FROST & SULLIVAN

INTELLIGENT MOBILITY

Digital Transformation of the Automotive Industry

Future of Connected and Autonomous Vehicles & New Business Models

Presentation by:

Franck Leveque
Partner & Mobility Group Head

Top 8 Trends Transforming The Autonomous & Connected Landscape

Connected & Autonomous Services to Generate \$84Bn worth of review to OEMs by 2025

OWNERSHIP/ USERSHIP STRUCTURE



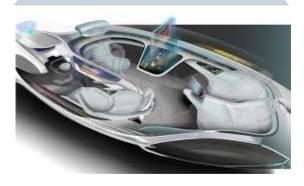
FUNCTIONS & SERVICES ON DEMAND



DATA USE CASES &
MONETIZATION (DIRECT
& INDIRECT)

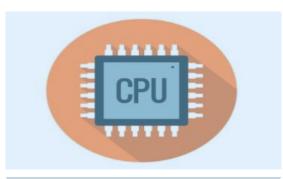


HANDS OFF HMI & PERSONALIZATION

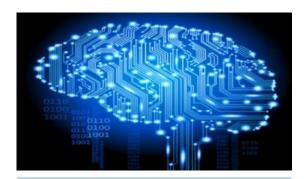




NEXT GEN VISION TECHNOLOGIES



CENTRALISED AD ECUS



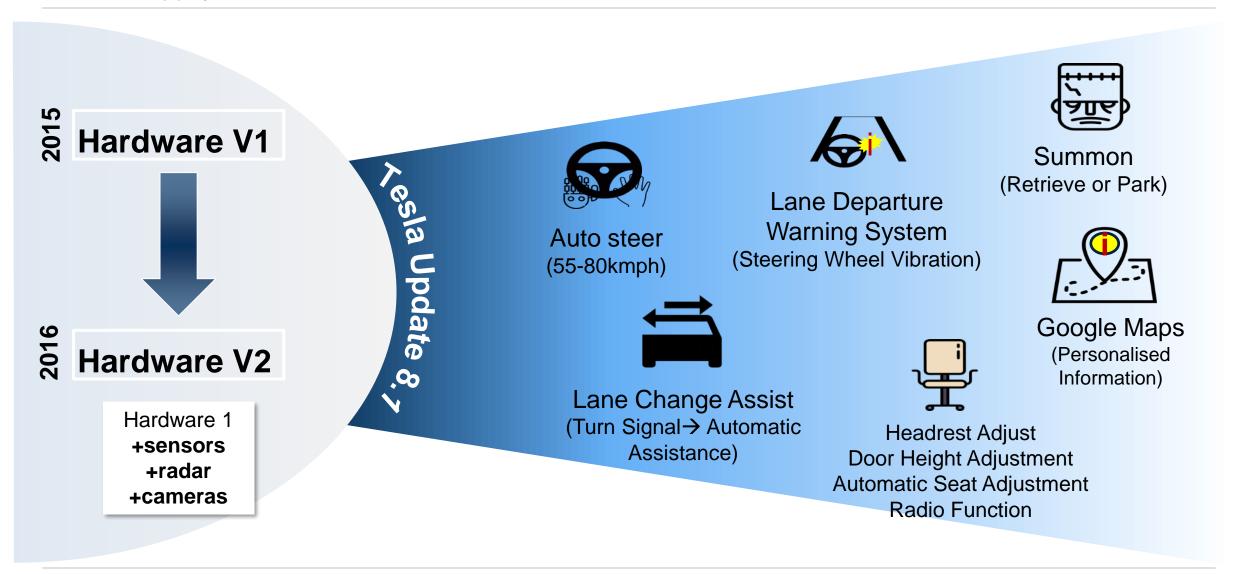
DEEP LEARNING



AUTOMATED ROBO TAXIS

Vehicle Hardware Paving Way For Data & Service Centric Business Models

Tesla's to appify all services → One time hardware sale and OTA based service deliveries with FoD as USP



On Demand Features & Services To Drive Connectivity Business Models

Value creation model to focus more on the downstream product lifecycle for which connectivity is the common denominator.

