

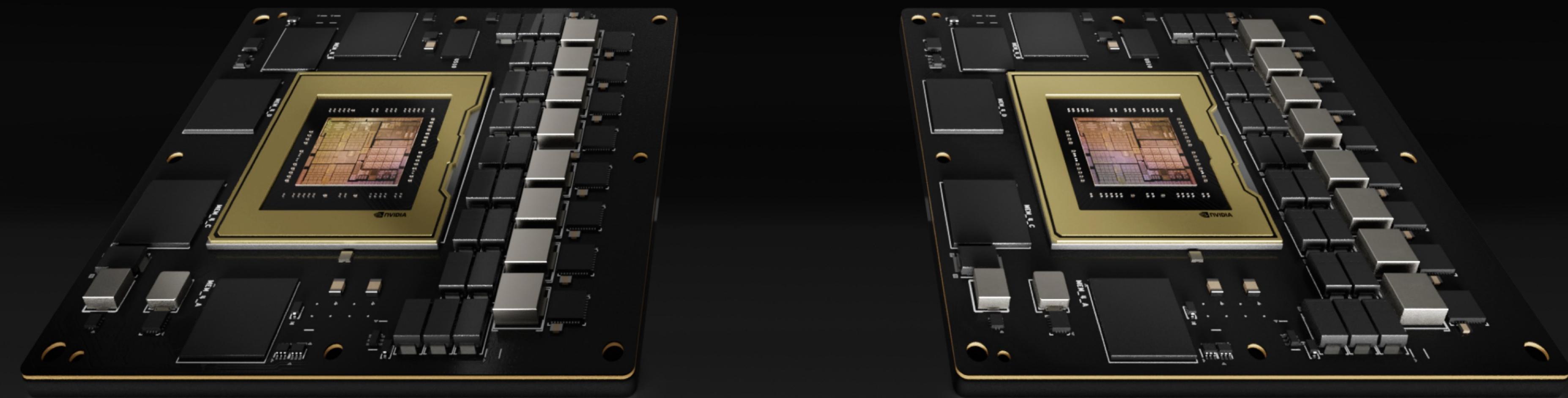
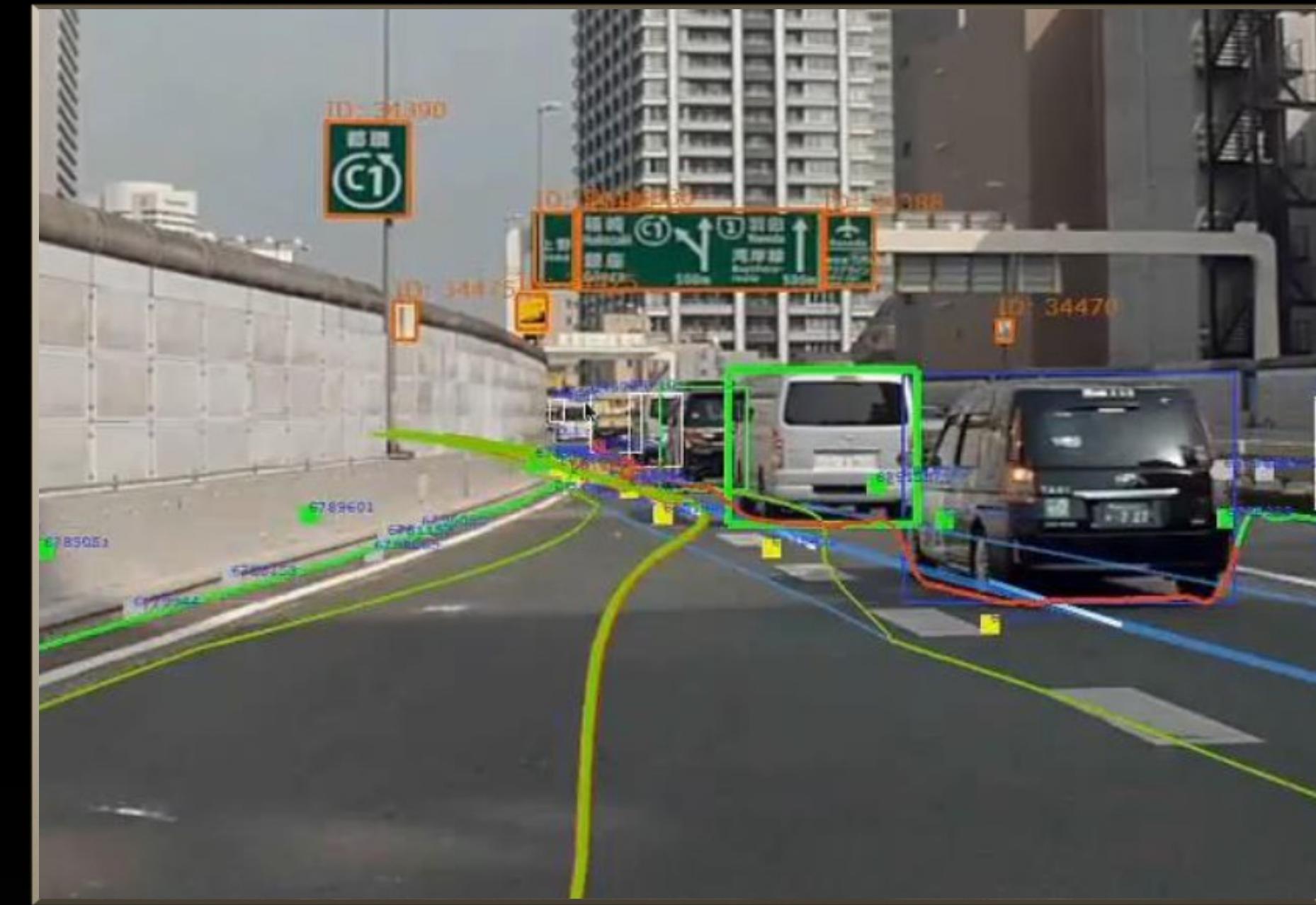
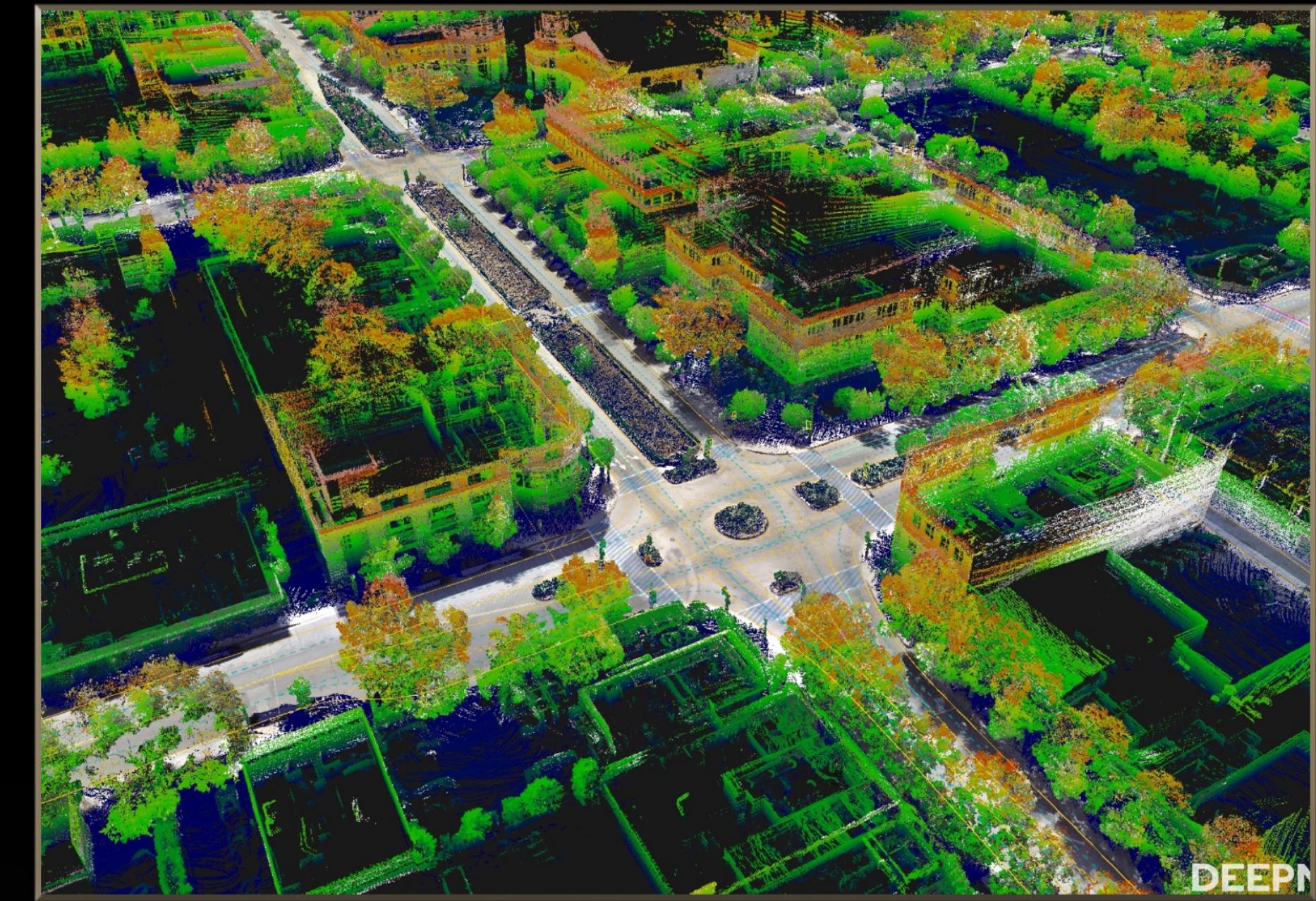


