

La Révolution de la Mobilité vue de la Silicon Valley

ORSAY CONSULTING

Preparing for the Mobility Revolution

Palo Alto, Silicon Valley (USA)

Arts et Métiers - Oct. 2019

4 Megatrends Disrupt Mobility

All modes of transportation are going **ELECTRIC**



Driving is incrementally **AUTOMATED**



CONNECTIVITY enables many value adding services



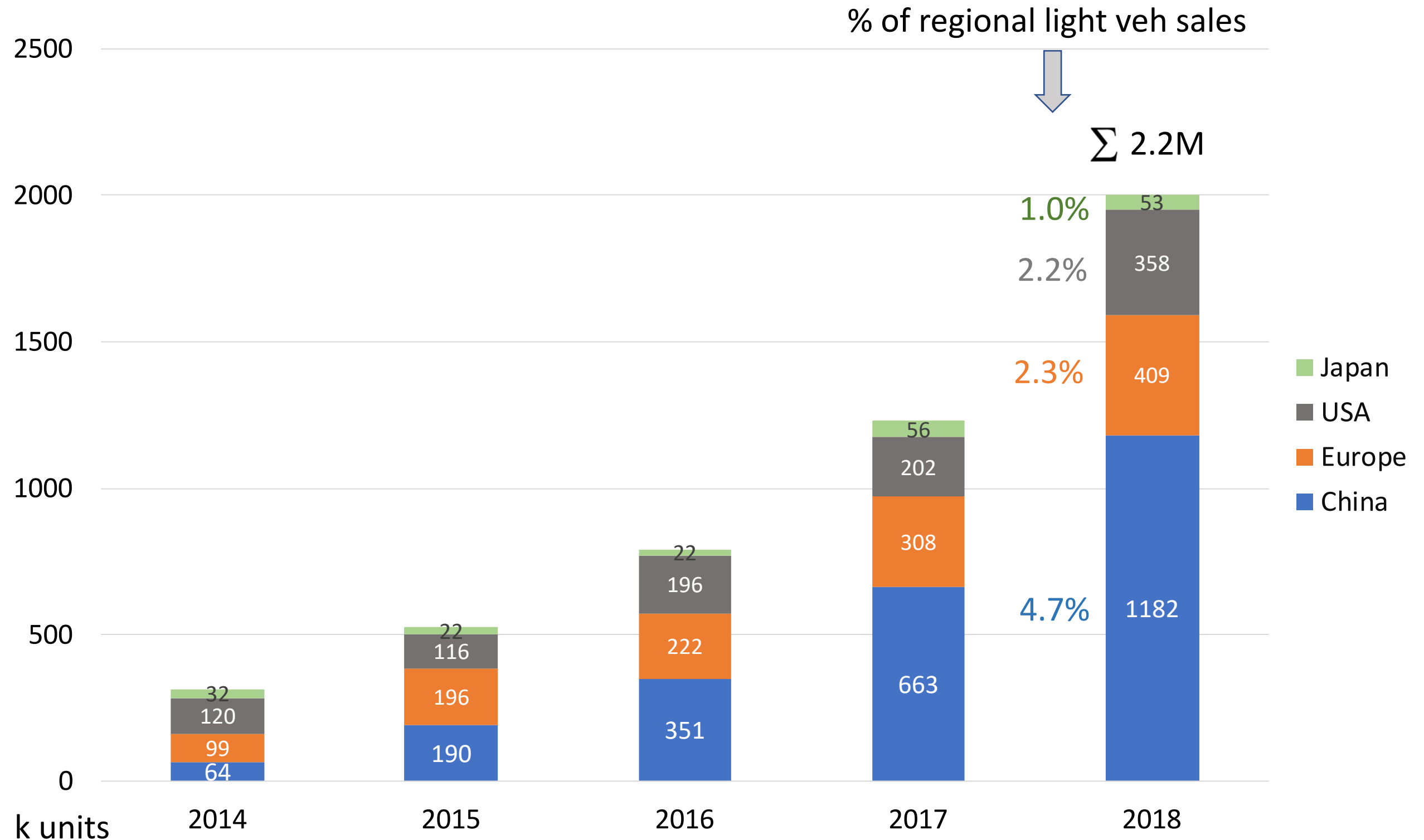
Mobility is increasingly **SHARED**, adding new modes



