Capability Statement

tyco
Traffic & Transportation

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1. The Tyco Traffic & Transportation Advantage

Tyco Traffic and Transportation is part of the Tyco group of companies, world leaders in the provision of engineered Traffic, Fire and Security solutions.

1.1 Specialists in Traffic & Transportation

Our Traffic and Transportation division has earned a well-established track record of working collaboratively with government and private customers, design consultants and asset owners in high profile, public facing environments, to successfully deliver complex Intelligent Transport Systems (ITS) technology solutions and services.

Our dedicated Traffic offices in New South Wales, Victoria, Auckland, Wellington, Singapore, Hong Kong, Shanghai and Beijing have been providing design, supply, installation and maintenance services to the Urban Traffic Control (UTC) and ITS industries.

From our head office in NSW, we design, manufacture, configure and maintain Urban Traffic Control systems including controllers and lanterns. This is also the home of our ITS business unit, which provides high level ITS systems design, hardware and software design, procurement, system integration and project management for ITS systems incorporated in freeways, tunnels, tidal flow, Bus Priority and Passenger Information and tolling systems.

Both our UTC and ITS capabilities can be readily deployed globally.

15+ Years of Experience

Tyco has been providing supply, installation and maintenance services to the urban traffic control and ITS industries in Australia, New Zealand and Singapore for over 15 years.
As a result, we have in-depth knowledge of the performance characteristics and maintenance requirements of Traffic Control Systems and associated ITS equipment, enabling us to continuously improve our products and maintenance procedures.

Customer Focus

Tyco's business is structured to ensure the best possible customer outcomes are delivered. From our senior management down, every aspect of our operation is continuously reviewing and calibrating to the specific needs of our customers.
Tyco's turnkey service offerings begin with deep customer engagement in the design phase of any solution and maintain regular collaborative steering workshops to ensure the outcome entirely meets (and often exceeds) requirements and expectations.
The ultimate goal is to meet the objectives of our customers in a manner which ensures safety, efficiency and functionality are delivered in a cost effective manner.

1.2 Asset and Program Management

Asset and Program Management are key strengths of Tyco in maximising the return on investment of customer assets through strategic planning that includes the application of preventative and corrective maintenance of installed assets, financial planning & modelling, condition surveying and technology development, supported by strong on the ground and in-depth technical knowledge and support.

To ensure our customers retain asset knowledge to allow them to make informed decisions Tyco have developed a suite of

software that manages the administrative activities of our Asset and Program delivery activities, which allows for the provision of detailed reports providing total transparency to our customers on both Tyco performance against KPI's and the asset availability over a defined period.

1.3 Intelligent Transport Systems (ITS) Maintenance

We are the principal ITS maintenance provider to VicRoads for two of their largest metropolitan regions, incorporating more than 3500 Traffic Signal intersections, ITS hardware and the related communications backbone.

We are also the principal ITS maintenance provider to New Zealand Transport Authority for the Auckland and Wellington regions, Land Transport Authority in Singapore maintaining their ITS assets on the MCE, KPE & Fort Canning Tunnels and Hong Kong Department of Transport for their UTC systems.

We have a proven ability in ensuring the availability of ITS assets across a wide range of products and systems, including those which are non-Tyco products, are maximised and that this is done in a way that is commercially competitive while providing customers with full transparency. The success achieved is attributed to Tyco's focus on customer engagement at all times and a continued focus on improving their delivery outcomes on a continuous basis.

The overriding focus by Tyco in delivering projects and services remains its focus on the environment and the health and safety of their staff, sub-contractors and road users.

You can be confident that Tyco has in place the relevant experience, skill sets, technology and systems to successfully deliver against the required outcomes in a collaborate and commercially aligned arrangement.

2. Meridian Software

2.1 Overview of the Meridian Integration Framework

The Meridian Core is responsible for collecting data from available sources, overseeing alarms and state change and monitoring the motorway and/or tunnel system, while Meridian Applications perform a huge number of operations such as detecting and managing incidents, calculating travel time and speed limits, controlling CCTV cameras and displays and conducting transfer of information to external systems.

