

Autonomous Vehicles and business models

Yannick Perez
Chaire Armand Peugeot
CentraleSupélec-Essec Business School
Yannick.perez@centralesupelec.fr

Mobility issues today

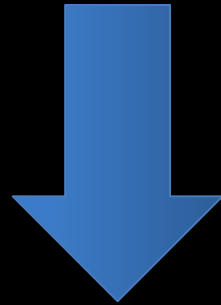
- Mostly Privately owned Internal Comb Engines
- Polluting sources of various emissions
- Raised urban congestion issues
- Created Noise pollution
- Killed or injured drivers, passengers and pedestrians
- Little used of carsharing Mobility services for pooling
 - => Actual business model is clear: Mainly Private with no internalisation of main negatives externalities

3 innovations have potential

- Electric car (hydrogen or BEV)
 - Noise reduction
 - Local emission reduction
 - Global emission reduction if Electricity comes from RES
- Shared Economy:
 - Reduction of urban congestion (4-15 cars for 1 shared)
 - Cost reduction per Km
- Autonomous cars
 - Running all the time (- refueling time)
 - Less accidents but unclear liability rule in case of problem

From Privately owned Internal
Combustion Engine

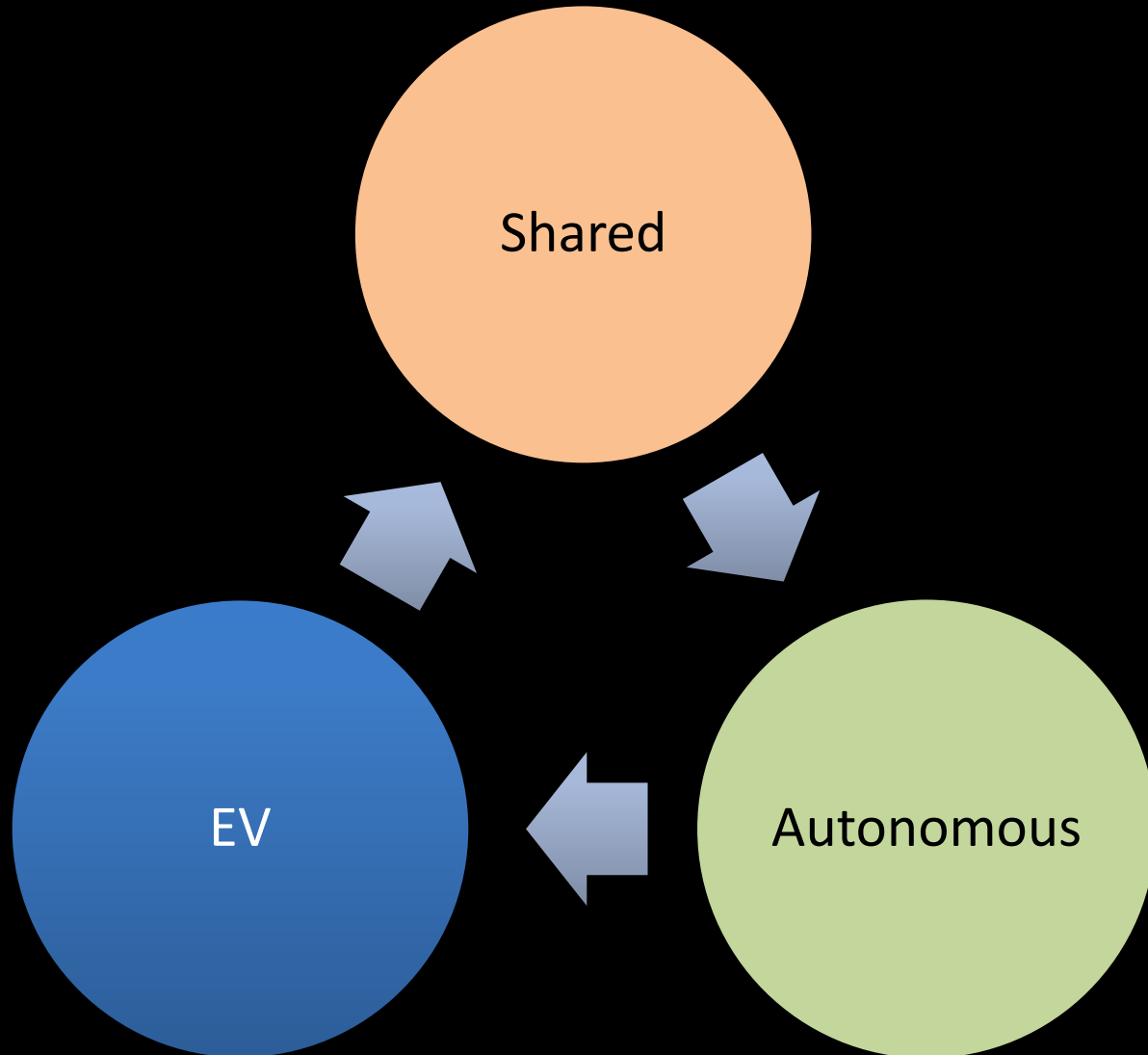
POICE



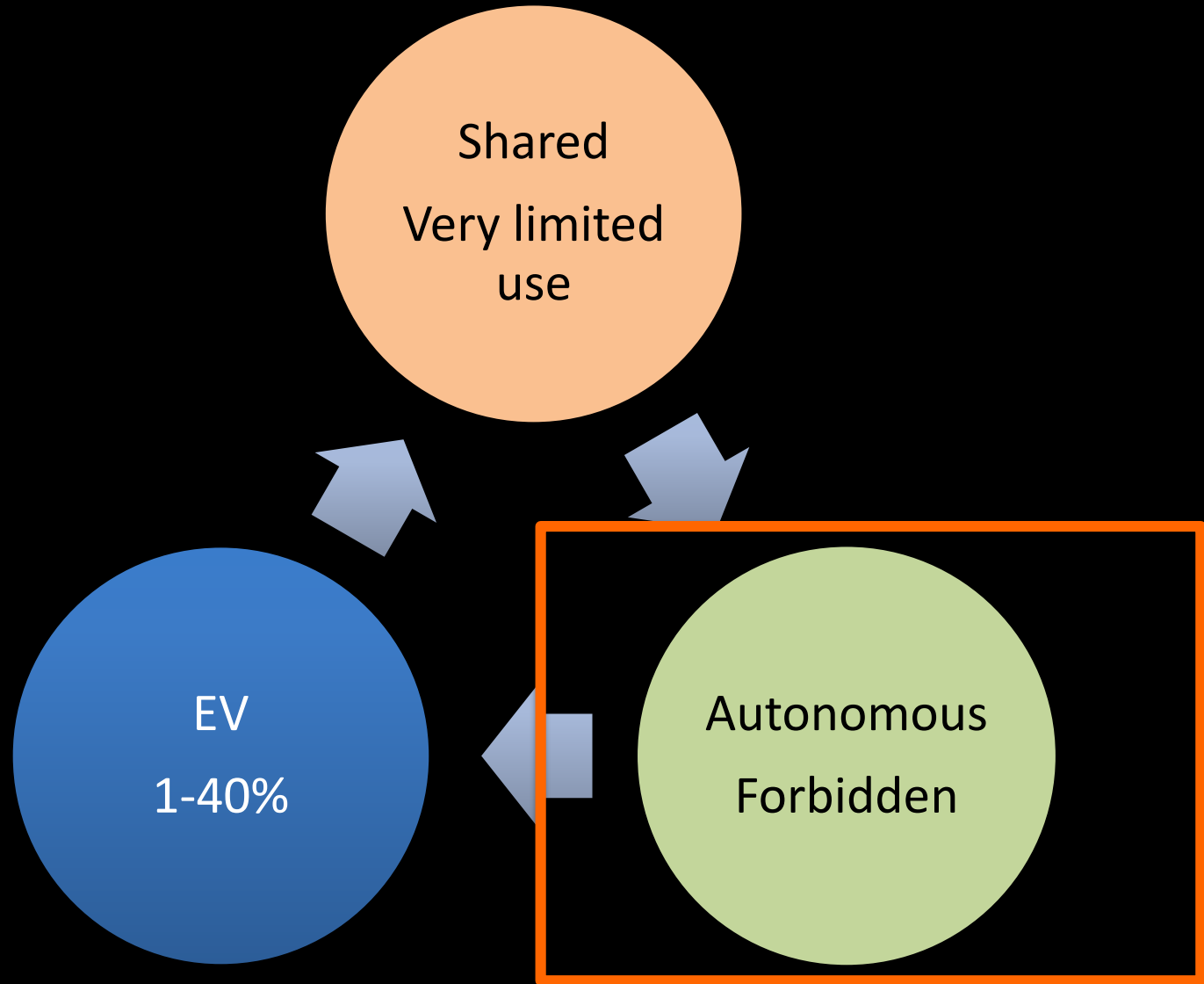
Shared Autonomous Electric
Vehicle

SA-EV

Potential new ecosystem



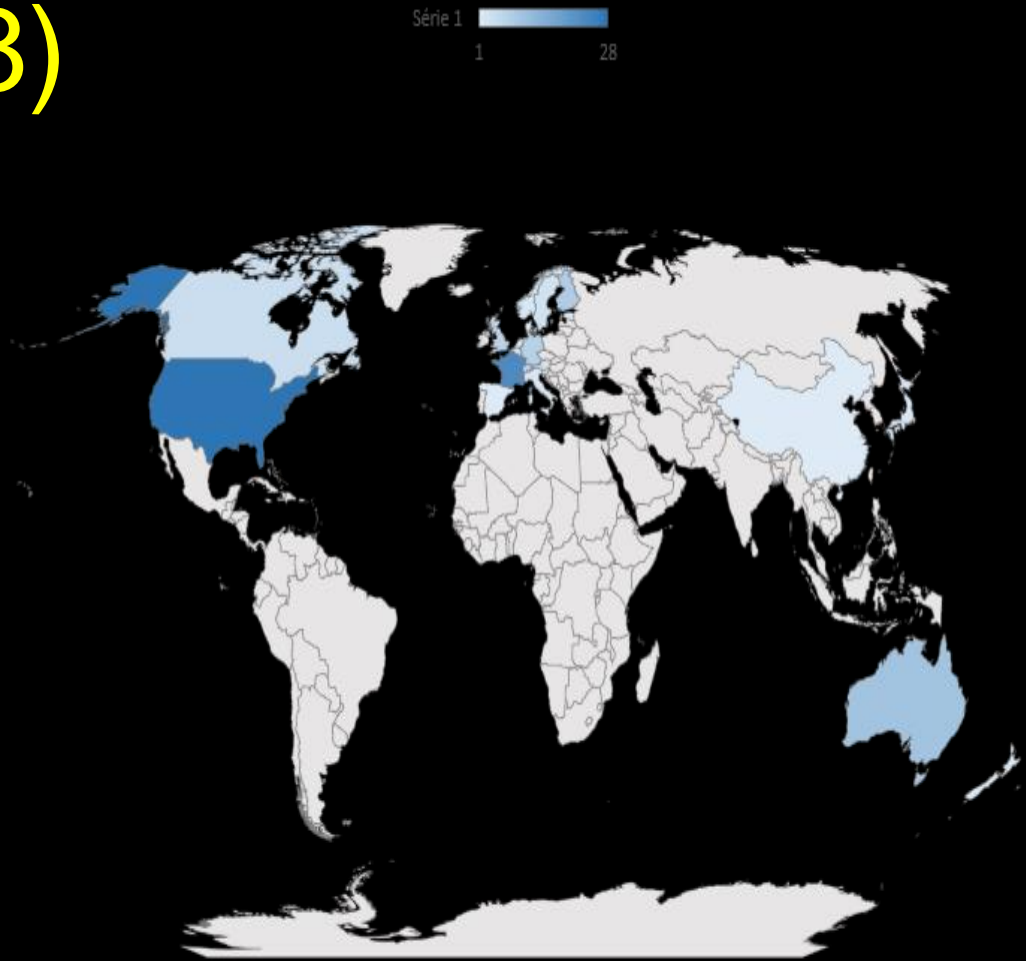
Today SA-EV main challenges



Autonomous cars are expensive R&D
projects

Buisson (2018)

