

# ADEPT

Association of Directors of  
Environment, Economy, Planning & Transport

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## Digital innovation research project *"Paving the way to future-proof road networks"*

Professional Services Workstream



## *Desktop Literature Review*

Professional Services Workstream

# Professional Services Workstream

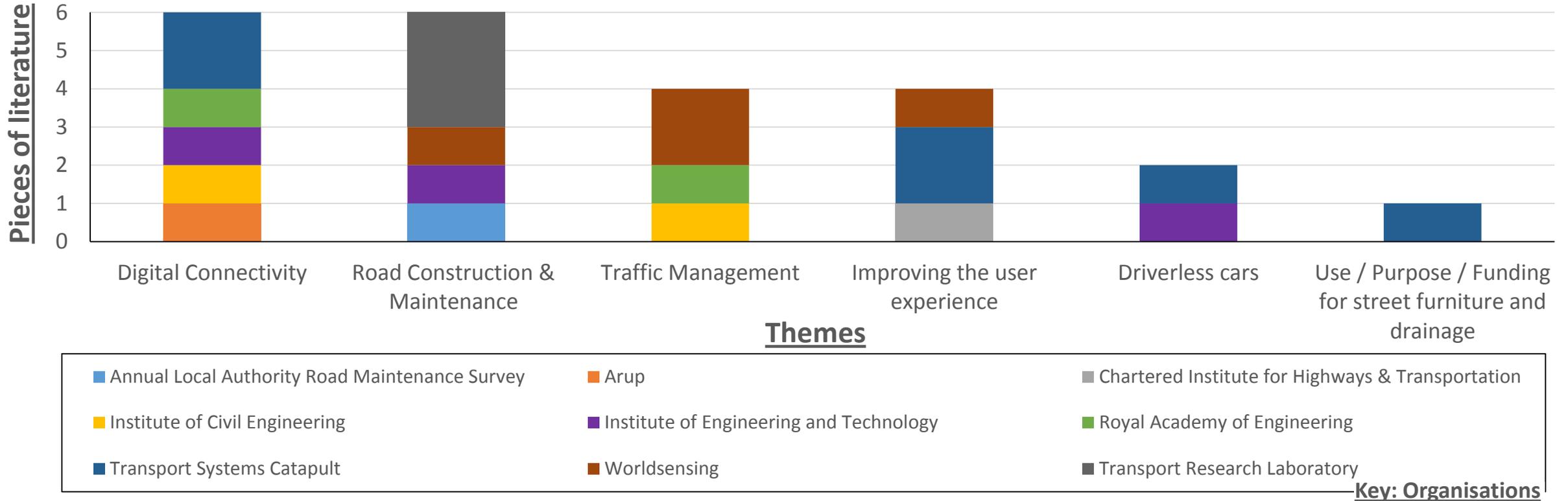


We reviewed the above organisations to assess existing research in topics relating to digital innovation in highways. In particular, looking for reports, case studies, thought pieces etc.

Existing research was grouped into a number of key themes, enabling us to identify the areas in which professional services firms are leading / investing and which areas other sectors might be leading on.

The outcome of this exercise will be used to inform follow up work in the compilation of a final report to ADEPT

# Desktop Literature Review - findings



In total the Desktop Literature Review yielded 23 separate pieces of research. *Digital Connectivity* and *Road Construction & Maintenance* were the most popular themes, each accounting for 6 of the 24 pieces. *Traffic Management* and *Improving the user experience* were the next most popular themes for existing research.

*Worldsensing* & *Transport System Catapult* led the way in terms of quantity of research, with 4 discrete research pieces each

# Emerging Themes

As discussed, *Digital Connectivity*, *Traffic Management & Improving the User Experience* all feature prominently as themes, with others less prevalent:

- *Digital Connectivity* - research was built around 2 key areas - use and sharing of digital data; and the application of IOT in highways and what this means for cyber security etc.
- *Traffic Management* - Again a 2 way split here - Worldsensing had 2 case studies on advancements in Bogota and Zaragoza, with other entries focused on congestion and smart motorways
- *Improving the User Experience* - was focused on encouraging take up of existing technology amongst road users, alongside investigation of the future of roads and what role the Government should play
- *Road Construction & Maintenance* - There were some practical examples of advancements in materials for road construction and maintenance as well as ways to detect faults in roads and a guide covering other technological advancements for Local Authorities
- *Other* - There were 2 pieces on driverless cars, more introducing their potential rather than practical explanations, alongside a piece on reducing surface water

There were other themes that we considered during our review, which were not readily apparent as outputs from professional services organisations. These included: Advancements in Road Safety, Considerations of power distribution and wireless charging and Environmental concerns relating emissions etc.

# *Research Workshop*

Professional Services and national bodies

June 2017

# Professional Services Workshop

We held a workshop with representatives from the organisations below. The intention was to talk through their perspectives on specific facets of highway use, maintenance and operations, as well as identify the areas which they think ADEPT should focus on for the next phases of the project



# Workshop findings – specific topics

## Digital Connectivity

- The group felt that the data produced from Digital Connectivity was very important and can produce valuable data for ADEPT. Due to the age of vehicles on the road it was felt that devices within vehicles (E.g. mobiles) will be used for connectivity, rather than technology built into vehicles.
- A lot of this data is already available, it is either not being shared across organisations, or data holders do not understand the data they hold.
- In terms of future proofing, it was suggested that ADEPT should put cables & ducting into all new street furniture and roads.
- It was acknowledged that data as a commodity was an important issue and how to allow access to data needs to be fully considered commercially, on both sides
- How to allow for connectivity in rural areas (e.g. existing 3G 'blackspots') will become a more pressing issue as technology improves and connectivity becomes more widely expected.

