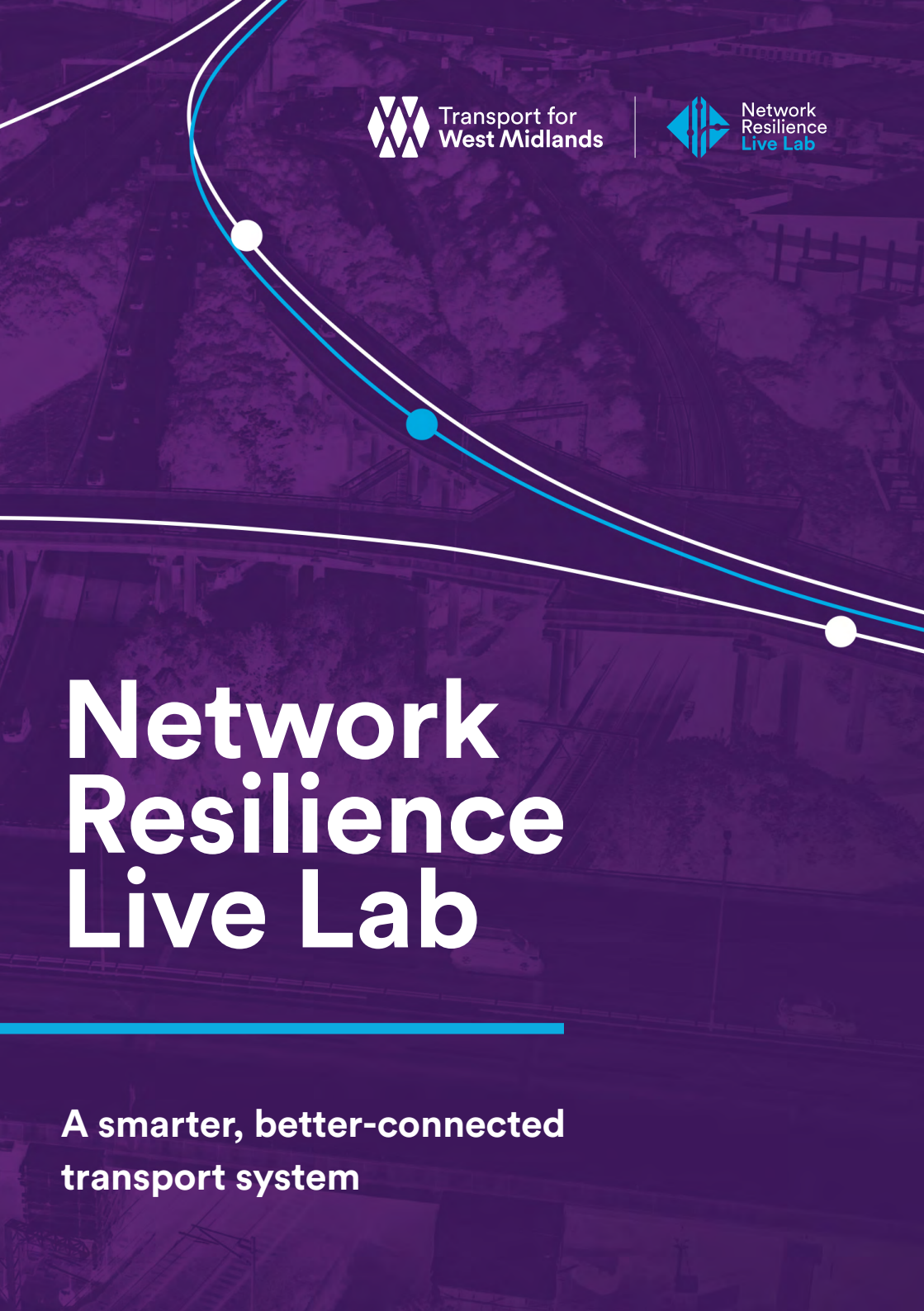


Network Resilience Live Lab

A smarter, better-connected transport system

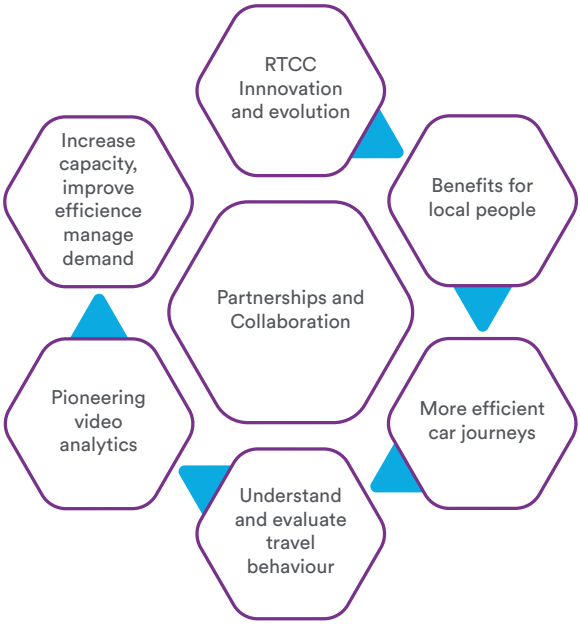
Background and Goals

A combination of innovative video analytics and establishing partnerships, formed a winning combination to create a programme that helps to combat congestion across the West Midlands. With a £2.65 million grant from the Department for Transport as part of the ADEPT Live Labs programme which runs until November 2021, Transport for West Midlands' (TfWM) Network Resilience Live Lab (NR Live Lab) project is about driving innovation, supporting sustainability and improving the safety of the region's transport network users.

The project is also contributing to developing the operational capability of the Regional Transport Coordination Centre (RTCC) and its evolution through innovation where giant screens and CCTV links relay the information to staff who can then coordinate action on the ground, such as rephasing traffic lights to clear bottlenecks, organising additional buses with operators to support emergencies, and provide useful information direct to travellers via social media and mobile apps.

In January 2019, our project was named one of eight projects selected for the ADEPT SMART Places Live Labs Programme. Nine local authorities and their partners are working across eight innovative projects to develop new SMART approaches across communications, materials, energy solutions and mobility.

The NR Live Lab has seven key goals which are outlined below:



Partnerships and Collaboration at the Core

Although the programme has been led by Transport for West Midlands, along with ADEPT and the Department for Transport, there have been numerous other key partners who have been instrumental in delivering this programme without whom it's progress would not have been possible.