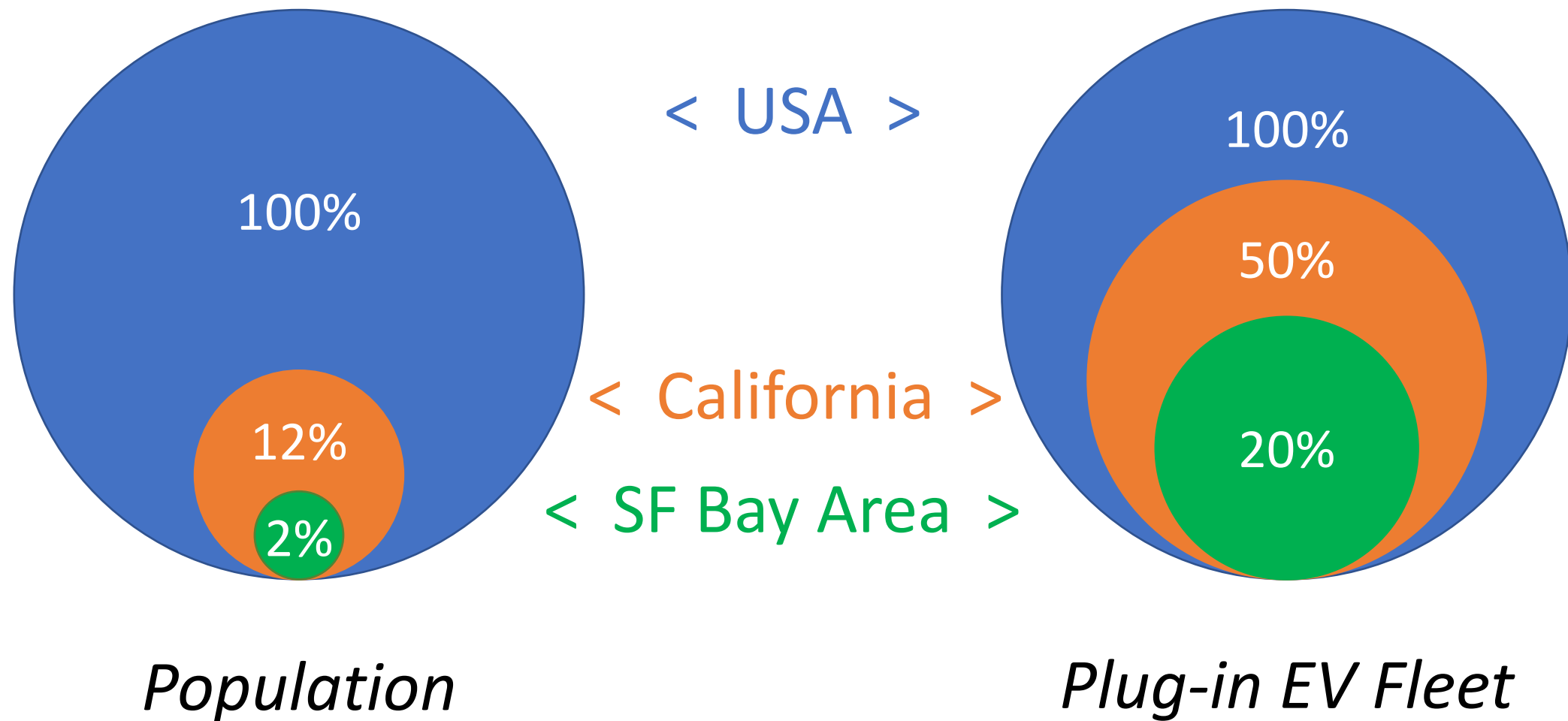
ELECTRIFICATION



USA Lagging in Plug-In Vehicles



High Plug-in Density in California

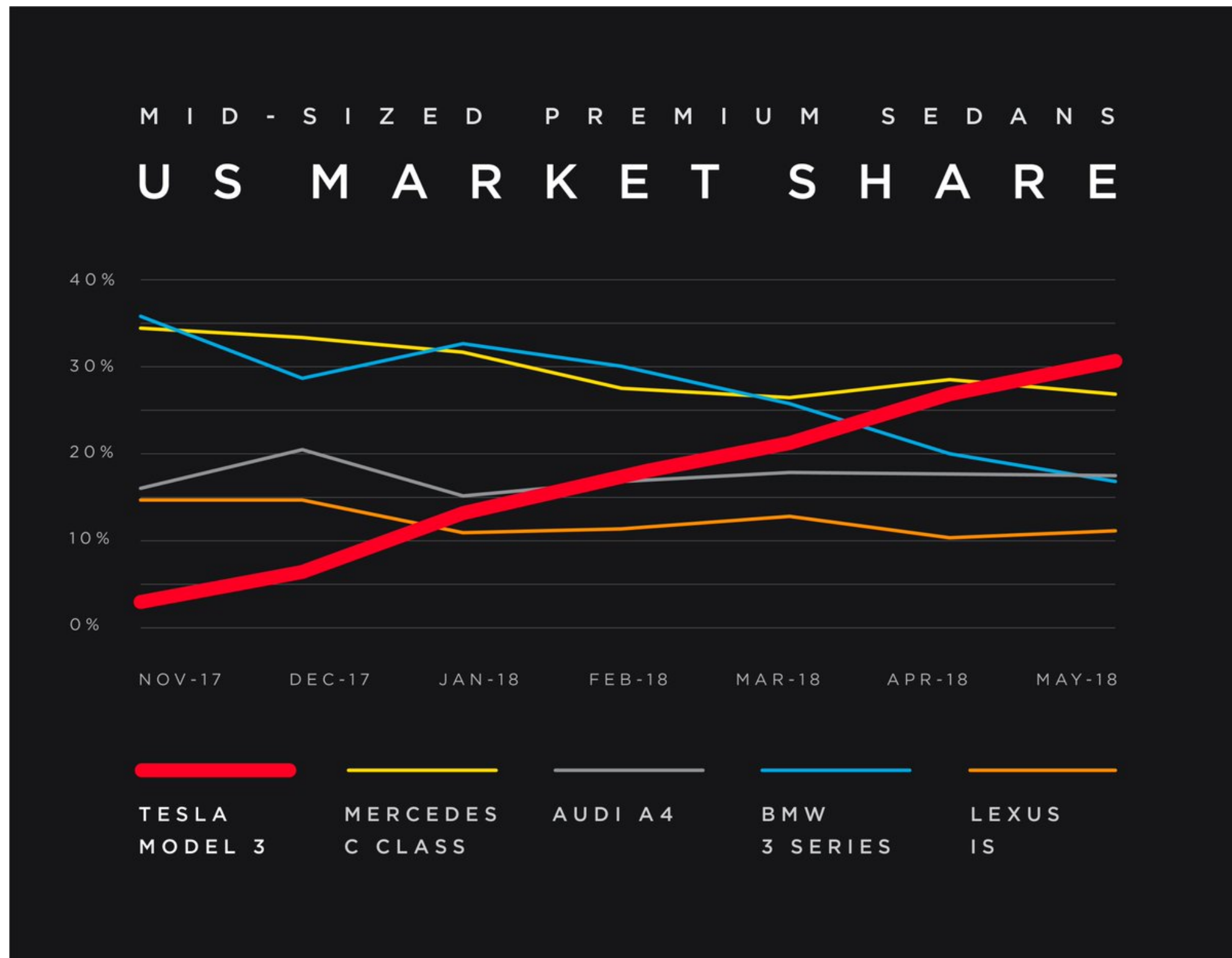


1 IN 3 NEW CARS IN PALO ALTO IS ELECTRIC

PALO ALTO IS THE **#1 CITY IN THE COUNTRY**
BY PERCENTAGE OF NEW ELECTRIC VEHICLES*



Tesla Model 3 beating the Germans



Source: Tesla

Top 3 trade-ins: Toyota Prius, BMW 3-Series, Honda Accord

Byton



M-Byte



K-Byte

- 70-95 kWh, 53k€
- 500 employees in SV (SW, AV)
- FAW owns about 15%
- SOP 2020 in China in own mfg plant, then Korea



Lucid



Air

- Up to 130 kWh, \$60-100k
- HQ in SV, over 500 p. in SV
- \$1B from S. Arabia
- SOP planned in 2020 (?) in the USA



SF Motors / Seres



SF5

- HQ in SV
- Subsidiary of Sokon (Chinese supplier), FAW invested
- Project delayed



SF7



Rivian



R1T



R1S

- Up to 180 kWh, 4 motors, \$70k+
- SW development in SV (HQ in MI)
- Raised \$1.5B in 2019 (Amazon, Ford ...)
- SOP late 2020 in the USA



Proterra



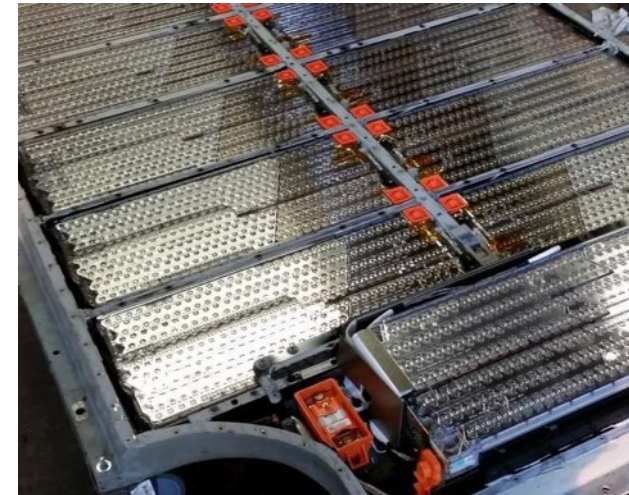
- Battery electric bus; ~\$600k
- HQ in SV
- About 1000 buses delivered to-date
- \$800M raised, incl. BMW and Daimler



Silicon Valley Tech Focus

Battery tech

- Solid state
- Electrodes (eg nanotech)
- Electrolyte



Charging tech

- Robotic, eg Stable Auto
- Wireless
- V2G, eg Nuvve (San Diego)

Charging network

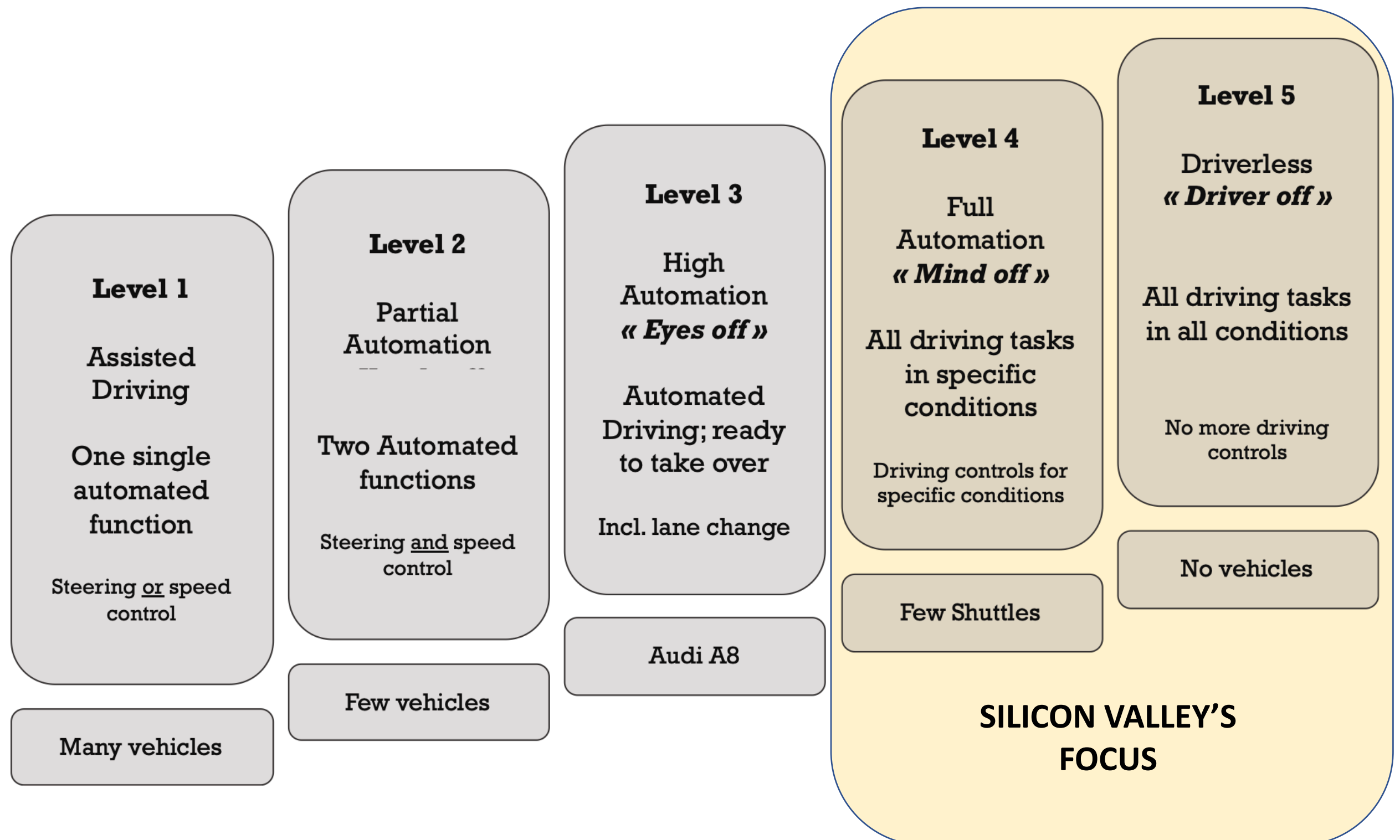
- Wide deployment, eg ChargePoint
- New business model, eg Volta
- Charging-as-a-Service, eg Amply



