



ADVANCING  
PUBLIC  
TRANSPORT



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

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13/06/2018

IEA Expert Workshop, on Automation, connectivity, electrification,  
and sharing (ACES): transforming road transport services



# A DIVERSE GLOBAL MEMBERSHIP

## UITP unites the sustainable mobility community



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



ADVOCACY  
& OUTREACH



KNOWLEDGE



NETWORK  
& BUSINESS

# WHAT FUTURE DO WE WANT?



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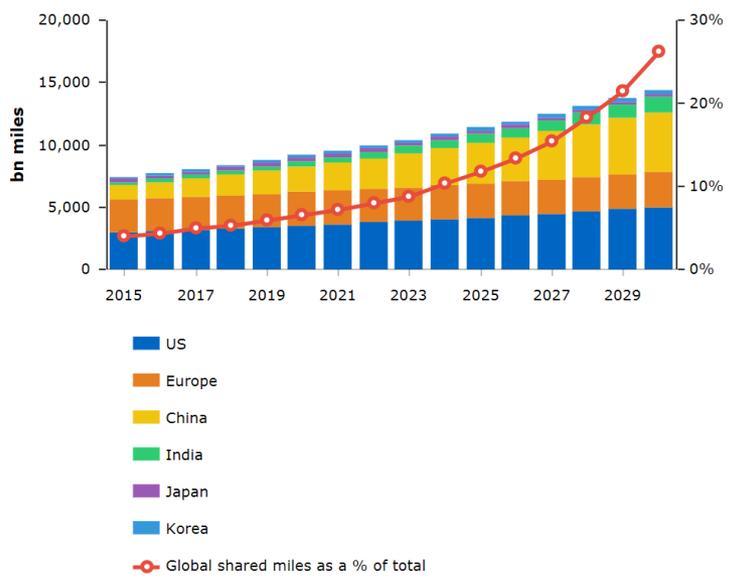
We are working to enhance **quality of life** and **economic well-being** by supporting and promoting **sustainable transport** in urban areas worldwide