Close collaboration between TfWM and local authorities, technology organisations, and academic institutions served to help roll out the programme. The first few months of the programme has highlighted the importance of another key partner with a significant part to play in the success of its long-term objectives. Namely, West Midlands Police (WMP) plays an integral part in keeping our region's roads running smoothly and already we are seeing opportunities for collaboration. Originally, we had planned to install all our new cameras along the relevant routes, however it soon became apparent that a collaboration with West Midlands Police would offer a cost-effective solution that benefitted us both.

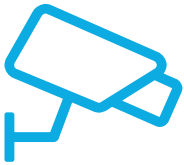
21 Partners
from a variety of organisations

Operational Interdependencies

There are four workstreams:

1. Fixed asset operations;
2. Fixed asset operations;
3. Granular or travel personas, and;
4. Learning and knowledge sharing.

1 These have numerous dependencies and inter-relationships between them – they are not independent of one another. Commencing with **fixed asset operations**, the focus is on using Static Automated Traffic Counters camera technology to automatically analyse video to detect and determine traffic events such as average journey times.



93 Static Automated Traffic Counters across 12 Key Route Networks

West Midlands Police granted TfWM permission to use their existing systems, allowing the ADEPT SMART Places Live Labs budget to be used more effectively and avoid some of the more costly and intrusive infrastructure installation. It also helped to avoid over-populating key routes with SATC, which may have had a negative impact on public perceptions of the project. WMP's robust approach to public consultations surrounding SATCs and

data-protection concerns is key to the project's success. Our priority is to reassure the public that their privacy is not at risk and this technology is being used for public good that will create long term benefits for local people.

