

Transport Committee

Oral evidence: Mobility as a Service, HC 590

Monday 5 March 2018

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[Watch the meeting](#)

Members present: Lilian Greenwood (Chair); Paul Girvan; Grahame Morris; Luke Pollard; Iain Stewart; Graham Stringer.

Questions 1 - 76

Witnesses

I: Paul Champion, Chief Executive, Transport Systems Catapult; Simon Ho, Chair of Executive Board, TravelSpirit Foundation; Professor Maria Kamargianni, Head of MaaS Lab, UCL Energy Institute; and Piia Karjalainen, Senior Manager, MaaS Alliance.

Written evidence from witnesses:

- [Transport Systems Catapult](#)
- [TravelSpirit Foundation](#)
- [MaaS Lab, UCL Energy Institute](#)
- [MaaS Alliance](#)

Examination of witnesses

Witnesses: Paul Campion, Simon Ho, Professor Kamargianni and Piia Karjalainen.

Q1 **Chair:** Welcome, and thank you for coming along this afternoon. For the record of our proceedings, could I ask you to introduce yourselves with your name and organisation?

Piia Karjalainen: My name is Piia Karjalainen and I am representing the Mobility as a Service Alliance, which is an international association based in Brussels. We are a public-private partnership, so among our members we have public bodies and private companies all actively involved in the development and deployment of Mobility as a Service.

Paul Campion: I am Paul Campion, CEO of the Transport Systems Catapult. The Transport Systems Catapult was one of the 10 catapult centres set up by BEIS and funded by Innovate UK, now UKRI. Our objective is to grow UK economic activity and employment by enabling companies to take advantage of the future of transport.

Professor Kamargianni: My name is Maria Kamargianni. I am a lecturer at the UCL Energy Institute and the head of MaaS Lab. MaaS Lab is a research group started three years ago, its main focus being on new mobility services and Mobility as a Service, and we have several MaaS-related projects in the UK and around the world.

Simon Ho: My name is Simon Ho, chair of the TravelSpirit Foundation, a community interest company established in Manchester in 2016 to provide an open framework to ensure that new integrated mobility services are universally accessible. To achieve our ambitions in this sphere we are working within the UK but, most importantly, globally to build a global network of transport operators, software developers, businesses, policymakers, planners and activists across the mobility and technology sectors. Naturally, this global network is diverse, and currently we are working with major cities, such as Cape Town, Singapore, Portland Oregon, and Toronto.

Q2 **Chair:** To start with a nice, easy question, what is Mobility as a Service? How would you define a Mobility as a Service solution? For those of us who are a bit new to the area, it would be useful if you explained how it is different from things we are familiar with, such as Google Maps, Citymapper or perhaps even Transport for London's Journey Planner?

Professor Kamargianni: Mobility as a Service may be a new concept and term, but the concepts it covers have been widely discussed in the transport sector over the last decade. Intermodality, green transport, sustainable transport and seamless mobility, and now Mobility as a Service, cover all those within one concept. The scope of Mobility as a Service, or at least how we approach it, is that you integrate the supply side, which is the transport operators, in terms of planning, booking,



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ticketing and payment, and offer those to users as one product via a single interface.

Paul Campion: Historically, transport has been provided, and we react with it modally, which is to say that you are in a car, on a bus, on a train or going by plane, whatever it might be. The responsibility for integrating our journeys has always rested with us. If I want to go to Birmingham, I need to find out what all the options are. I need to make a decision. I need to find the timetables, make a decision, buy separate tickets and organise my parking, whatever it may be. The idea of Mobility as a Service is that the paradigm is turned upside down. Instead of being operator-centric, it becomes traveller-centric, and I am able to make my journey with the details taken care of magically. That is what Mobility as a Service is about.

Q3 **Chair:** Piia, do you agree?

Piia Karjalainen: I agree. It is traveller-centric but it is also a very user-centric approach. It is important that the service is easy to use for the end user. We are always designing services from the user perspective. In MaaS Alliance, the official definition of Mobility as a Service is the integration of various forms of transport services into a single mobility service accessible on demand. What we are trying to achieve by producing, providing or developing MaaS is to create an attractive alternative to the use and ownership of a private car. Basically, MaaS should be as convenient, reliable, flexible and cheap as the use of your own car.

Of course, there are different MaaS models. You can use it for one journey and pay as you go, or we can provide MaaS, for example, as a monthly subscription. We also have a real-life experience of all those kinds of services.

There are three key features of Mobility as a Service. First, you need different modal transport services to be included in one service or offering. Not only does it combine different transport modes, but it combines or integrates public, private and shared fleets. The second feature is that there should be a single payment and digital platform or interface for the user. The third phase is that there should be good travel information covering the planning phase and the whole journey, so that the user is very well informed all the time, including information about delays or disruptions. Here we come to the point where it is different from what we already have today, because it does not only provide good tools for planning your journey—it is not just some digital form of transport service—but it really gets you there.

Q4 **Chair:** Simon, a platform such as Uber might claim to be Mobility as a Service, but you would not describe it as that because it is a single mode rather than a seamless multi-mode service. It is neutral about mode. Would that be right?



Simon Ho: I probably need to offer my own definition of Mobility as a Service. For the last eight years I have lived in the ex-colliery town of Atherton near Wigan. As a result, my view of how transport works may be different from that of some of the other panel members. It is as simple as defining a market. It could involve a multi-modal journey, or it could be supporting an overall lifestyle that can be achieved with a number of different modes in a seamless and integrated way. TravelSpirit was established because, referring to Atherton, which was the home of the Luddite movement, we are concerned about technological progress bulldozing what transport is really about, which is providing equitable and sustainable access to all.

You asked about Uber. It could be Mobility as a Service if it is providing those values, but we are seeing a lot of investment interest in transportation, which Uber represents, and it is really healthy and has helped transform the transport industry. It has changed consumer attitudes and taxi driver behaviour. We are getting a better level of service, but there is concern about where we are heading. As public transport appears to be less innovative and begins to erode, where do those core values end up?

Q5 **Chair:** Where is the demand coming from? Is it from the people who are the end users of transport? Are people in Atherton demanding Mobility as a Service? They probably are, but they would not call it that, would they?

Simon Ho: People in Atherton are demanding better transport, and that is what we don't have in many parts of the country outside London. Ever since we deregulated our bus services, we have had a very fragmented transport system, and it is not affordable, for young people in particular.

Q6 **Chair:** Do you think it is responding to that demand for better and more affordable transport services?

Simon Ho: All of us are now living in a digital age; we expect everything to work on our mobile phones. We are increasingly disengaged from cash; we have online banking. There is consumer expectation that things will just work, and transport is becoming a little bit of a joke in that regard.

Q7 **Chair:** You say "we," but presumably for loads of people, not just in Atherton but across the country, that does not sound like their experience, particularly if they are older, because they perhaps do not have a mobile phone, and certainly not a smartphone, and their expectation of transport is that there might be a reliable local bus service they can get on.

Simon Ho: The status quo serves the older populations quite well, but I am concerned that the status quo will be eroded. What we are missing out on are opportunities for young people to access employment and opportunities to tackle air quality in cities and towns outside London. Something needs to change, because one thing we definitely have in Atherton is an awful lot of congestion and air pollution.



Q8 **Chair:** I am sure that is the case in a lot of places. Do other panel members agree with Simon that it is about serving the needs of young people and enabling them to have affordable transport that gets them where they need to be?

Paul Campion: I am not sure that any of us would disagree with those aspirations. I am not sure that I see Mobility as a Service as necessarily a magic wand that brings them about. I characterise Mobility as a Service as being a traveller-centric way of providing service. That is great. All the examples we have seen around the world have delivered higher customer satisfaction. I am not convinced we know that they deliver better network capacity, better outcomes for the disadvantaged, reduced prices or any of the other social goods we desire from transport. Probably our central feeling about Mobility as a Service is that, as a statement of an aspiration, it is at maximum only half the story. It makes life better for the traveller, but we need to think about what it does or could do to the system to understand whether the aspirations could be or will be delivered.

Q9 **Chair:** Are you suggesting that potentially there might be unintended consequences, or just that if it is not controlled you do not know what the consequences are going to be?

Paul Campion: I do not know whether I would use the word "controlled."

Q10 **Chair:** Regulated.

Paul Campion: The technology or the way the mobility is provided is consistent with both outcomes. There is nothing intrinsic to Mobility as a Service that says congestion gets less rather than more, for example. I imagine that it could be directed, guided or built in such a way that it could give better traveller satisfaction and system outcomes, but I do not think that happens by magic; it has to be made to happen.

