

I LIVELLI DI AUTONOMIA

(SCALA SAE)

SAE level	Name	Narrative Definition	Execution of Steering and Acceleration/Deceleration	Monitoring of Driving Environment	Fallback Performance of Dynamic Driving Task	System Capability (Driving Modes)
Human driver monitors the driving environment						
0	No Automation	the full-time performance by the <i>human driver</i> of all aspects of the <i>dynamic driving task</i> , even when enhanced by warning or intervention systems	Human driver	Human driver	Human driver	n/a
1	Driver Assistance	the <i>driving mode</i> -specific execution by a driver assistance system of either steering or acceleration/deceleration using information about the driving environment and with the expectation that the <i>human driver</i> perform all remaining aspects of the <i>dynamic driving task</i>	Human driver and system	Human driver	Human driver	Some driving modes
2	Partial Automation	the <i>driving mode</i> -specific execution by one or more driver assistance systems of both steering and acceleration/deceleration using information about the driving environment and with the expectation that the <i>human driver</i> perform all remaining aspects of the <i>dynamic driving task</i>	System	Human driver	Human driver	Some driving modes
Automated driving system ("system") monitors the driving environment						
3	Conditional Automation	the <i>driving mode</i> -specific performance by an <i>automated driving system</i> of all aspects of the dynamic driving task with the expectation that the <i>human driver</i> will respond appropriately to a <i>request to intervene</i>	System	System	Human driver	Some driving modes
4	High Automation	the <i>driving mode</i> -specific performance by an automated driving system of all aspects of the <i>dynamic driving task</i> , even if a <i>human driver</i> does not respond appropriately to a <i>request to intervene</i>	System	System	System	Some driving modes
5	Full Automation	the full-time performance by an <i>automated driving system</i> of all aspects of the <i>dynamic driving task</i> under all roadway and environmental conditions that can be managed by a <i>human driver</i>	System	System	System	All driving modes

I PROGETTI DEI COSTRUTTORI

2017

- Tesla Hardware Two: pre-livello 4 entro l'anno su Model S, X, 3
- Nuova Audi A8: parcheggio automatico e guida nel traffico fino a 60 km/h (livello 3)
- Nissan ProPilot: gestione della singola corsia in autostrada (Qashqai)
- Mercedes-Benz Intelligent Drive (livello 2+ sulla nuova Classe S)

2018

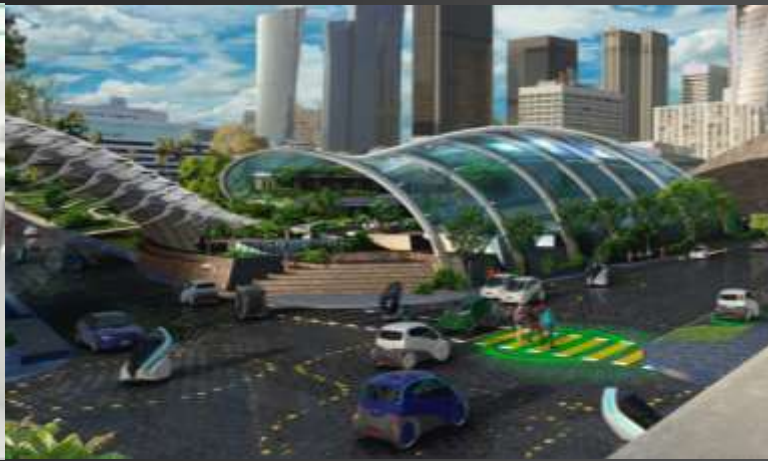
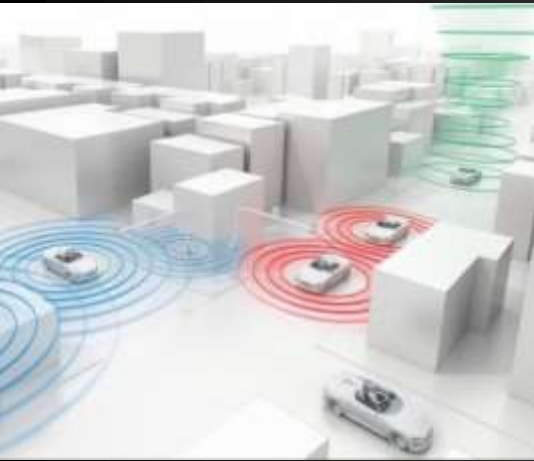
- Nissan ProPilot: più corsie in autostrada

