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The role of technology and innovation in improving transport and traffic management

Over the next two decades technological innovations will completely reshape transport.

People and goods will get to their intended destinations in smarter, safer and much more efficient ways. We will embrace interconnectivity on a scale not seen before, and utilise the best insights from big data in transport.

With 2.08 billion smartphone users around the world, we are more connected than ever before, and smartphones are continuously transmitting their position. Imagine if every product or package transmitted its position and status over the internet. As internet bandwidth and reliability improve dramatically, that means everyone could connect with everything; regardless of format—image, video or audio.

This would mean that we would know exactly where a package is, or where and when people are travelling. We would have an accurate understanding of transport demand because transport businesses would continuously analyse data to predict behaviour. We would be able to adapt to meet real-time demand. There would be no empty seats in vehicles, and no overloading of vehicles. Network efficiency would increase exponentially.

We would also be able to connect directly to the motor-management systems of vehicles. Buses could be brought in for maintenance before bus drivers even notice that there is anything wrong - well before a vehicle actually breaks down - improving safety and reliability.

Take it a step further, and vehicles won't need drivers anymore. They will be equipped with sensors that monitor surroundings and connect to the sensors of other vehicles and infrastructure. This will improve safety immediately, because these vehicles will adapt their speed and direction to any and every situation.

People will be able to use driverless vehicles when and as they need them. If a passenger chooses, they will be joined on their journey by a stranger on their way to another destination. If a passenger shares their ride, they will get a discount on their fare for using the driverless vehicle.

Owning a vehicle would not weigh up favourably against sharing driverless vehicles with others. Many houses and apartment buildings would not need dedicated parking spots anymore and parking a driverless vehicle in the city centre would not make sense. The number of vehicles in the city would be reduced, because each vehicle could be shared by many people. Parking spaces in the CBD could be reduced. The liveability of city centres would increase enormously. The destination would be better.

More than this, vehicles in the future will be completely electric. People will be able to charge them at home or at charging-stations located at former petrol-stations. There are already electric bus charging stations that take two minutes to charge a vehicle to run for 50 kilometres. With continuing advances in technology, we could drive an electric bus or vehicle for a whole day, without having to stop or visit a depot for a long recharging session.

These predictions are not a long way off. Uber already adapts supply to demand. A completely autonomous bus was trialled in Australia on August 30 this year. Transport businesses, such as Transdev Melbourne, have telematics systems that give us data on engine status and vehicle location. Electric buses are now being charged at interchanges and petrol stations across Western Europe.

In the future, these technological developments will happen and innovation in transport will continue. It will have an impact on nearly every aspect of our lives.

For transport and traffic management, it will mean our roads are used more efficiently, our vehicles are used in smarter and better ways, and we will be safer.

Journeys and destinations matter.

We have a lot to look forward to.