

Smart Cities Development Conference

Conference Report

Wednesday, 6th February 2019 King Centre, Oxford

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Keith Griffiths, Managing Director, Built Environment Networking The term 'Smart Cities' is in vogue across the UK Property and Construction sector but in putting together this event it soon became apparent that a lot of people have different interpretations of what it actually means. Quite timely then for our company to try and unpick the many different definitions and piece them together to help delegates understand how technological advancements are going to change the way we build our towns and cities.

This event was new territory for BEN but looking at the programme you wouldn't have thought so because we managed to attract some of the most eminent names in the future cities field. Perhaps one of the main highlights of the day was the 'Question Time' session which provoked a lively reaction from the audience and probably could have gone on for the full morning!

It is tradition for our conferences to act as more than just a 'talking shop' but we understand the necessity of providing space for ideas to be presented and then challenged. By the end of the day, the audience were left pondering the intricate details of what it takes to deliver change; considerations about energy, transport and digital infrastructure





pose compelling questions that must be addressed forthwith.

Thought leadership plays an integral role at all our conferences, hence we were delighted to take advisement from three of the UK's leading Universities – Cambridge, Manchester and Reading- who have world leading smart city research facilities and are informing hundreds of organisations business strategy directly or indirectly.

Giving real life examples of where developers are starting to tangibly build their schemes with a smart city focus was very important. As you go through the report you will notice several developers came along to share their plans and how our audience can get involved with them

Building on this event is a priority for our team and we are already planning the 2020 edition which I encourage you all to get involved in. We are always on the look out for event partners and cutting-edge speakers so if you'd like to know more please get in touch directly.

> Best wishes, Keith

keith.griffiths@built-environment-networking.com

From the Keynotes



Nicola Yates

Chief Executive, Future Cities Catapult

9 @futurecitiescat

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The importance of thinking about emerging technologies when planning development was the key message of the opening keynote presentation at the Smart Cities conference.

"Planners have to imagine a future world. If they are just designing and approving development for what they know now, what they are designing for 50 years time won't be fit for purpose," said Nicola Yates, chief executive officer of the Future Cities Catapult, which examines the application of innovation to the built environment.

WE NEED TO THINK ABOUT THE FUTURE NOW, NOT PLANNING BASED ON EXISTING TECHNOLOGY.

And she said it is important to design in flexibility by considering what the future purpose of a building might be when it is no longer needed for what its original use.

As examples of how buildings could change their uses, she pointing to an Olympic stadium in Japan which has been turned into an exhibition centre and New York, where former bunkers have been converted into urban farms.

And smart use of technology could avoid the need for new infrastructure investment, pointing as an example to work that the catapult had carried out in the Brazilian city of Bela Horizonte when it was called in to help solve problems of bus congestion.

PEOPLE THINK THAT SMART AND USING INNOVATION IS ABOUT BUILDING SOMETHING NEW. THEY THOUGHT THAT THEY NEEDED BUS LANES AND NEW BUSES BECAUSE THEY HAD A REAL PROBLEM WITH CONGESTION.

But by interviewing bus passengers, the study identified that the main problem wasn't lack of buses but the poor reliability of existing services, Yates said: "We discovered that it wasn't about lack of capacity on the network but flow on the network."

Instead of new infrastructure, new technological solutions were adopted, such as new smart phone apps, she said: "With technology that responds to people they didn't need new physical infrastructure."If you think that the solution is a new lane on a motorway, that is predicated on everything being the same in 50 years time."

Another example of how research into human behaviour can throw up counter-intuitive results was Glasgow's decision not to turn down its street lights following the introduction of spending cuts, she said:

INSTEAD OF TURNING DOWN STREET LIGHTS, THEY TURNED THEM UP WHERE PEOPLE WALK HOME AND SAVED MONEY BECAUSE THE CRIME RATE PLUMMETED.

The former chief executive of Bristol and Hull city councils said that her organisation's projects include looking at whether the entire design process can be done entirely by machines with no human intervention.

She also said that the catapult is looking at how technology can be harnessed to help public involvement in the planning system.

"There is a lot of technology to help people understand what development is going to look like: we're working with companies to develop what a planning application looks like in real life."



