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# Eloque's solution: Critical infrastructure management

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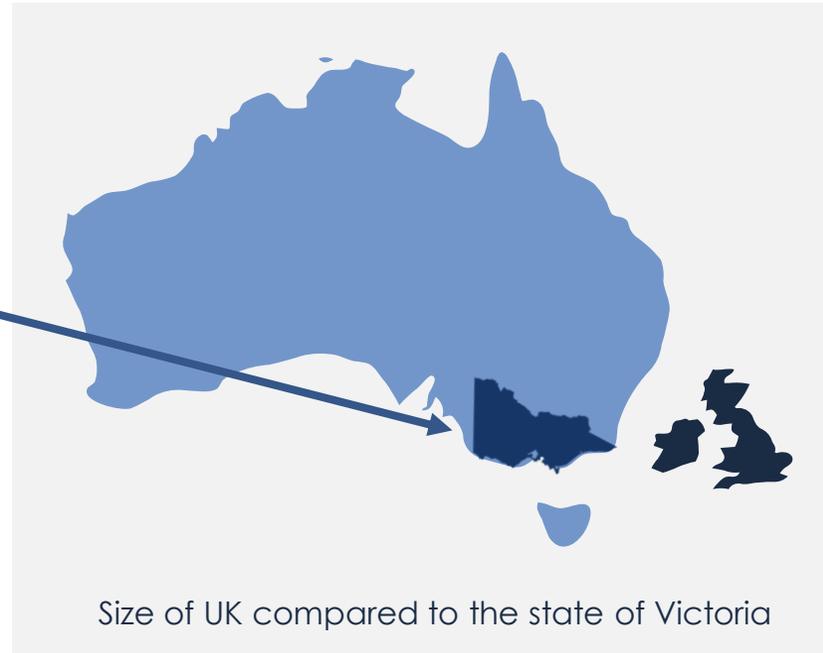
# Contents

1. Who are we?
2. What & Why?
3. How ?
4. What does FiBridge do?
5. Where to from here?

# Strategic context & real-world problems



**\$80bn (£42bn)** of transport projects  
**165** major road & rail projects



Whitten Bridge



Bolte Bridge



West Gate Bridge

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# Same, same but different

## Australia

- Ageing infrastructure
- 1.3% population growth
- Recent investment in infrastructure
- Engineering site visits can be costly, timely and not always accurate (despite highly trained individuals)



