Information technology went from bulky and cumbersome to lightweight, sleek, versatile….
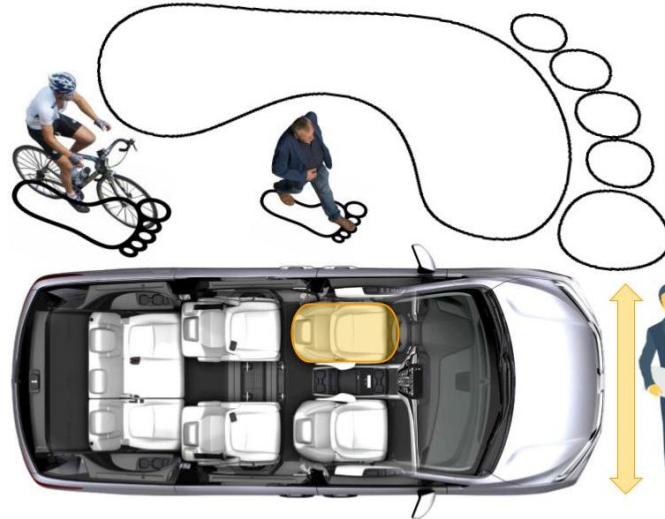
Personal Mobility is transitioning from already bulky and cumbersome (SUV and truck trend) to full-fledged overweight and wide, because of all the batteries…

Can't we do something? Yes, we can.
Reduce vehicle footprint, mass and energy intake, without compromising, even *improve* safety.
Introduce a car equivalent of the smartphone.

"1 in 900 suffices"

Electric Car 2.0 = basically an appliance on wheels

How to provide "Lean – Clean – Green" in Personal Mobility without bringing a small car?
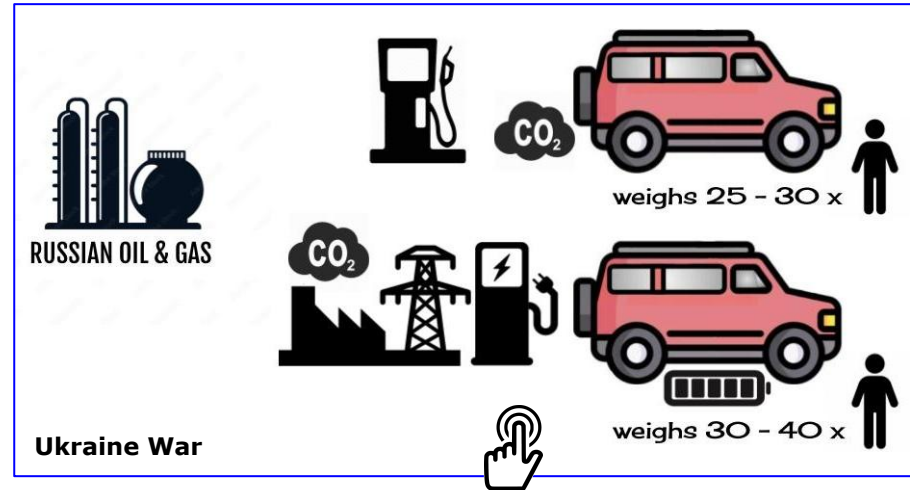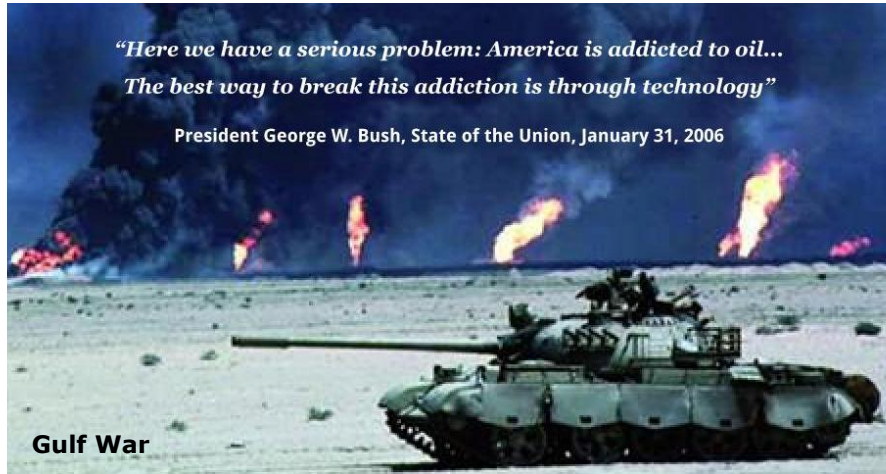

by Ralph Panhuyzen
click for 'credentials'

Aren't you getting impatient about the slow progress in really smart, electric vehicles? As the car is to lose its ICE-related engineering, it basically becomes a large, battery-powered 'appliance on wheels' to displace yourself. Most people think that 'smart' is about gadgets and on-board systems. In author's opinion it's primarily about how to deal with vehicle mass - energy - space - time more intelligently.