Smart Cities - What does it mean for the development sector?

Panel Members:



Phil Laycock, Director. **Built Environment** Networking @BENetworking









🕑 @FirstBaseUrban



Herculano Rodrigues

DIGITAL NATIVES MAY QUIT CITIES, PROP-TECH BOSS WARNS

The dystopian vison of future cities, painted in recent science fiction film Ready Player One, will come true if current patterns of high-rise development continue, a Crown Estates adviser has warned.

Vanessa Lee Butz told the opening session of the Smart Cities conference that the 'digital native' generation will have different digital and human connections to their predecessors.

She pointed to the millions of gamers who had logged onto the virtual concert staged by dance artist Marshmello on Fortnite during the previous weekend as an illustration of the increased importance of digital locations. And this emerging generation will turn their back on city centres unless they improve, she said:

THE DYSTOPIAN VIEW OF READY PLAYER ONE WILL HAPPEN IF WE **DON'T CHANGE THE WAY OUR CITY CENTRES ARE BUILT.** JUST BUILDING MORE HIGH **RISES WILL KILL CITY CENTRES.**

"People will stay in their clusters and won't go into their cities because it's a terrible experience."

Butz said that while the clusters surrounding city centres may survive, individuals would flock to smaller 'microclusters' in the countryside where they can reconnect with the natural environment.

The successful micro clusters of tomorrow would be 'innovation, experience-driven locations' as opposed to the retail-led high streets of today, argued Butz, who is also chief executive officer of pioneering prop tech firm District Technologies. "If we can make the city a better experience



people will go again." But in order to deliver achieve these better places, she called for mixed use planning consent to become standard.

While digital technology means that individuals are less tied to physical spaces, genuinely mixed us environments will become more attractive, said Barry Jessup, a director of developer First Base.

LOCATION BECOMES SLIGHTLY LESS IMPORTANT BUT WITH THE **MASSIVE CAVEAT THAT TODAY'S** AND FUTURE GENERATIONS WILL WANT TO LIVE, WORK AND PLAY IN THE SAME LOCATION.

"The assumption that the internet would mean a significant reduction in requirements for office and retail space. It isn't the case but we've seen a redefinition of those spaces.

Retailers relying on 'stack em high' concepts are losing out: you are designing for people who want a great experience.

"We mistake the failure of big box retailing as a precursor of the death of the high street but it was the success of the big box retailers that started to kill the high street with massive

Associate Director. Maccenture

service yards and car parks."With those disappearing and being replaced with more employment, more residential and a reinvention of experiential retail, we are going to create really exciting environments."

Combined with the reduction in parking provision that could result from increased autonomous vehicle use, he predicted an 'exciting future' for the high street.

Jessup said that local government can encourage smart cities by putting in infrastructure, which he admitted can be 'prohibitively costly' and being open to innovation such as Brighton's push for 5G in the seaside.

The successful high streets of the future will be those at forge their distinctive identities, said Herculano Rodriguez, associate director at the Javelin Group, which is part of management consultants Accenture. "There was a cookie cutter approach to high streets: The high streets that will win in the future will be very different to one another and rooted in their own communities." And while he said that the idea of going to shop in a supermarket will be 'archaic' in 20 years, consumers will still seek out retailers that offer experiences, like Nike stores."The merging of the physical and digital will continue whether vertical reality or augmented reality but we still believe that people need human interaction.

"Even online, there will be a need to have that community." he said, pointing to how 80,000 people had recently turned up to a stadium in China for a live Ready Player One gaming session.

Nicola Yates; CEO of Future Cities Catapult agreed that the successful town centres of the future will be those that carve out their own distinctive identities.

SOME HIGH STREETS ARE

The telecoms industry is under pressure to offer affordable **BUCKING THE TRENDS: THEY** packages to the low-income residents of the city, she said: **DON'T HAVE CHAINS WHICH** "This is as important as gas and water: we have to get IS WHY THEY ARE POPULAR. fibre connections to every home. If we don't, we won't encourage the business growth into areas where people And in a world where people have less need to gather are living and will just compound issues of congestion in together for work, the continued human need for interaction the centre of the city."