# TAKING NVIDIA DRIVE CHAUFFEUR ON THE ROAD

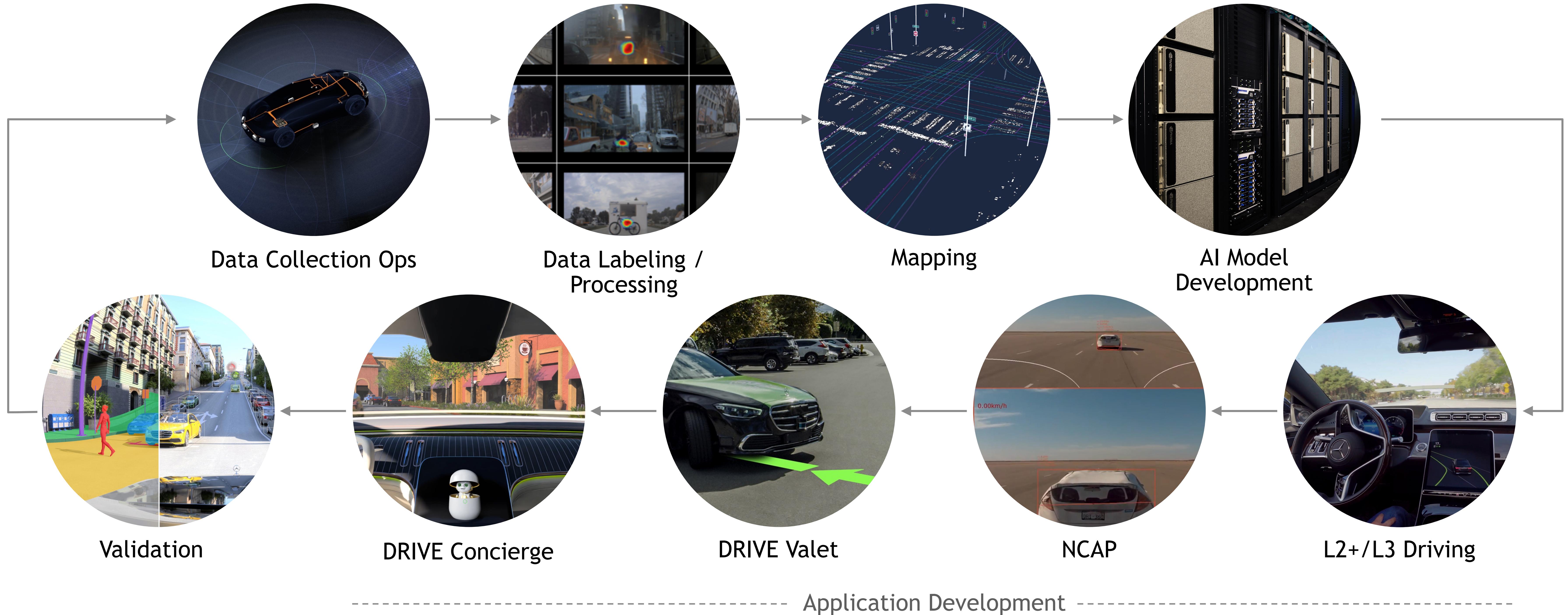
CHONGYU WANG, PRODUCT MANAGER  
CARMEN MAXIM, PRODUCT MANAGER

# DRIVE CHAUFFEUR (AV)

Future Cars Will Be Your Personal AI Chauffeur

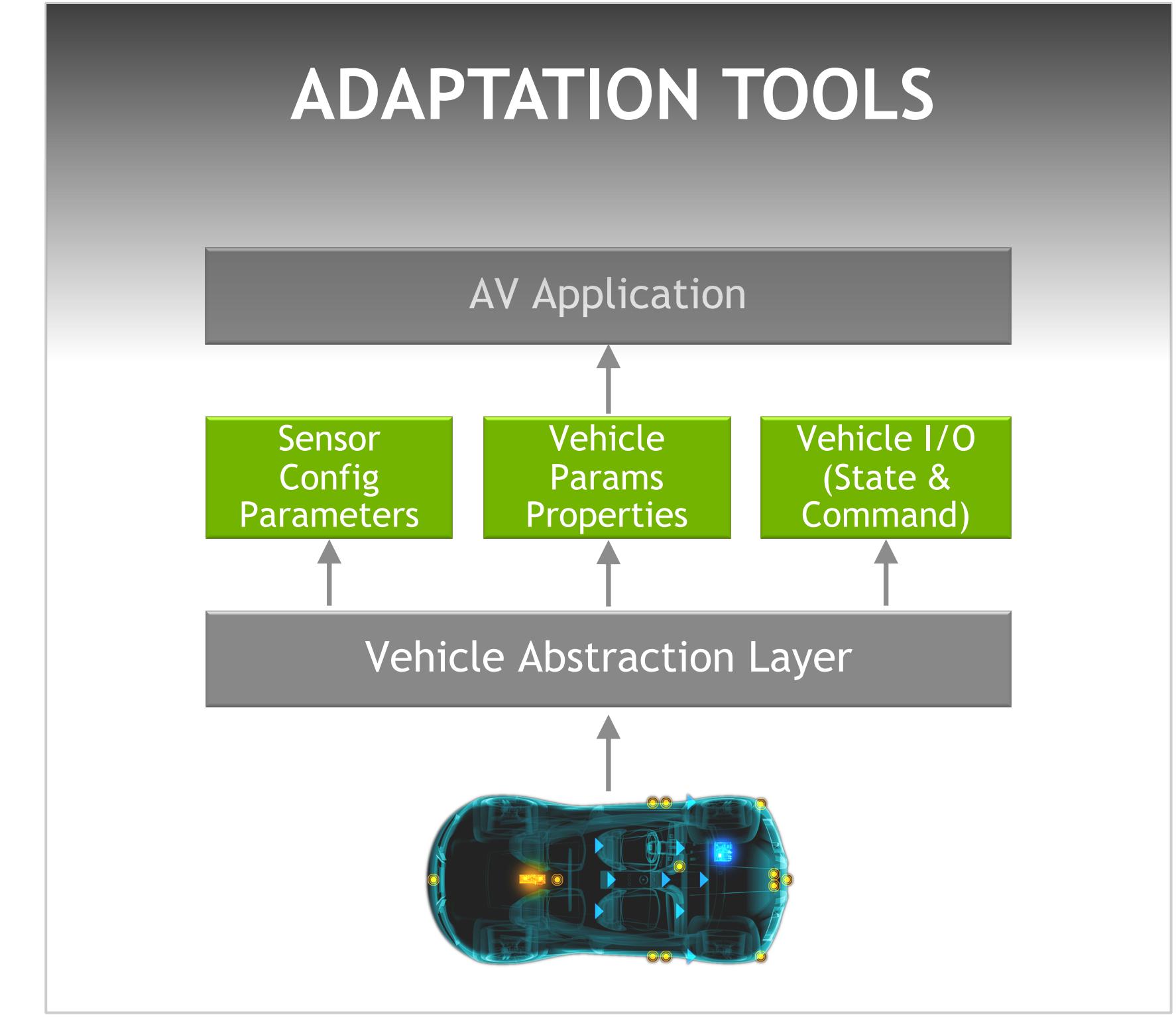
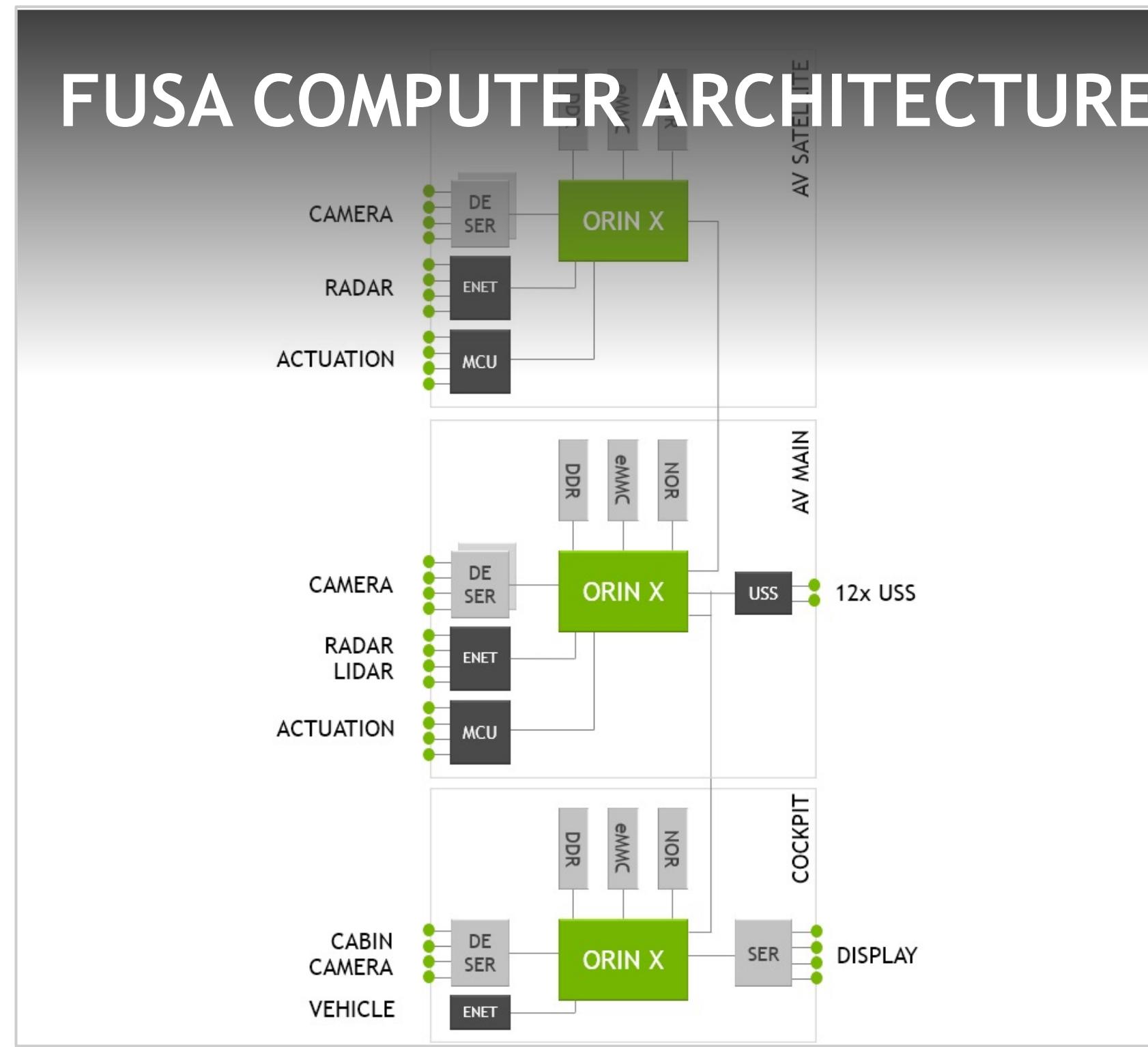
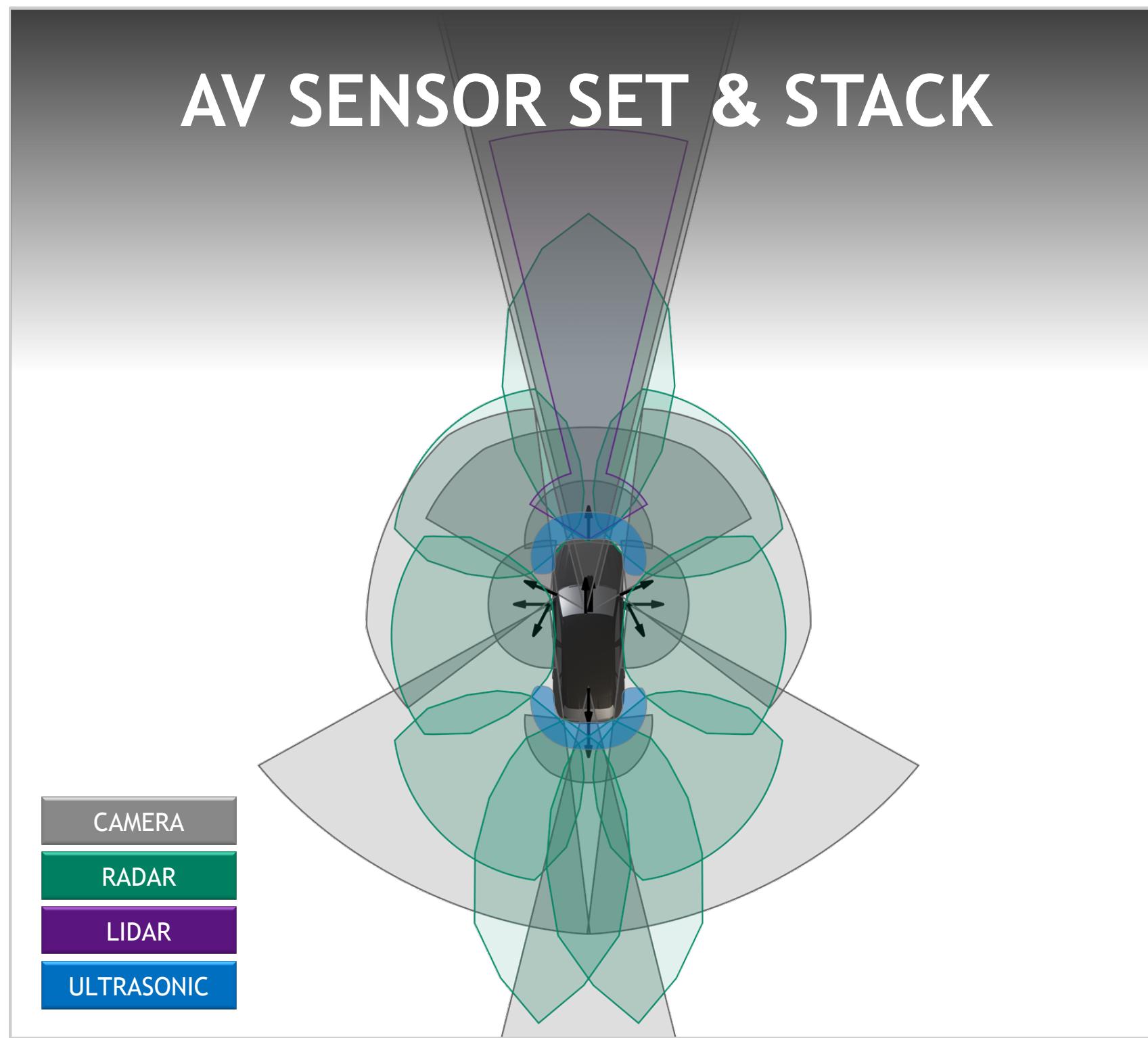


