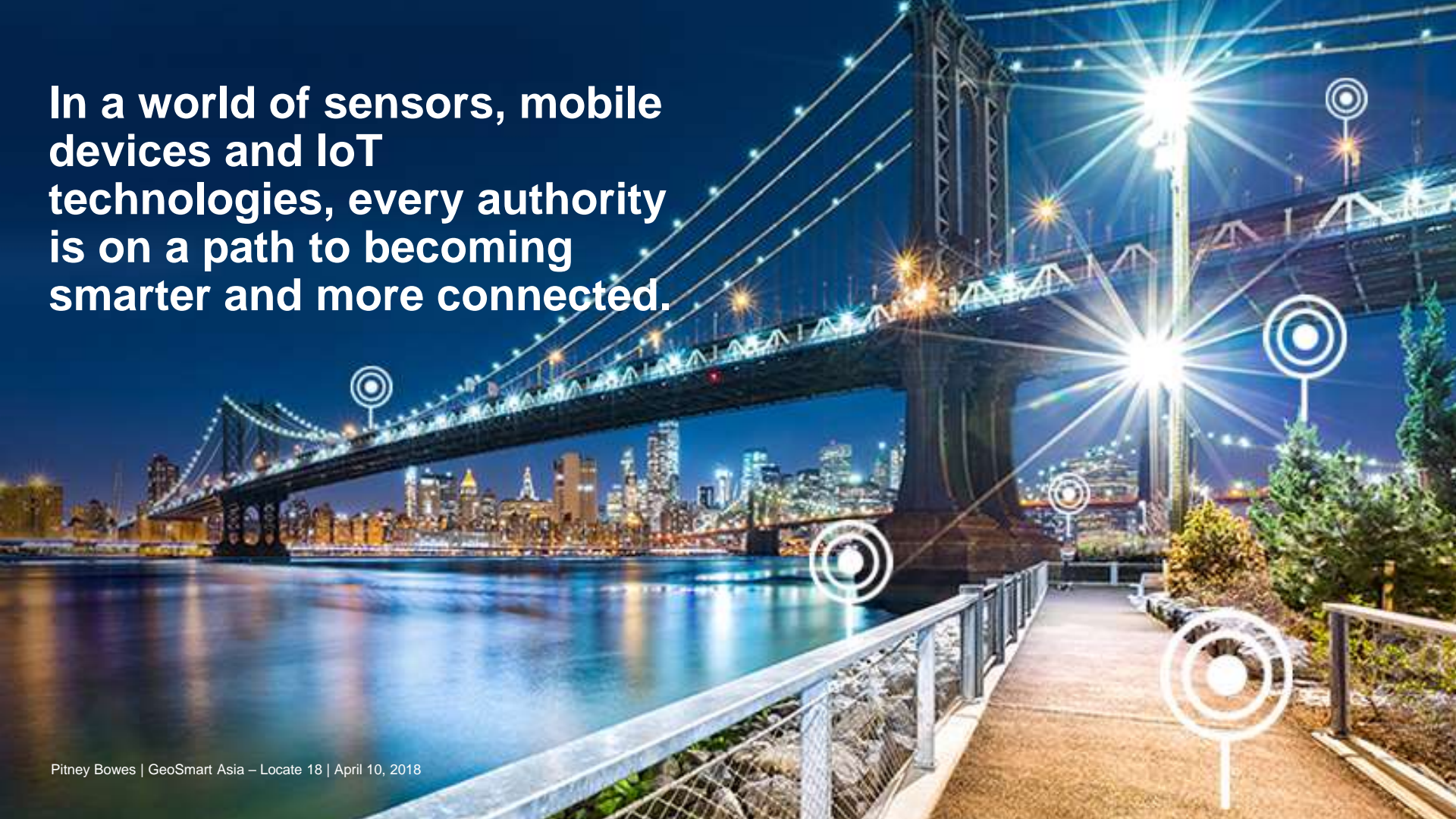


# Generating **real outcomes** from Smart City initiatives

Delivering **benefits** through connected infrastructure

**David McDonald** – Account Manager SA/WA/NT  
Pitney Bowes (Adelaide)

**In a world of sensors, mobile devices and IoT technologies, every authority is on a path to becoming smarter and more connected.**



