



ADVANCING
PUBLIC
TRANSPORT

AUTONOMOUS VEHICLES: A GAME CHANGER FOR URBAN MOBILITY?

DIONISIO GONZÁLEZ

**DIRECTOR OF ADVOCACY & OUTREACH
INTERNATIONAL ASSOCIATION OF PUBLIC TRANSPORT (UITP)**

UITP MISSIONS



We engage with decision-makers, international organisations and other key stakeholders to **promote** and **mainstream** public transport and sustainable mobility solutions.



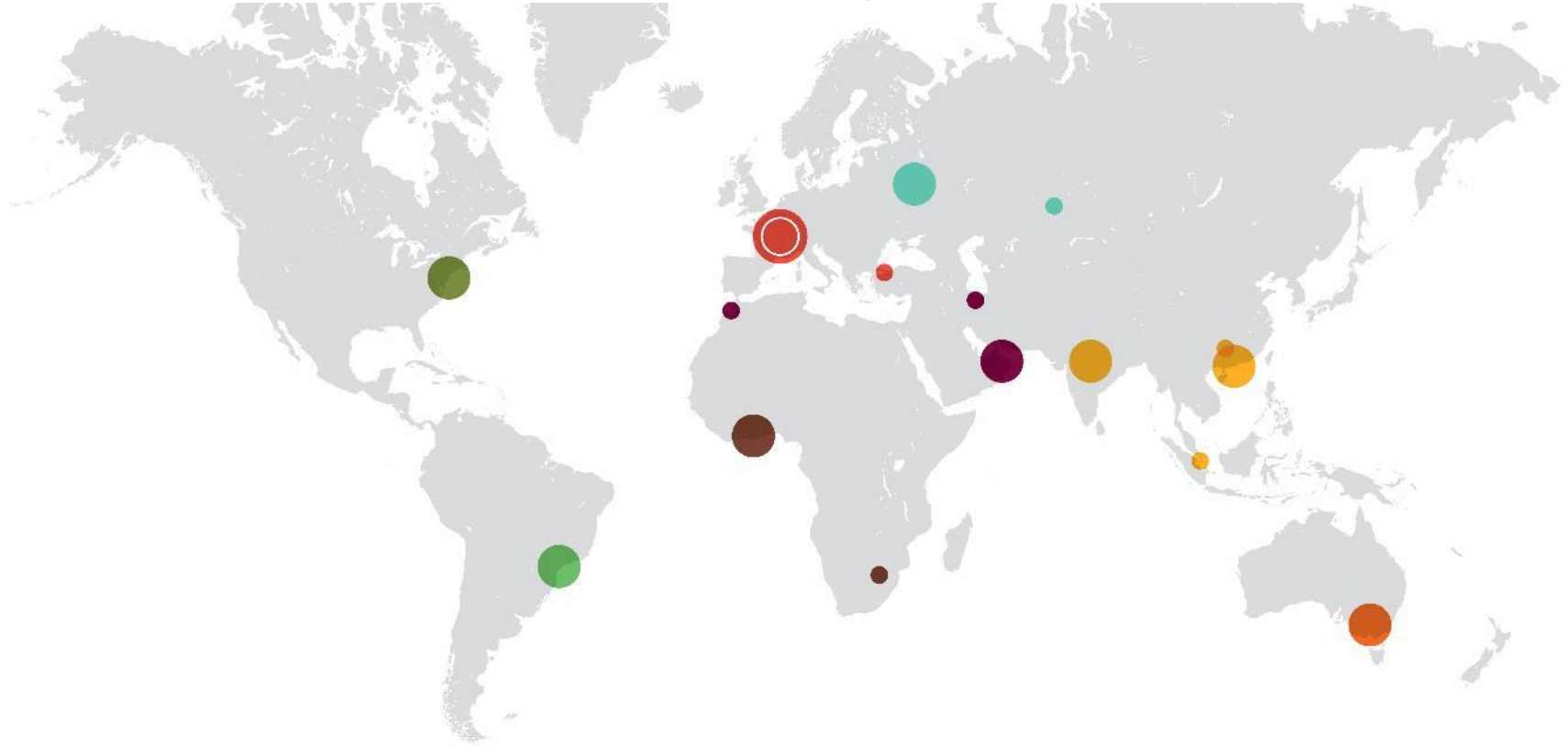
We inspire excellence and **innovation** by generating and sharing cutting-edge knowledge and expertise.



We bring people together to **exchange** ideas, find solutions and forge mutual beneficial business **partnerships**.