In this outline you will read how the Next-Gen EV you see depicted here will carry three passengers safely, comfortably, economically and autonomously.

Combining Need and Opportunity

1. Talk about Need: ditch our dependence on fossil energy because of the volatility involved (pricing, social unrest, war, climate). Since electricity is still being generated by burning fossils and needs to be distributed (raising demand on the grid), curbing an electric car's kWh intake is crucial.

2. Talk about Opportunity: realize more space-efficient 'auto-mobility' and therefore self-driving.

3. Tame Inflation: a more cost-efficient vehicle in terms of using less materials, energy and space.

"Here we have a serious problem: America is addicted to oil... The best way to break this addiction is through technology"

President George W. Bush, State of the Union, January 31, 2006

Gulf War

RUSSIAN OIL & GAS

CO_2 weighs 25 – 30 x

CO_2 weighs 30 – 40 x

Ukraine War

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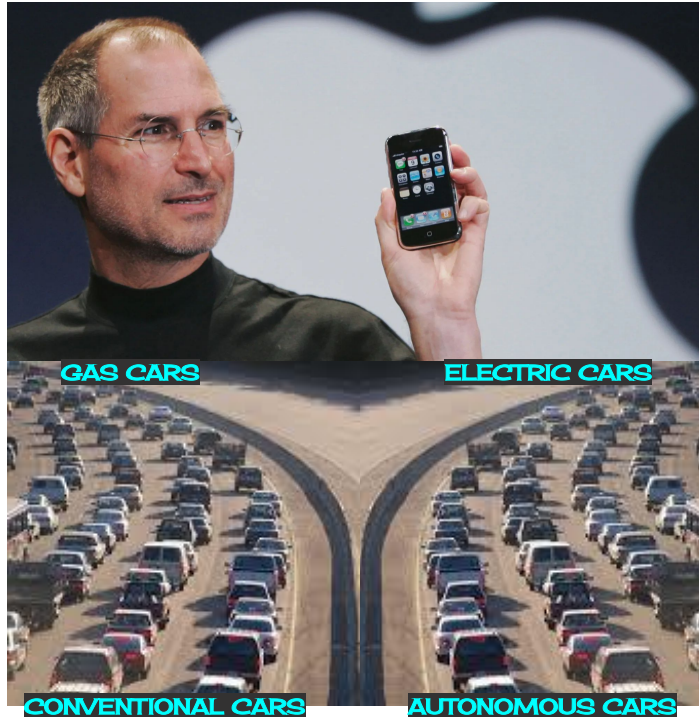
Greening the Car and making it Driverless are two sides to the same coin

The same change in mindset is needed as what took place in personal communication

Personal Communication   –>   Smartphone

APPLE disrupted the whole Personal Communication industry with the Smartphone. Personal Mobility (the biggest industry in the world) needs a similar smart device: lean, clean, green, and self-driving when you want it to be.

Besides swapping the gasoline engine for electric drive, TESLA never came to reformatting the electric car. You'd be surprised how *everything in personal mobility is size-related*, particularly the things we want: affordable electrification, self-driving and of course arriving at our destination on time.

Personal Mobility   –>   Smart-Mobility App(liance)

New challenges as well as persistent problems in auto-mobility, together with new possibilities, invite us to rethink the car.

Save the Planet

We need to look beyond the present day electric car to see what should be next.
With electrification, the car will become a household's biggest electrical appliance. This will put extra strain on power grids. Billions need to be invested in charging infrastructures. Obviously the smaller the appliance, the less kWh are required. A small battery pack suffices. This will also help to SAVE the Energy Transition itself politically, and help to build momentum.

