

## Breakout Session #12, July 19, 2016 "AV-Ready" Cities or "City-Ready AVs?"

### **How can cities plan for the transition period?**

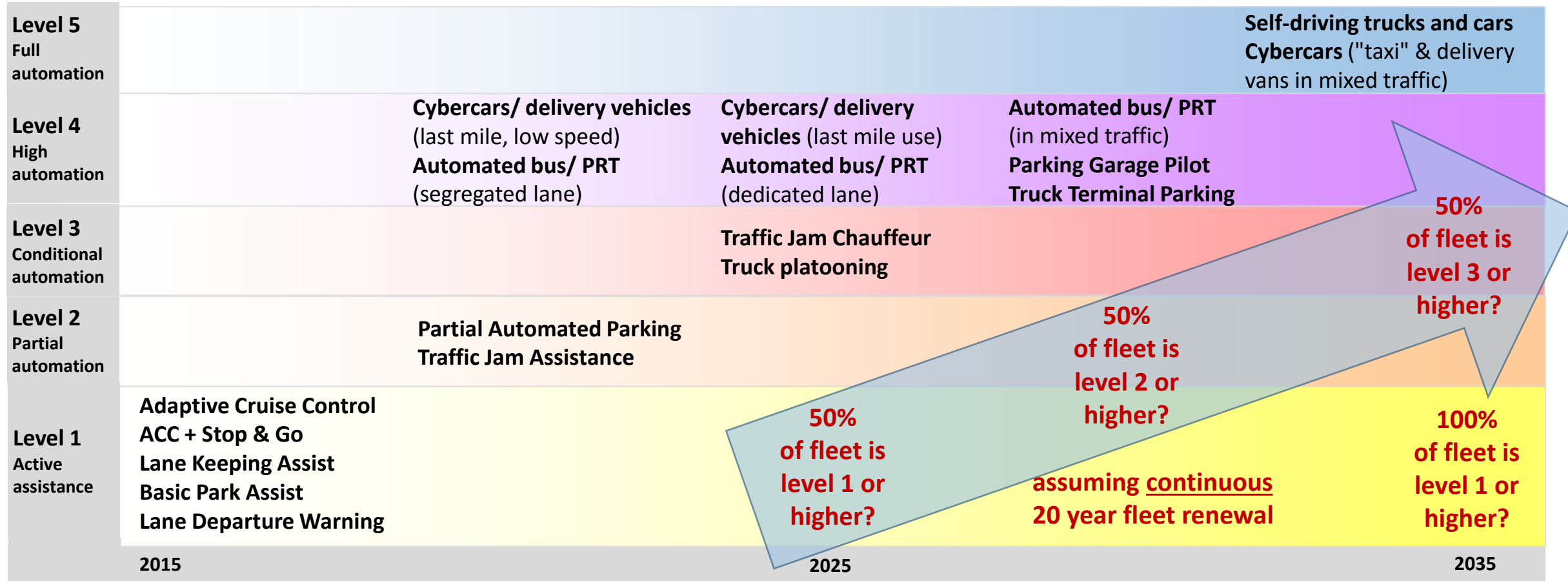
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# What is important about the urban "transition period"?

- Coexistence of **conventional and automated** vehicles
- Generally, **varying levels of "AV readiness"** in the entire transport system (users, infrastructure, service providers, etc)
- Transition challenges are particularly **high in urban contexts**
- Critical phase of a **large transformative process** with a major impact on our cities (beyond mobility)
- Managing urban transition well, will be a **key success factor** for effective AV deployment overall
- Not managing urban transition actively, can create **safety** issues, reduce public **policy impact**, will add further **uncertainties** to AV impact