Q11 **Iain Stewart:** I declare my interest. I chair two all-party groups. One is the all-party group on the future of transport, the secretariat for which is provided by the Transport Systems Catapult, and the other is the smart cities all-party group, the secretariat for which is provided by Newington public affairs. I need to get that on the record.

To pick up the point about the definition and potential of MaaS, in one sense it can be a static service. If you want to get from the House of Commons to a shopping centre in Birmingham, it works out that you need the tube, train, bus and whatever to do that. Equally, it could be a dynamic system that takes into account congestion, air quality, comfort and speed, and offers the passenger a range of options: the cheapest, the fastest and the most environmentally friendly. Is that the definition of MaaS, or is it more of a static model and simply about how to get from A to B?

Paul Campion: If you will forgive me, there may even be a step beyond that. There is a third option, which is that the data gathered by a system



that tells me where I can go, sells me a ticket and does all that stuff can be surfaced by the system such that the operators—the authorities—can use it to provide better services to respond, ideally in real time, to demand signals. The definition I gave, with which other panel members may disagree, is very much focused on the left-hand end of those scenarios—the static, or maybe the enriched static. The opportunity for the system, for the country, lies more to the right-hand end, where we start using the data that come out of these systems to deliver transport outcomes in a better way, whatever that may be.

Q12 **Chair:** Maria, do you want to pick that up?

Professor Kamargianni: It depends a lot on the supply of the transport modes we have in each area and what data we share about those transport modes. Ideally, MaaS is both a static and a dynamic service. If you have the data and you know in real time about demand, or the status of each transport mode, you can reallocate demand or propose ideal solutions in order to get from A to B. The solutions may change in peak hours or they may be different during weekends, but in order to achieve them you have to ensure that the transport operators, or the supply side as we call it, are able to provide that kind of data.

Q13 **Chair:** Piia, do you want to add anything?

Piia Karjalainen: Thanks to digitalisation, for the first time we have quite a precise idea of what users and travellers really need. Therefore, when MaaS is developed, it is based on demand and we can provide much better and more precise services to meet the needs of customers or end users.

Of course, those who are really familiar with the use of iPhones and smartphones may be the first to adopt Mobility as a Service, but when the model becomes a bit more mature and users are more mature in how to use it, there will be different models and services all responding very well to current demand on the transport market. Therefore, it will improve the service level of the transportation system.

Q14 **Chair:** Can you tell us a bit more about how Mobility as a Service schemes work in practice? How do people pay for the services they need? What are the business models, and how do they operate?

Piia Karjalainen: At the moment, there are at least two different business models for Mobility as a Service. The first is to provide a service for one journey. Basically, you have one application that you can use for planning and buying the tickets required for one journey, starting with your origin and point of destination. It is just a one-payment operation. The user is provided with information throughout the journey as well. That is one thing.

The other model is that you pay a monthly subscription, and all your travel and mobility needs for a certain period of time are covered for all different transport modes, within a certain regional scope, provided



through the service. There are many important things for the end user. Information is an important part, as is the feeling that someone is taking care of you and is liable when there are disruptions, providing you with information if something starts to go wrong—for example, when there are delays or something like that.

- Q15 **Chair:** If that happens, who is responsible? If I am wherever Mobility as a Service is operating and I have bought a seamless journey from my front door, which perhaps involves a hire bike, a train journey and then a taxi, and something goes wrong—the train is delayed, the taxi is stuck in traffic or whatever it is—as the customer how do I engage? Who takes responsibility for finding me a new way to get to my destination?

Piia Karjalainen: Of course, your first contact point is the MaaS operator who is providing services for you. This is something we are now discussing in MaaS Alliance. We are drafting a bill of rights for the MaaS user, and it should be ready by September this year. It will describe how passenger rights are defined in the multi-modal context. At this very moment, at European level, in European regulation there is no clearly defined passenger right for multi-modal transportation; it covers only one mode. If you are using separate or many modes for your journey, you are always between different pieces of regulation.

- Q16 **Chair:** Do any other members of the panel want to comment on the question about how MaaS deals with disruption or how consumers engage with it?

Simon Ho: There is a really important point about the viability of the MaaS operator. We can look at other fields, such as the airline industry and other industries, where even within a mode of transport there has been a commercial difficulty in allowing an aggregator to take on the customer relationship. At TravelSpirit, we have been doing some good thinking about that.

Our submission focused on a system that might be static all the way through to being very dynamic, and looked at whether the system would be closed or open. To answer your original question, Uber is perhaps a closed system. You might get some mobility as service offerings with a small consortium of different transport providers. That is very different from what we are promoting, which is an open system, maybe with more thought to the internet, to allow services to be discoverable to all. In that case, we are more focused on the fact that the customer relationship might still end up being with the individual transport operator, but what we are promoting is how we can create a greater level of interoperability and customer data portability to enable that to happen.

I would like to reference what has been happening in the retail banking sector. There is a very useful initiative called open banking. If we had open mobility, we could have a clearer view of transport history all in one place and we could get a better deal; the customer could then get a better deal from their data and behaviour, and that would enable more



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third-party access to their mobility accounts. That is a slightly different way of imagining how it might work in the future.

- Q17 **Chair:** What would that mean for policymakers? What would they need to do to enable that to happen, or do they just need to sit back and allow it to happen?

Simon Ho: I do not think it will happen on its own. If it does happen, where will we be in 10 years' time? Will we look back and say, "Where were the regulators or the regulatory thinking to ensure that when we got this market it was fair and transparent?" Will there be a customer-centric approach at the heart of it so that residents are getting a better deal from these aggregated services?

- Q18 **Chair:** What do you think we need to be doing now to ensure that we do not look back in 10 years' time and say, "My goodness. What have we allowed to happen?"

Simon Ho: Have a look at open banking. Could the Competition and Markets Authority set up something similar? I do not think the transport operators culturally are ever going to do that on their own. There needs to be some form of regulation, such as has been achieved in Finland, to enable the market to be made.

Paul Campion: This is all about data; it is enabled by data. The reason it has not happened before and can happen in the future is data: the visibility of what is possible and where people are on the earth's surface. It is the ability to do that. Transport provision is to some extent a natural monopoly. There are very strong network forces, which mean that it is hard to imagine having genuine competition at the level of, say, a city or region in this provision, because you only have one set of paths to go through. There is a strong public interest in thinking through an open data model, ensuring that whoever ends up with what essentially will be monopolistic provision has due regard to the outcomes the citizen wants rather than just creating private monopolies. We can think of examples on both sides. It is a really important point.

We are at a critical point at the moment. It is not too late to do the right thing, but the longer we leave it, the more private companies will try to monopolise, because that is how they work, and how they should work, and will be tempted into rent-seeking behaviour based on the monopoly of data.

Chair: I am sure we will want to explore the pros and cons and advantages and disadvantages in a moment.

- Q19 **Paul Girvan:** I appreciate that we are dealing very much with data being available from which to extrapolate a lot of detail that has been used and exploited by other agencies. I am thinking in particular of Uber, which uses a very up-to-date app approach to journeys. In Northern Ireland, a cartel of taxi companies, effectively, moved and lobbied to exclude Uber from getting a licence to operate. I can see this being fraught with



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exactly the same difficulties as we try to introduce the little bit of competition that could be created within your app as a way forward. I can see big financial implications or ramifications for them from something like this coming forward; there will be competition against them on journeys, and therefore they will close it down.

Paul Campion: To be clear, the provision of anything like this requires existing incumbents to be challenged. It is a completely separate debate. What is the economic model behind this? Who really makes money out of it? We can see that it is good for the traveller; it is not quite as easy to see how you make money out of it. Where is the money coming from? Leaving that aside for a second, even to provide these services we need to challenge what are essentially local franchise monopolies, and the whole point is that silos can potentially collapse. You used the word "taxi"; we have private hire. These are essentially regulatory-created categories, just as bus is a category created by regulation. There is no law of nature that says that in the future there will be things called buses in the form of 60-seater vehicles painted red with a diesel engine, and that they will operate and run in a different way from something called private hire. Why would that necessarily be the case?

We can imagine a way transport is provided in which those silos diminish, but those are regulatory categories. That is why I come back to the responsibility of government, in its wider sense, to help define a new set of categories within which people can make money. Yes, the current incumbents will probably try to defend those positions, but we have to recognise that their business models are created by regulation.

Q20 **Graham Stringer:** Isn't the most likely way money will be made out of MaaS the ownership of the data provided to the app itself, because that becomes the most valuable part of the system, doesn't it?