Mission
Save the Planet
'Save' Driverless
Save Lives
Save money by using less
Make money by going global

'Save' driverless

POLICE RECOMMEND CHARGING UBER DRIVER

autonomous tech

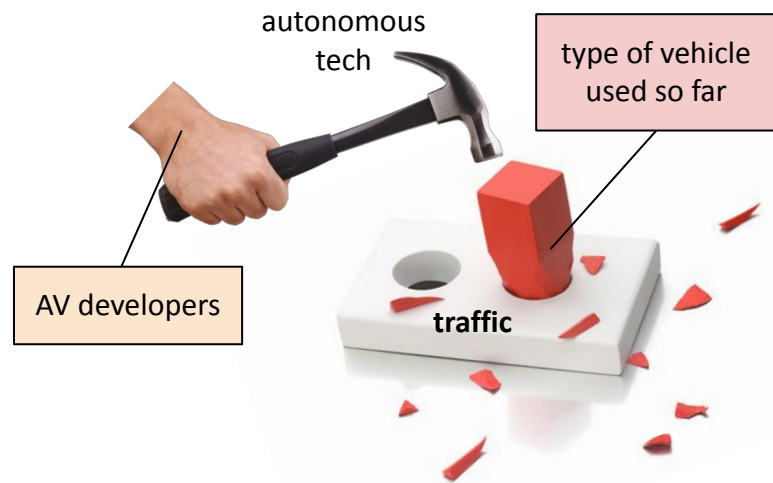type of vehicle used so far

AV developers

traffic

Tens of billions have been spent on making cars drive themselves. So far without a clear finish line in sight. Could it be that all those autonomous car developers have got it backward by fitting hard- and software to existing cars, usually SUVs and MPVs?

NHTSA, IIHS and ETSC have warned that SUVs cause more deaths among pedestrians because of the way they are built. Cause more damage to smaller cars.
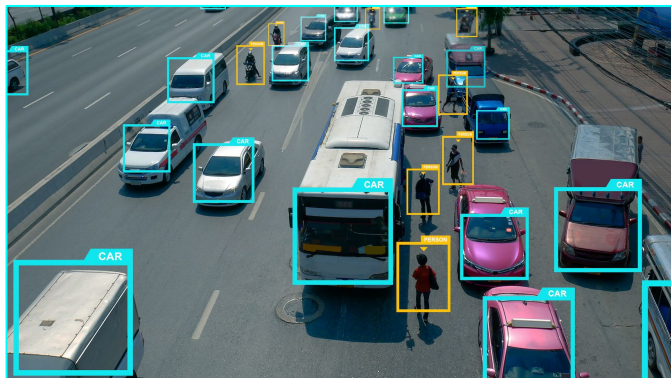
Do we need to 'save' driverless by infusing new ideas into the development process? It sure beats "fake it till you make it" (endless pilots and simulations).

When technology is supposed to take over control, the car basically becomes the 'app', the application. Why not reformat the car first to optimize the use of autonomous vehicle technology?

'Real estate on wheels' invading precious public space to carry the average 1.2 passenger. Really?