A WORLDWIDE ASSOCIATION

16 offices + 2 centres for transport excellence



EUROPE

- Main Office | Belgium (Brussels)
- Liaison Office | Turkey (Istanbul)

EURASIA

- Regional Office | Russian Federation (Moscow)
- Liaison Office | Kazakhstan (Astana)

ASIA-PACIFIC

- Regional Office | India (Bangalore/New Delhi)
- Regional Office | China (Hong Kong)
- Liaison Office | China (Shenzhen)
- Centre for Transport Excellence | Singapore

AFRICA

- Regional Office | Ivory Coast (Abidjan)
- Liaison Office | South Africa (Johannesburg)

AUSTRALIA & NEW ZEALAND

- Regional Office | Australia (Melbourne)

LATIN AMERICA

- Regional Office | Brazil (São Paulo)

NORTH AMERICA

- Regional Office | United States (New York)

MIDDLE EAST & NORTH AFRICA

- Regional Office & Centre for Transport Excellence | United Arab Emirates (Dubai)
- Liaison Office | Morocco (Casablanca)
- Liaison Office | Iran (Tehran)

1,400

MEMBER COMPANIES

16,000

CONTACT MEMBERS

MEMBERS FROM

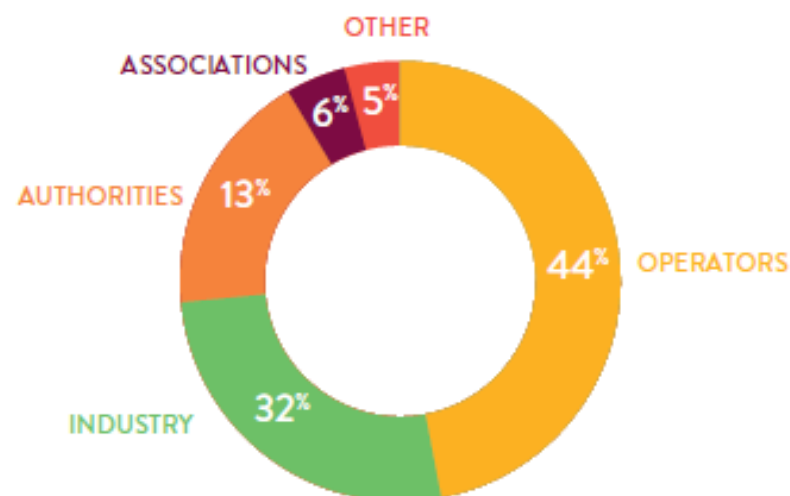
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COUNTRIES

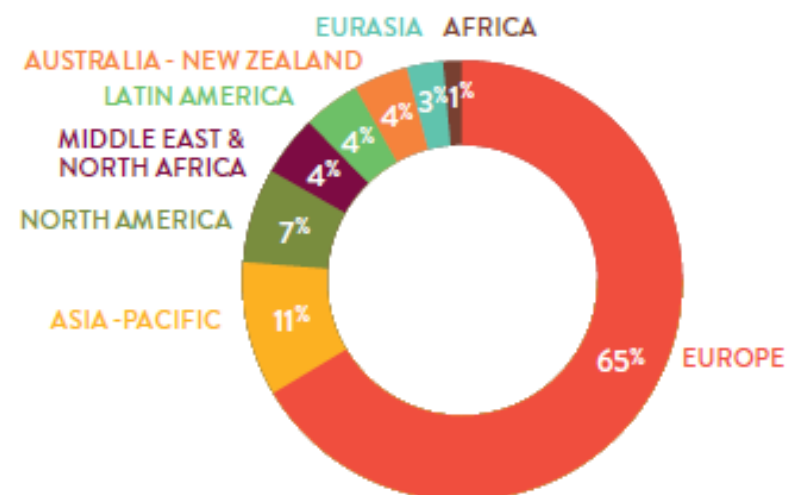
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LIAISON AND REGIONAL
OFFICES ACROSS THE GLOBE

UITP members by sector of activity:



UITP members in the world:





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AUTONOMOUS VEHICLES: A GAME CHANGER FOR URBAN MOBILITY?

Not without public transport!

