WHAT IS AUTONOMOUS VEHICLE BUSINESS

Autonomous Vehicle business is the set of businesses that builds the self-driving car technology stack, offers mobility services with data in the car and new business models that enable smart mobility.

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WHAT IS TECHNOLOGY OF AV BUSINESS?

Self-driving car technology stack,
mobility platform in the car,
digital identity
AIX Design Experience
Digital Twins
AV Solution Across Partners

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WHAT IS TECHNOLOGY OF AV BUSINESS?

AIX: Voice/AR	Infotainment	Affective Computing
Digital Identity	V2X Comms layer	AV Solution
Car Cognition	Cloud Infrastructure	Platooning
Mobility Platform	Data Management	Telematics
Digital Twins	Edge Intelligence	OTA

DIGITAL IDENTITY, OS, API PLATFORM

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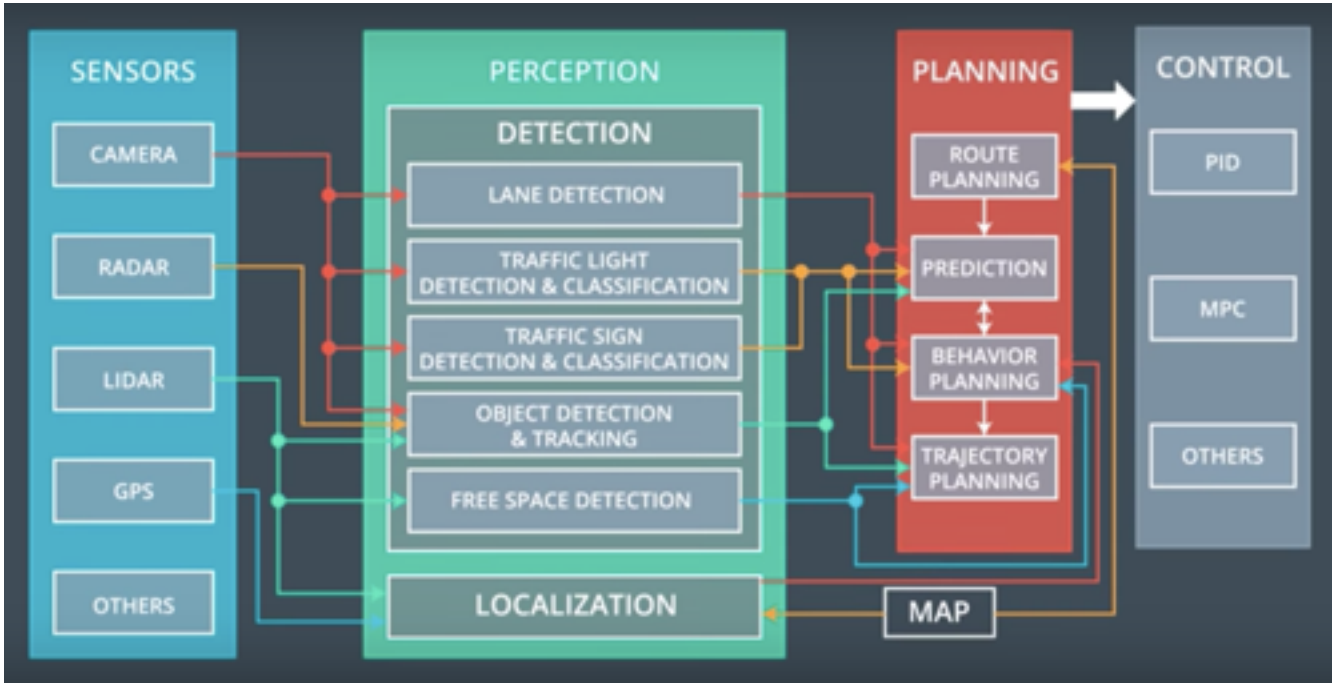
LESSON 1: CARS AS SOFTWARE ON WHEELS



