



West Midlands
Combined Authority

Transport Scrutiny Sub-Committee

Date	8 September 2022
Report title	Connected and Automated Mobility (CAM) in the West Midlands
Accountable Chief Executive/TfWM Director	Mike Waters Director for Policy, Strategy and Innovation, Transport for West Midlands email: mike.waters@tfwm.org.uk
Accountable Employee	Chris Lane, Head of Transport Innovation, Transport for West Midlands email: chris.lane@tfwm.org.uk

Recommendation(s) for action or decision:

The Transport Scrutiny Sub-Committee is recommended to:

- (1) Review the progress to Connected and Automated Mobility in the West Midlands.

1. Purpose

1.1. This document provides an overview of the connected and automated mobility or self-driving eco-system in the West Midlands including what's happening now and potential for the future.

Background

1.2. The West Midlands has become a springboard for scalable, real-world future mobility technologies and services provided either directly through TfWM or through a number of partners in the region. The industry uses the lifecycle, Figure 1 illustrated here to develop new products and services. The West Midlands has ensured that all aspects are available here.



Figure 1 CAM industry lifecycle

1.3. Through our programmes we have created some excellent collaborations. For instance, if you are developing a new vehicle, you can sit in a 3D immersive simulator at WMG at University of Warwick and drive a real car through simulated West Midlands roads, adjusting the weather, traffic conditions, mobile phone coverage etc. You can then recreate the same road on the closed city circuit at Horiba Mira proving ground and then go to the real roads in Coventry on our Key Route Network. This allows any company developing a new product or service to have everything they need here in the West Midlands. We have seen a lot of activity recently on the testbed, figure 2.

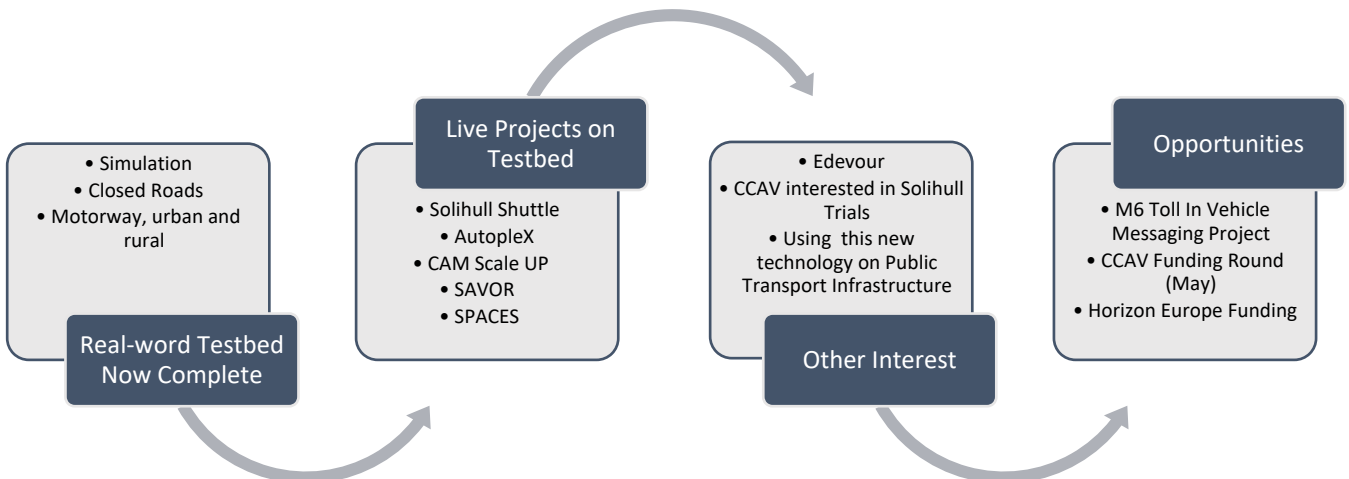


Figure 2 Recent testbed activity

2. Real-World Testbed

2.1. Some of the first self-driving trials took place here in the West Midlands on Coventry Roads and from this experience, through government grant funding, we have delivered Midlands Future Mobility, Figure 3, the West Midland public road Connected and Automated Mobility (CAM) Testbed, which spans around 300 miles of motorways, urban roads and rural roads across Birmingham, Solihull, Coventry and into North

Warwickshire. The goal is to support the testing and operation of CAM in our region to attract and retain innovative investment in transport. At the same time, allow TfWM and Local Authorities to understand the impact this technology, take advantage of that technology and also adapt the way we work to prepare for it.

