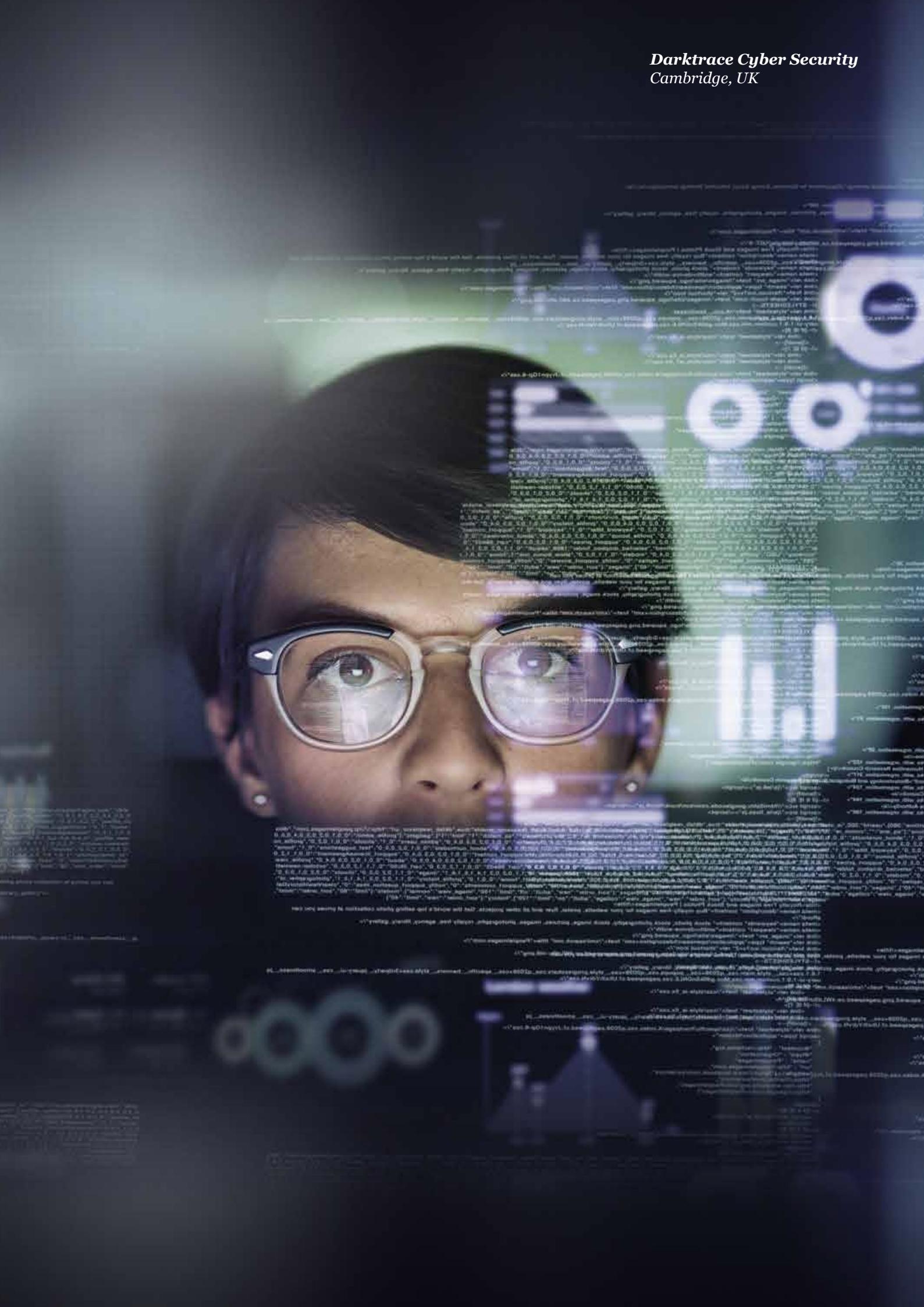
[www.yellowdesign.tv](http://www.yellowdesign.tv)

## Zipabout

Location: West Midlands

Zipabout's product is Passenger Connect; a plug-in personalised information service, powered by big data and built specifically for the transport sector to provide real-life insights into passenger behaviour. It is available to every UK rail operator and can be extended across the entire transport network.

[www.zipabout.com](http://www.zipabout.com)



# Security

## Overview:

The rise of increased data sharing and new business models within smart cities creates significant vulnerabilities and security issues. This has created opportunities in the cyber security sector for IoT devices and networks. The UK's world leading universities are the leading edge of this new IoT cyber security market.