Paul Campion: Totally. Forgive me for being pedantic. I think we need to be very careful about the word "ownership" when talking about data. The whole point about data is that I can have it and you can have it. What we need to focus on is: who has the responsibility to provide security and privacy around that data, who has the right to monetise that data, and who has the ability to use that data to provide services? Ownership is a portmanteau of all those different rights and responsibilities. We have to be a bit careful because "data" is a bit different from the bus.

You are absolutely right. The world is changing under our feet, and we need to be very thoughtful about how we allow people to go ahead, and wish them to go ahead, in order to get the aspirations, which Simon spoke of and I am sure we all share, to have better outcomes as well as better travel experiences.

Q21 **Graham Stringer:** Going to Simon's point, it would be much more difficult to follow the open banking system analogy because banks are already established and have large profits, so they can take a hit in



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sharing some of their data. That would be impossible in, or collapse, a start-up MaaS, wouldn't it?

Paul Campion: It would certainly change its nature.

Q22 **Graham Stringer:** It comes back to where the profit is. Somebody has to be incentivised.

Paul Campion: It absolutely does, but we are talking about the servitisation of a market that has been fundamentally based on making money out of physical assets, and now we are talking about providing a service disconnecting to some extent the revenue streams from the ownership of the assets. If I am running a bus and my tickets are going to get sold as part of a journey, and I no longer have control, when I make them available, as to whether the traveller is going to come on my bus or get a taxi, take a bicycle or go on a train, there is a level of risk and uncertainty that I have not had to deal with before. In the past, I had bus passengers and they had bus tickets.

Q23 **Chair:** Policymakers should be really concerned, because it is about trying to shape the future or making sure that we have a future we like the look of in the end.

Paul Campion: Concerned in the sense that you cannot evade responsibility absolutely, but at the risk of sounding a little like a poster, it is a genuine opportunity. We can make the world better; we can deliver better things for citizens, but what we cannot do is imagine that those happen automatically, without making, in the jargon, difficult decisions.

Q24 **Iain Stewart:** A thought has just come into my mind. I am not sure I fully appreciate the chain of transactions that would take place if we have an app on our phone that allows us to have multi-modal transport. In one sense, the developer of the app gets a value because I pay £3.50, or whatever it is, to download the app, and then there is a series of individual transactions with me; I buy a rail ticket, pay for cycle hire and whatever else it is. Do you see MaaS evolving so that O2, Tesco and Ford provide services? They would block-buy a series of tickets from a train provider. They would have 500 tickets from Euston to Birmingham on which they could negotiate a discount? Is that going to be the form of transaction?

Paul Campion: The answer is that I wish I knew. I think both are possible. I do not think it would be Tesco, but it could be, for instance, Google. You mentioned Google Maps at the beginning. I can well imagine that the company that owns the user interface is in a very strong bargaining position to go to whoever it might be and say, "I will deliver you such and such amount of business, but here are the terms." I do not know, but I imagine that could be Google's business strategy. They are trying to do end-to-end journey mapping. The obvious next step, having captured the eyeballs, is to try to capture the revenue streams behind that by disintermediating the transport operators. It has happened before



in many industries. I do not say that is necessarily the optimum way, but I can imagine it.

Q25 **Chair:** Piia, can I ask what you think, because you represent a wider group of MaaS organisations?

Piia Karjalainen: I would say that policymakers should take this as an opportunity to achieve the transport principles. MaaS is making it much easier than before. We have evidence for the three most advanced MaaS trials, and they have all been channelling new demand for public transportation, so basically the share of use of public transportation has been increasing due to better integration of services. By increasing the use of public transportation, we are able to allow people to reduce their dependency on private cars, and reduce emissions and pollution, for example.

A good example is Finland, which has used MaaS to achieve transport principles. Compared with conventional transport policy, the difference is that we do not have to use sticks so much any more; instead, we are providing the user with much greater freedom of choice and better services, and at the same time, we are really contributing to a policy of sustainable transportation, fewer emissions, less congestion and so on.

Q26 **Chair:** Maria, from your perspective do you think that is necessarily the outcome? Obviously, it is very desirable to have more sustainable transport modes, and that will help us tackle congestion, but is that necessary or a potential?

Professor Kamargianni: It is one of the outcomes of how these types of services are integrating all available transport modes in the market. By creating MaaS plans and adding services that are not so popular, you can create demand for some services that are sustainable but are not widely used; for example, by adding bike-sharing to a MaaS plan. When the user has this plan, they say they will use bike-sharing as well because it is included in their plan.

Q27 **Chair:** Is there evidence that that actually happens, that people use bikes more because it is part of the options available?

Professor Kamargianni: Yes. Most important is that our results show that public transport is the backbone of the MaaS concept. In London, where we have a very good public transport system, and in Birmingham and Manchester, where we have done surveys, they want public transport.

Chair: We want to explore a bit more how it might work in different parts of the UK.

Q28 **Graham Stringer:** Can you apply MaaS at a nationwide level? Is there a limit to the scale at which it can be applied?

Paul Champion: I do not think there are any technical limits. Let me come to the question in a slightly different way. I would argue that



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London already has most of the elements of MaaS. You can buy a single ticket that covers many modes; you can buy a season ticket. We can argue about the details and why other modes have not been included, but London is pretty much there. My observation would be that it shares with places such as Helsinki the fact that all the operational modes are essentially under one regulatory umbrella, which makes it easy to do that. If you go anywhere else in the UK, you do not have the same thing.

I would ask the question the other way round. If we get to a MaaS future, and we are doing everything over a smartphone or, I hope, through other even more accessible options, because many people will not have a smartphone and bank account, what happens when they get to Watford and have to change? Is it acceptable to have multiple MaaS provisions? If I want to go from Southwark to Dudley, do I have to change apps along the way? Can I buy through-ticketing? How does that work? These are important questions.

The low-hanging fruit is inter-urban because the modes tend to be much more connected, and that is great. That is good, and it will be valuable to a lot of people, but in the UK in particular, because we are such a centralised country and see such disparities between the capital and other regions, it is important to think through how the provision can extend into urban and rural areas; otherwise, we will not just perpetuate but exacerbate the differences in transport provision that we currently see.

Professor Kamargianni: It is very important to have critical mass in order to be able to cover the rural areas as well in terms of the transport mode. Nowadays, we subsidise several bus operators to cover rural areas, and we see that buses run empty. We spend a lot of money to subsidise all those bus operations. With MaaS, we can optimise the system; we can offer more flexible services. The model in the past was that the Government provided money to build roads. Then we reached a point where we had situations with private car ownership and congestion and we started investing in public transport, but now we have reached a point where public transport cannot solve all the problems. All of these new mobility services, such as Mobility as a Service, can work with public transport, optimise the system and probably save some of the expenses in the use of public transport.

Piia Karjalainen: As the end result, I hope, and I am quite confident, that we will soon see national schemes and programmes. A good starting point is to encourage different regional or local implementation of different schemes. We should encourage different business models and different operational models for MaaS, to learn what works best and what works well in different conditions. MaaS always relies on the local best ingredients and local service provision. Therefore, you really have to understand the local demand and supply side.



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I also believe that we should allow competition between different MaaS operators. Competition is striving for innovation, and, therefore, we have to let the market somehow decide what is functioning well or best, but the most important thing is to ensure interoperability of the different schemes or services, so that finally when we reach national scope there will not be any barriers or hindrances to interoperability of services. Instead, we have to make sure that they are easy to combine from the end user perspective.

Q29 Graham Stringer: The two indices, TravelSpirit's MaaS openness index and the MaaS Lab MaaS maturity index, are supposed to help in identifying where MaaS will be most effectively or successfully employed. Can you explain to us how those indices work?

Professor Kamargianni: MaaS Lab developed the MaaS maturity index, but we collaborated with TravelSpirit. In the beginning, TravelSpirit had its MaaS openness index that focused a lot on open data. Then MaaS Lab took over and we worked to improve the scores to include other aspects that are required for Mobility as a Service to be successful, because Mobility as a Service is not only about open data; it is about the ICT infrastructure and transport infrastructures we have in an area; it is about how familiar citizens are with intermodality or using app-based mobility; it is also about policies and subsidisation. The MaaS maturity index has taken into account all the other aspects that are required for the Mobility as a Service concept, to support cities and indicate to them their strengths and weaknesses, in order to implement MaaS and, at the same time, to support industry if it is interested in investing in cities to develop such services.