The Meridian Framework encompasses a device model from which status and control are granted in a uniform fashion for any equipment. Device types, which include variable message signs, lane usage signs, speed-limit signs, traffic barriers, CCTV, emergency telephones, air quality fans, and pumps, to name but a few, are seamlessly integrated and presented to the operators in a variety of ways such as SCADA/Schematics display, and full Geo-Spatial maps.

All this equipment can be monitored and controlled manually by the operator(s), or automatically to manage traffic, incidents and emergencies, and the entire system state is constantly and graphically displayed to the operators.

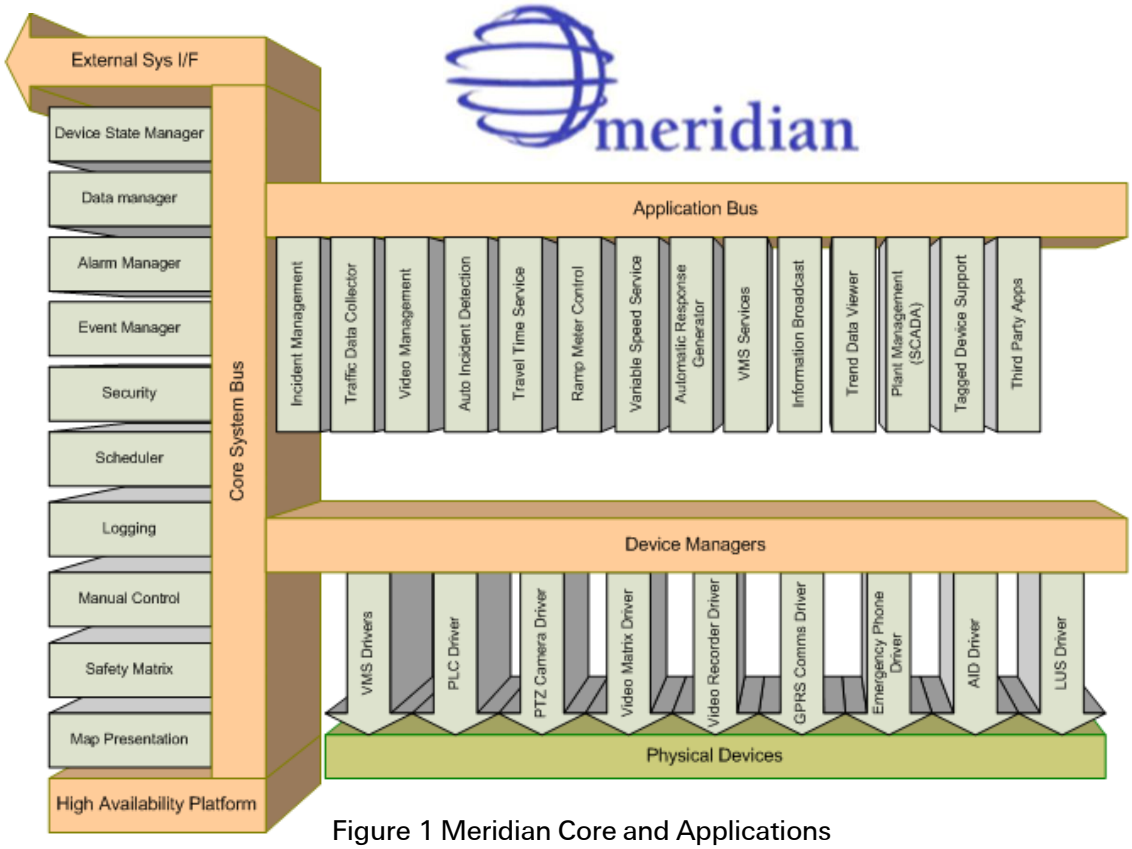

Figure 1 Meridian Core and Applications

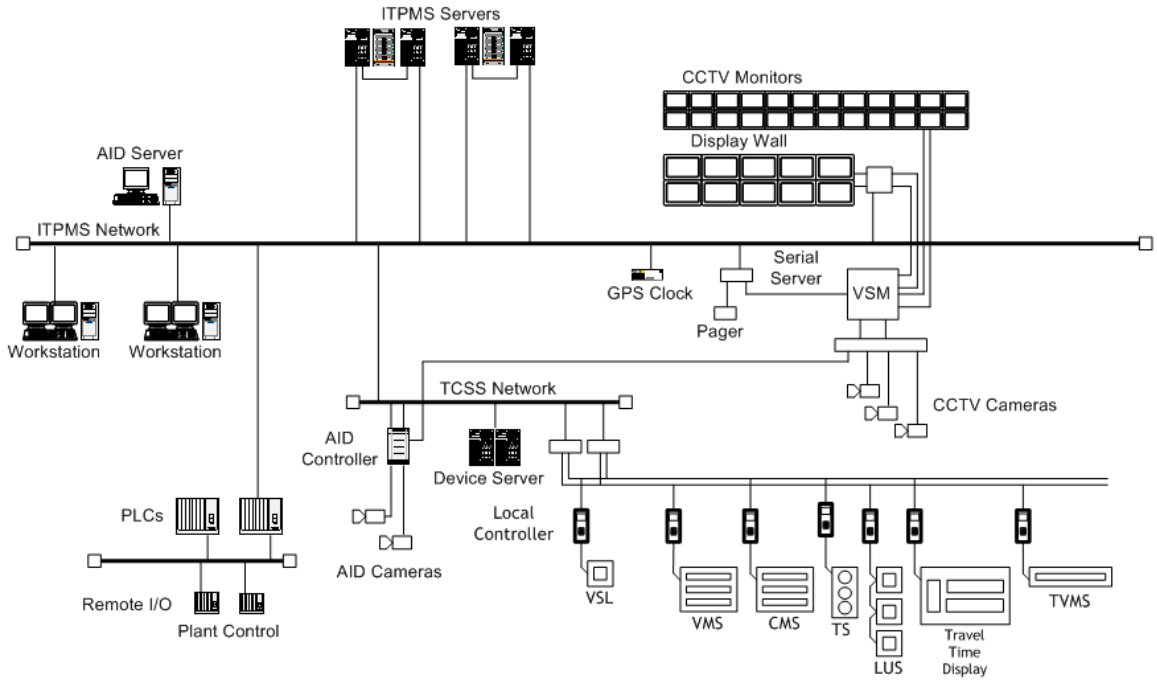

Figure 2 Typical Traffic Management System

2.2 The Meridian System

The Motorway Management System is a family of software components:

// Meridian Bus – this is the backbone of Meridian. Any number of Meridian Application modules can be installed on the Bus using open standards such as CORBA and JDBC.

// Meridian Core – these are a standard set of modules which provide basic functions, such as Security, Event and Alarm Management, Data Management and Logging.

/ / Meridian Apps – standard and custom Apps implement features such as Automatic Incident Detection, Travel Time Display, Automatic Response Generation and many more. Application Program Interface (API) and Software Development Kit (SDK) make it easy for third parties to develop Applications.

// Meridian GUI – is the operator interface. It uses scaled maps and schematic views as well as lists, forms and icons to create a pleasant and intuitive working interface.

// Meridian Tools – an extensive set of tools for managing and extending the Meridian System and for producing reports.

There are a number of standard Meridian Applications available. These can be supplemented by custom Applications produced by Tyco or by third parties using the published API and the SDK.

Think of Meridian as a Bus or a framework, into which you can plug the Applications you need for your operation. Tyco modules and third party modules can work side by side, sharing equipment, resources and information for a truly integrated, tailored enterprise solution.

And the Bus is Virtual– extending as far as your network reaches, so an Application in Sydney can share devices with an Application in Melbourne and the data they generate can be used in reports on transport infrastructure usage prepared in Canberra.