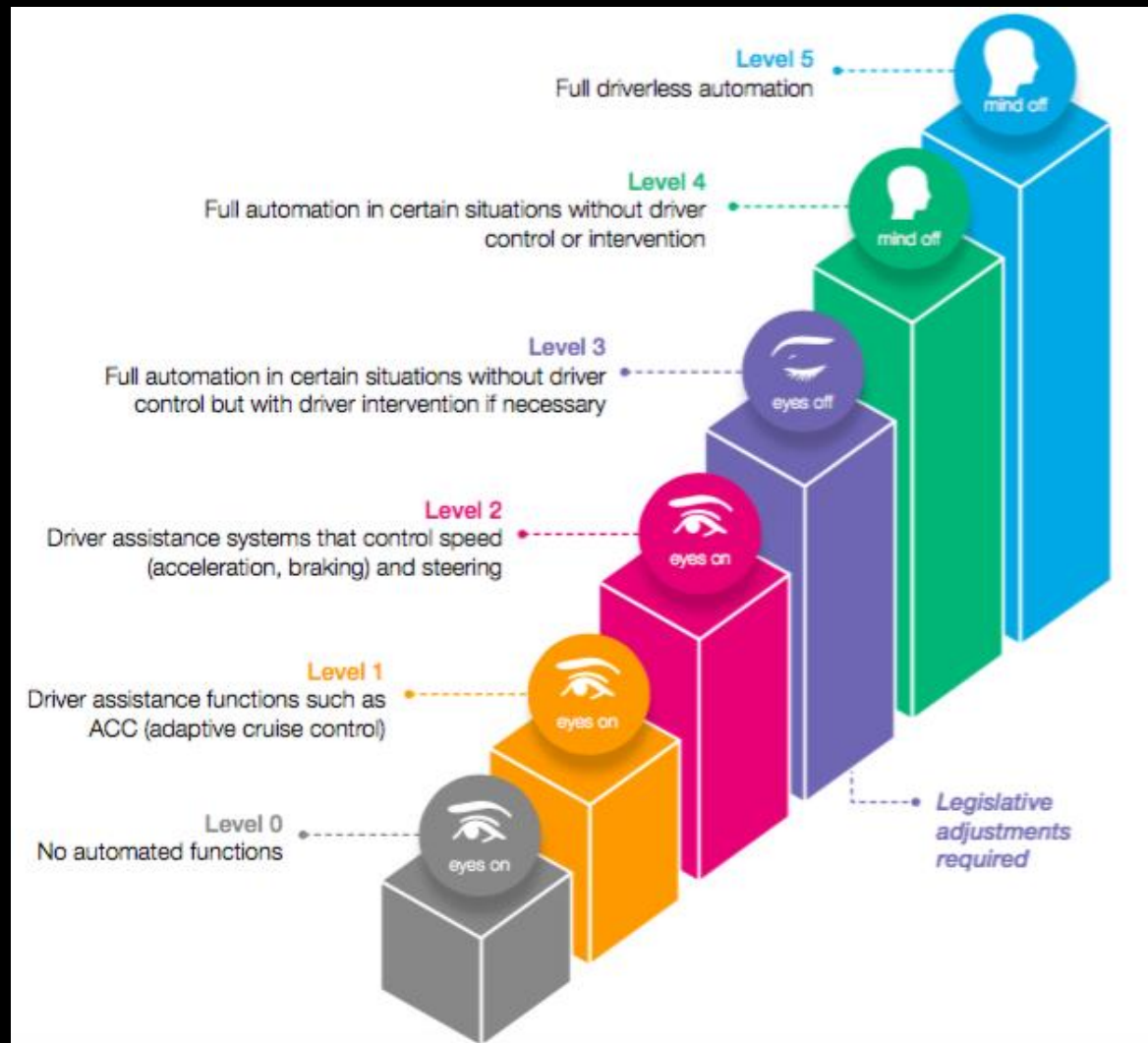
- 119 experiments complete, ongoing or announced between 2011 and 2021
- 81 % of shuttle and 15% of cars
- Type of place : city-center: 26 %, campus : 12 %
- Initiated by public entities : 34%, by computer company : 13% and by public transport operator : 13 %
- Experimental services provided : internal service : 29 %, regular line : 24 %, last mile : 17% and taxis : 10 %



Optimisé par Bing
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Image 3 : Number of experiments at country level (September 2018)

Autonomous cars are R&D projects



No level 4 or 5 cars / taxi/ bus do exist

A lot of issues to go to level 5

Data management
Algorithms architectures
Certification process...