Simon Ho: We developed the index as a measure of the health of collaboration within the transport industry. We validated it through a workshop. We brought in commercial directors from many bus companies, new mobility companies and car hire. Around the room, they all said, "This is definitely a problem we need to solve. We need to be able to collaborate, and we could grow a much larger market if we were able to do that." But each commercial director said, "That's great in this workshop, but I have to go back to my board and they will not sign this off." That is why we want to highlight that that is the natural outcome of a fragmented commercial market. Without some kind of support from the local authority to encourage a culture of openness and collaboration, it is not necessarily going to happen on its own.

Q30 Graham Stringer: Is the conclusion from that what Paul was saying before, that the only place where this system can be applied without separate regulation is London?

Simon Ho: To voice TravelSpirit's concern, Mobility as a Service has a great future. If we do not do anything, it will happen in London; it will focus commercially on the urban elites, and it will pop up in every other international city too. It will have very little relevance outside London.



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It is not just about making subsidy more efficient; it is highlighting that, maybe compared with the banking industry, our whole transport system is heavily subsidised. It is the roads we build and the buses we subsidise, which, for example, account for 20% of the budget in Manchester. It is the heavily subsidised rail systems we have in the north as well. Do we need to rethink and reform the way we subsidise transport? It is all linked; as Paul said, it is linked into the modes and how we regulate it. We subsidise bus and rail, but should we not in the 21st century think about a smarter way of subsidising to get the benefits we are looking for?

Q31 Graham Stringer: I think you have answered most of my final question. You mentioned that the Mayor of Greater Manchester and Transport for Greater Manchester know about this. How aware are other transport authorities in the rest of the United Kingdom of the work that is happening on MaaS?

Simon Ho: Transport for West Midlands has been doing some very good work; it has certainly been championing this. In terms of awareness, we ran our second annual conference in London in September. In my view, we are still working at a very low base in terms of cities' understanding of this opportunity.

Paul Campion: Can I make an observation and perhaps also give an answer? As Simon said, the public sector, widely defined, is using a lot of money, and that is an opportunity to guide outcomes short of full-blown regulation. There are large quantities of money being moved around. By the way, direct subsidy is one thing, but there are, to take a random example, bus passes. Transport is subsidised, but why just buses? Why can you not subsidise a Mobility as a Service account and enable different transport outcomes for people who do not live next to a bus? What about all the money that gets spent on social care and health? Huge amounts of money in both those systems are spent moving people to and from various centres—for example, hospitals. Those are potentially amounts of money that could, if appropriately directed, gauge outcome.

Q32 Chair: Where places are looking at total transport, trying to get out of silos and look at public transport, and health and education—different transport budgets—are they making a link between total transport and the potential of MaaS?

Paul Campion: That is my other observation. It is not happening to anything like a large enough extent, in my personal view. We are doing research with about 50% of the local authorities in England—there are about 152—and we have conducted interviews with about half of them. As you might imagine, there is a very wide spectrum of knowledge and understanding, but, more importantly, resource and expertise in those organisations. Many of them do not have the skills, expertise and knowledge required to take the decisions they would need to take now to end up with better outcomes in the future. The reason we talk about places such as London and Manchester is partly to do with organisation, but they also have the resources; they can afford to have people



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spending time reading papers at conferences, going to events and learning about this stuff. But for a lot of authorities, not so much.

Professor Kamargianni: We have a project in a living lab on MaaS. Although we have pilots and demonstrations in Greater Manchester, the living lab is open to all the transport operators of the UK. We have received many questions in the living lab from different sizes of transport operators in rail and buses. They are very interested in seeing in real life and in a controlled environment how this service works. That is very important for the market. The Department for Transport and Transport for Greater Manchester are also involved in the lab. We have several transport operators, but also IT companies. We have community clubs, because we need users to test how this will work. It is a very nice and safe environment to understand what the concept is about.

Q33 **Chair:** But there must be a real concern in places that have combined authorities and mayors. They already have new transport powers—for example, the Bus Services Act—to allow them to do things. As you said, Paul, they have the resources potentially to oversee this, but other places that do not have those powers and resources are getting left behind. Isn't that right?

Paul Campion: Yes.

Chair: Let us focus again on the advantages and then we will come to the disadvantages.

Q34 **Paul Girvan:** I do not know whether it is an advantage or not, but how do you deal with cultural change? I just mentioned this to Graham. People get issued bus passes in our area and there is free transport for the elderly, but it is not even interchangeable between regions in the United Kingdom. I am talking about a very simple thing that should be dealt with on the basis that a journey is billed to the authority, or wherever it is from. We have a system where both our bus and rail services in Northern Ireland are still completely public, and are regulated and controlled, which is an advantage on many occasions because you are not competing against other companies. What are the public policy advantages of MaaS solutions, and what kind of key advantages would the individual customer see from those?

Paul Campion: MaaS is a new page. It is a new start; it is a possibility to deliver transport outcomes in different ways. We have talked about the large amount of money that the public purse invests in transport. It is an incredibly important contributor to citizens' ability to participate in economic life and to have rich social lives. The second biggest part of consumer spending is on transport; it is about 14%, just behind housing. It is a fantastically big part of people's lives. If you have the ability to make it easier for people to use, and consciously and deliberately create better outcomes and make more efficient use of resources, it is potentially a massive public policy lever you can pull.



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The problem, as we discussed, is that it crosses so many different parts of Government; it is divided among national, sub-national, devolved, regional and local authorities. It is a very complicated public-private system, and involves historically a lot of very conservative cultural attitudes. By the way, in many cases, that is for good reasons. The reason why the UK rail network is about the safest in the world is that it has a very conservative engineering environment and culture, but that makes it more difficult to achieve the positive change you want.

We need to be positive about it and see it as an opportunity, while recognising—maybe this is the point I came in on—that just calling something Mobility as a Service does not magically deliver those things. The reality, as Piia has been saying, is that it intersects with the detail of local provision, infrastructure and systems of governance, and you have to get into those to make sure you get the good out, rather than just white-washing it with some sexy new acronym.

Simon Ho: I need to mention air quality again. MaaS is an instrument that has been seriously considered for tackling that in cities. Paul mentioned data. We could have a UK where the planning of services is driven by data. At the moment, a lot of that data is already collected and held, but it is held by a certain organisation called Google. What we are talking about is empowering our citizens to share those data with the transport companies and local authorities so that we can plan services better.

Young people have been mentioned. Sometimes we are so concerned about not leaving our old people behind that we forget there is a group between 18 and 25 that we are not serving enough. This is a group that completely accepts the use of mobile phones and is completely happy to share data with anyone—maybe to a point where they should be told not to—but look at their situation for accessing jobs, especially where I live. Car insurance is astronomical. Look at bus services. They do not get access to free bus passes. They are feeling rather excluded. It is much harder for young people to use transport. That is why I think we should address this and make Mobility as a Service something that helps to get people to work and enables cities outside London to become more competitive right now with other cities in Europe, which have progressed further, as we have seen in Finland and Germany. The question is almost, why wouldn't we?

Q35 **Chair:** Taking a bit further the point about young people being disadvantaged, I agree that a lot of them will identify the non-affordability of transport as a major barrier to accessing work or education, but why Mobility as a Service rather than, say, a concessionary bus pass for all under-25s? Why do you think it is the right policy?

Simon Ho: I think that is just a sticking-plaster over a broken system.

Q36 **Paul Girvan:** How do you feel policymakers can use MaaS to facilitate



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behavioural change, such as encouraging more walking, cycling and other activities?

Chair: Piia, is that something you want to pick up? Why will it encourage walking and cycling?

Paul Girvan: I appreciate that data might well be one of the ways to do that, but how do you ensure that policymakers see the advantages of using MaaS as a tool to deliver that change?

Piia Karjalainen: In terms of walking and cycling?

- Q37 **Paul Girvan:** Not only walking and cycling; it could also be used to identify where you need to put in additional infrastructure if you find there are journeys between A and C with no direct routes or links, and an ever-increasing number of journeys. It might warrant a little bit of investment and public money to make that connection. I am just teasing out an idea. Is that one of the routes you think could be used to sell the idea of using MaaS as a tool to drive policy?

Paul Campion: Absolutely. I turn it the other way round. I think this is going to happen one way or the other. It comes back to whether we want to take the opportunity to try to drive those better outcomes as a public policy statement, or allow somebody else to define what the answer is.

Can I return to something Simon said? I am not particularly on Google's case, or any company's case—capitalism red in tooth and claw; bring it on—but we have to recognise that a data monopolist captures the value chain and prevents other people from accessing it. With my other hat on, that is a problem for UK companies, because if it is a Californian company that has monetised the data—

- Q38 **Paul Girvan:** They could then say, "We want to build a railway between there and there and we'll own it."

