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SIET

DASTU, POLITECNICO DI MILANO MILAN, JUNE 20TH-22ND, 2018

# INNOVATION AND REGULATION IN SUSTAINABLE MOBILITY, CHALLENGES AND OPPORTUNITIES

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XX SCIENTIFIC MEETING, "MOBILITY AND THE CITY: POLICIES FOR SUSTAINABILITY"

# Some useful definitions for the mobility of today and tomorrow

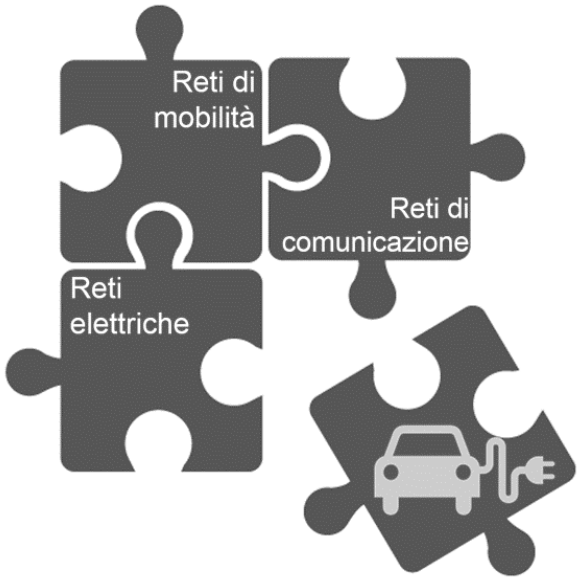
- **Mobility ecosystem**: services, infrastructure, providers, technology as enabler
- **Mobility as a Service**: single interface, «integrated mobility» providers
- **«Roaming» principle**: networking mobility services, collaborative basis, open APIs (application program interfaces)
