

Get me to the bus on time.

The bus schedules have had to be re-written. The published times of arrival were so inaccurate as to be an embarrassment. Sound familiar? Another complaint about late running public transit vehicles? Not this time, in fact quite the reverse. In the City of Aberdeen, an urban traffic management scheme has resulted in buses completing their routes well ahead of schedule and has required a new timetable to be published. The picture is the same in York and other cities in the UK where bus priority schemes linked to traffic light controls have allowed public service vehicles to avoid the worst consequences of congested streets. In each case, a highly accurate data profiling system has allowed priority to be given to public service vehicles on the approaches to automatic traffic lights.

“Like every other city in the UK, bus running times in Aberdeen were suffering as a result of traffic congestion.” said Colin Gibb, an ITS engineer with the local authority. “About five years ago we got together with Peek Traffic to install their highly accurate Prism® bus priority system on the three main routes into the City centre. Very quickly, we found that buses on these routes were knocking an average of 18% off their journey times.”

Deployed in Aberdeen on single carriageway roads, the scheme is unusual in that all traffic in the immediate vicinity of a bus is likely to benefit from the priority signalling. “The cross flow traffic at these priority signal junctions,” said Gibb, “is not heavy and the 15 minute headway between each bus means that there is no appreciable interruption to vehicles on these minor routes.”

Also in Scotland is another, major deployment of the data-profiling capacity of the Idris-based system. Between the town of Kilmarnock and the ferry port at Ardrossan, in Ayrshire is a bus route that must contend with no less than thirteen, light-controlled junctions, all of which have the potential to disrupt bus running times. To solve the problem, Prism has been installed at all the junctions within the last few months and is now helping to reduce bus delays.

A few hundred miles to the south of Ayrshire, in Coventry, the City Council is in the process of constructing a £42m (€70m) city-wide bus priority network known as Prime Line. The 4 year project, which started in 2004, has, to date, installed five priority signal sites at some of the most seriously congested junctions. More are expected to follow as the programme rolls out. Again, the product used is Prism with its hugely successful patented Idris® software and inductive loop technology.

Unlike Aberdeen, Coventry uses dedicated bus lanes and the approaches to junctions are controlled by ‘gates’ in which buses are given priority over other traffic. “We specifically recommended the Idris-based system,” said Barry Auckland, a consultant with Jacobs Babbie, “because of the known accuracy and reliability of their data-profiling capabilities.”

York City is another location where the authorities have installed the Prism system to control the free flow of public service vehicles. Installed on an outward section of a Park & Ride route (Malton Road/A1036), on an existing bus lane, the installation process was quick, simple and effective, allowing for improved services to the public. Intended to deal with a particular junction where unacceptable delays to buses were occurring, the system recognises a bus as it passes over inductive loops and causes the upcoming traffic lights to turn to green.

Across the Irish Sea, in Cork, the City authorities are part-way through a five year, €10 million, Green Routes programme designed to provide a range of improvements for all road users including cyclists, pedestrians and buses. A major part of the project is the upgrading of all the bus routes in the City centre. In addition to this, an isolated junction in the Black Ash area, south of the City, was causing some difficulties for Park & Ride buses that were obliged to turn right across oncoming

traffic.

“From the start,” said Ian Winning, Senior Executive Engineer with the Traffic Division of Cork City Council, “we specified Prism for our bus priority system for two reasons. In the first place, we wanted an accurate, robust and trouble-free system for giving buses priorities at certain critical junctions, while in the second place we wanted a system that did not require the fitting of any in-vehicle equipment before it would work. Apart from the stand-alone installation in Black Ash, all the junctions equipped under the Green Routes programme will be linked to the existing SCOOT system. This will ensure that any temporary disruption caused by the priority given to our buses will be dealt with by the ‘recovery’ algorithm within SCOOT ”.

The function of the Prism unit is to detect the relevant vehicles and place a demand on the junction controller. It is the responsibility of the junction controller to act upon that demand and, in the case of SCOOT, where disruption of the traffic may have occurred, to rectify and re-establish traffic movement and recover the timing after vehicle priority has taken place.

The Prism unit is based around technology that was developed around 10 years ago by Diamond Consulting Services, an R&D company based in Buckinghamshire, about 40 miles North-West of London. Using standard in-ground loops and a series of patented and highly complex algorithms, Idris is able to measure the speed, direction of travel, length and classification of any vehicle passing over the loop array. Widely used to classify vehicles as they pass through tolling plazas, the Idris technology is now increasingly seen as a data-profiling tool for the real-time management of traffic in a variety of situations, including bus priority.

At the core of the technology are the Idris patented algorithms and a high level scripting language. This language has been developed to describe the inductive profiles of vehicles as they travel over the loop array. The scripting language, stored in a rule file, along with the associated software components to read the file, allows suitably qualified engineers to adjust or change the profiles being determined. This ability enables specific vehicles with distinctive loop signatures to be identified, for example, county to county bus fleets including “bendy buses” or unique vehicles such as those carrying dangerous chemicals.

The Prism product, requires no on-board equipment and using a standard configuration with two loops per lane, any number of approaches can be monitored. Once configured the system operates as a stand alone unit without the need for expensive communications systems. In addition to this data-profiling function, it is possible for the Idris system to initiate a vehicle violation trigger to discourage non-priority vehicles from using the specified lanes.

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