Government of Western Australia, Public Transport Authority

Overview

The Government of Western Australia's Public Transport Authority, (PTA), is responsible for the operation, management, and maintenance of all urban heavy rail, bus, and ferry infrastructure in Perth, Western Australia. Committed to providing the safest, most efficient, sustainable, and cost-effective service possible for more than 140 million passengers annually, PTA has consistently pursued technical innovation to improve its assets, in particular lighting.

In an Australian first PTA engaged LVX's Consultant Services Division to audit their general and emergency lighting assets, and provide technical recommendations with the ambitious aim of developing and delivering the safest, most sustainable and cost effective IoT/Smart City Lighting & Life Safety System controls and monitoring solution in the world.

After a rigorous 18 month Due Diligence process, including successful in situ trials delivered by LVX's Field Services Division, PTA adopted LVX's engineered solution in early 2013.

With a detailed commercial and operational implementation strategy designed to optimise return on investment by marrying in capital works, capital replacement and reactive maintenance programs, this project, to be delivered over 10 years is one of the largest in the world, and easily the largest and most complex sustainable & intelligent lighting project ever to be delivered in Australia.

PTA first engaged LVX to review its emergency lighting assets, and management strategies. As a result, PTA trialed and adopted the "Zoneworks" emergency lighting and exit sign monitoring system, manufactured by Australian technology company, Clevertronics. This solution is built around NYSE listed Echelon Corporation's open protocol powerline communications technology and is integrated via the PTA Ethernet to a Central Server.

The Challenge

LVX started their engagement on this project in mid-2009 when Smart City and IoT were not central in any way to the discussion of infrastructure and asset management. Finding accurate, useful information and technologies that would still be operating in 10 years, (25 year design life), posed a challenge in a globally remote location such as Perth.

This project engagement commenced in 2009 at a time when Smart City & IoT were not really heard of and therefore poorly understood. Ensuring that the Smart City System was built out on an open protocol technology that was scalable to the end size of the project, device agnostic, software agnostic, usable by all stakeholders from IT to service and maintenance, and open to incorporate future applications was critical, and formed a large part of the initial technical due diligence and proof of concept trials.

The fact that this project covered such a vast number of sites and buildings, (> 200 separate locations including administration buildings, tunnels, bridges, car parks, [open plan and high rise], stations, shunting yards and service buildings), was an immediate challenge, as any technology used had to be suitable for and compatible with a wide variety of applications and field devices. Over time, some 100,000 devices of many different types needed to be connected to the Smart City network.

Visit **www.lonmark.org/connection/case** *for more case studies*

The Solution

Both environmental noise monitoring and forward compatable network architecture for future applications were requirements when selecting a solution.

Originally LonWorks was the chosen platform of the preferred Emergency Evacuation Lighting technology company, and once we did our due diligence on them and LonWorks we sought out smart general lighting technologies for a few reasons:

(1) It always worked, even in the most arduous communications environments, and when you are delivering such a large and complex project across so many asset types, (existing and new), there is no substitute for what you know, and have evidenced to work.

(2) A large amount of the assets were either pre-existing and being retrofitted, were not enabled or able to be enabled with a data BUS, and/or were partially or completely underground, meaning RF was not an option. Powerline communication was ideal.

Lighting

Smart Luminaire Controller	Manufacturer	Version	Transceiver
CPD 3000	Echelon Corporation, A Division of Adesto	3.4	PL-20C
Emergency Lighting: Clevertronics "Zoneworks" and SmartServers and iLON600			
General Lighting: LumInsight with CPD3000 and SmartServers			

The Results

The benefits are simple: we could actually deliver the project. If there were no available, proven and robust powerline solution, the project could not have happened. It's that simple.

Energy consumption with controlled LED luminaires using daylight sensing and astronomical clocks and occupancy detection has seen power consumption reduce by nearly 50% compared with the pre-existing halogen, fluorescent, sodium and metal halide but the most significant benefits are:

• Enhanced safety through maintaining a constantly operational lighting asset through the use of an alert/alarm procedure for reactive maintenance

• Cost savings associated with enforceable warranty through maintenance of asset and condition records

• Reduced maintenance costs by 90% by using log life technology with near-real time reporting of failures and detailed reporting of required placement parts and fault locations into the ERP system

Reduced executive risk through implementation of auto-compliance reports that provide a demonstrable, objective, up to date compliance profile

According to Dean Jones, **Global Major Projects Lead**, ''Our extensive due diligence and proof of concept trials identified that LonWorks was the only technology platform that was able to deliver a functional and cost-effective outcome for the project scope: emergency & general lighting across a wide variety of asset types: stations, undergrounds, tunnels, car parks, pedestrian crossings, shunting yards, service facilities and office buildings. Adding to that, sophisticated interfacing and development strategies to allow Luminance meter inputs for tunnel applications as well as peer to peer binding for switching and occupancy detection that we needed to develop could not easily be done on any other platform. LonWorks made this project possible."

3600 Peterson Way
Santa Clara, CA 95054 USA
Tel +1 866–566–6275
Tel +1 408–790–3247
Fax +1 408 790 3838
www.lonmark.org

Contact:

LVX Global (Australasia) Pty Ltd
Dean Jones
+61 (0) 8 9485 1017
dean@lvxglobal.com
www.lvxglobal.com