Future

Current

Functions

In-Cabin Services and Features





- Smart Parking
- Map & Traffic
- Car Sharing
- Ride Sharing
- eHailing
- Mobility as a Service

- Suspension/Steering settings
- Autonomous parking
- ECU mapping for different drive types
- Stability control
- Battery as a service for EVs
- ADAS assist packages
- Power on demand (or Low emission)
- Automation on demand (Autopilot)

- Gaming and VOD video on demand through different partners
- Office suite on demand
- Digital assistants
- WiFi hotspot/Connectivity
- Single trip insurance
- Maintenance & warranty
- Lighting as a service Mood based
- Instrument cluster skins & modes on demand
- Augmented reality information
- Complete HMI suite as a service



Data Monetization Potential In Connected & Autonomous Mobility

Multiple players across the ecosystem are developing the HW/SW to capture data and turn it into business.

DIRECT REVENUE OPPORTUNITIES



Usage-based insurance, tolling, and tax



Connected navigation/ intermodal navigation



Predictive Maintenance



Connected navigation

Geo

fenced solutions



Stolen Vehicle tracking and theft protection

INDIRECT REVENUE OPPORTUNITIES



Data feedback for OEMs resulting in better R&D



Optimizing emergency assistance providers services



Truck platooning services



Improving road Infrastructure for transport authorities



Early stage recall reduction and software updates



Coaching driver based on their Driving style



OTA updates add-ons



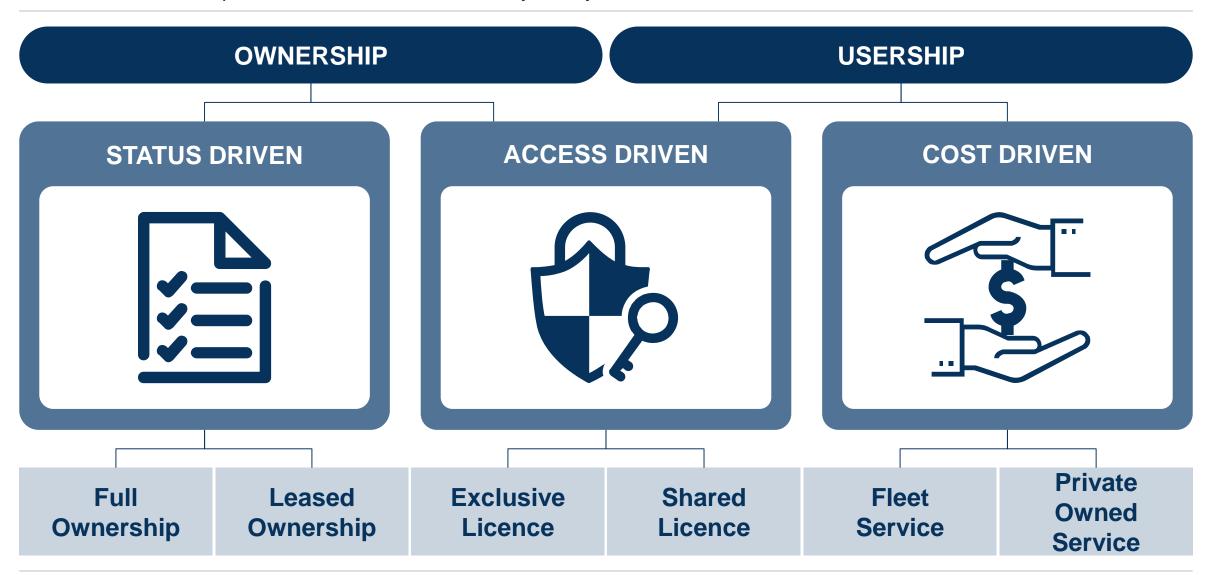
MONETIZATION AVENUES

Reduction on warranty costs

FMS = Fleet Management Services

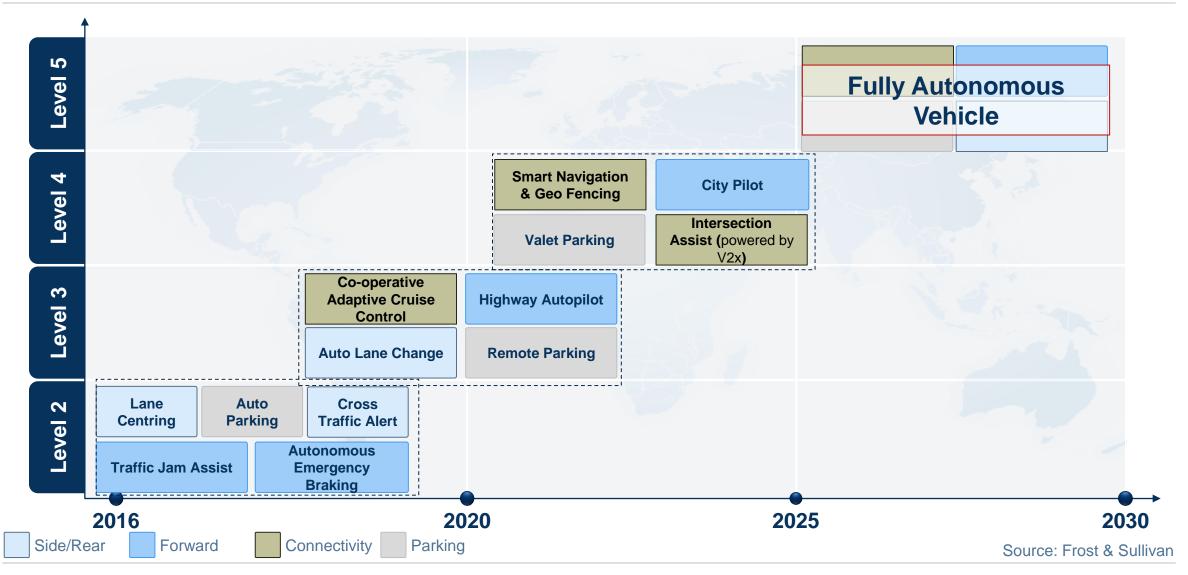
Future Ownership & Usership Structures In An Autonomous Eco System

Users to access multiple structures based on their day to day needs and travel scenarios



Feature Adoption For Each Level Of Autonomous Driving

At least 4 OEMs to skip level 3 Autonomous Driving & Full Level 5 capability not to be available before 2025



Start Ups Are Disrupting The Current Autonomous Driving Eco System

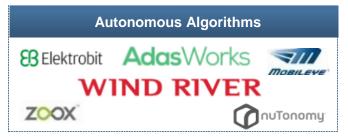
Over 300 start ups disrupting the autonomous & connected driving value chain





















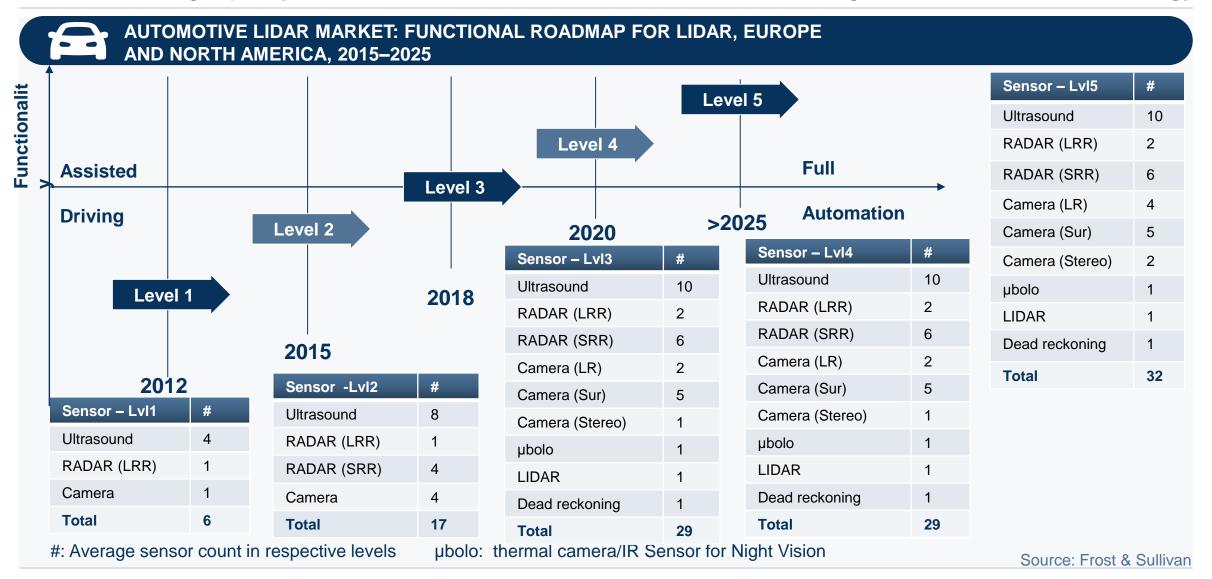




Source: requestsforstartups.com; Frost & Sullivan

Highly Autonomous Cars To Have Up to 6 RADARs and 9 Camera Modules

The cost & image quality of solid state LiDARs to be instrumental in deciding the success of the technology.