AUTONOMOUS DRIVING

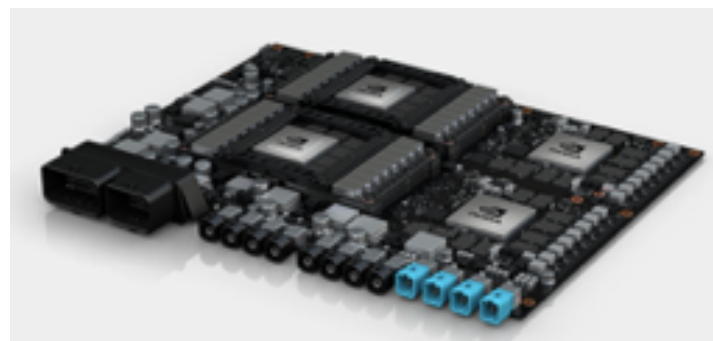
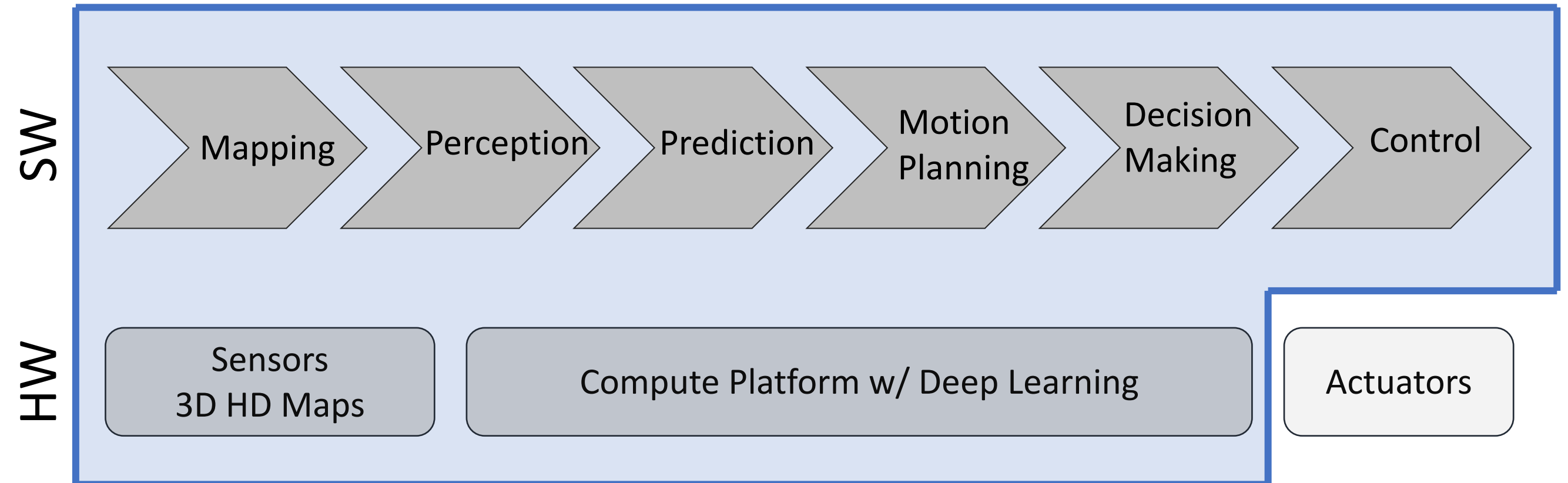


Progressive Level of Autonomy



Focus on Disruptive Tech

SV TECH FOCUS

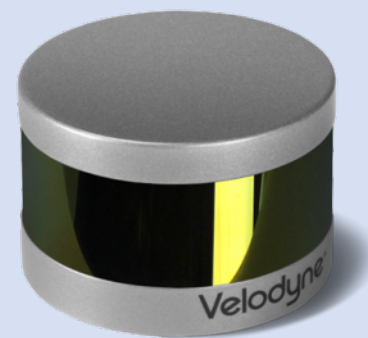


Silicon Valley's Tech Focus



SW

- Full stack (auto / trucks)
- HD 3D mapping
- Computer vision
- Annotation
- Sensor fusion
- Human perception
- Remote operation
- Simulation & Validation



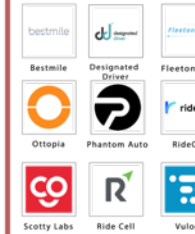
HW

- LiDAR
- Radars
- Compute platform
- AI chips
- V2X modules

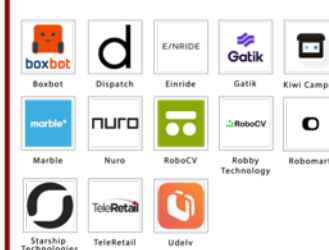


AV Applications

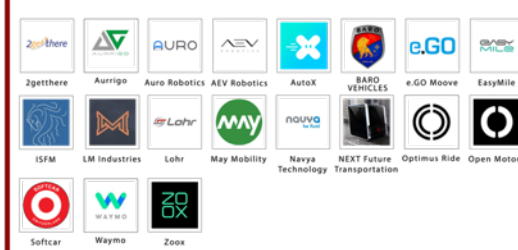
AV Fleet Management (9)



Goods Delivery (13)



Shuttle & Robo-Taxis (19)



Analytics

Driving Aid & Monitoring (16)

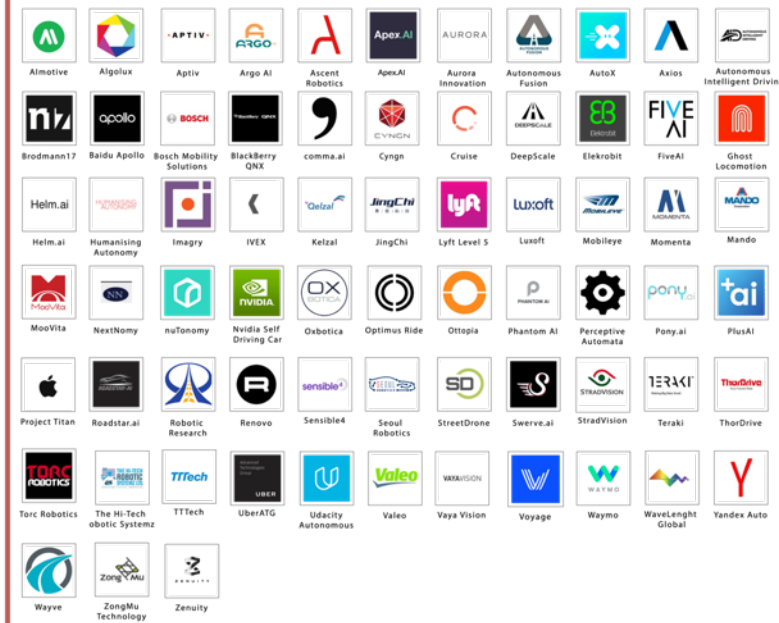


Occupant understanding (15)

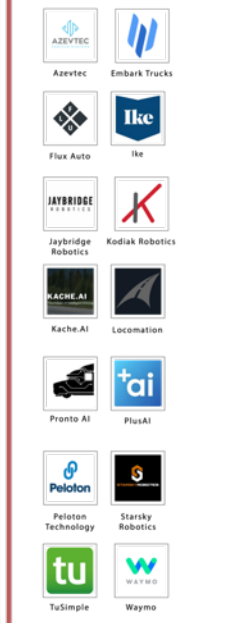


AV Software Stack

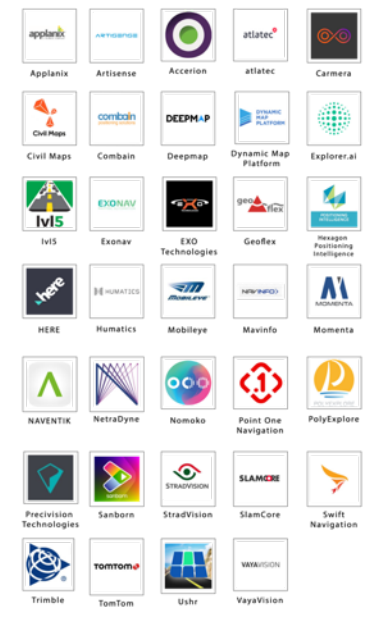
Automotive Stack (71)



