

## Approaching MaaS – Transformation in Mobility through Volatile Times

**Deeshraf Elias**, Podcast host, Deloitte Mobility Ecosystem Manager

**Andrey Berdichevskiy**, Director, Future of Mobility Solution Centre, Deloitte

**Johann Jungwirth**, Vice-President of MaaS Operations, Mobiley

**Andreas Herrmann**, Professor & Director for the Institute of Customer Insight, University of St. Gallen

**Deeshraf Elias:** Could the future of mobility lie in shared modes of transport rather than personal vehicles? If the success of Netflix is any indicator, the future of urban mobility might very well be centred on shared transportation. Also known as mobility-as-a-service, MaaS relies on digital platforms and big data to integrate end-to-end trip planning, booking, electronic ticketing, and payment services across all modes of transportation, public and private. MaaS models are forecasted to empower a new reality for urban mobility by ensuring equity and reducing traffic congestion, helping cities all over the world achieve their social and environmental goals. Today, we discuss mobility-as-a-service.

Welcome to another edition of our Future of Mobility series, bringing you the top voices from the sector - decision-makers, innovators and shapers pushing the envelope on future ideas

for transportation and beyond. I am your host, Deeshraf and today, we are joined by Johann Jungwirth, Professor Dr Andreas Herrmann and Andrey Berdichevskiy. Johann brings a strong track record across multiple stakeholders of the mobility ecosystem – from technology, over premium and volume automobile manufacturers, and is now working for the innovation leader in ADAS and autonomous driving. Professor Dr Andreas Herrmann is the Director for the Institute for Customer Insight at the University of St. Gallen and a visiting professor at the London School of Economics Cities. Finally, we also have, joining us today, Andrey Berdichevskiy who heads Deloitte's Future of Mobility Solution Centre in Singapore and was previously leading the Urban and Autonomous Mobility Practice as well as the Automotive Industry at the World Economic Forum till the end of 2017.



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Hi everyone – welcome to the podcast! I would like to first start with a brief introduction. Andreas, you've been very active in applied research on urbanization, city planning and new mobility. Could you please tell us more about your field of work?

**Andreas Herrmann:** Well, we observe a tremendous trend in the cities in our world. Cities such as Delhi, Shanghai, Mexico City, Dhaka, Cairo and some other cities. Between 1000 and 2000 immigrants arrive per day looking for jobs, education, health (and) apartments. Infrastructure in those cities is not able to handle the number of people so we see congestion, air pollution (and) accidents. A lot of scarce space is needed to be devoted to infrastructure.

There is a tremendous need to rethink the way we consider mobility. Cars are fine but it is probably a very inefficient mode of transport. We know that on average, 1.5 passengers are in a car and each car is only used for 55 minutes per 24 hours so rethinking mobility means to question car ownership and find new ways to improve car efficiency. That is the main topic I'm working on and I want to contribute to execute these ideas; to execute some kind of mobility revolution.

**Deeshraf Elias:**

And Johann, you've worked across multiple stakeholders of the mobility ecosystem – from technology, over premium and volume automobile manufacturers, and now you are working for the innovation leader in ADAS and autonomous driving. Tell us a bit about your experience working in the space of mobility-as-a-service.

**Johann Jungwirth:**

Yes. I've been very fortunate in the last 10 years to work in this field with Mercedes Benz and

also with the Volkswagen group and now at Mobileye. I'd have to say, it's quite exciting to see what we will be able to do actually once we have self-driving vehicles.

For me, that's really the beginning of mobility-as-a-service; to be able to offer mobility also to people who have accessibility needs. For example, people with wheelchairs, people who have visibility impairment. It's really, for me, something that reminds me of the invention of the automobile. Back then, 130 years ago, when we went from horse-drawn carriages to automobiles, that's how it feels; that's how this next transition will be: from what we know today of a car you drive yourself or you call, maybe with a ride-hailing app, and then going to self-driving vehicles.

**Deeshraf Elias:**

And finally Andrey, for the past 3 years or so, you have been based in Asia. What are your thoughts regarding mobility-as-a-service offerings in Asia and their feasibility in the region?