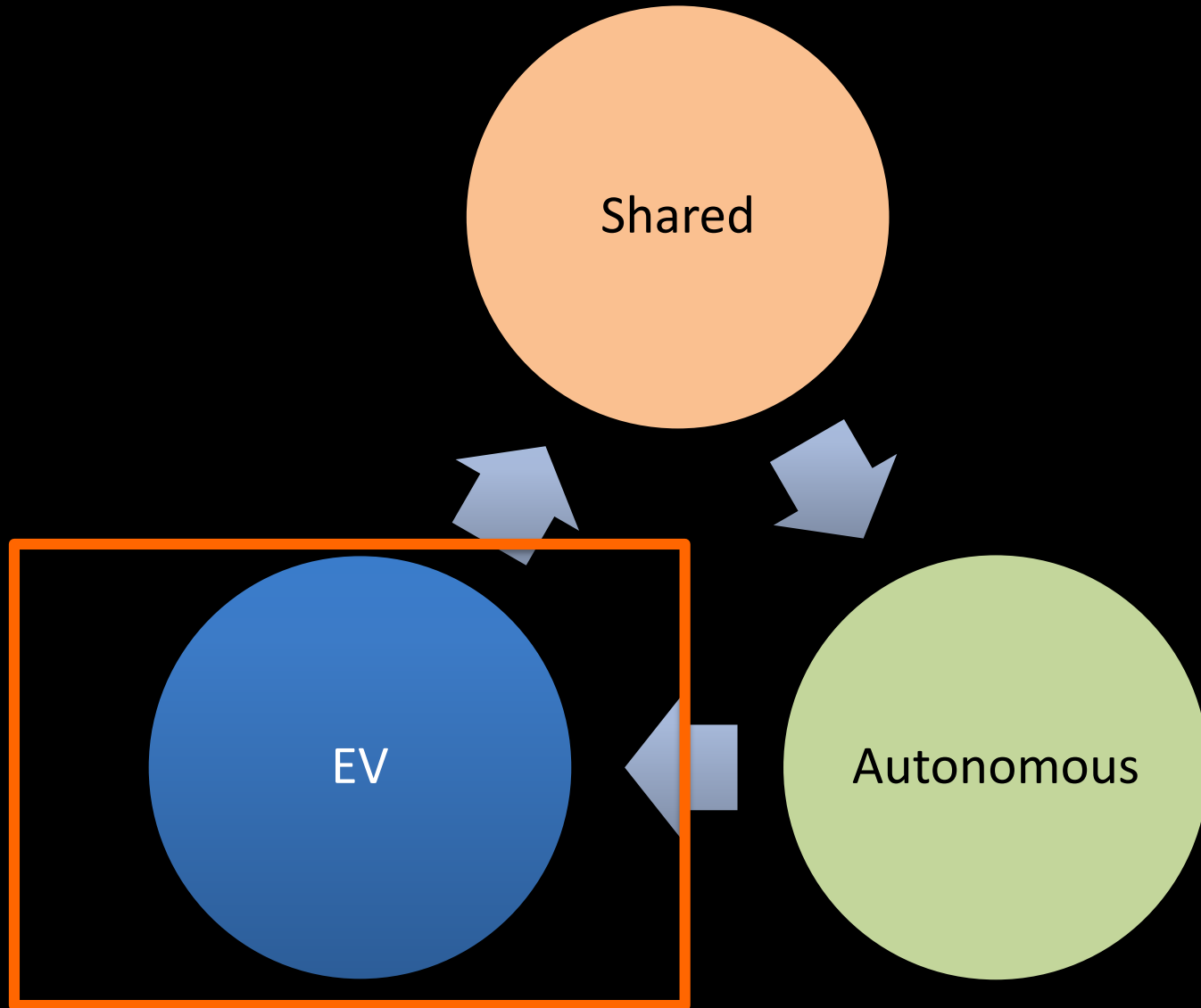
Some unsolved Puzzles for Autonomous Cars...



Algo challenge !