Paul Campion: That is my point. There is a public policy statement and there is an economic imperative as well behind open data. If we allow data to be monopolised by non-UK companies, all the value will go offshore. There is little or no UK employment or value-add that comes out of Google.

- Q39 **Paul Girvan:** What is the approach of MaaS with regard to data it retrieves? What is the approach to imparting that data to policymakers?

Paul Campion: Policymakers have the opportunity to create an environment in which UK companies can deliver better outcomes for travellers and potentially, with design, better systems options by making sure that no one—I repeat I am not on Google's case particularly—runs away with the data and prevents those outcomes.

The onus is the other way round. The levers are there, but if they do not get pulled, something is going to happen anyway because someone is



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going to deliver the service in the way that best suits them rather than best suits us. Apologies. I may not be answering your question.

Q40 **Paul Girvan:** You've got where I'm going. Does anyone else have any views on that?

Simon Ho: I completely agree with what Paul has said. I have nothing more to add.

Piia Karjalainen: Open data policy is a really good starting point for regulation to promote or encourage development of a Mobility as a Service environment. Again, I would like to refer to the Finnish example, because it is often cited by our members as the best example of what is happening in Mobility as a Service schemes.

There, they adapted a new transport law last year and it will come into force later this year, 2018. They made it an obligation for transport service providers to share data on schedules, prices and so on with other service providers and MaaS operators. They also made an obligation to promote interoperability of interfaces, so they now really push integration of services, to be combined with MaaS service offerings. The data tool is there now, and we want to encourage something that is easy to use as a starting point in that environment.

Chair: Data sharing is obviously a really important part. Iain has some questions about that.

Q41 **Iain Stewart:** We have touched a lot on the importance of data sharing to maximise the benefits of MaaS and, on the other side of the coin, the risks of monopoly and not sharing. I suspect there has to be a range of carrots and sticks to make sharing happen. What should those be, in your opinion?

Paul Campion: That is a really excellent question. I am not sure that I know the detailed answer. It would be more effective if there was more carrot and less stick. There is a minimum level of data sharing that has to be made to happen, to recognise the public goods and the level of public subsidy. The Government should not spend a lot of money just to create private monopolies.

We have Highways England. Perhaps we need a Highways Data England, and similarly for the devolved Administrations. Maybe for a certain amount of data, we say, "To play here, you have to make a certain amount of that data available." Clearly, we do not want to socialise all the value out of that data because no one will do anything. Everything will then be left back with the Government. We have to find a way in which we can enable companies to make money out of this.

I am dancing around the subject a bit, Iain, because it is so deep and so broad that I am nervous that anything I say will be irrelevant. As I think you may know, it is a key topic of work for us and the industry and academic partners we collaborate with. In our next five-year programme



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it is, in my view, one of the most important topics that we need to work on with UK industry and UK universities to understand. Honestly, it is so big and so deep. I apologise; that is a long non-answer.

Q42 Iain Stewart: Does anyone else on the panel have specific recommendations about the balance of obligation and incentive?

Simon Ho: Yes. In terms of stick, the open banking example, requiring all companies at least to make customers' data portable and accessible, is very different from asking them to share. Then it is the customer's decision. It is their data, after all, and they can decide who they share it with.

A future example might be if this Government revisit road pricing. Maybe it is not just about asking for money, but about asking for data for using our roads.

Q43 Luke Pollard: I wanted to build on Iain's question about who owns the data and who has liability for data. For five years, I worked in the travel industry. I got very excited about the package travel and data transfer directive. When someone sells a flight, accommodation and car hire together, who is the organiser in that relationship? Who owns the data and things like that? Effectively, it is the same parallel. It is not just who owns data but who has liability for that data, not only in terms of data protection and data integrity, but making sure it is correct and that it is accessible in the event of court orders and things like that. Do you have any views on liability with respect to ownership, or is that one of the questions we are inquiring about to which you do not know the answer?

Dr Kamargianni: This is now the most popular question on data. We do not have the answer. We might have different concepts about how it works. That is why we have the MaaS operator, who is the intermediary and provider of MaaS products. He has the data. He should probably share the data with the suppliers, the transport operators. Ideally, he should also share data with public transport authorities and whoever provides data in order for the system to work. So far we see only one-way data exchange; for example, mobility apps use open data from public transport authorities but they do not give data back to the authorities. The MaaS operator has his data, but he has to distribute the data back to the actors in the system.

Paul Campion: The issue is that it is such a deep domain, as I think you understand very well. To take a really simple journey, if someone gets in a car and drives from home to work, there is a level of data that is absolutely privileged to the automobile manufacturer. There is a level of safety data that will be passing to them, particularly as we increasingly go to connected and autonomous vehicles. There is a set of data that we absolutely do not want anyone other than the automotive manufacturer to have, because there are security concerns.



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There are sets of data relating to the nature of that journey, such as the weight of the vehicle, which could be very relevant to the person who manages the infrastructure—the actual road. There is information about the carbon emissions or other emissions from the car. There is information about the journey, which, by the way, a mobile phone operator already captures. At the first level of approximation, every journey in the UK is already tracked, every day, but that information is associated with other information about my bank details. Again, that has different sensitivity and different security. There are probably a dozen other examples.

There is information about the radio stations I have listened to which enables people to sell me advertising. There are so many different layers of data for an incredibly trivial journey. When we start talking about a pre-planned multi-modal journey that has been optimised in a particular way to my particular needs, and then in real time is dynamically changed, again the levels of data multiply almost infinitely.

That is the key thing. That is why it is so powerful but also why it is hard. My opinions are, frankly, worthless. We need to do the work and we need to run some demonstrations. We need to run some trials. We need to really understand at a very practical level how this stuff is going to work together in the very complicated ecosystems that are part of all our mutual work programmes and installations. It is really hard. I apologise that I keep saying it, but I think I am right; it really is hard. I would love there to be easier answers.

Q44 Luke Pollard: We have some of the foundation blocks already, haven't we?

Paul Campion: Of course.

Q45 Luke Pollard: I was looking at the rail settlement plan, which is the bit of the Rail Delivery Group that was created after privatisation to reconcile the different tickets that are sold by the different private operators and the half thousand different ways you can buy your ticket. Effectively, that is a resolution mechanism that is already established, so we are not necessarily creating the concept of a resolution mechanism from scratch. The liabilities are already set down in terms of holiday legislation, which I just spoke about briefly. We are not necessarily starting from a blank bit of paper in terms of regulatory environment.

Paul Campion: Let me say something that I probably have not emphasised enough. We can do this. I have said that it is going to happen anyway. It is being done and it will be done; there is no question. I am just baulking at trying to give you a crisp answer to the question you are asking, which is, where should we set the needle? The answer is "We don't know. Here? There? On this journey or on that journey?" There are answers. I just cannot articulate them crisply for you in response to the questions you are asking, for which I apologise. We will get there—no question—and we are working on it.



Q46 Iain Stewart: Just to extend the complexity if I may—this is something we touched on in earlier questions and answers—yes, we have the transport data itself, with all the areas of complexity you have just outlined. If we want to make this a much more holistic product, we are looking at getting health data, school data and local authority data. That requires an element of standardisation or interoperability, so that different people can capture that data. How do we incentivise that? What are the opportunities and barriers? Again, it has been touched on, but where is the security if I am travelling from home to hospital because I have something life-threatening, not just a broken arm, and an insurance company gets hold of some data that potentially jacks up insurance payments? There is a huge area of opportunity about risk. What is our path to try to get there?

Paul Champion: Security and privacy have to be overriding. As the Americans would say, that is table stakes. You do not get to play unless we can design that in as fundamental. We need to work use case by use case. The opportunities are potentially huge. We have not talked once about freight, because we have been talking about Mobility as a Service, which implies personal mobility, but clearly the personal mobility outcomes we get are very dependent on what else is on the road or on rail at the same time. If we think at system level, to deliver better outcomes, there are lots more pieces of data, maybe even before we get to some of these potentially very sensitive use cases. I feel I have spoken too much.

Chair: Piia, Maria or Simon, do you want to come in on the question about standardisation and regulation of data, and how we ensure that it delivers the right things? You do not have to. Iain will ask another question.

Q47 Iain Stewart: There are a number of initiatives already in place from the Department for Transport. We are going back to specific transport data. There was the bus open data project, the rail data action plan and the local transport data discovery project. What is your view of those projects? Are they just toes in the water or are they more substantial than that, and the start of a better analysis?

