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Generating Real Outcomes from Smart City Initiatives

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ABSTRACT: *Many Smart City initiatives have been undertaken but how many actually provide solid outcomes or value to the community for the public money spent? This is the question many CEOs are now asking. What if your corporate systems consumed live sensor feeds and automated the decision making process to provide actionable insight, reduce risk and deliver real benefits to the local community? Pitney Bowes has worked on Smart City initiatives across the globe and the outcomes have been amazing.*

In this session, you will be taken through several Smart City projects and initiatives Pitney Bowes has supported. Some examples include: reducing risks associated with road water flooding through real-time monitoring of storm water infrastructure; installing sensors on road safety barriers; and the automatic generation of work orders to repair faulty traffic signals. Smart City initiatives are now expected to provide real benefits and efficiencies to the community and this presentation will showcase how this is already being done today.

KEYWORDS: smart cities, internet of things.

1 Introduction

The objective of this paper is to illustrate examples of where infrastructure related smart city projects have delivered real value to the community.

Many Australia public sector organisations have commenced on a Smart Cities journey. For some this is as a result of the Australian Government's $50 million Smart Cities and Suburbs Program[1]. As indicated in a recent report by KPMG[2], Australian public sector organisations are at various stages on this journey with many yet to move to a pilot or operational rollout phase.

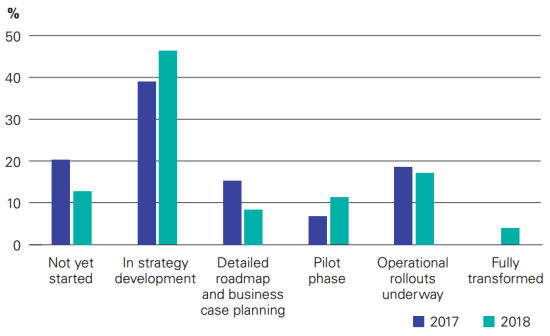

Figure 1: Where are you on your Smart City journey? [2]

This presents an opportunity for organisations still in the development and planning stages to implement effective programs and avoid pilot projects that do not deliver value to the community.

Key to achieving this is careful consideration of the objectives of any project; just because it can be done does not mean it should be done. Central to this pragmatic approach is carefully considering both the problem to be solved and the root cause of that problem.

2 Methods

The authors have identified a number of examples where sensors have been deployed successfully to infrastructure assets to address real problems. In all cases there is value delivered by having the Internet of Things (IoT) sensors through to an Asset Management System (AMS).

2.1 Road Surface Water Flooding

Surface water flooding of road networks is a global problem causing disruption to road users and damage to valuable assets. In the United States, the Federal Highway Administration[3] has identified that more than 544,700 people are injured, and some 5,700 people are killed in crashes on wet pavement annually, with

flooding recognised as the leading source of fatalities.

In Scotland, Aberdeenshire Council manages an area of 6,300 square kilometres. This includes a road network of 5,440 kilometres with over 70,000 drainage gullies. The diverse nature of the landscape leads to conditions that can be impacted by high volume run off from mountains in this region.

To help monitor how their network is impacted Aberdeenshire has deployed sensors to monitor water levels in the storm water gullies. Importantly they have also ensured that the sensor network feeds in to its corporate asset management system, Confirm.

This approach ensures the management response teams are able to access information using a tool they are already familiar with. Using the information obtained from monitoring the drainage network, Aberdeenshire can target cleaning activities and take other appropriate measures to safeguard the community.

2.2 Safety Barriers

Australian state road authorities have invested heavily in safety barriers in recent years. The Victorian Government's Towards Zero plan is an example [4]. Barrier strikes present the opportunity to deploy an IoT based solution to identify a strike and activate an appropriate response.

The authors have participated in two different approaches to addressing this challenge. The first placed a tilt sensor on the barrier post, while the second used a sensor to measure the tension in the barrier rope. The tilt sensors require a direct hit on the host post to be activated and were placed in known impact zones. The tension-based approach instead requires careful calibration to accommodate the impact of temperature changes.

As part of the work done with safety barriers, the platform supporting the IoT devices was integrated with the operational asset maintenance management system. This provides the opportunity to initiate the required response in the primary operational system. The sensors used were also recorded as assets in the AMS. This required the definition of a new asset class and the upload of the sensor data, including geospatial location, once they were commissioned.

3 Findings and Argument

The importance of achieving interoperability between the components of Smart Cities technology is clear and recognised widely. The McKinsey Global Institute[5] calculated that interoperability is required to capture 40 percent of the potential value from IoT.

As Smart City standards develop and technologies evolve, the corporate asset management system can be considered a constant within the organisation and used as a repository of key data collected from IoT initiatives. An open system is required to support the rapid pace of innovation and resulting change.

4 Conclusions

There can be no doubt that the emergence of the IoT presents great opportunities to meet the many challenges faced today in managing infrastructure assets.

To help ensure that the benefits of this wave of innovation are fully realised links between this new technology and corporate AMS are planned for and implemented.

This approach ensures the data collected can be evaluated to surface valuable insights and to improve the operational responses.

References

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