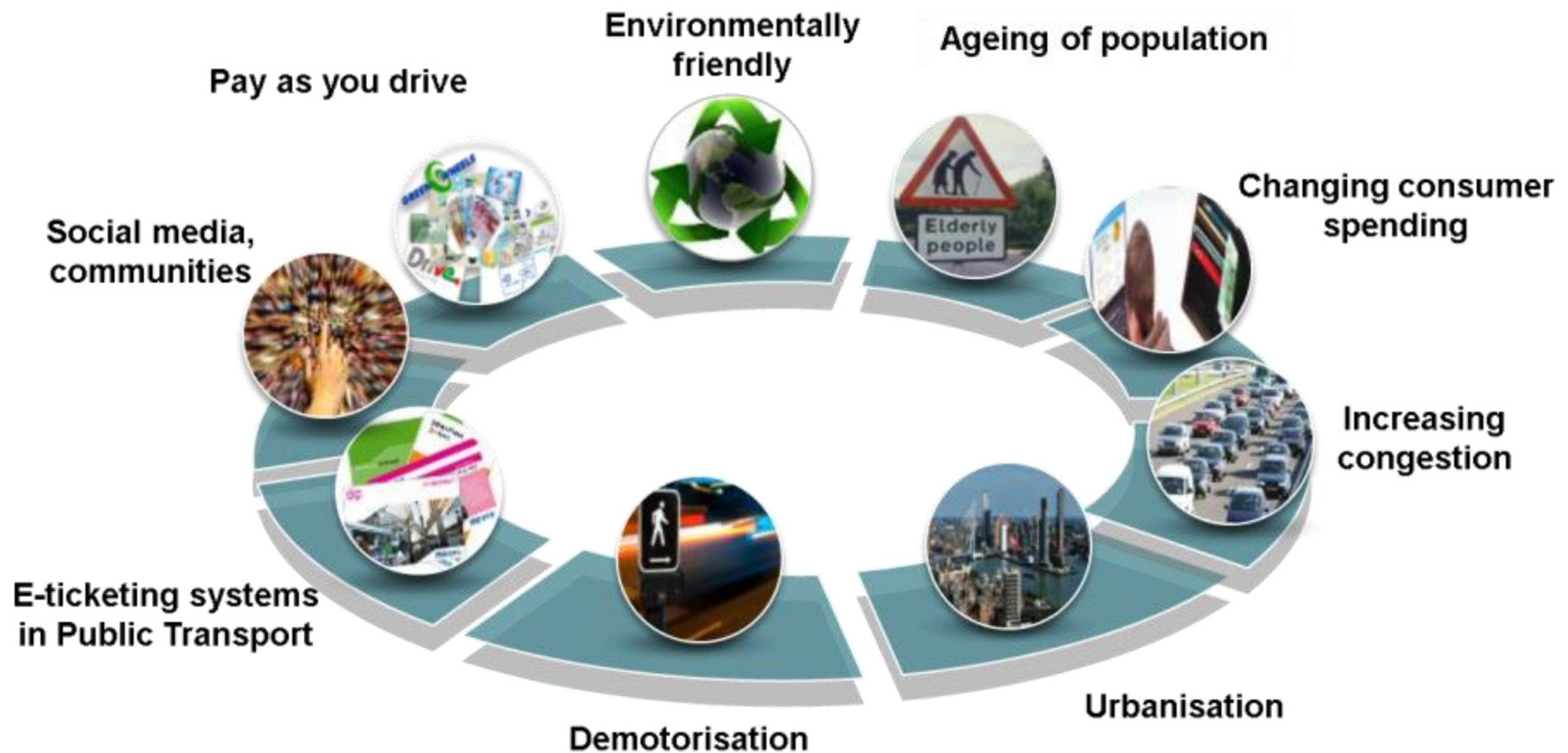
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UITP**

ONE OF THE GREATEST CHALLENGES FOR CITIES : MOBILITY

- Urbanisation, changes in society, digitalisation
- Green, smart and sustainable mobility is part of the **top priorities** for urban decision makers
- New innovative services** are on everyone's lips, but still at small scale



CITIZEN PERSPECTIVE: LIFESTYLE & TRENDS



CITY PERSPECTIVE : PUBLIC TRANSPORT IS THE MOST EFFICIENT IN TERMS OF SPACE

To carry 50,000 people per hour per direction, you need:

a 175m wide road used only by car



a 35m wide road used only by buses



a 9m wide railway track bed for metro



Daily trips in urban areas worldwide are going to rise from **7.5 billion** in 2005 to **11.5 billion** in 2025

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**



LET'S WORK TOGETHER...

- Better match of supply and demand with new mobility services
- Difficulty to efficiently serve less densely populated areas
- Need for extended operational times
- Traveller's perspective : ever more complex mobility needs

Public Transport on its own is not able to compete with the private car in terms of flexibility and convenience



WHAT FUTURE DO WE WANT?

Principles for a city :

accessible, safe, green, affordable, equitable, inclusive mobility

- **Pillars:**
 - Vision
 - Adequate governance
 - Long term political commitment
 - Integrated land use and mobility planning
 - Long term funding stability

WHAT FUTURE DO WE WANT?



WHAT FUTURE DO WE WANT?