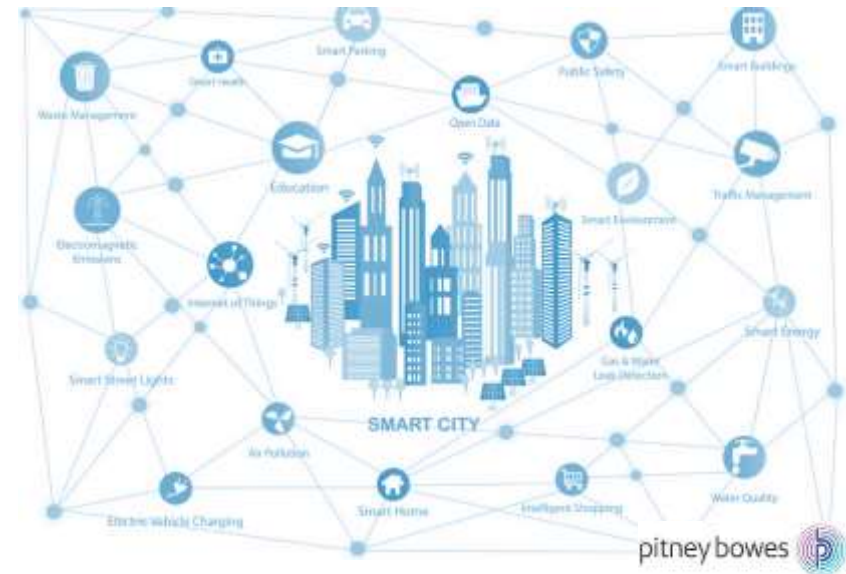
# AGENDA

**Setting the scene:** IoT and Location

**Being Smart with purpose:** Identifying problems & solving them

**Showcase:** Smart City projects & initiatives

**Summary:** It can be done now...  
...providing real outcomes & benefits





# Setting the scene: Significance of integrating IoT data

**TATA CONSULTANCY SERVICES** HOME KEY FINDINGS BUSINESS INDUSTRIES LEADERSHIP CASE STUDIES PARTNERSHIPS

## Key Findings

[Download Report](#)

### The most important issues to address are strategic and cultural

Internet of Things • Key Findings • The most important issues to address are strategic and cultural

**Choose a section:**

- IoT spend will increase by 26% to \$353 billion in 2018
- IoT spend is directly proportional to the price of a company's product
- Mobile apps are the most commonly used IoT technologies
- North America and Europe lead IoT adoption
- Companies using IoT technologies increased revenue by 58% in 2014
- Industrial manufacturers are ahead of others in leveraging the IoT
- The most important issues to address are strategic and cultural**

When asked to rank the importance of 21 success factors, executives rated two strategic issues: identifying and pursuing new business and/or revenue opportunities that the IoT makes possible, and determining what data to collect using the IoT, as first and third, respectively. They rated two corporate culture challenges as second and fourth: getting managers and workers to change the way they think about customers, products, and processes, and having top executives who believe the IoT will have a profound impact and are willing to invest in it. Four technology-related issues also finished in the top 10: handling big data, deciding which IoT technologies to develop internally vs. using third party service providers, integrating IoT data with enterprise systems, and making sure IoT technologies are reliable and secure.