Gantry identifier falls on Melbourne's Tullamarine Fwy, 2019

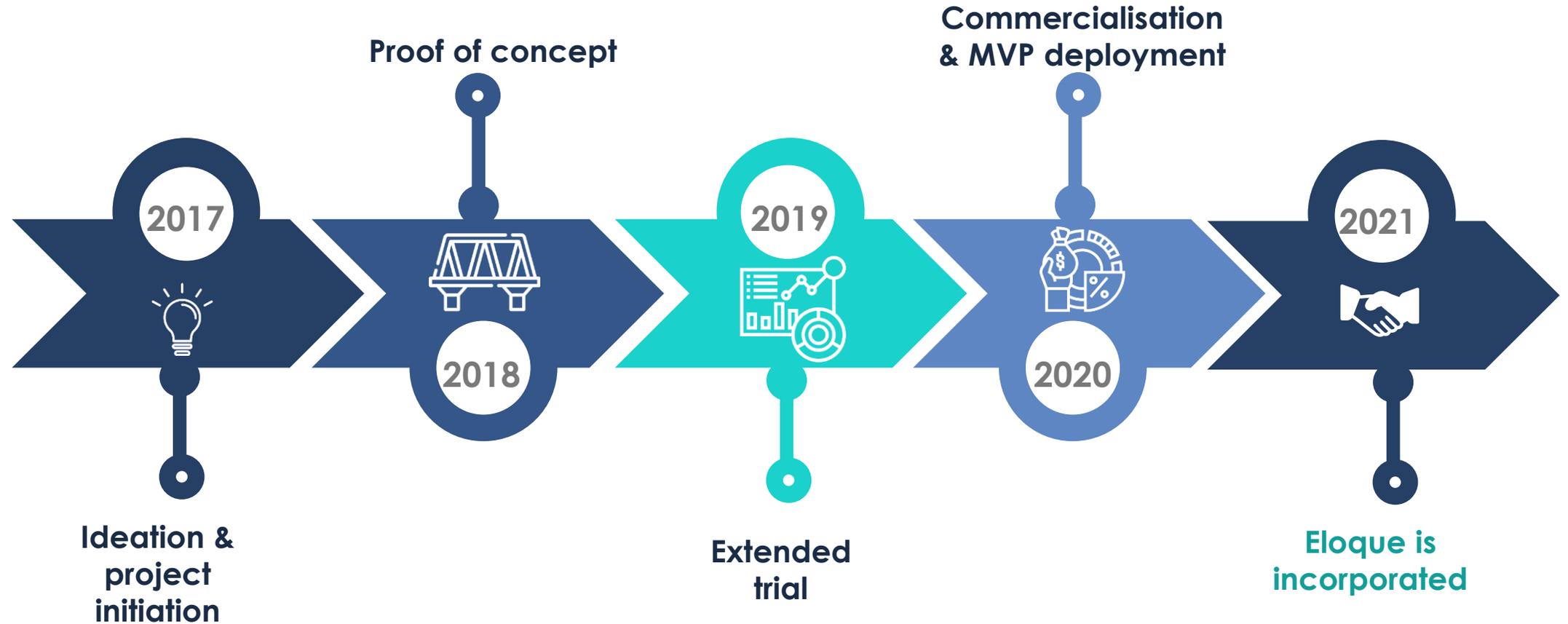
## United Kingdom

- Many post-WWII bridges & earlier
- 0.6% population growth
- Limited budget to invest in ageing infrastructure (smart solutions needed)



