INVENTING THE FUTURE

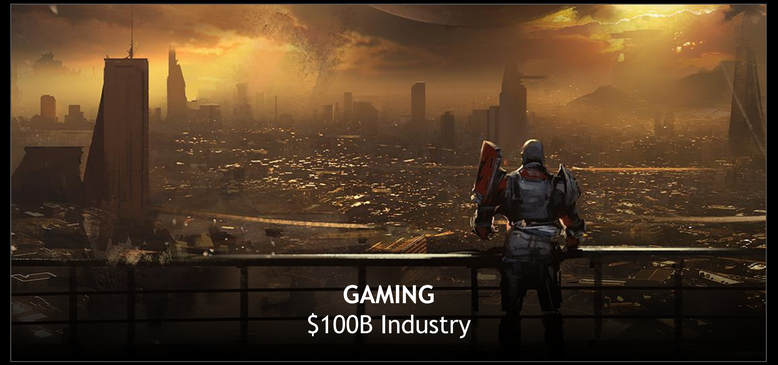
JENSEN HUANG, FOUNDER & CEO | CES 2018

5 Big Things to Watch for at CES 2018

It's the year's biggest tech trade show, and it should be jam-packed with announcements related to self-driving cars, gaming PCs, VR headsets and much else.

—TheStreet, Jan. 6, 2018

THE MOST EXCITING TIME IN TECH HISTORY

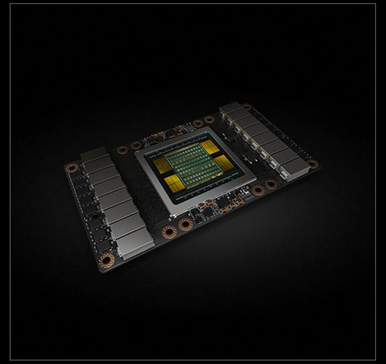


NVIDIA GPU

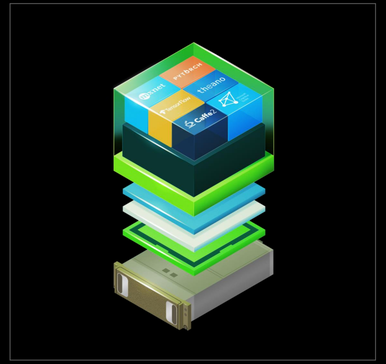
NVIDIA GAMING

- 200M GeForce Gamers
- 50M VR Headsets by 2021
- 600M eSports Viewers by 2020
- 1B GeForce Experience Captures
- Fastest-selling Console Ever in U.S.

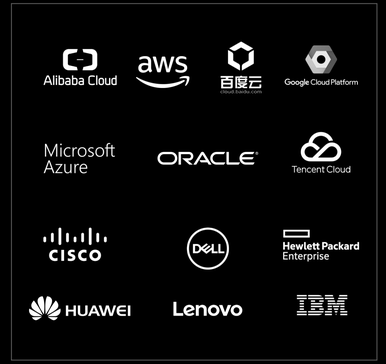
THE WORLD'S AI PLATFORM



Volta
125 TFLOPS Tensor Core

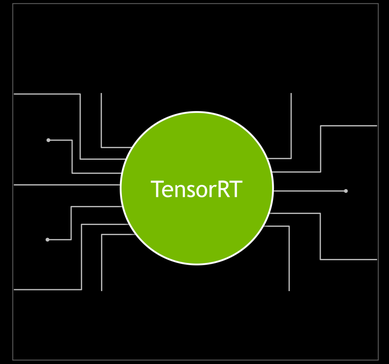


NVIDIA GPU Cloud
Every Framework



Every Cloud
Every Computer Maker

DGX and DGX Station
1st 1PF AI Supercomputer



TensorRT
Inference Accelerator Platform

TITAN V
Supercomputer for Developers

NVIDIA TENSORRT
10X BETTER DATA CENTER TCO

45,000 Images/s ResNet50
160 CPU Servers
65,000 Watts

NVIDIA TENSORRT
10X BETTER DATA CENTER TCO

45,000 Images/s ResNet50
1 NVIDIA HGX with 8 Tesla V100 GPUs
3,000 Watts

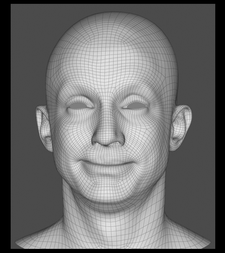
1/6 the Cost | 1/20 the Power | 4 Racks in a Box