## Case Study

The UNHCR organization in Iraq are targeting more than 1 million displaced Iraqis and refugees that need cash assistance. Currently over 120,000 vulnerable families in Iraq and approximately 30,000 non-Iraqi families in the country receive cash support via the UNHCR. A Cash-out identification solution was required to increase the registration capacity for beneficiaries whilst, making it more convenient, removing duplication of effort, eliminating fraud and identity theft and making it easier for use by the elderly.

Iris recognition is the most accurate, fast and secure biometric personal identifier available today. The on-boarding process for iris biometric capture is fast and simple - the IrisGuard imager captures a greyscale image of the iris, converting it to a reliable and permanent Unique Verifiable Identity (UVI) template that is used for cross-matching purposes. IrisGuard's EyePay® Phone is the first of its kind; and capable of authenticating identity on a global scale within 3 seconds. This new smartphone combines IrisGuard's expertise in iris recognition technology with mobile capability, providing the world's only one-to- millions iris comparison in real-time – increasing the number of beneficiaries served with higher standards of accountability and efficiency.

IrisGuard's partnership with the UNHCR and Zain Cash has delivered a program utilizing our end-to-end EyePay® Cash platform across 70 Zain Cash agents' locations in Iraq, which has in the last 4 months processed over 47,000 transactions amounting to \$20M and growing.

# Security companies

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- |                           |                        |
|---------------------------|------------------------|
| 1. Angoka                 | 11. IBM                |
| 2. Awen Collective        | 12. Intercede          |
| 3. Aralia Systems         | 13. IrisGuard          |
| 4. Brandseye              | 14. KeyOptions         |
| 5. BT                     | 15. NCC Group          |
| 6. Cambridge Intelligence | 16. ProtectBox         |
| 7. Crypto Quantique       | 17. Skurio Ltd         |
| 8. Darktrace              | 18. Symphonic Software |
| 9. EtherSec               | 19. Uleska             |
| 10. Hugslock              | 20. Yoti               |

## Angoka

Location: Northern Ireland

Focussed on managing the cyber security risks inherent in Connected and Autonomous vehicles, Smart Cities and IoT devices.

[www.angoka.io](http://www.angoka.io)

## Awen Collective

Location: Wales

Awen Collective are the first step in effectively identifying potential cyber threats on modern and legacy operational infrastructure. Their software addresses the most pressing aspects of industrial cyber security including asset and vulnerability discovery for smart city technology.

[www.awencollective.com](http://www.awencollective.com)

## Aralia Systems

Location: South East

Software incorporating real time cataloguing of sensor data, including video, automatic reporting of alarms, filtered through user-defined actionable intelligence and rapid SQL-based querying.

[www.araliasystems.com/smart-city](http://www.araliasystems.com/smart-city)

## Brandseye

Location: London

BrandsEye uses a unique combination of crowd-sourcing and AI to turn unstructured public feedback from social media or survey data into actionable insights. BrandsEye's Crowd platform of human contributors identify specific issues driving public sentiment, which can be used to inform strategic and operational decisions across multiple business units at critical stages of the customer journey.

[www.brandseye.com](http://www.brandseye.com)

## BT

Location: London

BT provide cyber maturity assessments to evaluate the infrastructure of an organisation's network find any shortfalls or vulnerabilities and identify solutions and can then be built into assessments of IoT applications.

[www.iot.bt.com/industries/cities.html](http://www.iot.bt.com/industries/cities.html)

## Cambridge Intelligence

Location: East of England

Cambridge Intelligence helps organisations visualise and understand their complex connected data. They provide data visualisation toolkits that enable organisations rapidly to build and deploy customized network visualisation (applications that are powerful and simple to use).

[www.cambridge-intelligence.com](http://www.cambridge-intelligence.com)

## Crypto Quantique

Location: London

Combining quantum technologies with modern cryptography to provide a unified IoT end-to-end security from device to network.

[www.cryptoquantique.com](http://www.cryptoquantique.com)

## Darktrace

Location: London

Darktrace's self-learning AI detects and responds to threats as they emerge, providing total network visibility and ensuring that critical infrastructure can function reliably and safely, without interruption.

[www.darktrace.com](http://www.darktrace.com)

## EtherSec

Location: London

Deep A-Eye™ from EtherSec is the world's most advanced real-time video analytics software, designed to detect and verify humans – and only humans – in areas they are not supposed to be.

[www.ethersec.com](http://www.ethersec.com)

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## Hugslock

Location: South West

Hugslock systems is a security & safety service provider offering infrastructure operators best-in-class incident prevention and response management.

