



TACKLING CONGESTION IN BRISTOL THROUGH JOURNEY TIME MONITORING

A joint presentation by Jackie Davies, Senior Technical Officer (ITS/UTC) Traffic Signals, Bristol City Council and David Richmond, CEO of Videalert Ltd

Bristol is the tenth largest city in the UK and, situated off the busy M4/M5 corridors, experiences over 600,000 vehicle movements every day. In common with many other cities, congestion was becoming a major issue and, in May 2012, Major George Ferguson's manifesto proposed a seven part vision for the city with a primary focus on 'getting Bristol moving'.

Bristol City Council had no effective way of monitoring and reporting on traffic conditions, especially journey times, throughout the day. This meant that accurate journey time predictions could not be provided via the regional Travel West website and that automated incident detection was not possible. It also made monitoring the impact of traffic schemes and interventions very difficult.

Therefore the decision was taken to implement a journey time monitoring system. A carefully designed system would allow the development of an incident detection system for the city centre and main routes, enabling faster detection and reaction to incidents and changing traffic conditions. It would also facilitate the development of journey time predictions for the Travel West website and monitoring of the effectiveness of traffic schemes and interventions. The council also wanted access to journey time, traffic count and origin-destination data for modelling major future highway schemes across central Bristol.

The council undertook an extensive review process to determine what would be the most appropriate solution. This included the full range of ANPR, Bluetooth and a myriad of single point solutions, each of which would require separate systems presenting significant integration challenges. It soon became clear that ANPR was the preferred solution, mainly due to the need for origin-destination data, which cannot be provided by any other solutions.

However, lacking the necessary funding to install the system, the traffic signals team sought to bring on board additional partners to make the project possible. They included:

- The city's major projects team, which required data for microsimulation modelling
- The transport monitoring team, which needed journey time and traffic flow data
- The public transport team, which wanted journey time comparisons between park and ride buses and general traffic.

Avon and Somerset Police and the Safer Bristol Partnership also contributed to the project in return for receiving real-time VRM data from each of the camera locations that are useful to them. This approach has

enabled budgets to be combined to scale the project up and deliver the effective results needed for all partners.

Bristol City Council's solution was to install a network of analogue ANPR cameras that would send back video feeds via its existing private fibre optic communications network to a centrally located image processing and data management server with the ability to add digital cameras as required. The tender prepared by Bristol specified that any new system must have the ability to handle and process video from 125 analogue cameras and generate VRM data for use in a number of key applications:

- Real-time data to UTMC database
- Near real-time aggregate data to UTMC
- Real-time police ANPR data to BOFII
- CSV data to SCOOT/Paramics traffic modelling systems
- CSV data to car park operators
- Online data access

Videalert's intelligent digital video platform is a unique solution that provides councils with a more cost effective solution compared to traditional single point CCTV systems. This innovative multipoint solution uses standard off-the-shelf equipment and seamlessly integrates with existing CCTV systems and infrastructure used by local authorities.

According to Duncan Laird, Group Manager – Transportation at Bristol City Council: "We wanted to engage a single supplier to implement a back-office hardware and software solution that would give us the flexibility to support multiple traffic management applications and disseminate information to the council, Avon and Somerset Police and other stakeholders. The Videalert platform is highly scalable, supports our existing analogue cameras and allows us to progressively migrate to a mixed analogue/digital camera environment."

This wireless-based solution can be deployed, without impacting the council's existing CCTV and IT infrastructure, offering the flexibility to support a full range of deployment options including wired LAN, Wi-Fi LAN, 3G-WAN, mobile, attended and unattended as well as analogue and ONVIF compliant digital megapixel cameras. What is more, the Videalert platform will allow Bristol City Council to adopt a phased migration from analogue to digital without requiring additional major capital expenditure

The first phase of the project went live in March 2014 when the Videalert platform was integrated with 65 strategically located ANPR and context view cameras at fifteen sites with real-time data transmitted to the council's CCTV control room over the B-Net optical fibre network. This initial phase was fully operational within just eight weeks, due in no small part to the close working partnership that quickly developed with Videalert's experienced project management team.

The delivery of real-time VRM data to Bristol's central Urban Traffic Management Control system assists with traffic modelling and journey time information. The data collected and analysed by the system provides essential "intelligence" to optimise the design of transport schemes in central Bristol as well as modelling the impact that business or retail developments will have on future congestion levels. It will also provide the Travel West website with real-time mapping updates on congestion hotspots enabling drivers to avoid unnecessary delays to their journeys. Data delivered to Avon and Somerset Police's BOFII database is used for crime prevention initiatives and investigations including the identification and monitoring of suspect vehicles after leaving the surrounding motorways.

Avon and Somerset Police and the Safer Bristol Partnership have also found the data to be extremely valuable on a number of anti-crime initiatives including the identification and tracking of vehicles that are stolen, uninsured, untaxed or likely to have been used in suspected burglaries. In fact there have already been a number of key arrests as a result of the deployment of this system.

The Videalert platform provides significant cost savings and high levels of future proofing by allowing additional traffic and data applications to be added as required. It is the only digital video platform that can run multiple civil traffic enforcement, traffic management, community safety and crime prevention applications from a single CCTV infrastructure without requiring specific equipment for every point solution.

What makes the platform different is that it combines ANPR with video analytics enabling additional intelligence to be used to track moving or stationary vehicles. This supports a wide range of additional applications including:

- moving traffic offences including bus lanes, banned turns and yellow box junctions
- parking offences on school keep clears
- continuous video recording outside schools
- real-time vehicle data for average journey time monitoring through UTMC
- real time vehicle count data
- real-time data to identify suspect vehicles through BOFII
- automatic car park entry/exit and tolling

With the ever increasing pressure on funding, it is partnership initiatives of this kind that will become more commonplace to maximise the effectiveness of CCTV infrastructure to reduce costs and make our cities safer places to live and work.



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