# AV REQUIRES END-TO-END AV DEVELOPMENT FLOW

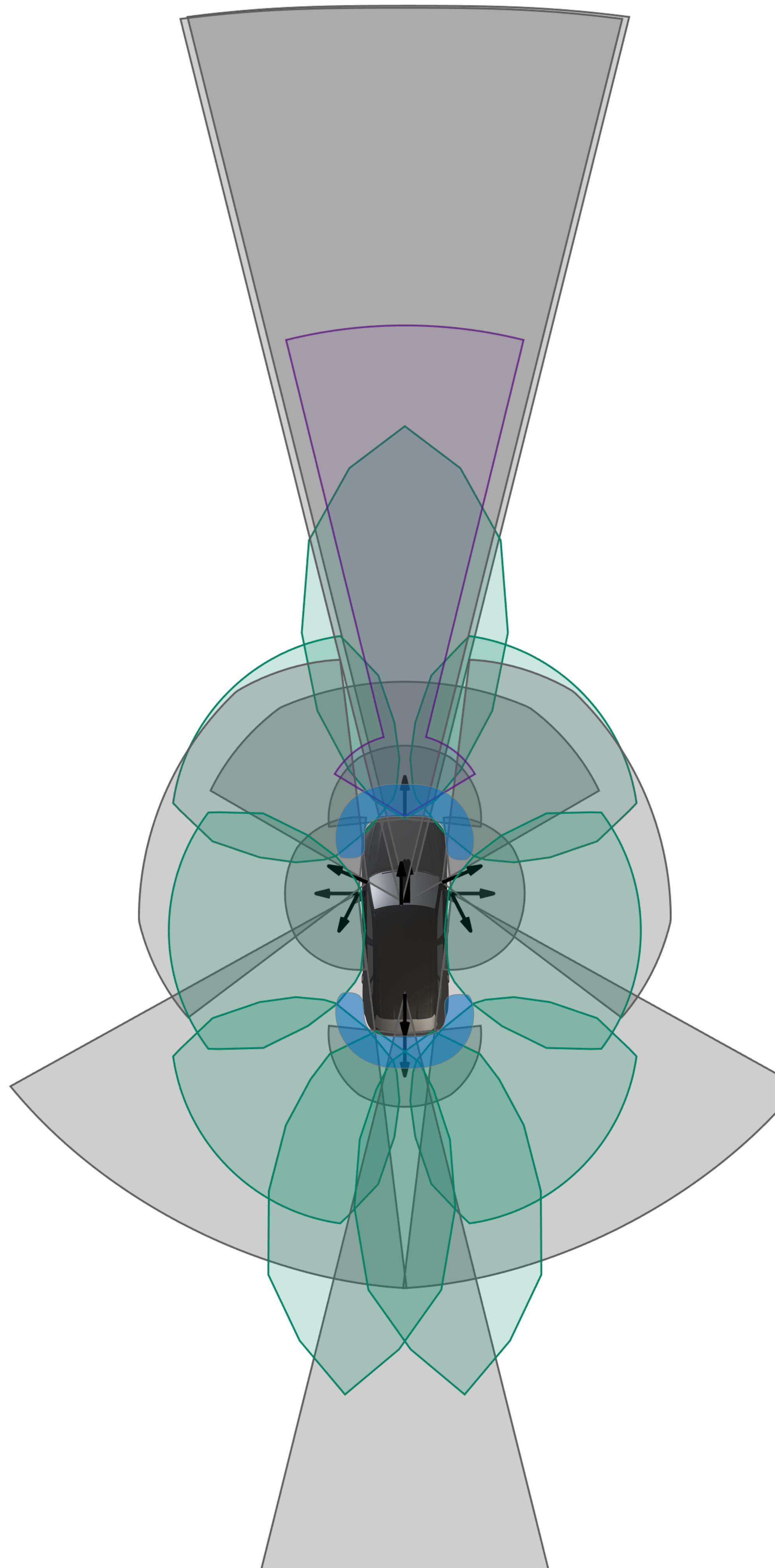


# DRIVE HYPERION 8.1 PLATFORM SOLUTION

## Complete Sensor Suite & High-Performance AI Computing



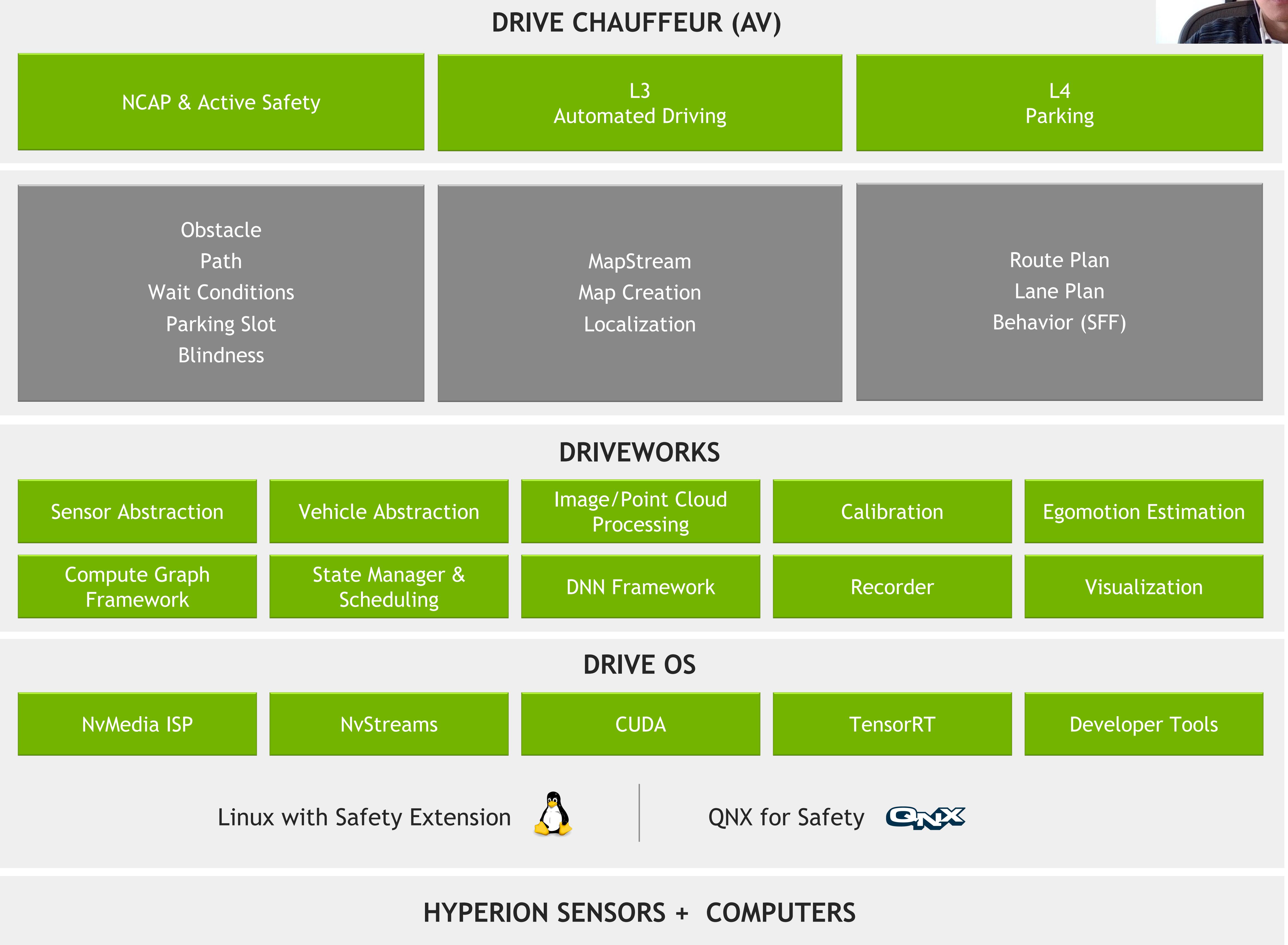
# HYPERION 8.1 SENSORS FOR L3



Type	Sensor Name	IO	Sensor Part	HFOV
Camera	Front Wide	GMSL2	Sony IMX728	120
Camera	Front Tele			30
Camera	Side Rear Left			70
Camera	Side Rear Right			
Camera	Front Fisheye			
Camera	Rear Fisheye			
Camera	Left Fisheye			
Camera	Right Fisheye			
Radar	Front Center Imaging		Conti Image	120
Radar	Corner Front Left	ETH	Hella SRR	
Radar	Corner Front Right			
Radar	Corner Rear Left			
Radar	Corner Rear Right			
Ultrasonic	Ultrasonic x12		Valeo	-
IMU	Vehicle IMU x2	DSI3	Conti	-
GPS	Vehicle GPS	CAN	U-blox	-
AV SATELLITE	Front Tele Satellite	GMSL2	Sony IMX728	30
	Rear Tele			
	Cross Left			
	Cross Right			
	Radar	ETH	Hella SRR	160
	Side Left			
	Side Right			
	Rear Left			
	Rear Right			
Lidar	Front Center		Conti	50
IX	Driver Monitoring	GMSL2	Luminar	120
	Front Occupant Monitoring			
	Rear Occupant Monitoring			
	Radar	CAN	OVT OV2311	55
	Child Presence Detection		OVT OX05B1S	170

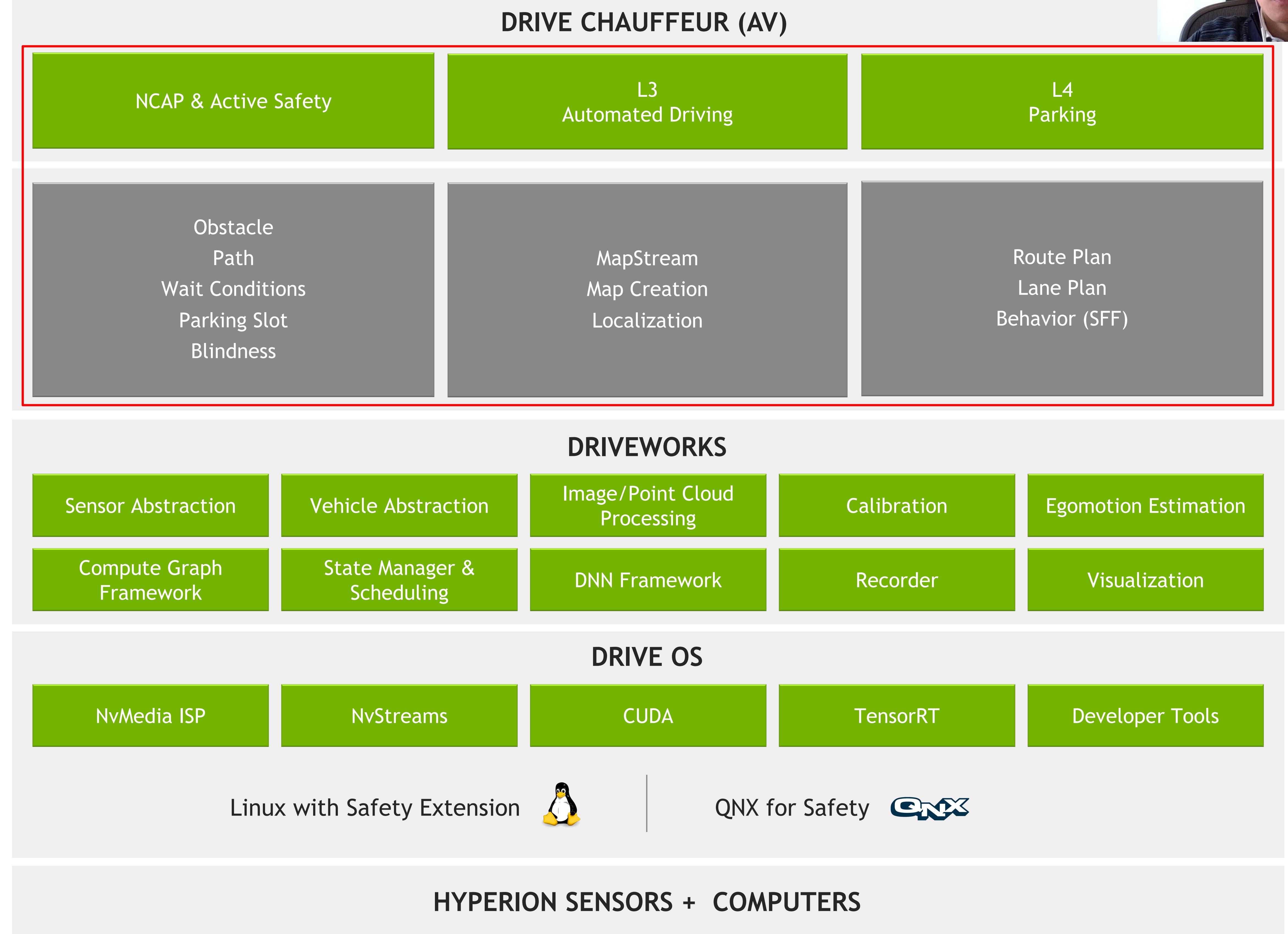


# AI POWERED DRIVE SCHAUFFEUR SOFTWARE STACK



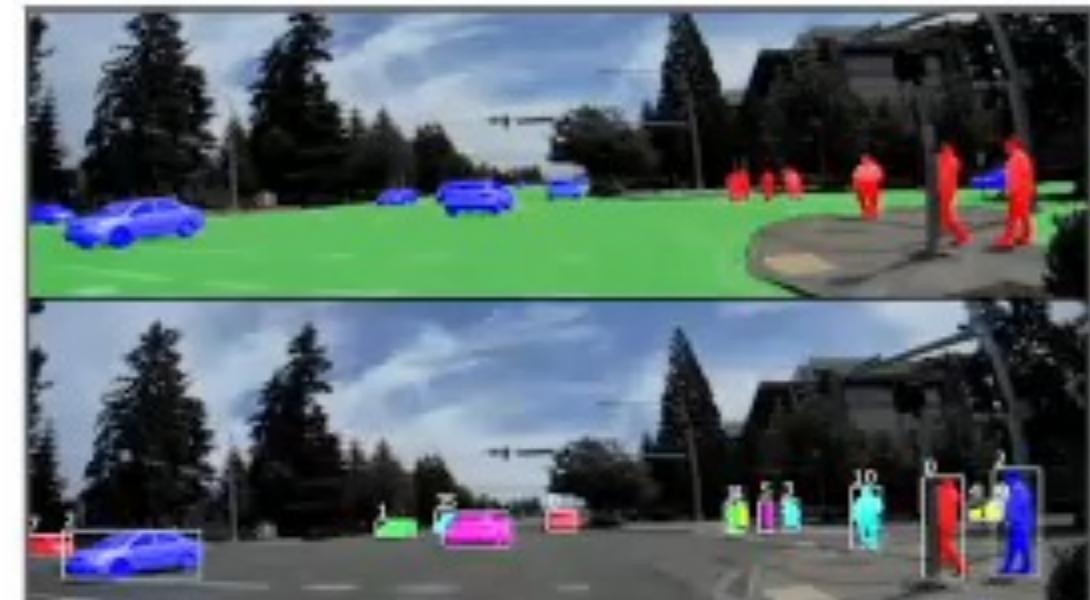


# AI POWERED DRIVE SCHAUFFEUR SOFTWARE STACK



# AI MODELS – MOST IMPORTANT COMPONENT OF AV

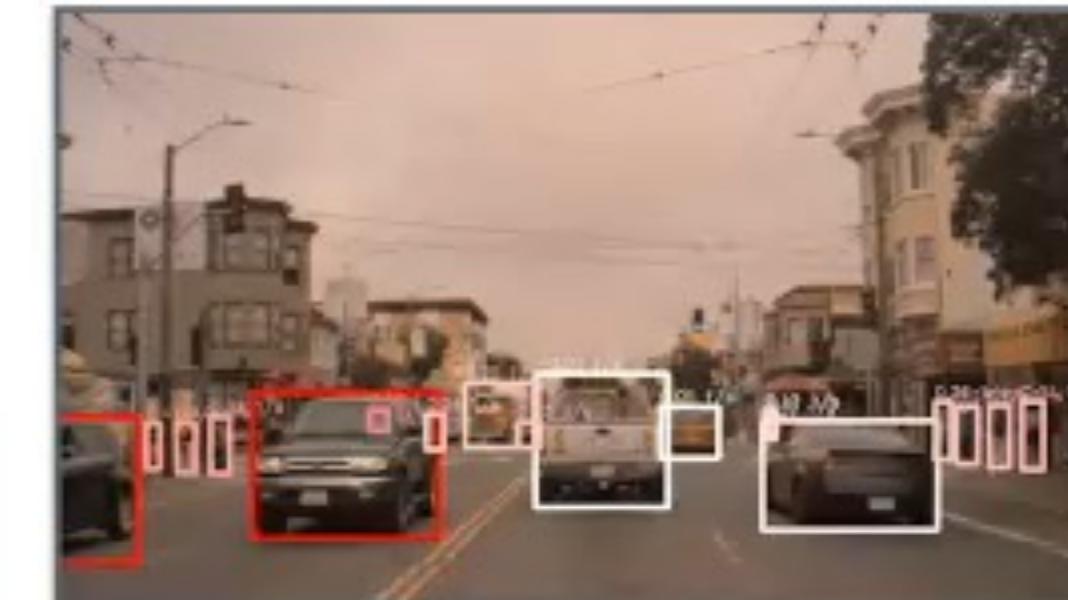
## World-Class Neural Networks



Obstacles



Distance



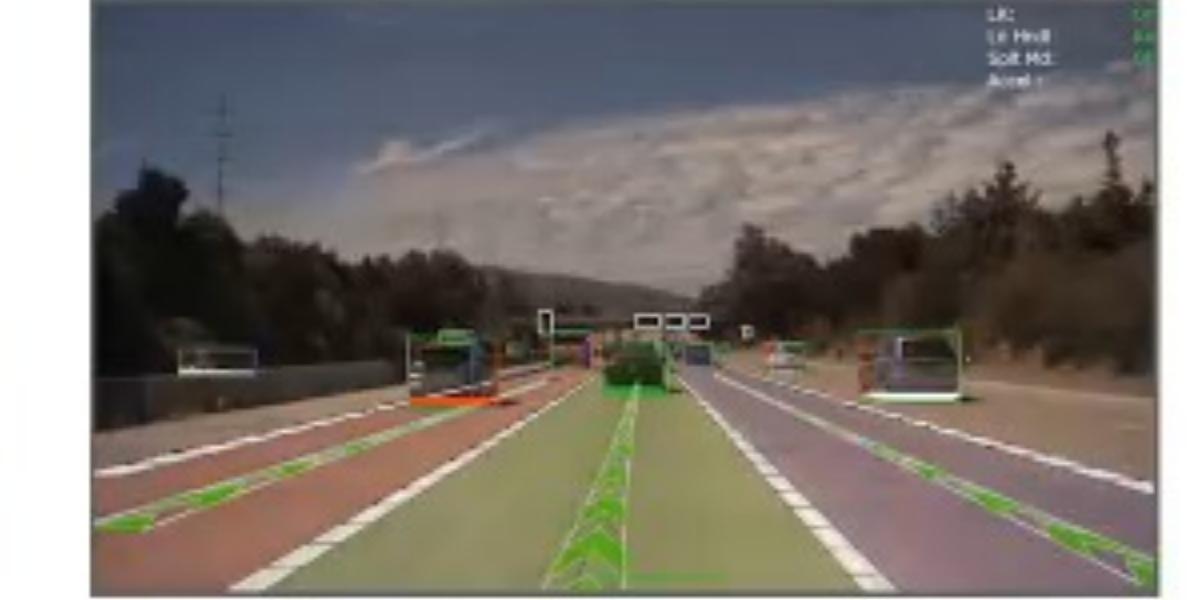
Time to Collision (RNN)