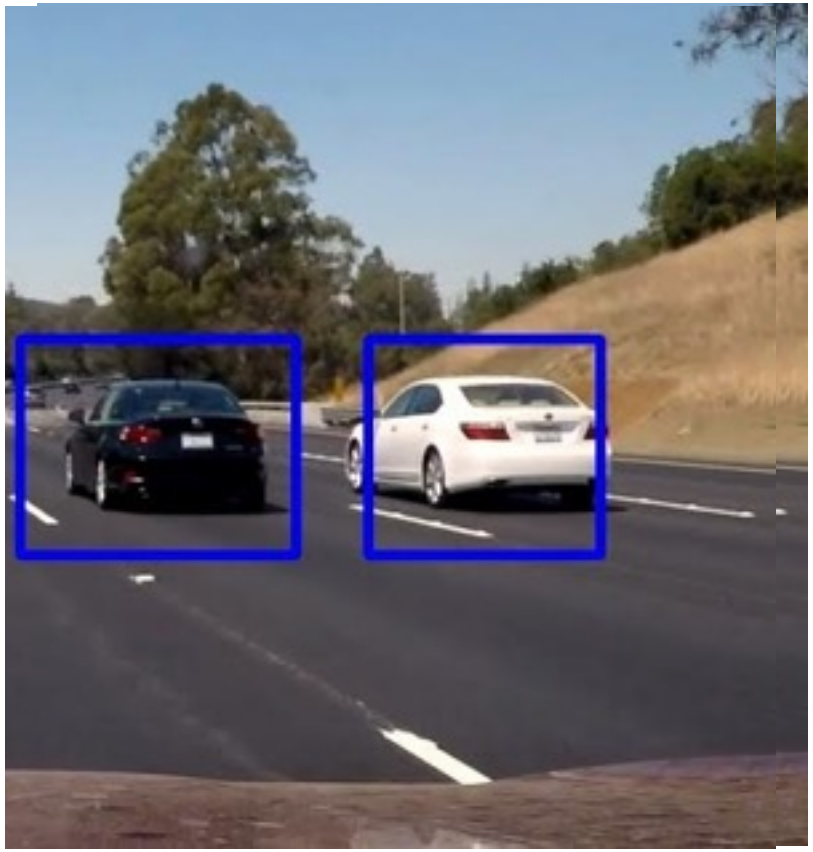
Should this be done as OTA updates or can AI chips on the car make car cognition more intelligent?

Car sensors market $26 billion by 2030.

Process video to detect other vehicles. Software to process sensor data into structured information to use for path planning – combine sensor data to information. Detection (understand surrounding) & Localization (sensor and map data). Localization is called as “perception space as a business” Is not taken.