Meridian **Core Extensions** further extend this interoperability; the External Systems Interface accepts plug-in protocol converters to provide a secure connection to other systems.

3. Company Information

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Date of Registration:	13/04/2000

3.1 Quality Management

Tyco maintains accreditation to AS/NZS ISO 9001:2008.

3.2 Environment Health & Safety Management

Tyco maintains accreditation to AS/NZS 4804:2001 and ISO 14001:2004.

Copies of the certificates and relevant supporting information are included in the Appendices.

Quality
ISO 9001

Health & Safety
AS 4801

Environment
SO 14001

Environment Protection

Protection of the Environment is achieved through Tyco environmental commitment, management planning, and project works procedures and their implementation. The Tyco Environmental Policy is signed by the Managing Director. The policy and its implementation are regularly reviewed.

A Project Environmental Management Plan (EMP) will facilitate:

- Ensuring compliance with the provisions of the relevant environmental legislation,
- Ensuring that the works are conducted in accordance with the requirements of the contract,
- Addressing the environmental issues and safeguards identified in the Client's Construction EMP, to facilitate a minimal impact on the environment, and
- Raising the environmental awareness of the persons involved in the design and construction of the works, to realise the project environmental objectives.

Tyco has a Waste Minimisation Policy, aiming to reduce site waste to a minimum, and if waste is produced, to look at the possible recycling alternatives. Examples of waste management currently in practice are the recycling of pipe waste and cable waste to metal merchants, and the recycling of all paper waste.

4. Innovation

Tyco's approach to design delivery and service strongly encourages innovation to achieve customer outcomes. In taking a creative approach which embraces and rewards innovation we are often able to reduce cost and improve outcomes for our customers.

We have built a culture of innovation across our business in which continual improvement is driven at all levels by individuals who strive to meet and exceed customer expectation. This core value is underpinned by our quality management system, which drives continual improvement through our requirement to regularly review and audit work procedures. Key learnings from these audits are used to improve and better align work practise to drive improved outcomes. Additionally, innovation in safety is long established through formal reward and recognition programs; with Tyco global awards showcasing the best of our efforts worldwide.

Our approach to innovation closely aligns our group capability with the outcomes and results sought by our customers.

4.1 Materials and Services

Controller Repairs

Tyco has a specialised service, repair and test facility providing diagnostic and repair services for all makes of traffic controllers installed by VicRoads and Councils in metropolitan and regional areas. This facility is supported by our experienced Product Support and R&D teams.

Our software upgrade service covers controllers from different manufacturers installed in the VicRoads networks. This service is utilised by all VicRoads traffic signal maintenance contractors for equipment change over and on-line assistance.

Benefit:

- // Extending the lifecycle of legacy assets
- // Assurance in the availability of electronic spares

4.2 Fault Management Systems

Automated Work Management System

We currently use customised automated systems in high-traffic areas, such as Victoria and the United Kingdom, providing fast fault response times developed by Tyco and Mott MacDonald. We will combine our experience from the Highways Agency Fault Logging System (United Kingdom) and the traffic signal maintenance dispatch in Victoria. This will provide our customers with best in class fault clearance and increase asset availability.

Benefit:

- // Increased asset availability
- // Automated work management
- // Improved asset knowledge

4.3 GPS Assisted Fleet Management

Fleet management in Victoria is assisted by a GPS tracking system that locates the best placed and equipped vehicle to respond to the work request.

Benefit:

- // Faster response times and notification of arrival times;
- // Improved worker safety

4.4 Asset Planning and Management

Field Devices

Mobile field computing (MFC) via toughbooks, tablets or smartphones have evolved into a critical tool managing asset works in the field. Risk assessments, safety precautions, and work instructions are viewed and verified on the devices at the commencement of work.

Technicians accurately capture asset condition, fault and failure information on their device rather than on paper. Labour, plant and inventory details are recorded at the conclusion of works.

