

# Building Future Cities: Perspectives from Bogota and London



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*Jeremy M. Goldberg, Worldwide Director of Critical Infrastructure at Microsoft meets with representatives from Bogota, Colombia and London, United Kingdom to talk about the future of cities and mobility.*



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**Our urban environments have been built over time to support mobility in various forms. How will new technologies be best used to build on and enhance that existing infrastructure?**

Amongst the objectives and projects of the Smart Territory Plan of Bogotá we have “La Nueva Movilidad” – The New Mobility, an innovative agreement that we all build together. It’s an agreement that was accelerated by the Covid-19 pandemic that empowers every citizen to rethink the priorities when it comes to moving and the way we do it. For example, cycling and walking have become increasingly important for citizens. Through this increased citizen engagement, we can accelerate the adoption of new technologies and have the tools to provide citizens with information and services through digital media. This generates a large volume of information, data and scenarios that allow us to think of solutions beyond the traditional exclusive lanes or traffic restrictions (by time or zones). Thanks to new technologies, we can make better use of our existing infrastructure, with better multi-modal options based on the information that allows citizens to plan their trips and data analysis to establish speed limits that make the routes safer for all.

**Mobility technologies generate large amounts of data. What are the highest impact ways to use that data to improve everyday life for residents and government operations? What privacy and security measures are necessary to accompany these technologies?**

Large volumes of data bring opportunities to analyze it and create different queries. The first thing we did in Bogotá was to establish priorities for data analysis, considering the most common questions or issues associated with mobility. For example, what is the most used modality in daily trips? Or who moves more and in which mode, men or women? The first actions, based on data analysis, made it possible to define interventions in the road infrastructure, creating temporary bike lanes that are now permanent and make up more than 550 kilometers of track. These actions have made it possible to expand bicycle trips on one of the capital’s emblematic streets, “Carrera Séptima” – 7<sup>th</sup> Avenue, from 32 to 464 daily trips and it is growing every day. All this data brings the additional responsibility of security and privacy. In times during which citizen trust towards governments is weakened, we must work for the anonymization of the data, from third party sources and in the case of own sources, strengthen compliance standards to protect privacy.

**How will new mobility technologies contribute to the economic recovery as we begin to build back from COVID?**

Taking a broader view, the Covid-19 pandemic has brought the need to adjust our urban planning actions. The concepts of proximity cities have dominated the discussion for years; however, we must review the socioeconomic conditions of the territory because in emerging economies we will probably find that many citizens mobilize out of necessity, not for leisure, and this leads to allocating a large part of their income to cover daily transportation costs. With the use of technology, we can better plan and prioritize trips, exchange information for decision-making or definition of public policies based on data that contributes towards economic recovery. For example, to carry out pilots for bikes as a last-mile solution help to reduce emissions and congestion in commercial areas, especially in the areas with the highest density of people during the day.

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Chief Digital Officer,  
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There's always been a strong relationship between transport and the growth of our city. While it has always driven regeneration, today we also think about the green economy. As part of London's Green New Deal, the Mayor has set an ambition for 80% of journeys to be by walking, cycling and via public transport by the 2040s. New mobility services can extend green choices to Londoners, for example through e-scooters (which we are currently trialling) and demand responsive buses. The provision of live 'real time' data, pioneered by Transport for London via its Open API has led to the proliferation of apps and digital services which show the quickest and easiest route across our city, as well as options for healthy and historic walks. We plan to go further, so data can be fully mobilised to enhance the travelling experience in our capital.

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Data-enabled technologies are at the core of the city's Congestion Charge and Ultra-Low Emission Zone to improve air quality. The transport network also gains insights on how busy the network is from data abstracted from peoples' mobile connections to free station wifi. TfL's 900 cameras give us insights into road traffic congestion and AI allows us to have responsive traffic lights across 6000 points in the city. All of these measures smart measures have to be underpinned by strong data protection standards, so we innovate from the basis of GDPR – which provides strong safeguards to citizens about the sharing and use of their data.

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Test-beds like the Smart Mobility Living Lab in Greenwich and on the Olympic Park allow us to trial new mobility services, and components that make them up in live settings. Backed by progressive guidance on CAVs and other mobility options developed by TfL, there's a real role for mobility to meet our target of doubling the size of the green economy by 2030. This means green jobs are tech jobs too – data analysts, developers and user design specialists – as well as jobs in retrofit.

**What are the highest impact and best implementations of mobility technologies you have seen in operation to date? What had made them work so well?**

The number one mobility technology which has impacted Londoners' lives has been contactless payments on public transport. It is intuitive and easy to use and has been embraced by the majority of Londoners. It's seen a massive reduction in tickethall queues and increases the flow of passengers onto the network. Beyond that big differences are made by the ULEZ – a camera network which links to driver data – which is now being extended to outer London. Both of these initiatives are now seen as 'normal' in the city – so much so that people often forget they are smart city initiatives!

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**SHASHI VERMA**

Director of Strategy and  
Chief Technology Officer

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New technologies have a big role to play in improving the capacity and efficiency of existing infrastructure. Modern digital signalling can increase the capacity of railway lines substantially, sometimes by about 50%. In London, the Victoria Line on the Underground runs 36 trains per hour or one train every 100 seconds. Conventional signalling would not get past about 24 trains per hour. Similar improvements in capacity can also be achieved on the road network. London has had a system for optimizing road signals, which is about to be replaced with an even more modern system. It increases the carrying capacity of the road network by about 10-15%.

The cost of infrastructure to increase capacity by this much is a multiple of the cost of digital technologies; and prohibitive. In some cases, building the infrastructure may well be impossible, such as with roads where finding the physical space is constrained by existing city layouts.

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There are two principal ways in which data can be used effectively. First, it is essential to liberate data so that it can be used by the travelling public to make better choices. London pioneered the open data policy in 2008 leading to hundreds of apps being built to use the data in a manner that is useful to customers. Eventually, the large mapping players also incorporated public transport data into their mapping systems.

The second is to use analytics to drive better planning and customer services. Planning is now largely driven by automatically collected data rather than relying on survey data. Mobility technologies allow data collection to be very granular and therefore provide insight not just on averages but also on variability. Through customer service, London is now able to provide its customers with personalized information and automated support where the data indicates if/when something has gone wrong.

**What are the highest impact and best implementations of mobility technologies you have seen in operation to date? What has made them work so well?**

The most impactful implementation in London was the development and deployment of contactless payment technology. In 2003, London introduced the Oyster card, a proprietary, closed loop system for payments. This was followed by an open loop system, contactless bank cards, first used in London in 2012. For a relatively low-cost implementation it has had a huge impact, completely changing the way the travelling public interacts with the transport system.

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