# 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**

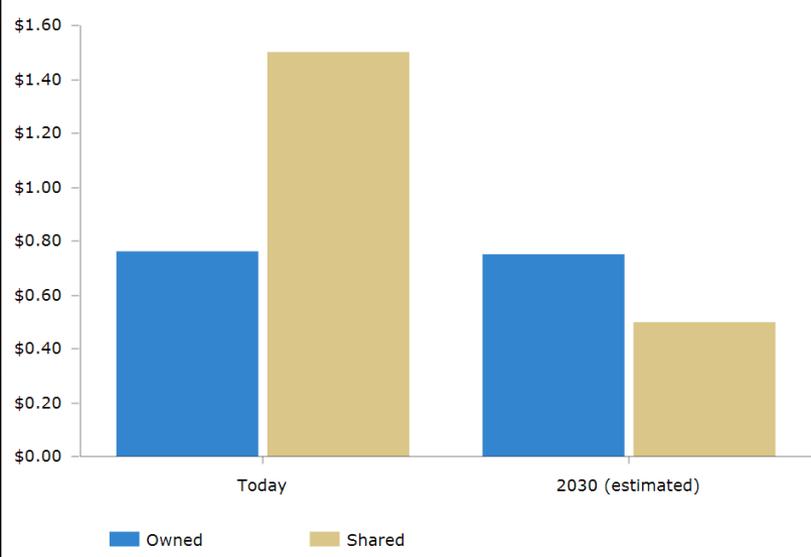


Miles Traveled & Shared Miles Forecasts for Major regions

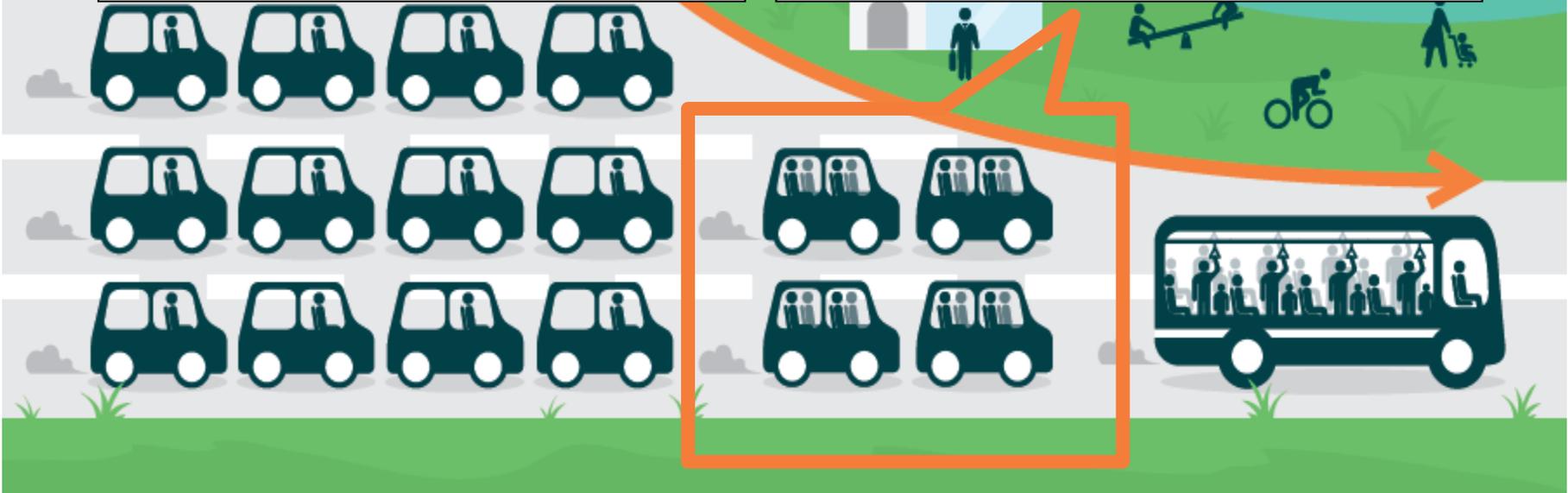


Source: Morgan Stanley Research

Cost per Mile: Shared vs. Owned



Source: Morgan Stanley Research



# 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



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## Consequences:

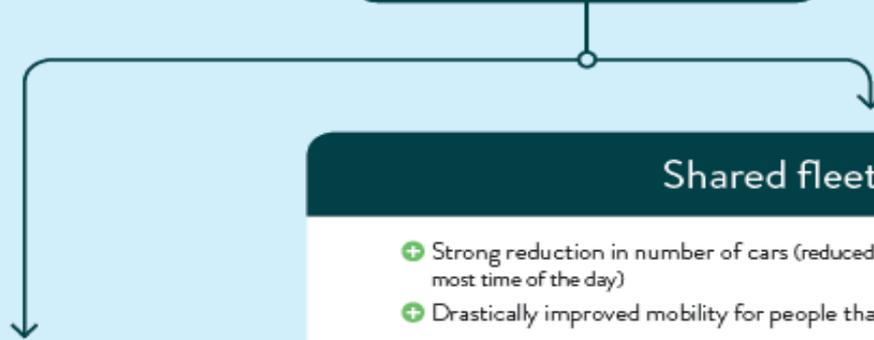
- More purchase of cars
- Average AV drives more
- Empty cars on the road
- Urban sprawl
- Loss of public space
- Decrease of use of PT, walking and cycling

## Challenge:

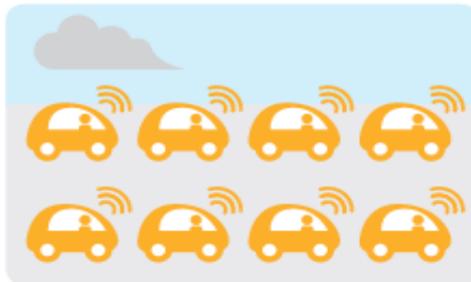
Convince the individual to make a shift to shared AV's

# Autonomous vehicles will only help to meet public policy goals if they come as shared fleets integrated with public transport

