Grounds for optimism

Cities hosting large events may take the chance to improve their smart transport applications and information services, introduce new services and generate additional ITS-based travel information, as **Dagmar Röller** reports

When a city hosts a major event, many thousands of people will travel at the same time to the same destination, whether it's to attend a football match or concert. Events of this magnitude generate specific travel demands and have a significant impact on local transport systems, but at the same time they provide a chance to give local transport services a boost.

Within the STADIUM project (Smart Transport Applications Designed for large events with Impacts on Urban Mobility), intelligent transport systems have been employed to manage transport at large events such as the 2012 London Olympic and Paralympic Games, the 2010 FIFA World Cup matches in Cape Town and the 2010 Commonwealth Games in Delhi. The project's aim is to improve the performance of transport services and systems made available for large events hosted by big cities.

INTELLIGENT EYES FOR LONDON

London has just successfully hosted the world's biggest sporting event, the Olympic and Paralympic Games. Even for a city that regularly stages over 4000 events per year that affect the road network, the Olympics were a huge undertaking and a unique challenge for transport in London. Very specific additional travel demands were created over a significant number of days by thousands of people moving to sports venues and back at the same time. To manage this huge operation, Transport for London (TfL) identified suitable ITS

applications to monitor, assess, impact, react, and coordinate the network (see the cover story from *Thinking Highways* Europe/Rest of the World, June/July 2012).

A key focus for Transport for London was to prevent congestion on the Olympic Route Network, to keep the way free for public transport and to keep London moving. Some 1450 CCTV traffic cameras across London delivered coverage in real time to the London Streets Traffic Control Centre (LSTCC). Operators observe the video images 24/7 but there is a limitation of how many staff can monitor cameras and it is not practical to continuously monitor every CCTV camera installed on London's road network on over 100 monitors. This is where new state-of-the-art technology came in courtesy of the STADIUM project.

INTO THE ARENA

With the application of additional SMART 3G cameras, the demonstration allowed automatic notification of congestion along the Olympic Route Network and around Olympic venues. The image recognition server IRID processed the data from 12 existing traffic cameras and six additional smart cameras and, for all intents and purposes, provides yet another set of intelligent eyes. Such smart video analytics alert the team in the case of issues and highlight congested locations on maps.

The video analytics and its impact response mechanism aim to maintain journey time reliability even during periods of heavy traffic. Intelligent CCTV, using video analytics that provide information to the user on a 'need to know' basis, allowed TfL to manage their time effectively,

concentrating on key locations while still being alerted immediately should incidents occur in areas that would not be examined on a regular basis. It has been shown that manual monitoring over time significantly reduces the accuracy

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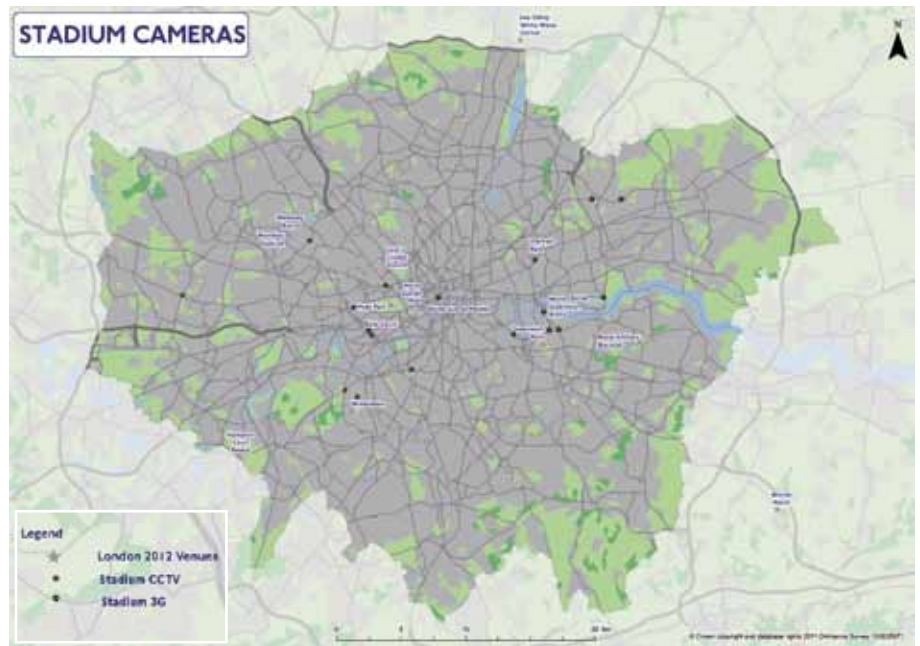
The addition of 3G smart cameras allowed automatic notification of congestion along the Olympic Route Network and around Olympic venues (image: TfL)
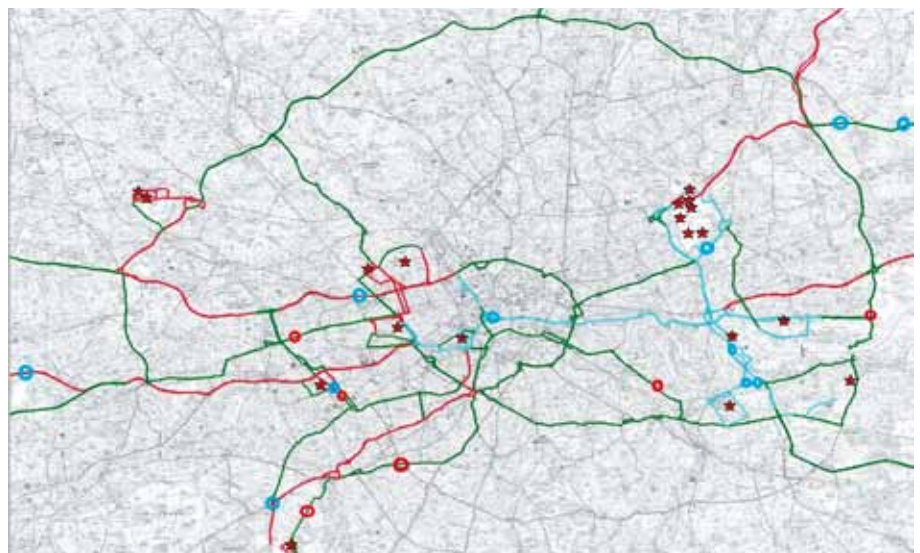
London's Olympic route network and locations of smart cameras (blue circles) and CCTV cameras connected to video analytics (red circles) (image: TfL)