2020+

- Nissan ProPilot: guida automatizzata in città
- Ford senza senza volante per ridesharing e car sharing
- BMW iNext, Volvo (livello 4 e 5)
- Flotte robot: Uber, GM-Lyft, Daimler, Ford, BMW, Gruppo Volkswagen

L'AUTO E LE SMART CITY

- Piattaforme V2X (connessione a semafori, altre auto)
- Guida predittiva, orizzonte digitale
- Trasformazione urbanistica: garage e strisce blu, traffico adattivo, smart parking
- Risparmio di spazio urbano fino al 60%, da convertire in spazi verdi e servizi



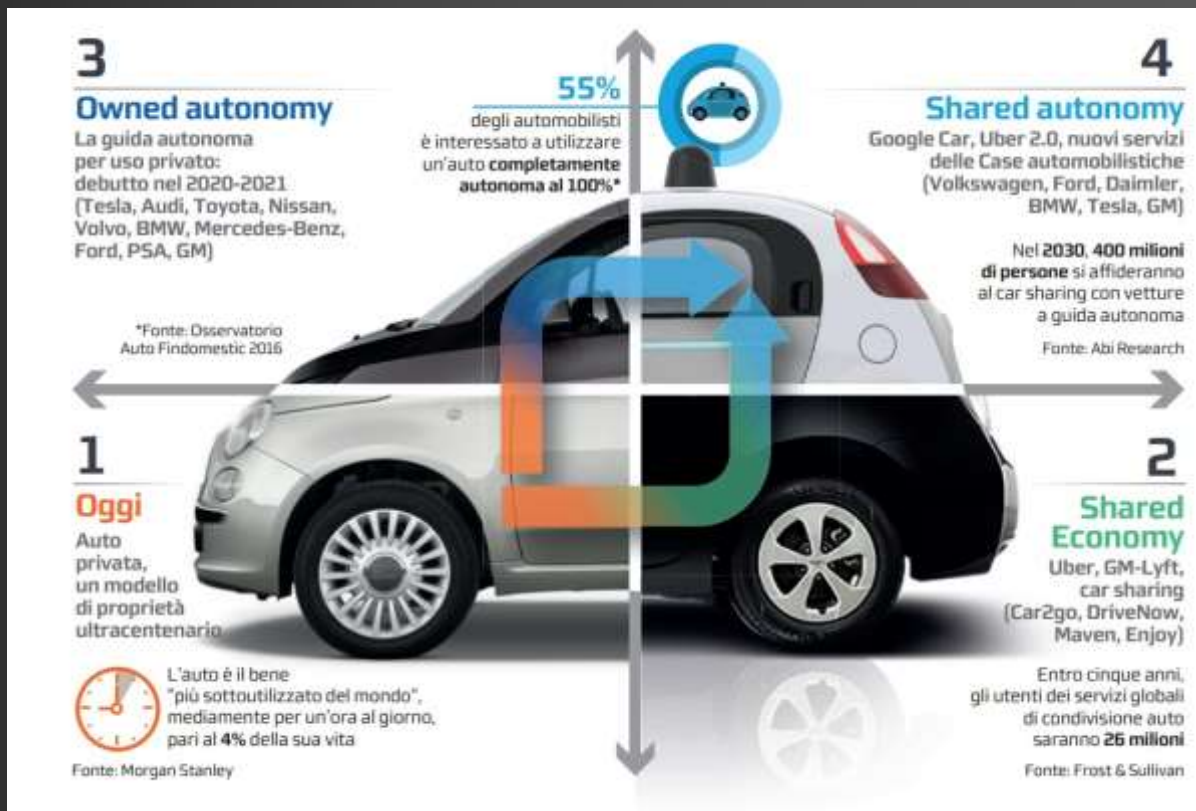
MOBILITÀ 2.0

- Car sharing
(Enjoy, Car2go, DriveNow)