Benefit:
// Improved data integrity
// Access to up-to-date procedures, work instructions and safety practices
// Better inventory control and traceability from vehicles to site

LED Upgrade – Traffic Signals

Asset upgrades are an opportunity to optimise life cycle costs by eliminating maintenance activities, reducing maintenance frequency or changing the maintenance strategy. Working in collaboration with VicRoads, an upgrade to new LED lanterns, with increased life expectancy, has resulted in a reduction of "burn out" runs from monthly to three-monthly.

Benefit:
// Enhanced safety for road users
// Cost saving
// Improved asset reliability

5. Tyco's Experience

Since our first major ITS project, we have worked on the following ITS projects described in the table below:

Name	Description	Network	Management Software	VMS Signs	Speed & Lane Signs	Other signs & devices	Phones	CCTV	Incident Detect	Tidal Flow	Backup Power System	Traffic Signals	Maintenance Services	Public Transport RTPIS
Public Transport Information and Priority System (PTIPS) Contract period: 2008 to 2015	PTIPS performs a number of high-level public transport functions including tracking and recording vehicle activity, traffic signal priority, passenger information and performance measurement and reporting. Tyco's scope of work includes the re-design and manufacture of the electronic On-Board Unit (OBU), the core component of the in-vehicle equipment, deployment and maintenance of the system to 2,500 State Transit Busses operating on the Sydney network.					X							X	X
VicRoads Maintenance of MNWR Contract 7774 Current Contract to June 2015	The contract involves the maintenance of traffic signals and on-road electrical and communication devices for the metropolitan north west region.	X	X	X	X	X	X	X				X	X	
Electronic Speed Limit Signs for Vic Schools Contract period: May 2008 to May 2014	The supply and integration of 1500 electronic speed signs for schools and for shopping strips. The system includes a management system using 3G communications, solar powered signs, a Maintenance Management System with web-interfacing to maintenance operators. Tyco are also the maintenance supplier for this system.	3G	X		X						X		X	
South Road Superway (Under Construction) Scheduled for completion: Dec 2013	This Project is an upgrade of a 4.8km section of South Road to an expressway standard, with 2.8km of elevated roadway providing up to 8 lanes of non-stop North-South corridor above the existing South Road. Tyco is to supply, install, test and commission the Intelligent Transport System (ITS) with the equipment being integrated to the SA Government's Traffic Management Computer System (STREAMS) to allow central monitoring and control of the Superway. ITS devices include CCTV cameras, freeway detector stations, video incident detection, VMS, VSLS and CMS.	X		X	X	X		X	X	X	X			
VicRoads Maintenance of MSER Contract 7527 Current Contract to June 2013	The contract involves the maintenance of traffic signals and on-road electrical and communication devices for the metropolitan south east region.	X	X	X	X	X	X	X				X	X	