Simon Ho: I personally think that part of the problem is that we look at what data we can open—what data we have as the public sector, for example. That seems to be a lot of the focus. It might be looking at a certain mode, such as bus, where we are finally going to be able to find out how much it costs to ride before stepping on a bus. That is all really good, but it is not very customer-centric.

The customer holds a lot of the data we are really talking about. There is something in the way companies are responding to GDPR, where they have to understand what data they can hold and for what purpose. There is a role for Government. Not just in transport but across the whole field, consumers or customers are becoming a lot more responsible for our data, because we are beginning to realise that no one else can help us.



We are the only people who have a complete view of our needs and wants. I know that it does not quite answer the question, but data standards are very much a global thing. We really need to be working internationally to set those standards.

Q48 Chair: Do other members of the panel want to comment on data standardisation and regulation?

Piia Karjalainen: Generally speaking, I would continue with what Simon has just said about the multi-modal or user-centric approach in regulation. That would be a really good general approach if we want to encourage Mobility as a Service; not to focus on the individual transport modes, but instead try to have more general provisions covering all different transport modes, and maybe shift the focus from structures to the outcomes and impacts of the transport system. It is a similar mindset to what has been seen in public procurement when we discuss innovation procurement; public authorities do not define how something should be delivered, but the outcome we want from it. Mobility as a Service has the momentum to apply the same approach to the regulation.

Dr Kamargianni: It is very important to have international standards. We have several initiatives for different transport modes, but we should approach this as an ecosystem that includes not only buses or certain transport modes, but all the supply side, all the transport modes and the demand side. We need standards at an international level. It requires a lot of work, but it has happened in other sectors. For example, in telecommunications, we have roaming. It is an international standard. Customers go from one country to another without the need to do anything. It is important to approach all these standards from an international point of view.

Simon Ho: It is worth noting that the World Economic Forum has published an important paper, assisted by our colleagues at Deloitte. It very much articulates a need for new standards in a global mobility system.

Q49 Luke Pollard: Picking up on the global standards work, I was wondering how it fits with the IMOVE scheme from the European Union under the Horizon 2020 funding, creating Mobility as a Service on a pan-European level and how we are looking at it in the UK. Are we already looking at it behind the trend? There is going to be a market of 350 million adopting a common standard, and we will be adopting their standard after we have faffed around with ours for a bit and have had lots of up-front costs. Then we will adopt a European one. Could you articulate where you think the standardisation is coming from? Is it an industry-led thing or a bureaucratic thing? Is it Brussels led or a SEM-led project?

Simon Ho: Part of the reason we established TravelSpirit was that we felt that maybe Europe was going a bit too slow. It is really important to establish relationships with a global community. If you look at some of the strongest developments we have been making, we are now working



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quite heavily in Cape Town in South Africa where they are digitising right now, so in many ways they do not have any legacy systems or legacy ways of thinking. They are now at the forefront of greenfield development because they can be. It is important to recognise what is being developed by Europe, but also to recognise the baggage that comes with bringing the existing industry along with them.

Piia Karjalainen: Within MaaS Alliance we are currently working with the standards board on data sharing. Basically, the first step is to define what kind of data should be shared. When we have a clear idea on that, we will develop standards as an industry-led exercise.

Q50 **Chair:** I am going to move on from data and go back to some of the difficulties of MaaS. I could ask what the disadvantages are, but one of the obvious ones is the potential for people who do not have access to smartphones and digital connectivity. Are there any MaaS schemes you can tell us about that would give us examples of the way they work for people who are digitally excluded, or is that missing the point? Simon, you were talking about young people in particular, who are very tech savvy, but what about people who are not?

Simon Ho: It is sometimes really important. We naturally talk about an app as a way of making it easy for people to understand what MaaS might look like, but really what we are talking about today is creating some kind of underlying infrastructure. That can be accessed in many different ways.

Q51 **Chair:** We get the app version, but are there any concrete examples of ways that have made it accessible for people?

Paul Campion: There are examples of elements of it being accessible in different ways. Travel information is available in different ways. There are different ways to purchase. As far as I know, and we know, there are no examples of anything that calls itself MaaS that are not at the moment app and bank account related.

I personally agree with the thrust of your question. If we are to reduce social exclusion and address general accessibility issues, we have to make sure that the underlying platform can be accessed in ways that do not demand smartphones and bank accounts as the only way in. It is just an engineering problem. It is fundamentally solvable with will. The bit that makes it all work is the back end. In principle, that is accessible in arbitrary fashion.

Simon Ho: I would also highlight the good work of the Government Digital Service, where it can create a common core infrastructure to provide access to all in digital services. It has been done in other areas and there is no reason why we could not get that support for the transport system.

Q52 **Chair:** Thank you. Piia, do you have any examples of schemes that are specifically designed to be accessible for people who might otherwise be



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disadvantaged?

Piia Karjalainen: Yes. So far, the development has been heavily driven by digitalisation, smartphones and things like that. As Paul just said, it is basically an engineering problem to create new interfaces that deploy the same information and the same services as a back-up form of the digital service. To answer your question, I am not familiar with something like that existing at the moment, but I am sure that there will be something soon.

Q53 **Chair:** One of the other questions I wanted to ask was about potential unintended consequences. You probably know that in London the number of licensed private hire vehicles has risen by 70% in a very short space of time. Is MaaS likely to be offering more on-demand bus and taxi services, and, if it does that, is it likely to make congestion worse rather than better? Is that a serious concern in already congested areas, given that that was one of the potential issues that we as a country are concerned about tackling?

Simon Ho: It is probably a potential concern. That is why there is a unanimous view on this panel that Government involvement in helping to regulate the system and enabling transparency is really important, so that we can see that the overall outcome is a more efficient system and not just one that profiteers. As well as Mobility as a Service, that is going to happen anyway by 2025. Our colleagues at the Centre for Connected Autonomous Vehicles would agree that that is the sort of timeline we now have for mass production of autonomous vehicles. Again, without any common rules or infrastructure for how those AVs are going to behave, we could have a lot of unintended consequences.

Q54 **Chair:** Do other members of the panel agree? Is there an inevitability that people will demand door-to-door services, if that is what is on offer?

Piia Karjalainen: Yes, I would say that, because MaaS is often driven by business interest and commercial service provision, it is quite natural that the MaaS operator has the incentive to channel demand for public transportation. Business-wise it is often much more profitable for them to invite people to use more public transportation than any other services. Basically, the natural development is towards increased use of public transportation. Of course, the use of different shared mobility services will complement the use of public transportation, but I would not be so pessimistic maybe in terms of the modal shift.

Paul Campion: I am afraid I am pessimistic if we do not take positive decisions. It is very easy to focus on a Helsinki or a London, where there is good public transport and a set of other motivators that mean that, if you make it easier for people to hire a "Sadiq cycle," they probably will. I do not think that applies in other places, where the cycling infrastructure might not exist, for instance. We must not think that this is a magic wand. It is good and it can make life a lot easier for the traveller, but



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making it easier for the traveller is not the same as making it more efficient for the system.

- Q55 **Chair:** If you are a policymaker trying to reduce road congestion and trying to improve air pollution, would you look at MaaS or would you be thinking about other measures such as bus priority or traffic light sequencing? Or would you be looking at both?

Paul Campion: Forgive me, I think it is a false dichotomy. I have said before that MaaS is going to happen and if we do not take public policy decisions, or if as administrators we do not try to use it in such a way that we get better outcomes, someone else will use it to make money. Whether or not that is good for us as an authority or a Government will be random.

You yourself gave the example of certain companies we all know about that are flooding the streets of London with private hire vehicles, which, at least part of the time, are just circling for business. That is adding particulate emissions. It is adding greenhouse gases. It is adding congestion. That is an undesirable outcome. Yes, for me as a user, it means that I can get a private hire vehicle much more quickly. I am never more than two minutes from a private hire vehicle and that is fantastic for me, but it is a bit of a problem for the system.

- Q56 **Chair:** Are we clear about what local authorities or Government should be doing in order to ensure that we get the right outcomes, both for the individual and the system? That is the key question. Do we know what we should be doing to get what we want?

Paul Campion: I think we have some good ideas.

- Q57 **Chair:** Spell them out a bit for us; that would be really helpful.

Paul Campion: First, we have talked about open data. We need to recognise that we cannot allow the motor or the fuel of this new thing to be completely privatised. If we do, we have lost our control.

Secondly, we need to think about the system as a whole. We need to think about outcomes and not just individual journeys. We need a conscious idea of what better is. We need to be goal oriented. What is better for us, as the administrator or the authority? Is it more active travel? Is success an increase in cycling? Is success reducing journey times? Is it reducing the price or is it reducing carbon emissions? We might be able to get all of them, but we might not. How would we prioritise?