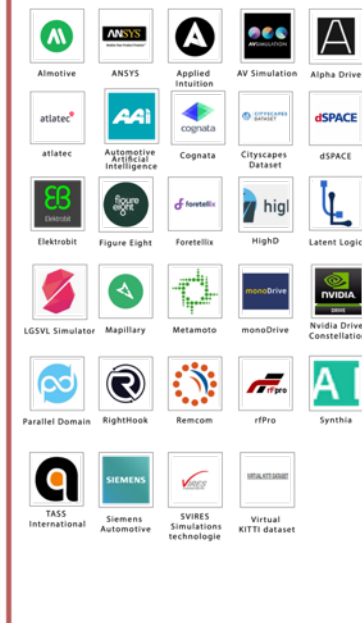
Trucking Stack (14)



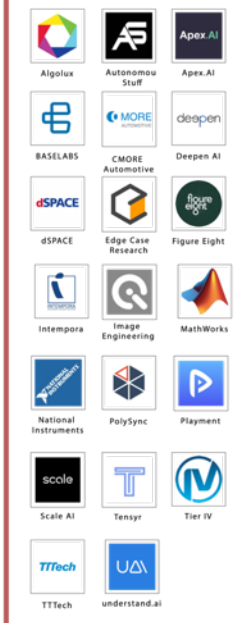
Localization & Mapping (33)



Simulation and Validation (29)



Dvpt tools (20)

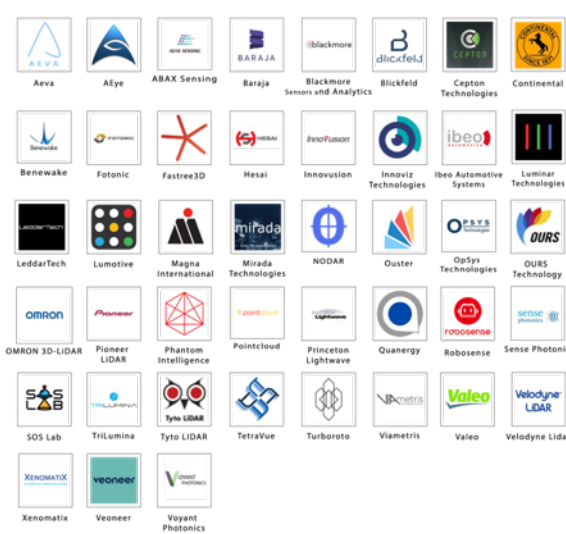


AV Hardware

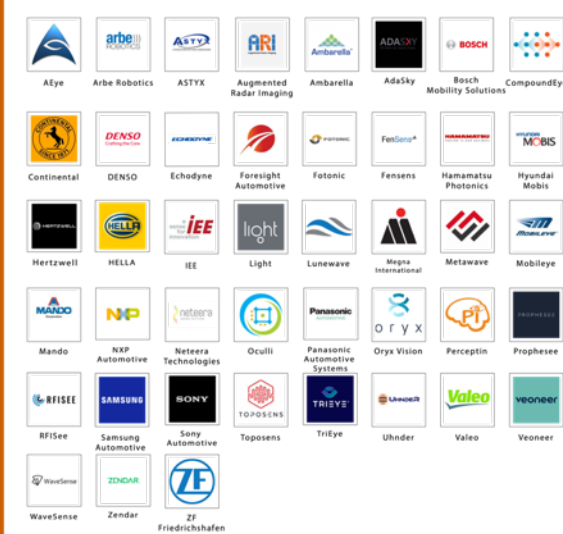
Compute HW (21)



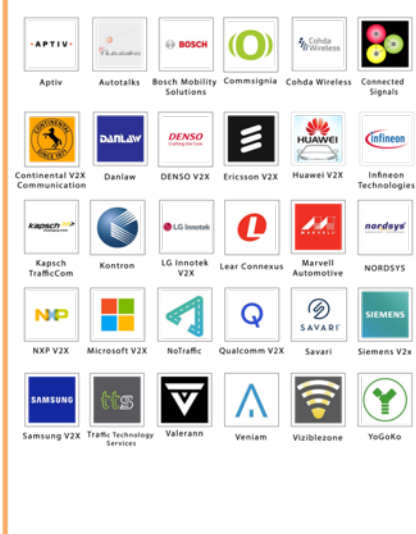
Lidars (43)



Cameras, Radars and other Sensors (42)



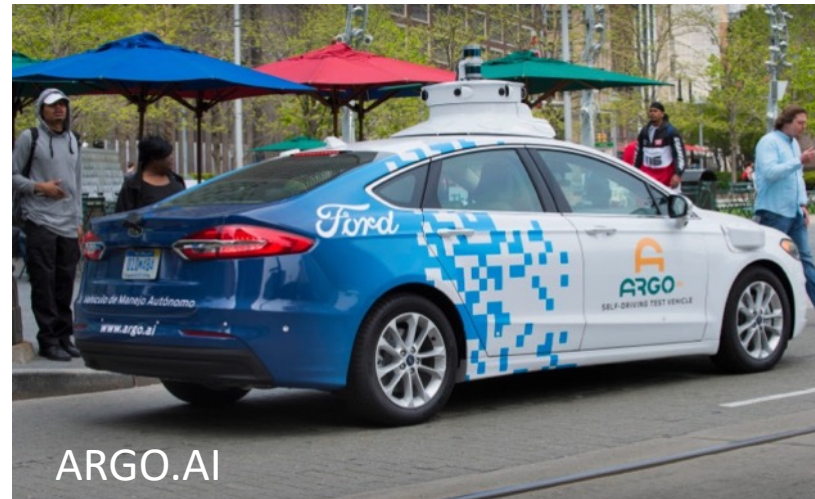
V2X (30)



On-Board Communication (11)



Sample of AV Testing in Silicon Valley



Autonomous Truck Testing in SV



EMBARK



WAYMO



Last Kilometer Delivery



Nuro



Udely



UPS Drone



Dispatch (Amazon)








Starship

SHARED MOBILITY

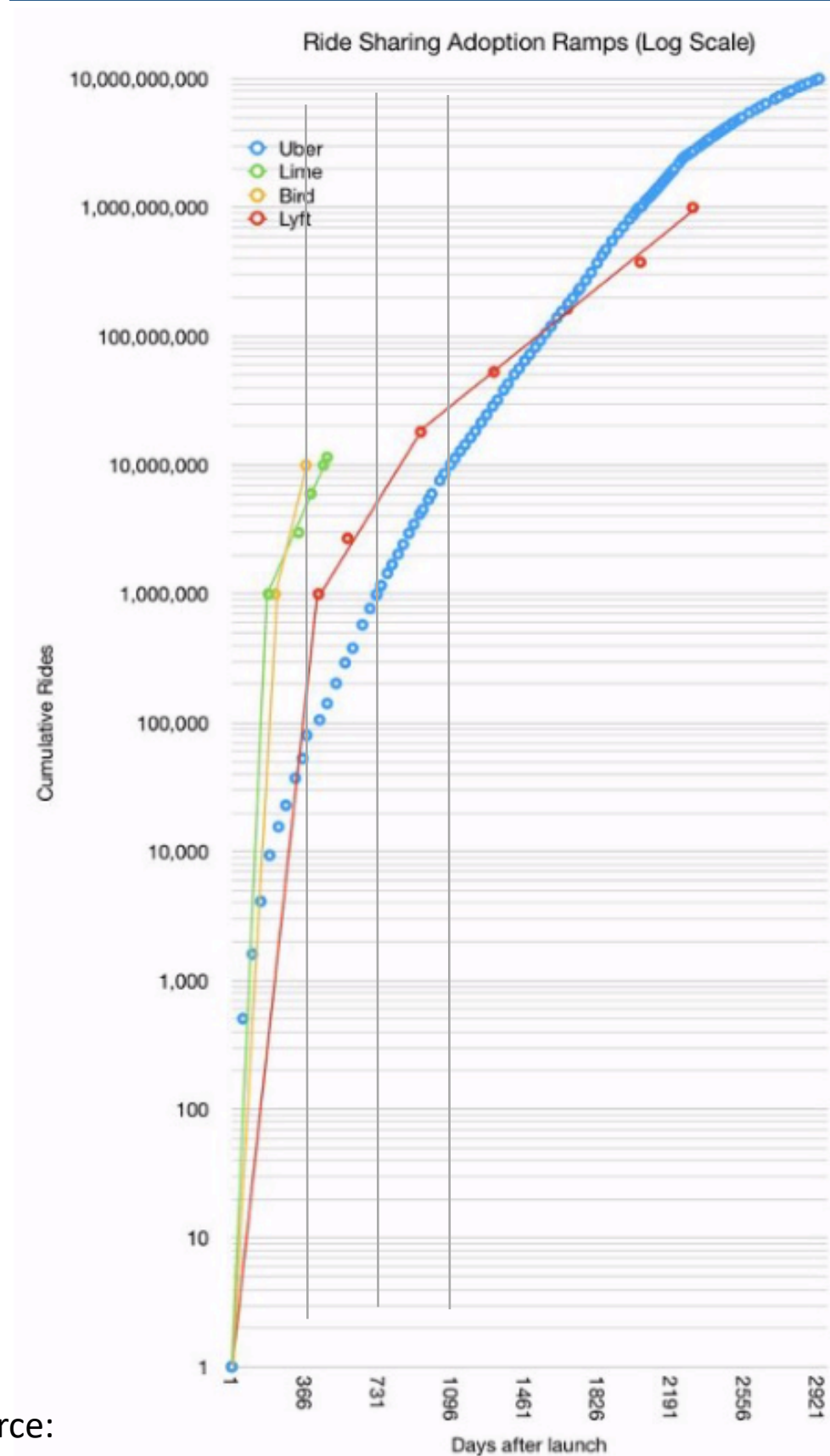


New Mobility Models are Emerging

Sharing ...		B to C	Peer-to-Peer
	Rides	Ride hailing - Individual Ride hailing - Pool Autonomous shared Mobility	Ride sharing
	Cars	Long term rental Short term rental – docked Short term rental - free float car sharing Subscription model (OEMs)	Car sharing
	e-Mopeds	Short term rental - free float	
	(e)Bikes	Short term rental - docked Short term rental - free float	
	e-Scooters	Short term rental - free float Short term rental - docked	