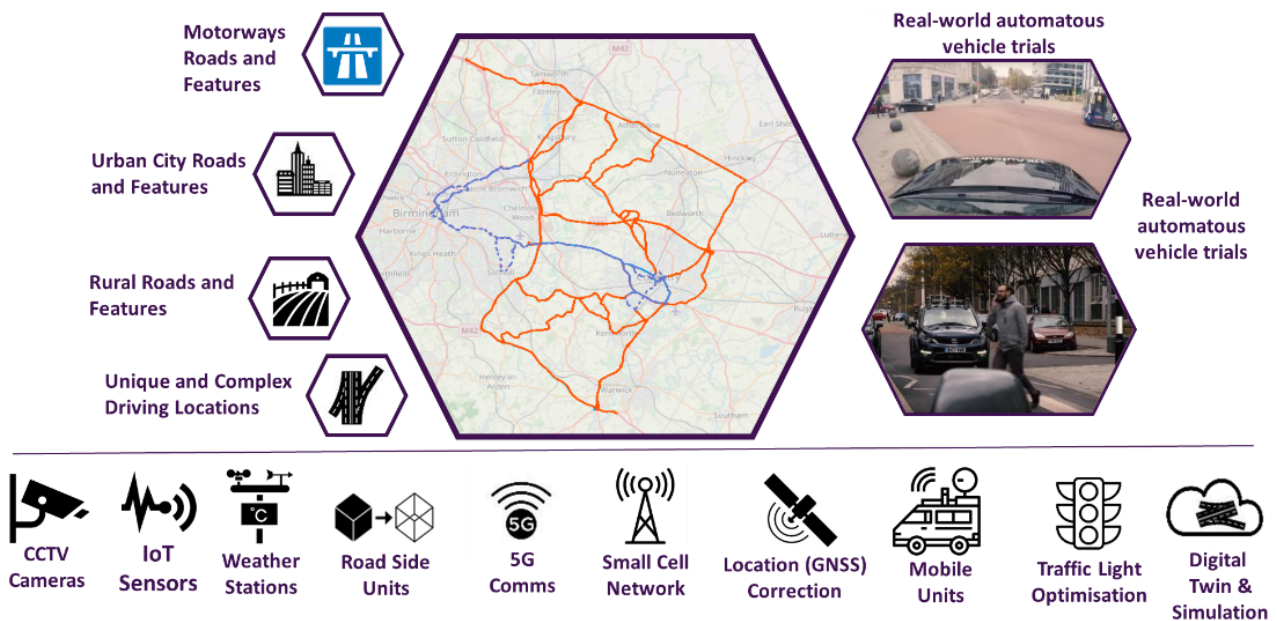


Figure 3 Midlands Future Mobility Testbed route and technology

2.2. In delivering our vision to make transport safer, more accessible, and affordable for people we have worked with the Midlands Future Mobility consortium to push new innovations for the benefit of our people. Our testbeds are now complete and the map and technologies you see here illustrate what we have achieved.

3. Current Projects

3.1. Following the completion of the testbed we have seen several projects in the region, some of these are described here.

Solihull Shuttle

3.2. With support from TfWM, Solihull purchased their own Autonomous Shuttle to undertake a number of trials, Figure 4, and learn both about the technology and how a Local Authority might need to adapt to this new technology. Following successful trialling of shared automated transport at the NEC it has now be trialled at Birmingham airport. A significant amount of learning, engagement and understanding has been developed through autonomous vehicle deployments, which leads us to believe we are in a strong position to submit a successful bid to do more to understand autonomous shuttle could support mass transit.



Figure 4 Solihull Automated Shuttle Trials

<https://www.youtube.com/watch?v=EpScj3SQEio>

AutopleX

- 3.3. Research and Development project with Jaguar Land Rover to develop a merge lane algorithm to assist Autonomous vehicles merging onto roads with poor visibility, this project entering final testing phases.

CAM Scale UP

- 3.4. Two start-up companies who won funding for projects from the Centre for Connected and Autonomous Vehicles used our testbed to further develop their products. We are seeing interest from multiple companies and how they can utilise the testbed. TfWM Planning a testbed industry demonstration day early in 2022.

