

REAL-TIME MODELLING FOR SMART TRAFFIC MANAGEMENT SYSTEMS WITH PROACTIVE TRAFFIC CONTROL AND DEMAND OPTIMIZATION

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ABSTRACT

Historically, cities have managed the live transport network through staff monitoring CCTVs and social media feeds, with Network Monitoring Operators (NMOs) and transport engineers manually implementing new plans and signal changes to ease network issues.

In recent years, the evolution of technologies (e.g. sensors, connectivity, computational capacity, etc.) have allowed the adoption of more pro-active approaches in monitoring and influencing the transport network and the behaviour of its users. These approaches leverage on systems based on dynamic transport models and machine learning algorithms that can ingest data, estimate and predict traffic as well as perform simulations in real time. The goal of such predictive system is to evaluate in real time the effects on traffic caused by changes to the transport network such as planned works, accidents, and traffic lights configurations, including the synchronization effects between adjacent intersections such as the so-called green wave phenomenon. With these augmented capabilities, traffic managers and operators can take advantage of simulation, evaluation and visualization capabilities to test and monitor any traffic optimization strategies in an integrated and centralized environment, enabling its users to evaluate their effectiveness before proceeding with their application on the ground. In our presentation, through a practical application, we will explain the specifics of this system, the symposium of benefits of the real time traffic models for NMOs, and how they are integrated with live data assets including traffic signals.