Traditional Established Emerging Future

Micro-Mobility Blitz Deployment



Lime



- Started operating in Sept 2017
- 10M rides after 12 months of operation
- 125 cities in 10 countries after 12 months
- Raised \$765M at \$2.4B valuation

Bird



- Started operating in Sept 2017
- 11.5M rides in its first 12 months
- 100 cities after 12 months
- Raised \$700M at \$2.5B valuation



Multimodal Expansion



Ride sharing



Multi
Modal
Platform

...

Level 4/5
Autonomy



Ride sharing



Multi
Modal
Platform

...

Level 4/5
Autonomy



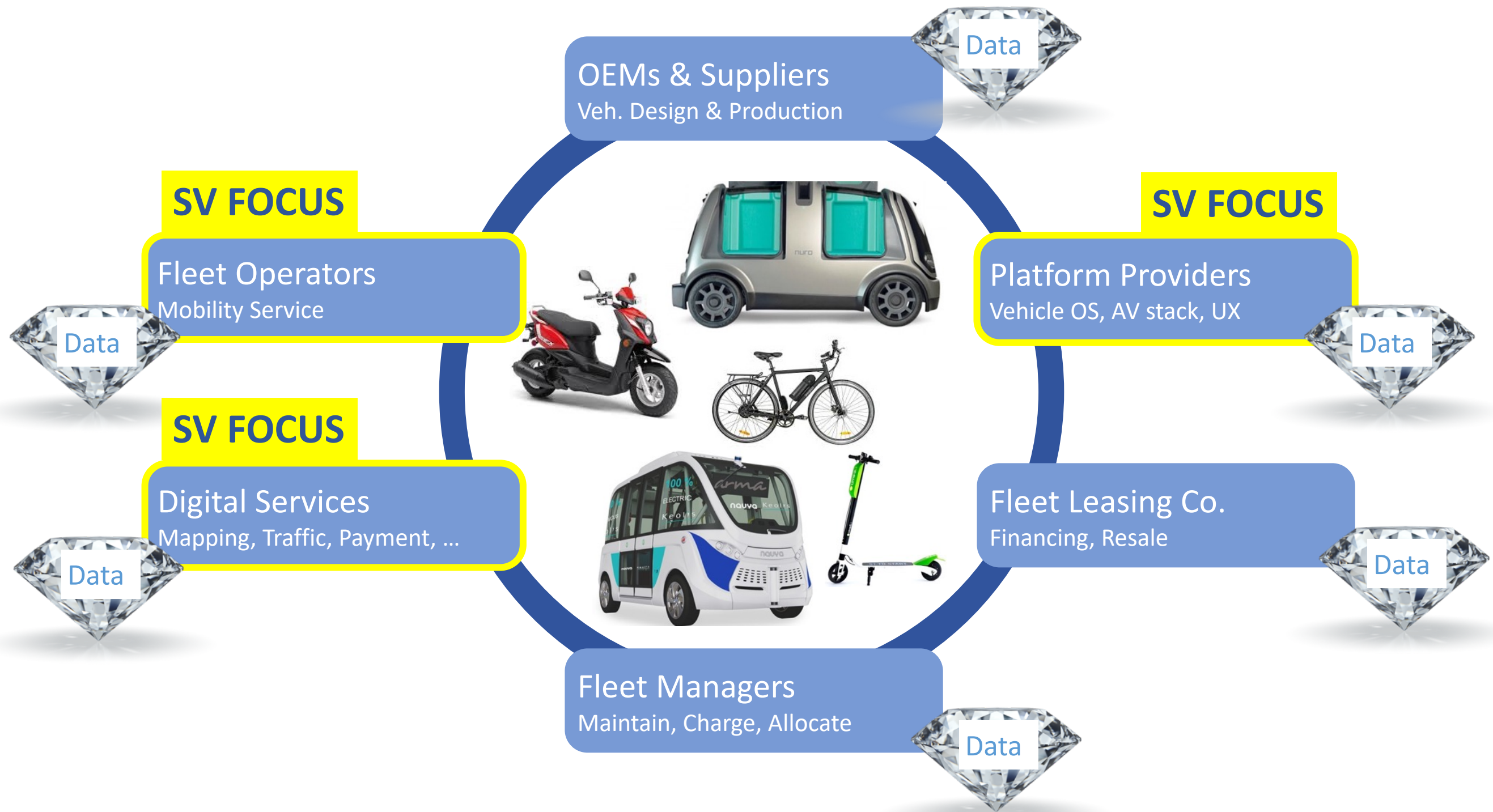
E-scooter sharing



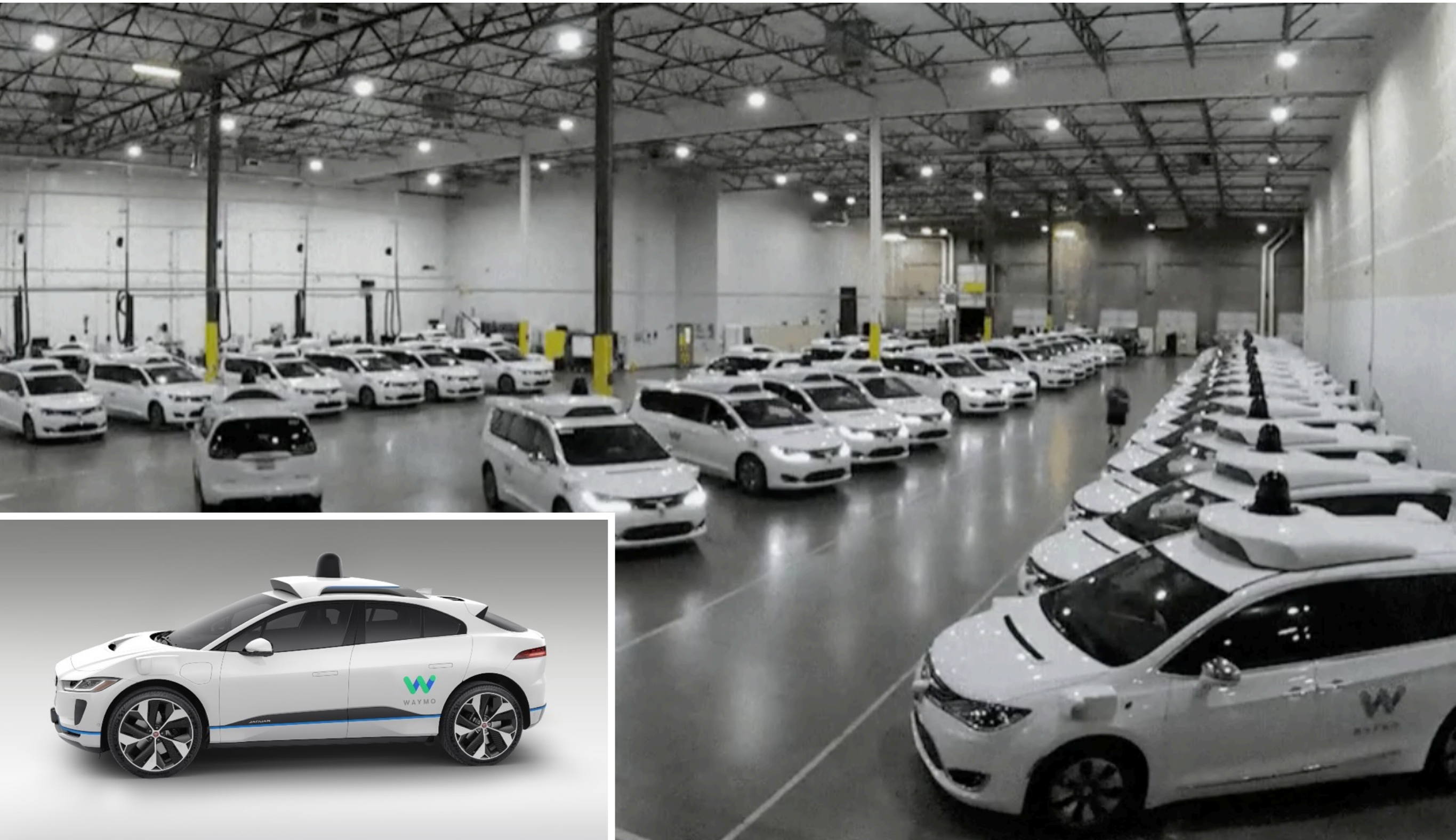
E-scooter sharing



New Roles: Opportunities and Risks



Waymo First to Market



Waymo Going Driverless

*Email sent to
select riders
Oct 2019*

Completely driverless Waymo cars are on the way

Over the years and with your support, we've been testing and refining our fully self-driving technology – including cars without a trained driver up front.