[www.hugslock.com](http://www.hugslock.com)

## IBM

Location: London

Through the intersection of AI, intelligent orchestration, the agility of the cloud and, collaboration with each other, IBM can tackle the cyber security challenges of smart cities.

[www.ibm.com](http://www.ibm.com)

## Intercede

Location: East Midlands

Intercede's MyID® credential management software enables governments and enterprises to deploy and manage PKI based digital identities so that citizens and employees are able to access secure cloud and network-based systems and resources using the strongest form of multi-factor authentication.

[www.intercede.com](http://www.intercede.com)

## IrisGuard

Location: South East

IrisGuard develops and manufactures iris recognition technologies, including a payment system that verifies user identity via eye scanning.

[www.irisguard.com](http://www.irisguard.com)

## KeyOptions

Location: London

KeyOptions innovates, designs and develops solutions for government, defence, security, urban, commercial and retail industries. Their 'In-Motion' solutions and services coupled with real-time analytics for IoT brings a new way of integration that provides simplified integration with the Machine Learning and dashboard results organisations need.

[www.keyoptions.com](http://www.keyoptions.com)

## NCC Group

Location: North West

A global cyber security firm that has deep expertise in the secure design, testing and operation of Smart Cities to optimise their cyber resilience.

[www.nccgroup.trust](http://www.nccgroup.trust)

## ProtectBox

Location: Northern Ireland

Cyber security comparison marketplace that lets small and medium businesses everywhere find and buy all their security in one place. Consumer, Government & Enterprise versions to be launched soon. Their award winning, responsible bundling & matching AI is also being re-purposed for Smart Cities, Industrial IoT, Health, Agri, Energy, Cleantech markets, amongst others.

[www.protectbox.com](http://www.protectbox.com)

## Skurio Ltd

Location: Northern Ireland

The Skurio Digital Risk Protection platform promotes a data-centric approach to cybersecurity. Established in 2011, to provide real-time cyber threat intelligence for UK.GOV, police & intelligence agencies to protect the 2012 Olympics

[www.skurio.com](http://www.skurio.com)

## Symphonic Software

Location: Scotland

Symphonic Software, headquartered in Edinburgh, is an industry leader in dynamic authorization software helping organisations with the challenge of complex policy decisions across multiple channels, meeting regulatory compliance, sharing data securely and protecting critical assets and IP.

[www.symphonicsoft.com](http://www.symphonicsoft.com)

## Uleska

Location: Northern Ireland

Uleska provides a software platform, and associated services, that automates software, cloud, and other security assurance checks within fast-paced software companies. Uleska's modular nature allows assurance checks to be geared towards specific types of technology, or industry, making it the perfect choice to implement a suite of security checks specific to Smart Cities.

[www.uleska.com](http://www.uleska.com)