AUTONOMOUS VEHICLES...



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AV'S: CHALLENGES FOR CITIES

Increase of individual comfort

- Time saving
- Smart driving
- Personal preferences
- Liberty

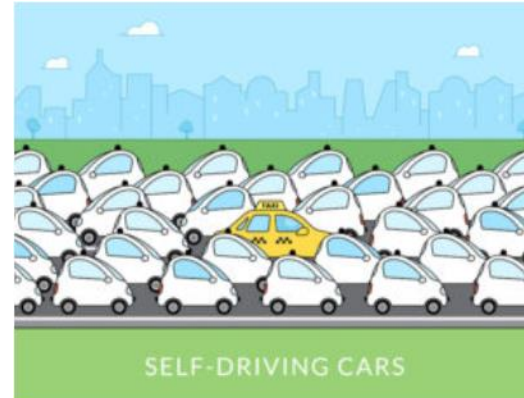


« Natural » choice for the individual

AV'S: CHALLENGES FOR CITIES (II)

Consequences

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

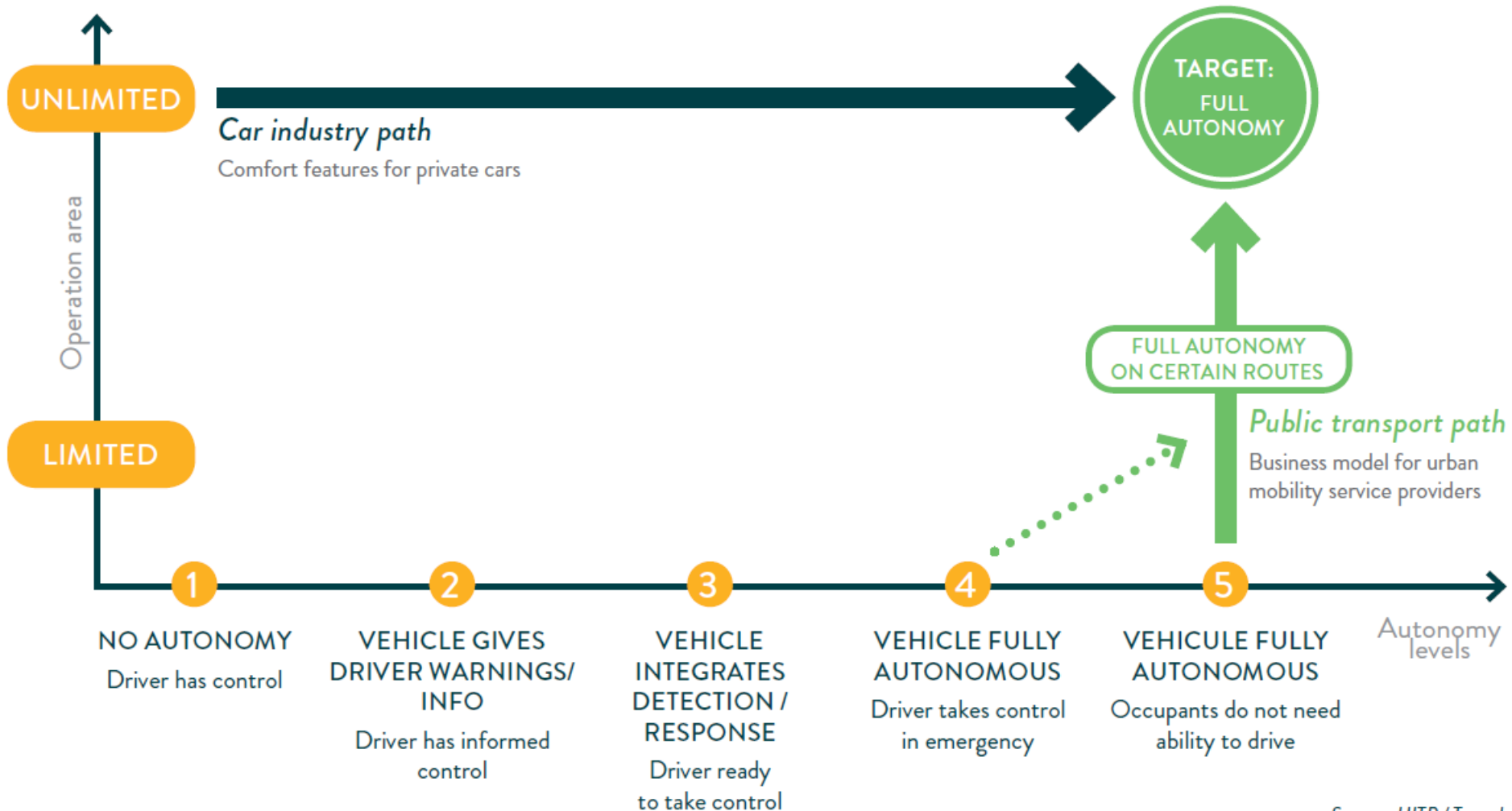


Challenge:

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

AV'S: OPPORTUNITY FOR CITIES (I)

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



AV'S: OPPORTUNITY FOR CITIES (II)



AV'S: OPPORTUNITY FOR CITIES (III)

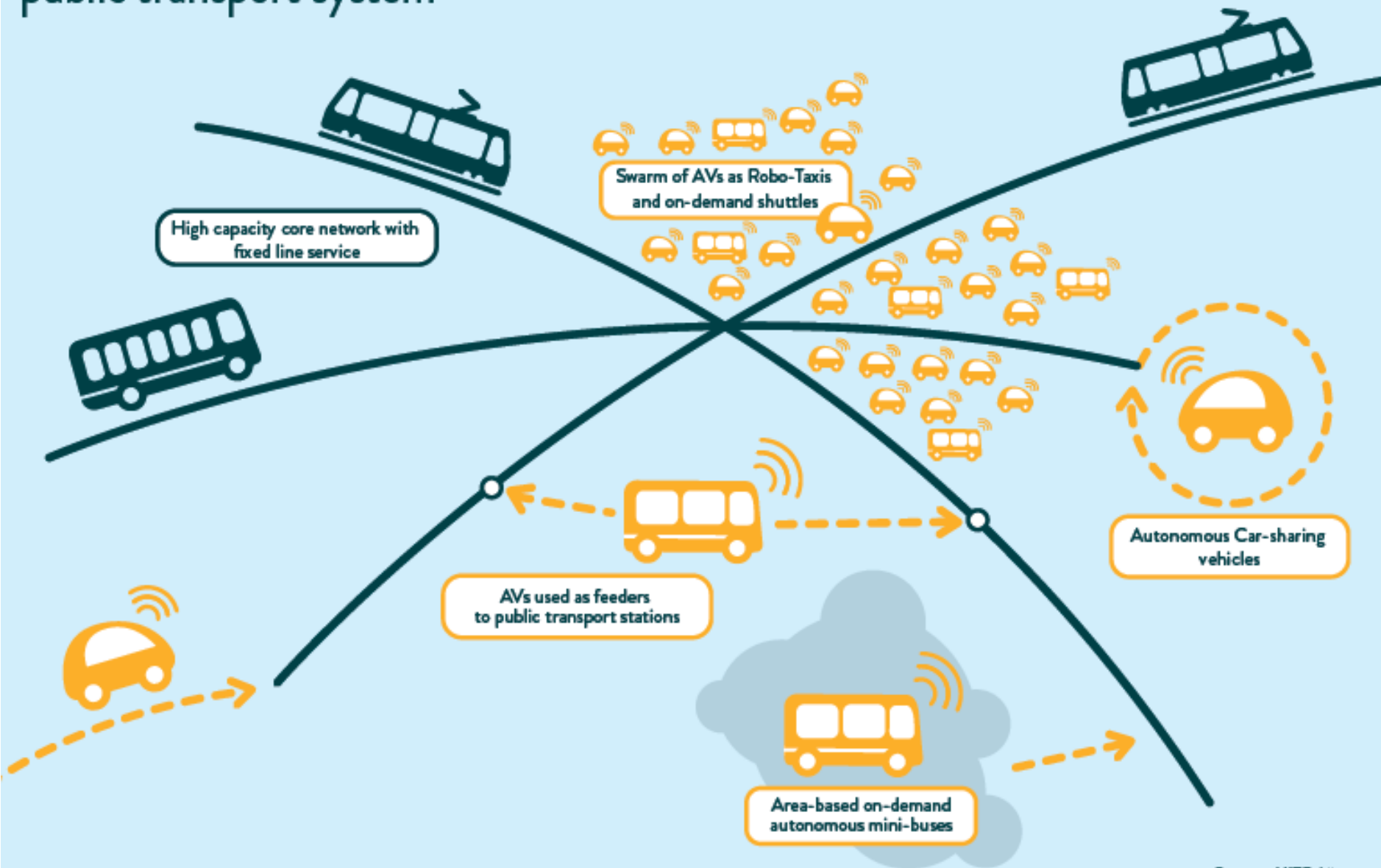
Positive influences if initiated by Public Transport Authorities:

- More public space and liveable cities
- Less congestion (interconnectivity + road pricing)
- Less emissions
- Data ownership
- ...