We're excited to share that soon you may experience one of these driverless rides!

Here's what you can expect:

- If you get matched with a fully driverless car, you'll see a notification in your Waymo app that confirms the car won't have a trained driver up front.
- You'll also see a "What to expect" button in your app, which you can tap to learn more about our driverless rides.
- You can enjoy having the car all to yourself.
- As always, if you need assistance during any part of your trip, you can contact a rider support agent through the car's help button or in your app.

Rest assured, Waymo will still be taking care of you; this is just the next step as we travel down the road toward a fully self-driving future. Thank you for joining us on this journey! If you have any questions, you can [contact support](#).

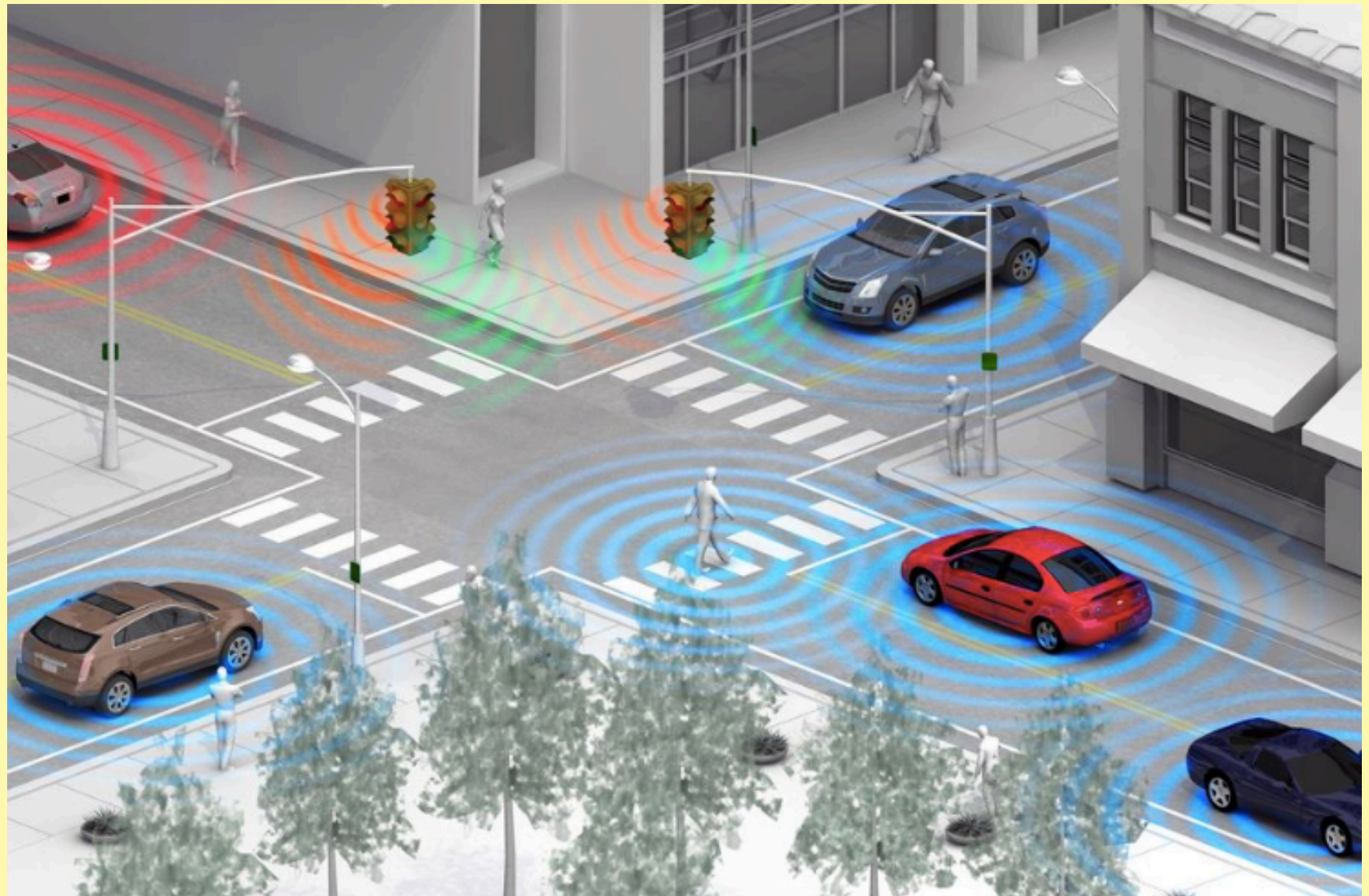
Zoox



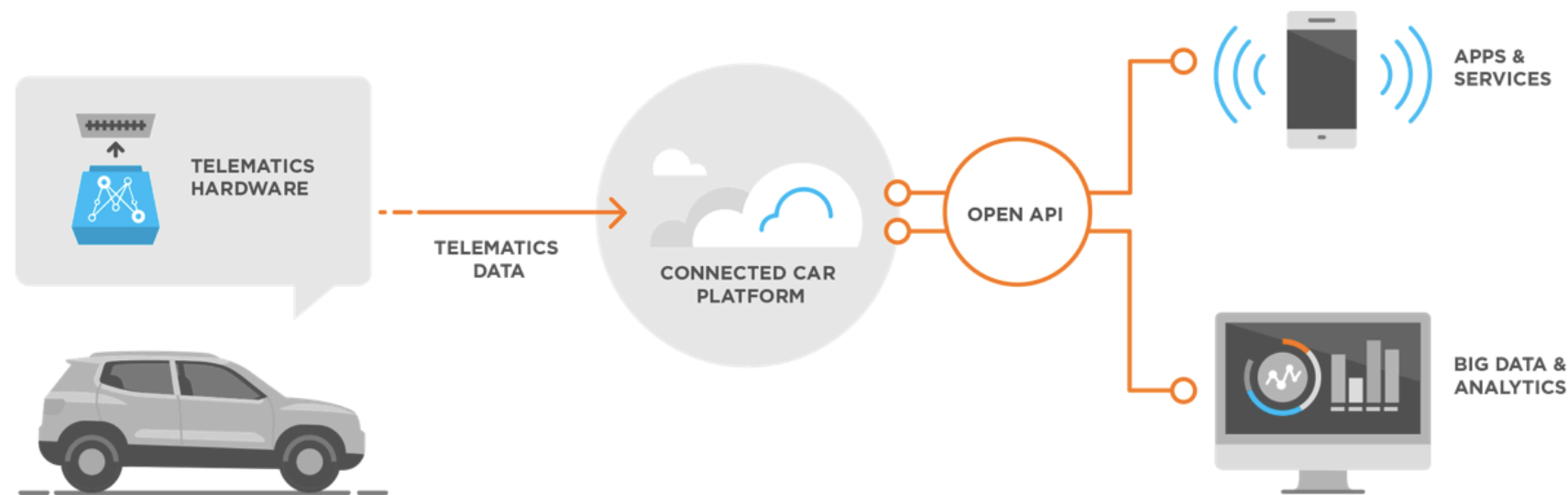
- Full stack design, assembly of AVs + operation of ride sharing service
- HQ in SV
- Raised \$800M
- Intend to launch in SF end 2020, testing in Las Vegas



