

OPINION

What the Covid-19 lockdown tells us about 'old' and 'new' mobility

With its London-based Smart Mobility Living Lab the UK is well placed to lead on the introduction of new mobility platforms, says TRL's **Iwan Parry**

As I write, most of us are in isolation, working from home looking at empty streets, empty buses and empty trains. It is an opportunity for us in the transport industry to pause for thought and consider the implications of our situation on the future of mobility and the societal benefits they deliver.

WHERE WE FIND OURSELVES TODAY

Humans are social creatures and in lockdown we are quickly learning that our need for interaction goes far beyond that which our electronics and communications systems can provide. With our freedom to move and interact with wider society so limited, we cannot fail to see that a healthy human society is a mobile one.

With the lockdown imposing isolation, frustration, and an inability to easily access amenities, we are collectively experiencing the daily realities of those without easy access to mobility. For many, an end to lockdown will only go a small way to alleviating the practical and wellbeing challenges that the isolation of our inflexible and unadaptable transport systems impose.

Moving beyond the current crisis, therefore, we must recognise that ending lockdown and reopening transport networks is not the full picture. We should learn from our experience and ensure that old and new mobility systems adapt, enabled by a new sense of purpose to physically connect, support and build our communities.

The Covid-19 crisis is undoubtedly going to change attitudes to public transport – especially when it comes to commuting.

With many of us isolating at home, there has been a significant overall reduction in public transport use. For transport providers, this has meant learning how to provide an essential service with a reduced workforce and lower demand. Many of our key workers wouldn't be able to access their places of work and carry out their vital roles without

public transport. With each journey, they must deal with the uncertainty of risk, safety and service levels.

The plight of our key workers got us thinking about the links between coronavirus and connected mobility. Seeing how key workers have had to navigate mobility issues during this difficult time made us wonder how future generations will have to respond to fluctuations in demand for travel. Transport is a derived demand, but it's so crucial for a healthy society. So, while we have a moment to pause, we should be investing considered thought into what we want from future mobility solutions.

THE IMPORTANCE OF ACCESS AND SERVICING NEEDS OF THE CONSUMER

We know and understand that access to mobility is crucial, particularly for certain groups like the elderly, when it comes to mental health and societal wellbeing. Future mobility services offer the promise of ubiquitous, cost-effective mobility solutions for those who are less mobile and who will benefit most from the increased flexibility such services could provide. A 'mobility for all' focus can be led by challenging industry and innovators to fix this target firmly in their crosshairs, and by Government supporting research and development (R&D) investments which aim to improve quality of life and community objectives in a far more inclusive way than is now the case.

Today, we already have a variety of transport choices. Micro-mobility, e-scooters and e-bikes are fun, but they only provide more choices to people who already have lots of options. By switching our focus to 'mobility for all', we encourage the design of alternatives for people who are unable to use more active forms of mobility.

The question for our contemporaries in the field of connected and automated mobility (CAM) is: Can we use this period of reflection as an opportunity to reconfirm



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and refocus our CAM vision to ensure that inclusive, accessible cost-effective mobility is at the heart of our innovation, rather than a hoped for consequence of it? If so, we must purposefully place these goals at the heart of developments in our industry and start to show how these technologies will help individuals and communities as a priority.

WHERE ARE WE IN THE UK WHEN IT COMES TO MAKING AUTOMATED VEHICLES (AVs) AVAILABLE TO ALL?

While we don't have solutions ready to be rolled out in the more complex locations (where demand for mobility is greatest), we do have two parallel lines of research which suggest how we might arrive at real autonomy. On the one hand, there is the evolution of conventional vehicle design with the addition of automation, and on the other is the development of purpose-built automated mobility platforms, such as shared pods.

Vehicle developers have already launched fully automated, road-ready platforms and many more are at prototype stage. However, to move beyond demonstrations and pilots will require mechanisms to approve and certify these platforms for operation in real-world conditions.

These approvals will require evidence of functional and operational safety together with validation of AV performance and, again in the real world, through testing regimes which are still in development.

TRL and its urban real-world testbed the Smart Mobility Living Lab (SMLL), is working

collaboratively to develop these approaches, for example, by authoring the new BSI PAS 1881 – a specification for the development of operational safety cases for AV trials – and by supporting verification and validation in SMLL's real-world testbed and its digital twin.

At this pace of change, the next generation of AVs to be tested in UK cities will be a league ahead of the first generation of new mobility platforms we have seen over recent years.

From a service point of view, we're likely to see new mobility platforms developed to suit increasingly sophisticated use cases, and more intrinsically integrated to existing transport provisions, both of which require extensive real-world testing.

