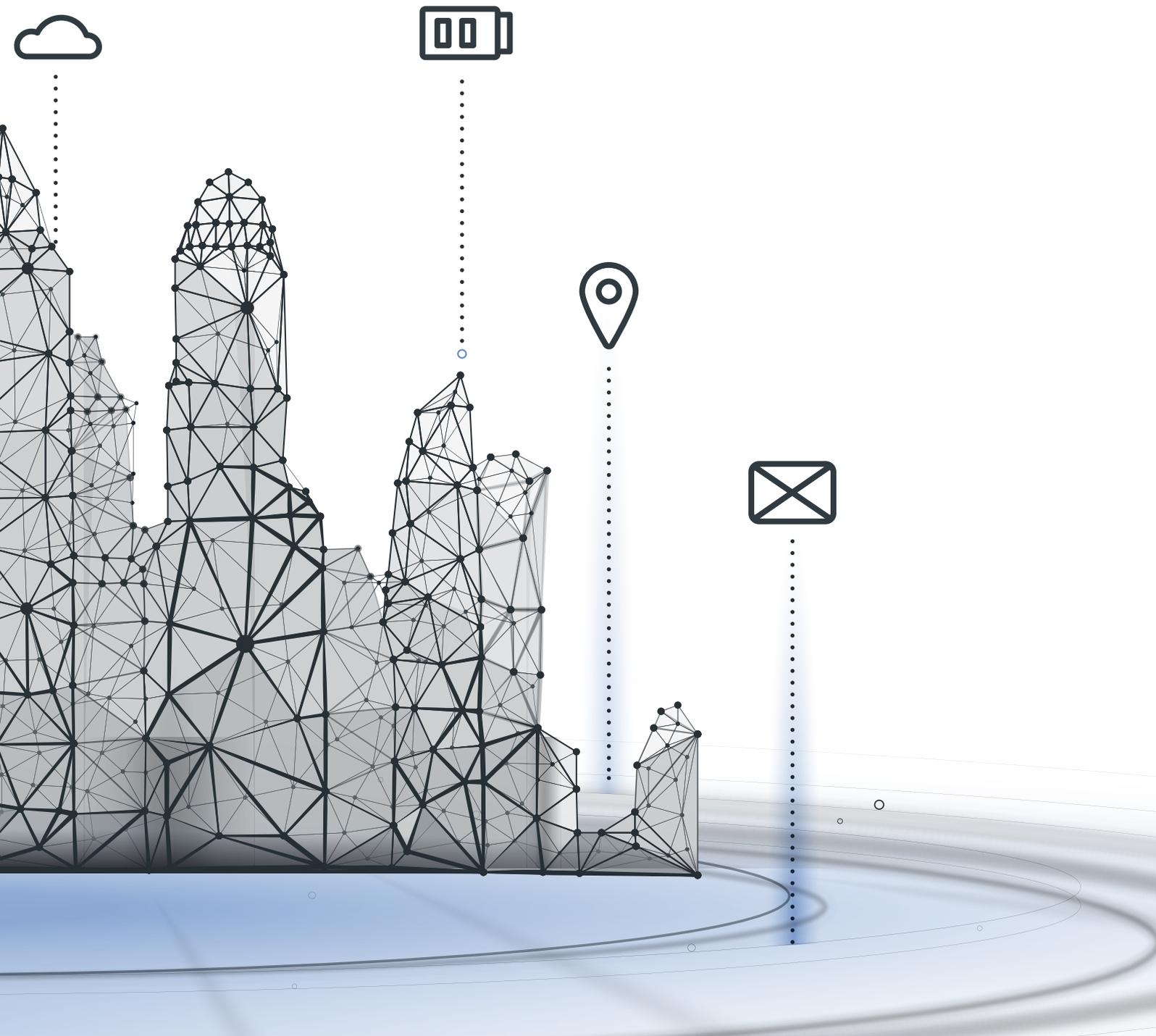


SMART CITIES

Creating cities of the future



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Foreword

The world is becoming more urban, with 70% of the global population expected to live in urban areas by 2050.

