



Episode 5: Autonomous Vehicles

I'm Kevin Chambers, Technologist with NCMM, The National Center for Mobility Management. And this is Conversations with Leaders, a podcast funded by NCMM. Check out all our resources, aimed at mobility managers, at nc4mm.org.

Today we bring the final segment of the three-part interview I held with Carol Schweiger. In this final part we talk about the white paper she recently authored regarding Automated Vehicles. Carol is the head of Schweiger Consulting based in Boston. Carol has been supporting transit agencies around the world for over 40 years and is nationally and internationally recognized in transportation technology consulting. Her wide-ranging and in-depth expertise is in several specialty areas, including technology strategies for public agencies, public transit technology, traveler information strategies and systems, and systems engineering. Now on to part three of the interview, where we talk about automated vehicles.

Let's talk about AVs. Let's talk about automated vehicles. So you know, open data has been in broad use for four years now. Mobility as a service, we're starting to see it in some places. But it's still very early days, as you as you said, and AV's are probably even more so right even more early or you know characterize it yourself, how would you say the that were AVs are for transit.

Carol Schweiger: So the way the way that I look at it is there have been a lot of pilots of AV|s being used mostly in a shuttle kind of environment, as a shuttle, and not so much within a public transit operation, where they're used on a particular route. Or, you know, I have referred in that white paper to a project in Europe, where they actually did put AVs in operation within a transit environment, so not as much of just the shuttle service. But more so in that transit environment. And in doing that, some really good things have happened from that technology aspect, where we know that it's possible to put AVs in service. But that's the one element we have not done a lot of real work with in a transit agency structure.

Again, it's mostly been low speed shuttles. And that's great because we needed that first. But then how do you incorporate a true automated vehicle in transit service. And that's something there was a study done by UITP where they actually put together some guidance as to what do you need to consider if you are going to put an automated vehicle in real transit service.

One of the biggest projects in North America to do that is in Jacksonville, Florida. They specified a vehicle for regular transit use, they intend to incorporate it into the transit network as you would any other type of vehicle. And I think where you know, we're looking at that, which is a very comprehensive project, to see how that works, as well as the project in Connecticut, where they will be using full size, automated buses, first, on a bus way, which is part of the transit network and part of Connecticut already. But there'll be testing it there first, which will then be able to at least give us some recommendations as to how we would incorporate that into a bigger transit network, and sort of move away from these pilots shuttle system. But you've got to start somewhere. And I think that's been that's been very, very popular.

I think the other aspect, given COVID, is being able to use low speed automated vehicles, to do some work that people might have done before. So there's some examples in the white paper of food delivery, right? medical, whether it's testing equipment, or it's tests that need to go to a facility to be analyzed, whatever it is, they can do that in an automated vehicle with no, you know, no person needs to be involved in that.

But let me throw out just a little bit of an aside when I talk about automated vehicles in true transit service. We are talking a lot about making those vehicles accessible. But very honestly, in the industry, that continues to be an afterthought. The companies that are developing automated vehicles, want to get their designs down on paper. And after the fact, someone says, "Is this vehicle accessible?" And if it's not, how can you possibly put it in real transit services, we have to meet the Americans with Disabilities Act. And we can't be putting vehicles on the street that are not accessible. However, making an automated vehicle accessible means a lot of different things. It's not just can somebody physically board the vehicle. It's a number of other things about the vehicle, and about how that individual will be able to communicate with a system or an individual as they're traveling. And that's often an afterthought as well.

Kevin Chambers: Right? I mean, the number of things that are trying to be accomplished in what we're now calling AVs is significant. And you know, it's interesting that this all gets packaged under the term of AVs but we've had automated vehicles for decades. We've had elevators, which are automated vehicles that travel vertically in generally private space, you know, privately operated buildings. We've had automated trains for decades, there's the SkyTrain system in Vancouver, BC, as well as the many sort of airport people movers across the world. And what we're talking about with AVs when we use that acronym now is generally we're talking about rubber tire vehicles moving in public space, in space that is mixed with pedestrians, other vehicles. And we're wanting to do that while making the . . . so I'll digress for moment . . . it sounds like the project in Connecticut is largely targeting a bus lane. Is that what you were saying a moment earlier?

Carol Schweiger: Yes, it is starting in a busway, because frankly, it's going to be easier to test the features of that full size vehicle on a bus where because obviously it's just relegated to that particular environment. The project in Europe, the acronym is Fabulos. And that's in the white

paper. All of those were in real traffic in shared space. All of those operated in different cities, towns, different sort of geographies. But those were all in real traffic, they were not in a separated guideway.