*In a study by Tata Consultancy Services (TCS), executives were asked to rank 21 success factors for IoT.*

*It recognized that “integrating IoT data with enterprise systems, and making sure IoT technologies are reliable and secure” were among the top ten.*

<http://sites.tcs.com/internet-of-things/key-findings/the-most-important-issues-to-resolve-are-strategic-and-cultural/>

# Setting the scene: IoT has value beyond the hype

*In a McKinsey [report](#), The Internet of Things: Mapping the value beyond the hype, found that the IoT “hype may actually understate the full potential—but that capturing it will require an understanding of where real value can be created and a successful effort to address a set of systems issues, including interoperability.”*



# Setting the scene: IoT and Location

*Adding context to locations to make a difference...*



<https://www.pitneybowes.com/us/location-intelligence/case-studies/context-matters--how-the-iot-is-saving-lives-with-aeds.html>

# Creating the Smart City

## Connect all your assets?

- Can it be done?
- Should it be done?



# Every city is a collection of assets



Bridges  
Fibre optic cables  
Fire boxes  
Fire hydrants

Fleets / vehicles  
Footpaths  
Kiosks and benches  
Manholes

Parking meters  
Roads and highways  
Rubbish Bins  
Sewers

Storm Drains  
Street lights  
Traffic signals  
Trees

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**When city leaders can identify, track, monitor and manage these assets, the full value and possibilities of connected technologies become clear.**

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- Increase digital access.
- Improve the flow of people.
- Create accessible public space.
- Deliver exceptional city services.
- Gain efficiencies.
- Expand constituent engagement.
- Spark business growth.
- Build a platform for learning.
- Improve the quality of life.



# Being Smart with purpose: **Identifying problems & solving them**

- Starting with a problem  
[the WHAT]
- What is the root cause?  
[the WHY]
- How can it be solved?  
[the HOW]
- Will it deliver a benefit?  
[the SO WHAT]



# Common problems: the WHAT?



Flooded Roads



Dangerous Working



Congested Roads



Aging Infrastructure



Watering Trees



Faulty Traffic Signals ...

# Showcase: Smart City projects & initiatives

# Surface Water Flooding – The Problem





# Surface Water Flooding – Root Cause



A broken network



Insufficient capacity

# Case Study – Storm Drain Monitoring



- City in the North of Scotland
- High rainfall and run off from the Scottish mountains
- During bad weather there is a high risk of flooding and the drainage system must be operated efficiently



**Providing real time monitoring of drainage assets so preventative and reactive maintenance can be optimised**



- Monitor water levels in the storm drain system
- Monitor water level and flow rate at key drainage points
- Visualise the current condition in the control centre