## Yoti

Location: London

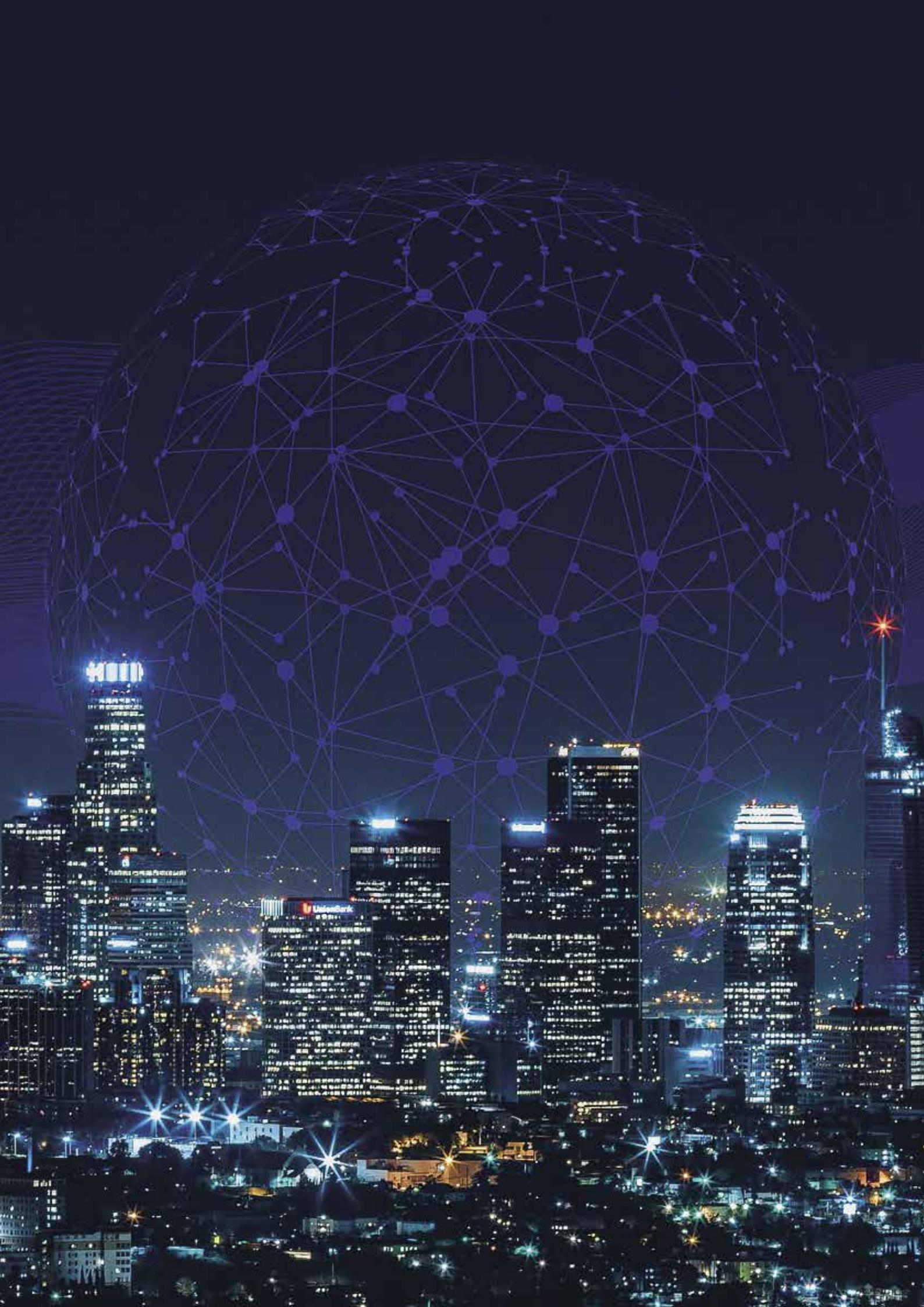
The Yoti platform spans digital identity verification, credential management (eg Covid test results), age verification, e-signatures, biometric authentication and access control. This enables governments and businesses to onboard their users securely across their apps and websites, at a fraction of time and cost compared to traditional methods. Sectors: cyber security, health, financial services, aviation, retail, government, access control.

[www.yoti.com](http://www.yoti.com)

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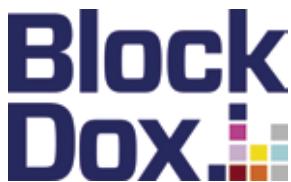
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# Smart Buildings

## Overview:

New technologies and business models have made buildings and houses active players in the energy system and cities are looking to smart buildings to solve many of the challenges of moving to lower carbon emissions. In addition, cities are developing high performance buildings that interact with occupiers, provide location-based services, increase comfort and even maintain themselves.



## Case Study

BlockDox are a London based digital solutions company, focussed on challenges facing the built environment. BlockDox utilise IoT and data science technologies to improve operational performance in two smart city verticals: intelligent transportation & smart buildings. Using sensor technology BlockDox collect anonymised footfall data, which is then analysed and displayed to inform demand based decision making. Additionally, the sensors integrate environmental monitoring (CO<sub>2</sub> levels, PM 2.5 levels, temperature, humidity) from both indoor and outdoor environments.

Their patented technology has multiple benefits including energy saving, space optimisation, operational decision making & revenue generation. In public transportation, the BlockDox solution can help understand passenger footfall trends, predict crowding, inform timetabling and retail performance. BlockDox have installed projects in the UK and Europe with their first project in China scheduled for 2020.

As of 2020, BlockDox have already participated in five international accelerator programmes and attained 14 global innovation awards.

# Smart Building companies

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- 1. Ash Projects
- 2. Atamate
- 3. Audio Analytic
- 4. Avia
- 5. Beringar
- 6. BlockDox
- 7. Briteyellow
- 8. Centrica
- 9. Chameleon Technology
- 10. Cûrv
- 11. Energenie
- 12. Filament
- 13. heatboss
- 14. Kraydel
- 15. LightFi
- 16. Lightwave
- 17. Lowe Rental
- 18. Ovon Technologies Ltd
- 19. Pointr
- 20. Shields Energy Services
- 21. Spicatech
- 22. Sycous Limited
- 23. Wondrwall Group
- 24. Yoti

## Ash Projects

Location: Yorkshire and the Humber

Real-time occupancy monitoring to dynamically manage climate control. This can be integrated with existing Building Management Systems and utilise historic data to better plan energy consumption.