Kevin Chambers: Got it. And so, you know, when I start to like, inventory, all these things that are trying to be dealt with all at once, both, you know, the shared space being in rubber tires as opposed to a fixed guideway, and then having a system that is readily accessible to a full range of users—that's expected with public transit—people who can roll out of the vehicle, people who may have visual impairments, hearing impairments, cognitive impairments, people who are maybe fragile in some way and need support under a number of circumstances, how are they going to get support? So when I add all those things up, and you say it in your white papers, that having all those things in place, we're not close.

Carol Schweiger: I agree.

Kevin Chambers: And you make that pretty clear in your white paper. So my question to you is, what should a transit agency that's in a small urban or rural context, what should they be planning for? What should they have on their radar? What are their next steps as this rolls along?

Carol Schweiger: Yeah, I think it's important not to lose sight of it, even though it's not readily available today. But I think folks in transit agencies should be looking at where automation could really provide a better service than what they are providing now, in all of these aspects of automated vehicles that that you and I spoke about, will be coming along in the following years. But there are certain environments where those automated vehicles would probably do a much better job, then the way we do things now, and also, potentially at a cost that might be a little bit lower than it is right now as well, when you look at our sort of traditional on demand services, they tend to be more costly, for obvious reasons. A lot of that is labor.

So in that sense, having automated vehicles, on your radar, I think is still important. Because there may be an aspect of your service area that either you've not been able to cover at a reasonable cost. And somewhere down the road, you might want to replace that service with an automated vehicle, for example. I think that's kind of the aspects of what people should be looking at, because probably most of the transit managers that we know, are probably not going to be the transit managers necessarily, when automated vehicles are here for us. And you know, the robo taxi is going to pull up to my front door. I think that's way off. And I also think, a number of very, very talented researchers have been looking at really, what are our barriers. It's not just making those vehicles accessible. It's also still working out the technology that they can be operated safely.

I just think in in the transit environment, there's a lot of potential for automation. If you go way, way back to, again, the Urban Mass Transportation Administration, and the downtown people mover program, which was something very, very new and different, but it showed us a lot of things about in that case of fixed guideway automated system. But it taught us a lot about what are some of the things we should be thinking about with automated vehicles. But again, I think that

focus on what services could best be provided by an automated vehicle is either a service that maybe is you're providing now, and not economical, or service you'd like to provide, but you can't, for a variety of reasons, for numerous barriers. And frankly, we also don't have a lot of vendors in this space, we have a fair number of vendors that build the vehicles, but to bring in the actual public transit aspect of a vehicle is fairly complex. And it actually goes into the institutional aspects of transit. Because if you have a unionized workforce that is operating your vehicles, there are aspects of automation, that will have to be negotiated.

Kevin Chambers: They may displace some roles, they may create new ones. And so what's gonna happen to those roles that shrink in number? What's going to happen with those new roles? Are those going to be unionized, for example? Or what's the compensation or conditions of work going to be for those people? Yeah, those are big questions.

So one thing I hear is that, if you have a viable service, don't be looking to replace your viable service with something that is automated. But if you have a service that's not very viable, or you are not performing a service because it's certainly not viable, then those may be the sort of the edge cases where down the road, keep an eye out for where it may be possible to create a new service that you couldn't have had before. Or to make something more sustainable by bringing in automation. And it sounds like also, just from what I've heard, and if you could speak to this, , there's been a focus on low speed trips, that doesn't sound very viable in a rural context? And I know a lot of small agencies are serving rural populations. Do you see on the horizon at a time when rural automated vehicles are viable? Do you see that within 10 years?

Carol Schweiger: Maybe within 10 years. I think one of the biggest issues that I've had discussions with people in different groups about just the rural environments alone, unpaved roads, no real landmarks, operating in, for example, tribal lands, where there may not be a lot of infrastructure there, I think those are very, very challenging cases. I do think down the road vehicles will be built to be able to overcome some of those sorts of barriers. I'm not sure if that's within 10 years. I also wanted to mention that another and maybe this isn't exactly an edge case. But where you have a transit route, if part of that route, could be automated, that's also another way to look at the use of automation, is if there's a way to break up a route. And part of it is automated, that could also be viable. And I know there are a number of agencies sort of looking at those, as well. But I think within a 10 year time frame, the robo taxi is not pulling up to my front door quite yet. But I do see automation being used in a very small scale in a transit environment. I don't know that that will be more than low speed. However, I'm not sure about that. The only sort of higher speed example is the Connecticut project that's just getting underway with a full size bus. And operating it both ways speeds which are way above low speed shuttle.

Kevin Chambers: That concludes our 3-part interview with Carol Schweiger. Thanks for listening!

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