AUTONOMOUS VEHICLES: A GAME CHANGER FOR URBAN MOBILITY AND PUBLIC TRANSPORT

Mihai CHIRCA
UITP Expert on Digitalisation and Autonomous Transport Systems

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A DIVERSE GLOBAL MEMBERSHIP

UITP unites the sustainable mobility community

- Operators
- Industry
- Research institutes
- Associations
- Authorities
- Policy decision-makers

WINNING CITIES GROW with PUBLIC TRANSPORT

ADVOCACY & OUTREACH  KNOWLEDGE  NETWORK & BUSINESS
WHAT FUTURE DO WE WANT?
We are working to enhance quality of life and economic well-being by supporting and promoting sustainable transport in urban areas worldwide.
PT IS THE BACKBONE OF INTEGRATED URBAN MOBILITY

• High quality public transport is the only alternative able to fulfil the lion’s share of trips by using a minimum of space
• Without public transport, other sustainable & innovative mobility services cannot offer an affordable alternative to car ownership
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AVs: CHALLENGES FOR CITIES

Decrease
- Traffic jams
- Pollution
- Accidents
- Cost of mobility

Increase of individual comfort
- Time saving
- Smart driving
- Personal preferences
- Freedom

«Natural» choice for the individual
## AVs: CHALLENGES FOR CITIES

<table>
<thead>
<tr>
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### Increase of individual comfort
- Time saving
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### Consequences:
- More purchase of cars
- Average AV drives more
- Empty cars on the road
- Urban sprawl
- Loss of public space
- Decrease of use of PT, walking and cycling

### Challenge:
Convince the individual to make a shift to shared AV’s
Autonomous vehicles will only help to meet public policy goals if they come as shared fleets integrated with public transport.

**Autonomous vehicles**

**Shared fleet of vehicles**
- Strong reduction in number of cars (reduced car ownership, effective use of cars as they operate most time of the day)
- Drastically improved mobility for people that do not own a car

**Privately owned cars**
- No effect on car ownership
- No effect on number of parked cars (cars unused most of the day)
- No effects on costs/km
- No effects on mobility for people that do not own a car
- Even more car traffic (as it is even more comfortable and attractive to go by car)

**Fleet cars COMPETING with traditional public transport services**
- Street reclaiming (less parked cars)
- Improved access to public transport
- Improved mobility for people that do not own a car
- More traffic (strong increase in Vehicle Miles Traveled - VMT)
- Inefficiency (small vehicles replacing buses and trains)
- Passenger loss for traditional public transport walking and cycling

**Fleet cars INTEGRATED with traditional public transport services**
- Large scale street reclaiming
- Highly improved access to public transport
- Highly improved mobility for people that do not own a car
- Strong decrease in VMT
- High gain of efficiency (large and small vehicles perfectly mixed)
- Low costs/km

**Unsustainable, even more car traffic**

**Better mobility, less efficiency**

**Sustainable, better mobility and equity**
Combined Mobility is the answer!

Flexibility + convenience = Door-to-door solution

### URBAN MOBILITY: SOLUTIONS

- Public transport
- Walking
- Bicycle
- Bike-sharing
- Car-sharing
- Ride-sharing
- Taxis and shared taxis
- On-demand transport

A real alternative to the private car
Key to changing citizens’ travel behaviour
AVs: OPPORTUNITY FOR CITIES

Public transport offers the quickest development path to full autonomy because it can start operating in a limited area.

**Car industry path**
- **UNLIMITED**: Comfort features for private cars
  - **LIMTED**:
    - **NO AUTONOMY**: Driver has control
    - **VEHICLE GIVES DRIVER WARNINGS/INFO**: Driver has informed control
    - **VEHICLE INTEGRATES DETECTION/RESPONSE**: Driver ready to take control
    - **VEHICLE FULLY AUTONOMOUS**: Driver takes control in emergency
    - **VEHICLE FULLY AUTONOMOUS**: Occupants do not need ability to drive

**Public transport path**
- **TARGET: FULL AUTONOMY**
- **FULL AUTONOMY ON CERTAIN ROUTES**
- **Business model for urban mobility service providers**

Source: UITP / Transdev
AVs: OPPORTUNITY FOR CITIES
Possible applications of autonomous vehicles (AVs) as part of a diversified public transport system

- High capacity core network with fixed line service
- Swarm of AVs as Robo-Taxis and on-demand shuttles
- AVs used as feeders to public transport stations
- Autonomous car-sharing vehicles
- Area-based on-demand autonomous mini-buses

Source: UITP / istra
PUBLIC AUTHORITIES need a central and active role in the roll out of AVs so they meet policy objectives, therefore they need to take action now.

Encouraging shared mobility now is the way to ensure autonomous vehicles are shared tomorrow.

UITP Project: SPACE (Shared Personalized Autonomous Connected Vehicles)

Objective: Building knowledge & sharing experience on how the Public Transport Sector can use AV technology to reach public policy goals.

4 working groups:
- Connected and Automated Mobility Scenarios
- Technical Reference Architecture
- Observatory of shared AV experience
- Estimated impact assessment, customer acceptance and stakeholders’ engagement
CONCLUSION

The only goal when developing a city’s mobility policy: *offer your citizens the possibility to live and work in your city without owning a car!*

How?

- **Prepare** citizens for shared mobility
- **Partnerships**: shared mobility providers & public transport
- **Integrate** mobility platform - MaaS
- **Test and Deploy** AV technology
POLICY BRIEF

AUTONOMOUS VEHICLES: A POTENTIAL GAME CHANGER FOR URBAN MOBILITY

INTRODUCTION

Imagine providing affordable, sustainable and convenient mobility options to all citizens including less mobile persons, the elderly, children and people living in suburban or rural areas. Autonomous vehicles (AVs) can help to build that future.

A NEW CHANCE FOR AN EVER-PRESENT PUBLIC TRANSPORT SYSTEM

Cities play a crucial role as engines of the economy, enablers of connectivity, creators and innovators. The arrival of technologies such as autonomous vehicles represents a unique opportunity for a fundamental shift in urban mobility and could lead to healthier, more competitive and greener cities - but only if public authorities and public transport companies take an active role now and integrate AVs into an effective public transport matrix. If employed as shared ‘hate-taxi’ and micromobility as well as used to reduce car ownership through more effective car-sharing schemes, driverless AVs could dramatically enhance public transport. This paper details the challenges ahead and outlines a way forward for the introduction of autonomous vehicles in our cities.

Indeed, a future with autonomous and connected vehicles can have various outcomes depending on how they are to be regulated and used. Will they lead to fewer cars on the road, more urban sprawl and more congestion? Or will they contribute to shaping sustainable and liveable cities, the regaining of urban space, less vehicles on the road and a higher quality of life?

Imagine providing affordable, sustainable and convenient mobility options to all citizens including less mobile persons, the elderly, children and people living in suburban or rural areas. Integrate these mobility solutions opening the way for decarbonisation, so enable your city to regain valuable urban space to be reallocated to green zones, economic activity or affordable housing and to provide flexibility, around the clock on-demand transport that is safe and cost efficient. Autonomous vehicles can help to build that future.

THANK YOU!

Mihai.CHIRCA@uitp.org
https://www.linkedin.com/in/MihaiCHIRCA/