[www.ashprojects.com](http://www.ashprojects.com)

## Atamate

Location: South East

IoT platform which reduces energy, maintenance and management in buildings while increasing the occupant's security and comfort.

[www.atamate.com](http://www.atamate.com)

## Audio Analytic

Location: East of England

Audio Analytic are the pioneer of AI sound recognition technology. The company is on a mission to map the world of sounds, giving machines a compact sense of hearing. Use cases include both the smart home and automotive sectors, where intelligent sound recognition can aid decision making and monitoring.

[www.audioanalytic.com](http://www.audioanalytic.com)

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## Avia

Location: East of England

Avia have developed secure smart locks for windows and doors. Avia products have been approved by many different regulatory bodies and have achieved many notable 'first' accreditations with such bodies as the BSI, ETSI, Sold Secure (Master Locksmiths Association) and Apple HomeKit.

[www.aviasmart.com](http://www.aviasmart.com)

## Beringar

Location: Scotland

Beringar develops sensors that utilise machine learning technology to provide users with metrics on how they use their space at home, such as typical number of people and temperature.

[www.beringar.co.uk](http://www.beringar.co.uk)

## BlockDox

Location: London

BlockDox makes spaces smarter using artificial intelligence, machine learning and the Internet of Things.

[www.blockdox.com](http://www.blockdox.com)

## Briteyellow

Location: South East

Indoor mapping, wayfinding, and asset management solutions to create intelligent spaces to improve user experience and generate revenue through augmented and virtual reality.

[www.briteyellow.com](http://www.briteyellow.com)

## Centrica

Location: South East

A leading energy and services business providing large energy users a tailored energy strategy and plan covering flexible, distributed and low carbon technologies, in addition to system access and energy optimisation services (including SaaS) to support energy resilience and sustainability goals.

[www.centrica.com](http://www.centrica.com)

## Chameleon Technology

Location: Yorkshire and The Humber

Chameleon Technology develop and manufacture in-home displays and related hardware for the global smart meter market that enables consumers to regulate and monitor energy consumption.

[www.chameleontechnology.co.uk](http://www.chameleontechnology.co.uk)

## Cûrv

Location: West Midlands

Cûrv provide smart solutions for homes, including infrared heaters and apps which enables users to control heating remotely via smartphone devices.

[www.curv360.com](http://www.curv360.com)

## Energenie

Location: East of England

Energenie develops, designs and manufactures energy-efficient smart homes products.

[www.energenie4u.co.uk](http://www.energenie4u.co.uk)

## Filament

Location: London

Filament are experts in Applied AI. With a host of world-class clients, they build bespoke AI solutions ([filament.ai](http://filament.ai)) with use cases in governance and standards, health, smart buildings and data analytics. They also own and distribute EBM ([enterprisebotmanager.com](http://enterprisebotmanager.com)), the UK's leading Chatbot CMS to build, monitor & continuously improve chatbots programmes at scale.

[www.filament.ai](http://www.filament.ai)

## heatboss

Location: Northern Ireland

Energy efficient heating controls for commercial & public buildings, enabling web-access to room-level control of the building's heating via a. wireless retrofit, to achieve typically 30% reduction on heating energy consumption & associated costs & emissions.

[www.heatboss.co.uk](http://www.heatboss.co.uk)

## Kraydel

Location: Northern Ireland

Kraydel develops technology for monitoring elderly individuals living alone. The technology uses machine learning to predict their daily routines and can be programmed to alert a carer when certain triggers are met.

[www.kraydel.com](http://www.kraydel.com)

## LightFi

Location: London

Monitoring of people movement in buildings and regulation of air quality through IoT sensors.

[www.lightfi.io](http://www.lightfi.io)

## Lightwave

Location: West Midlands

Lightwave is the first comprehensive smart home range of wiring accessories in Europe. It is simple to install yourself and integrates seamlessly with other leading smart home products for worry-free wireless home automation.

[www.lightwaverf.com](http://www.lightwaverf.com)

## Lowe Rental

Location: Northern Ireland

LoweConex from Lowe Rental is the latest NarrowBand-IoT enabled monitoring and automation platform that handles millions of data points every resolution from any modbus enabled source. LoweConex is a central data visualisation and automation platform. Allowing for revolutionary visualisation of data and with rule-based logic generating automated actions, LoweConex is at the cutting edge of big data egress, visualisation and automated actions.

[www.lowerental.com/uk/  
Loweconex](http://www.lowerental.com/uk/Loweconex)

## Ovon Technologies Ltd

Location: North West

Ovon are IoT product specialists who create cutting-edge hardware and software solutions. Ovon takes your product all the way from an idea into a mass-produced product suitable for customers around the world.