of detection. Therefore, a technology that provides automatic and relevant real-time alerts to traffic management operators can have an immediate and long-term impact on traffic management, far beyond the period of large events like the Olympics.

TfL jointly with TU Berlin now analyses the effect the video analytics had for traffic management during the Olympic and Paralympic Games. The researchers now examine the added value of the video analytics components in areas where

the effects of traffic in large events need monitoring. Data is being compared to the "before-situation" in which no alerts were sent to the operators while a camera had detected an incident. Evaluation data includes numbers of congestion   >>>

During the 2010 World Cup minivan taxis were equipped with an ITS application which supported a DRT to integrate the service with local public transport in Cape Town

incidents, journey time, the average vehicle speed and numbers of accidents.

Following careful planning, TfL experienced a very smooth traffic situation during the Olympics with few incidents and with few alerts generated by London's intelligent eyes. Data collection, therefore, continued throughout the Paralympic Games.

DEMAND-RESPONSIVE TRANSPORT SOLUTIONS

The legacy benefits of ITS applications set up in South Africa during the 2010 FIFA World Cup have already been proven, with the quality of local transport services improved beyond the football tournament itself.

The demonstration in South Africa targeted the minivan transport sector, which is of high relevance in urban transport across the country. Jointly with the local transport operator Peninsula Holdings a demand-responsive transport system (DRT) and monitoring control centre were implemented in Cape Town and the so-called Last Mile service established. This mini bus service runs as an extension of the airport BRT service, taking passengers arriving at the Civic centre via the airport BRT shuttle to their final destination. A fleet of minivan taxis in Cape Town was equipped with an ITS application which supported a DRT to integrate the taxi service in local public transport.

After the World Cup the system has been adapted to allow new transport services using the DRT and AVM system provided. Call centres and monitoring control centres established during the demonstration continue operations and now manage different flexible transport services, such as a loop service (the driver will deviate slightly off existing routes to pick up commuters who booked through the call centre), mall shuttles and contract services for companies to collectively transport staff to work and back.

The STADIUM demonstration in India focused on paratransit services. During the 2010 Commonwealth Games, metro and bus timetables were linked in Delhi, with the buses and paratransit vehicle fleet equipped with GPS devices allowing bus arrival forecasting in a new control centre. This way, paratransit services such as taxis and autorickshaws could be integrated with other modes to improve access to public transport infrastructure.

DECISION SUPPORT SYSTEM FOR CITIES

Overall, there is a lot to learn from each other's experiences when it comes to provide transport services during large events. A reference group of experienced cities co-operates with less experienced cities preparing to host major events. This includes cooperation with Brazilian cities which are involved in the organization of the 2014 FIFA World Cup and the 2016 Olympic & Paralympic Games to analyse possible introduction of ITS supporting public transport during the events.

A HANDY GUIDE TO EVENT MANAGEMENT

Based on the experiences of the past project years, an online ITS handbook has been developed to support all those involved in the organisation of transport services for large events. The handbook provides cities planning to host large events with a specific tool and a set of guidelines to identify and implement the most suitable ITS applications. The guide works as a decision support system for administrators of candidate cities at different stages of the decision, planning and implementation process of intelligent transport systems.

To support the delivery and management of the mobility strategy for a large event, the online handbook covers the features and typologies of large events and reports on many past events. It addresses their basic characteristics, the planning process,

the classification of the most proven ITS applications, a methodology for impact evaluation and benefits to the transport systems. Furthermore, it reports on the STADIUM demonstrations deployed during recent large sport events. The handbook also includes a reference list of ITS suppliers and main events organisers.

Handbook users are guided through a four-step assessment process in practical terms. Each typology of events corresponds with a set of transport requirements, ranked by relevance to the specific event. For each of the requirements, the most suitable responding mobility strategies are presented and classified by priority. Finally, the selection of the ITS solutions, proved to have successfully supported the delivery of the selected strategies, is proposed to the user with the description of the technologies available and references to "best cases".

"The handbook can help cities to integrate intelligent transport systems in order to manage the transport challenges caused by large events," says project co-ordinator Maurizio Tomassini of ISIS. The Online guide will be made available to local authorities, free of charge, in early 2013.