Skylake
TensorFlow on CPU
INFERENCE
ON IMAGES
Images Per Sec: 5.0

Skylake
TensorFlow on CPU
Images Per Sec: 5.0

SOLVING THE UNSOLVABLE

NVIDIA Research
AI Autoencoder



NVIDIA Research / Remedy
Audio-driven Facial Animation

NVIDIA Research
Semantic Manipulation with GANs

NVIDIA Research
Progressive GAN

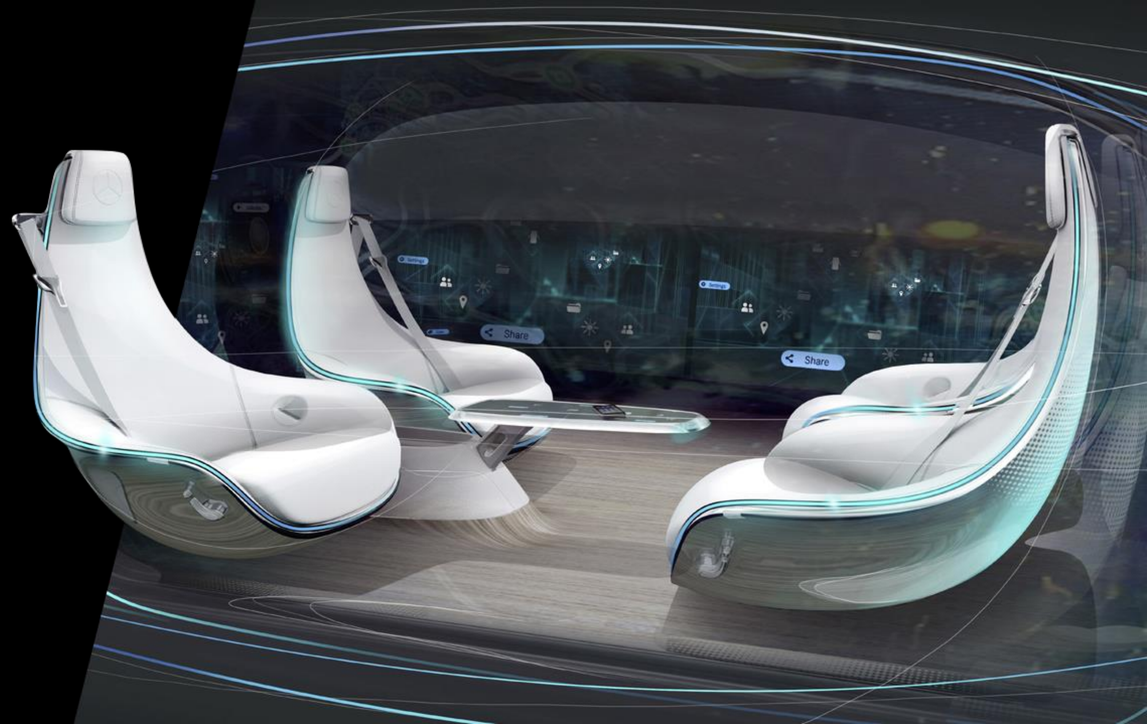
NVIDIA Research / AIVA
RNNs for Music

AV REVOLUTIONIZES DRIVING

82M Accidents | 1.3M Fatalities | >$500B in Damages
~1Hr per Day Commuting | $10K Lost Wages per Year
AV Can Save Millions of Lives and Billions of $

AV REVOLUTIONIZES MOBILITY SERVICES

+1 Billion People by 2030
Traffic Increasing 3X to 40T Miles per Year
Every Car Has 2-3 Parking Spots
Pay-as-You-Go Growing in Popularity
AV Can Reduce Cost-per-Mile to Same as Car Ownership