Driverless that Saves Lives Part 1

As long as there's no Level 5 self-driving, it is better to have the person behind the controls **seated on the curbside** for better visibility of pedestrians and cyclists. Also to avoid injury in case of the most frequent type of frontal collisions. A three-wheeler is more agile than a four-wheeler.
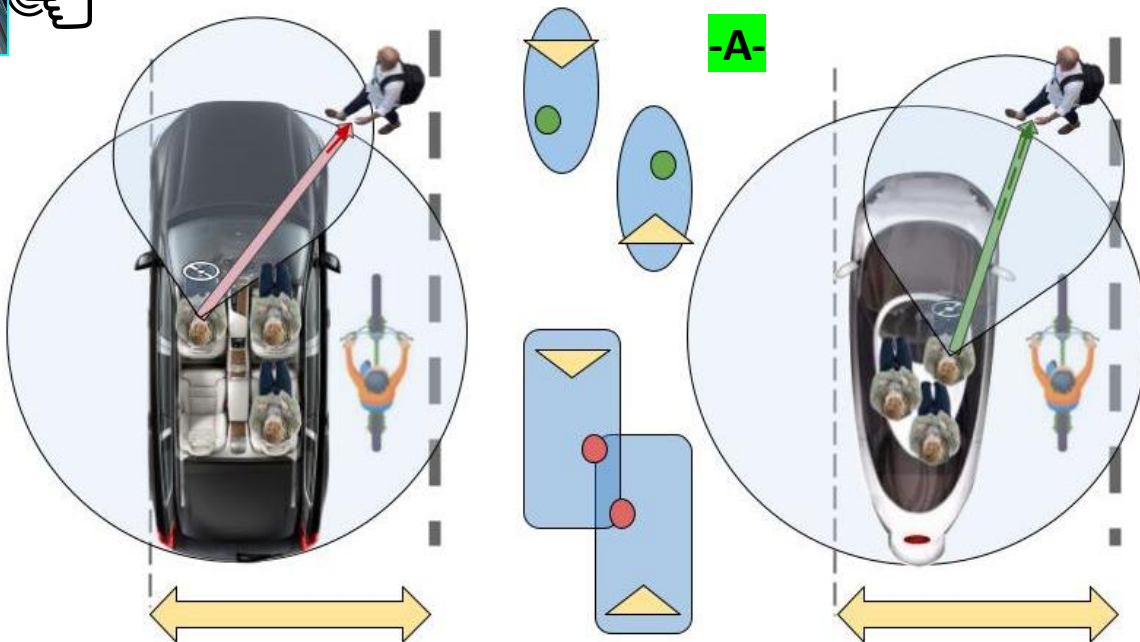
AV developers can't control traffic, the weather, nor legislation.
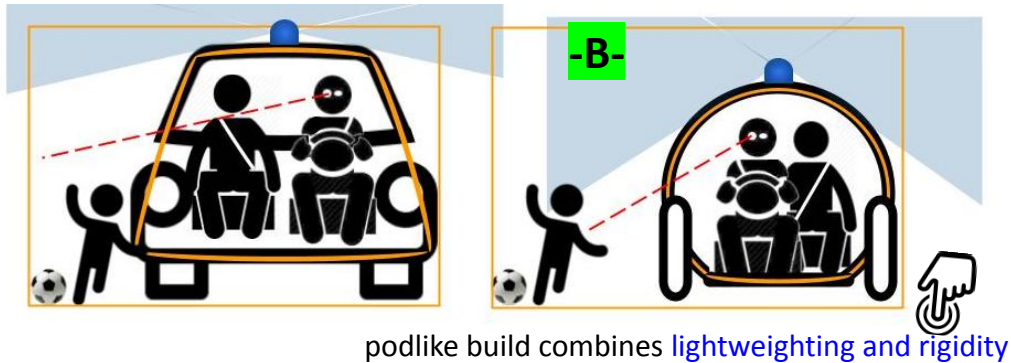**What they *can* control, is the vehicle itself.**

Wouldn't you say that:

-A- the smaller the vehicle, the more margin there is to maneuver, evade other road users?

-B- could a vehicle be formatted in such a way that it has more built-in safety for all involved to begin with?

-A-

-B-

podlike build combines lightweighting and rigidity
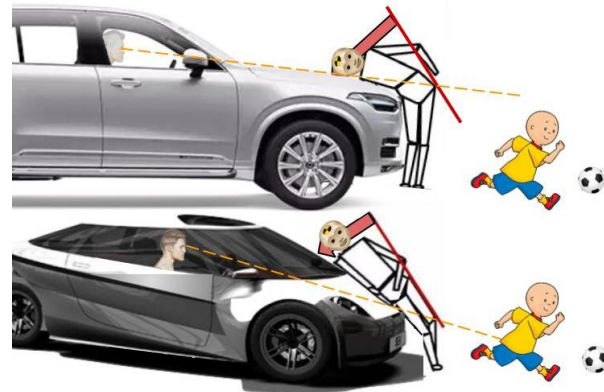

Driverless that Saves Lives Part 2

Boarding curbside. Wheelchair users won't have to roll onto the street to enter and exit.

Car itself needs to 'smarten up' when it comes to the use of space, to 'street ergonomics' and to safety.

Left: sleek, rounded, sloping vehicle contours make it easier to scan-sensor-image the AV's vicinity. Author's sleek-footprint vision and the specific concept that's featured on next page is filed with the NHTSA (U.S. DOT).