The cities we live in need to change – they need to become smart; Smart Cities are our future.

A Smart City is one in which technology is employed across an entire city, using data platforms that are accessible and used to enhance a citizen's experience of how they live, work and socialise.

Trowers & Hamblins and RDS Big Data Solutions brought together a host of experts in the field to discuss some of the issues associated with the Smart Cities agenda. It was a frank and lively debate and we look forward to contributing to an issue that will impact on all our futures.



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“It’s important to place human health, happiness and experience at the centre of everything we do.”

Martin Prince-Parrott, Gensler

Roundtable

Attendees

Turner Townsend	Asef Ahmed
WM5G	Gayle Cogswell
CLF Consulting	Claire Fisher
We Fight Fraud	Solomon Gilbert
Oxford Computer Consultants	Reynold Greenlaw
Barton Willmore	Luke Hillson
Infitech Solutions	Nagaraj Konda
We Fight Fraud	Andy Macdonald
Mott Macdonald	Tony O'Toole
Gensler	Martin Prince-Parrott
Viessmann	Graham Russell
Copper Consultancy	Kelly Ruston
We Fight Fraud	Tony Sales
Expert in Autonomous Vehicles	Monique Seth
You Smart Thing	Chris Thompson
Mott Macdonald	Anna Watt-Radford
Localis	Jonathan Werran

Hosts

Trowers & Hamlins	Amardeep Gill
RDS Big Data Solutions	William Taaffe
RDS Big Data Solutions	Karen Morrall

“Smart living will just be living really conveniently; people-focused living.”

Luke Hillson, Barton Willmore





New forms of Public Private Partnerships

There are numerous facets to a Smart City and to create a 'Smart Cities future', we need to work collaboratively. It was argued that the state does not possess the resource to address the Smart City agenda alone, and a transparent and regularised approach from the public sector will be needed to tackle some of the challenges of what is often perceived as a purely private sector initiative. New forms of public private partnerships (PPP) will need to emerge. Jonathan Werran, Chief Executive at Localis, suggested that more than just a mixture of public and private funding will be required to facilitate Smart Cities:

“A three pronged approach is needed to deliver Smart Cities; decarbonisation, digitalisation and decentralisation”.

Acting alone the public sector may not be able to take advantage of emerging technologies, but through a PPP a balance can be struck between the public sector's expertise and the innovation within the private sector.

This approach to PPPs and Smart Cities is not necessarily shared across the region. Gayle Cogswell, Programme Director of Industry 4.0 at WM5G, takes the view that “it is about smart living, not the city”. It was also discussed that perhaps collaboration between the public and private sector could cause delay.

The table considered that “Smart Cities” is often a label and in reality it will be about how we work and live within our city. Irrespective of what a Smart City actually is; legal frameworks and regulation will be vital.



Mobility in a Smart City

Mobility and transport need to undergo changes and improvements to help facilitate a Smart City, which raises the question of what changes need to be made and how will mobility and transport look in a Smart City?

Karen Morrall, Director at RDS Big Data Solutions, considered the impact of infrastructure on the efficiency of transport, referencing Shanghai as an example where the city and its transport infrastructure has been built from the bottom up and provides support for different modes of transport. There was consensus that despite differing from Shanghai in terms of infrastructure foundations, other cities can move towards smarter mobility by achieving smarter, optimised transport and mobility through data exploitation.

A challenge to achieving a Smart City is a lack of data. A lack of data means that we cannot properly understand the behaviour of citizens, how they use transport and what drives their choice of transport. The importance of introducing mobility-related technology, such as sensors embedded into street architecture and roads, to better gather relevant data and understand behaviours was identified as a necessary step.

The table reiterated that the data sharing benefits of PPPs may be key in a move towards 'smarter' transport, by enabling the public sector to access the data gathered by the private sector. Data will need to be shared to make the Smart Cities concept a reality, and the public sector can support the private sector to achieve this.