Autonomous Driving To Transform Design Styles Of Future Vehicles

Distinct styling, materials and features will dominate design and development off autonomous vehicles.







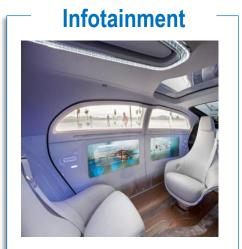


Steering Columns

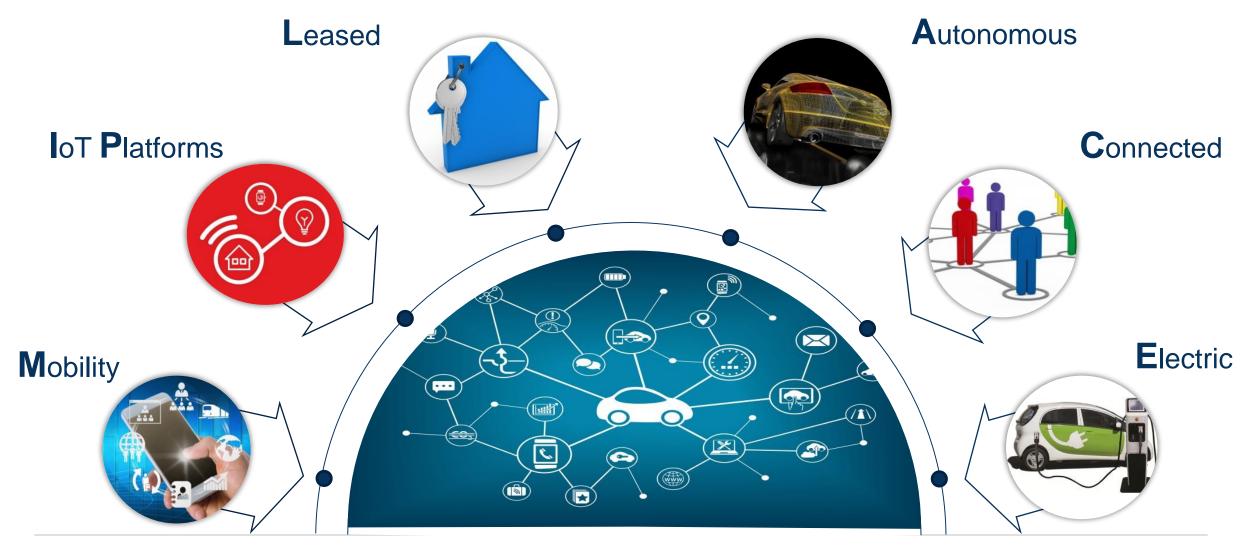
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$MIPLACE \rightarrow Convergence \ Of \ Technology \ And \ Services \ To \ Be \ Essential \ For \ Addressing \ New \ Business \ Opportunities$

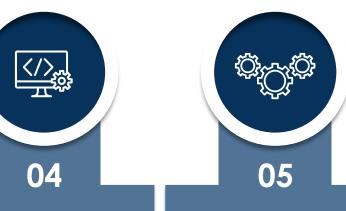


Key Takeaways & Discussion Points









Service Based Revenue Streams

Focus on Updates over Vehicle Lifecycle, OTA based service delivery options

Consolidation of IT Platforms

Integration of IT
platform with 3rd
Party features and
services, connection
with larger IoT
ecosystem (Smart
office and Home)

Finalisation Of OEM Sensor Suites

Multiple sensor suite combinations based on purpose of deployment of the autonomous vehicle.

Focus on Software and Deep Learning Algorithms

Growing use cases to push OEMs to incorporation of deep learning NN to automated decision engines.

Evolving Automotive Value chain

New generation of start ups evolving, capable of addressing specific white spaces in product & service development.

Contact Details for more Information