2

Through Workstream 2, **data and testing**, the data consisted of data flow architecture and then the aggregation of the data to enable the provision of real-time, operational and strategic insights. This work was delivered through agile project delivery with the data provider, QRO, and with the support of Amazon Web Services (AWS) Professional Services to help TfWM design a secure, scalable and stable data architecture. This is the basis of the TfWM "Data Engine", a vast transport data processing and analytics capability.

Over 4.5 million data records each day in real time

Data about the West Midlands highways used to be collected for 1 week at 700 locations, every 2 years. This data was then used to track trends, update transport forecasting models and to generate evidence for business cases and policy. It was recognised that the RTCC needed to move to 24/7/365 real-time data to help understand congestion occurrences and the impacts, however the access to this data could be at great cost. This has been achieved through the roll out of new fixed assets and processes and outcomes from Workstream 2, which developed and rolled out real-time processes and RTCC integration of the data received.

Over 3,000 subjects through travel segmentation, a cohort of 48 people, distilled into **14 personas**

3

Workstream 3 established a range of **granular personas** and recognised that managing travel demand in the context of the regional population's

habits is an important part of driving successful behaviour change. The NR Live Lab programme took this to a new level, by seeking to understand the residents' travel habits and lifestyles, as a way of better reaching them at times when there is a need to reroute, remode, retime, or reduce their journeys.

There are several objectives to introducing the granular personas work such as: being able to scope the needs to identify gaps and opportunities, enhancing experiences to understand how to make traveller experiences more efficient, service design and 'sense-checking' that new propositions fit with target segments. Alongside this, other objectives include building compelling communications with real life stories and motivations, shifting behaviours to more efficient and sustainable journeys and understanding barriers, and identifying the channels and communications formats that best drive change within a persona.

Workstream 4 seeks to embed learning within TfWM and ADEPT, through upskilling and **knowledge dissemination**. Taking advantage of the opportunities afforded to us, this covers speaking opportunities, developing methodologies to anticipate how people will react to travel demand management strategies and techniques, including marketing, communications and engagement; and measuring their impact e.g. on traffic flows in (near) real-time.

Our learning to date has seen better network management, processes and financial improvements with benefits through shared infrastructure. For example, joint funding has

provided greater roll outs of equipment, enabling joint police and TfWM intelligence, while reducing costs to the public purse through a reduction in the total amount of SATCs deployed. Financial savings have also been achieved; TfWM has funded new SATCs at a cost of £750K, saving money for the Police. There are a number of future aspirations, including: expansion of the data area captured by the SATCs using other data sources e.g. bus interchange crowd monitoring, and identification of personas to target as part of a TDM campaign to influence travel behaviour, linked to the NetZeroSolihull campaign. Benefits realisation is also an important part of this workstream, to identify and document the skills, experience and training required to meet the main mission of the NR Live Lab, and for ongoing maintenance and development.

It also leads on the capturing and dissemination of learning in how-to guides, peer to peer Live Labs networking and accessing over 30 speaking opportunities for knowledge sharing.

Accessing **over 30 speaking opportunities** for knowledge sharing

Online learning

You can broaden your knowledge about our work by viewing the following web pages.