The table recognised the importance of sharing data between cities and how an ideal national model creating an efficient and optimal transport network would involve the sharing of data between major cities including Birmingham, Manchester and London. However, a starting point is required, as Monique Seth, an expert in autonomous vehicles, stated: "in order for a Smart City to become a reality, there needs to be a city platform of some kind".

The table agreed that transport can be optimised through data, highlighting the importance of finding a way to harness data appropriately and effectively. The table discussed that the quick transfer of data can be achieved through a digital solution-focused approach, utilising strong data storage facilities, super computers and powerful networks and servers. Monique emphasised:

“The key to making a smart city work is the transfer of data. This needs to be quick, instant”.

The Government named the West Midlands as the UK's first 'Future Mobility Zone'. Transport for West Midlands (TfWM), an organisation responsible for the delivery of public transport in the West Midlands and part of the West Midlands Combined Authority (WMCA), has been creating one of the world's most advanced environments for live-testing connected autonomous vehicles (CAVs) on West Midlands' public highways. The majority of the funding for the project is from the Government-backed Innovate UK with the ambitious target of implementing driverless cars and trucks into everyday life within the next decade.

Trowers & Hamblins provided legal support on a project that will see the transformation of more than 100km of public highways into a hi-tech test bed spanning between Coventry, Solihull, and Birmingham. These public highways will be

enhanced with weather stations, live cameras, movement correction towers and other equipment to enable accurate positioning of vehicles using GPS data. On completion, manufacturers and other stakeholders of CAVs and related CAV systems will have a state-of-the-art facility to conduct driving research and trials on the Cooperative Intelligent Transport Systems (C-ITS).

We advised WMCA on the procurement and engagement of a contractor to deliver the CAV testbed facility; including the commercial matters arising from the innovative project, complex project procurement, supply, construction, and maintenance contract terms relating to the UK's most advanced highways project. We also advised on a variety of commercial arrangements including the Innovate UK funding agreement.