- **Digital Matching Services (DMS)**, four criteria*: 1) the use of advanced technologies in order to allow peer-to-peer transactions; 2) the use of rating systems in order to feed new forms of trust between strangers; 3) the possibility for workers to choose their working time flexibly; 4) the use of workers' own assets.
- **Transportation Networking Company (TNC)****: an organisation whether a corporation, partnership, sole proprietor, or other form...that provides prearranged transportation services for compensation using an online-enabled application (app) or platform to connect passengers with drivers using their personal vehicles

**US Economic and Statistics Administration, (2016) Digital matching firms: new definition in the sharing economy*

*** California Public Utilities Commission (2012)*

# Mobility ecosystem and networks



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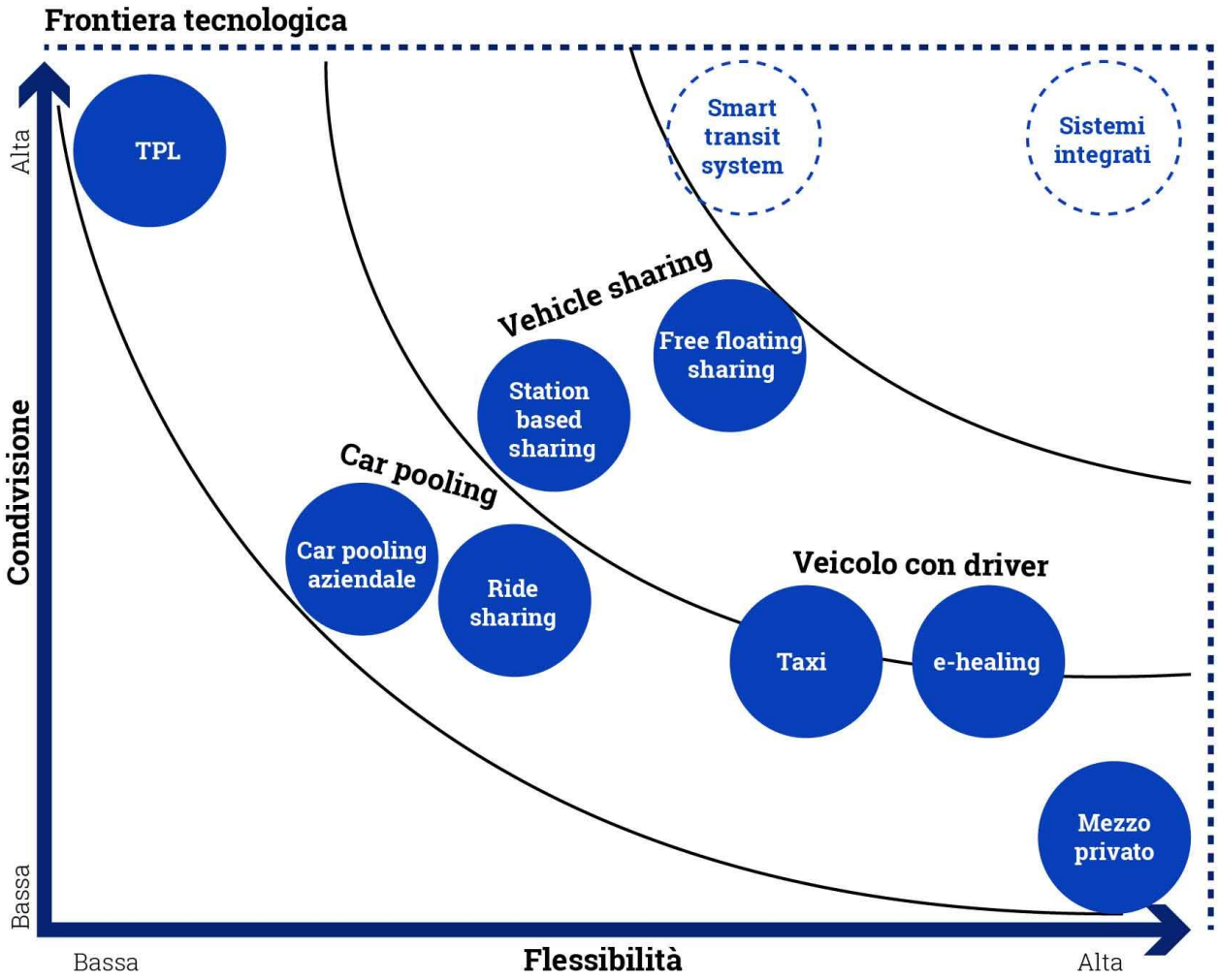
# Main actors, and new actors