Free Space



Lanes



Paths



Traffic Lights



Signs



Intersection



Map



Parking



Prediction



Camera Blindness



Gestures / Pose



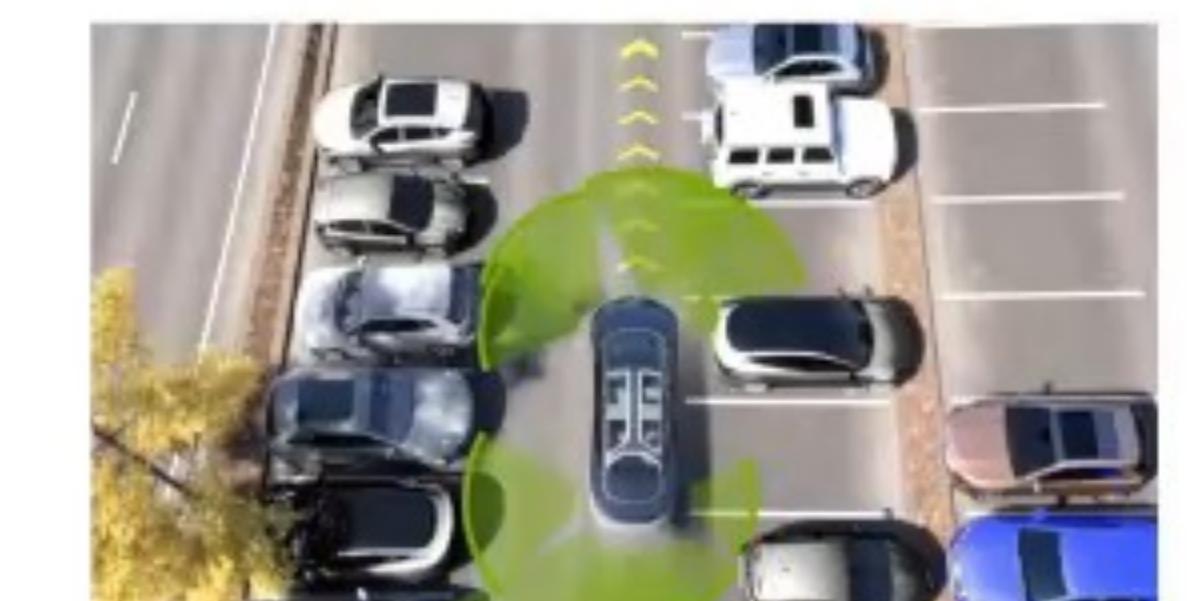
Gaze



Lidar



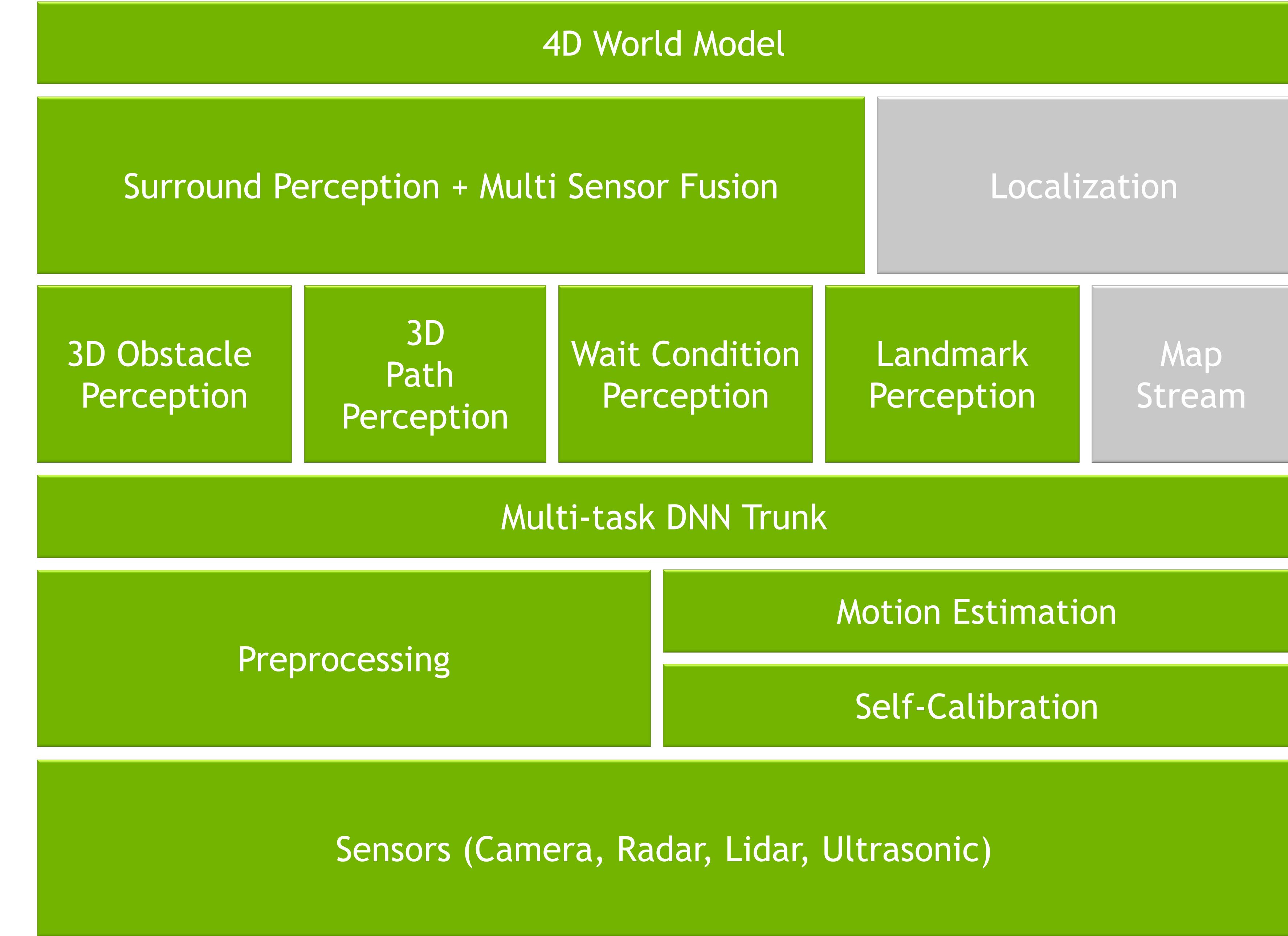
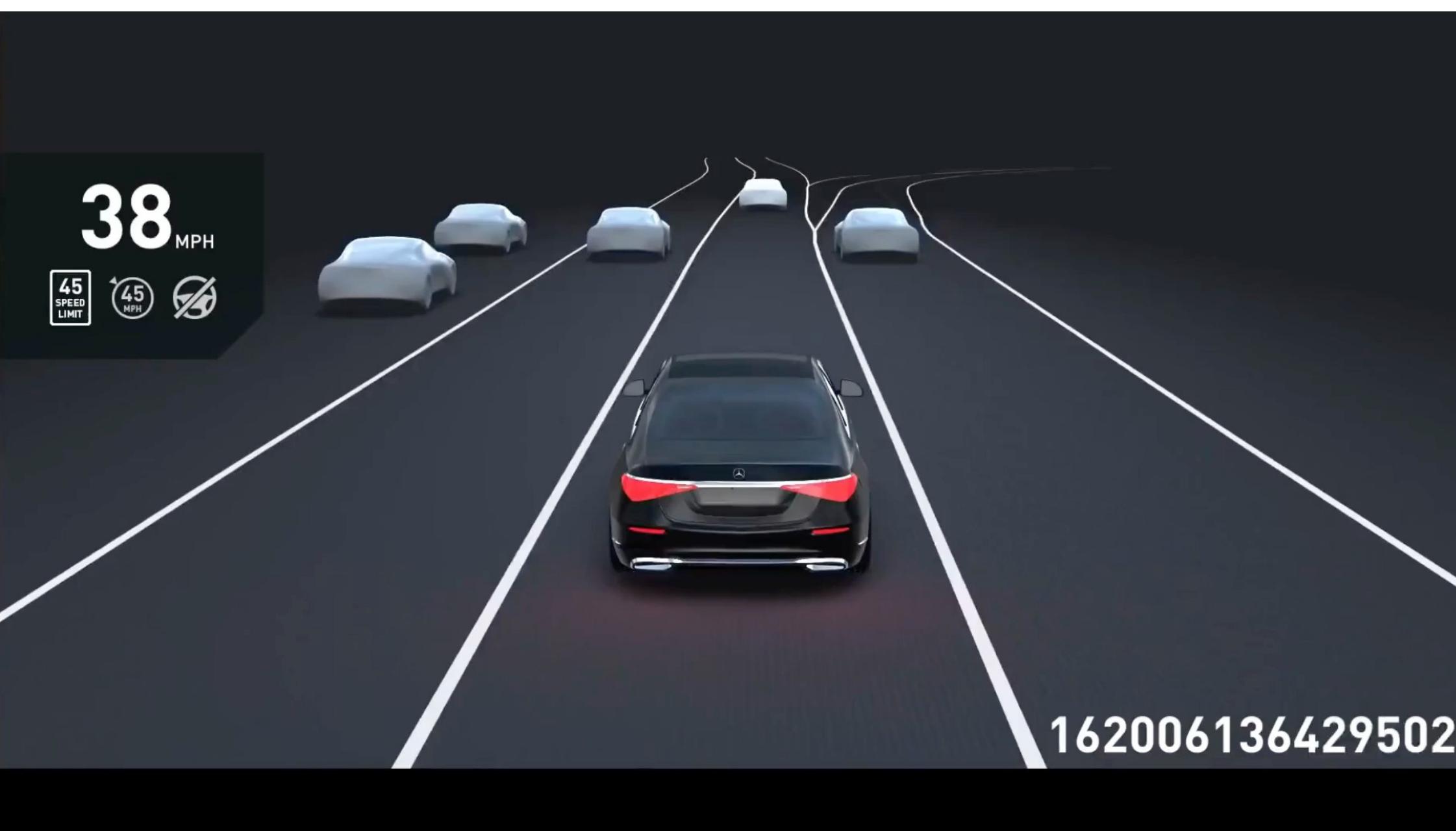
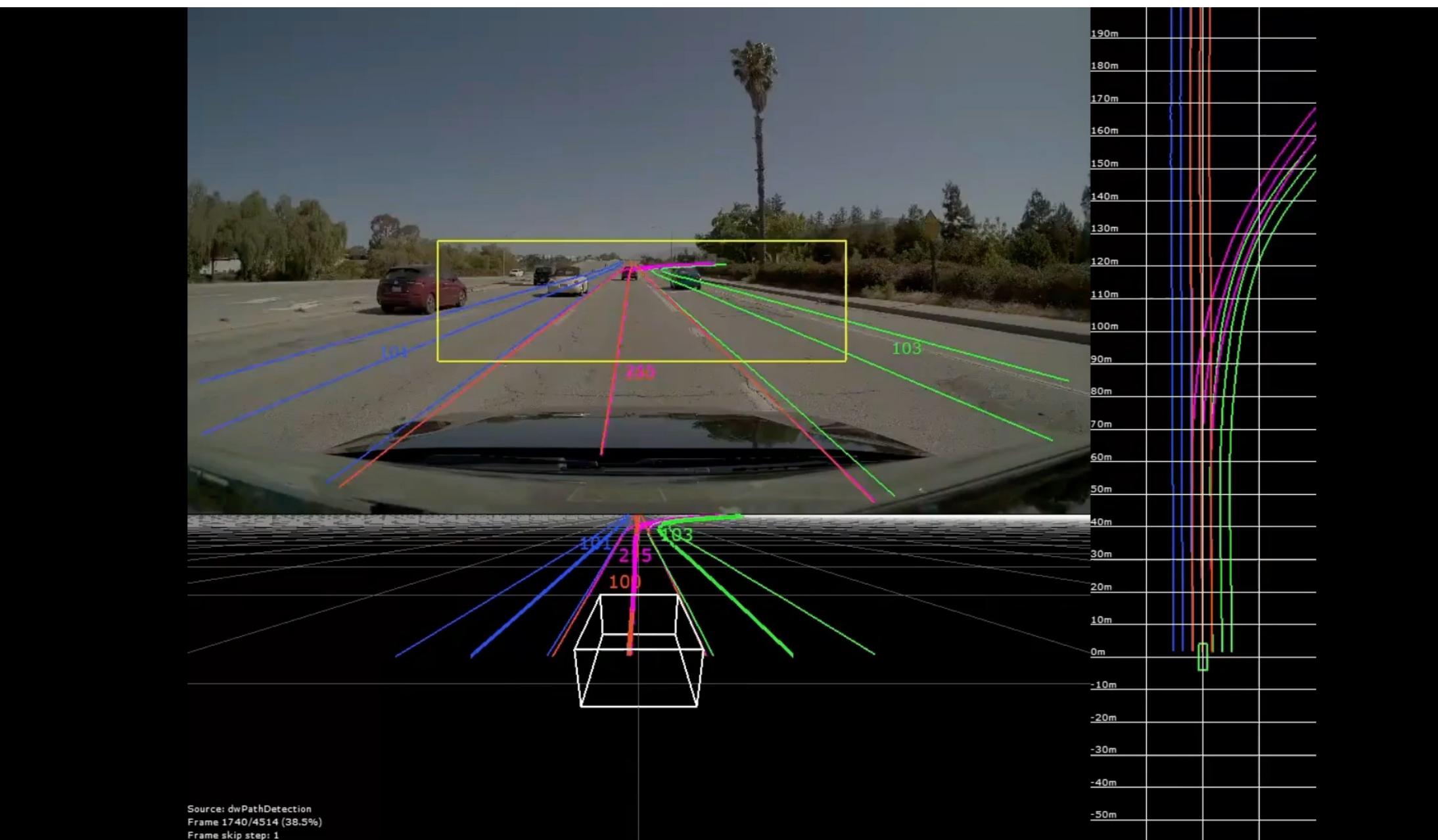
Radar



