A.I. for MOBILITY

La guida autonoma ed il futuro della mobilità urbana

Prof. Sergio Savaresi Milano, 19/6/2025

POLITEC MILANC **NICO** 1863

M METRO

Car density is very high



Per 60M people

Country	Cars per 1000 inhabitants	Total number of cars
United States	831	275,913,237
Canada	790	30,754,600
Australia	782	20,335,000
Poland	771	29,369,800
Italy	755	45,487,900
France	668	45,297,000
Germany	628	52,275,833
Spain	627	29,707,581
Japan	624	78,461,953
United Kingdom	600	40,800,000
Netherlands	588	10,248,388
Malaysia	542	17,728,482
South Korea	485	25,167,409
Russia	395	58,116,046
Mexico	391	50,400,000
Argentina	373	17,000,000
Colombia	324	16,500,000
Thailand	280	19,576,630
Turkey	254	21,763,186
Ukraine	245	10,500,000
South Africa	232	13,570,330
China	226	319,000,000



Average mileage of cars is very low





Few cars are used simultaneously

10-12%

of cars (only) are simultaneously active during peak hours





Urban public space occupation is massive



50%

of cars in Milan parked on streets

5M m²

of public space occupation



Commuting by car is still very large







Electrification and private ownership: a difficult match





Servitization: Car sharing?

Cars are often too far from users, requiring a large fleet

High costs and low margins make the model UNSUSTAINABLE.







Car Sharing in Italy: (almost) only Milan



Location	# Services	# Vehicles	
Arezzo	1	11	
Bari	1	39	
Bologna	2	342	
Cagliari	1	40	
Ferrara	1	23	
Firenze	1	142	
Genova	1	87	
Imola	1	7	
Milano	4	3.365	
Napoli	1	65	
Palermo	1	14	
Parma	1	47	
Roma	3	1.933	
Torino	2	567	
Venezia	1	5	



Number of vehicles in sharing: stagnation



Number of car-sharing vehicles

	2019	2020	2021	2022	2023	2024
Rotation rate	4,7	2,9	2,9	3,6	2,4	2,5
Annual vehicle mileage	12.649	8.632	10.385	15.995	11.705	n.d.

Larger fleets mean lower utilization and mileage per vehicle



Autonomous driving solution

Vehicles autonomously pick up users, then relocate for parking, charging, or the next ride.

Estimated: x5 MORE EFFICIENT than a standard car-sharing









AIDA "Robo-Sharing": visual concept



From the docufilm «AIDA» (premiere screening on 12/4/25, Caserta)





AIDA "Robo-Sharing"

- Un-manned operation
- Operations at low- speed (max 30kph)
- Active remote supervision





Case Study - Brescia

Replacement target (first target): cars with 70% trips «in-in» in BS.

Robo-sharing cars	10.200
Ratio private/shared cars	11
Replaced private cars	112.000
Average mileage of replaced cars	7.000 km/y
Average mileage «in-in» of replaced cars	4.500 km/y
Average Mileage of shared cars	47.000 km/y
Average Wait Time	3min



Estimated in Italy (urban)

Robo-sharing cars	0,5M
Replaced private cars	5,5M



Expanding the robo-sharing features: "Robo-Fencing"

When a Robo-Sharing customer **DRIVES** the car, a **set of safety features can be EASILY ENFORECED**

Speed-fencing

Rule-Fencing

Estimated number of avoided urban accidents: -40%





"Robo-sharing" Social Impacts



New Job Positions (Supervisors)

>15.000 new job positions in Italy



Space saved

~ 48 Km² urban space saved in Italy



Reduced Number of Urban Accidents

~ 57.000 avoidable accidents in Italy

X

Time Saved

Average time saved ~200 hours/car/year







Autonomous driving: the enabling technology for electrification and servitization





Long-term vision (the dream...) – Full servitization of personal urban mobility





USA vs. China (and EU?)



Waymo (USA)



Baidu (China)



a Quotazioni ABBONATI

Stati Uniti Ufficiale: stop ai veicoli con tecnologie cinesi e russe

💽 Redazione Online | Pubblicato il 14/01/2025 | 🗏 6 commenti



1/2 ka Stati Uniti - Ufficiale: stop ai veicoli con tecnologie cinesi e russe

Ascolta questo articolo ora...

A pochi giorni dall'insediamento di Donald Trump, la Casa Bianca guidata da Joe Biden formalizza il regolamento che impone **il divieto** alla vendita e all'importazione negli Stati Uniti di veicoli con tecnologie di origine cinese. Il dispositivo, che riguarda anche componenti o ricambi commercializzati separatamente dalle auto, è stato definito dal Bureau of Industry and Security del Dipartimento del Commercio al temine di un lungo processo normativo in corso ormai da mesi. Inoltre, rispetto a quanto emerso negli scorsi mesi, la norma si applica non solo alla Cina, ma anche alla Russia.



Conti in tasca: Jeep Avenger BEV, benzina e ...



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A major threat for EU – call for ACTION!

China and USA are massively developing Robotaxi tecnology

New mobility models (MaaS) based on Robotaxi will influence also the car manufacturing

(service + AV-technology + car-manufacturing)

Major risk of national security (internal security)

EU is is an (almost)closed "bubble" till now (very difficult to test and deploy AV), but we need to develop EU technologies soon!

Major risk to give out to USA and/or China the whole mass-market of personal mobility







