Using Innovative Technology to Improve Road Safety in London

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Isabel Dedring is London’s Deputy Mayor for Transport. In this capacity she is responsible for setting policy and ensuring programme delivery across the Mayor’s transport portfolio. Key projects in this role have included the Tube Reliability Programme, targeting a 30% reduction in delays, developing the Mayor’s recent Cycling Vision, and leading the development of London’s first-in-a-generation new roads strategy through the Roads Task Force.

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Abstract: London is at the cutting-edge of traffic signals management, successfully developing smart technology to deliver both safety and traffic benefits. The Mayor’s Office and Transport for London (TfL) are now looking to pioneer autonomous vehicle technologies that will better protect the most vulnerable road user groups while delivering wider benefits to the road network. Such technologies offer exciting opportunities for London to meet the Mayor’s ambition to free London’s roads of death and serious injury.

London’s road network faces many challenges over the next 20 years: a rising population expected to exceed 10 million by 2031, the need for significant investment in road infrastructure, rising aspirations for high quality public space, conflicts between competing road users and the imperative to improve road safety. Now is the time to ensure that the right systems and procedures are in place to maximise the effectiveness of the road network in light of London’s growing population.

Last year, the Mayor’s Roads Task Force – an independent body set up to develop a long-term strategy for the road network – outlined its vision for ‘world-class streets and roads in London, fit for the future’. One way we are looking to achieve this is by using cutting edge technology to provide smarter, safer roads.

London is at the forefront of innovative traffic control technology. This month we will be trialling Pedestrian SCOOT (Split Cycle Offset Optimization Technique), an intelligent pedestrian
crossing technology. This technology, the first of its kind in the world, fulfils both a safety and a traffic management function. It uses cutting-edge equipment to automatically extend the green pedestrian invitation to cross phase when large numbers of people are waiting. This allows more people to cross the road safely while keeping London moving. With pedestrians making up 36 per cent of all Killed and Seriously Injured casualties (KSIs) on London’s streets in 2013 – the largest number for a single transport mode – we are particularly interested in how this technology can be used to ensure pedestrian green man times are appropriate for the number of pedestrians waiting to cross.

Of course we cannot overlook the role that other cities are playing in this area. When it comes to traffic signals for cyclists, London is adopting best practice from cities such as Amsterdam and Copenhagen which have high levels of cycling. For example, low-level traffic lights which are already common place in many parts of Europe were trialled for the first time in London earlier this year. The intention of these lights is to improve safety by giving cyclists an early start ahead of traffic. And we are rolling-out Pedestrian Countdown, a technology designed to improve pedestrian understanding of traffic signals by providing clearer information about the time available to cross the road. This technology has been fairly widely used in Europe and elsewhere, but not in the UK. Early trials in London indicated that pedestrian KSIs reduced by 58 per cent where the system had been installed. This technology is now in place at over 200 sites across London which will rise to 400 sites by 2016.

**London as a testing ground for autonomous cars**

As well as developing smart traffic signals, we are pioneering new vehicle technologies as part of the Mayor’s bold plans to prioritise Vulnerable Road User (VRU) safety. In London, VRUs – pedestrians, cyclists and motorcyclists – make up around 80 per cent of all serious and fatal collisions yet account for only a quarter of daily journeys. We are very keen to better understand how different technologies could help to further reduce VRU casualties on our roads.

There are already a number of collision avoidance systems on the market that can help prevent accidents. These technologies detect and warn drivers of an imminent crash, and can even take action autonomously without any driver input. As such, we are currently undertaking a groundbreaking trial using innovative detection software on London buses. Four buses have been fitted with brand new pedestrian and cyclist detection software, which alerts bus drivers when pedestrians and cyclists are moving close to their vehicles.
Our aim is to better understand the role of technology in reducing collisions between buses and VRUs.

Accelerating the development and adoption of the most effective vehicle safety technologies is an important step to achieving our ambition of freeing London’s roads from death and serious injury. As such, TfL is also funding a project to evaluate the effectiveness of the full range of Heavy Goods Vehicle (HGV) blind spot safety technology in spotting pedestrians and cyclists. This includes camera monitoring systems, optical and radar detection systems and other sensors fitted to HGVs. The findings will be used to create new, detailed performance criteria which companies can use to make a more informed choice about the types of safety equipment to invest in for their fleet vehicles.

Perhaps most exciting is the potential that autonomous technology has to reduce the number of KSIs in London. A recent study on the future of driverless transport suggested that fully automated vehicles could cut the number of deaths and injuries on London’s roads by 90 per cent. This would effectively eliminate all casualties caused by human error. As well as offering safety benefits, driverless cars have the potential to reduce congestion, travel times and lower emissions.

Our aim is to establish London as a testing ground for autonomous cars and a key part of this will be to explore how autonomous technology can be used to further improve VRU safety. Of course there are a number of autonomous car projects already underway across the globe which will help to better inform our thinking in this area, such as the Google trials in America and the Volvo trial in Gothenburg. For London, it will be interesting to see what objectives other cities pursue through autonomous technology – congestion, air quality, road safety – all of which are priorities here.

New technologies are playing a vital role in transforming safety in London. TfL has already shown how innovation in smart traffic signal technology can make London’s roads easier and safer for everyone to use. We now intend to establish London as a pathfinder for the development of car safety technologies that will better protect VRUs. For London to remain one of the safest metropolitan cities in the world, we need to continue to develop smarter ways to manage traffic and reduce casualties. Innovative technology is having and will continue to play a key role in London’s future success.