[www.ovon.io](http://www.ovon.io)

## Pointr

Location: London

Pointr is a mobile navigation app providing location information inside large buildings such as airport terminals.

[www.pointr.tech](http://www.pointr.tech)

## Shields Energy Services

Location: East of England

Shields Energy Services installs technology for clients' properties which increases the efficiency of energy consumption. It also offers data monitoring services in order to advise clients on the best methods for reducing their energy usage.

[www.shields.energy](http://www.shields.energy)

## Spicatech

Location: West Midlands

SPICA provide PropTech solutions to manage workspaces. The tech uses IoT sensors in workspaces to regulate temperature, usage, lights, noise, parking, catering, hot desking and meeting rooms, as well as helping with wayfinding.

[www.spicatech.co.uk](http://www.spicatech.co.uk)

## Sycous Limited

Location: Yorkshire and the Humber

Sycous provide solutions for metering and billing of utilities, including data importation, management, validation and consumer billing. Sycous' software is designed to work seamlessly with conventional AMI systems, as well as cutting edge IoT technology for smart utilities and cities.

[www.sycous.com](http://www.sycous.com)

## Wondrwall Group

Location: North West

Wondrwall is a technology company dedicated to changing the way we live and how we use energy. Wondrwall's intelligent AI powered home automation adapts to human behaviours and environmental factors efficiently to control a home's heating, lighting and security.

[www.wondrwall.co.uk](http://www.wondrwall.co.uk)

## Yoti

Location: London

The Yoti platform spans digital identity verification, credential management (eg Covid test results), age verification, e-signatures, biometric authentication, and access control. This enables governments and businesses to onboard their users securely across their apps and websites, at a fraction of time and cost compared to traditional methods. Sectors: cybersecurity, health, financial services, aviation, retail, government, access control

[www.yoti.com](http://www.yoti.com)

**Interactive bus stop with a real-time mapping tool**  
Regent Street, London



# Data Analytics

## Overview:

Data analytics allows computers to quantify the millions of digital elements of urban life that are created by sensors and the Internet of Things. To realise the benefits of data analytics it is essential that data is shared throughout the smart city. Open data projects collect either full data sets or metadata from existing databases, often from multiple sources, into huge, searchable databases or archives of different types of machine-readable media.



## Case Study

nquiringminds' Trusted Data Exchange (TDX) is a secure data sharing and data analytics platform for Smart Cities. The TDX has been deployed in many cities, solving many different problems, on a unified platform, including:

- **Social Care Analytics:** Strategically plan, monitor and managed social care. Southampton. Hampshire. Torfaen, Oxford.
- **Social Care Sensors and Care Management:** Smart sensors and self-managed care solutions. Portsmouth, Oxford, Sunderland, Southampton.
- **Business Rates:** Optimise business rate collection through analytics and optimised inspection workflow. Belfast.
- **Highway Sensors and Analytics:** Analytics and smart sensors for detecting and predicting road distress. Durham and Gwent.
- **Domestic Energy Sensing:** Energy and building performance and occupancy monitoring. Xian Province, Southampton, Portsmouth.
- **Traffic and parking:** Smart integrated parking analysis. Oxford.

The TDX is proven Smart City platform, which integrate disparate data sets, handles security and privacy constraints. analyses data in depth and helps you deploy the results operationally.

# Data Analytics companies

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1. Actuality One
2. Anaeko
3. Analytics Engines
4. BT
5. Datactics
6. Emu Analytics
7. Filament
8. Hypersphere
9. IBM
10. Informed Solutions
11. iSensing Ltd
12. KnowNow Information Ltd
13. Limitless Insights
14. Movement Strategies
15. nquiringminds
16. Perform Green
17. Rezatec
18. WhiteSpider

## Actuality One

Location: Scotland

Actuality One provide reporting and analytics platform delivery, allowing organisations to make data informed and driven decisions.

[www.actuality.one](http://www.actuality.one)

## Anaeko

Location: Northern Ireland

Anaeko is a trusted data partner of large public and private sector organisations. The company provides the following services: Agile & DevOps, data optimisation, integrated analytics, hybrid cloud Integration and has a focus on the health sector and smart cities including a number of smart water analytics solutions.

[www.anaecko.com](http://www.anaecko.com)

## Analytics Engines

Location: Northern Ireland

Provides data analytics solutions to organisations throughout industry and the public sector by reducing complexity, optimising performance and maximising the value of data.

[www.analyticsengines.com](http://www.analyticsengines.com)

## BT

Location: London

Intelligent Data Analytics provide better insights into how smartphone and tablet users behave in cities.

