

# Creating Value from Integrating IoT Data in Transport Assets



The IoT revolution is coming, but for facilities managers there is no reason old technology needs to be left behind.

**Damian Sander**  
Technical Sales Director – Rail

**From smart ports to smart cities, today data is king, with digital infrastructure playing an ever-greater role in improving the way physical infrastructure works for its users. But how do you make sure the power of specific tools, including edge computing and machine learning, can be brought to bear in environments built before such technology was even conceived? This is the challenge many industries in Australia and globally are grappling with right now.**

For new builds, from stadiums, to shopping malls, to airports, embedding software that monitors the functionality and useability of a building is becoming easier. The Internet of Things (IoT) is becoming well understood within the context of new builds where entire systems can be pre-planned,

but the facilities management industry should not overlook the opportunities to apply this new approach to existing assets.

## UTILISING IOT-GENERATED DATA IN PUBLIC TRANSPORT SYSTEMS

At EQUANS ANZ we are working across several projects which aim to pull in several independent yet highly valuable data sources, integrate and interpret that data, and put it to use in a range of environments. A good case in point is public transport, specifically trains.

Most modern rolling stock built over the last twenty to thirty years has built-in CCTV. These CCTV systems operate perfectly well for the task they were originally designed for, which in most cases is incident monitoring and recording and are most likely run as a closed system. Today, there is the opportunity to leverage these systems further.

Traditionally a human would be needed to review the footage and then take an action. But through video analytics and machine learning, technology can be trained to review footage and alert anomalies more effectively. This can even be extended to simple things like people counting and people density on trains and buses. Traditionally, a train carriage would need to be taken out of service to retrofit Automatic Passenger Counters. This can be difficult, disruptive, or cost prohibitive, but applying new video analytics to the established CCTV system on the train solves this problem. The same principle can be used for the rail infrastructure that same train travels on.

All modern trains are equipped with systems and subsystems that collect operational and performance data of the vehicle. In most cases this is not used in any form as it is contained in the on-vehicle systems. There is opportunity to create interfaces to this data, collect it, process it, and transfer it to a data lake where it can then be used to create aggregated performance reporting data on train lines. For example, data pooled from a number of trains on their electrical current consumption in a specific section of track could identify where and when there is an overhead catenary degradation or a damaged track. The outcome here is that the infrastructure maintenance team can be dispatched to the location to assess the issue before it becomes a service affecting incident.


## OTHER USE CASES OF IOT DATA INTEGRATION

Away from transport, there are other obvious use-cases across many other public spaces, not least in a world where we will continue to manage COVID

into the future. Using established, embedded but closed CCTV, card entry, and even COVID check in technology, aggregating that data and using it to analyse and improve crowd spacing and distancing holds considerable potential. Being able to analyse passenger, shopper, and visitor density is also useful as it allows facilities managers to better design or amend design for a range of spaces from platforms, to shopping malls. It can also deliver huge cost savings for clients. If a sensor system can be retrofitted into a building to properly monitor when,

**THERE IS NO SET FORMULA TO DELIVERING SOLUTIONS FOR CLIENTS IN THIS SPACE. EACH PROJECT WILL HAVE A SPECIFIC CHALLENGE AND WILL NEED A TAILORED SOLUTION, SOMETHING WE AT EQUANS ARE FOCUSED ON DELIVERING.**

say, a lighting or ventilation system needs to be on and when it can be turned down or off then the energy savings can be significant. The IoT approach is constantly evolving, and it is not without its challenges. Utilising the latest power of a piece of monitoring equipment – a CCTV camera or a motion sensor for example – needs multiple servers to host the generated data. This in itself can be costly. But with cloud computing these problems are surmountable.

There is no formula to delivering solutions for clients in this space, each project will have a specific challenge and will need a tailored solution, something we at EQUANS are focussed on delivering. In Europe and North America IoT is already being utilised across city-wide projects and here in Australia and New Zealand such approaches are becoming more common. But the opportunity to embed this approach further is still huge. We're excited to be part of this revolution. 

---

**If you would like more information or to chat further to Adrian about this article, you can contact him at [Damian.Sander@engie.com](mailto:Damian.Sander@engie.com)**