Ultrasonic

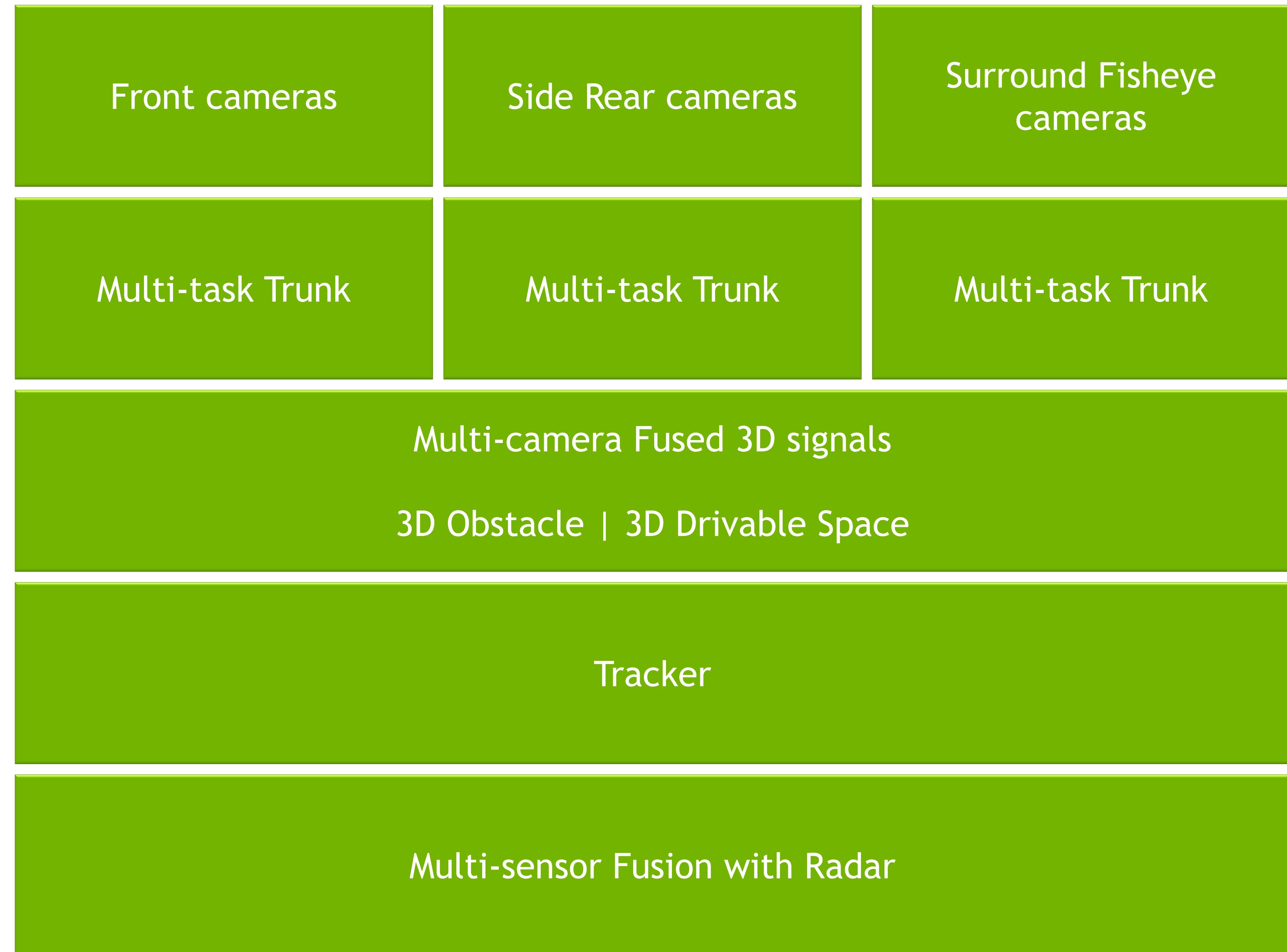
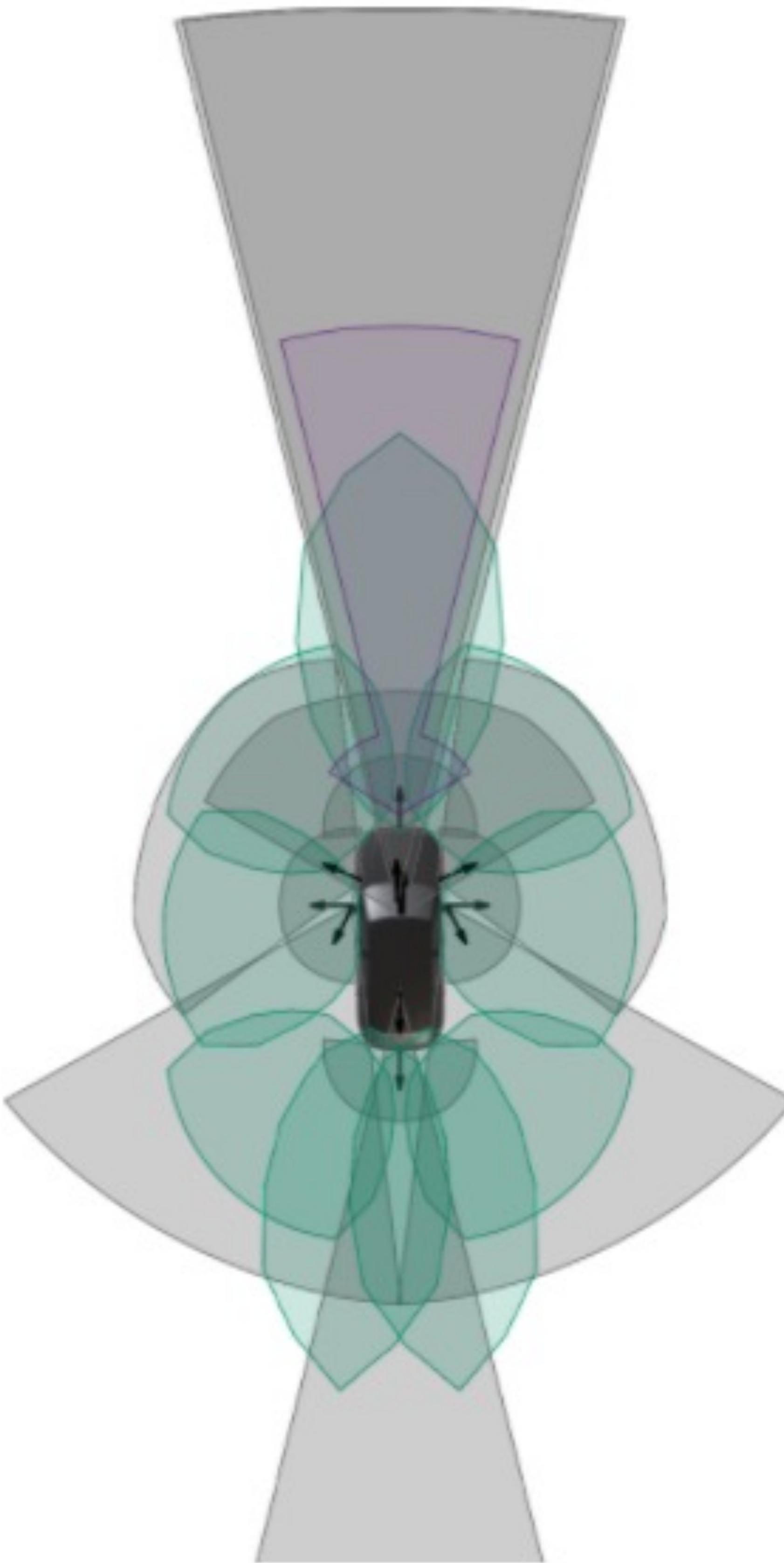
# DRIVE PERCEPTION