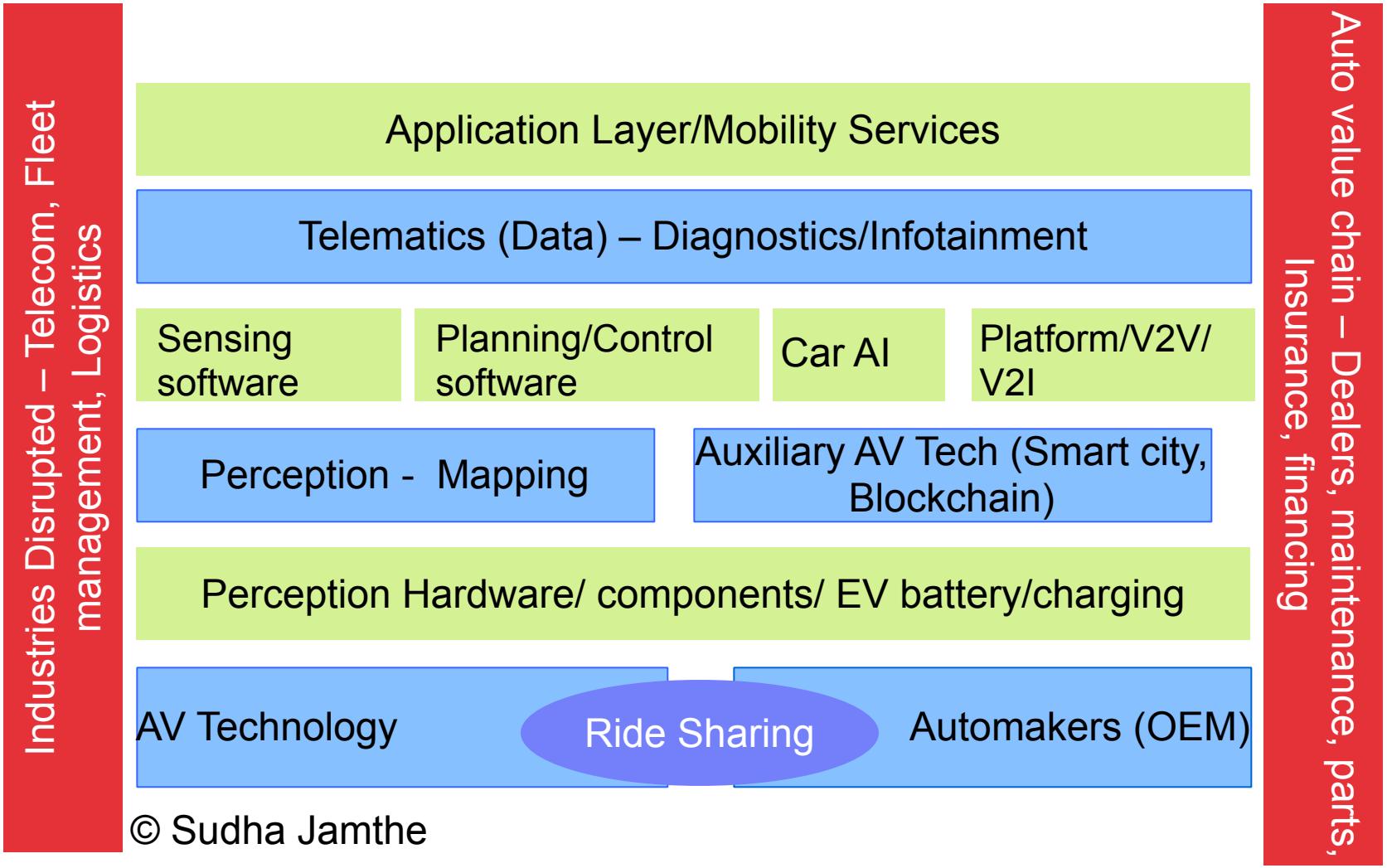
Source: Udacity

CAR COGNITION DATA FROM SENSOR FUSION



Perception & Objects Identification - DeepLearning
– Traffic signs, cars, people

LESSON 2 : AV TECHNOLOGY STACK & OS IN CARS



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V2V, V2I, V2X COMMUNICATION (DSRC or C-V2X)

Image: lrg-law.com

DIGITAL TWINS IN CONNECTED CARS

Image: Siemens SimRod Vehicle (Fully instrumented) creates the data set of performance attributes and model calibrations.