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would create the need for better quality communal places, eroding the traditional British attachment to defensible space, she said: "We will have a lot less defensible space and a lot more good quality public realm."

Noting how WeWork cuts the size of the corridors in its shared office in order to encourage occupiers to use its communal areas, Yates said: "People want to work in those environments because they don't want to work at home, there will never be a need for humans not to interact."

But she said progress in the built environment is being held back by public sector conservatism, noting how councils are still legally obliged to physically deposit their local plans in a library, precluding the production of virtual only documents.

And Yates said UK local government is held back by a greater level of centralised controls than in other parts of the world, pointing to Bogota where the mayor closed down a three lane highway to cut traffic.

Julie Snell, managing director of Bristol is Open, said the city suffers from a digital divide with some neighbourhoods suffering from poor quality telecoms infrastructure.

Transportation & Infrastructure

Panel Members:



(Chair) Head of Innovation, Oxfordshire County Council

Llewelyn Morgan







Paul Campion Chief Executive Officer, Transport Systems

Catapult

UBER'S RURAL PLANS QUERIED BY CATAPULT CHIEF



Moves by Uber to expand into
rural areas won't work, the
Smart Cities conference's
transport session heard.Based on Uber's
experience in
London, where th
introduction of the

James Kelly, Head of Cities (North) at the app-based ride hailing business, said the company is exploring a roll out of community transport services, recalling how he had used informal ride sharing early in his career to commute into work from the countryside.

WE ARE REALLY AT RISK OF CREATING TRANSPORT POVERTY WHERE YOU HAVE A HUGE LEFT BEHIND IN THE COUNTRY. WE'RE LOOKINGAT HOW WE CAN HELP TO CREATE COMMUNITY TRANSPORT.



experience in London, where the introduction of the 'Night Tube' had depressed demand for its services in Zone 1 but boosted it in the capital's suburbs, there is scope for greater integration with public transport services, he said.

But Paul Campion, chief executive

officer of the Transport Systems Catapult, expressed scepticism that Uber would be able to make a profit in rural areas where services generally require more subsidy than in cities.

He said: "I don't know how it can be done: the rural and extra urban is not going to be favoured by commercial companies.

THERE'S NO POINT PRETENDING THAT THERE IS A MAGIC WAND THAT MAKES IT AS CHEAP TO MOVE AROUND SOMEWHERE IN THE MIDDLE OF NOWHERE: IT JUST COSTS MORE.

"We need to think about the total system and work out how our tax systems and subsidies work to enable those outcomes."

James Kelly Head of Cities, North of England, Uber Y @Uber

As an example of a poor use of transport spending, Campion, pointed to the cable car introduced by ex-London mayor Boris Johnson in the capital's Docklands.

Referring to the total level of transport infrastructure that is currently in the pipeline across the UK, he said: "If you are going to spend £65bn you need to spend it on the best outcomes and a skylift comes way down the list.

"It's not that they're not fun but there is absolutely no business case from a transport perspective, it doesn't have capacity.

"We have to think better, it's good example of something that we tried and didn't work," he said, namechecking the hovercraft and Maglev system as two other examples of transport experiments that had not succeeded.

THESE ARE ZERO SUM DECISIONS, THEY AREN'T GOING TO BE BALANCING DESIRED OUTCOMES BECAUSE YOU CAN'T KEEP MOTORISTS AND CYCLISTS HAPPY AT THE SAME TIME.

E-bikes are a 'potentially transformational development in a city like Leeds where hilly conditions currently put off individuals from saddling up, said Campion: "Bikes potentially enable a city like Leeds to aspire to the quality of life offer that Copenhagen has but people don't feel safe cycling."

But he said that the reason for the much lower levels of cycling in Leeds, compared to the Danish capital, is the 30 years of 'consistent policy decisions'.

Campion also said it is 'very easy to overestimate' the impact of technology in the short term and 'underestimate it in the long term'.