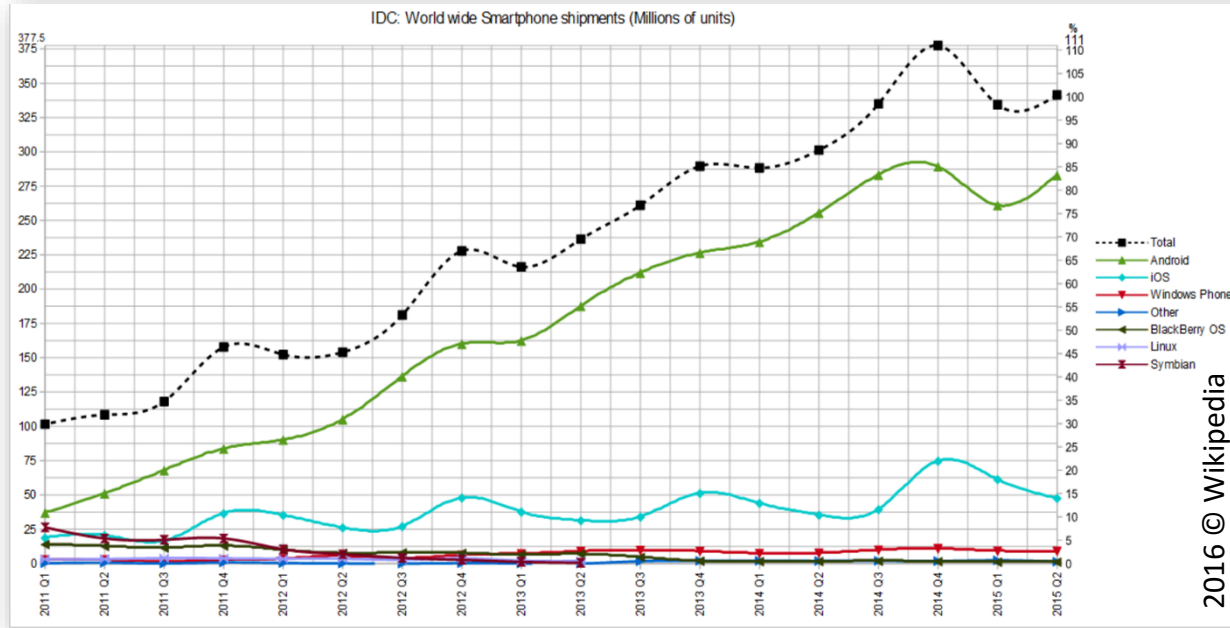
## Urban Transition Scenario (technology) *[source: CityMobil2 Project, 2015]*



USERS. VEHICLES. INFRASTRUCTURE.

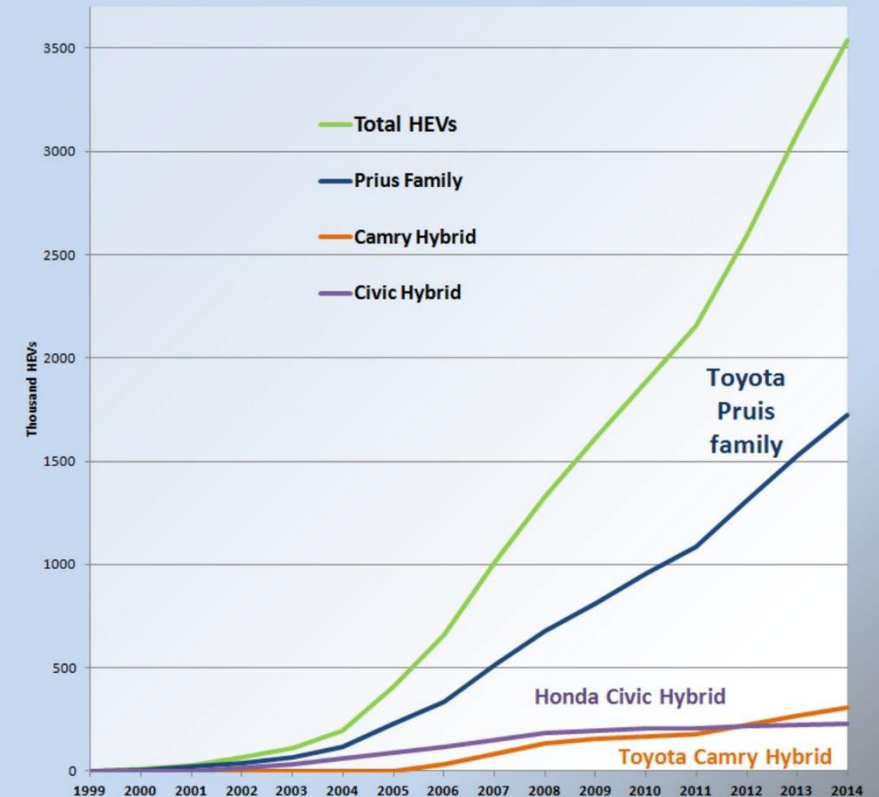
## Technology growth rates

### Worldwide smartphone shipments (2011 – 2015)



Growth rates can be very different!