Then we need to understand, probably working with other people, the real barriers standing in the way. Why hasn't it already happened? After all, London and Helsinki have pretty much got it, so why hasn't everybody else? What has stopped us in our local area? Between us, we could probably give you quite a long list of the sorts of things it would be, but it would become quite specific quite quickly.



Q58 Chair: Do other members of the panel want to offer ideas about how we would ensure that we got the maximum best outcomes for society as a whole and not just for individual users?

Simon Ho: From my experience of working in the public transport industry and for cities, the role of the taxi and flexible on-demand transport is a bit of a missing policy gap. The sooner cities can somehow adopt these modes of transport as a positive public policy instrument rather than something that just happens outside, the better; otherwise I do not think we are going to get anywhere. These things need to be integrated. There are loads of new pop-up, flexible on-demand transport services that fill a need, but they are falling through the gaps in terms of policy and regulatory support. Cities and national Government can do a lot to provide a much more holistic regulatory environment that includes all modes of transport, not just what we have traditionally called public transport.

Q59 Chair: Is it all about cities? How does it relate to more rural areas or small towns and villages, or do we not know?

Simon Ho: If you changed the system to subsidise the person, you would get information from the electorate on what is required. If we keep on with our issues around what we are trying to achieve, which is to deal with air quality, combat inequality and support access to employment, it could look very different. That is why it is hard. When we have an inquiry about MaaS, we cannot help thinking that we have a solution looking for a problem. We have to avoid that type of mindset.

We have mentioned cycle infrastructure. It is such an obvious barrier to cycling in rural communities. You are probably aware of the silent revolution going on with electric bikes right now. It started off with retired folk realising that they could get further with electric bikes. Electric bikes can actually replace car journeys. Unlike common bicycles, they can replace a six-mile commute. There is lots of other stuff outside traditional service provision, which somehow needs to be caught up in the policy mix.

Paul Campion: To add to Simon's list, parking is the Cinderella of transport. The majority of journeys are by car. If you want to make them multi-modal, you have to enable people to know that they will be able to park; they have to know where to park and how much it will cost. You need to enable them to buy parking as part of their overall journey ticket. Parking, parking, parking.

Chair: Good. Barriers to implementation seem to be a good place to go now.

Q60 Grahame Morris: You have been through the advantages and disadvantages and, in response to Iain's question, you mentioned data sharing. More generally, what are the main barriers to the implementation of MaaS? Could you identify them specifically?



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Piia Karjalainen: Data sharing is one big topic, which we often rework and discuss.

Grahame Morris: I think Iain is going to come back in more detail on that.

Piia Karjalainen: There are some general sale restrictions, and MaaS providers have problems accessing the ticketing. Basically, in many cases transport service providers are not providing access to ticketing for MaaS service providers, so there is no chance to make integration really happen. There might be some local or regional restricting barriers for new mobility services, but there is no access to the transport service provision market. If we do not have services to integrate with, there will not be integrated services. Those three topics are the most relevant instances of barriers at the moment.

Q61 **Grahame Morris:** Is everyone broadly in agreement with the areas that Piia identified?

Paul Campion: Yes. I would add one, which I have sort of mentioned before. There is significant lack of knowledge and skills among the people making these decisions.

Simon Ho: I have one to add as well. Incentivising local authorities in cities to take risks is culturally a very difficult thing, and not something we would usually do. We usually apply central Government money and then central Government want to know that it has been well spent; even if it is devolved, we are accountable. This stuff will happen only if we can have more experimentation, so that the commercial models can be understood further.

Chair: We have to accept that some of those trials might not work.

Simon Ho: Exactly. That is the only way we will actually get an ecosystem, and companies will be able to develop commercial agreements.

Q62 **Grahame Morris:** We talked a bit about smart ticketing; you mentioned it a little earlier. When you talk about ticketing, it is smart ticketing, isn't it? That is the kind of precursor, or the stage to get to it. Simon, you were talking about legacy systems and how Cape Town is a good example, where they do not have to battle with legacy systems. I do not know who would be the best person to begin on this, but do you want to say something about smart ticketing and its role in developing MaaS systems, supporting the development of a MaaS system? You mentioned that it did not matter in Cape Town because they did not have a legacy of it, so is it not of critical importance? I am from the north-east, from a relatively rural area in County Durham, and they are moving towards smart ticketing in the big city, in Newcastle. I am not sure what that means for me in a fairly rural community. Is it an essential prerequisite?



Simon Ho: Putting my Luddite hat back on, I think that is technology taking over the outcomes we want to achieve. The problem with smart ticketing out of London is not the technology; it is the commercial agreements and the commercial model for how it can work. Without regulatory support, you could end up with a smart ticketing product, but one that retails an integrated ticketing product that is actually worse value for the customer.

Q63 **Chair:** Does anybody else want to pick up on the issue about the role smart ticketing might play as a stepping stone, or is it an irrelevance?

Professor Kamargianni: From a user point of view, smart ticketing is very important, because having to buy different tickets to access each transport mode, or having to queue at ticket machines and having different payment methods and so on, is a hassle for the user. Smart ticketing, NFC and those technologies are important for the Mobility as a Service concept.

Q64 **Grahame Morris:** Although there are other elements—commercial agreements and value for money—generally, have we got to try to get to a smart ticketing position, even outside the big cities, as a stepping stone to opening up the opportunities of a MaaS system? Or am I misunderstanding it?

Paul Campion: Smart ticketing is an intrinsic part; whether it happens first or at the same time is a different question. I have to be careful here. If by smart ticketing we just mean the piece of technology that enables us to do it, that is great. The really important thing is to have simplicity and transparency in the pricing model. One of the big issues at the moment is that, famously, on national rail, the pricing book is just too complicated for humans to be able to use. That is multiplied if you try to do a multi-modal journey and try to grapple with the bus pricing model of a particular region.

Q65 **Grahame Morris:** Then there is fragmentation, with the number of companies operating services, which are unco-ordinated, and so on. You mentioned Cape Town, but in the United Kingdom is there a particular city, such as Manchester, outside London, which is making progress on trying to integrate and develop a MaaS system?

Simon Ho: Maria is involved in a European-funded project, which funds Manchester to experiment in this area.

Paul Campion: There is Transport for West Midlands.

Professor Kamargianni: There is also Birmingham, where they have a demonstration of Whim. There is a different approach in those two cities. For example, in Birmingham, Transport for West Midlands did not have the funding to do a demonstration, so they just opened their data and said that whoever was willing could come and play, to understand how MaaS works. That was a very good example for everybody to understand



how the system works. We have a situation where the public authority is open, and there are a lot of possibilities to learn about MaaS.

In Manchester, where MaaS has a Horizon 2020-funded project, we have a different approach. Transport for Greater Manchester is the MaaS operator, but there are several difficulties, so we have another situation where everything is controlled by the city, and the city is the one that provides MaaS. Now that we are moving to the operational side, there are a lot of difficulties for the public transport authority to lead on that.

Chair: Is part of the difficulty because individual private sector transport operators can just decide that they do not want to be part of it?

Professor Kamargianni: I am sorry, could you repeat the question?

Q66 **Chair:** Is there operator resistance to being part of the system? Is that part of the problem?

Professor Kamargianni: The public transport authority already has the trust that it needed for the system to operate. On the other hand, we have a lot of operational difficulties; for example, who offers customer support? The public transport authority does not have the resources to do that. There are a lot of issues. Although we started with a different concept in mind, we see that this probably does not work. That is why we need all these demonstrations, to understand the implications of all the questions we have.

Q67 **Grahame Morris:** We are trying to set the framework for public policy, and we are trying to use your expertise to guide us down the road as to what we should be looking for and what questions we should be asking. Finally, on barriers, you kind of touched on this: there are a number of physical barriers, such as not having the infrastructure or the transport operators, and fragmentation is another one. On the one you mentioned, how can we persuade operators, particularly smaller ones, and incentivise them to participate in the scheme? How do we do that?

Paul Campion: We either have to help them to see that they can make more revenue or help them to reduce costs.

Q68 **Grahame Morris:** It comes back to the point you made earlier about the simplicity of a pricing model that they can see some benefit from themselves.

Paul Campion: Yes. I am sorry to keep on saying this, but the answer will be different in different places. It tends to be a risk-averse industry, for good reasons, because we do not want our buses to crash. Helping them to understand the commercial risk and the commercial opportunities will require experts on behalf of the authorities that want to make this happen. There are definitely revenue opportunities for many operators.