Referring the most advanced autonomous car currently on the market, he said: "For the same price as a Tesla, I could

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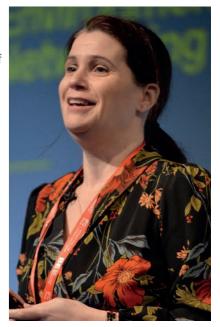
buy a Nissan Leaf and employ a driver for three years, and he is level five already."

Kelly said autonomous vehicles have the potential to 'completely change the way we travel'.

"But we need to change the way we travel. If we just replace a single occupier in a self-driving vehicle with a single occupier in an autonomous vehicle we haven't. If anything, we've worsened the problem because the AV is driving around empty after dropping someone off: we need to look at barriers to sharing rides."

Delivering the session's opening presentation, Catherine Topley, chief executive of Scottish Canals had outlined how the agency had promoted regeneration by exploiting its infrastructure.

As an example, she pointed to how an under-used pathway by one of the canals that her organisation runs had been lit up with the installation of specially designed, solar powered lamps.



BY CREATING THIS CORRIDOR WE'VE CREATED AN OPPORTUNITY TO INCREASE THE FOOTFALL TO AN AREA THAT WASN'T BEING VISITED BY MANY PEOPLE.

Digital Connectivity and Sustainable Energy Development

Panel Members:



Darren Gardner (Chair) Strategic Account Manager. E.ON 🥑 @eonenergyuk





Steve Cox Engineering & Technical Director



EV ROLL OUT SPARKS MANCHESTER POWER UPGRADE CALL

Manchester's power network requires a significant upgrade to cope with the anticipated increase in use of electric vehicles (EVs), the energy session at the Smart Cities conference heard.

Steve Cox, engineering & technical director at Electricity North West, told delegates that every morning, 223,000 vehicles are driven into Manchester.

IF THOSE EVS ALL HAVE TO BE CHARGED THAT WOULD DOUBLE THE ELECTRICITY DEMAND OF MANCHESTER. THE NETWORK **NEEDS TO BE TWICE THE SIZE OR** YOU NEED SMART GENERATION.

"If we don't act now, cities like Manchester cannot have EVs," he said, adding that demand on the city's network is also being fuelled by the breakneck redevelopment of brownfield sites for housing.

"One of the largest breaks on economic redevelopment in cities is the availability of high quality, reliable power supplies.'



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And Cox said there is a big mismatch between different areas in terms of the amount of renewable energy that they generate, giving as an example Cumbria which produces three times as much renewable energy as it consumes.

Referring to the government's target to cut carbon dioxide emission to 80% of 1990 levels by the middle of the century, he said: "These areas are almost beyond 2050 but if you look at the large cities, they are still probably in the 1970s."

Another challenge for his company, which provides the electricity distribution network for the north west, is the increased uptake of smart devices. Cox said.

He added that the challenge for the grid is how to double its capacity in order to cope with the approximate tripling in the amount of energy it will have to transport in the future as the economy decarbonises and depends more on electricity.

Projecting forward to 2025 or 2030, reliance on the electricity network increases 'quite markedly', Cox said.

And with fuel poverty rates already running at 15%, decarbonisation must be carried out affordably, he added.





Carbon Neutral Programme

CBE FEI Chief Executive. Renewable Energy Association **@REAssociation**

But greater digitalisation, enabling a better balance of supply and demand on the grid, could enable increased demand to be catered for affordably, Cox said: "The ability to schedule flexible demand is the key to not spending £24bn by making the network twice as big, which is not affordable. There are lot of challenge but it's doable."

He also predicted that the decarbonisation of the heating system may be smoothed if consumers are not obliged to replace their gas boilers with new low carbon kit but buy heat as a service instead.

RATHER THAN BUYING A HEATING SYSTEM, WE WILL SEE A MOVE TO PAY FOR HEAT **AS A SERVICE WHERE THE INFRASTRUCTURE COST IS** PAID FOR BY SOMEBODY ELSE.

"At the moment in the UK we are obsessed with owning everything, but we have seen huge shift," Cox said, pointing to how rates of private vehicle ownership have fallen as an increasing proportion of the population leases rather than buy vehicles."If the benefits are over 40 years, why pay for all of it on day one?"

Tony Hart, head of Smart Oxford at Oxfordshire county council & Oxford city council, said that retrofitting the infrastructure required to cope with increased electricity demand is a challenge for historic cities.