Instead of installing ADS on cars as we know them today, reformat the car first to optimize ADS. The car becomes the extension of the tasks it is supposed to perform. Sleek vehicles squeeze more effectivity and safety out of any ADS. Important to avoid the 'small car' stigma though. Ergo, reformatting is quintessential.
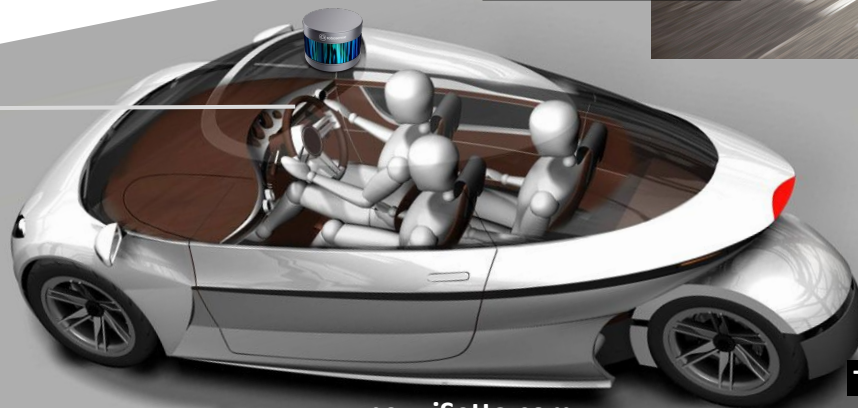
How to combine **lightweighting**, structural rigidity and improved in- and outside safety? By reformatting the vehicle. In this case a pod-like body with rearranged seating layout, featuring a long wheelbase thanks to a protruding rear-wheel(s) assembly. This also yields great comfort and rear-impact safety. **Fahrvergnügen** is guaranteed as it leans into the bend.

Passenger heads cannot collide when vehicle is side-impacted.

Notice the curbside 'driver' * position for much better view of cyclists etc. When the AV technology has matured, the steering wheel can be left out.
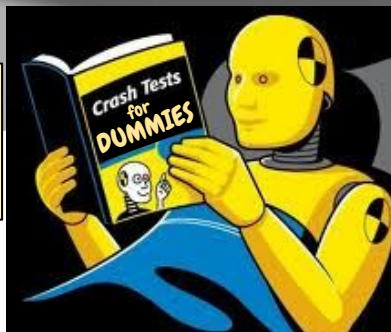
T-bumper

new-iSetta.com

Frontal Impact Offset Collision. Most frequently occurring frontal collision type according to NCAP.

Author Ralph Panhuyzen
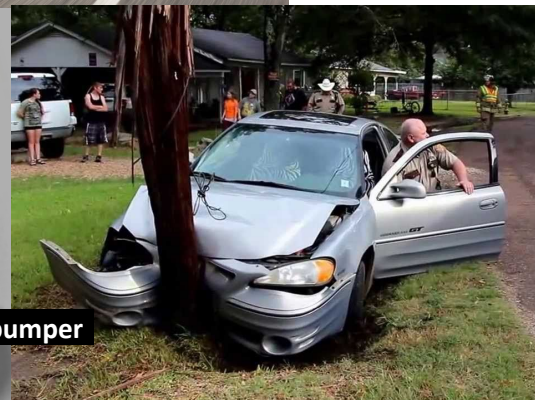For assessment purposes only | IP registered design

Crash Tests for DUMMIES

The slender build already suggests substantial materials use savings. Together with carefully 'topographed' lightweight materials, weight loss may well turn out to be spectacular.

* **UK driver** is obviously seated on the left side of the vehicle.

The Bigger Picture *

INVESTMENTS / COSTS **SAVINGS** **SAVE THE ENERGY TRANSITION** **SPACE UTILIZATION**

Energy Transition costs

the less of those costly **batteries** are needed

power grids

Subsidizing EVs not only costs a lot of taxpayers money, but may lack bipartisan support.

the more efficient use

sharing road space

less intrusive on neighborhoods

the lower and more manageable the grid demand

the more effective the automation

safety

charging net

UAM

the less wear and tear of roads and bridges

Infrastructure Bill

more profitable and equitable ride-hailing

intermodality increases

* No carmaker 'connects the dots' like this!

Size determines efficiency, versatility, driverless, safety, costs

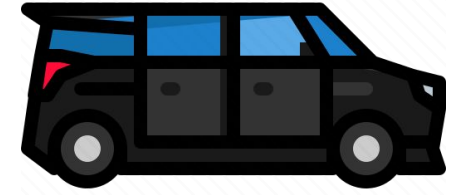**Car Ownership:**

instant availability

customization

wannahave

performance

manual Fahrvergnügen

privacy

Smart-Mobility app(liance) - Best of Both *

faster response time than robo-taxi

cheaper than personal car & robo-taxi

wanna-use (wannahave?)

no parking needed in ride-hail mode

manual Fahrvergnügen optional

more privacy than in 6-seat robo-taxi

less 'hardware' per person traveled (VMT2)