### Cumulative U.S. Hybrid-Electric Vehicle Sales by Year (Total sales and the leading models 1999- 2014)



# What determines the speed of transition?

- **General** socio-economic factors
- Definition of successful use and **business cases** – and public **image** of automation
- **Legal** framework (national, multi-/international)
- **Integration** impact (IT, electrification, service models e.g. intermodality)
- **Transition dynamics** *[Beiker, 2015]*
  - **evolutionary** (~automobile industry) → "something everywhere"
  - **revolutionary** (~IT industry) → "everything somewhere"
  - **transformative** (~start-ups, local automated mobility on-demand services)  
→ "disruptive innovation process"? (Christensen)
- **Visions and mobility policies of local stakeholders**

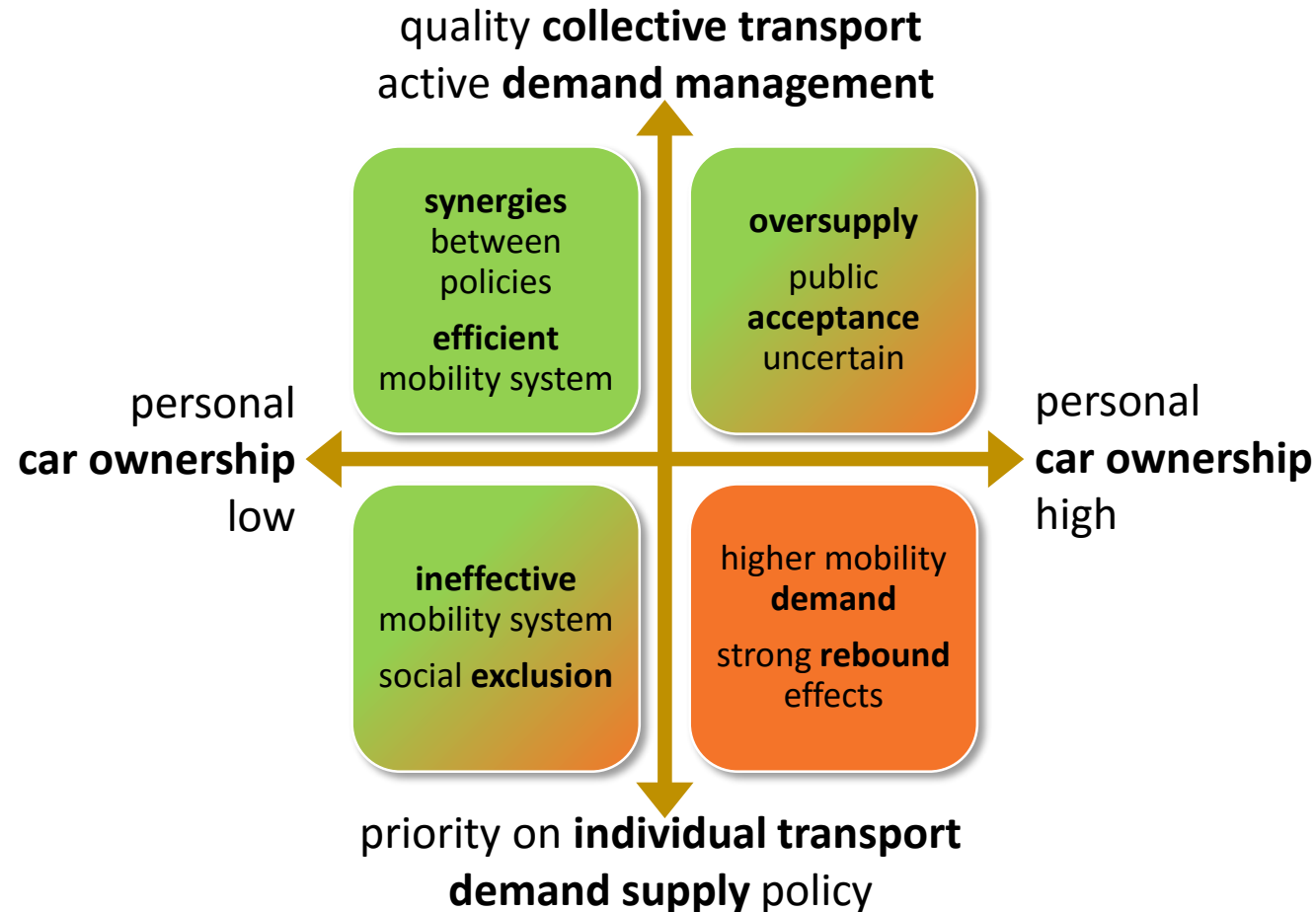
# Policy context of road automation (local government perspective)

## Opportunities

- better **safety**
- **fuel** efficiency
- less **space**
- more effective transport **system**
- higher **reliability**
- greater **comfort**



relevant  
at which  
**automation**  
level?