He said: "There will be a significant number of new homes in the city and as we go forward with new developments, we can at least ensure ducting networks to put in EV charge points and fibre connections.

"Tying in new developments hopefully will spark off other areas to have in place an infrastructure for energy and digital networks."

Hart said that once those networks in place, work can start on addressing unequal access to digital services in the county.

Dr Nina Skorupska

Responding to a question on whether about whether cheaper and renewable energy sources will lower bills, he said "The hope is certainly that costs of energy become lower but it won't necessarily have an immediate impact."

Dr Nina Skorupska, CBE, chief executive of the Renewable Energy Association, predicted that energy costs would fall because



renewable energy doesn't require fuel to make power.

WHOLESALE PRICES HAVE **COME DOWN TREMENDOUSLY BECAUSE OF THE PRESSURE** THAT HAS BEEN BROUGHT **TO BEAR FROM NEW TECHNOLOGIES. BILLS WILL** ULTIMATELY COME DOWN.

And higher energy efficiency standards for buildings would drive down bills by up to a third, she said: "If you are building homes for the future, for God's sake make them homes that are affordable to live in not just rent."

Sarah Handley, carbon neutral director at Siemens said that at the company's Digital Factory in Congleton, an energy efficiency programme had led to a 23% reduction in gas consumption.

She said that the factory's next step is to examine becoming zero carbon by decoupling its growth from energy consumption.

The Role of Universities within Smart Cities

Panel Members:



Helix & Newcastle University @UniofNewcastle @newcastlehelix

Newcastle Science City

Partnership Lead, Newcastle

Michelle Duggan

(Chair)







Professor of Sustainable Futures in the Built Environment University of Reading

♥ @UniofReading

WARNING OVER AUTOMATION **JOBS POLICY GAP**

Innovative thinking is required to help society cope with the estimated 2.5m jobs that will be lost during the next decade as a result of automation, the Smart Cities conference's universities session heard.

Dave Carter, smart city project lead at the Manchester Urban Institute, said that an estimated 2.5m jobs are due to disappear in the next decade before new replacement jobs are created.

He said: "This isn't particularly new but at least in the 1990s, we had a raft of public policy however inefficient, said Cater, referring to initiatives like the Manpower Services Commission and the Employment Support Allowance (ESA)

HALF OF MANCHESTER'S MUSIC SCENE IN THE 1980S WAS BASED **ON YOUNG PEOPLE GETTING ON** AN ESA AND FORMING A BAND.





"We need some innovative thinking about how we go through the process of dealing with that huge shake-up," said Carter, whose institute is based at the University of Manchester.

And encouraging innovation required more than investment in infrastructure, he said: "The idea of catalysing innovation is that it's not just in the ground and ducts: if the place looks crap, it doesn't matter how much Wifi you've got.

"We need to think much more creatively about the aesthetic of the urban infrastructure and not just the infrastructure of the urban environment."

As an example of an innovation that had been developed at, he provided a bike sensor developed at Manchester University which was competitive with products already on the market.



Professor Dave Carter

Honorary Research Fellow, University of Manchester OfficialUoM



THESE MICRO TOOLS THAT COME OUT OF BIG RESEARCH **PROJECTS ARE JUST AS VALUABLE AS SOME OF THE BIGGEST PLATFORMS** THAT YOU DEVELOP.

Alexandra Bolton, deputy director of the Centre of the Digital Built Britain, said that massive savings

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can be delivered through more widespread take-up of digitalisation.

She said: "It depends on the extent that people will adapt digital but the savings are huge which is why the government is so keen to incorporate digital innovation."

"This isn't a five-year project but a 50-year project." she said, adding that infrastructure projects move at a much slower pace than the technological innovations that have transformed daily life in recent years.

Sustainable Developments Presentation

Panel Members:



Phil Laycock (Chair) Director. **Built Environment** Networking **W**@BENetworking







Andre Gibbs
Partner, Argent
🔰 @AraentLLP



Head of Property Development, Transport for London Innovation

Gibbs also told the conference that he is not concerned about putting digital infrastructure into the company's new developments, like the redevelopment of Brent Cross, which is the next major scheme in Argent's pipeline.

