



HOW DO INTELLIGENT TRANSPORT SYSTEMS ASSIST WITH IMPROVING THE ENVIRONMENT?

Transport is one of the major causes of pollution in the UK, including Carbon Dioxide, Nitrous Oxide and particulates. Despite vehicle engines becoming much more efficient over the last two decades, as well as better driver education and other anti-pollution initiatives, because many more journeys are undertaken, the contribution transport makes to overall emissions has barely changed. To meet aggressive environmental targets, transport must change.

Fortunately, Intelligent Transport Systems are helping reduce the impact of transport on the environment in a number of ways.

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Low Emission and Clean Air Zones

In order to improve air quality, many cities are now introducing restrictions on certain vehicles entering their centres. These Low Emission or Clean Air Zones are enforced by either fines for those driving prohibited vehicles in the area, or by charging drivers of such vehicles to enter the zone.

Intelligent Transport Systems support the enforcement of these zones. Automatic Number Plate Recognition Cameras are placed at strategic points on the road network to monitor vehicles within the zone. Special software checks the number plates against their vehicle type, and prohibited vehicles are identified. The software can send warning letters or fines to those breaking the rules.

Without enforcement, these Zones risk being useless in the fight to improve air quality. ITS is vital to make them work.

Traffic management

Vehicles emit more emissions when they are stationary, and traffic jams cause more vehicles to be in one place at one time, meaning more emissions in that area.

By monitoring traffic flow, the traffic can be better managed to reduce the size and frequency of jams. This could be changing the phasing of traffic lights based on realtime information about traffic conditions, allowing the busier roads to get more green time and significantly reducing the any time when a green light is showing on a road with no approaching cars when there are vehicles waiting at red lights at the same intersection. It is even possible to program a network of traffic lights to hold traffic outside a city where there are fewer people to breath in the emissions. Live information about air quality is also made available to cyclists and pedestrians so they can optimise their routes to reduce exposure to pollution.

Transport modelling

By efficiently planning a transport network, the risk of traffic jams can be reduced. Transport modelling looks at the network alongside population movement and trends to predict the way people and goods move around. For example, the effect of a new housing estate on the wider transport network is predicted, and any problems mitigated against in the planning cycle, rather than discovering problems once building is complete and having

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to deal with them retrospectively. Modelling can also advise on the most efficient public transport solutions to minimise the need to travel by polluting car.

This reduces traffic jams and improves network efficiency.

Modelling can even be used to predict the movement of traffic in real time. By using live data and the prediction tools, software can predict where traffic jams will occur before they happen. The software then works out the best way to minimise any traffic jams by using traffic management tools to route traffic in the most efficient way, thus reducing the amount of idling traffic and therefore emissions.

Public transport

By making public transport more efficient and easier to use, the reliance on private cars, and therefore the pollution caused by them, can be reduced.

Intelligent Transport Systems include the availability of real time information and smart ticketing solutions which have changed the way we travel by giving live information at our fingertips. Better knowledge of when the next bus is due, or how the trains are running make using public transport a happier, less stressful experience. This moves more people onto these modes and out of their cars.

By integrating this real time data, it is possible to plan a seamless, integrated journey using a variety of modes. This means a person can travel across fairly complex journeys using public transport, often at a lower cost and more quickly and reliably than by car.

Using the transport modelling solutions mentioned above, public transport routes and frequency can be planned to best deliver services based on demand, again reducing the need for private cars and therefore the environmental impact per passenger mile.

Also, by monitoring passenger journeys, people will be able to share journeys far more easily. Instead of one taxi taking one passenger, for example, an app will allow different people to share a vehicle to take them on a journey, again improving the efficiency of the transport network.

Electric Vehicles

The UK Government has pledged to outlaw the sales of internal combustion engine vehicles by 2035. Electric Vehicles will therefore be a key mode on the transport network.

However in order to ensure that these can be a reliable, viable replacement to traditional vehicles, a robust fit-for-purpose charging network must be set up. Transport modelling is being used to ensure that there are the optimum number of charging points required, and that they are in the right place, not only for the road network but also in relation to the national electricity grid. On the road, drivers of EVs receive live, accurate information about charging locations and availability even allowing them to book a charging point when they need one.



ITS (UK)'s Smart Environment Forum has led the way in discussion about implementation of these solutions for more than 20 years, sharing knowledge from around the world. Many UK members are part of a larger global company and liaise with colleagues around the world to discuss best practice and lessons learned. Sign up for details of regular meetings and webinars and to receive important news about this vital environmental Forum.