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



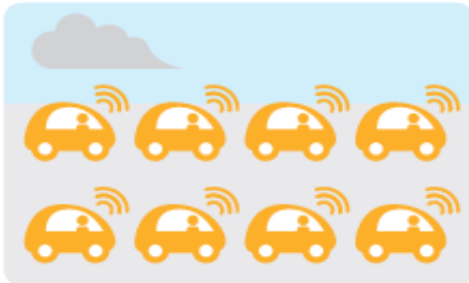
Autonomous vehicles will only help to meet public policy goals if they come as shared fleets integrated with public transport

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)

> **Unsustainable, even more car traffic**

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

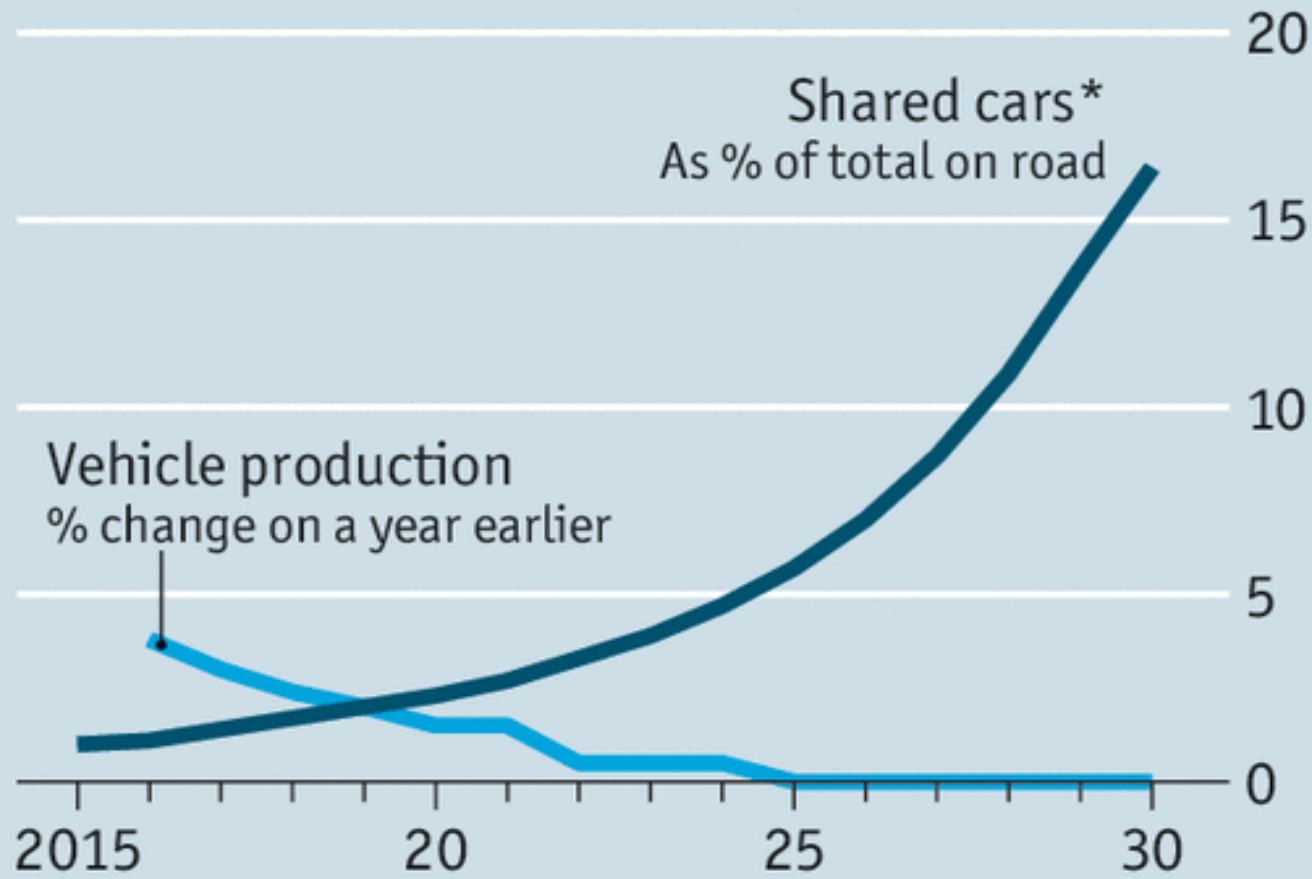


- + Large scale street reclaiming
- + Highly improved access to public transport
- + Highly improved mobility for people that do not own a car
- + Strong decrease in VMT
- + High gain of efficiency (large and small vehicles perfectly mixed)
- + Low costs/km

