Autonomous vehicles and non-autonomous urban planning

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Introduction and sources

➢ **The elements presented here are some learnings from numerous researches made in the LaSUR and in MoHo**

↳ A large literature review

↳ Creativity workshops

↳ Some interviews made with a large range of experts (in urban planning, urban development, numeric issues, transport and mobility issues, etc.)

Autonomy levels

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) AUTOMATION LEVELS

Full Automation

0	1	2	3	4	5
No Automation	**Driver Assistance**	**Partial Automation**	**Conditional Automation**	**High Automation**	**Full Automation**
Zero autonomy; the driver performs all driving tasks.	Vehicle is controlled by the driver, but some driving assist features may be included in the vehicle design.	Vehicle has combined automated functions, like acceleration and steering, but the driver must remain engaged with the driving task and monitor the environment at all times.	Driver is a necessity, but is not required to monitor the environment. The driver must be ready to take control of the vehicle at all times with notice.	The vehicle is capable of performing all driving functions under certain conditions. The driver may have the option to control the vehicle.	The vehicle is capable of performing all driving functions under all conditions. The driver may have the option to control the vehicle.

Crédit image : https://www.nhtsa.gov/technology-innovation/automated-vehicles-safety

Autonomous driving in Public Transports

- More flexibility and reactivity in operational preocesses

- Increase in the frequences

- Limitating emergency brakes

- For passengers, it doesn't change a lot

(1)

> **Autonomy in public transport vehicles can help developing an alternative offer of mobility to the car. And a strong public transport service is necessary for TOD.**

Autonomous shuttles

To complete the public transport offer

Last-mile service

For people with disabilities and reduced mobility

(2)

➢ **Something interesting on specific segments of the offer. But be very careful not to replace walking trips...**

(2)   Source : http://www.lenouvelliste.ch/photos/valais/les-premieres-navettes-autonomes-circulent-a-sion-549080

➤ **Public transport autonomous vehicles with or against conventional public transport?**

↳ A need to articulate the new offer with the classic public transport offer

↳ The need for public authorities to equip infrastructures before welcoming such autonomous vehicles provides an opportunity not to do that everywhere and without conditions

↳ Autonomous vehicles will develop before autonomous cars because level 4 is sufficient for the first ones

Shared autonomous cars

Shared services are developing, sometimes quickly

Autonomous cars in shared fleet allow to better organize the vehicle fleet

For each vehicles, time on the roads will be more important and time parked less important

(3)

But what link with the actual offer of Public Transport ?
Which form of car-sharing ?
Free-floating or station-based systems ?

Non-shared autonomous cars

What price ? What use ?

Car manufacturers know how to sell cars. Do they know how to sell mobility services ?

Non-shared autonomous cars would sweep parking policies

Why not a car occupancy rate below 1 person per vehicle ?

(4)

From Zahavi to Zahavi 2.0

(4)   http://voiture-autonome.lefigaro.fr/solution-developpement-durable/

Let's plan !
Let's regulate !

> **If autonomous cars will circulate on an autonomous way, planning won't appear on an autonomous way**

In urban city centers, the situation is probably easier to regulate

But in rural areas ?

I haven't the miracle solution, but I have a belief, a frame to follow :
Mass collective transport services
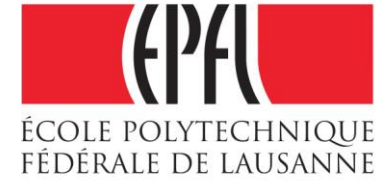
Thank you for your attention !

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