**Andrey Berdichevskiy:**

Thanks, Dee. You know, the beauty of Asia for me lies in the uniqueness of its diversity. I think as unique as the countries are, representing some of the oldest cultures, philosophies, and sciences in the world in Asia, as unique their mobility systems and the problems that come with them. So you can think about topics like managing very complex two-wheeler populations in Southeast Asian countries or managing air pollution and congestion caused by cars in countries like Malaysia and China. Or driving for solutions for elderly populations in Japan, Korea. Or building greenfield new city developments in China, Philippines and Indonesia, up to really addressing the topic of space constraints in Singapore.

All of them seem to be very different but they are unified by the pursuit to make mobility more inclusive, more environmentally friendly, more efficient, safer and economically-viable which also comes from a mobility-as-a-service concept.

Now, I think Asia is unique because here, the consumers are very open, no matter if you look into Thailand, Malaysia or China, to really adopt new technologies very quickly and leapfrog new technologies and also to share their data if they see a benefit to their mobility patterns. That makes, actually, the applicability of integrated mobility, very very probable in these geographies, where we also see first pilots coming up in the countries.

**Deeshraf Elias:** The COVID-19 situation has created a challenging climate for MaaS and traditional mobility services globally. I wanted to hear from each one of you on what are some of the impacts you are seeing in urban environments and how do you see mobility players mitigating the impacts of COVID-19 that we can learn from. Perhaps we can start with you, Johann?

**Johann Jungwirth:** Yeah, so what is interesting actually to see is that, of course, the whole economy is impacted right? And public transportation is down and people need to stay at home so there's of course, at the moment, very little need for transportation in general. That said, I have seen a lot of requests around the world if mobility-as-a-service or transportation-as-a-service even for goods would be available today based on self-driving vehicles. The need is gigantic because at the end of the day, with the physical distancing, staying 2 metres apart from other people, it's technically not possible if you have a human driver. So taking the human driver out and being able to offer an individual or a family to get from point A to point B with no one else nearby or in the same cabin would be huge. And the same goes for transportation of goods.

Unfortunately, we are not completely there yet at the moment. We are still in the development phase and proof-of-concept phase but I actually foresee that in the future, based on this experience, there will be even more pressure to get this to market safely and rightfully. It is quite interesting how this situation will push this technological shift and revolution.





**Deeshraf Elias:** And what about you, Andreas?

**Andreas Herrmann:** The immediate reaction here in Central Europe is that people hesitate to use public transportation modes. They stay at home and use online devices as Johann pointed out. By the end of this year, we will be back to normal, meaning people will fall back to their established mobility habits. Yes, COVID-19 might slow down the idea of MaaS a little bit, but the transportation problems around the world will not disappear so MaaS will be back on the agenda.

Any crisis is also a chance to do things differently in the future. As Johann explained, autonomous driving would be very helpful these days. We could isolate people in specific vehicles. We could offer different forms of transportation so I think MaaS will be on the agenda once the daily hectic of COVID-19 is over. I see a bright future for this idea, and this concept and technology.

**Deeshraf Elias:** And bringing it back home to Asia, Andrey, do you have anything else to add?

**Andrey Berdichevskiy:** So what happened is that we put the economy to sleep collectively across all countries. However, most governments did not think about how to wake it up again. The question is, who will be the first one to re-bounce?

Now, making predictions today is very difficult but what we did at Deloitte is that we partnered with Salesforce on scenario analysis. And one of the scenarios we defined is called "Sunrise in the East". It assumes that Asia will recover from the COVID crisis first and also from the ongoing second crisis, which is the economic crisis. Asia will come up with innovative solutions, invest in new topics, including mobility, which then can be adapted by the Western countries in a collaborative approach.

My hope is that some of the topics we have been working in Asia before the crisis, like for example, the establishment of alternative drivetrains, like mobility pricings, like new materials and technologies for a safer environment, will actually be adopted quicker and then become standard across the globe.

**Deeshraf Elias:** Andreas, building on top of what was already mentioned, do you think the COVID-19 situation will have a long-lasting impact on consumer's receptivity towards MaaS business models or is it more of a short-term impact?