People tell you about the experiences in Helsinki where there seems to have been some modal shift, some move towards public transport. The truth is that we do not really know why that has happened, and we need to do more research to understand what has done that. We can imagine that, in a particular scenario, we can create a simpler environment and help people to gain new customers by giving them a simpler interface, a simpler pricing model and better access, and that could be a revenue upside. Or there is cost reduction; if we can show them that they can defray the costs of customer acquisition because, as an authority, we are going to take some responsibility for bringing in people, that is another thing. Those are potential carrots, and in any given situation there could be many others.

Professor Kamargianni: We can help small transport operators to access a wider market. They are on a platform that has several transport modes and many more customers, so they can cut their marketing expenses, and so on. But smaller transport operators usually do not have the data that we need to participate in a MaaS ecosystem, because we need planning and booking data, as well as routeing and ticketing data. There may be a need for the Government to support the small operators to develop their APIs, or find some way to support them to create and develop the data they need to participate in the ecosystem.

Simon Ho: Financial incentives probably work, if this is about starting to experiment and develop pilots in this area and having the willingness to fail, if they do not work. It is also about having a common, national infrastructure, and that is what we are missing. At the moment, maybe Transport for Greater Manchester will provide some infrastructure, or it may be TfL, but we have already recognised that there are many other cities that do not have that level of infrastructure.

If there could be some Government support in digital services, it could get local transport companies to be more competitive. They do not have the same access to IT as the larger companies. From my experience of developing an electronic ticketing scheme in Manchester, we found the small operators coming through very quickly, because they saw the advantage that TFGM would provide in terms of common infrastructure. It was actually the larger companies that had more problems, because they needed it to interoperate with their own systems.

Chair: That handily takes us on to the role that central Government can play.

Q69 **Luke Pollard:** I am trying to understand the role different levels of government within the UK could and should play in developing and supporting a rolled-out system. From your point of view, what role would you see local authorities, national transport bodies and national Government having, in terms of bringing forward this roll-out? You have used some examples already, but, in terms of the mechanics of how to achieve the system that we have been speaking about today, what



suggestions do you have for actions the Government could take?

Piia Karjalainen: I am not too familiar with the UK system, but I can try to figure out how it might work. Central Government definitely have a role to play on data policy, encouraging open access to data and ensuring that the data environment is safe and secure. At the more local or regional level, the Government or public authorities should play a more enabling role. For example, they should ensure that there is access to the market for different transport service operators, and that there is a chance to integrate and to have new mobility services. In that phase, we could encourage different trials to find the right business models.

To go back to a previous question about the different options, in Canada, for example, they are now studying a co-operated model for Mobility as a Service, where the risks and profits are shared between all transport service providers that are part of that value chain ecosystem. Maybe we can find different models that might work in a different local or regional scope, and then learn from the experience.

Paul Campion: That last point is a really important thing for central Government to do, but, to some extent at least, it is already happening. My own organisation, Transport Systems Catapult, receives funding from BEIS. One of the things we will do is to try to make sure that various demonstrators in the UK test out some of these possibilities. More would be better, but that is already work under way.

There are policy statements that need to be made, and some research needs to be done into specific local barriers. We could argue as to the level of divergence we want at local level for local democratic prioritisation, but understanding the things that prevent local authorities that want to do this from doing it is something that should be done.

Q70 **Luke Pollard:** To take that point briefly, do you think that means local authorities and different tiers of government investing in creating a system, or are you saying that there needs to be a point where local authorities are, effectively, enabling systems to be bought off the shelf that will fit their circumstances a bit better?

Paul Campion: I do not think we want every local authority building from a blank sheet of paper. Part of the policy-setting statement would be to define some parameters that systems need to comply with. We have already talked about data security and privacy, and that is a given, but there will be certain interfaces that at national level we would think desirable.

It comes back to the Watford problem. As a user, I would like to be able to book a through journey, please. I do not really care if all the authorities and regions I travel through use different manufacturers to produce the systems. I do not care about that, as long as my journey can be seamless. That is the distinction. Let as many local implementations



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bloom as appropriate—that is absolutely fine—but they have to work together.

- Q71 **Luke Pollard:** I represent Plymouth, where we do not have a sub-national transport authority or an elected mayor. We have a city council and that's it. How a system would benefit a place in the rural south-west, albeit an urban area, is quite a challenge. In terms of what you think Government should be enabling and creating, are we looking at different systems, or should we look at a UK Government endorsement of a MaaS system across the UK that would enable the example you gave—going from Southwark to Dudley via Plymouth—to be delivered?

Paul Campion: My preference, speaking personally, is that I do not think we want central Government to define a system, but we do want them to define a way in which a system should work. Plymouth gets to procure anything that it gets to procure, and probably gets to implement it at the rate of pace that it feels appropriate for the local community; that is its job, after all. As and when it decides to do it and to gather whatever benefits there are, it needs to work with Exeter and whatever is up the road. You get my point. We need to be able to ensure that journeys can be seamless.

- Q72 **Luke Pollard:** I realise that you are answering more of the questions than the rest of the panel. I apologise. Apart from funding, which Government could provide, we have talked about standard setting and enabling. Are there any other roles that the Government could and should be playing in this emerging area?

Simon Ho: Providing a lot more clarity around the regulation for taxis and flexible on-demand transport is really important, because there is a big gulf, and lots of the innovation is falling through the gaps. That means, quite frankly, that the only people who can innovate are some company in California, who can make it up as they go along.

The other thing is the idea of an open mobility framework. That is very much the idea; not specifying or building a system but giving us how the system should operate. There should be some clear business rules and expectations for commercial companies in this domain. I would define a transport company as any company that seems to hold valuable data about how people travel. You will need to bring some of the Googles and Ubers into this conversation and say that we want transport systems to be interoperable. We want to have customers' data and transaction history—the analogy with banking history—and we want that data to be portable, so that the customer can elect to share it with Government or a city. At the moment, TfL has invested so much in its open data programme, but does it receive back all the data from the very companies that have gained value from it? No. There are many things that cities do not have the clout to do, which we need national Government to reinforce.

- Q73 **Chair:** So that you have reciprocity.



Simon Ho: Yes.

Q74 **Luke Pollard:** I have one quick final point. Summarising what you have just said, apart from funding and standards, do you think that setting a clear aspiration and vision for where we need to get to is something that industry and people such as yourselves who work in the sector would benefit from, in terms of the Government setting out their vision of where they see this going?

Simon Ho: Yes, it is for the Government to show leadership for the transport industry. The Transport Systems Catapult highlighted 18 months ago what the actual value of integrated transport is to the UK economy, and I think that says it all, but individually transport companies will not get there. We need some strong leadership from Government to outline how we are going to get there.

Paul Campion: There is a vehicle right in front of us to do that, by the way. The industrial strategy has as one of its four grand challenges the future of mobility. There is the opportunity right now to have the debate in Government and through industry and communities as to what the future of mobility is. What do we want?

Piia Karjalainen: I have one thing to add as a task for central Government. I do not know what kind of incentives there are within the UK transport policy system, but I come from Belgium, where there is heavy financial support for the use of company cars. We have been trying to discuss with Belgian policymakers the idea that, instead of incentivising, supporting or subsidising the use of company cars, we should incentivise the use of mobility packages, whereby the user can decide for him or herself what kind of combination or different modes he or she would like to use. If there are different kinds of incentives within the transport and mobility system, we should streamline them and, in that way, enable Mobility as a Service.

Q75 **Luke Pollard:** That means tax incentives as well as funding incentives.

Piia Karjalainen: Yes.

Professor Kamargianni: We need funding, but usually funding is just for a specific purpose—only for technology or for data. We need funding to start this as an ecosystem, and at the same time find the requirements of transport operators and customers for technology and policy. All those actors have different priorities and interests, and we have to study them all together to understand them and make a consensus.

Paul Campion: Can I make just one point on the financial incentives? It is a well-known fact that fuel excise duty raises an amount of tax roughly equivalent to the budget of the DFT. When we are successful in decarbonising transport, that will go away. The power is reserved to the Treasury as to how that gap gets filled, but it is another potentially very significant financial lever that could be pulled.



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Q76 **Chair:** We have the very clear view that Mobility as a Service has the potential to be absolutely huge and transformative, but we need to shape it to suit our ends as a society, rather than letting it develop in its own way.

Paul Champion: Fourteen per cent of consumer spending is £100 billion a year or more. If that all went to Mobility as a Service, it would be a massive industry.

Chair: Do members of the Committee have any further questions?

Iain Stewart: Lots, but not for now.

Chair: Then I thank our panel very much for coming this afternoon. We can now release you.