## Autonomous vehicles



### 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)

> **Unsustainable, even more car traffic**

### 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

#### 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

> **Better mobility, less efficiency**

#### 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

> **Sustainable, better mobility and equity**

# URBAN MOBILITY: SOLUTIONS

**Combined Mobility is the answer!**

**Flexibility + convenience = Door-to-door solution**

**Public transport**

**+**

Walking

Bicycle

Bike-sharing

Car-sharing

Ride-sharing

Taxis and shared taxis

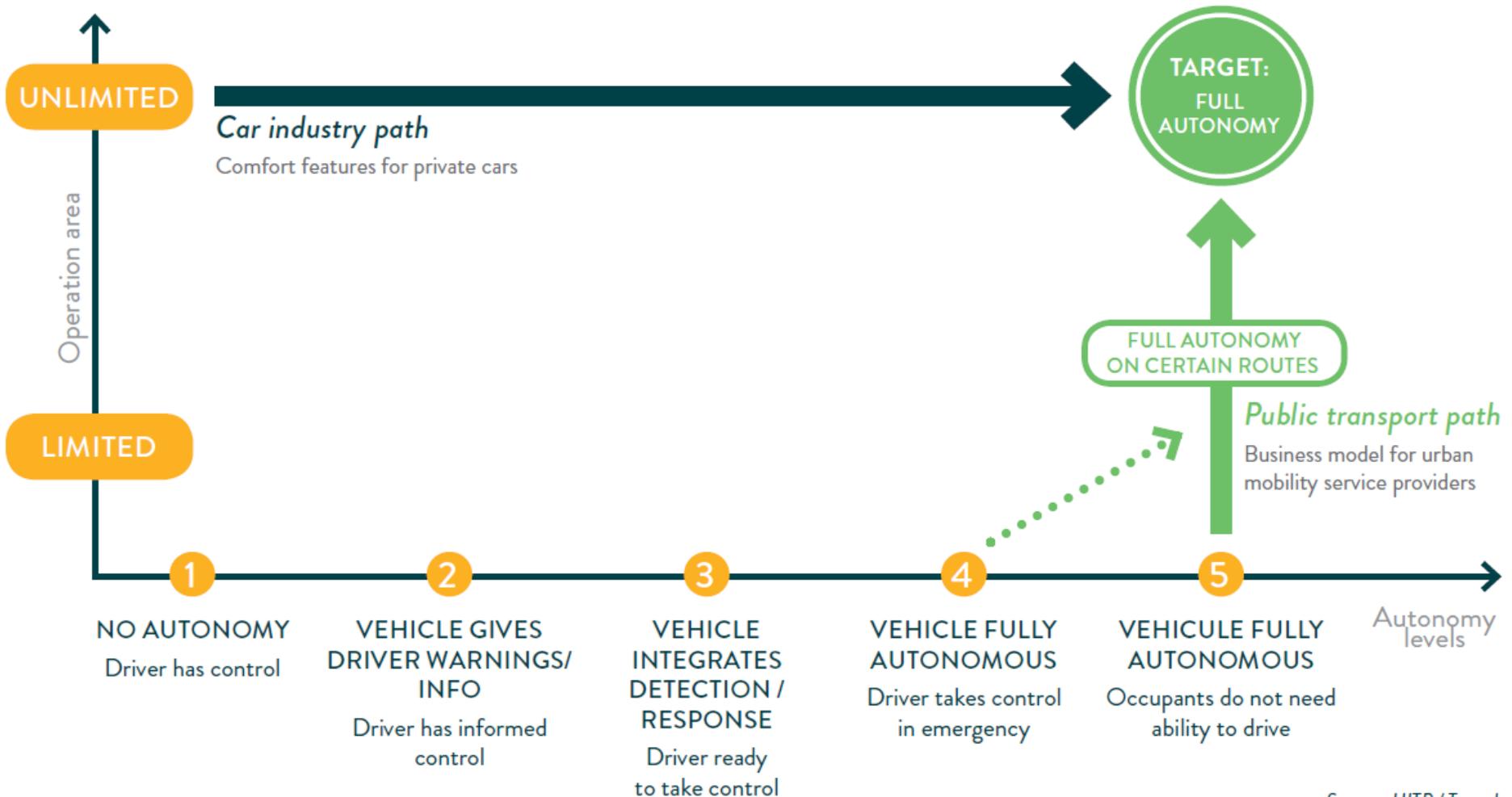
On-demand transport



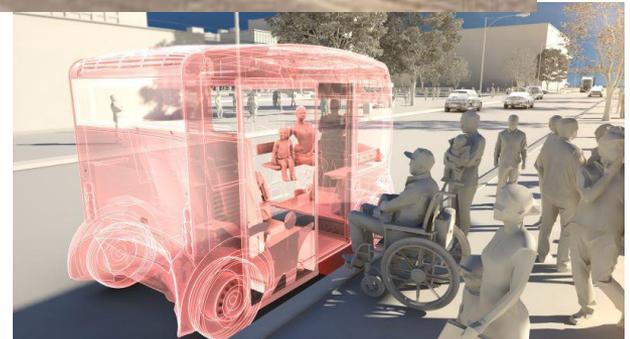
**A real alternative to the private car  
Key to changing citizens' travel behaviour**