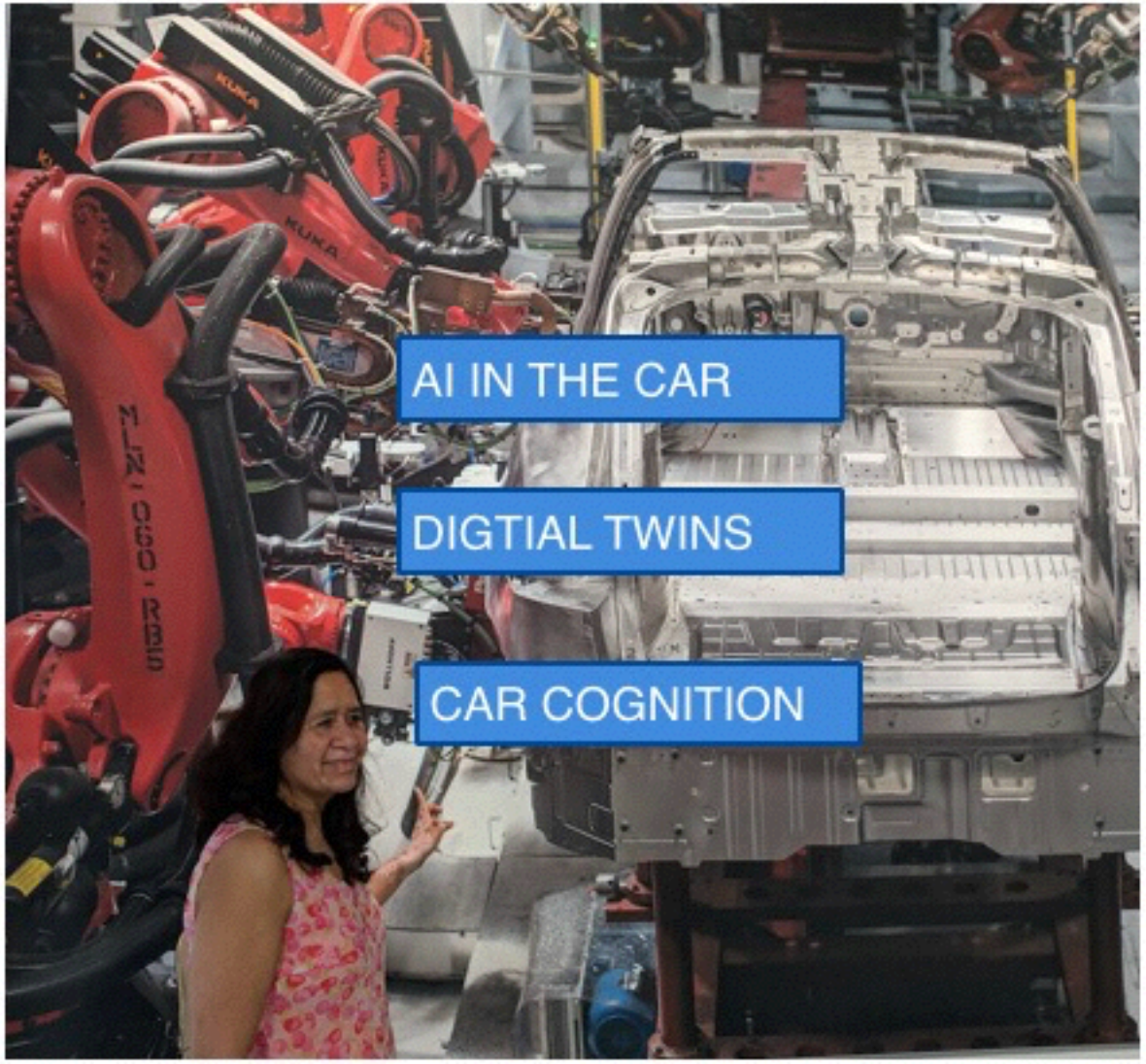
DATA CAR: INSIDE, OUTSIDE, AROUND

V2X

BLOCKCHAIN

FEDERATED AI

MICRO-MOBILITY DATA



AV SOLUTION DATA INTEGRATIONS IN PARTNERSHIPS

Amazon Key delivery to a Volvo car

AV SOLUTION BUSINESS DEVELOPMENT

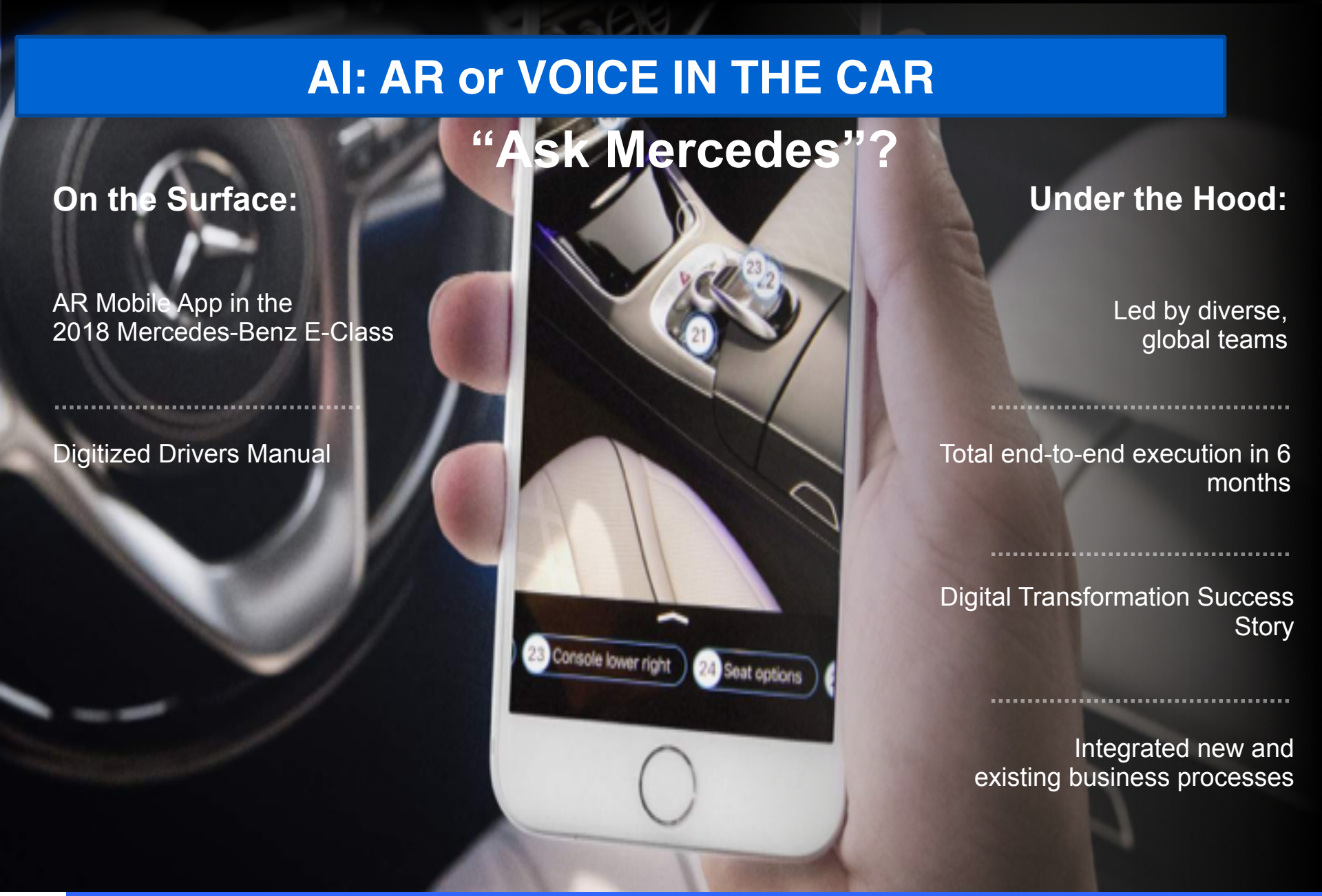
Navya delivers Covid kits to Mayo Clinic