Multi-task Training | Trajectory Prediction | Early Sensor Fusion



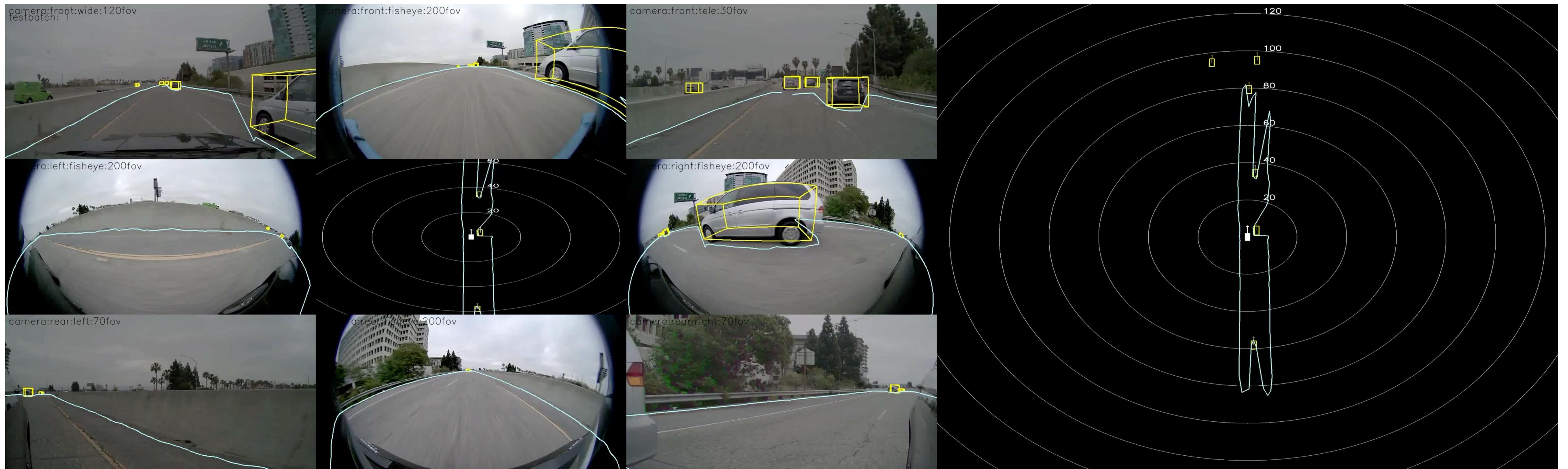
# DRIVE PERCEPTION ELEMENTS

3D Obstacle | 3D Drivable Space



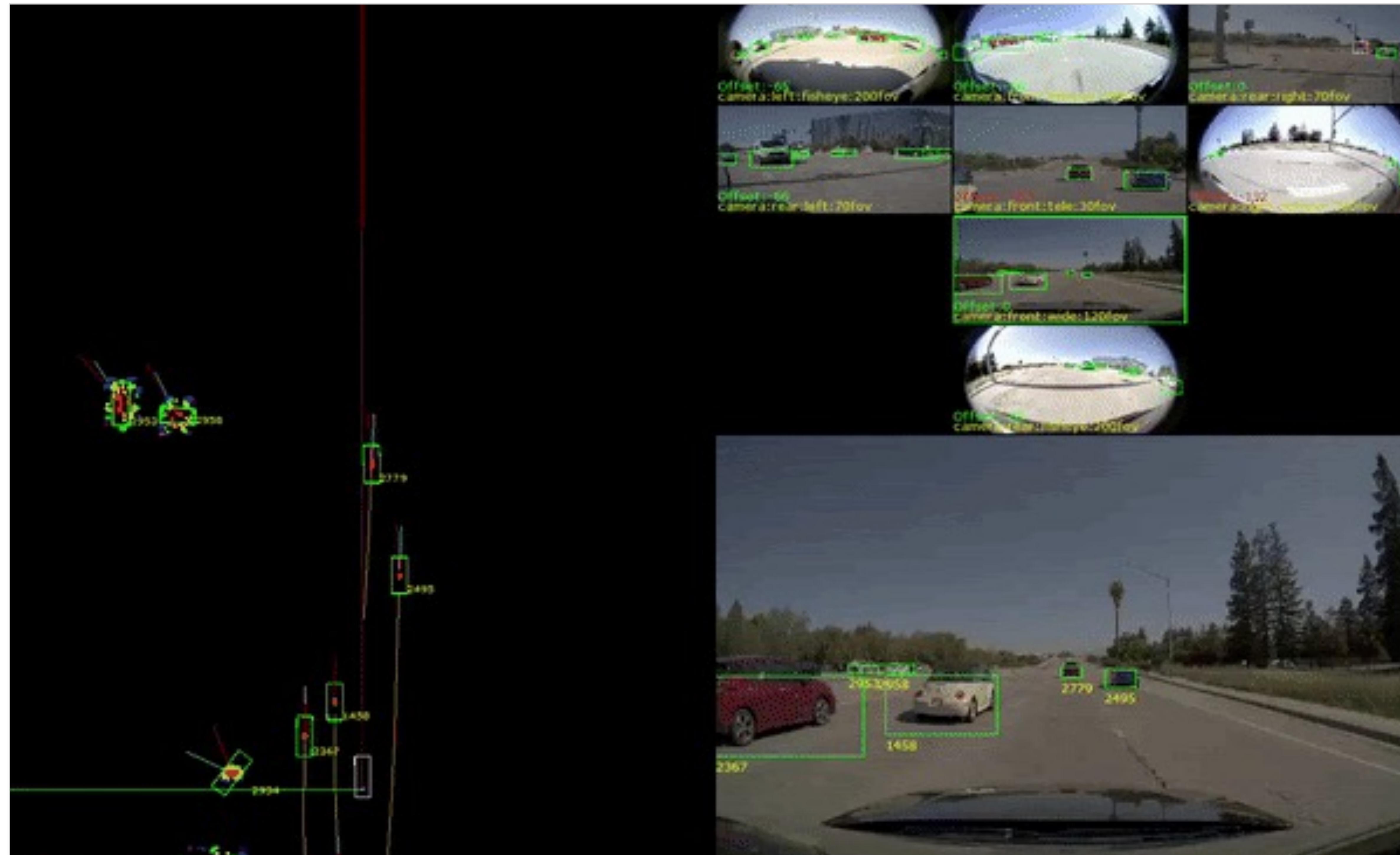
# DRIVE PERCEPTION ELEMENTS

## 3D Obstacle | 3D Drivable Space



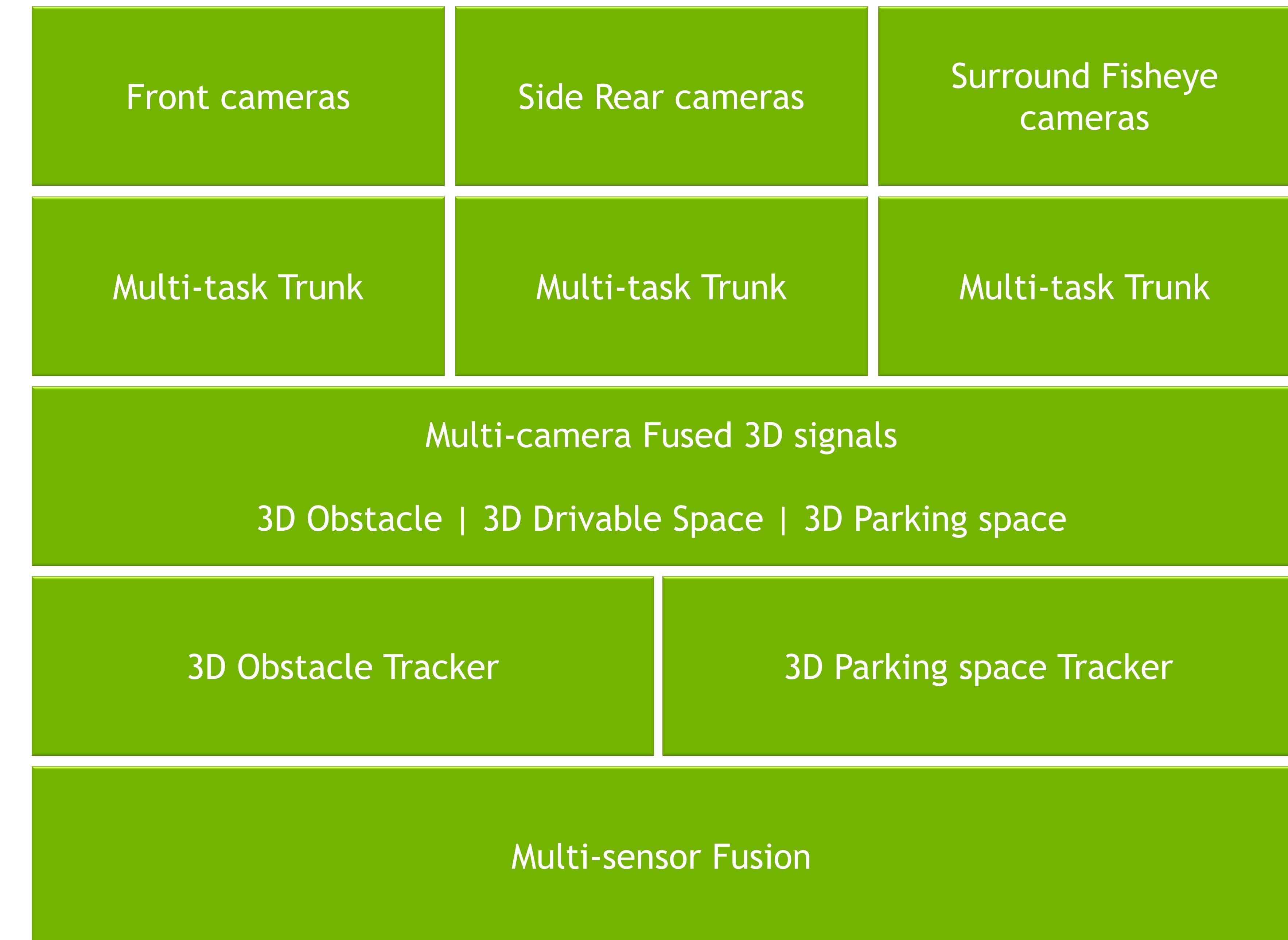
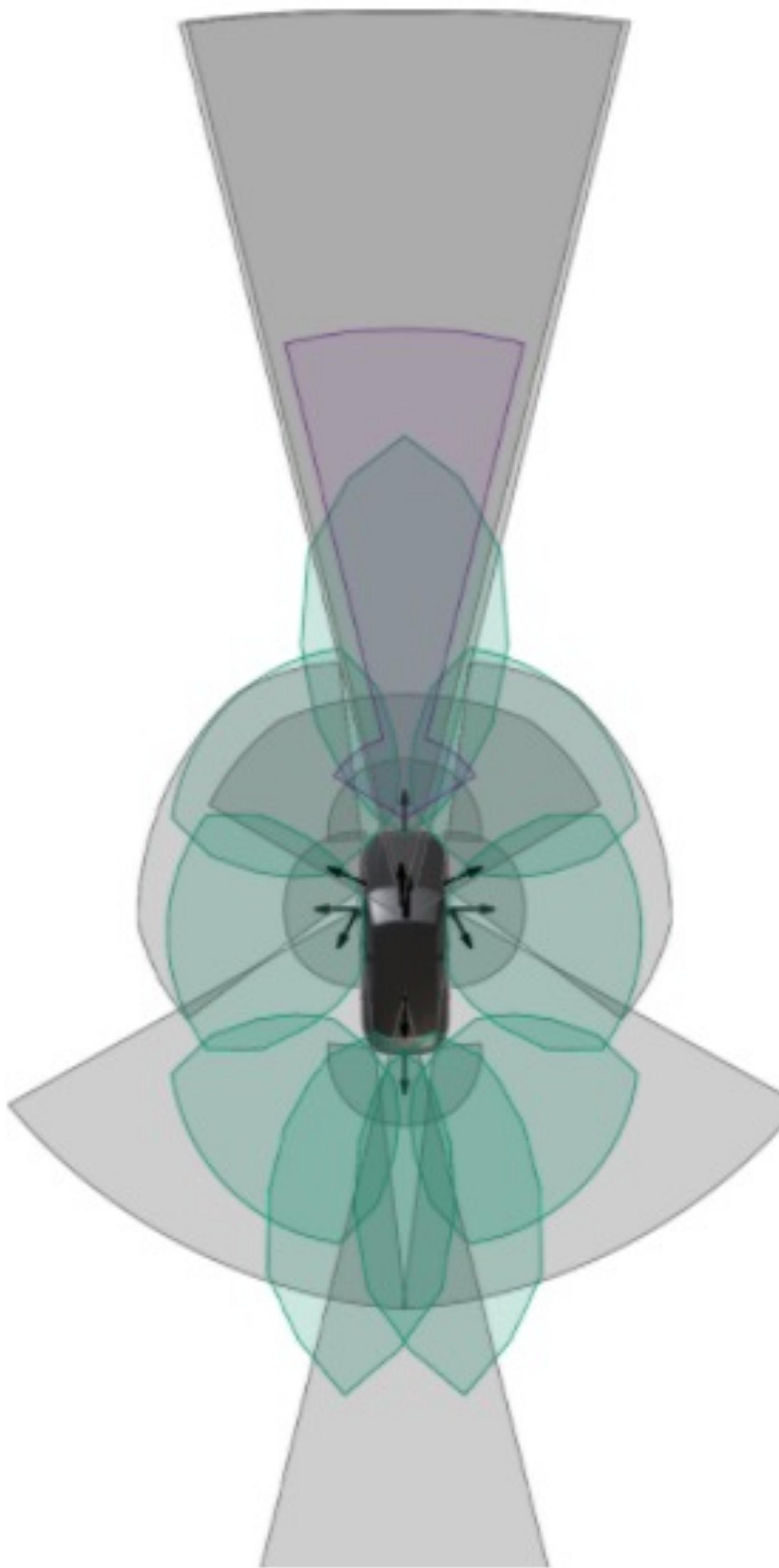
# DRIVE PERCEPTION ELEMENTS