# Storm Drain Monitoring: Base State

## Weather:

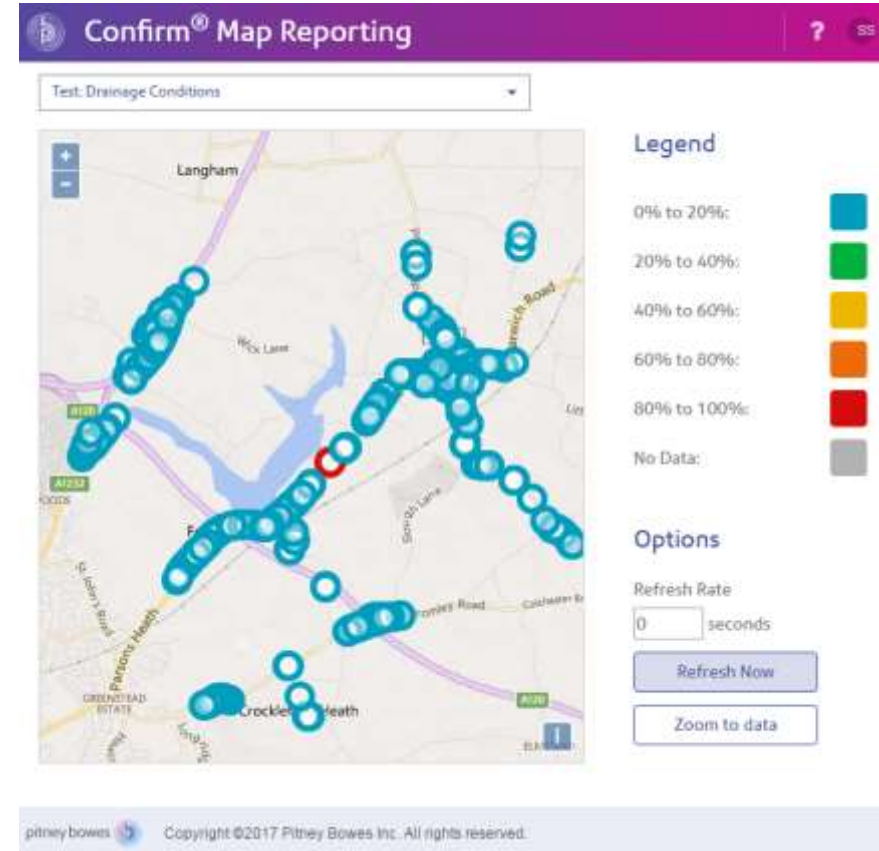
Dry

## Status:

Storm Drain system is empty apart from one location

## Action required:

Investigate single drain



# Storm Drain Monitoring: Rain Begins

## Weather:

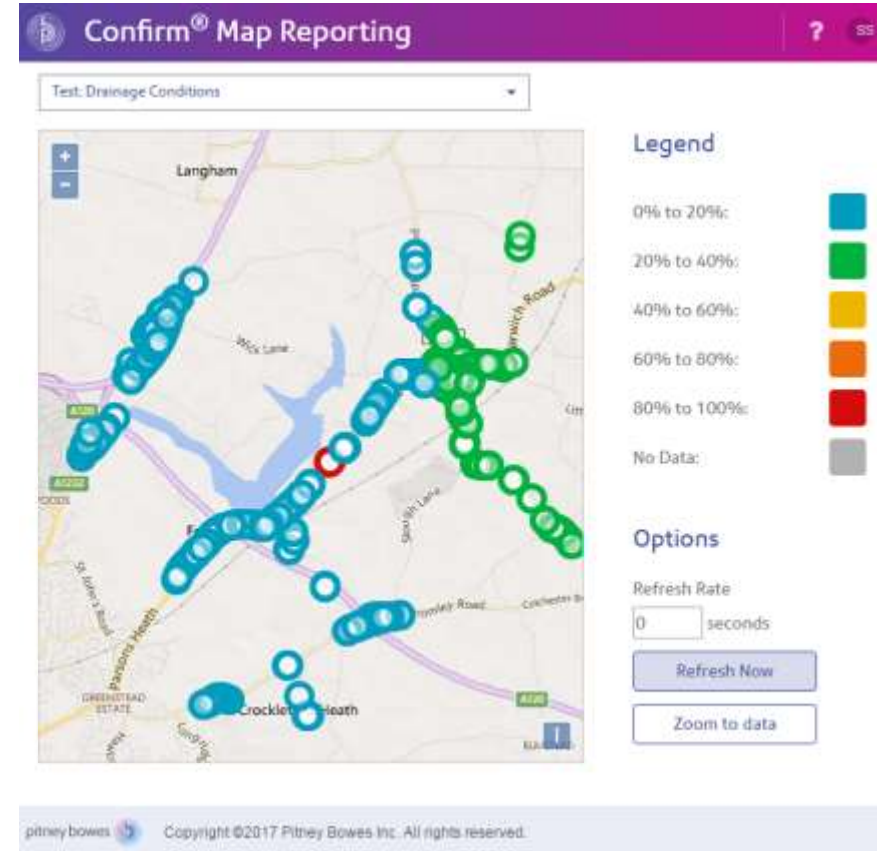
Steady rain, more intense on hills