SA-EV ecosystem to build



EVs seem to start a S shape curve

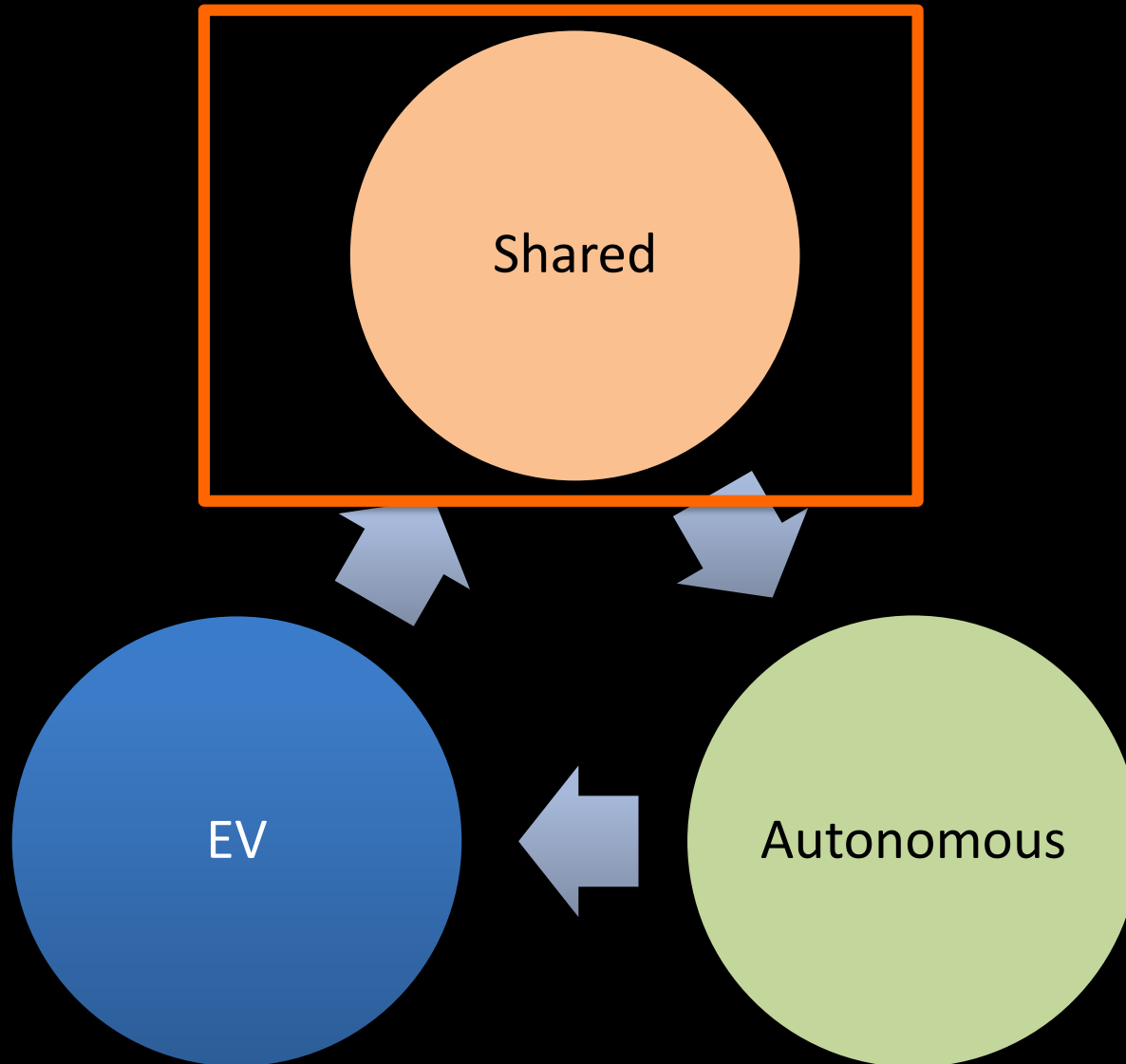


Source: Bloomberg New Energy Finance

But

- Evs are still mainly privately owned
- No garanty on the charging issue
 - Green, blue or black electron?
- Rooming issues if you move your car away from home...
- VtoX markets are not existing yet