[www.iot.bt.com/industries/cities.html](http://www.iot.bt.com/industries/cities.html)

## Datactics

Location: Northern Ireland

Self-service data quality, matching & AI platform provider, helping global financial services firms and governments to get value from their data, avoid costly IT roadblocks, common in data management, and reduce the risk of being fined or sanctioned by regulators.

[www.datactics.com](http://www.datactics.com)

## Emu Analytics

Location: London

The Flo.w platform captures, analyses and visualises location and time-based data to generate interactive, map-based, location insights which are presented through a hyper-perfomant web experience.

[www.emu-analytics.com](http://www.emu-analytics.com)

## Filament

Location: London

Filament are experts in Applied AI. With a host of world-class clients, they build bespoke AI solutions ([filament.ai](http://filament.ai)) with use cases in governance and standards, health, smart buildings and data analytics. They also own and distribute EBM ([enterprisebotmanager.com](http://enterprisebotmanager.com)), the UK's leading Chatbot CMS to build, monitor & continuously improve chatbots programmes at scale.

[www.filament.ai](http://www.filament.ai)

## Hypersphere

Location: South East

HyperSphere are big data visualisation specialists providing strategic consulting, innovative design, project management and implementation of engaging smart solutions.

[www.hyper-sphere.com](http://www.hyper-sphere.com)

## IBM

Location: London

IBM provide a suite of data analytics, data management and blockchain consulting solutions and services. Smart City use cases include co-ordinating citizen records and administration.

[www.ibm.com](http://www.ibm.com)

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## Informed Solutions

Location: North West

Informed Solutions is a leading international provider of digital transformation services and secure platforms for large scale operations, data analytics and location-based intelligence. It turns digital infrastructure into smart physical infrastructure, serving millions of people every day in a more connected, converged and personalised world.

[www.informed.com](http://www.informed.com)

## iSensing Ltd

Location: North West

The platform is made up of IoT sensors that collect data on passing mobile devices. The data is then sent back to the cloud platform where it is stored, processed and made available to users. Data is visualised in four ways; through iSensing's API, dashboard, infographics and raw data.

[www.isensing.co.uk](http://www.isensing.co.uk)

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## KnowNow Information Ltd

Location: South East

KnowNow provides software and consultancy services to city planners, ranging over areas such as app development, sensor deployment and analytics, and flood modelling.

[www.kn-i.com](http://www.kn-i.com)

## Limitless Insights

Location: Northern Ireland

Limitless are a location intelligence platform that ingests location, company and social data and provide customers with rich, intelligent insights. They specialise in Retail, Property and Place Tech and connect digital and physical customers for visibility on marketing activity with a full recommendation engine to make interactions personal & relevant.

[www.limitlessinsight.com](http://www.limitlessinsight.com)

## Movement Strategies

Location: London

Movement Strategies apply pioneering algorithms to complex spatial data sets, extracting valuable insights for end users. From this they measure, analyse and enhance places, events, transport and cities for all the people that use them.

[www.movementstrategies.com](http://www.movementstrategies.com)

## nquiringminds

Location: South East

nquiringminds specializes in Smart Cities, data analytics and Internet of Things. Solutions focus around digital transformation, unlocking efficiency and cost savings in existing and new processes.

[www.nquiringminds.com](http://www.nquiringminds.com)

## Perform Green

Location: South West

Delivers transformational smart society programmes that harness the new opportunities presented by data and technology.

[www.performgreen.co.uk](http://www.performgreen.co.uk)

## Rezatec

Location: South East

Rezatec's geospatial analytics help business leaders in the water, agriculture, infrastructure and forestry sectors to prioritise investment, multiply asset value, optimise resources and super-charge productivity.

[www.rezatec.com](http://www.rezatec.com)

## WhiteSpider

Location: London

Through their Software Designed Solutions, WhiteSpider provide the connectivity, data and applications needed to power smart cities.

[www.whitespider.com](http://www.whitespider.com)

*Urban regeneration of the London Docklands*



# Urban Planning and Project Delivery

## Overview:

Owing to the vast nature of smart city technology and projects, urban planners and consultancies are playing an ever more prominent role in the design, creation and delivery of Smart Cities. These companies specialise in bringing together technology, skills and experience into a package to deliver positive change to an urban environment.



## Case Study

Connexin are an end to end smart cities and IoT operator based in Yorkshire, offering a number of smart cities and IoT services and solutions, including a powerful platform that collects and integrates sensor data from different vendors, sensor types and systems, which are typically fragmented and independently managed.