## Status:

Low levels of water in the storm drain system, single blockage still obvious

## Action required:

Investigate and clear blockage





# Storm Drain Monitoring: Weather Event

## Weather:

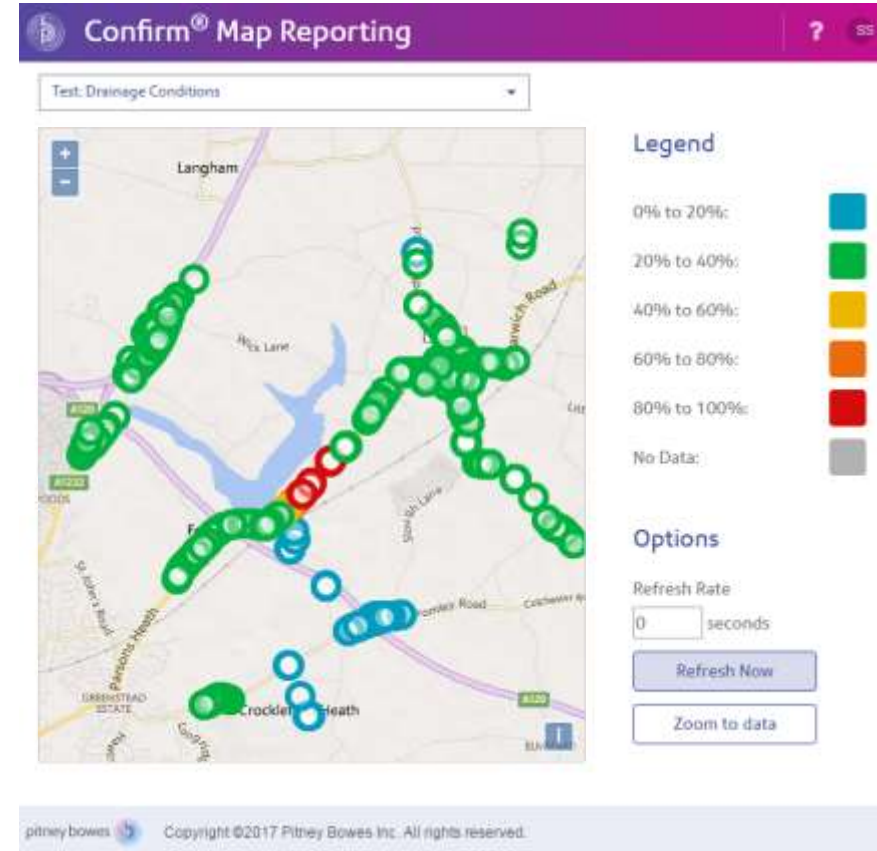
Persistent rain

## Status:

A pinch point is immediately obvious as a cluster of storm drains are filling towards the bottom of the valley