## Tracker | Multi Sensor Fusion



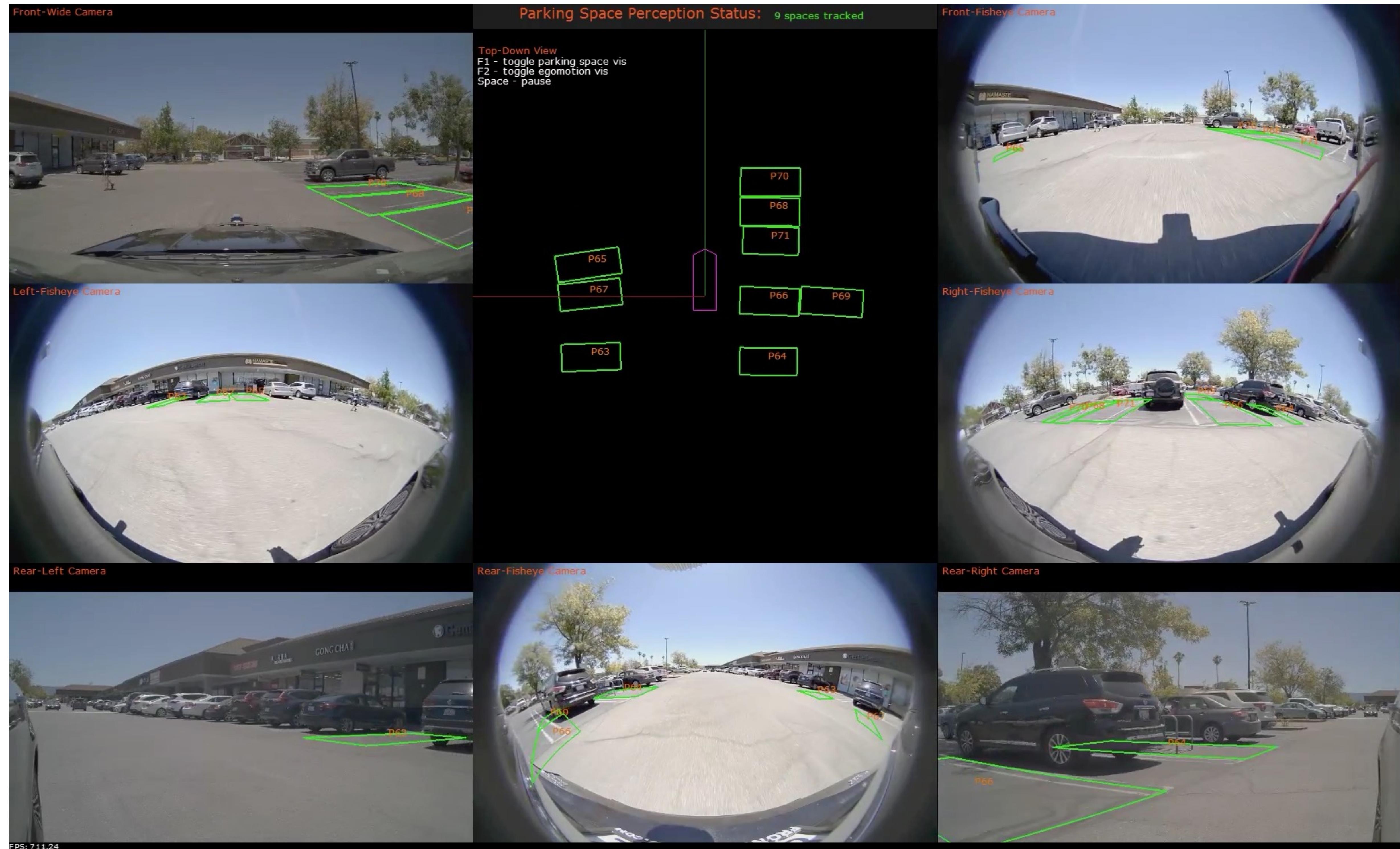
# PARK PERCEPTION ELEMENTS

3D Obstacle | 3D Drivable Space | 3D Parking space



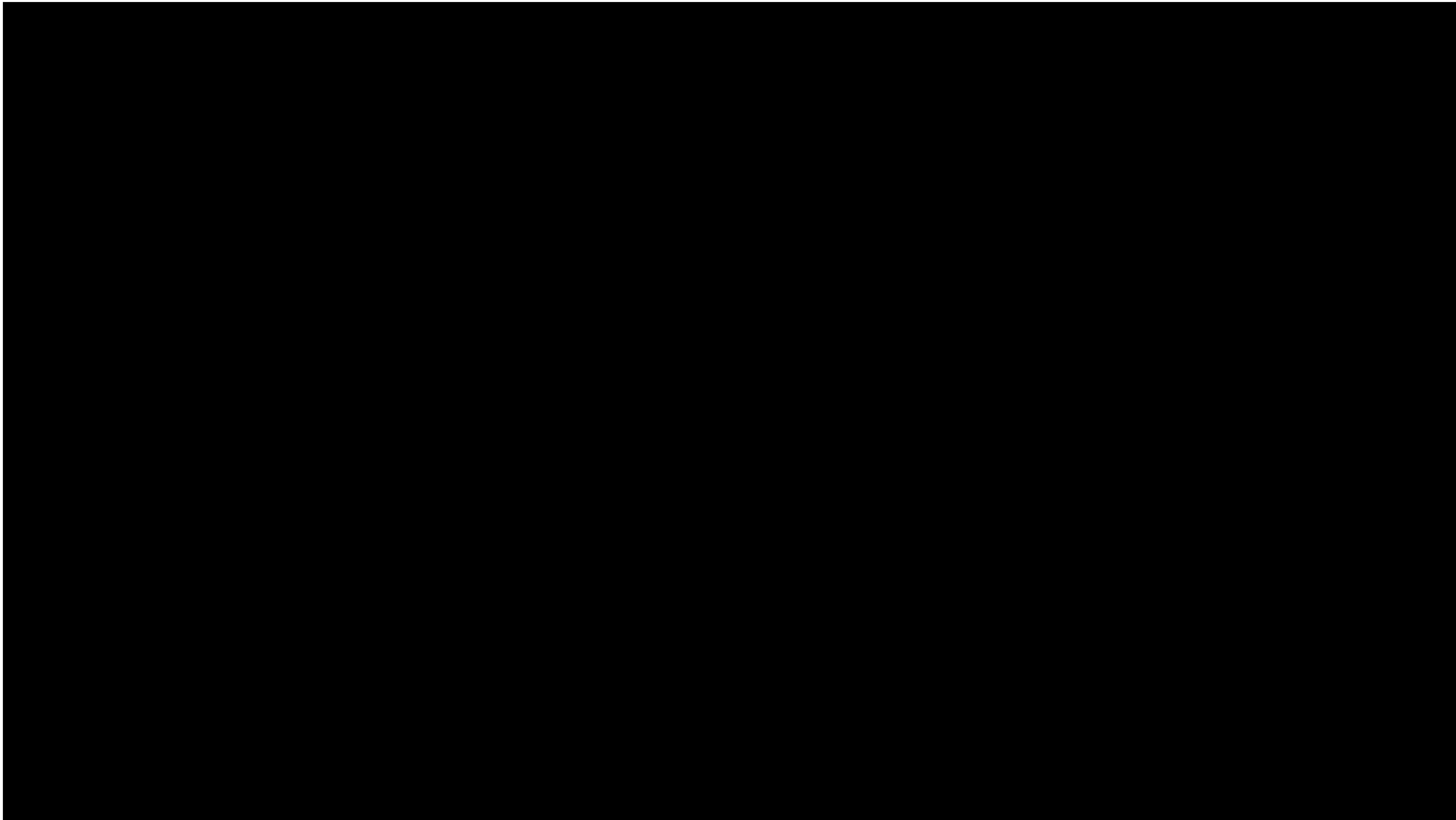
# PARK PERCEPTION ELEMENTS

## 3D Obstacle | 3D Drivable Space | 3D Parking space



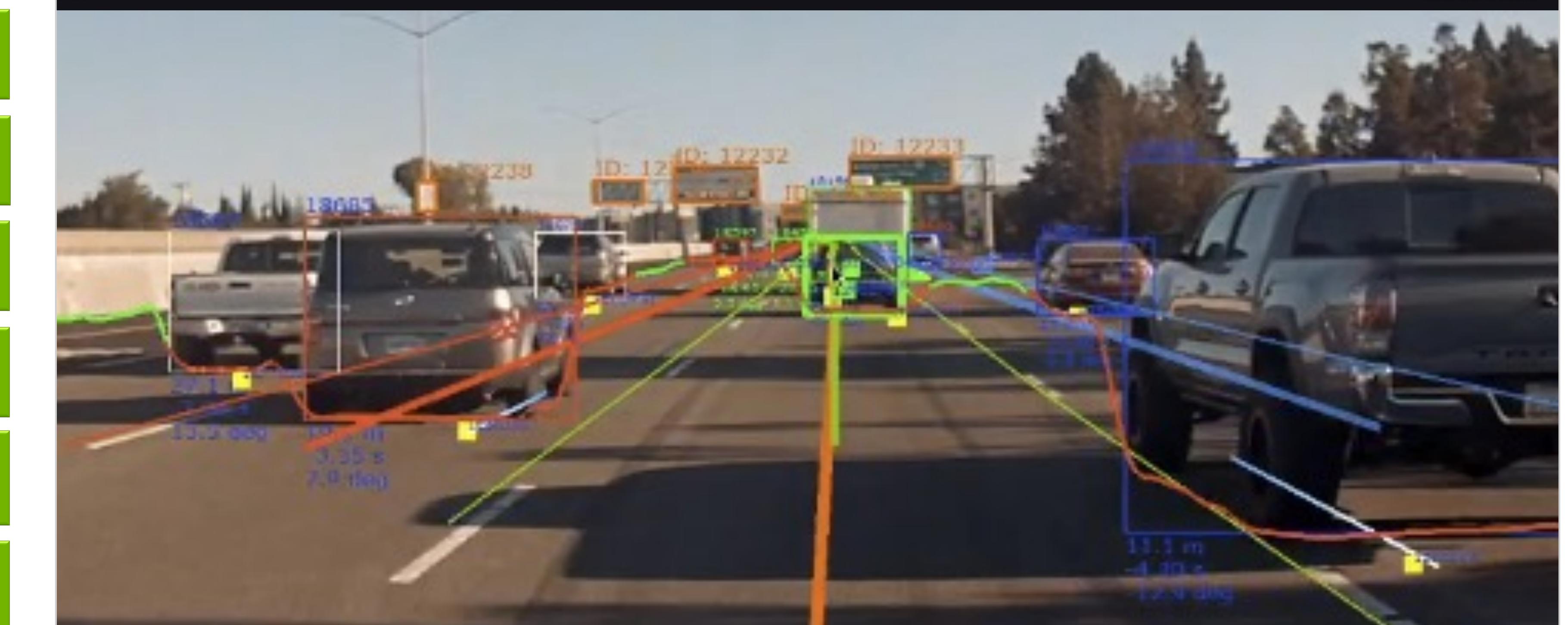
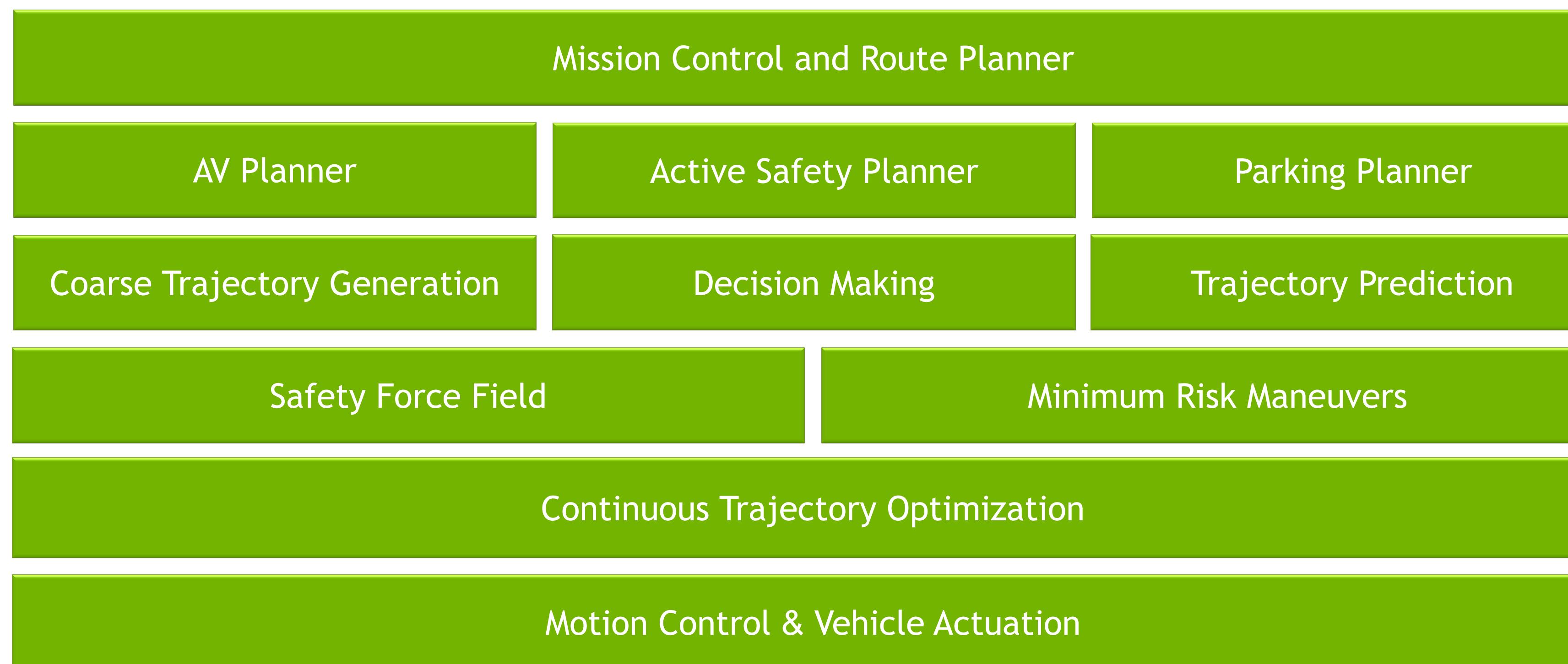
# DRIVE CHAUFFEUR (AV)

AI powered ride



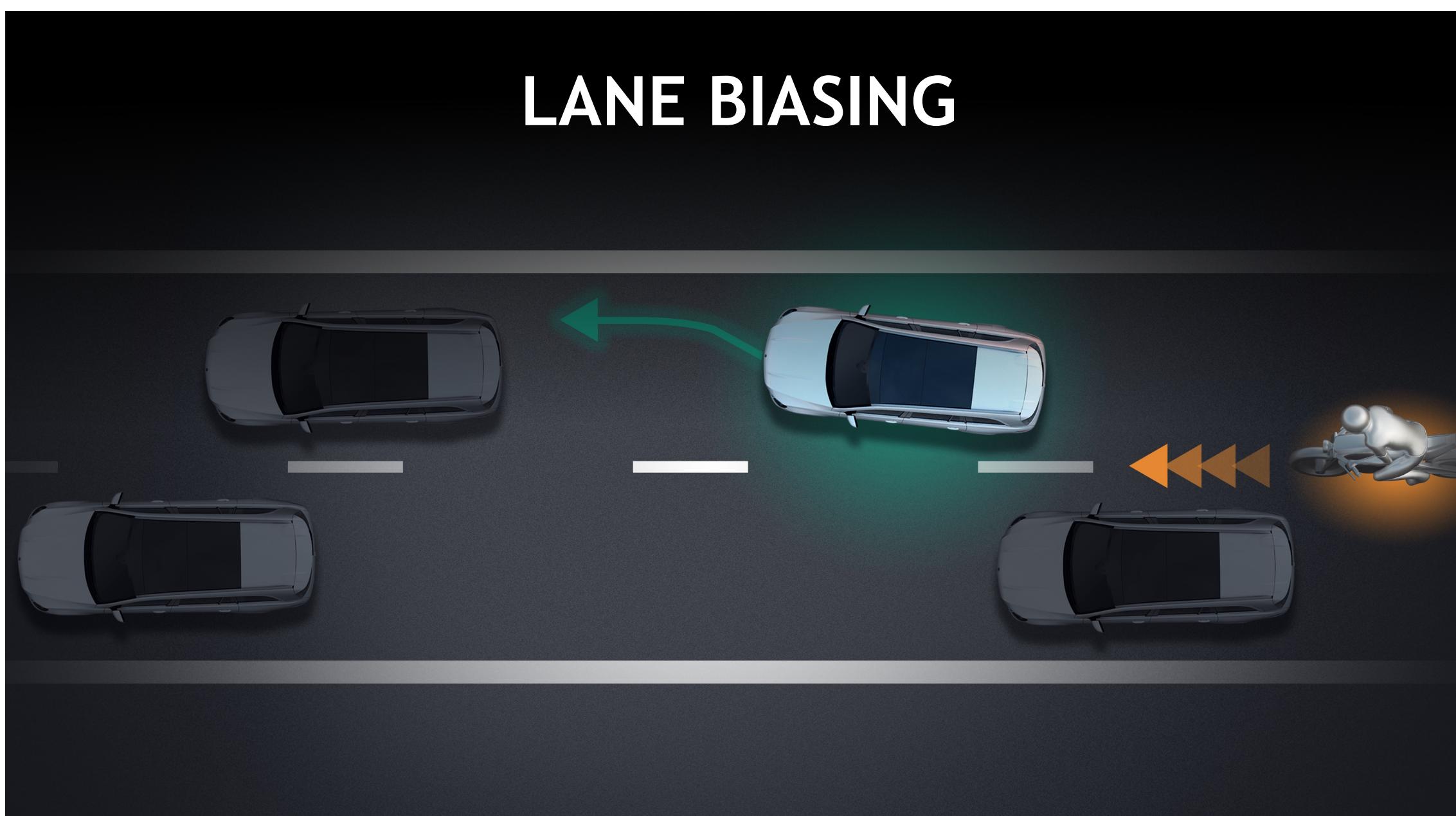
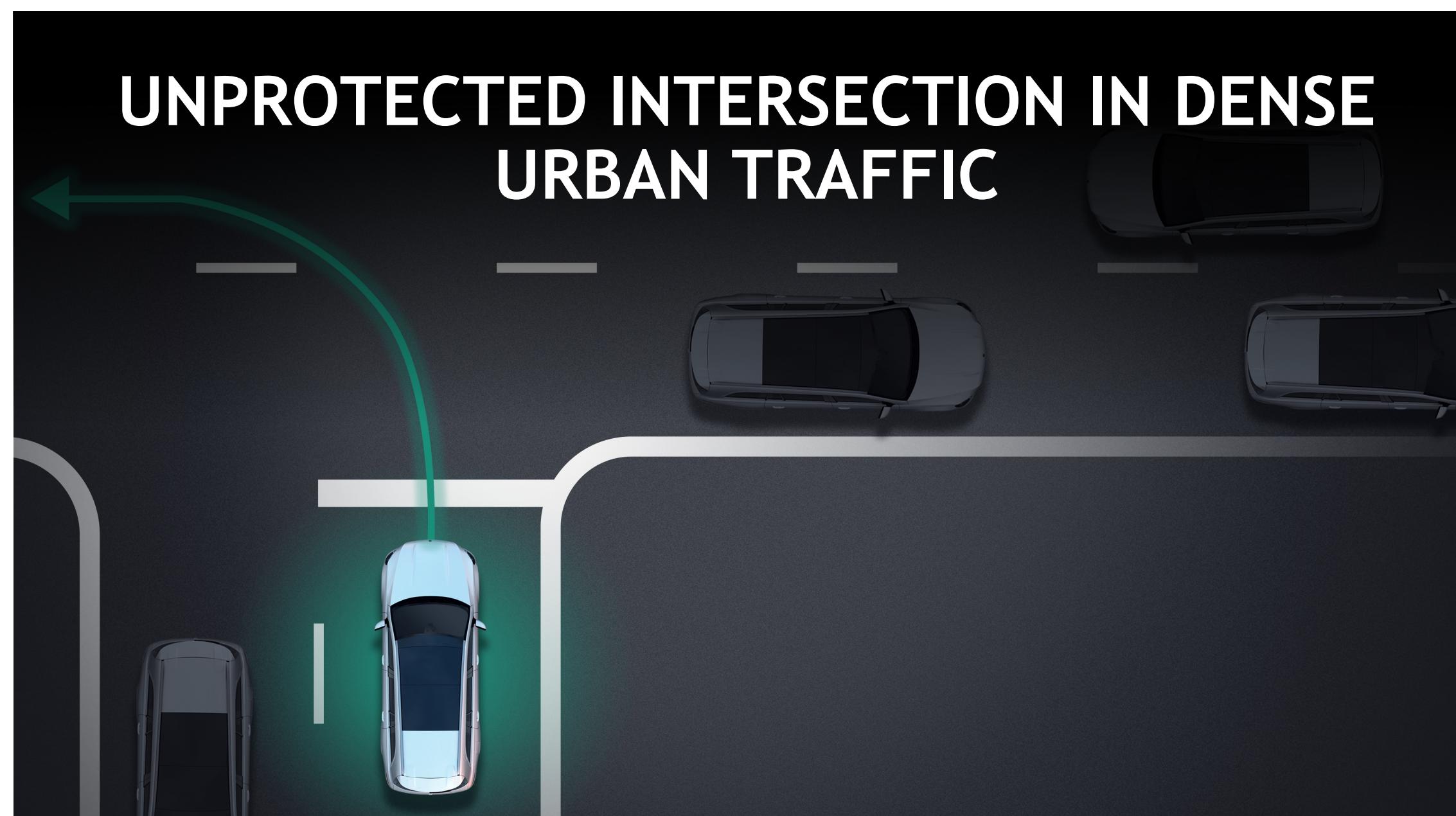
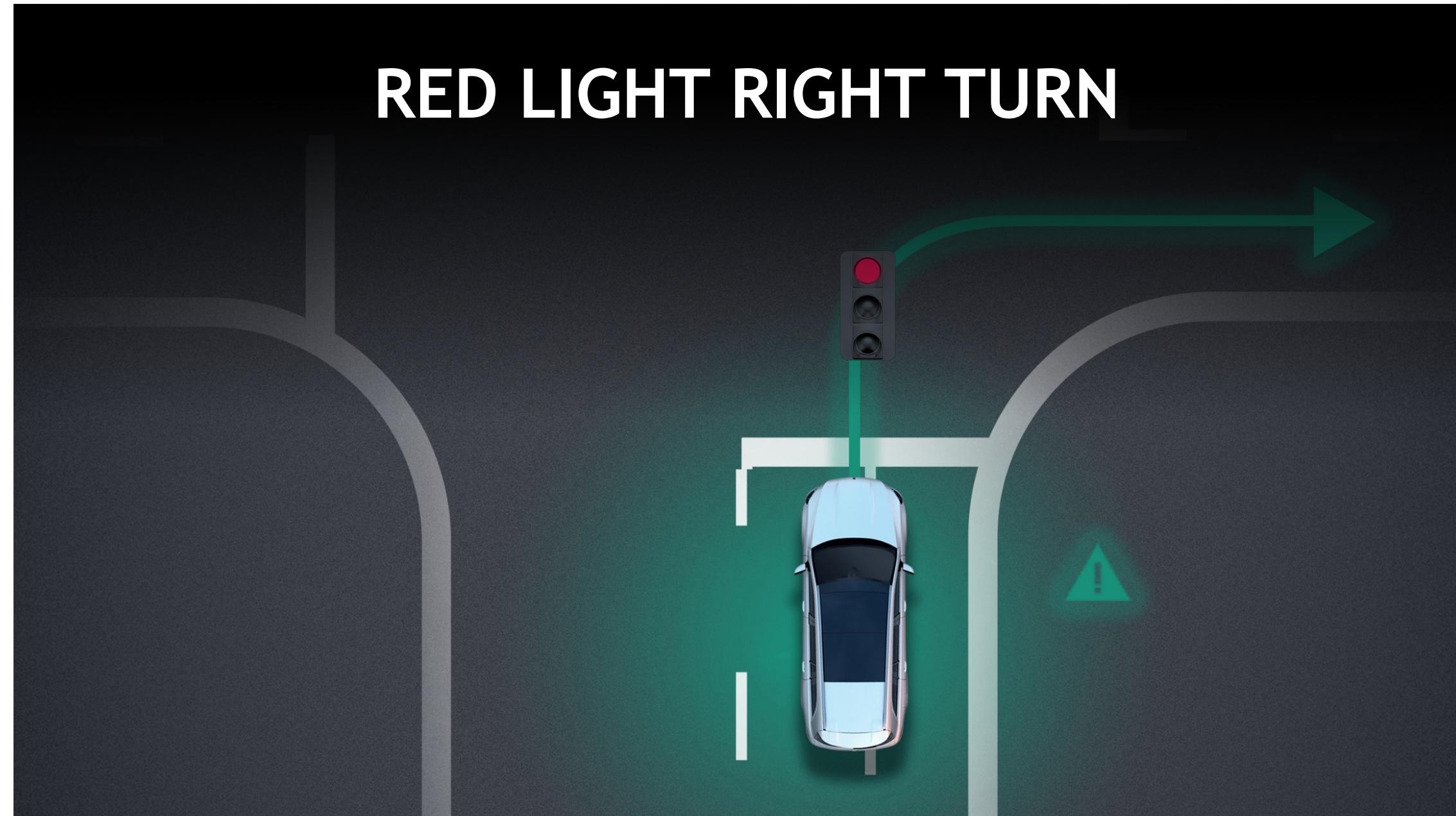
# DRIVE PLANNING