# Mobility services, today and tomorrow

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# Innovative approaches to sharing*/ flexible services

**FLEXIBLE: Rabbitransit (US) – Shared Ride Paratransit**

- Demand Responsive Transport (DRT) with different programmes (and fares) per target group, e.g. elderly, people requiring medical assistance, etc.

http://www.rabbittransit.org/SharedRide.aspx

**FLEXIBLE Bridj (Australia)**

- App Based Demand Responsive Transport (DRT), market based

http://www.bridj.com/

**SHARING – BlaBlaLines (France) – Carpooling for commuters**

- BlaBlaCar service for commuters, fixed lines and stops, app based

https://www.blablalines.com/

**SHARING: carsharing24/7 (Austria) – p2p carsharing**

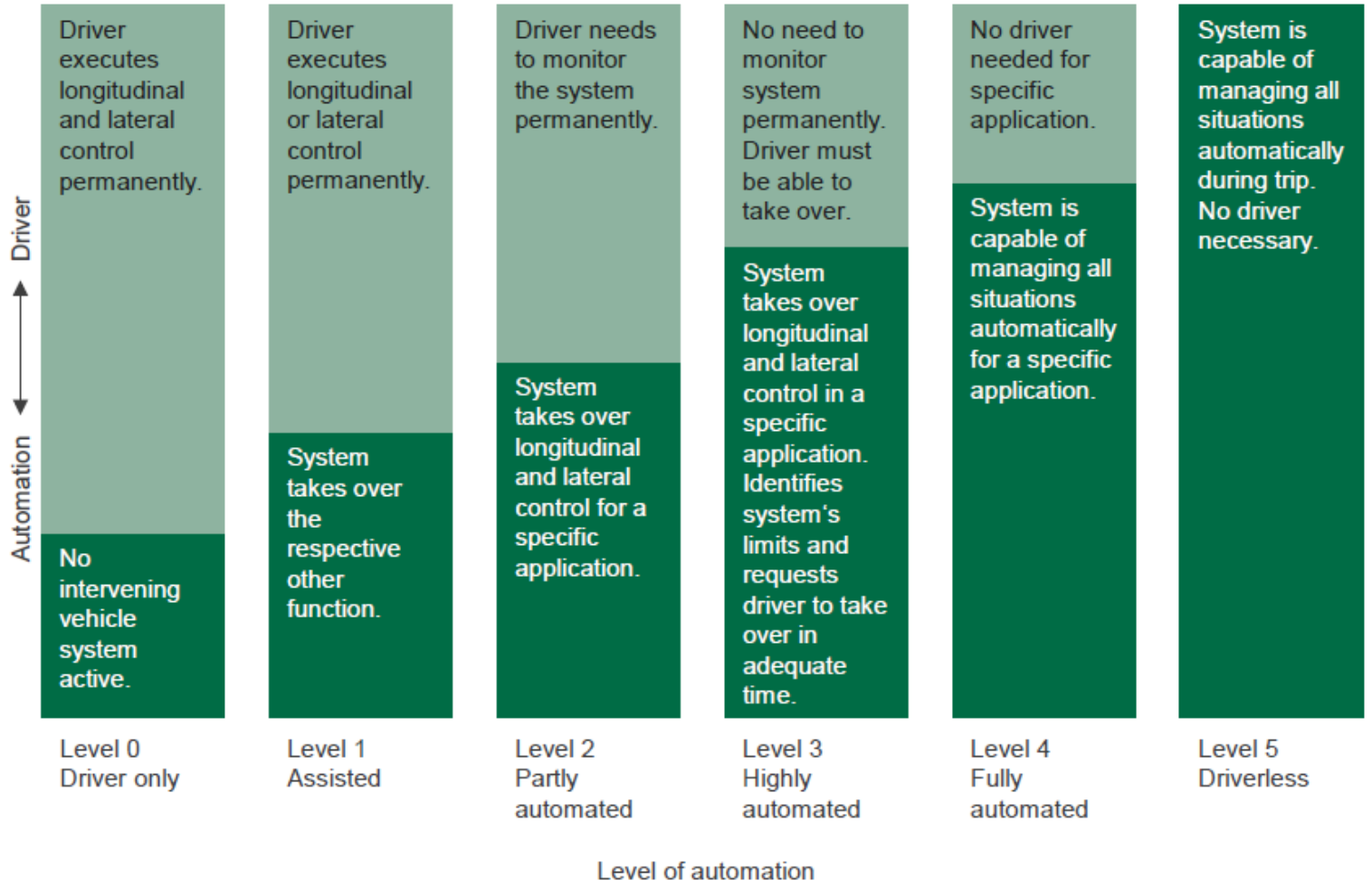
- App based p2p carsharing service

https://carsharing247.com/



** excludes carsharing non p2p, bike sharing and long distance ridesharing*

# Levels of automation (SAE 2014*)

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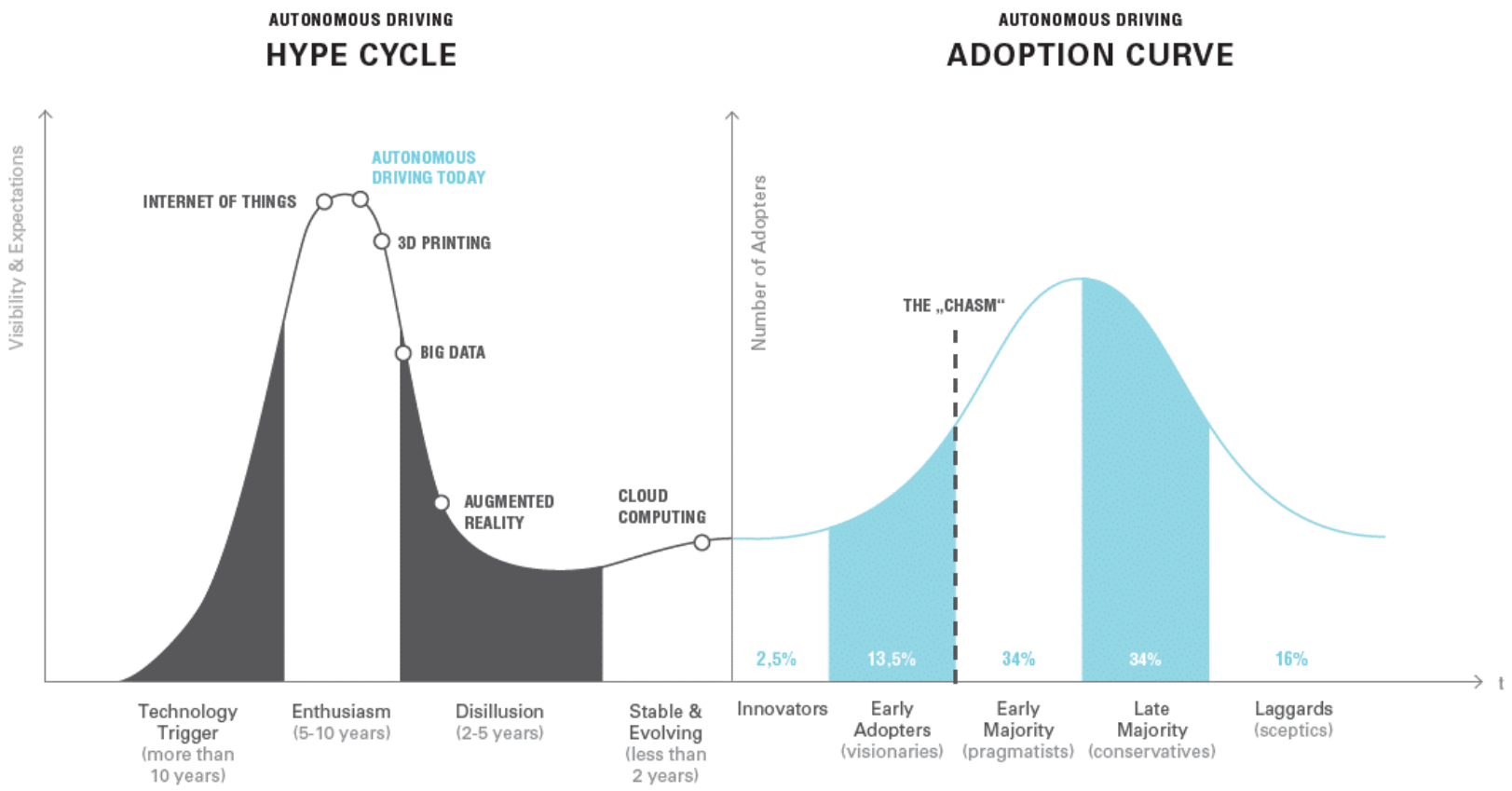
*Source: Lenz B. et Al (2016), User Perspectives on Autonomous Driving. A Use-Case-Driven Study in Germany*