As automation and connectivity technology advances, we will increasingly test its ability to meet the expectations of demanding and pragmatic fleet buyers (and eventually consumers) who will be conscious of differences in performance found in independent safety (and other) benchmarking, and will make buying decisions accordingly.

Similarly, insurers will source evidence of operational risk to underpin their underwriting and pricing decisions. With the curation of ever more evidence of AV performance in real-world conditions, the commercial models by which they operate and the societal benefit they deliver, CAM solutions will acquire an unstoppable momentum into the mainstream.

London has a variety of mobility challenges and also a number of potential use cases for CAM. The capital has a robust and forward-facing transport system because Transport for London (TfL) is an international leader in mobility innovation, backed by investment.

This makes London one of the most progressive cities for mobility innovation, every bit as good as other ambitious cities in Europe, Asia and the Americas. More broadly, the wider CAM testbed UK, supported by our coordinating body Zenic, allows UK industry to demonstrate the value of innovative mobility approaches, which, in turn, encourages investment into the UK.

International CAM innovators are taking advantage of the UK's uniquely accessible testbed network to further their R&D programmes.

By supporting the creation of the SMLL, TfL and the Government have enabled the creation of a world-leading open environment for CAM trials.

In London today, CAM solution providers have access to unique facilities which can accelerate development. The SMLL offers a ground-breaking opportunity for the industry to create, demonstrate and deliver mobility solutions which deliver on the promise of societal benefit and access to mobility for all.

These benefits will be realised not only by enhanced vehicle technologies; there are multiple stakeholders and evolving partnerships in this space who are needed to provide communications, take payment, deliver power, connect to infrastructure, integrate with the smart city, as well as to control, operate and maintain the physical vehicle assets.

At the living lab, we have everything to support the evolution of a system-centric mobility ecosystem, bringing the R&D needs of the wider stakeholders into play. Rapid innovation is possible thanks to SMLL's ability to 'plug and play' new vehicle technologies (such as sensors) quickly and efficiently, while backhauling data from the surrounding infrastructure to a dedicated data centre for careful analysis.

These facilities allow our customers to accelerate their R&D programmes, gathering the evidence that can help CAM solutions reach operational readiness faster, even for the most complex scenarios.

When it comes to CAM, we need to look for "new mobility" choices that assist, empower and enable those not best served by "old mobility"

WHAT CAN WE LEARN ABOUT THE FUTURE OF MOBILITY FROM COVID-19?

At TRL we believe mobility should be of benefit to, and accessible by, all. So, in the short-term, while we will begin to see automated technologies maturing to the point that early mobility solutions will deploy into controlled settings, and our cars will allow us to make better use of some of our time behind the wheel, our focus should not stray from enabling the wider benefits to individuals and communities that CAM promises. Covid-19 reminds us of the importance we attach to personal freedom, the ability to move, travel and be part of society. However, we should not forget that for many without easy access to mobility, the lockdown is not temporary.

So, in the future we'd like to see more thought put towards mobility choices that have a clear underlying societal benefit. Having anecdotally observed people's behaviours during the lockdown, we believe having 'more' mobility choices are not necessarily beneficial. When it comes to CAM, we need to look for "new mobility" choices that assist, empower and enable those not best served by "old mobility".

The challenge for transport innovators is to reduce the time lag between trials and the arrival of consolidated solutions. This will help create real, practical, affordable services that people will use daily.

As we look beyond the pandemic, this is a good moment to pause, to genuinely collaborate and cultivate a national and international 'think tank mentality', to re-imagine what society needs from transport. We are ready to play our part.

Pandemic serves to underline the need for self-driving vehicles

The effects of Covid-19 are already echoing around the world, and neither the automotive nor the connected and automated mobility (CAM) ecosystems are immune.

In the US we've seen the likes of Waymo and Uber temporarily pause their testing programmes due to concerns for their in-car safety drivers, and Ford has delayed plans to launch its autonomous vehicle service in the UK until 2022.

Meanwhile, the pandemic has been providing a clear case for how self-driving vehicles, as part of automation more broadly, can be of benefit to society in difficult times. As a result, we expect the automation sector to come out of this with optimism as companies rethink their supply chains and manufacturing processes in a post-pandemic world.

The current situation provides

the catalyst for focusing efforts toward turning the promise of self-driving vehicles into a reality. The opportunities for societal resilience, and the reduction of transmission of infection, on top of the other more obvious benefits of the technologies, show that the time to endlessly debate the hype is over.

Instead, we need to focus on carrying out rigorous testing and development and approaching self-

driving vehicle technologies with pragmatism and realism to ensure we are able to benefit from them now and in the future.

The challenge is to recognise the need for investment in the infrastructure and R&D necessary to build on the UK's momentum in connected and automated mobility. Only then will the industry be able to create sustainable CAM services in the future. **DANIEL RUIZ, Zenic**