Technology to Have in Place for Three Transit Trends: Aerial Mobility, Automated Driving, Electrification

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BIG TECHNOLOGY AND SOCIAL changes are impacting how transportation will help people get where they want to go. It's important to put the technology in place now to benefit best from those changes. We believe that three of the biggest trends are aerial mobility, connected and automated driving and vehicle electrification.

Urban Air Mobility: Not Flying Cars, But Bus Routes in the Sky

Electrically powered aerial drones capable of carrying humans are still mostly found in quirky YouTube videos. But these vehicles will rapidly develop to the point that user-operable aerial vehicles will become practical, ready to carry people right over clogged expressways.

And that's the future we *don't* want. Private "flying cars" might turn out to be part of a dystopian future in which only the wealthy can afford the convenience of avoiding ground-based frustrations.

Rather, aerial mobility vehicles, whether autonomous or human-piloted, must become part of an overall city or regional mobility system that uses a variety of means to help people get where they want to go.

Aerial mobility vehicles will be best leveraged as aerial "bus routes"—taking people from a transit hub in their community, along defined corridors and as part of a network of urban and regional mobility. This can include going to and from work. But with more people now able to work from home, we want to enable more people traveling on transit for other purposes, such as medical appointments, cultural events, meeting up with friends and other aspects of living their lives.

This future is well underway. In September 2022, the FAA published new design guidelines for vertiports, the ground infrastructure required for the establishment of urban air mobility (UAM) services. The design standards will serve as a starting point to provide key information to airport owners, operators and infrastructure developers involved in the buildout of facilities that will support the ground operations of electric vertical take-off and landing (eVTOL) aircraft.

Yet while national entities such as the FAA help build the future of the "aerial" side, it's cities and regions that will need to direct the "ground" aspect—making sure that aerial mobility doesn't become a service just for the wealthy, but rather part of helping the community at large. Public transit agencies will need to support elected municipal and regional leaders in building this better future. Regulations should require that vertiports be multi-modal hubs that work within and for the regional network.

This can include developing facilities where aerial vehicles can land, recharge and transfer passengers, as well as the on-the-ground vehicle networks that will help passengers get from their homes to their destinations. One of the most critical aspects to success will be to develop safety protocols and measures to protect the people inside the vehicle as well as those nearby.

Image courtesy of TYLin

TransLink's Skytrain, Vancouver, BC, Canada, is an example of autonomous, electrically power public transportation.

Autonomous Driving Boosts Efficiency and Safety

The idea of self-driving vehicles was popular several years ago, and many headlines talked excitedly about this future. Then there were injuries and even some fatalities caused by autonomous vehicles, and for many people, their interest waned.

But the issue hasn't gone away. While the death or injury of even one person from autonomous vehicle error—or even human error that involved an autonomous vehicle—is too many, the safety record of autonomous vehicles greatly surpasses that of human drivers. The human-caused carnage on the world's roadways stands in sharp contrast to the safety record of AI-guided vehicles.

The connected and autonomous-vehicle trend is growing in strength. Walking through the showroom of the World Congress on Intelligent Transportation Systems recently fo many vehicle manufacturers, devic manufacturers, software developer others, all focused on making the f happen.

The whole point of the technolo to save lives and reduce injuries, w also getting people and cargo to th destination quickly, conveniently ar safely. These types of technology c see in 360 degrees at one time and make instantaneous reactions to st

This technology would be best i grated into regional transit network to get people to and from the trans hub. The transit agency may offer autonomous buses or other vehicl maybe accessed through GPS-bas ride-sharing apps that allow the tra to request a vehicle. If this system vides reliable service and short wai times, people will be less likely to the roads with yet another persona vehicle.

This involves a modification of th traditional hub-and-spoke transit n historically designed to move empl ees to and from their central workp It will support a more distributed ki of service, with people more easily to get between suburban destinati

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for example. Many agencies are already exploring this and it will only become more imperative as regions content with the connected/autonomous vehicles and the aerial ones.

Electrification—But Make Sure It's Green, Not Greenwashing

Electrification of vehicles is also bringing big changes for public transit authorities.

One consideration that may get missed is the need to make sure that the source of the electricity is "green"—ideally, from renewable sources—or there is no net carbon-output benefit. Expect customers, political leaders and other stakeholders to become increasingly savvy about the source of the electricity used in public transit vehicles.

This is one reason why hydrogen has become such a big part of the question around carbon-neutral public transit. But, as with electricity, much of the hydrogen available comes from fossil fuels. Only "green" hydrogen—generated from water, using renewable energy—passes the current standard for being part of the solution.

All these changes—urban air mobility, autonomous vehicles and electrification—require a re-thinking of how communities help their people move. This can be an opportunity to make major improvements in how that's done.

If you think that this goes beyond a focus of having trains, subways and buses run on time, you're right. It goes beyond "transit management" to "mobility management," with a focus not so much on creating a smooth-running transit machine, but in helping people get where they want to go.