Data security

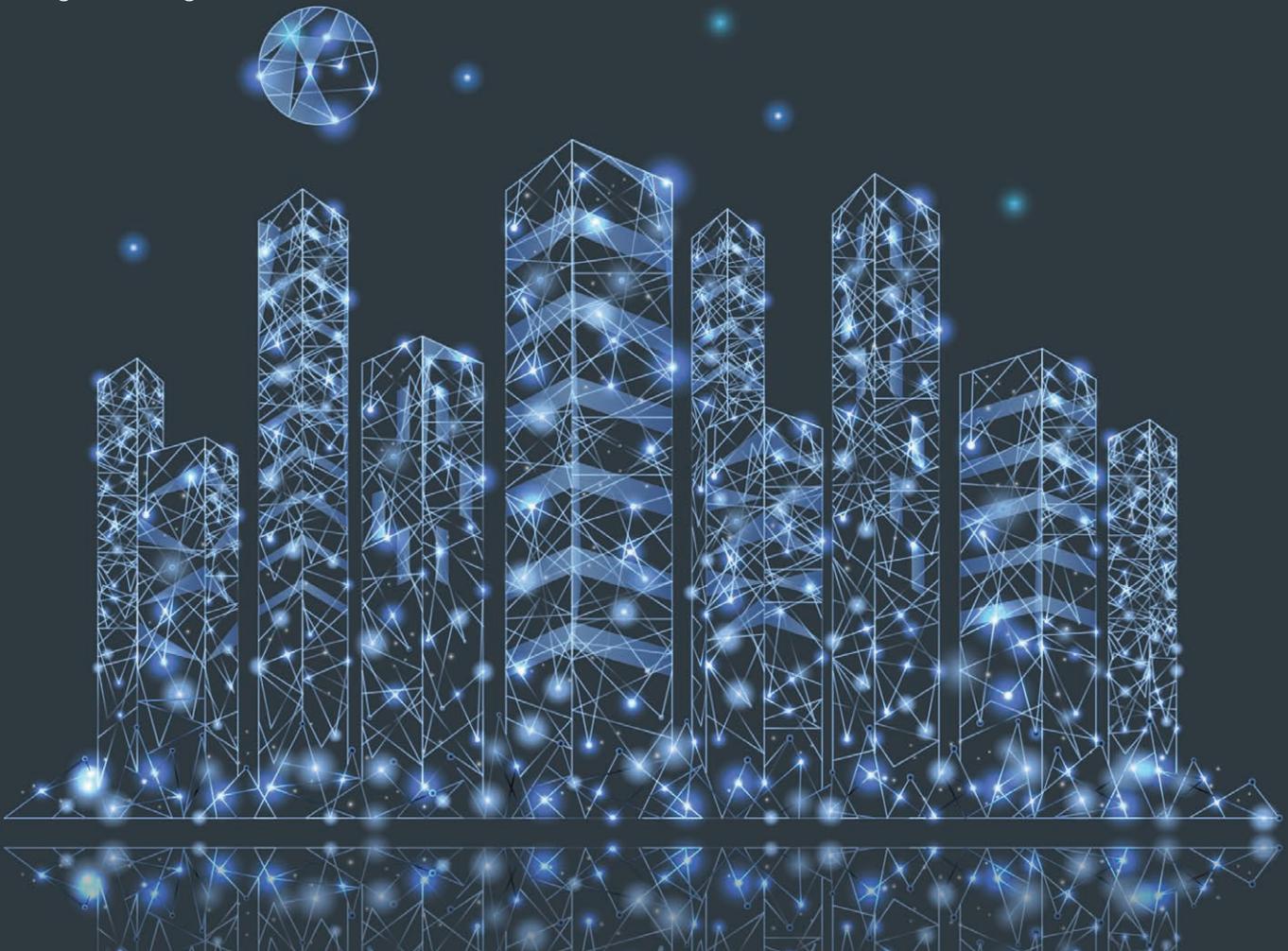
Whilst data sharing and analysis will be key in facilitating a streamlined Smart City, there is a general consensus that there is a risk that data security and privacy could be compromised in the process. As Tony Sales, Director of Strategy at We Fight Fraud said; “We are all a piece of data” and therefore data security and protection of privacy are real concerns for both businesses and individuals alike.

Claire Wright, Owner and Director of CLF Consulting agrees, commenting that: “if we put all data into one repository, it is easier to access - including to hack”. The table considered that on some occasions, usability is prioritised over security and consequently, when facilitating Smart Cities, there is a need to spread data with different encryption codes.

Andy Macdonald, Senior Advisor at We Fight Fraud, says:

“We have a hierarchy of needs but one thing we all want is a safer city”.

Wright believes a practical point of view is required when taking steps towards Smart Cities and that a significant risk assessment should be carried out in terms of the risks associated with facilitating a Smart City and the actual wider benefits. The table turned its attention to the idea that when driving Smart Cities forward, we need to see what service users really want. Wright reinforced this notion further, commenting that: “5G technology is an enabler to build technology, not a reason for doing something”.



The production, use and processing of energy and waste

The table discussed whether Smart Cities can assist in the constructive agendas ensuring that resources are used effectively and efficiently. Given increasing awareness and activism to slow down climate change, and the widely recognised need to move towards renewable, sustainable, green energy and a reduction in wastage and waste, the table discussed if Smart Cities can be achieved without causing further harm to the planet or how they can further these agendas.

Views were expressed about the potential impact on the environment and whether the pursuit of Smart Cities may be one where we are seeking a solution where there isn't a problem. In order to achieve Smart Cities in a way which minimises excess consumption and waste, an importance was placed on engaging in critical thinking about what Smart Cities will be designed to achieve and what problems they will be designed to address.

