



WHAT ARE INTELLIGENT TRANSPORT SYSTEMS?

There are many definitions of Intelligent Transportation Systems, but put simply, they are the use of technology to improve transport efficiency. The concept of ITS is the application of sensing, analysis, control and communications technologies in order to improve safety, mobility and efficiency. ITS include a wide range of applications that process and share information to ease congestion, improve traffic management, minimise environmental impact and increase the efficiency of transport to commercial users and the public in general.

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Although you often don't realise they're there, intelligent transport systems are everywhere on the transport network.

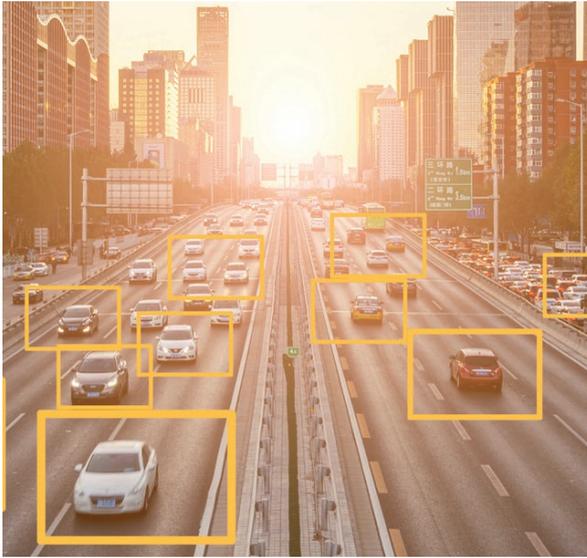
For example:

Traffic lights change their timings based on traffic levels. Sensors in the road or radar above ground monitor the speed and volume of traffic and this information is used to dynamically change the amount of time green lights are shown on different roads and even the lanes within them. This significantly improves the efficiency of a road junction by reducing time where a green light is showing to no traffic while vehicles wait at a red light on another junction.

Traffic information is gathered using sensors in the roads and above ground, plus by analysing the movement of vehicles, sat navs and mobile phones (all anonymously to protect privacy) to analyse average speed on a road network. This information is used to warn travellers of delays so they can choose whether to change their route, time of journey or mode of transport. This means that the impact of delays is reduced and the transport network is "load levelled" so more people use quieter routes and fewer use the busy ones, making everything more efficient.

Intelligent Transport Systems make our transport network safer. Special cameras and radar are deployed on parts of the transport network to constantly search for broken down vehicles and other hazards. Instead of waiting for people to make emergency phone calls to alert emergency services, the technology does it in seconds, calling for help and warning other travellers. Technology is also used to enforce the rules of the road, meaning bad drivers are caught rather than having to be "unlucky" to be spotted by a police officer while emergency service vehicles can now get priority through traffic lights to make their journeys quicker.

Technology is used in car too. Known as Advanced Driver Assistance Systems, vehicles are now fitted with a range of safety devices such as lane departure warnings which use cameras to monitor when a vehicle is crossing the lines on the road, automatic braking when it gets too close to another vehicle or object, blind spot warnings where drivers are alerted to traffic nearby when they are about to pull out and even spot when a driver



Driverless Vehicles which use sensors on vehicles, connectivity and high-resolution mapping to travel without the need for a driver to be in control..

ITS solutions can help improve air quality. By making the transport network operate more efficiently, there are fewer traffic jams and therefore fewer idling vehicles polluting the air. By linking air quality monitors to the traffic management systems, traffic can be held outside areas in city centres when air quality is poor keeping the numbers of vehicles to manageable levels.

ITS solutions are not only used for drivers. Public transport providers benefit from technology too through improved passenger information through bus priority at traffic lights to better journey planning, connections and ease of payment. Through these improvements, public transport becomes easier and more attractive to use, reducing the demand for single-occupancy vehicle journeys which are an inefficient use of scarce transport network resources.

And city planners use special modelling software to better understand changes to the transport network before they make them. They are used to predict everything from the effect of different lane layouts at junctions to the changes to traffic levels when a new housing estate or shopping centre is built. Transport modelling is used to test a range of different solutions and pick the best one for any particular circumstance. They can even be used in real time to predict traffic jams in the near future and make traffic management changes to stop traffic jams building up in the first place.



These are just a few examples of the many ways technology is used in transport. By using these solutions, we can usually make important improvements to our network quicker, cheaper and more efficiently than relying on infrastructure investment alone.

is getting drowsy. Sensors on lorries and cars are also used to warn of cyclists nearby, lowering the risk of dangerous collisions. With the vast majority of collisions involving human error, ADAS is an important way to reduce the risk of crashes.

Connected Vehicles allow vehicles to “talk” to infrastructure and to each other. This means warnings about adverse road conditions can be shared quickly and efficiently and vehicles can even be used to report where the road needs maintenance. Vehicles will even be able to let each other know as they are braking or making a turn in order to ensure that others nearby automatically allow for this, vastly reducing the risk of collisions.

ADAS and Connected Vehicles are paving the way for