Quantela

Australia's largest smart streetlight deployment, Queensland

The Customer

Queensland Department of Transport and Main Roads (DTMR) is a department of the Queensland Government, formed in April 2009 with the merger of Queensland Transport and the Department of Main Roads.

The Queensland (DTMR) needed to replace its 35,000 legacy streetlights with smart streetlights aiming to reduce costs and increase operational efficiency and public safety.

The Challenge(s)

• **A highly dispersed existing streetlight network:** An off-the-shelf solution would be cost-prohibitive because DTMR would have to install so many telecommunications gateways to accommodate a coverage area the size of Queensland (around 2 million sq km)

• **Upside-down streetlight sensors:** With a typical smart streetlight, the sensors and controllers are above the light fixture. However, Australia's harsh weather conditions and abundance of birds necessitated a creative design and hardware solution.

• **Near real-time device communications:** A project with a dense coverage area typically uses a standard cellular network to transmit communication signals. Because many streetlights are in very remote locations, DTMR required a data transmission technology that could provide near real-time communications with all 35,000 streetlights.

• **In-country data residency requirement:** Per Australian law, all smart streetlight data had to reside on servers located within the country boarders, which meant a cloud-based solution may not be feasible.

How Quantela Helped

Quantela's expertise in smart streetlight projects around the world made it an ideal fit for the project. Using the Quantela LightingGale Central Management System (CMS) to control the 35,000 streetlights and Quantela NB-IoT/ CAT-N Street Light Controllers (SLC's)as the basis of the project, technicians attached wireless hardware to every streetlight. The project was completed in 2021 and is currently operational with Quantela providing ongoing support and maintenance as needed.

Queensland Facts

The second largest state in Australia **2M** Sq km

Home to the world's largest sand island

More than **5M** residents
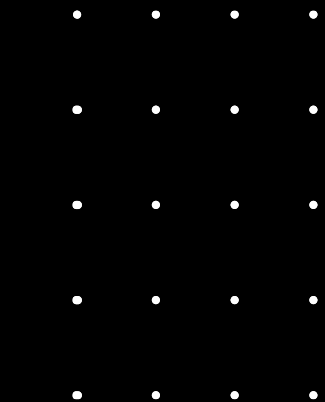
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Together with UST, Quantela contributed engineering know-how for the creation and improvement of the SLC for the project. The Quantela LightingGale hardware, firmware, and CMS were confirmed by UST engineers to meet the stringent certification standards of the Telstra telecommunications network, and data would be limited to an in-country cloud infrastructure.

Narrowband internet of things (IoT) technology that can transmit data over long distances in a low-power mode on both LTE and 5G networks was implemented to ensure streetlights in remote and urban locations would have near real-time connectivity. The UST engineering team enhanced the Quantela iSLC3100-N controller, and the associated firmware. The enhanced SLC had the capability to fit on top or underneath the light fixture. Furthermore, the engineers helped implement a multitenancy feature, so different localities have autonomy to cluster and control streetlights based on their specific needs—all without impacting the master streetlight grid.

Outcomes delivered

Increased operational efficiencies
With an implementation timeline of six years, the project is underway and already delivering positive results. Now, the Queensland DTMR team can remotely monitor and manage the deployed smart streetlights from the Quantela LightingGale CMS dashboard—with full visibility into energy consumption and streetlight status across the system.

20-30% reduced energy costs
The team can dim or turn off lights individually or set dimming and energy saving schedules for clusters of lights to better manage usage, energy consumption, and costs—with an anticipated savings of 20-30% for cities and municipalities across Queensland.

Improved maintenance efficiency and public safety
The smart streetlights are easier to maintain, because of power outage notifications, automated fault reports, and remote diagnostic capabilities. The reports and notifications include pole IDs and GPS locations, so repair teams can go directly to the outage location instead of searching for dark streetlights. Remote diagnostic capabilities improve maintenance crew efficiency because crews are dispatched with information about the issue and can take the necessary equipment to repair the light. Smart streetlights improved public safety through effective streetlight management.

Watch the Full Video

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