CONNECTED VEHICLES



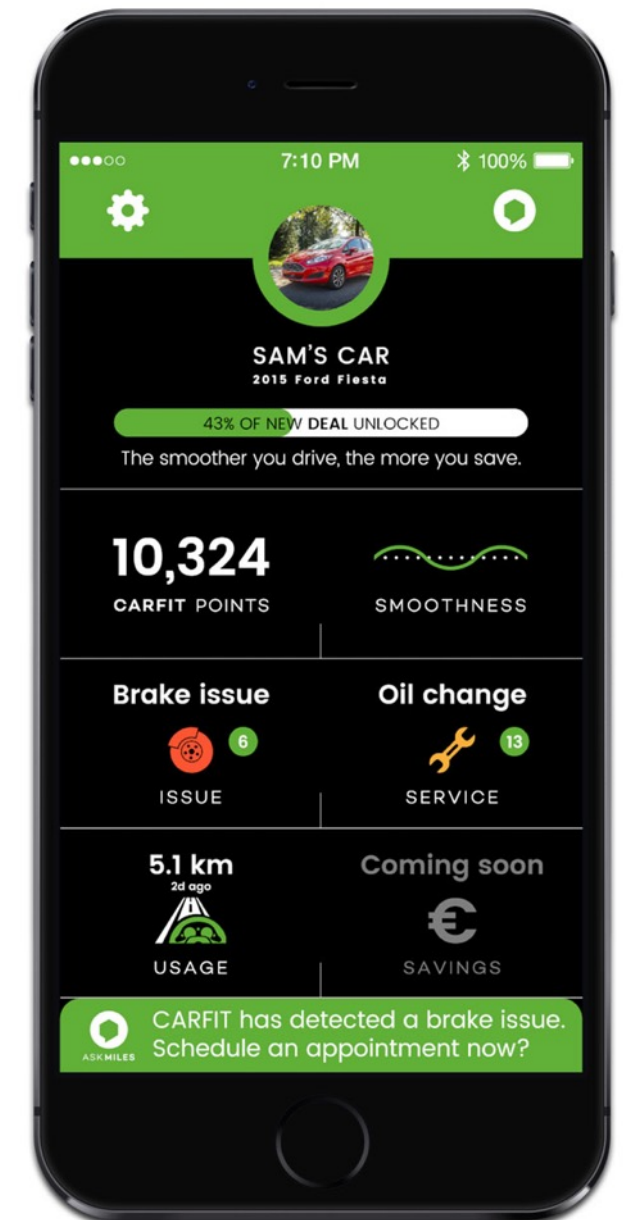
TCO and OPEX Reduction



Telematics Services



Driving Scores & Usage-Based Insurance (UBI)

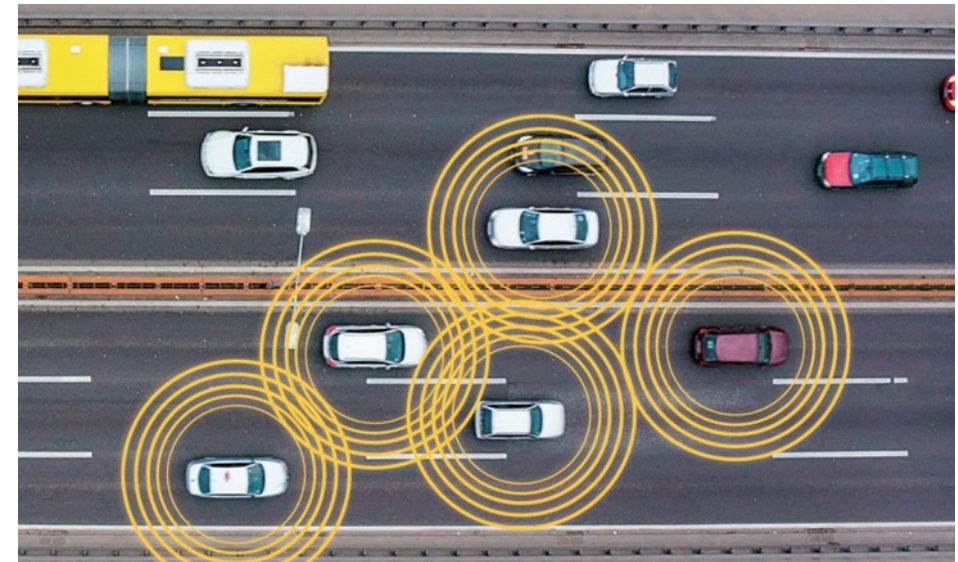


Remote Health Monitoring
Predictive Maintenance

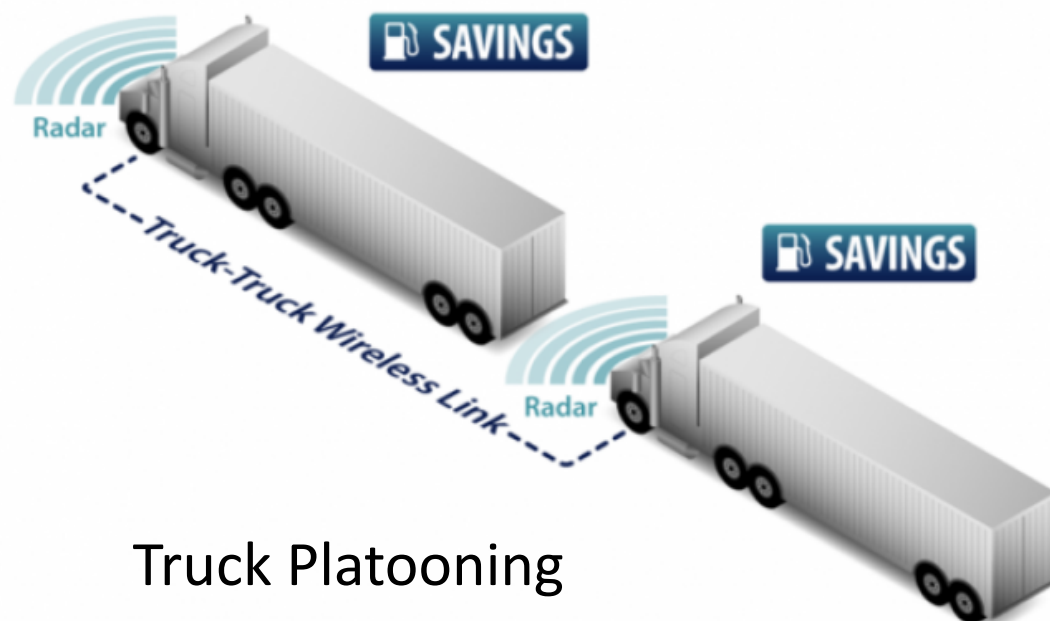
Safety and Operational Benefits



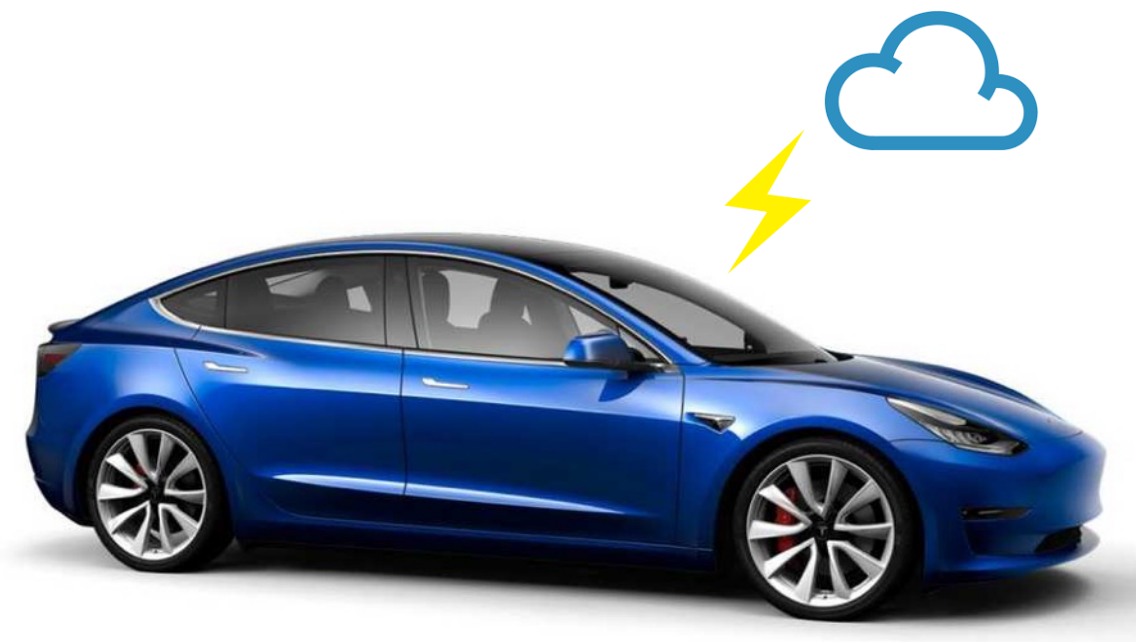
Vehicle-to-Infrastructure (V2I)



Vehicle-to-Vehicle (V2V)