**Taxonomy and Definitions for Terms Related to On-Road Motor Vehicle Automated Driving Systems*

# Autonomous vehicles, the innovation path




Source: Adapted figure based on Gartner's Hype Cycle (Gartner, August 2015) and Rogers Diffusion Curve.



*Source: HYVE Science Labs (2015), Autonomous Driving The User Perspective*

# Autonomous vehicles for sustainable mobility, benefits

- **Reduced drivers' stress and productivity**
- **Mobility for** non-drivers (potentially reducing subsidies for PT)
- **Reduced driver costs** (taxi, commercial)
- **Increased safety** (reducing insurance costs)
- **Increased road capacity and reduced costs** (reducing infrastructure costs)
- **Increase fuel efficiency and reduce pollution** (supporting penetration of EVs)
- **Reduced parking costs**
- **Supports vehicle sharing**



*Source: Litman T. (2018), Autonomous Vehicle Implementation Predictions Implications for Transport Planning*

# Autonomous vehicles for sustainable mobility, costs

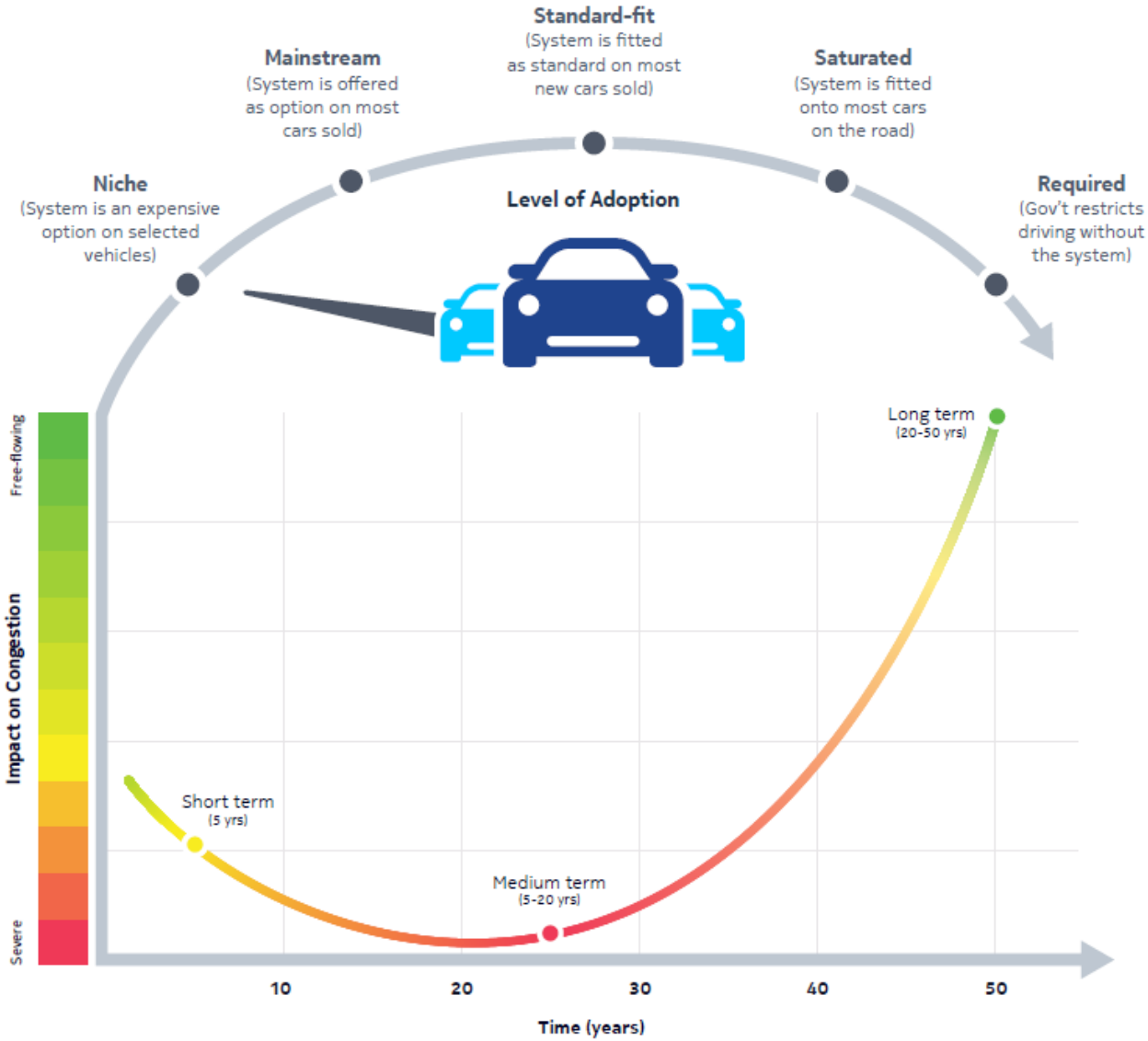
- **Increases costs** (additional equipment/services/infrastructure)
- **Additional risks** (system failures)
- **Reduced security and privacy** (terrorism, hacking)
- **Induced vehicle travel and increased external costs**
- **Social equity concerns** (reducing the convenience and safety of other modes)
- **Reduced employment and business activity** (taxi and commercial drivers)
- **Reduced support for other solutions** (less resources for cost-effective transport solutions)



*Source: Litman T. (2018), Autonomous Vehicle Implementation Predictions Implications for Transport Planning*

# Avs and congestion: adoption rate and impacts

*Source: SBD-HERE (2016), How autonomous vehicles could relieve or worsen traffic congestion*

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# Autonomous vehicles, operational models

