

STREAMS ITS Integration

STREAMS is an Intelligent Transport System designed “from the ground up” to integrate the flow of information between ITS applications such as:

- » Motorway management
- » Incident and event management
- » Traffic signal management with priority for public transport vehicles and pre-emption for emergency vehicles
- » Real-time passenger information
- » Parking guidance

The building-block architecture of STREAMS software also provides the blueprint to extend the many benefits of the integrated approach to legacy traffic management systems.

BENEFITS

With the addition of STREAMS, owners and users of legacy traffic signal or motorway management systems can realise the following benefits:

User Interface Integration

Operators of STREAMS-integrated legacy systems can manage traffic through a single interface.

Users interact with all systems using STREAMS Explorer, a map-based, browser-style interface. The intuitive STREAMS user interface becomes familiar, reducing training costs and operator errors.

Holistic Road Network Management

STREAMS allows operators to manage the road network as a whole rather than a collection of separate components. Use STREAMS to interface a set of discreet traffic management systems and improve network performance. STREAMS helps different systems work together to achieve the desired outcomes.

- » Create Response Plans to request changes on routes, intersections, movements, ramps and signs. A response plan may be triggered by a set of predetermined conditions or requested by an operator.

- » STREAMS reports the current demand and learnt operational capacity of each section of road where detector data is available. This allows for informed operation of the road network to utilise spare capacity.

Integral Geographic Information System

STREAMS' underlying Geographic Information System (GIS) models the transport network infrastructure, including the physical components of the transport network such as the intersections and links, and all field equipment such as signs, cameras and vehicle detectors. The model also defines all traffic movements and routes.

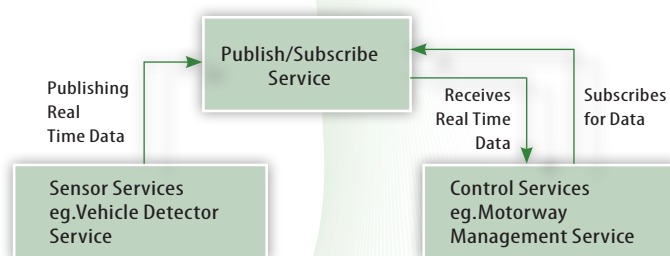
By allowing for geographic relationships among transport network objects, the GIS significantly reduces the configuration data requirements because much of the information can be derived from location data rather than needing to be specified explicitly.

The integrated GIS covers everything managed by STREAMS directly or controlled by legacy systems interfaced to STREAMS.

INFORMATION INTEGRATION

The STREAMS Publish/Subscribe Service provides a single source of data for all ITS applications in STREAMS.

Where interfaced to legacy systems, STREAMS can deliver the data received from the existing system to all other STREAMS modules.



Depending on what data is available, STREAMS can provide the following functions:

- » Incident management
- » Advanced equipment fault monitoring and alarms
- » Validation and integrity checking of collected data
- » Traffic network data profiling
- » Traffic network capacity learning
- » Advanced system response plans, including scripting capability
- » Network-based simulation for signals and freeways
- » Business intelligence to provide advanced reporting

CASE STUDIES

VicRoads Coordinated Freeway Ramp System

VicRoads made use of STREAMS as the software platform for its award-winning project to replace an existing ramp metering system, provide an integrated ITS platform and integrate the use of digital CCTV.

VicRoads used a STREAMS interface to the existing Motorway Management System MMS to collect data from the detectors on the freeway mainline. Wireless stud detectors were added to the on-ramps and connected to STREAMS via field processors.

The HERO ramp metering algorithm was implemented in STREAMS and used the integrated data set from the Publish / Subscribe interface.

Work is proceeding on this project to replace all remaining functions of MMS with STREAMS and add advanced Lane Use Management capabilities to provide lane control and variable speed limits.

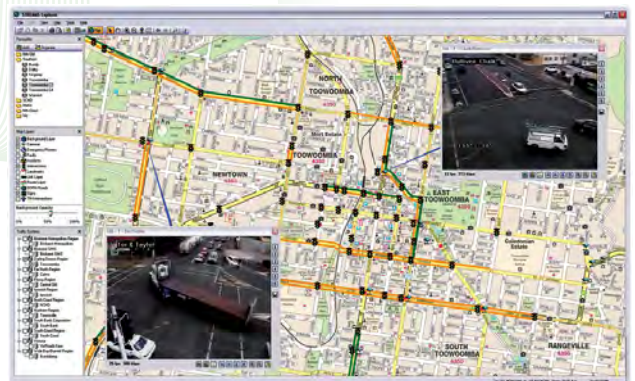
South Australia DTEI Integrated ITS

The Department of Transport Energy and Infrastructure (DTEI) is using STREAMS to replace existing freeway management systems. One of the freeways, the Southern Expressway, is a fully reversible road that is “turned around” 12 times each week.

An interface to the existing SCATS™* traffic signal management system provides STREAMS with data and allows STREAMS to control intersection operations.

Features of the system include:

- » Integration of SCATS Access™ to manage intersections from the STREAMS Explorer interface.
- » Interactive response plan scripts to manage the reversal of the Southern Expressway
- » The ability to request SCATS™ functions including:
 - Action lists
 - Cycle time locks
 - Phase dwells
 - Plan locks
 - Route pre-emption



The STREAMS Explorer User Interface

*SCATS is a trademark of the NSW Roads and Traffic Authority.