SAVOR

- 3.5. Small project supporting Coventry City Council working to develop removing the safety driver from self-driving vehicles. The project completed end of March with demo in Coventry City Centre.

SPACES

- 3.6. Developing the removal of the Safety Driver, demo was held last during March at the NEC with the Solihull Autonomous shuttle. Project completed end of March.

4. Other Interest

- 4.1. There has been other interest in the testbed some we are aware of and others we are not. Having this facility allows companies to come and test their systems in the West Midlands. For example, Project Endeavour, a mobility project designed to accelerate and scale the adoption of autonomous vehicle services across the UK and maximise the potential of this exciting technology trialled their project in Birmingham.

Figure 5 Endeavour private trials (included Birmingham)



- 4.2. Following the completion of the testbed we are exploring, with the WMCA Assets Teams and Local Authorities, what opportunities there are to use the testbed assets to better manage and support our own infrastructure. For example, using the mobile trailer with a 5G road sensor camera fitted to monitor the types of vehicles (including micro-mobility) using our facilities such as bus stations or the digital mapping software to map the key route network.
- 4.3. We have engaged with a number of new companies wanting to build their autonomous businesses in the West Midlands one example being ZF (with UK HQ in Solihull), a global automotive technology company supplying systems for passenger cars, commercial vehicles who are entering the automated shuttle market.

5. Related Investment

- 5.1. Public and Private Investment in autonomous vehicles and associated services in the West Midlands over the last 5 years has been significant, in excess of £35m. It has supported our transport innovation eco-system, below and proven a catalyst for other related investment. £1m from DfT for Midlands Motorway Hub to support our M6 Toll Project. £8m investment to region for a Mobility Data, £22m for the UK's first Future Transport Zone and a number of parallel 5G transport projects in excess of £18m.