> **Sustainable, better mobility and equity**

Sharing, not growing

Worldwide forecast



*Including taxis,
excluding car rental

Source: Morgan Stanley

Shared fleet of vehicles

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RECOMMENDATIONS ON AV'S

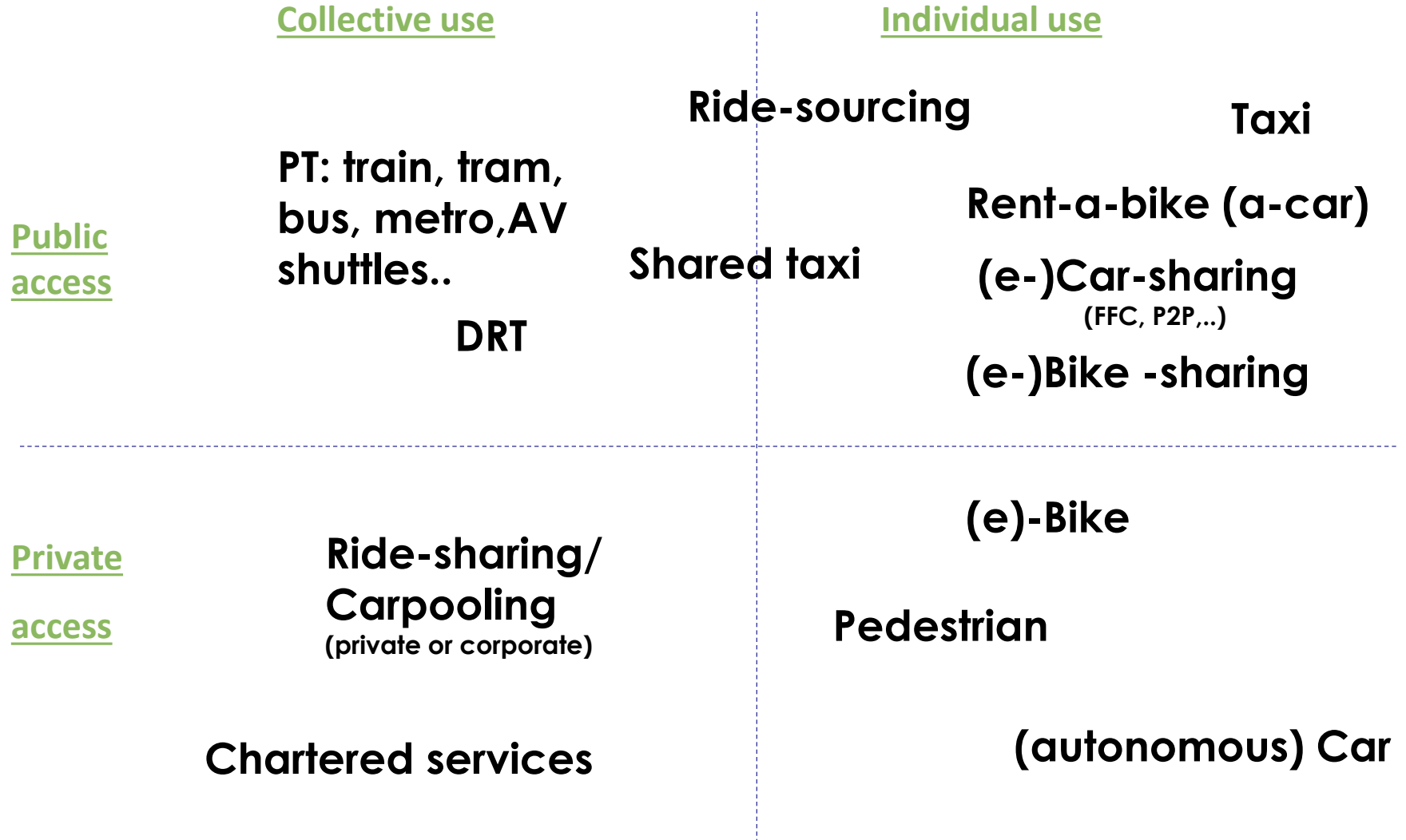
- **Public Authorities need a central and active role in the roll out of AV's so they meet policy objectives:**

Principles for a city :