Name	Description	Network	Management Software	VMS Signs	Speed & Lane Signs	Other signs & devices	Phones	CCTV	Incident Detect	Tidal Flow	Backup Power System	Traffic Signals	Maintenance Services	Public Transport RTPIS
MCE ITS & Plant Management Completed: June 2013	This is an extension of the KPE system. It involves additional tunnelling to extend the system to 12km, plus new intelligent incident response software to assist operators in managing the extensive system. The system includes ITS and plant management (SCADA) catering for 40,000 controlled & monitored points.	X	X	X	X	X	X	X	X	X	X	X		
Peninsula Link Completed: Feb 2013	Tyco was awarded the contract to design, supply, install and commission the Intelligent Transport System (ITS) for the Peninsula Link Project. The complex nature of ITS elements and varying technologies for this project consists of data stations, primary and secondary interchange information signs, closed circuit television cameras, help phones, and communication links to the freeway control centre (FCC) and VicRoads Traffic Management Centre (TMC) to enable the effective and efficient operation of all ITS elements.	X	X	X	X		X	X			X			
Tugun Bypass Meridian Software Upgrade Completed: Oct 2011	The original Meridian software developed for the Tugun Motorway met the contract specifications, but it was later identified that the TMC operator's processes did not line up with the Software General User Interface. A review was undertaken by Tyco with input from the TMC. A design was developed by Tyco and Main Roads approved the work to be undertaken, with the upgrade of the Server Hardware.		X										X	
Woodsville Tunnel ITS & Plant Management Completed: Nov 2011	This was the first tunnel to be integrated into the 10-tunnel Fort Canning system. The system is essentially the same as Fort Canning, except that it shares a server with FCT. New operator interfaces were designed to define "areas of responsibilities" for individual operators and the server-database-backup system was updated to take advantage of technology advances.	X	X	X	X	X	X	X			X	X		
Houghton Duplication Project ITS Completed: Aug 2011	With the addition of a new 2.5km bridge, the old tidal flow system was removed and Tyco designed, supplied & installed a new ITS system comprising signs, phones, detectors, weather station and backup UPS and generators. Integrates into STREAMS.	X		X	X	X	X	X			X	X		
Tugun Bypass Network Reconfiguration Project Completed: Mar 2011	Tyco reconfigured the Tugun Bypass Network for DTMR to rectify a number of subtle issues with the original design done by others. The network is now stable and, in addition to meeting the performance requirements of the Bypass ITS system, meets DTMR's expectations as a component of its wider communications network.	X	X											

Name	Description	Network	Management Software	VMS Signs	Speed & Lane Signs	Other signs & devices	Phones	CCTV	Incident Detect	Tidal Flow	Backup Power System	Traffic Signals	Maintenance Services	Public Transport RTPIS
Wellington ITS Field Device Maintenance Contract period: July 2006 to June 2010	Services provided include scheduled 6 monthly inspection and preventative maintenance services, fault rectification and repair, emergency repairs and 24 x 7 service response of all ATMS assets installed in the Ngauranga Gorge section of SH1, Mt Victoria Tunnel, the Terrace Tunnel and the Coast Road.	x	x	x	x	x	x	x			x	x	x	
Monash Freeway/South Gippsland Freeway Ramp Signals Completed: June 2009	Supply and install Freeway Ramp Signals at seven on-ramp locations on the Monash Freeway and one on-ramp location on the South Gippsland Freeway. Works also included CCTV, vehicle data stations, message signs, ramp signals & controller, field processor and cabinets.			x	x	x		x				x	x	
Auckland Motorway ITS Asset Maintenance Contract period: 1999 to 2008	The contract covered all ATMS assets installed in the Auckland regional motorway. Services provided included scheduled 6 monthly inspection and preventative maintenance services, fault rectification and repair, emergency repairs and 24 x 7 service response.	x	x	x	x	x	x	x	x	x	x		x	
KPE Tunnel ITS and Plant Management Completed: Aug 2008	A 9 km two tube tunnel, with up to 5 lanes in one direction. Tyco provided the ITS and the plant management systems. This is a huge system with 14 servers providing ITS & SCADA management plus 4x redundancy with automatic failover for high reliability. This was an externally audited IEC61508 SIL 2 project.	x	x	x	x	x	x	x			x	x		
Tugun Bypass ITS & Plant Management Completed: June 2008	Tyco designed, supplied & installed the ITS and the plant management system for the 7km stretch of Pacific Hwy, including a 350m tunnel. The ITS system included over-height vehicle detectors which automatically close the tunnel.	x	x	x	x	x	x	x	x		x	x		
Fort Canning Tunnel ITS & Plant Management Completed: June 2007	A short tunnel system in Singapore, expandable to 10 tunnels, providing full ITS and plant management plus backup power. Also included a port into Singapore's iTransport umbrella system	x	x	x	x	x	x	x			x	x		
Auckland's Central Motorway Junction ITS Completed: May 2007	When the Central Motorway Junction was remodelled, Tyco designed, supplied & installed the ITS system. This was an extension to the Harbour Bridge system that Tyco also provided. The project added approximately 92 lane control signs and upgraded the old SDH network to Gbit Ethernet	x	x	x	x	x	x	x				x		
Auckland City Council Traffic Signal Maintenance & Upgrade Contract period: 2002 to 2007	The contract covered the routine and preventive maintenance activities, and upgrades to the city's traffic signals infrastructure of 300+ signalised intersections including 24x7 emergency response services.					x						x	x	