London's Hammersmith Bridge, closed to traffic since April 2019

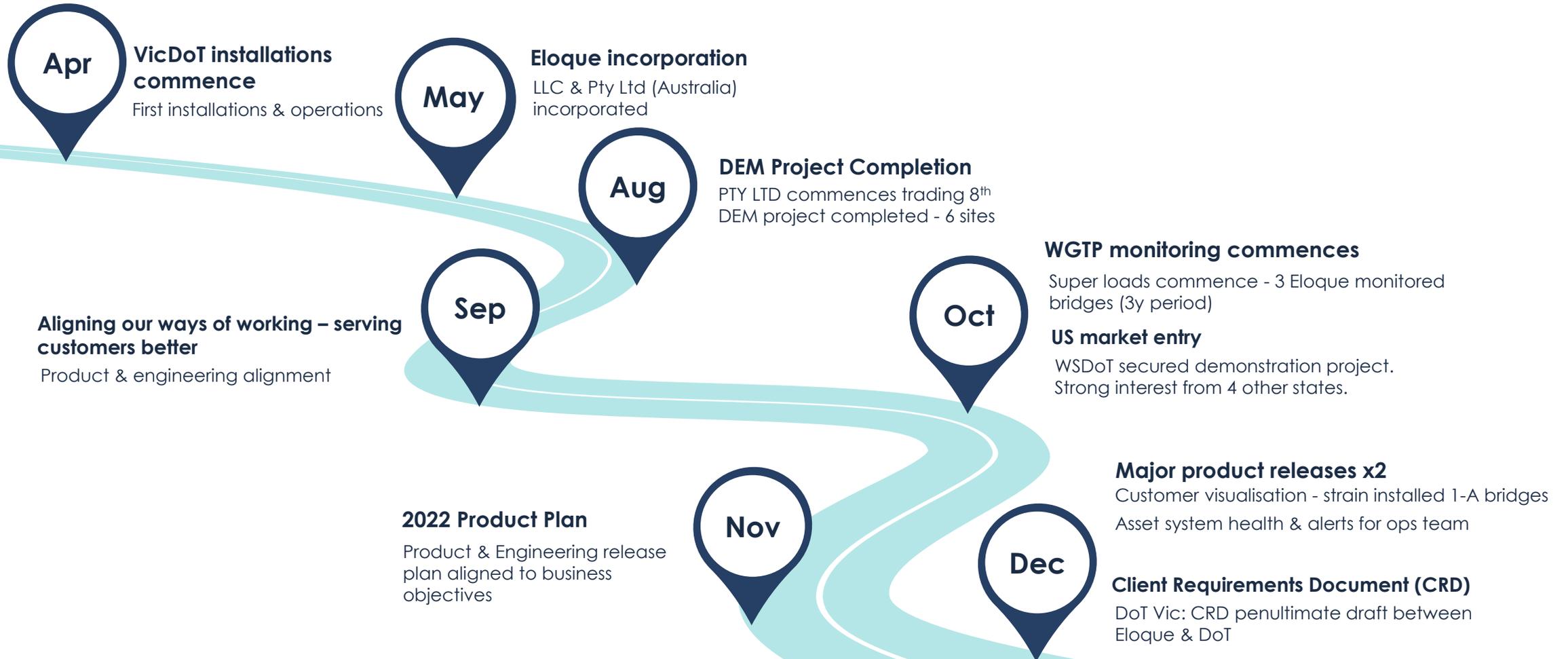
# The genesis of Eloque



Victorian State Government

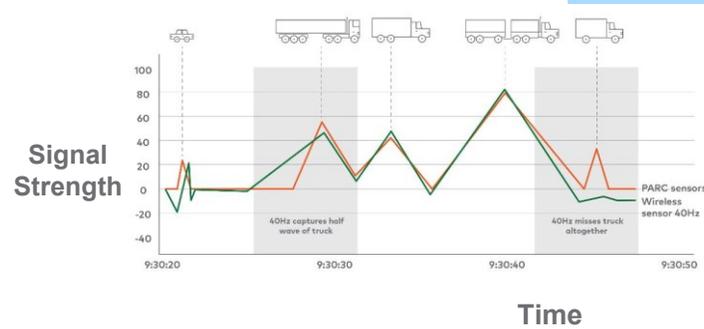