## Traffic Management

- In terms of technological advancement, it was felt that using more up to date, recent information to aid in the planning of roads was a key goal.
- Alongside this, improved co-ordination between road closures / diversions by different organisations could be improved to lessen the impact and disruption.
- Other areas of discussion included amending policy to reduce flow at peak times through ideas such as: incentivising freight and other deliveries at non-peak times through improved traffic flows / designating parking areas for deliveries to reduce wait times and blockages.
- In the longer term, it was questioned whether LAs can influence the encouragement of home working to lessen rush hour traffic, with organisations within their boundaries. It was accepted that was only applicable to certain industries

# Workshop findings – specific topics

## User Experience

- Discussion against this area focused on two key points: parking and keeping residents informed.
- On parking, it was discussed about the need to better inform residents about live availability of parking spaces, through mobile apps. The lack of a single solution utilised by all LAs is a barrier to this. Similarly, a lot of information on parking spaces is still maintained on paper, or not in readily accessible electronic formats, making the construction of such apps difficult.
- The group felt that ADEPT could explore improve ways of communicating messages to residents – e.g. reduction in roadside messaging and utilising social media. In addition, instead of just informing residents of delays, what about also informing them of alternate routes or expectation of how long a journey might take before they leave
- There was a discussion about whether LAs have an aversion to publicising information on delays as it can be considered ‘bad news’. The group felt informing people was key.

## Construction and Maintenance

- The use of data to promote effective asset management was the key driver here. Sourcing data on the live condition of highways and associated assets would be vital in moving more to preventative maintenance and making informed decisions about how to prioritise resourcing
- This data needs to be understood and made available to those who need it in a timely and appropriate format, in order for effective asset management to be undertaken.
- It was felt that LAs should prioritise this data over the installation of specific technology – new legislation will make data on road condition available from all new cars
- There was a frank discussion about innovation and how ADEPT can encourage their commercial partners to innovate – it was felt that current contractual relationships do not encourage innovation, with private providers neither challenged sufficiently to improve, not effectively incentivised to do so.

# Workshop findings

## Autonomous Vehicles

- The group felt that autonomous vehicles will happen, but that take up might not be as swift as people think and that the implications for ADEPT will be much longer term. As adoption becomes more widespread, there should be some capacity gains (as cars drive closer together), but that this may actually worsen in the short term as initial models are overly cautious.
- A longer term effect would be on housing – driverless vehicles may increase the radius in which a commute is viable, affecting a significant shift in the Housing market for LAs.
- It will be difficult to effectively plan for future roads until the full effect of Autonomous Vehicles is more widely known, it may be that some roads being planned now end up with too much capacity by the time they are in operation.
- The impact on subsidised bus travel was also discussed, with the idea that AVs could replace public transport and save money for LAs in the longer term
- The overall sense was that ADEPT should ‘wait and see’ with this area

## Environmental Factors

- The main discussion here was on emissions and the role LAs could play in altering policy to penalise drivers of ‘dirtier cars’ effectively employing a similar model to London’s scheme. Technology would need to play a part in enforcing this change.
- A pilot with Dundee was discussed, where they have an aspiration to become emissions free as a city, with no personal cars within the city.
- Electric cars were discussed and the merits of charging points. It was felt that individuals will still likely want to charge at home.
- Ultimately the group felt that behavioural change was the key factor here – people need to be encouraged to drive less if the environment is to be improved, although it was appreciated that this would be politically difficult

# Barriers to innovation

The group then discussed what they think some of the barriers that make it more difficult for Local Authorities to embrace new technology and new ways of working within the sphere of highways. The conversation settled on 4 key areas:

1

## People

The group felt that innovation is only driven by organisations staffed with people who are completely open to and willing to embrace change.

It was questioned the extent to which this is prevalent in all the relevant departments of Local Authorities

2

## Skills

Many people within highway teams are not traditionally advanced in their experience and adoption of IT. Lots of anecdotes of people bypassing technology tried and trusted methods. "People are engineers, not computer specialists"

3

## Capacity

Reductions in LA budgets have removed staffing levels to the point which staff are very busy with 'the day job' and simply don't have time to learn about, implement or adopt new ways of operating

4

## Leadership

It was felt that LAs needed to lead change and could not rely on their commercial partners or the wider private sector to drive innovation. The constraints placed upon LAs through financial challenges and political considerations make leading change difficult

# Future Focus

The group felt that all of the topics discussed, there were 4 areas ADEPT should focus on for the next stage of the project:

## **Use of Data and Data Sharing**

Collecting as much data as possible from all sources and understanding what that data is. Using that data as part of your key processes and sharing it with partner organisations (it needs to be made as accessible)  
Understanding data ownership and data as a commodity.

## **Active Asset Management**

Changing the nature of their contractual relationships with commercial partners to encourage practical asset management, utilising data.  
Move away from reactive and reactive maintenance structures to creating real time view of asset condition and optimising expenditure from a preventative perspective

## **User Interaction**

Utilising social media and other platforms to keep road users better informed about the status of roads and providing helpful information. This will allow road users to moderate their journey expectations and make informed decisions about their road use

## **Traffic Management**

Considering the use of planning and policy to alleviate peak congestion. Encourage non-peak deliveries through incentivisation, such as joint route planning, amending signalling (to reduce stoppages in journeys) and changes to parkin