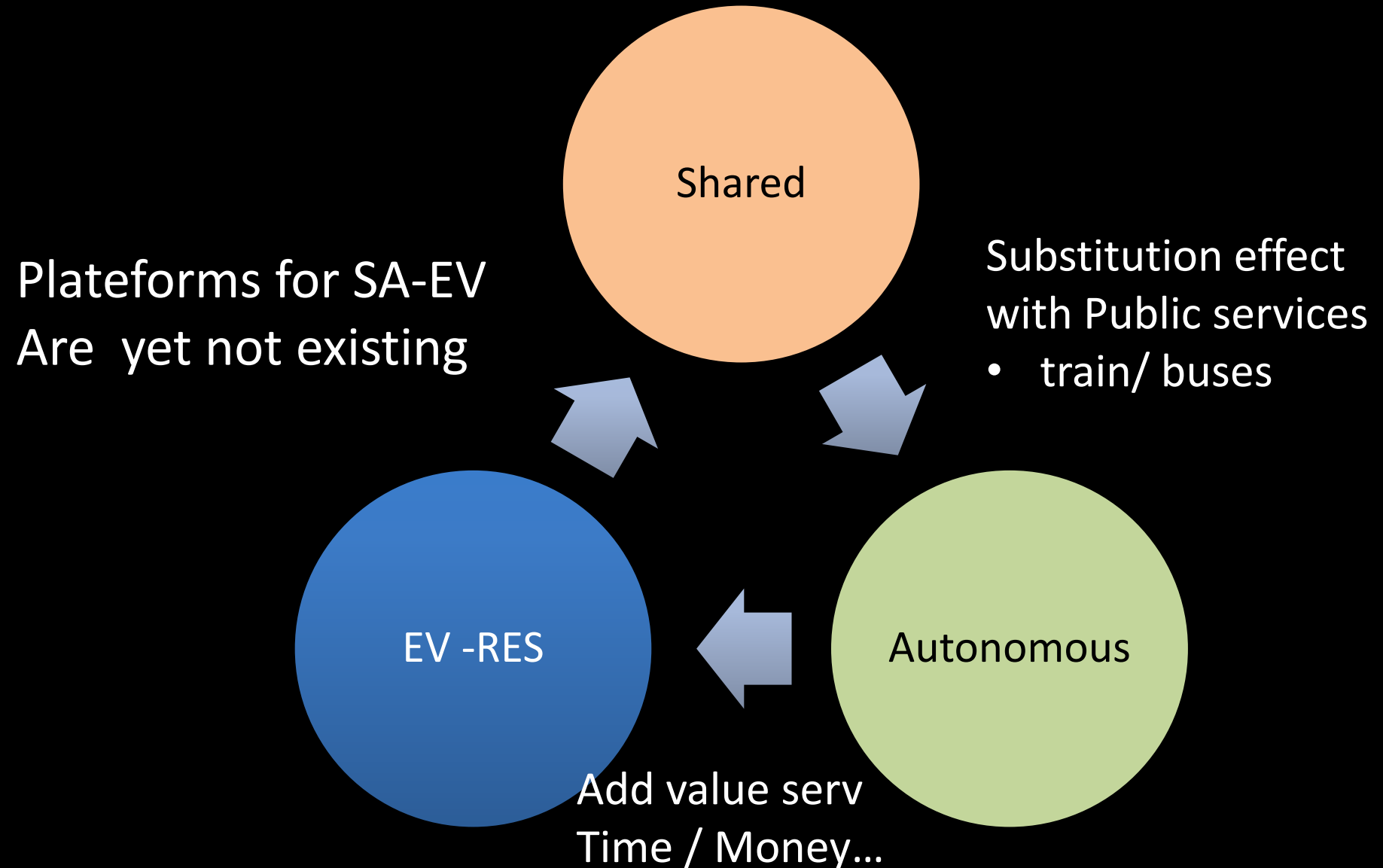
SA-EV ecosystem to build



Carsharing platforms exist

- Use of “Uber Pool” is less than 15% of the Trips sales
- Blablacar :
 - 6 billions Passengers/KM in 2015 in France.
 - Makes money since september 2018
- But no Evs and no VtoX or RES dimensions in their app
- Autonomous data management (2GB per s per car)
- How to combine it with public transport?

Some gaps and who will benefit from?



Conclusions

Some actions taken so far

Public policy driven changes

- CO2 regulation => EV
- Subsidies for EV purchase
- Congestion tolls=> shared
- Consistency issues
 - Autonomous cars are illegal
 - Shared mobility/Public service provision

Business driven changes

- OEMs push for Autonomous cars technologies and R&D
 - AI
 - Cameras / algo/
 - Rules and algorithms
- Platforms
 - Carsharing (Blablacar / Uber)

A lot of services / business models to explore

- Exploring synergies :
 - A fleet of SA-EV helping a grid issue / hospital/ concert in an Arena / back up power?
 - Trains of SA-EV = « Taxi de la Marne »
 - Free time in the car for what?
 - Eating ?
 - Sleeping ?
 - Meetings ?

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