**Personal autonomous vehicles**

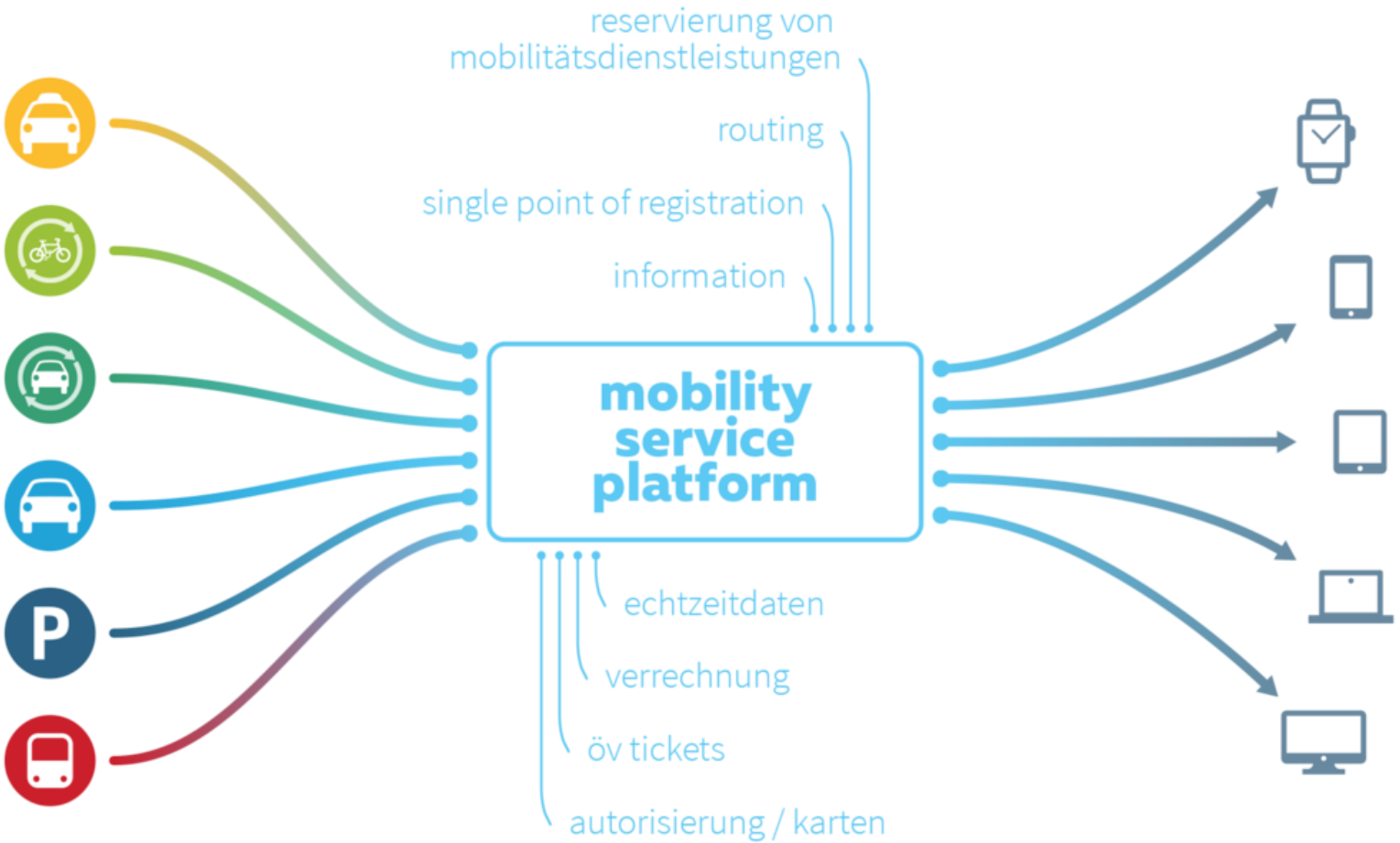
**Shared autonomous vehicles**

**Shared autonomous rides**

# New business model in urban mobility: Helsinki e the MaaS concept

- **Helsinki: car free city in 2025**
- **Mobility as a Service**: single interface, «integrated mobility» providers
- **Mobility ecosystem:** services, infrastructure, providers, technology as enabler
- **«Roaming» principle**: networking mobility services, collaborative basis, open APIs (application program interfaces)
- **Mobility packages**, customization and inclusiveness

# MaaS approach in Vienna

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# Challenges for regulation, changing perspectives

I. **Centrality of the citizen** for a greater competitiveness of collective mobility towards the private one

II. **Governance of new business models:** inclusiveness, security and maximization of common well-being

III. **Fairness and non-discrimination:** networks of services and collaborative schemes for efficient use and sharing of resources

IV. **Ambitious objectives:** phasing out and switch off of the most polluting technologies, sustainable long-term choices

V. **Accessibility for all:** transfer the benefits of digital and shared economies from the center to the periphery

*There is always unpleasantness about this tandem. It is the theory of the man in front that the man behind does nothing; it is equally the theory of the man behind that he alone is the motive power, the man in front merely doing the puffing. The mystery will never be solved.*

*(J. K. Jerome, Three Man on the Bummel)*

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Sometimes I imagine
the car of the future.
It will be a wonderful thing
and will go by land, sea and air.

Will be electronic, automatic,
good at physics and mathematics.

The driver, during the trip,
can sleep, watch the scenery:

the car will think how to maneuver,
to find a parking spot
to be careful when overtaking,
dodging potholes and stones
(which will be for sure
holes and stones of the future).
Will have a well governed brain,
Fond of rules,
and in case it'll break the code
by itself it will be fined.

*Gianni Rodari, The car of the future*