## Action required:

Immediate remedial action, clear the pinch point



# Storm Drain Monitoring: **Surface Flooding**

## **Weather:**

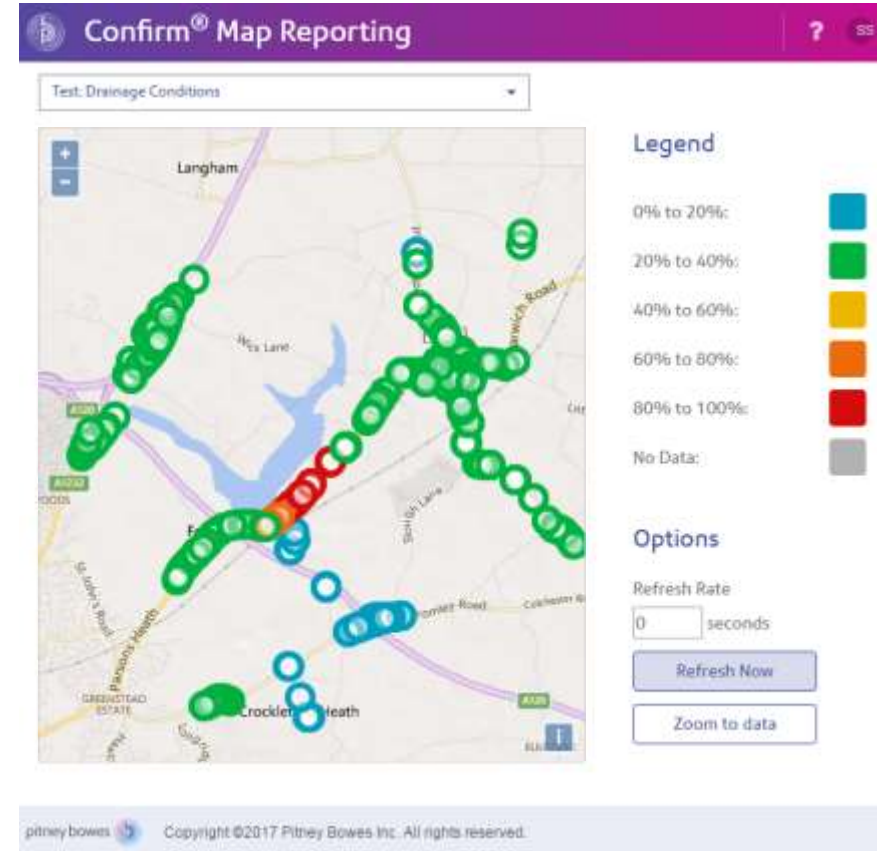
Continuous rain

## **Status:**

Surface water flooding, long chain of filled storm drains

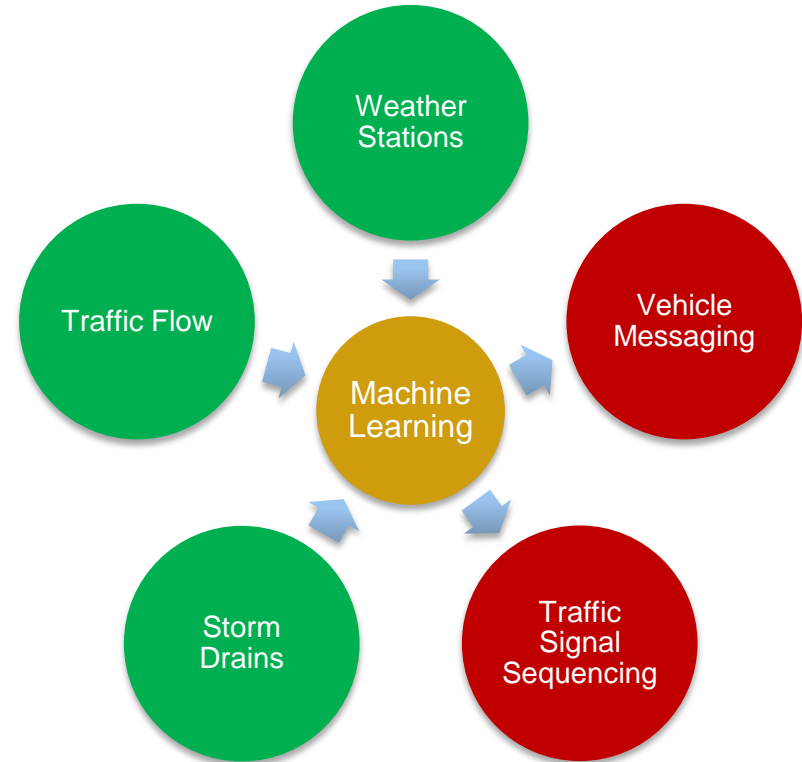
## **Action required:**

Potential diversion and emergency action



# Insight from multiple data sources

- Multiple live data feeds
- Identify relationships and causes
- Complex iterative analysis
- Outputs to change behaviour



# Case Study – Lifebelt Monitoring



- City in the North of Scotland
- Sea front and riverside footpaths
- 88 Lifebelts being inspected twice a week / daily in the summer