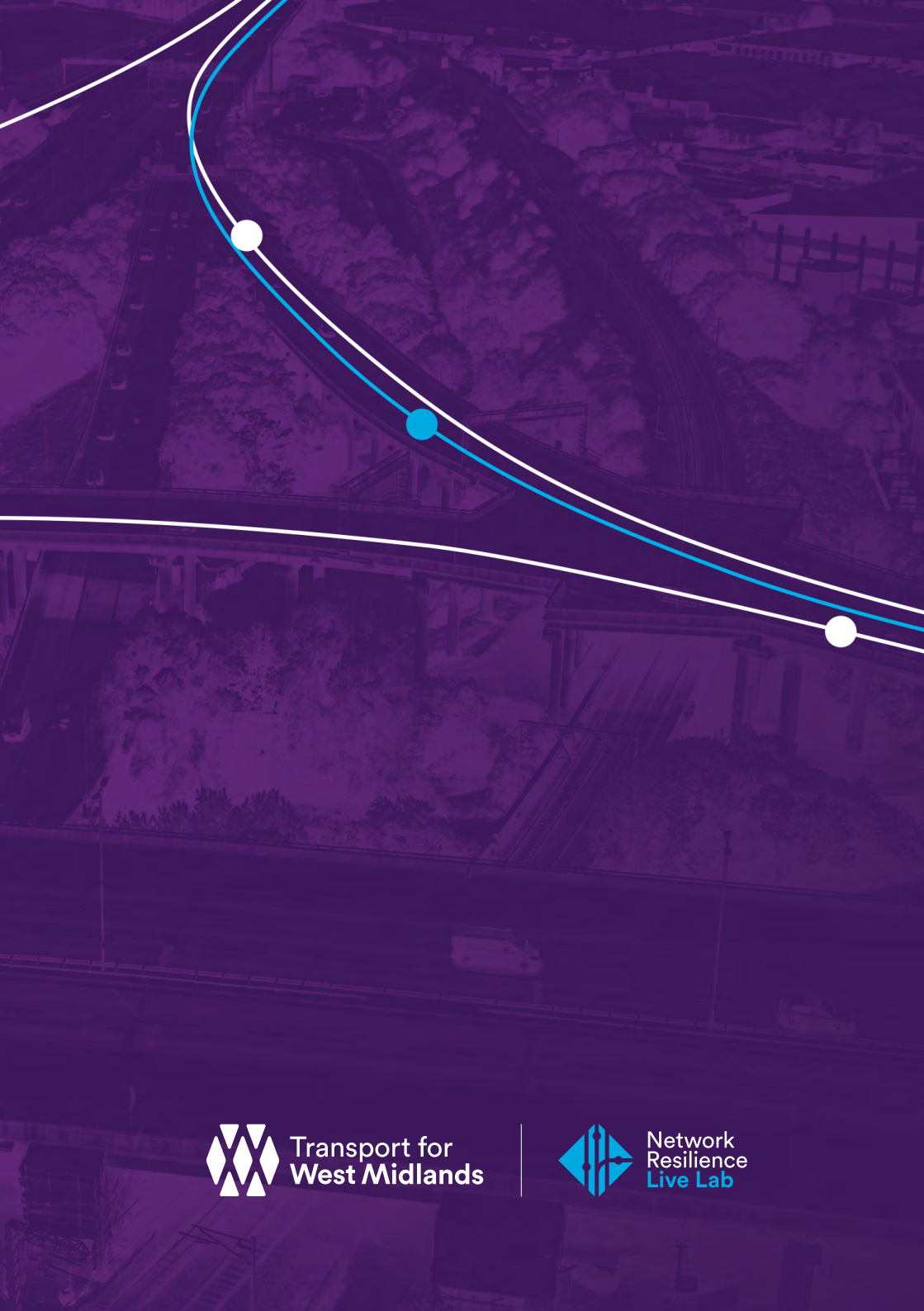
Overview of the Live Lab programme
https://youtu.be/YQ3omO53KV8

Transport Practitioners Meeting presentation 2021 – a comprehensive overview of the work of the Network Resilience Live Lab
https://tinyurl.com/xsm5txc

ADEPT Arcadis 'Going Dutch' Active Travel Webinar 2020
https://www.youtube.com/watch?v=42ILp6Fvc28

Visit our webpage
www.tfwm.org.uk/livelab

Visit the ADEPT SMART Places Live Labs web page
https://www.adeptnet.org.uk/livelabs


Transport for
West Midlands
Network
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Live Lab