It was suggested that in order to develop and move forward the Smart Cities concept in a way which minimises damage to the planet, there needs to be a better understanding of how much energy people are using, how it is being used and for what purpose; this can be achieved through using data. For instance, Graham Russell, Managing Director at Viessmann, explained that we are “not using heat effectively and we are not knowing how to use it”; better use of data can help us to tackle issues at an earlier stage. However, it was discussed that the smart initiatives designed to achieve this, such as smart meters do not go far enough and may already be outdated.

Acting for leading private sector contractor Amey, Trowers & Hamlins successfully delivered three waste PPPs (North Yorkshire, Milton Keynes and Isle of Wight). The Amey projects deliver a variety of integrated waste treatment facilities including mechanical treatment (to separate co-mingled municipal waste and deliver higher rates of recycling), anaerobic digestion (for the organic waste fractions) and energy from waste (both gasification and conventional mass burn with energy recovery) facilities to treat remaining residual waste which cannot be recycled or used in other energy recovery processes. The various technology solutions require the development of sophisticated supply chain arrangements to deliver the required civil and engineering works including addressing interface arrangements between the two elements.

Each Amey project involved a different funding solution including traditional project finance, hybrid construction finance with public sector funded capital payments payable on successful commissioning and public sector payments against milestones (with no bank funding).

Working together with potential funders, the Milton Keynes Waste PPP was structured to take account of available construction finance (covering the

build period) with the local authority making a payment equivalent to the outstanding debt upon successful commissioning of the new facilities. The local authority funded the payment from Prudential Borrowing.

A different approach was adopted in the Isle of Wight integrated waste collection and treatment waste PPP. Here the authority was keen to explore the benefits of funding the entire construction through milestone payments using its general power of competence and prudential borrowing. Safeguards are built into the project documentation to ensure that the authority only pays for work carried out and has access to a security package to guard against any defects arising during commissioning which may prevent the facilities from achieving full service commencement.

This finance structure represents an innovative approach to risk allocation (and mitigation of risks borne by the authority which traditionally sit with the private sector). The benefits include significantly reduced costs to the authority over the lifetime of the project and increased flexibility, particularly in the ability of the parties to agree variations once it is operating.

Smart places

Technological innovation and ambitious thinking is important in driving positive change, however the table recognised that there are differences in society in terms of perspectives, experiences, understanding and the needs people have. Kelly Ruston, Senior Account Manager at Cooper Consultancy identified that, “we need behavioural change” in order to formulate a Smart City that serves people, as well as innovation. There was a consensus that human experience must be central in our planning of Smart Cities. Martin Prince-Parrott, RIBA Architect at Gensler emphasised:

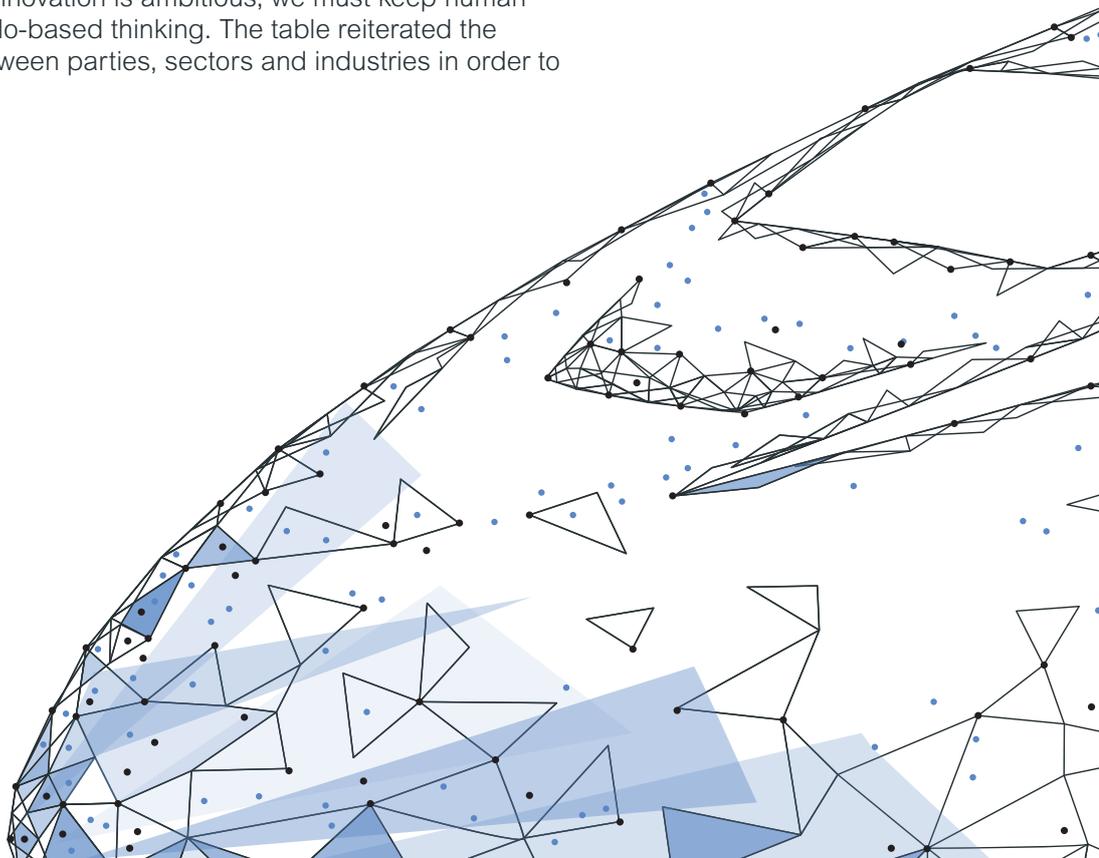
“It’s important to place human health, happiness and experience at the centre of everything we do”.

To this end it was suggested that successful urban planning is achieved through a people-focused approach, putting human convenience first. Nagaraj Konda, Director at Infitech Solutions, underlined the importance of thinking about people and communities in the facilitation of Smart Cities and the application of technology: “I don’t believe Smart Cities will become a reality until the time we follow smart and adaptive lifestyles creating fully connected communities”.

The table agreed that the aim of Smart Cities and technology should be to bring simplicity and convenience to people’s lives. Luke Hillson, Design Director at Barton Willmore, who has expertise in the field of urban planning summarised:

“Smart living will just be living really conveniently; people-focused living”.