Obstacle Prediction | Trajectory Prediction | Safety Force Field



# DRIVE CHAUFFEUR DESIGNED FOR ADDRESS TO ADDRESS

Hard to Achieve Scenarios Being Enabled Using DRIVE Chauffeur Stack

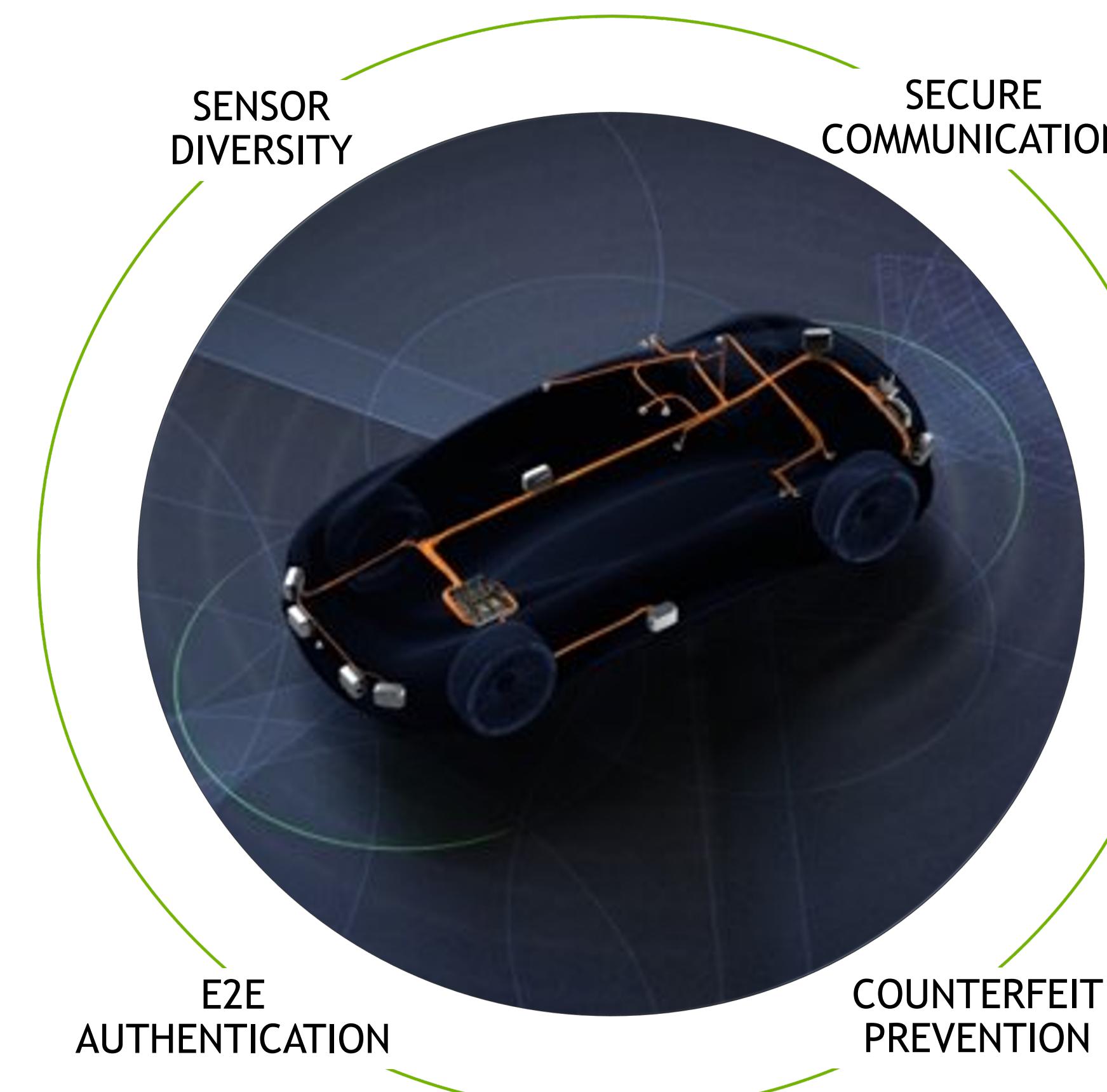


# SAFE DEVELOPMENT FRAMEWORK FOR CONTINUOUS PRODUCT ENHANCEMENT

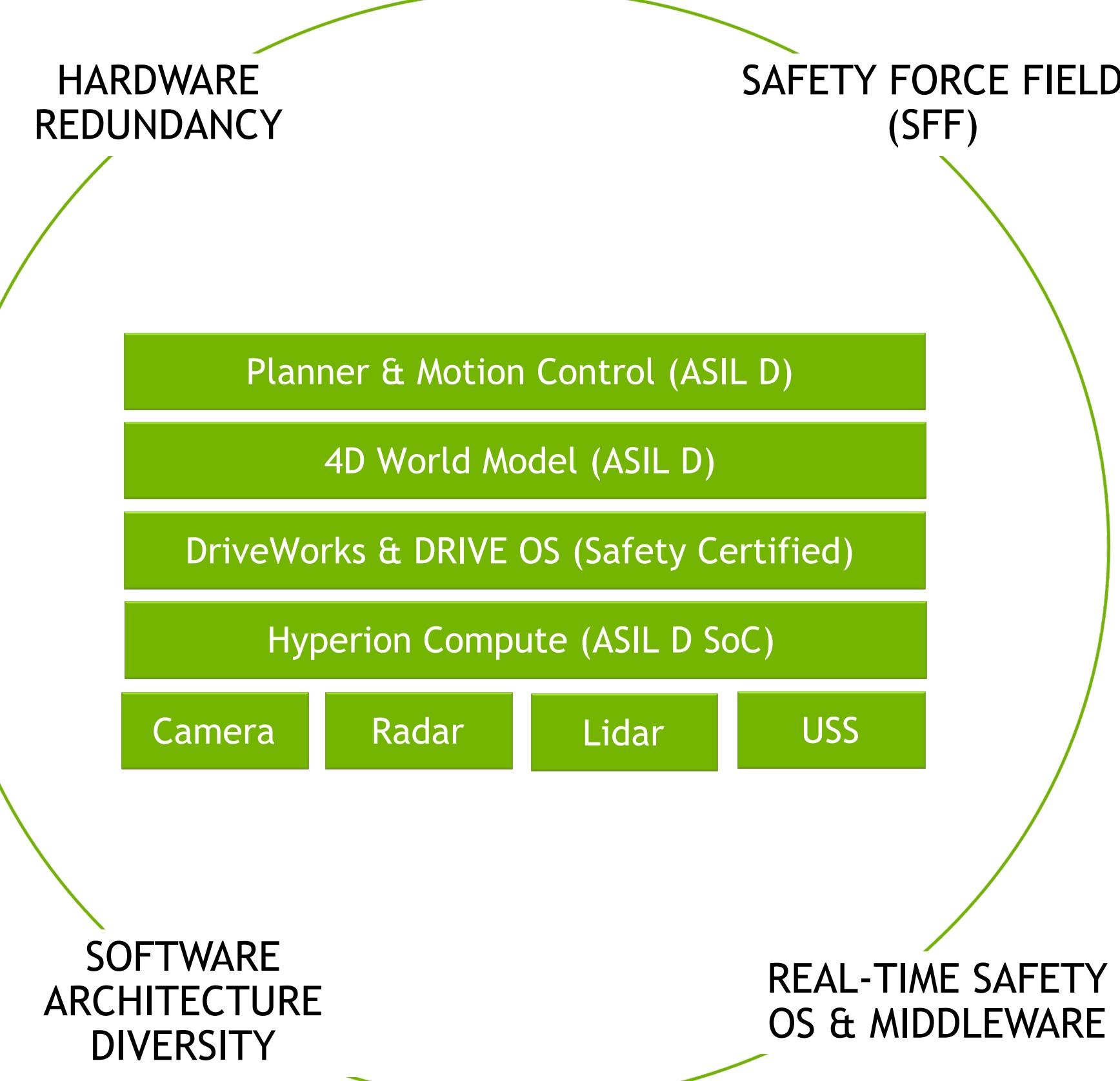
First and Only ISO 26262 & ASPICE Standards Compliant End-to-End Solution



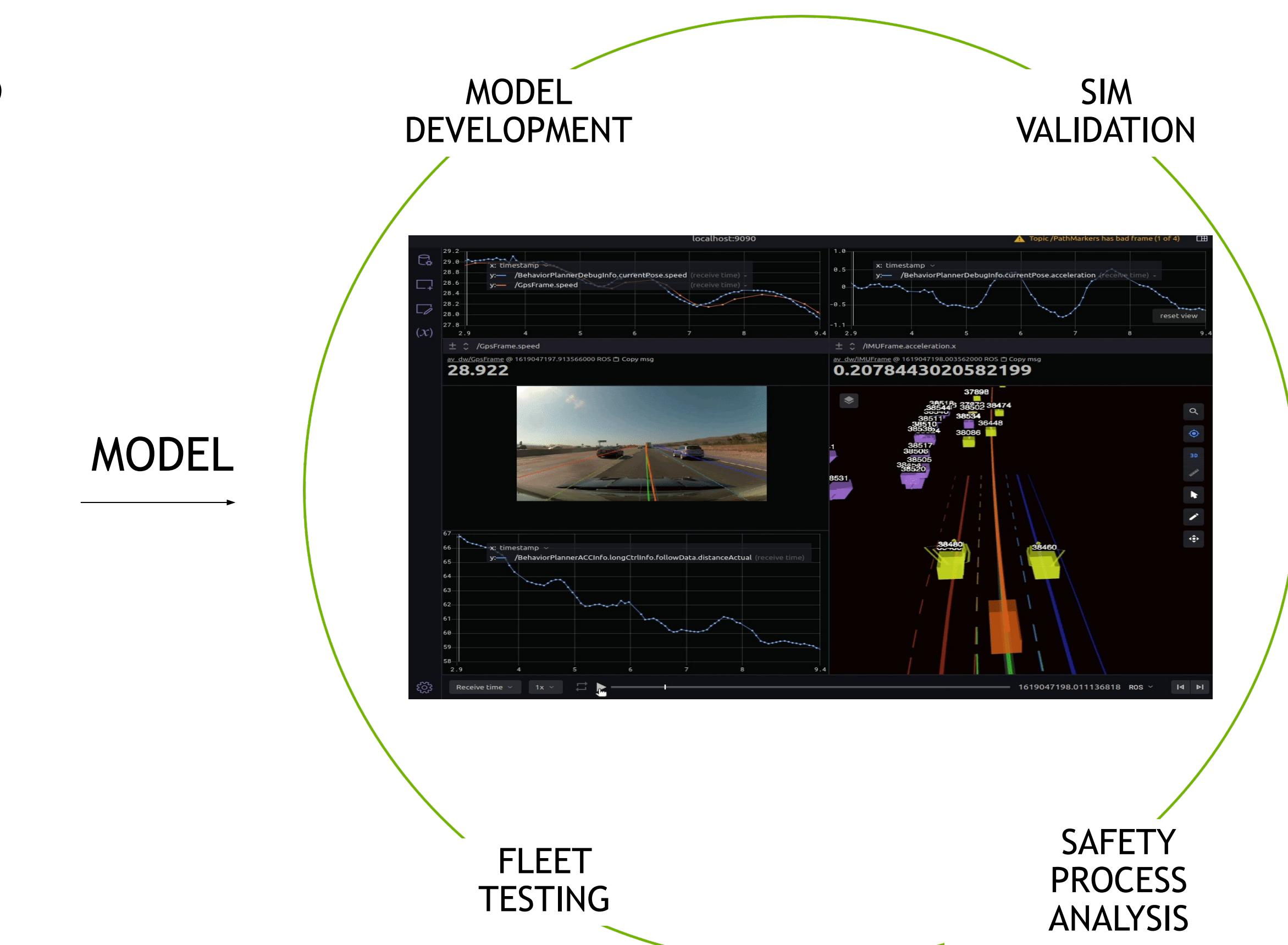
## SENSOR DIVERSITY & SECURITY



## DIVERSIFIED AV ARCHITECTURE WITH HARDWARE REDUNDANCY



## SAFETY ASSURED INFRA TOOLS & METHODOLOGY



Continuous End-To-End Measurement of Safety KPIs | Safety Assured OTA Deployment

**10 Engines**

Diverse & Redundant Computing

**38 Sensors**

Four Modalities

**50K Cases**

Functional Testing

**600K Miles**

Driven Daily in Sim

**2M Tests**

Daily E2E Integration

**5M Lines**

Of Safety Code



# NVIDIA DRIVE VIDEOS

DRIVE Labs + DRIVE Dispatch

- Peek under the hood to experience NVIDIA DRIVE software engineering team's innovations and milestones transforming the AV industry
- DRIVE Labs are short-form videos that detail specific self-driving algorithms and DNNs
- DRIVE Dispatch are brief updates highlighting key AV breakthroughs from our fleet

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