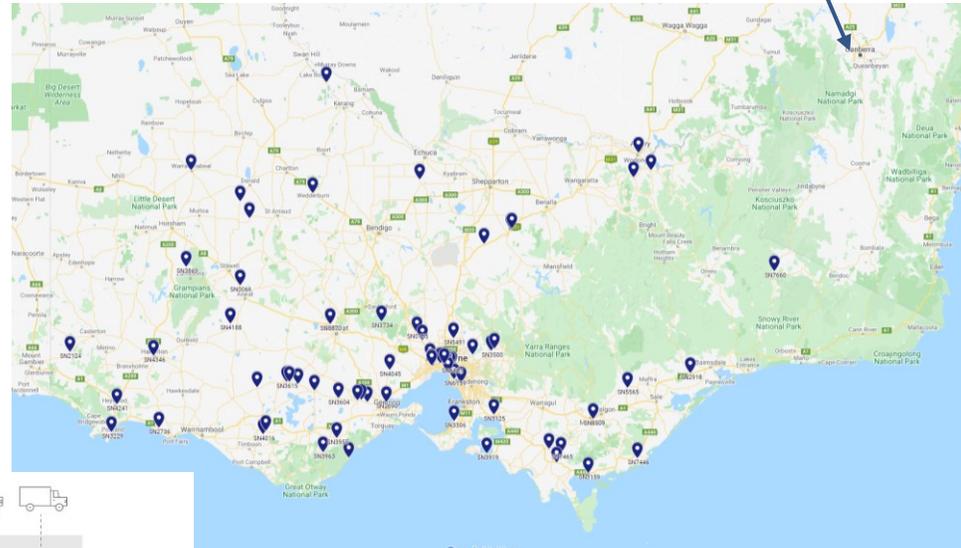
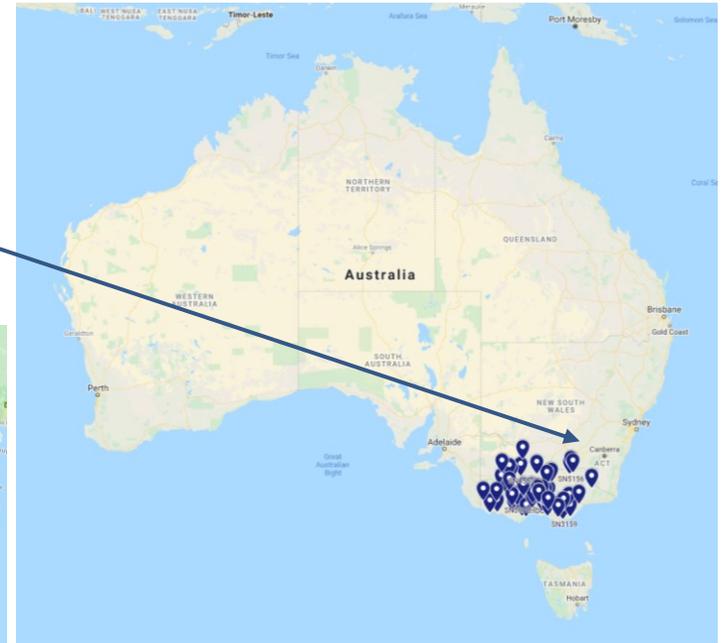
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# Eloque achievements in 2021