**Andreas Herrmann:** Well, I think we experience COVID-19 as a shock but in the medium-term, I think we will definitely recover. But we should make some conclusions and we should learn from this crisis. I read a very exciting study from Harvard Medical School saying that exposure to PM2.5 (which is fine

dust in the air) is one of the major drivers of corona deaths. Maybe, one learning can be that we reconsider problems like congestion, air pollution in cities, rethink mobility and go on a track towards autonomous driving, more efficient driving, and mobility-as-a-service and other relevant topics. That's my hope related to COVID-19.

**Deeshraf Elias:** For a long time, the focus has been on the technology and technical aspects of autonomous driving. Johann, I wanted to hear from you, what has changed, and why is MaaS now the new focus?

**Johann Jungwirth:** I think at the end of the day, with most S-curves and big innovation cycles, eventually, once the technology is solved, it really is about the user experience. It is about what we can do for the individual, what we can do for social aspects. For me, it is a massive opportunity to actually make cities clean and quiet. Electric vehicles, which I suspect most self-driving vehicles will be based on electric powertrains, are really important to make cities clean and quiet.

I have, myself, small children and I just love it, being basically on the side of the road with the stroller and not having cars with loud engines driving by and waking up the little ones. Of course, having clean air and safety are also big aspects. When I look at 92% or so of all the accidents being caused by us humans as drivers; falling asleep, drinking and driving, texting and driving, and so on. Looking at the statistics, we know that at least 81% - 82% of these accidents can be immediately solved with self-driving vehicles, another aspect that is very important.

And then with accessibility, as mentioned before. That's very close to my heart. I personally like to call it inclusive mobility. This

is what it's all about. I actually have a family member, one of my nieces, who has some mental impairment and my sister basically has to drive her to all places because she would just never be able to have a drivers' license. They can't wait for self-driving vehicles or mobility-as-a-service based on self-driving vehicles to become available to grant them the freedom to move; that's basically one of those core things; freedom of mobility, freedom of movement which I think is a basic human right.

**Deeshraf Elias:**

Moving on to you Andreas, I understand that you are writing a book about mobility-as-a-service. Do you think that MaaS models are a step forward towards more sustainable development in urban cities?

**Andreas Herrmann:** Absolutely, I'm certain that we need to rethink transportation. The do-nothing scenario is that we would double the number of miles driven from 2015 to 2030. If we allow things to happen, many cities will die in traffic. MaaS is, in my view, the most promising approach to reduce congestion, emissions, and accidents if we think in term of autonomous driving, and land use. This is the reason why Johann and myself are working on this book.

**Deeshraf Elias:** We are starting to see a growing trend of co-opetition. For example, OEMs are cooperating with ecosystem players to implement smarter mobility solutions. How important are collaborations between various sectors and industries for implementing MaaS initiatives? Johann, maybe you can weigh in on this?

**Johann Jungwirth:** Yes, I think it's very very important and I think it's important, not like with other technologies and other innovations that we have seen where it was sufficient to have technology players collaborating,



refining standards and bringing the innovation of products based on these standards to market. Mobility requires partnerships and relationships and collaborations across the board; between technology companies, between governments, between municipalities, metropolitan areas, travel agencies or transit agencies or public transportation. I have to say, that's fascinating and it brings the community together to solve the challenges.

**Deeshraf Elias:** Andrey, you wrote an article about this and I wanted to hear from you, particularly through the Asian lens, how is this panning out?

**Andrey Berdichevskiy:** Well, I think, first of all, complex topics in mobility like the mobility-as-a-service concept or further integration into a mobility operating system in cities cannot be solved by one player alone. It is an equation of infrastructure companies, automotive companies, governments, local and national

level, energy companies, insurance companies, telecommunications companies, technology companies and so on, all working together across start-ups, established companies, scale-ups. The reason for this is just sheer complexity.