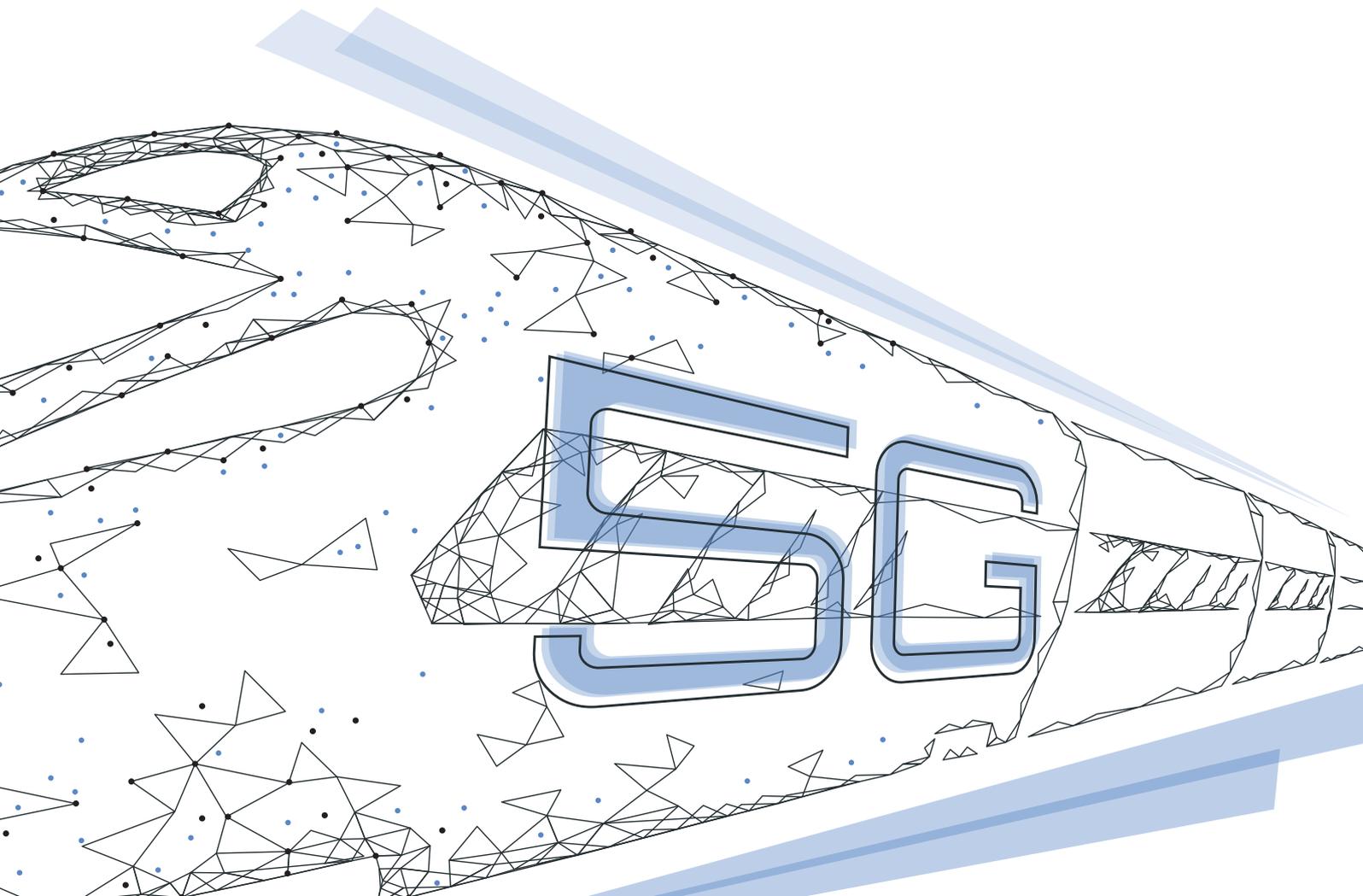
To ensure that technology and innovation is ambitious, we must keep human experience in mind and avoid silo-based thinking. The table reiterated the importance of collaboration between parties, sectors and industries in order to achieve this.



In September 2018, the West Midlands was selected to become the first multi-city 5G test bed in the UK. Trowers & Hamlins continues to advise WM5G, a wholly-owned subsidiary of the West Midlands Combined Authority, on the programme which sees £50m funding pooled from the Department for Digital, Culture, Media and Sport and regional partners to exploit the full potential of the new technology and drive economic growth across the region. Not only will the programme provide opportunities for locally based businesses to contribute to the innovative ecosystem, the advanced connectivity will also seek to support the region's growing digital start-up and SME sectors whilst also enhancing public/private collaboration and devolution.

Trowers provides legal support on a range of core business areas as part of the programme, including procurement, state aid, commercial contracts and corporate governance. The WM5G team continues to focus on five core areas as part of the Urban Connected Communities programme; Application Accelerator, Citizen Wellbeing, Infrastructure Accelerator, Manufacturing and Mobility.

5G, which is short for "fifth generation wireless", is set to be significantly faster than previous generations of telecoms technology, provide more reliable connectivity and greater spectrum bandwidth that can be exploited in new ways by users. Since the launch of the programme, the region continues to become a key tech hub with Wolverhampton selected as one of the first cities in Europe to receive 5G roll out by the mobile network operators.



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