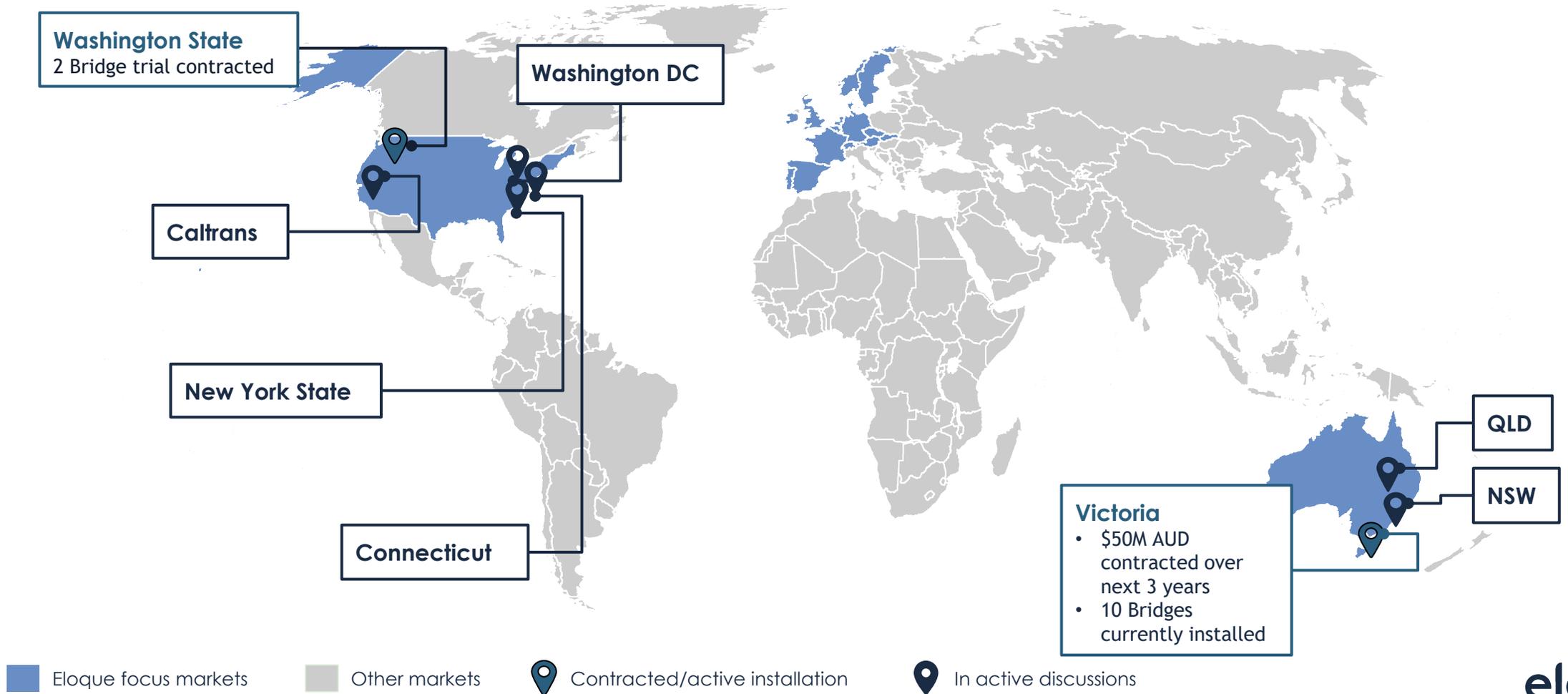


# FiBridge locations in Australia

Australia's capital city - Canberra



# Eloque's current and global footprint



# We bring assets to life through the power of data

## Problem

Infrastructure is ageing globally and deteriorating at an alarming rate.



## Challenge

Maintenance costs are increasing but asset managers have limited information to make effective decisions.



## Impact

When critical infrastructure fails it places lives, communities and governments at risk.



## Our solution

Real-time, cost-effective structural health monitoring using advanced fiber optic sensing technology and A.I.

FiBridge is a **real-time** Structural Health Monitoring (SHM) solution using **imbedded fibre-optic sensing technology** with advanced analytics for informed, proactive asset management.