If we look into the Asian example, the key pre-requisite for mobility-as-a-service is data sharing; having a pool of data where all the actors in the ecosystem have regulated access. I think, in my perspective, the model should be that there is an independent third party which can monitor the data usage without a vested interest so that third party cannot be an operator; it has to be someone that really takes care of the data as an independent broker; a mobility broker who can then allocate the right data to the right participant in the ecosystem. There might be different approaches there as well. But in the end, I think Asia is uniquely positioned because like I said in the beginning, the customers are much more open to sharing their data and we have countries, again very

diverse environments, but we have countries where data regulation has been quite open and with that, we have seen new models of data sharing, connected applications, digital services for mobility, super apps evolving at a much faster pace and leapfrogging everything the West would do in response.

We have seen here in Asia, because of the usage of data and willingness to share data, a much higher innovation pace, which I also think we will see in integrated mobility ecosystems and mobility-as-a-service solutions.

The second point is the integration of payment which, of course, is also based on data, but then it also requires standards. Again, with the leadership of China, vastly followed by Southeast Asian countries, we have seen the integration of digital payments here evolving much faster which I think will be important to bring this ecosystem together and not only offer a solution but also to bring different vendors and other applications on this platform to integrate the different solutions in the mobility-as-a-service ecosystem.

**Deeshraf Elias:** With the MaaS market set to grow exponentially over the next five years, Johann, what do you think are some of the most important considerations governments and transportation agencies should take note of when it comes to implementing MaaS initiatives of the future? Do you think the approaches differ between transitioning from heritage mobility systems and planning for greenfield approaches?

**Johann Jungwirth:** I think, first of all, it's important to look at what mobility-as-a-service actually means in terms of execution. There's a model with 5 layers for this and I want to go through that quickly.

So layer 1 is basically the technology and building the self-driving system stack with sensors, hardware computes, software, AI, and services. There's of course, a set of companies working in this field.

Then there's MaaS layer 2 which is the self-driving vehicle itself; integrating the self-driving system into these products and there will be different kind of products from self-driving taxis to passenger car-types of vehicles, all the way to SUVs, to vans, to shuttles and buses and trucks eventually and so on.

Layer 3 is also important. That's basically the whole fleet operations. You think about rental car companies, think about the service hubs in each of the municipalities, in each of the cities, so looking at the cleaning, the charging, the parking, the maintenance and the repair and all of that so looking at it from the municipality-side, that needs to be solved locally. There are public transport operators or agencies that do some of that work for like, buses today.

MaaS layer 4 is basically the mobility platform and the services of the app; basically customers, multimodal platforms, payment and ticketing and all of that.

MaaS layer 5 is basically about the content and the advertisements and also looking at what people do at these modes of transportation: from being productive to you know, gaming, shopping and all of that so I think regulatory aspect is important but also looking at which licenses are required and what is actually given to which types of entities and how are these collaborations working.

**Deeshraf Elias:** And Andreas, expanding on the question I've just asked, with cities transitioning towards smarter forms of mobility,



what considerations do you think cities should keep in mind with regards to customer-centricity?

**Andreas Herrmann:** Even the best technologies can fail if people do not accept or learn how to use it. The MaaS concept needs to be designed in a way that it is intuitive and easy to use; so meaning easy to pay, easy access, permanent availability, and different types of vehicles for different purposes. At the end of the day, we need to be aware that some travelling habits need to be changed. The car industries and mass manufacturers did a great job within the last decade to explain that car ownership is necessary for many purposes, not just for travelling. It is also for social respect, for interacting with other people, for demonstrating social class and things like that. At the end of the day, it is a combination of sticks and carrot which needs to be put in place for MaaS transformation and I see many good examples, especially from Scandinavian cities, from Asian cities exactly going that way, offering incentives for using other mobility concepts than cars and also providing incentives and establishing sticks such as reducing the amount of parking space as Copenhagen and Stockholm do, or having road chargers like London is doing it.

We see a combination of different measures and different politics to make sure that people find their way into the new world of mobility.

**Deeshraf Elias:** With rapid urbanization being a pertinent problem in many developing countries, I wanted to hear from our guests today: do you think MaaS is a realistic solution for cities and regions that are undergoing rapid development such as in Southeast Asia? Andreas, what are your thoughts on this?