PUTTING IN ADDITIONAL **COMMUNICATIONS AND CONNECTIVITY WHICH IS THE** HARD STUFF TO RETROFIT IN **CITY STREETS, IS NOT A BIG** COST TO US.

"It's not the massive quantum leap that will sink viability, we don't see this adding massive overhead," said Gibbs, who during his presentation had described the installation of lavish levels of cable ducting in its Kings Cross regeneration strategy as 'an extraordinarily robust strategy'.

Michelle Duggan, partnership manager at Newcastle University, said there are currently seven live construction projects at its 'Triple Helix' project, which she described as 'one of the largest urban developments in the UK.

The level of floorspace is due to increase from one 1,500 sq m building on the site in 2014, to nine buildings covering 17,000 sq m by next year.





TURN BUS GARAGES INTO EV TOP UP POINTS

Transport for London is exploring how its network of bus stations can be turned into top up charging points for emergency services vehicles and even private cars as part of a major revamp of its estate.

Peter Elliott, head of development at Transport for London, told the closing Sustainable Developments session at the Smart Cities conference, that the agency is looking at redeveloping its bus stations.

He said the anticipated switch over to electric buses means that existing problems of fumes and noise would be lessened, increasing opportunities to build residential accommodation on top.

And the bus stations themselves, which are largely empty during the day, could become top up charging points for other organisation's vehicles, like the ambulance and fire service and even potentially private motorists. Elliott said: "These hangars are empty during the day and chock full at night."

THE OPPORTUNITY FOR THEM **IS ABSOLUTELY VAST. WE CAN** LEVERAGE AGAINST OUR LAND HOLDINGS AND LOCAL **AUTHORITY OR PRIVATE** SECTOR LANDHOLDINGS: **THOSE SITES ARE DRIVING** THOUSANDS OF UNITS.

Elliott also told delegates that TfL is going through an exercise to put digital connectivity into its on-street and below ground infrastructure. But he said that the pace of innovation in construction industry has been 'glacial',

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giving as an example the nine months delay to Crossrail.

The main reason is problems integrating five existing signals systems with that installed for Crossrail, he said: "You can run the trains but they don't talk to each other."

Andre Gibbs, partner at Argent, said that the fundamental problem with

construction is structure of the industry, noting that industries like automotive and aerospace have achieved much greater vertical supply chain integration.

The construction process is plagued by too many middle men but that change is afoot with the erosion in the number of top tier contractors, he said: "The design and build model is starting to fray at the edges.

A LOT OF THE SECOND TIER **CONTRACTORS ARE NOW** MUCH BETTER CAPITALISED AND MUCH MORE CAPABLE **OF TAKING ON LARGE SCALE** SO CAN SEE LOT MORE **CONSTRUCTION MANAGEMENT COMING INTO VOGUE AND LOT** MORE DIRECT RELATIONSHIPS IN THE SUPPLY CHAIN.



Julie Alexander

Director of Technology and Places for People 9 @placesforpeople



The development of the former Scottish and Newcastle brewery covers 24 acres close to Newcastle city centre.

And the project, a joint venture between the university, Newcastle council and insurer Legal and General, will bring 230,000 sq ft of commercial floor space to the market in the next 18 months.

It also boasts a district energy centre, which is due to be delivered by partnership between Newcastle council and Engle, with a combined heat and power plant currently under construction.

Julie Alexander; Director of Technology and Innovation at Places for People, said that the social landlord is looking to extend the use of BIM into asset management.

"We are building properties we intend to own and manage for a very long time. For any homes that have a maintenance problem we can put a cost on that.

If there is something we can do technically that can alleviate some of those costs we will look at it. It's getting to the point we can make a business case for smarter ways to look at some of this stuff."

Conference Photos

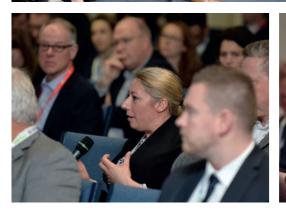




























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5th February 2020

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Smart Cities Development Conference

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