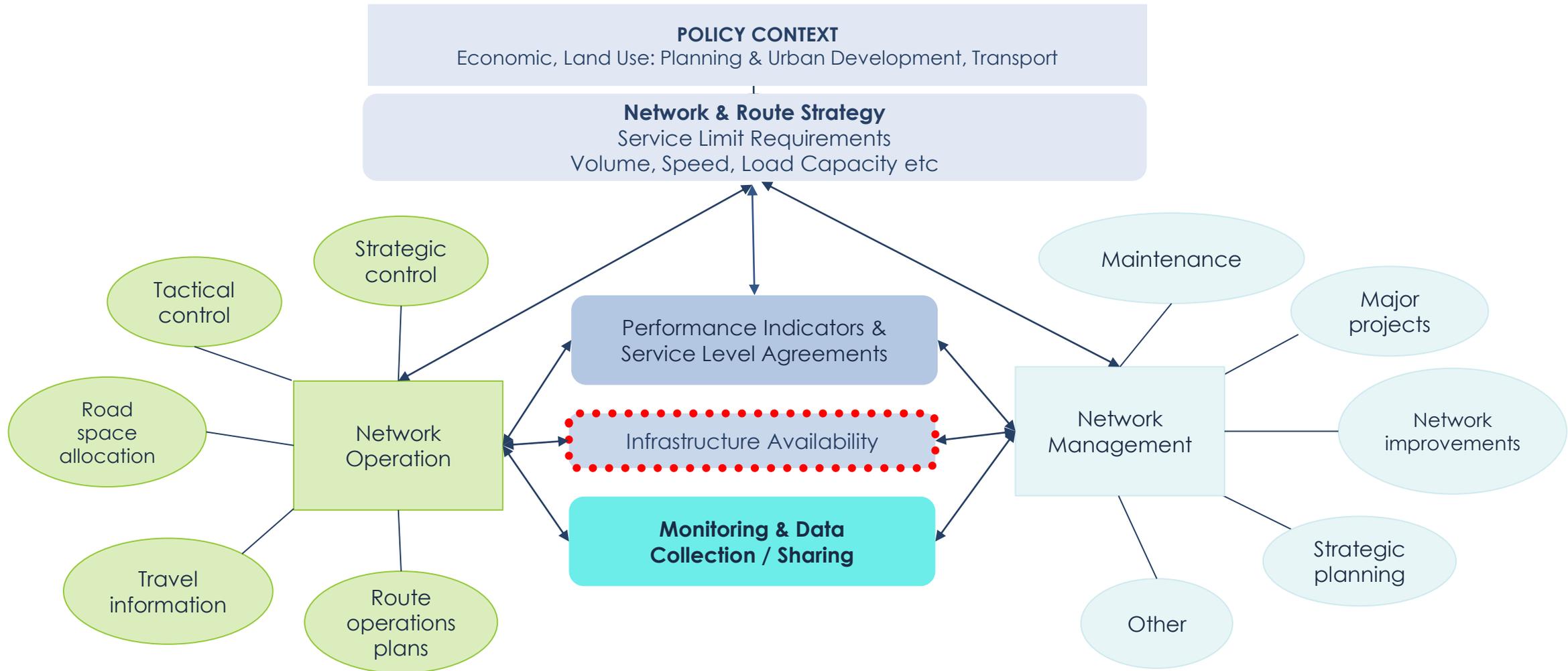
**VicTrack**

**parc**  
A Xerox Company

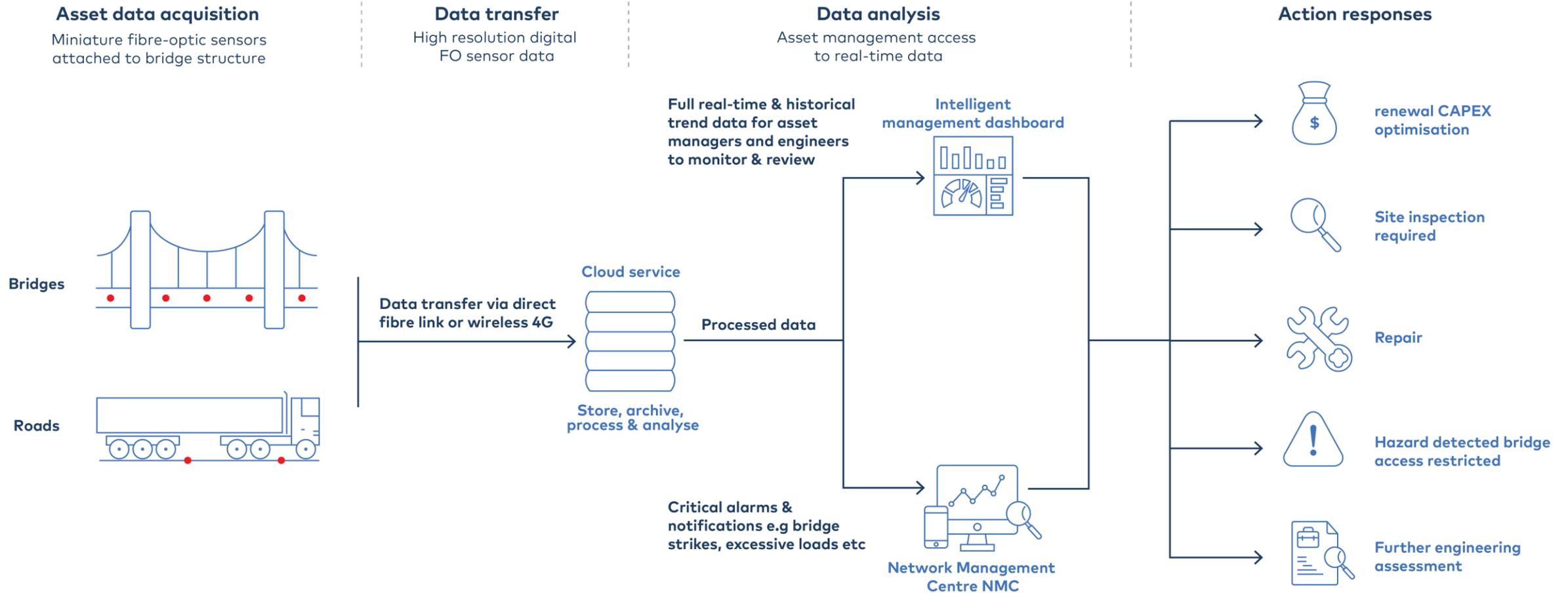


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# Simplified Network Operations



# Delivering an end-to-end solution



# Westgate Tunnel project

Politics: low tolerance for error

ALLs travelling on the elevated structure on the Syd > Mel highway

Eloque provided **confidence** for asset owners

- ✓ Site implementation completed
- ✓ New protection systems deployed
- ✓ All sites are green: this is the first site where this has been achieved
- ✓ First control vehicle tests have been conducted