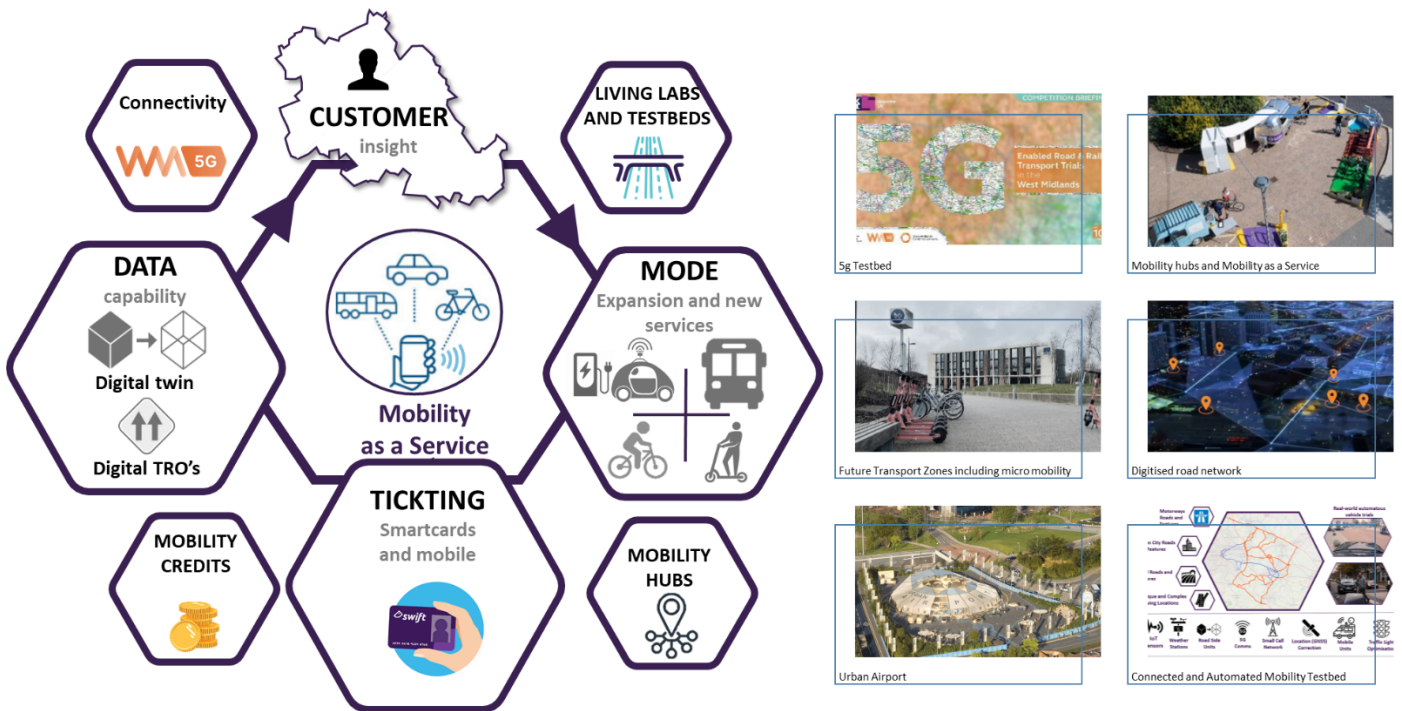


Figure 6 Future Transport eco-system and testbeds

6. What Next

The Testbed

- 6.1. Whilst there has been interest in the testbed, at this time the industry is at the early stages of development. This means we are seeing a number of bespoke projects rather than mass testing.

M6 Toll

- 6.2. Following the Midlands Motorway Hub Study and Midlands Connect being unable to cost effectively install a Variable Message sign on the approach to the M6 Toll, TfWM convinced Midlands Connect, the funder via DfT, to invest their £1m in a digital solution building on our testbed experience. The project aims to deliver messaging directly to drivers in their vehicles and has allowed a collaboration with DfT, CCAV, National Highways Midlands Express Way and Midlands Connect. The solution when proven form the basis of providing a similar service to drivers on our Key Route Network. This is an example of a connected vehicle project.

CCAV Funding

- 6.3. The Centre of Connected and Autonomous Vehicles (CCAV), are preparing to open a funding round relating to commercial automated passenger and goods transport. The competition is expected to run from mid-May to mid-July 2022, with successful consortiums being announced in September. The projects should start in January 2023 and be funded for three-years. The precise level of funding is still to be announced, but is understood to be in the region of £65m, split across multiple projects. The primary requirements of the funding are: 1) it is safe by design, 2) it provides real value to passengers, such as linking into existing transport networks, 3) it serves a route that isn't better served by active or mass transport. TfWM are exploring opportunities to bid into this work and are in the process of forming a suitable consortium. At this time our intention is to build on the success of the work in Solihull.
- 6.4. The route for the next the bid is expected to be focused in the Hub area (NEC / Birmingham Airport / Birmingham Business Park), and build upon our learning to date, but precise details are still to be confirmed. There is also an ambition to incorporate learning from DRT trials within the region into this service which fits well with our CRSTS and BSIP ambitions.

7. Industry Engagement

- 7.1. The work on connected and automated mobility has given us an excellent opportunity to engage with a broad range of public, academic, and private sector organisations, Figure 7.



Figure 7 Collaborating companies

8. Legal Implications

- 8.1. There are no legal implications for these types of projects. Any company who followed the Governments code of conduct may perform autonomous vehicle testing on West Midlands roads, currently with a safety driver. Being involved in these project means that these companies do consult with TfWM and Local Authorities before undertaking trials and we can support then in unstinting what the right level of safety assurance should be.

9. Impact on Delivery of Local Transport Plan

9.1. The existing West Midlands Local Transport Plan: “Movement for Growth, strategic transport plan (2016)”, is currently being reviewed. Innovation is a core feature going forwards and these initiatives support new modes of sustainable transport, a good example being a demand responsive passenger shuttle which is seeing some very early trial in Solihull. By having a testbed and being involved in these projects we can ensure that they develop to being a modal shift away from private car use and ensure these schemes are compatible and complementary to the key objectives of the LTP including:

- Delivering environmental improvements
- Creating a fairer society
- Supporting local communities and places
- Becoming more active
- Sustaining economic success

10. Equalities & Inclusive Growth Implications

10.1. A major part of creating an eco-system is to also understand its impact on society. Alongside this programme we have researched the gender policy gap in public transport design and are seeking to deliver inclusive accessible solutions that support all.

11. Geographical Area of Report's Implications

11.1. Transport for West Midlands will continue to work with the constituent local authorities to manage cross border relationships and align protocols governing eScooter operations in each authority area. TfWM will also work with colleagues both within the organisation and with our local authority partners to align and make compatible the key objectives of the eScooter trial with the overarching strategic priorities applicable to transportation policy across the region.