

Rémy DANGLA

Delivering Autonomous Mobility

Autonomous vehicles in the future of mobility



EasyMile in a nutshell







Headquartered in **Toulouse** (France), with offices in **Denver** (USA), **Berlin** (Germany), **Singapore**, and **Adelaïde** (Australia)



Privately funded by **founders**, with **Alstom**, **Continental** and **Bpifrance** as strategic investors







Our vision : Autonomy is the future of mobility



Improved safety



More mobility

• Affordable solution for 1st and last mile to complete public transport network



Better use of public space

- Less traffic jam and new way to share public space by reducing number of private cars
- Less space dedicated to parking lot



Mobility needs have exploded in urban areas

 1985
 9 cities > 10 Million inhabitants

 2001
 19 cities

 2017
 40 cities



 Commuting is growing: 45 km/ day - 9 times more than 50 years ago



Public transport vs private cars

- Mass transportation is a solution to restain the flow. Example: Paris RER A has a 50 000 pphpd capacity
- Considering 1.2 passengers per car, a 2x18 lines road would be required to reach this capacity
- Cars, autonomous or not cannot be the answer...





Current public transport system issues

- Despite...
 - A great promotion
 - o Environmental benefits
 - Low cost for users
- ... there are still lots of trafic jams
- Some areas suffer a lack of service





Limits of current solutions



Autonomous shuttles as a complement of current mass transportation

Autonomous vehicles cannot be the solution to replace current public transport system.

Shared autonomous vehicles can greatly improve the door to door ride, even more on low demand areas





Challenge 1: being at least as safe as a human driver

What a human bus driver achieves	Fatality rate	4 * 10 ⁻⁸ /hour
	Severe injuries	4 * 10 ⁻⁷ /hour
	Injuries	4 * 10 ⁻⁶ /hour

Assuming a 10km/h commercial speed, this represents one fatality per 250 millions km travelled

 \rightarrow Very high

 \rightarrow Can not be demonstrated through statistics



Challenge 2: make autonomous driving vehicles certifiable to gain large public acceptance





No existing standard tailored to autonomous vehicles

Nearly infinite number of corner cases "Black box" effect of machine learning, vs. need of formal proof Each autonomous driving player has adopted a specific strategy / technology mix to address this challenge



Challenge 3: being cost competitive vs. a human driven vehicle





Since November 2018, EZ10 is 100% autonomous on an industrial site in France

Description of the site

- Nearly 1km road with limited intersection with other vehicles
- Linking Workshop Restaurant
- Daily operation at lunch time



- Supervised by an operator trained by EasyMile
- 50% of TLD employees use it daily





Thank you !



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