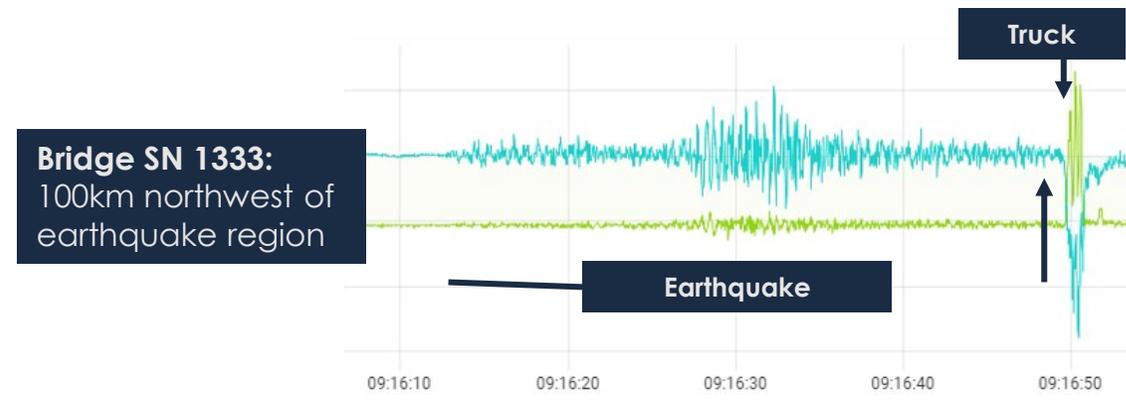
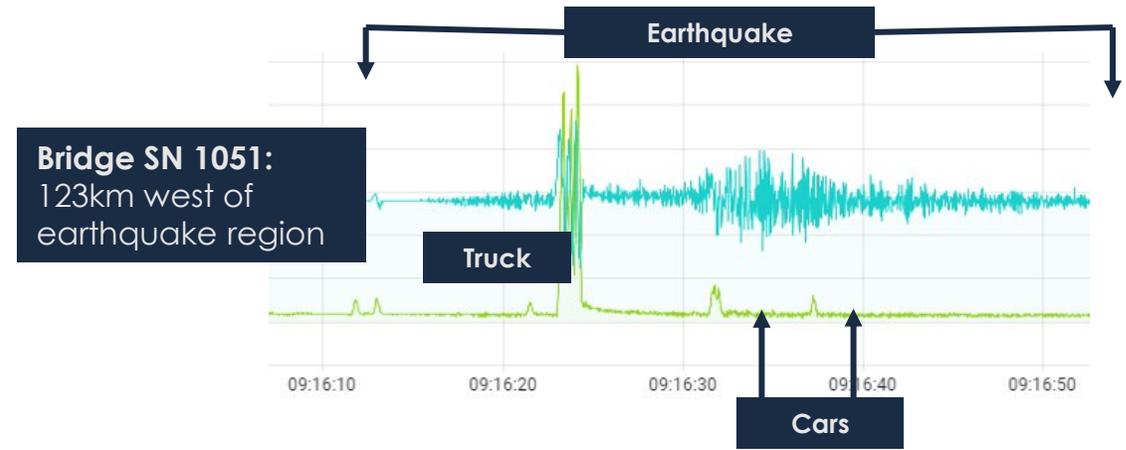
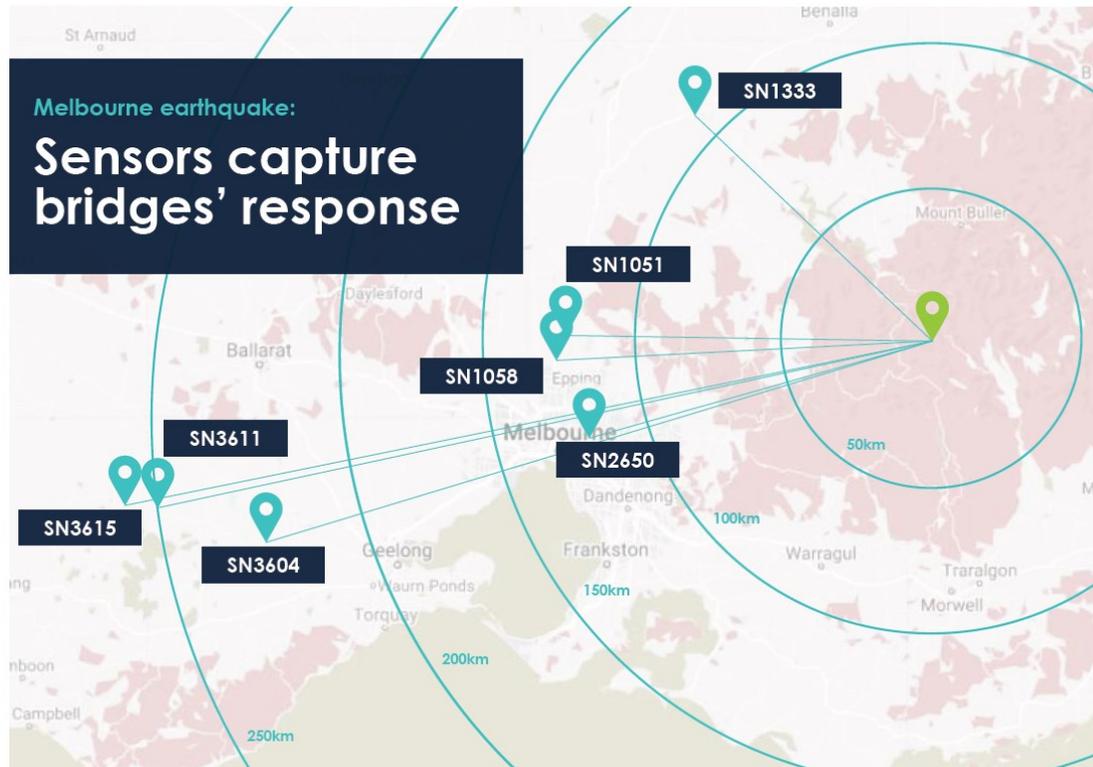
**\$10bn (£5.2bn)** of upgrades