## Threads

- new perception of **travel time** → more **VMT**
- increased urban **sprawl**
- lower traffic **efficiency** (in some contexts)



effective  
strategies  
to **avoid**?

# What will you do tomorrow about automation in your city?

- Transport **planning**
- **Infrastructure** development
- **Governance** structures/ **service** models
- **Policy** development
- ... while dealing with many **uncertainties**  
(user response, prevailing technologies and business models, timescales)

# How can cities prepare (better) for the transition period?

## Transport planning – *plan with automation in mind!*

- What are we planning for? (how to overcome uncertainties?)
  - what is the **vehicle share** of "autonomous", "automated and connected" personal cars,  
and shared vehicles (single occupancy or ride sharing)?
  - what will be the success of "disruptive" **fully automated** services in (specific areas)
  - what is the time horizon for **mainstream AV market take-up**? how does it match our planning horizons?
  - how much is "**freight planning**" an issue?

# How can cities prepare (better) for the transition period?

## Transport planning (2) – *plan with automation in mind!*

### ■ Transport **mode perspective**

- planning impact of **automation corridors**
- drawback of AV's **high efficiency road space** use for non-automated modes
- interaction with **human road users** (e.g. with non-motorised users/ in complex traffic situations)  
→ traffic efficiency impact?
- automation rate of **public transport**, AV impact on transit demand, intermodal connectivity

### ■ **Modelling** is not yet "AV ready"

- **vehicle** behaviour (micro simulation)
- **demand models** need to reconsider value of time, car ownership
- **AV network impact**: at which automation rate/ in which traffic context?

# How can cities prepare (better) for the transition period?

**Infrastructure development** – *"AV-enabling" infrastructure that we build now!*

- High automation **pilot areas**: test grounds to understand
  - what are infrastructure needs of **connected vehicles** (IT, financing, standards)?
  - what is **user** response? when and in which context is there a relevant **traffic impact**
- Automation **corridors**
  - how can "**segregated**"/ "**dedicated**" lanes for AVs work in practice?
  - how can **walking/ cycling** travellers survive in AV-built corridors?
  - what are **low-cost** AV-infrastructure options?

# How can cities prepare (better) for the transition period?

## Infrastructure development (2) – *"AV-enabling" infrastructure that we build now!*

- Infrastructure for **public transport** (transit) and new **AV-based services**
  - the end of the "**bus stop**"?
  - design of (local) interchange **hubs** (AV ↔ transit) – scope for new business models?
  - converting **parking** to "vehicle storage"
- **Freight distribution** infrastructure (e.g. converting parking houses to logistics centres?)
- How to redistribute **space** and to reassign urban **functions**?

# How can cities prepare (better) for the transition period?

**New service models and governance structures** – *agree an automation agenda!*

- **"Mobility on Demand"** – or "vehicle on demand"?
  - vehicle and ride sharing services that support **policy goals**
  - use cases and **cooperation models** for last mile/ low density services, special needs services (e.g. for ageing communities), municipal services, e.g. waste collection
  - new and traditional providers in a **"services platform"**
- Changing role of **large transit operators**: innovative mobility providers
  - integrator, system backbone, AMoD provider, hub operator
- **Freight** distribution: a growing threat (and an opportunity)
- "Automation platform" (or initially a "task force") to facilitate **multi-stakeholder cooperation**

# How can cities prepare (better) for the transition period?

- **Policy development** – *actively develop an "automation vision"!*
  - **mobility innovation culture** – getting ready for "disruptive innovation"
  - **land use** policy and building standards
  - major new **trends** (e.g. impact of 3D printing)
  - **demand management** policies
  - services based on **shared use**

## Discussion:

# The next five years of urban "automation policy" development

My City's **Automation Roadmap**, including

- Transport **planning**
- **Infrastructure** development
- **Governance** structures/ **service** models