Name	Description	Network	Management Software	VMS Signs	Speed & Lane Signs	Other signs & devices	Phones	CCTV	Incident Detect	Tidal Flow	Backup Power System	Traffic Signals	Maintenance Services	Public Transport RTPIS
Victoria CCTV Management Completed: Oct 2006	Tyco designed, supplied & installed a Camera Computer Control (CCC) System for VicRoads. This system consists of two fully equipped camera control computers with its own graphical user interface for CCC system management, PTZ control of 250+ selected cameras, and linkages to a number of external authorities.	x	x			x		x						
Shadow Tolling System Completed: 2006	Two ITS systems in Portugal covering approx 100km of new motorway, with vehicle detectors used for “shadow tolling”; state paid operator per vehicle and per type. Extensive auditing features are built into the system.		x	x		x	x	x						
Wellington City Council Traffic Signal Maintenance & Upgrade Contract period: 2003 to 2006	The contract covered the routine and preventive maintenance activities, and upgrades to the city’s traffic signals infrastructure of 95+ signalised intersections including 24x7 emergency response services.					x						x	x	
Terrace Tunnel & Victoria Tunnel Completed: 2005	Tyco was engaged to design, install and maintain a network, fire detection system, incident detection system and CCTV system for two short tunnels in Wellington, New Zealand.	x	x		x	x		x	x			x	x	
VicRoads Tram Priority Project Completed: Nov 2003	Tyco designed, installed and commissioned a Tram Detection System to provide reliable, efficient Tram priority calling at traffic signal intersections.					x						x	x	x
SmartBus ICT System Project Completed: Sept 2003	Tyco was engaged by the Department of Infrastructure (VIC) to supply and support a bus tracking system that provides late running busses with traffic signal priority to improve journey times and increase service reliability. The system also provides passengers with real time travel information at selected bus stops and rail interchanges.	x	x			x								x
Houghton Highway upgrade Completed: 2003	Design, supply & installation of a lane control system for the 3 lane, 2.5 km bridge with CCTV and phones. Other devices included Changeable Message Signs & pavement lights	x	x		x	x	x	x		x	x	x		
Adelaide RTPIS Completed: 2003	Tyco was engaged by the DTEI to supply and install a bus vehicle tracking prediction and priority system complete with passenger information signs.	x	x			x								x
Pacific Motorway ITS Completed: 2002	Design, supply & installation of an SDH network to integrate various systems. Also provided CCTV, weather stations and phones over a length of Pacific Hwy around Nerang in Queensland.	x				x	x	x					x	

Name	Description	Network	Management Software	VMS Signs	Speed & Lane Signs	Other signs & devices	Phones	CCTV	Incident Detect	Tidal Flow	Backup Power System	Traffic Signals	Maintenance Services	Public Transport RTPIS
Auckland Harbour ITS Completed: 2002	Design, supply & installation of an ITS system on the Auckland Harbour Bridge and State Highways 1 & 16. Developed hardware and software to manage and track moveable barrier. Software included automatic response generator for incidents and elaborate reporting & diagnostic features. An SDH network was designed and supplied in what was a state-of-the-art communications system	x	x	x	x	x	x	x	x	x	x		x	
Ngauranga Gorge Completed: 2001	60,000 vehicles per day pass along this 2km stretch of motorway running through a steep gorge. Tyco was engaged to provide an Advanced Traffic Management System – Meridian (formally Odyssey) and Automatic Incident Detection to improve safety by fast incident detection / response and by warning oncoming motorists through Variable Message and Mandatory Speed Signs.	x	x	x	x	x		x	x		x		x	

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