- Ridesharing alla Uber

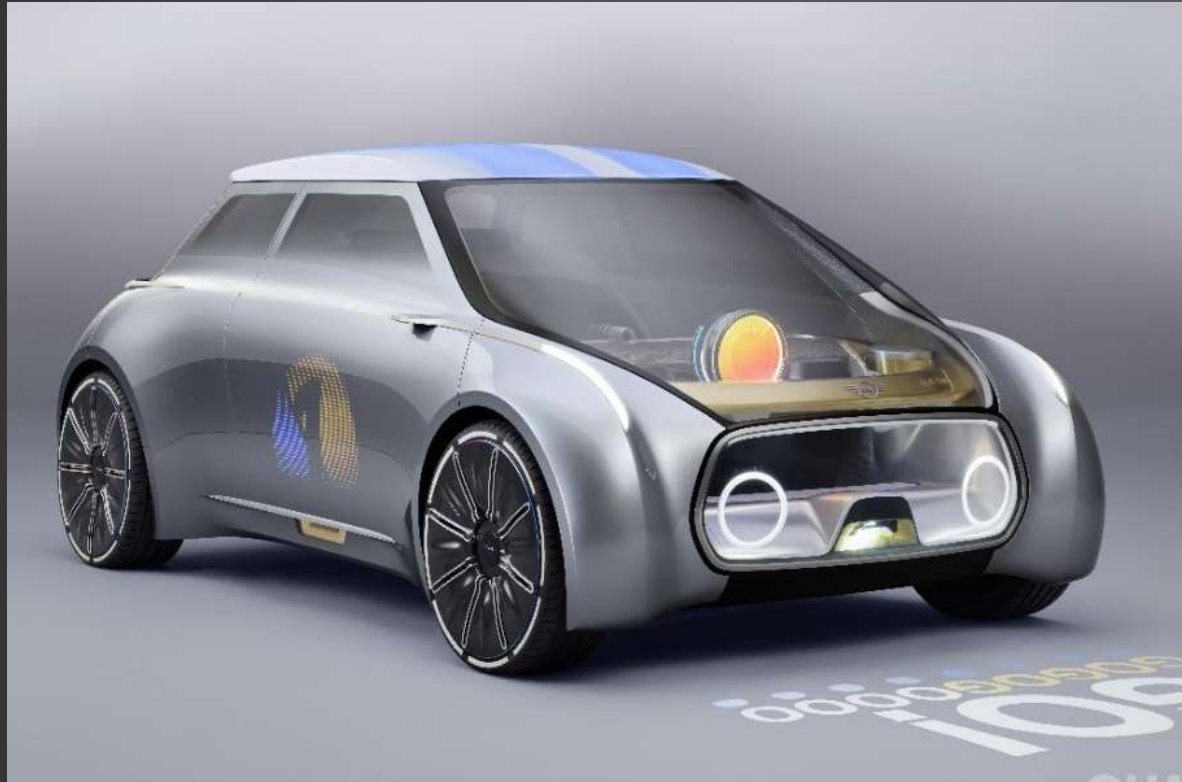
- Nuovi servizi di micro sharing condominiale, comproprietà, noleggio flessibile (Audi, Cadillac)

- Noleggio tra privati
(Airbnb dell'auto: Croove, ReachNow, Auting)



PROPRIETÀ FLESSIBILE

- Oggi le auto restano parcheggiate per il 95% del tempo (in media 23 ore al giorno)
- Tra 10-15 anni potremo monetizzare l'inattività dei veicoli
- Soluzioni: Mini Vision Next 100, Tesla Network, studi Volkswagen, Ford, GM, Honda, BMW e Daimler



LE CITTA' DEL FUTURO

- Tariffe flat per abilitare tutti i servizi di mobilità

- Flotte autonome, anche in concorrenza con il trasporto pubblico: Daimler-Bosch (2020+), Waymo (Google) a Phoenix



VOLKSWAGEN SEDRIC

- 2018: primi progetti pilota
- 2021: in 20 metropoli
- 2025: flotta globale



INTELLIGENZA ARTIFICIALE

Toyota e Honda hanno presentato dei sistemi capaci di riconoscere lo stato di salute e le emozioni del conducente, attivando la guida autonoma in caso di pericolo

Toyota Concept-i (Yui)



GLI ASSISTENTI PERSONALI

Intelligenze artificiali in grado di conversare con il conducente in linguaggio naturale

Alexa (Amazon), Siri (Apple), Google Assistant (Alphabet), Cortana (Microsoft)



HEAD-UP DISPLAY E REALTÀ AUMENTATA



GUIDA AUTONOMA, MERCI, LOGISTICA

- Mercedes-Benz Future Truck 2025
- Mercedes-Benz Vision Van
- Tesla Semi (motrice elettrica)



ELETTRICHE E AUTONOME (2019+)