**Andreas Herrmann:** Let me be bold. The way we organise transportation these days around the world cannot be more inefficient. In order to bring cities forward, especially these growing megacities in Asia, we need to rethink transportation from scratch and mobility-as-a-service is definitely the one important piece of the puzzle.

**Deeshraf Elias:** Andrey, you have lived in Asia, America, and Europe for extended periods of time. Based on consumer patterns and governmental support, where do you see the future of MaaS being realised? And which regions are closest to achieving that in your opinion?

**Andrey Berdichevskiy:** I think it's very difficult to predict and I think we will see different elements in different geographies. Given the current situation, I can see that it also depends on where the investments will be triggered first and where the governments and the private-sector players are bold enough to go into collaborative approach but also to invest in the future.

The regions where collaboration is more open, where the governments and the policies are more agile, and where the consumers are more receptive to new technologies and saying: "let me try something out". So not established too much in their traditional patterns saying: "I have to have a car because this is the place where I store my golf clubs or I need a car to go for grocery shopping." These are the places which will evolve faster and of course, also the places where the capital is at scale and where governments in the current situation make very bold decisions to invest in the future.

**Deeshraf Elias:** I want to wrap things up by asking a question to each one of you. Johann, maybe we'll start off with you. From a personal



standpoint, what is most exciting about this space and what keeps you up at night?

**Johann Jungwirth:** Basically making mobility safe, making it clean, making it affordable, accessible, and actually also convenient. This is what it's all about and I actually do believe we will see this in the next 2 to 5 years and it will be an exponential curve because it is powered by exponential technologies and it's quite exciting actually. I can't wait for this to happen. The team here, we all are a part of this.

**Deeshraf Elias:** And Andreas, when can we look forward to the date of publication of your second book? Do you have any teasers or insights from the book to share with us?

**Andreas Herrmann:** Well, it will be launched next year and Johann and I hope we provide a comprehensive concept for MaaS and hopefully we can provide a convincing story, convincing case for this transportation revolution. We will

also showcase the opinions and positions of leading stakeholders in the book to get a very broad range of insights and for this reason, I hope to be able to carry out an interview with Andrey at some point in time to learn more about his insights on MaaS in Asia.

MaaS is not only about improving life in cities. We have to be reminded that the transportation market is the 3rd largest single market worldwide and this market is in transformation. We want to be part of it. We want to shape it. We want to show how to make best out of this transformation, that's why I'm so excited about this.

**Deeshraf Elias:** And finally Andrey, with the work at the Deloitte Future of Mobility Solution Centre, what are you most excited about for the future of mobility?



**Andrey Berdichevskiy:** I'm most excited about my work. We define the mission for our centre as igniting collaborative shifts in mobility which means we are really co-creating the future with our partners and clients. We are not in this alone and we are at the edge of designing the most advanced digital solutions for mobility and it's just exciting to work with smart people, with very genius and highly motivated people both internally and people who partner with us on this.

Personally, I'm excited about culture change. I believe that people will be much more conscious about how they live and part of it is also about how they move. Also taking into consideration that the choices they make are also not affecting their personal lives but us as a collective society; as a collective community and I hope that we, also with the current situation, don't forget that there are crises which we face and have been facing before the pandemic like the environmental crisis; that we don't stop acting on this but intensify acting

on those issues and find a collective solution for humanity. Because don't be fooled, it's not an issue which the planet is facing. It's an issue which humanity is facing and the planet is giving us a very clear sign that it can survive also without us. We need to come together as humans and mobility will be an important part of it to say how can we exist and thrive as collective humankind.

**Deeshraf Elias:** Well, that was a fascinating discussion. Thank you once again, Andreas, Johann and Andrey for coming onto today's podcast.

And that's it for today's episode of our Future of Mobility series. If you want to comment on this podcast or the topics covered, you can send us an email at [seapodcast@deloitte.com](mailto:seapodcast@deloitte.com). That's spelt S-E-A podcast@deloitte.com. Also, don't forget to subscribe to our podcast to get the latest episodes – we are available on Apple Podcast, Google Podcast, Spotify, Soundcloud and Stitcher. I am Deeshraf and until next time.

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