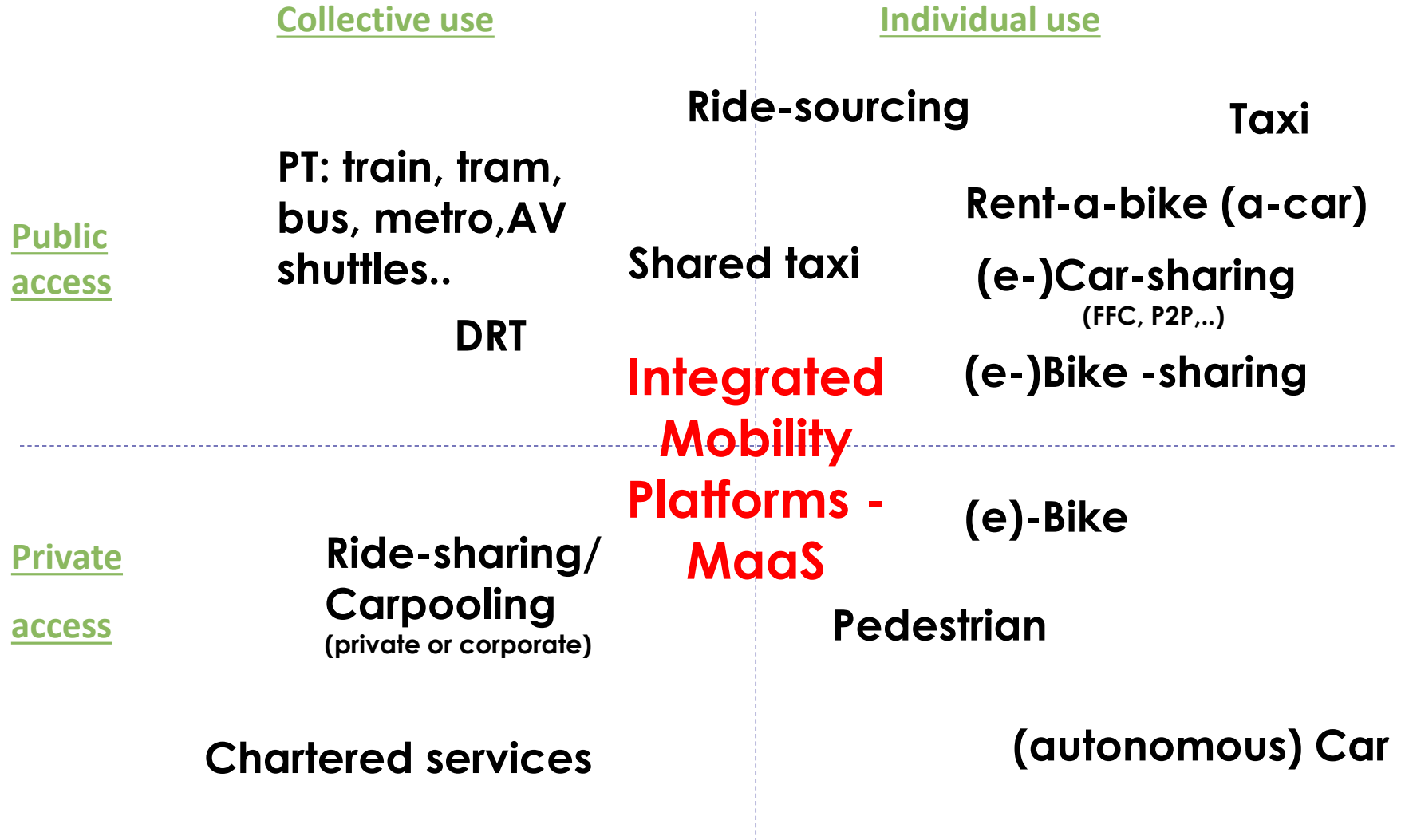
accessible, safe, green, affordable, equitable, inclusive mobility

- Urban planning measures - regain urban space—integrated land use & mobility planning
- Regulate and allow trials of driverless PT shuttles
- Promote shared vehicle use in all forms (citizens's acceptance)
- Make tendering/concessions for shared AV fleets
- Provide integrated mobility platforms (MaaS)

URBAN MOBILITY: MORE & MORE OPTIONS



URBAN MOBILITY: MORE & MORE OPTIONS



URBAN MOBILITY: SOLUTIONS

Combined Mobility is the answer!

Flexibility + convenience = Door-to-door solution

Public transport +

Car-sharing

Bicycle and bike-sharing

Walking

Ride-sharing

Taxis and shared taxis

On-demand transport

...



URBAN MOBILITY: SOLUTIONS

Combined Mobility is the answer!



A real alternative to the private car
A key to change citizens travel behaviour

URBAN MOBILITY: SOLUTIONS

Encouraging shared mobility now will pave the way for the shared use of shared AVs in the future!



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?

More information
in the UITP
Policy Brief on
Autonomous
Vehicles on
www.uitp.org

«A carless driver is better than a driverless car»





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THANK YOU!

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