

Public Transport Re-imagined: Making Smart Cities Smarter



When asked about the future of our cities, most people think of flying cars, robots, autonomous vehicles, and instant gratification making things available with a click of a button or a snap of the finger. Smart Cities is no longer a new concept, and as we progress closer and closer to the smart city reality, are we pushing the boundaries of what's possible? Are we, in the public transport community, pushing mobility forward to a point that will make these dreams a reality?

Mobility is no longer just about a bus, a tram, a car, a bike, or someone walking. In the past, these modes were mutually exclusive from one another. Now, things like Mobility as a Service fill our dreams of what could be. And seamless mobility is one of the main benefits of the smart city concept. Are we doing enough to make sure, as new technologies start integrating with our cities, they aren't falling to the same unfortunate trends of our cities of today? If we're not careful, we'll end up with flying car traffic jams because we haven't shifted our mindset to cope with the fundamental problems currently plaguing our cities. We need to shift our mindset around public transport, what it means to be mobile, and how a smart city will help. We need to re-imagine public transport to make smart cities smarter.

A Look Into the Past Before We Can Predict the Future

Public Transport used to rule the road. The streetcar/tram was the livelihood of the city, and cars were an afterthought. The need for space pushed people to suburban areas. The assembly line made the personal car more affordable. Then trams/streetcars started getting ripped out of most cities. Public transport became the second choice. Less public transport meant more cars, more cars meant more traffic, more traffic meant more roads (highways), more roads meant more cars, which meant more traffic – an endless, inefficient, and vicious cycle.

Making Smart Things Smarter

It's not all despair and worry in the field of public transport and smart cities. Quite the opposite actually – the future appears bright. Newer and better technology is entering the world every day. Things like:

Machine learning and artificial intelligence are changing the software you use, making it smarter so you can better operate your systems.

Automation makes your jobs easier as you use things like **intelligent decision making**, so you can focus more on the bigger picture projects.

Robotics and quantum computing further the ability to offer better services.

Blockchain has the potential to change the security, traceability, and anonymity in the way you move people.



Digital twins create a digital replica of your passengers and the residents of your city, and are a great way to plan your network, create simulations – adding in what-if scenarios – in a way to build the future of a city or transit infrastructure. This idea is, essentially, using real people to see how residents move throughout the city or your authority.

Virtual reality – can build upon the simulation and what-if scenarios.

Augmented reality (AR) – the ability to view digital overlays within the real world, has great opportunities from a workforce and public perspective.

- **Workforce perspective** – your workforce can use this for training, but the more interesting aspect surrounds maintenance. Imagine putting on a pair of glasses and being able to see all the different components. Working in conjunction with your asset management software, you can know exactly which part needs to be replaced, and the AR can guide you to fix that part.
- **Public perspective** – the public can use it with navigation and information finding during trip planning. Instead of following a map, arrows or lines guide you to the stop, with a digital sign letting you know when the next bus is set to arrive.

What Could this Look Like?

Imagine, if you could, waking up on a Saturday morning in Stockholm and deciding, on a whim to head to Gothenburg for the day. You start to get ready and order a trip on your phone. Within a few minutes, an autonomous vehicle (AV) arrives to pick you up. You hop inside. You realize that you forgot to eat breakfast and would like to before the journey begins. Mid-trip, you adjust your trip plan to stop by and pick up some fast food breakfast before you go. Now, you're back on track and get dropped off at the Hyperloop stop. On you go, and within ~30 minutes you are in Gothenburg. Your door to Gothenburg was 50 minutes (that included the breakfast detour).

You spend the day biking or scooting around, finding and paying for these modes using the same app that you used to order the AV earlier in the morning. You check out the Gothenburg Museum of Art hopping on and off the tram when you need it to check out more of the city. You get a text message from your friend asking you to go to dinner that night back in Stockholm. You accept and start wrapping up your current activity to head back to the Hyperloop station. You call for another AV, but one isn't available. However, there is a flying taxi ready to pick you up if you want. So, you order the flying taxi. You hop in and are whisked away to the Hyperloop. In 40 minutes, you are back in Stockholm.

The restaurant your friend chose wasn't far from the Hyperloop station, so you grab a bike from the local bikeshare rack (again, using the same app from the morning) and ride off to meet your friend.

You enjoy the evening, and you use the services of a rideshare company to get home (this time a human is in the vehicle). Not bad for a day's adventure. And all of this was done because of the seamless flow of information from one system to the next. This doesn't happen without the proper planning and infrastructure in place that a smart city will enable us to leverage.

Are We There Yet?

Autonomous vehicles, flying taxis, Hyperloop are all within reach. But they won't mean anything if we don't build cities with mass transport at the forefront of the design. The smart city will only exist if smart transportation is in the centre. Without a mobile city, all the information and cool features in the world won't matter if people can't move to where they want to go. Public transport is the heartbeat of a city. We need to make sure that we don't make the same mistakes of our past and make these tools, these modes exclusive from one another. If we do that, if we lose sight of the importance of mobility and the interconnectivity of data and people, we will be in the same position as we are today, sitting in traffic in our flying cars. Let's work together to prevent that flying traffic jam before transport truly takes flight.



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