Connexin have recently partnered with Hull City Council to help the city realise its ambition of becoming a leading smart city. Connexin are providing Hull City Council with the CityOS platform, which will allow Hull City Council to add and connect new smart, sustainable technology solutions. Hull City Council will use Connexin's CityOS platform to integrate, view, manage and respond to information from a range of council services, sensors and systems, using a single intelligent dashboard.

The project will help Hull City Council deliver more effective services for residents, including everything from traffic management to health and social care. Initially residents will benefit from improved information about transport, traffic and parking, allowing them to make better informed choices.

Connexin are also working on a number of other IoT projects across the world helping both the public and private sector realise the power of data through smart monitoring and data science in sectors such as manufacturing, water utilities and energy.

# Urban Planning and Project Delivery companies

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1. AECOM
2. Arup
3. Atkins
4. Broadway Malyan
5. Buro Happold
6. Cities Reloaded
7. Cityzenith
8. Connexin
9. Mott McDonald
10. PwC
11. Transport for London

## AECOM

Location: London

AECOM is the world's premier infrastructure consulting firm, partnering with clients to solve the world's most complex challenges and build legacies for generations to come. From pioneering digital design to developing their own custom software and innovative environmental solutions, they bring the best minds together to deliver a better world.

[www.aecom.com](http://www.aecom.com)

## Arup

Location: London

Arup is a firm of designers, engineers, and consultants working across the built environment from 90 offices worldwide. The firm's mission to Shape a Better World has delivered iconic projects ranging from the Sydney Opera House to the Singapore Sports Hub.

[www.arup.com](http://www.arup.com)

## Atkins

Location: London

Atkins helps clients plan, design and enable major capital projects, and provides expert consultancy that covers the full project lifecycle.

[www.atkinsglobal.com/en-gb](http://www.atkinsglobal.com/en-gb)

## Broadway Malyan

Location: London

Broadway Malyan is a Global Design & Architecture Consultancy, who pro-actively support governments, institutions, communities and developers with state of the art, smart, resilient and award-winning design solutions across urban scales, sectors and challenges.

[www.broadwaymalyan.com](http://www.broadwaymalyan.com)

## Buro Happold

Location: London

Buro Happold is an independent, international engineering firm with a reputation, built up over the last 40 years, for delivering creative, value led building and city solutions for an ever-changing world.

[www.burohappold.com](http://www.burohappold.com)

## Cities Reloaded

Location: London

Cities Reloaded is a new smart cities platform to enable the best of urban regeneration to be designed and delivered in the 'new normal' utilising best in class partners, collaboration and emerging technologies.

[www.citiesreloaded.com](http://www.citiesreloaded.com)

## **Cityzenith**

Location: London

Cityzenith is a software development organisation that makes software services for the built environment, assisting people designing, constructing, and managing complex, large-scale building projects, real estate portfolios and cities. The company's SmartWorldPro2™ Digital Twin platform helps forward-thinking architects, buildings owners, and property managers leverage data across every phase of the building lifecycle, from design through demolition.

[www.cityzenith.com](http://www.cityzenith.com)

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## **Connexin**

Location: Yorkshire and the Humber

Connexin is the UK's first Smart City Operator. Delivering IoT connectivity across their purpose-built UK network. They provide a central CityOS software platform for device and data management. Connexin design, build and deploy end-to-end solutions on top of this platform to enable businesses and government to make faster and smarter decisions by utilising IoT and the power of data.

[www.connexin.co.uk](http://www.connexin.co.uk)

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## **Mott MacDonald**

Location: London

Mott MacDonald are the global engineering, management and development consultancy, helping cities leverage the value of data for the benefit of the citizen and harness smart technology and city data to achieve: enhanced insights into citizen aspirations and choices, increased efficiency and resilience of city services and improved economic and social outcomes.

[www.mottmac.com](http://www.mottmac.com)

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## **PwC**

Location: London

PwC's Cities team in the UK is part of a global network of smart city specialists. PwC work with local governments, their development partners, and the private sector, to help solve important urban problems using data and technology.

[www.pwc.com](http://www.pwc.com)

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## **Transport for London**

Location: London

Transport for London designs streets to make London's communities greener, healthier and more attractive places to live, work, play and do business. This transformative spatial and master planning expertise and project sponsorship is available via TfL's international consultancy.

[www.tfl.gov.uk/info-for/business-and-commercial/commercial-consulting](http://www.tfl.gov.uk/info-for/business-and-commercial/commercial-consulting)





Department for  
International Trade

[great.gov.uk](https://great.gov.uk)

## DIT

The UK's Department for International Trade (DIT) helps businesses export, drives inward and outward investment, negotiates market access and trade deals, and champions free trade.

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