# AVs: OPPORTUNITY FOR CITIES

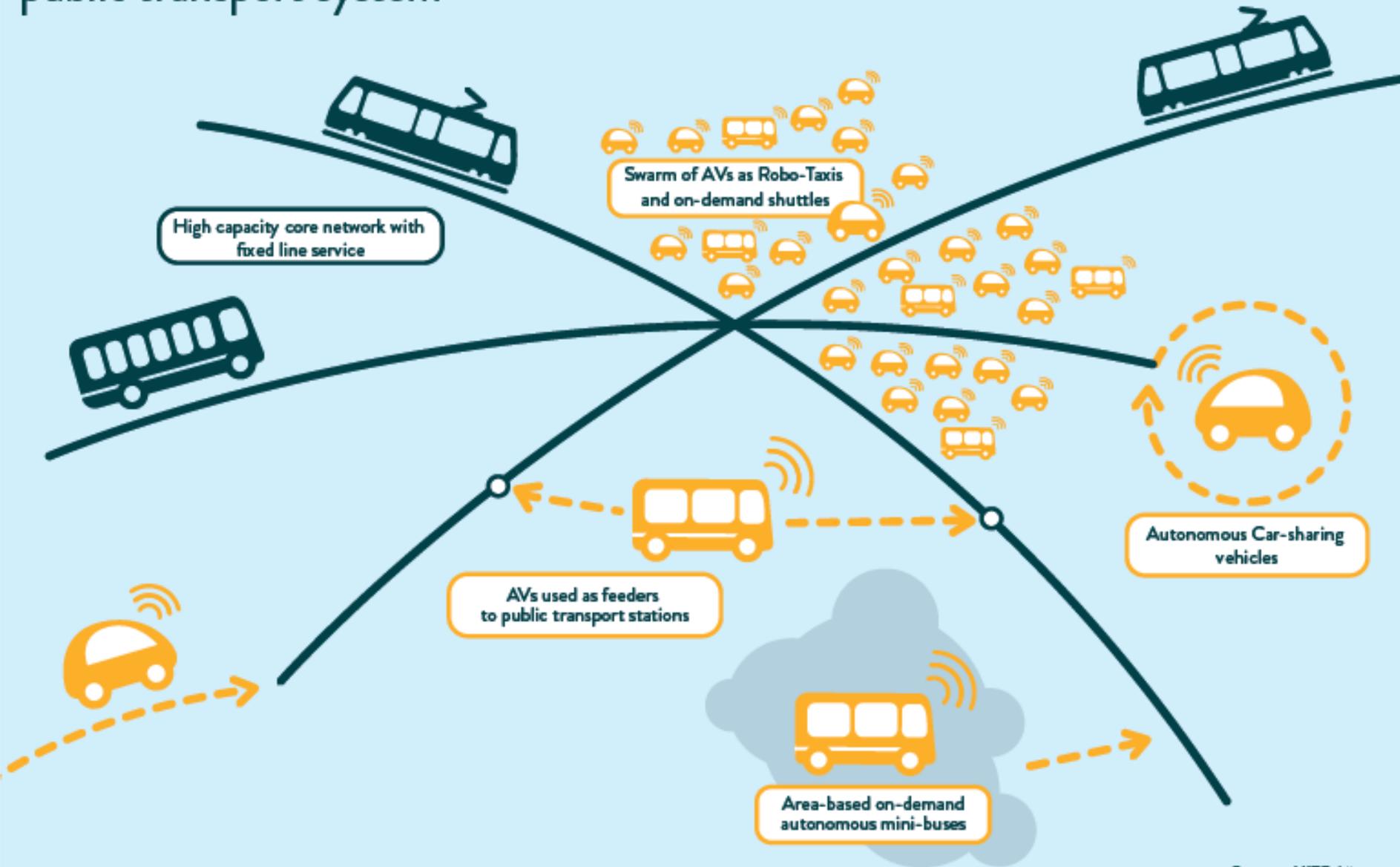
Public transport offers the quickest development path to full autonomy because it can start operating in a limited area



# AVs: OPPORTUNITY FOR CITIES



# Possible applications of autonomous vehicles (AVs) as part of a diversified public transport system



# ACTION NEEDED

- **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, as places of connectivity, creativity and innovation. The arrival of driverless autonomous vehicles represents a unique opportunity for a fundamental change 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 network. If employed as shared 'robo-taxis' and mini-buses 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 even more 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. Imagine these mobility solutions opening the way for decarbonisation, to enable your city to regain valuable urban space to be reallocated to green zones, economic activities or affordable housing and to provide flexible, around the clock on-demand transport that is safe and cost-efficient. Autonomous vehicles can help to build that future.



► Which future will you choose?

<http://www.uitp.org/news/autonomous-vehicles-urban-mobility>

# THANK YOU!

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