Truck Platooning

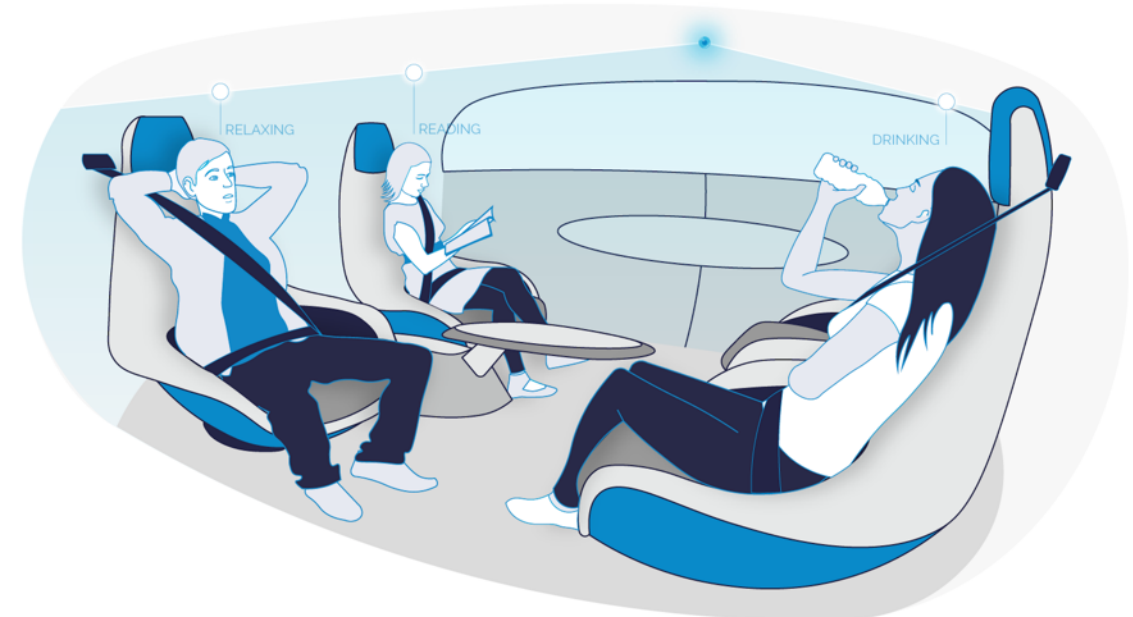


Over the Air Update
Vehicle-to-Cloud (V2C)

New Business Opportunities



In-Vehicle eCommerce



New Services On-Board



Connected Payment



Transformative UI

SILICON VALLEY'S MOBILITY ECOSYSTEM

ELECTRIC



AUTOMATED



CONNECTED



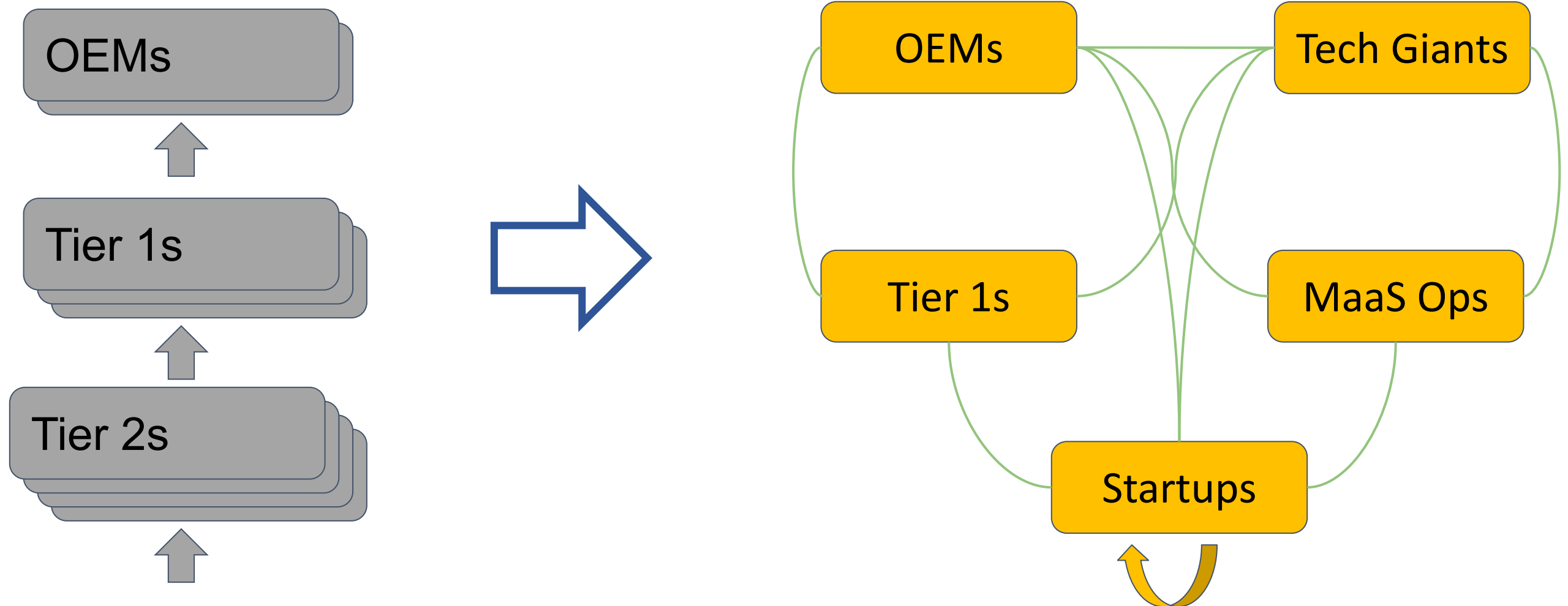
SHARED



Complete Ecosystem within 30 km



Modus operandi completely transformed



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ORSAY CONSULTING

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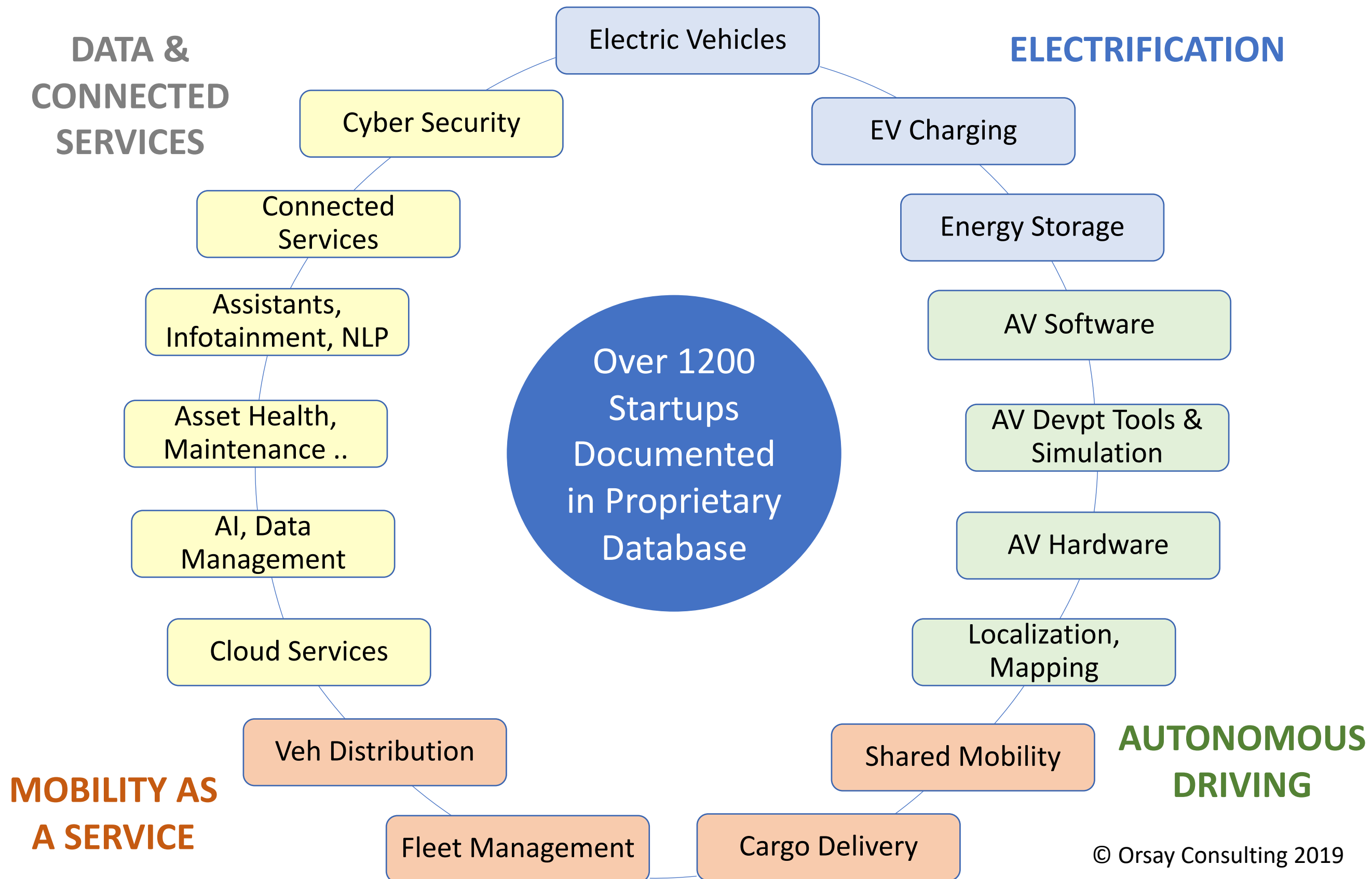
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