**Find an efficient method of monitoring and prioritising the inspection of lifebelts**

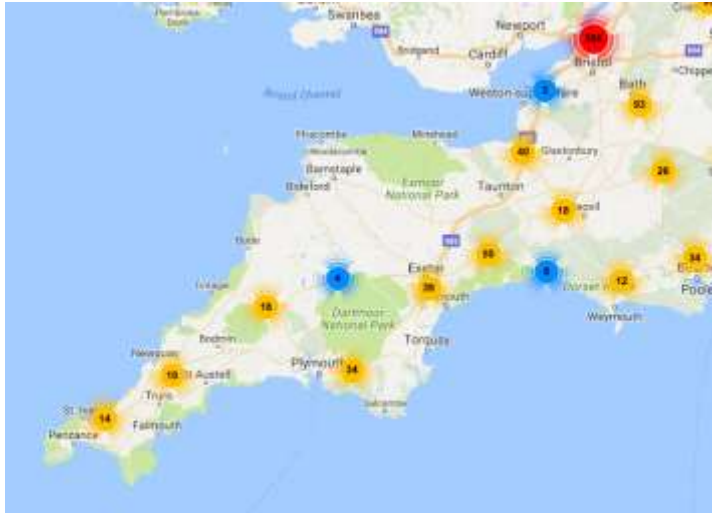


- Which lifebelt housings have been opened?
- Which lifebelts are no longer in their housing?
- Make the work of the inspector more efficient by targeting problem areas





# Proof of concept – UK Strategic Road Network



Azure IoT



Confirm®

# Proof of concept – UK Strategic Road Network



Condition Data



Azure IoT /  
Stream Analytics



Confirm



Confirm Dashboards  
and Reporting



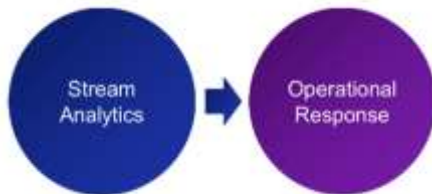
Multiple Stream



Azure IoT /  
Stream Analytics



Confirm



- Automated Crew Response
- Outputs to staff & citizens
  - Message Alerts
  - Vehicle Messaging Systems
  - Variable Speed Limits

# Smart Traffic Signal Maintenance: Melbourne

## Melbourne metropolitan traffic signal network

The contractor that PB work with has connected Confirm to the VicRoads systems

**Failure / alert notifications are passed to Confirm and updates are passed back through the course of an event**

This allows automated workflows to be generated to ensure signals are fixed quickly and signal network is maintained at high level to meet service level agreements



# Improving worker safety: installing strain gauges in guard rails

Having people to manually check the tension in guard rails puts road workers in a very risky situation which requires traffic control

In the UK they are investigating improving worker safety through installing strain gauges in guard rails to facilitate 'smarter' maintenance regimes

## Benefits:

- Reduce manual testing (high-speed environment)
- Reduce lane closures (better meet service levels)
- Proactive maintenance regimes can be implemented





# Smart Watering Initiative: local government

**Typically a new tree would be on a watering regime for up to 2 years**

Great opportunity to think Smarter

**Tree contracting industry has been working on a Smart Watering concept with LG to bring a great deal of efficiency to operations & provide significant savings**

The concept is twofold:

- No need for labour intensive water trucks if watering regime is programmed by the system
- Moisture sensors (only water when required)



# Summary

## IoT

- adding context to Location to achieve Smart outcomes

## Being Smart with purpose

- Identifying problems & solving them

## System provides actionable insight

- Can consume IoT feeds
- Is Location aware (not just text based)
- *Configurable, provides **insight** and delivers real outcomes through automated workflows*

## Summary

- It can be done now
- Providing real outcomes & benefits
- PB have the knowledge & experience globally to assist...



Confirm® for Smart Cities  
The engine behind smart, connected technologies



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