Better together

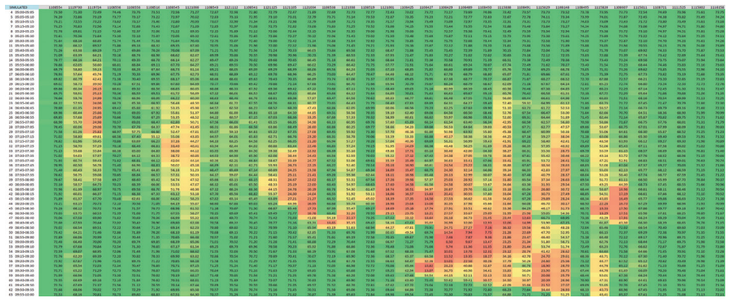
The integrated corridor management initiative in San Diego, California, benefits from one of the most comprehensive and intelligent decision support systems in the industry

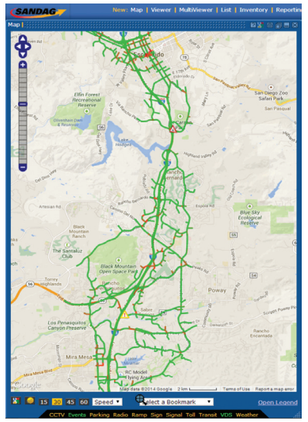
Words | **Matthew Juckes, TSS-Traffic Simulation Systems, USA**

Just as the whole is greater than the sum of its parts, a corridor is much more than a collection of separate message boards, express lanes and traffic lights. The idea behind integrated corridor management (ICM) is to pull together all available traffic management resources, coordinate them centrally and organize them proactively, with system managers using real-time simulation to anticipate congestion before it happens, and applying mitigating measures. The result is more reliable trip times – particularly when there is high demand and in cases of accidents or incidents – increased cost-effectiveness and reduced environmental impact.

Following years of site selection and project development, the Interstate 15 ICM project went live in San Diego in March 2013. Led by the San Diego Association of Governments (SANDAG), the ICM project has been operating successfully for 18 months and has already won the ITS America Best of ITS Award for Best New Innovative Practices in April 2013 and the CTF award for Operational Efficiency Program of the Year in May 2014.

Focusing on a 20-mile stretch of Interstate 15 between San Diego and Escondido, the project introduces 'smart' traffic management technologies and concepts never used before in the USA: the project's pioneering decision-support system (DSS) uses strategies such as network traffic prediction, online microsimulation analysis, and real-time response strategy assessment, to give system managers comprehensive awareness of the current and predicted future performance of the entire corridor. Rather than reacting to traffic conditions, managers can now anticipate problems before they arise and take preventive action using ICM strategies such as responsive traffic light synchronization, coordinated ramp metering, or bus priority on arterials.





(Opposite) **San Diego I-15 Express Lanes**
(Opposite below) **Speed contour diagram showing congestion on the I-15**
(Left) **SANDAG project area map**

Intelligent management

Core to the ICM solution is the ability to forecast and simulate congestion and capacity imbalances in real time or near real time. The multimodal DSS integrates two tools: the Delcan Intelligent NETworks ATMS, for field device monitoring and control, center-to-center data fusion, event management and response plan generation; and Aimsun Online, a tool from TSS-Transport Simulation Systems. Aimsun Online uses live data feeds and simulations to dynamically forecast traffic conditions based on the current state of the network, which helps system managers to evaluate incident response or congestion management strategies.

The free 511 San Diego mobile app is the most recent innovation to come from the ICM project. Funded by the US Department of Transportation, the app provides real-time predictions from Aimsun Online and system-based advisories, letting users view: predictive travel times on I-15; current traffic conditions; MTS bus routes, fares and arrival times; and real-time dynamic toll rates for the I-15 Express Lanes. It also uses text-to-speak to give users alerts for the latest incident and construction information in the region. Since its launch in May 2014, the app has already had over 22,000 downloads.

Another recent improvement is that the system is now taking automatic control of signals and ramps when recommended by the simulated evaluations. This may be the first time in the USA that traffic management decisions are being made entirely based on automatically triggered real-time simulations of the entire transportation network.

Alex Estrella, senior transportation planner and ICM functional project manager at SANDAG, believes that real-time simulation has the potential to completely transform traffic management.

"The San Diego ICM system is unique for incorporating both the network prediction subsystem (NPS) and real-time simulation subsystem (RTSS)," he explains. "Now traffic management decisions are based on both current and predicted traffic conditions, a capability that has so far been missing from ATMS solutions. I believe that we are creating one of the most comprehensive and intelligent decision-support systems in the industry today."