

## Autonomous Vehicles and Connected Urban Mobility: Rethinking Public Transit

Like many other domains, transportation is undergoing deep and significant transformation, seeking to fulfill the promise of connected mobility for people and goods, while limiting its carbon footprint. The advent of autonomous vehicles has the potential to change the economics of ownership and use of private automobiles, likely accelerating trends towards greater use of app-based ride hailing and/or sharing by private TNCs (Transportation Network Companies). We outline and interpret developments in connected and autonomous vehicle technologies, in the broad context of the Internet of Things (IoT) and smart cities; identify likely deployment scenarios; and highlight implications and opportunities for emerging service delivery models, particularly with regard to the respective roles of the public and private sectors. Several potential business models with varying degrees of ride sharing and public vs. private involvement in the delivery of mobility as a service (MaaS) are presented. Algorithms for shared autonomous fleet management are discussed and illustrated on a small case application. These are then integrated in an intermodal network modeling framework, applied to the Chicago region to evaluate the impact of new services on mobility and sustainability. By reinventing themselves as mobility agencies, public transit companies can leverage these developments to focus resources on providing high-quality services along high-density lines, resulting in significant improvement in overall urban and regional mobility.



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