Vision-driven approach to change the perspective on "smart" street lighting
by Christian Mildner, Solutions Architect – Sylvania Connected Solutions

Energy efficient LED street lighting is often seen to be a low hanging fruit of energy efficiency projects. The energy savings and emission reductions that can be generated by upgrading to LEDs are substantial, with paybacks and financial returns for projects being very attractive.

Street lighting upgrades have been implemented in Australia for several years now and most LED lights are smart-enabled. Although, controls have still not been adopted at scale, even though they offer many opportunities to generate additional energy savings, improve asset management and to support other smart city applications.

This is due to multiple reasons, which are commonly known in the industry and are not subject of this article. For example, often the benefits for asset management will not flow through to Councils because most of their lights are maintained by the utilities. And because most street lights are classified as "unmetered loads", additional energy savings from dimming and trimming strategies cannot be captured, plus there are various issues to be addressed around compliance with standards. Many of these challenges are currently being addressed and worked through by industry stakeholders and it seems solutions for some of them are not far away.

City of Ryde Council – one of the first and most progressive Councils to embrace a full smart city solution

However, there's still a strong case to invest into street lighting controls, when considering the role a controls system plays in the broader smart cities ecosystem. Relating to this, a recent paper published by CSIRO's Data61[i] suggests that smart cities need a more "vision-driven" as opposed to "problem-driven" approach and that smart cities should in fact be looked at as jigsaw puzzles. Every project and implementation of a solution places a puzzle piece in its rightful place of the big picture (the vision), even though for now, many other pieces don't yet exist. By contrast, a "problem-driven" approach focuses on technology first and naturally results in fragmentation and walled gardens of solutions that do not interoperate together.

Applying this approach to street lighting controls could be the solution to the earlier mentioned challenges. And there could be other smart applications, which in combination create new and value-adding use cases when lighting is in fact used for its primary purpose; visibility, visual cues, safety and security.

For example, imagine the following use cases:

- You park your car at the side of the road, the street lights adjacent to the parking spot increase the light levels around you. You feel safe and your car is protected while it's parked out on the street.
- Street lights indicate available parking spots to you, for example by changing colour, flashing or by providing other visual signals.
- An accident happens on the road at night, the street lights brighten the scene for helpers and provide visual cues to alert other drivers and pedestrians to the danger, for example, by flashing a few hundred meters before the crash site.

- Video analytics from CCTV provide triggers for lighting scenes that deter criminal offenders, for example, when fights break out at night. This could include scenes such as increased light levels or flashing lights.
- Lighting could also be used for crime prevention, for example, video analytics can identify persons of interest or loitering, in which case lights can shine brighter to deter people from loitering and make passers-by feel safer.

Because street lighting is ubiquitous in urban areas and lighting at night-time is extremely visible, the opportunities to combine control systems with other applications to create new and innovative use cases is sheer endless.

Circling back to the "vision-driven" approach and jigsaw puzzle analogy, street lighting controls, like other smart city applications, should be viewed as a system within a system, and only one element in a smart city's foundation to support a multitude of higher-level goals.

As such, Councils should always give careful consideration to include a controls system when upgrading their street lights and to address the problems "here and now" with solutions that contribute to the vision of an ideal integrated future in the longer term. Do not miss the opportunity to place another puzzle piece where it rightfully belongs in the big picture.

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