**4km** tunnel to provide alt. route

**9,000** trucks cross the bridge per day



# Fibridge in use: Mansfield earthquake



**Where to from here?**

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# Increasing policy support

for deployment of digital solutions in asset management



**Moving toward sensors as asset management solution**

Tech-driven asset management policy being progressed across government agencies, with a formal policy currently awaiting endorsement by Cabinet

- “ Advanced fibre-optic sensors on rail & road bridges collect real time structural performance data &...can replace some in-person inspections, providing **faster, cheaper, & more accurate condition reports.**

**Infrastructure Victoria, Victoria's infrastructure strategy 2021-2051**



**Focusing on technological advances to extend life of bridges**

- “ These innovations, technologies, & evaluation methods are **effectively allowing engineers to identify problems earlier**, increase the lifespan of the nation's bridges, stretch limited resources, & prioritize public safety.

**American Society of Civil Engineers, Infrastructure Report Card - Bridges**



**Emphasising necessity of innovation in infrastructure**

- “ Every infrastructure sector could face transformative technological change over the next twenty years... **This Strategy will ensure the UK is at the forefront of this technological revolution**

**HM Treasury, National Infrastructure Strategy**

Source: <https://infrastructurereportcard.org/wp-content/uploads/2020/12/Bridges-2021.pdf>;  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/938539/NIS\\_Report\\_Web\\_Accessible.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938539/NIS_Report_Web_Accessible.pdf)

# SHM Features



**Lightweight, durable & low cost** fibre-optic cable & sensors are attached to the structure



Installed, tested & commissioned in several days often **without interruption to service**



Product can be **installed by any fibre optics deployment** or maintenance personnel



**Multiple asset monitoring** available through cable, wireless telco networks & satellites

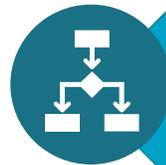
# Vehicle Analytics Features



Durable & low-cost fibre-optic cable & sensors cut into the highway (no gantries)



Installed, tested & commissioned in several sessions under standard traffic management processes



Replaces functionality (at higher levels of accuracy/ reliability) currently delivered by multiple systems



**Multiple asset monitoring** available through cable, wireless telco networks & satellites

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# Questions & Answers

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