Robo-Taxi:

availability

all-in priced

no driver license needed

no parking

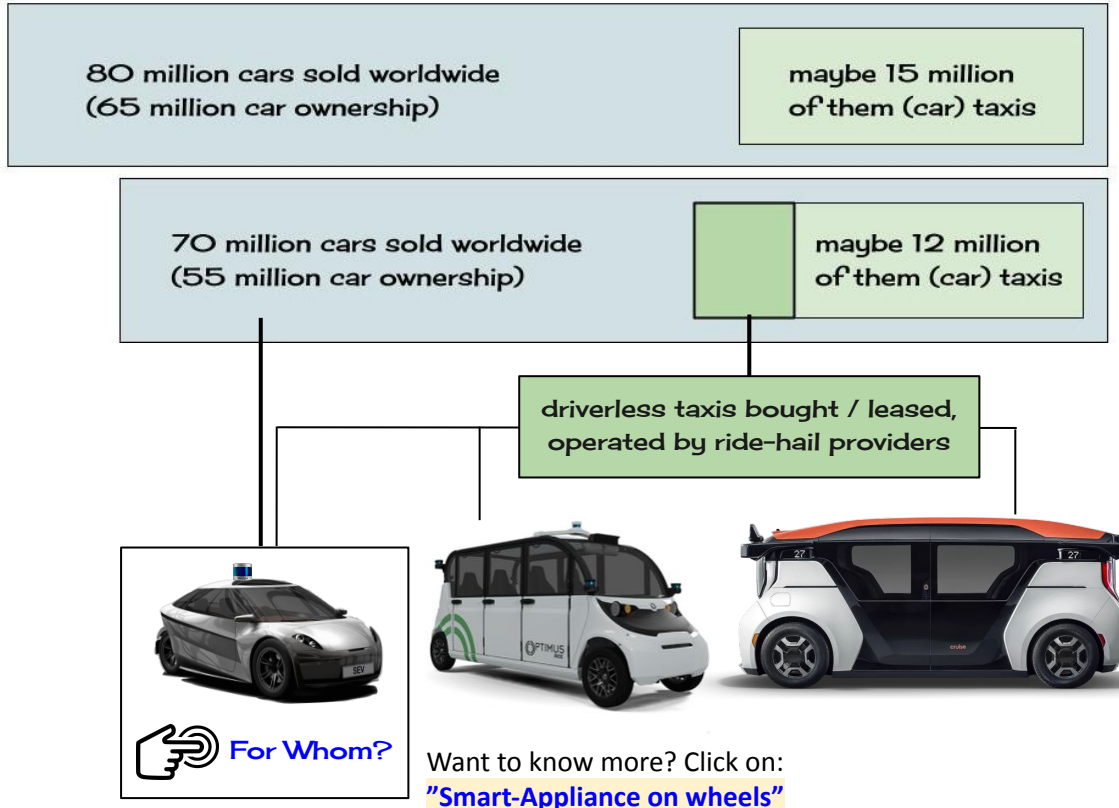ease of use

no privacy

more efficient use 'hardware'

* Smart-Mobility 'app' can be used as a three-person autonomous taxi as well as make driverless available to people who want a personal AV.

point-to-point

no responsibility in driverless mode

do some reading or gaming

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Will Car Automation Disrupt the Personal Mobility market?...

Below estimates to give an impression what shift may take place

80 million cars sold worldwide
(65 million car ownership)

maybe 15 million
of them (car) taxis

70 million cars sold worldwide
(55 million car ownership)

maybe 12 million
of them (car) taxis

driverless taxis bought / leased,
operated by ride-hail providers

☞ For Whom?

Want to know more? Click on:
"Smart-Appliance on wheels"

The good thing of ride-hail taxis is that they can operate in rural areas as they are driven by their local car owners. Robo-taxi companies will prefer to cater to mobility needs in and around cities as a way to cut their biggest expense: human drivers.

A (subscription-based) AV will be handy in cities all over the world, where ownership, having your own parking etc. is out of the question or too costly.

Of course driverless may still appeal to car owners mainly as a comfort feature. Especially on longer-distance routes. It would also make for the perfect 2nd car in 2-car households which may turn out to be the preferred, daily transport mode. Convincing one in every 900 looking for a new car, suffices.

Criteria for deploying/using an AV:
- operating costs
- does it fit the need?
- range (and recharging)
- response and transit times
- effectivity & safety driverless
- spinning off a whole **ecosystem**?

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