AV SOLUTION PRODUCT MANAGEMENT

Nuro delivers prescription for CVS in Houston,TX

AI: AR or VOICE IN THE CAR

"Ask Mercedes"?



On the Surface:

AR Mobile App in the
2018 Mercedes-Benz E-Class

Digitized Drivers Manual

Under the Hood:

Led by diverse,
global teams

Total end-to-end execution in 6 months

Digital Transformation Success Story

Integrated new and
existing business processes

PLATOONING TRUCKS

Source: Volkswagen Platooning Trucks

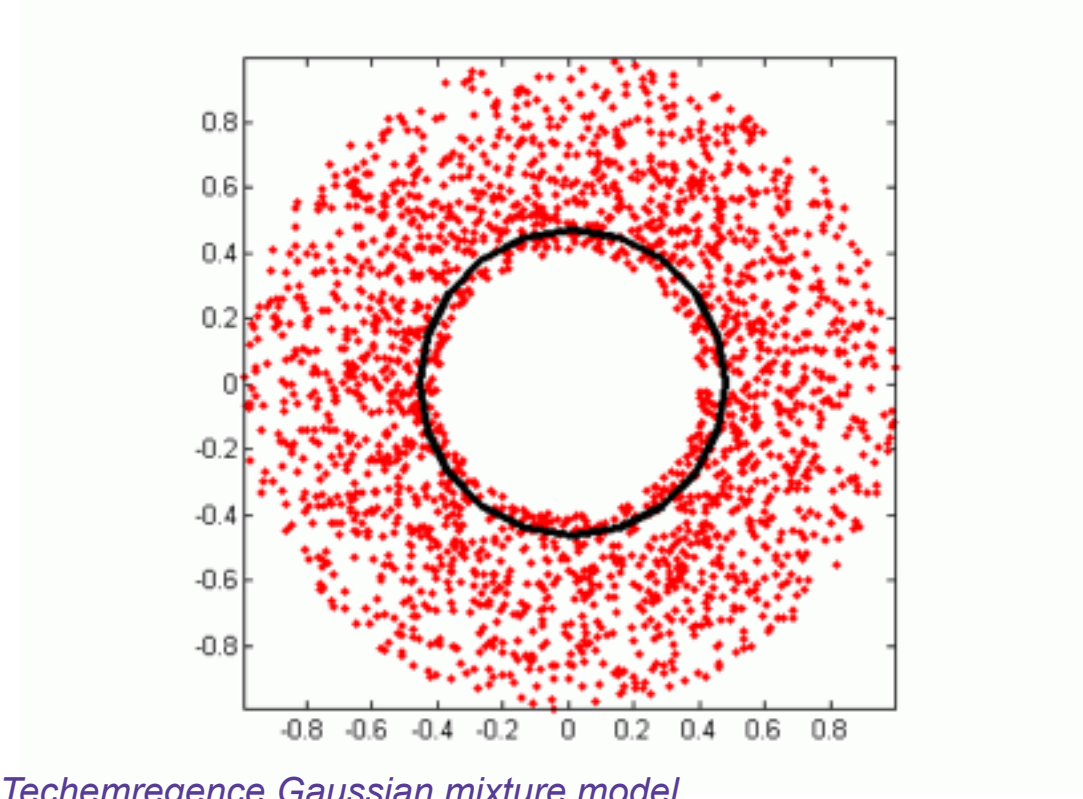
More Automation: shipping, logistics, agriculture

Ref: https://www.pscp.tv/w/1yoKMEgdjvOKQ?t=198 (video in spanish)

APPENDIX: WHAT IS MACHINE LEARNING?

Machine Learning takes in structured data and makes a decision by building data models (a geometric shape of data*)

Training Data & Factors



Predict Outcomes to make decisions

image: Techemregence Gaussian mixture model