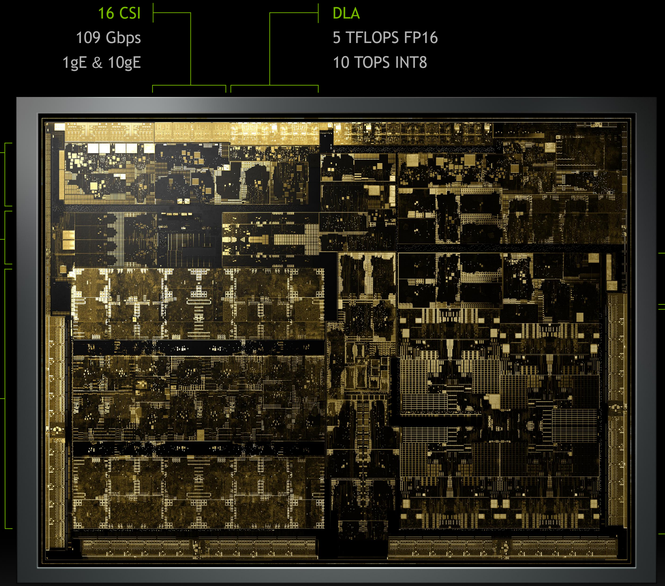
AV REVOLUTIONIZES TRUCKING

3.5M Truckers Transport 10.5B Tons & $750B of Goods in U.S.
11 Hours On | 10 Hours Off
ELD Resulted in 10-12% Loss in Productivity
50K Truck Driver Shortage in U.S.
AV Can Extend Range of Drivers

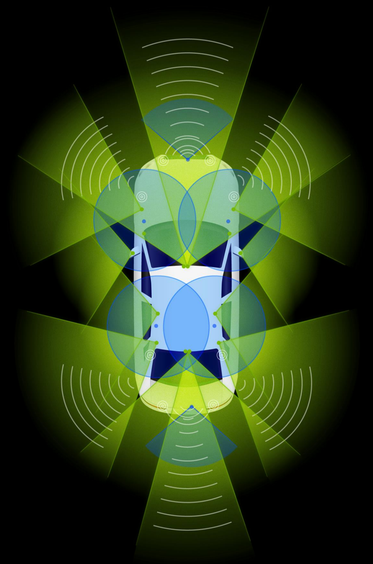
ANNOUNCING
DRIVE XAVIER SAMPLING IN Q1

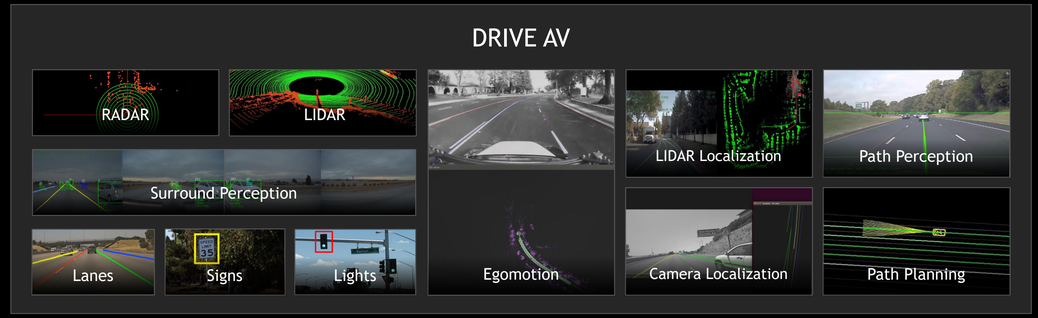
WORLD'S FIRST AUTONOMOUS MACHINE PROCESSOR

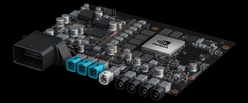
Most Complex SOC Ever Made
9 Billion Transistors, 350mm^2, 12nFFN
~8,000 Engineering Years
Diversity of Engines Accelerate Entire AV Pipeline
Designed for ASIL-D AV



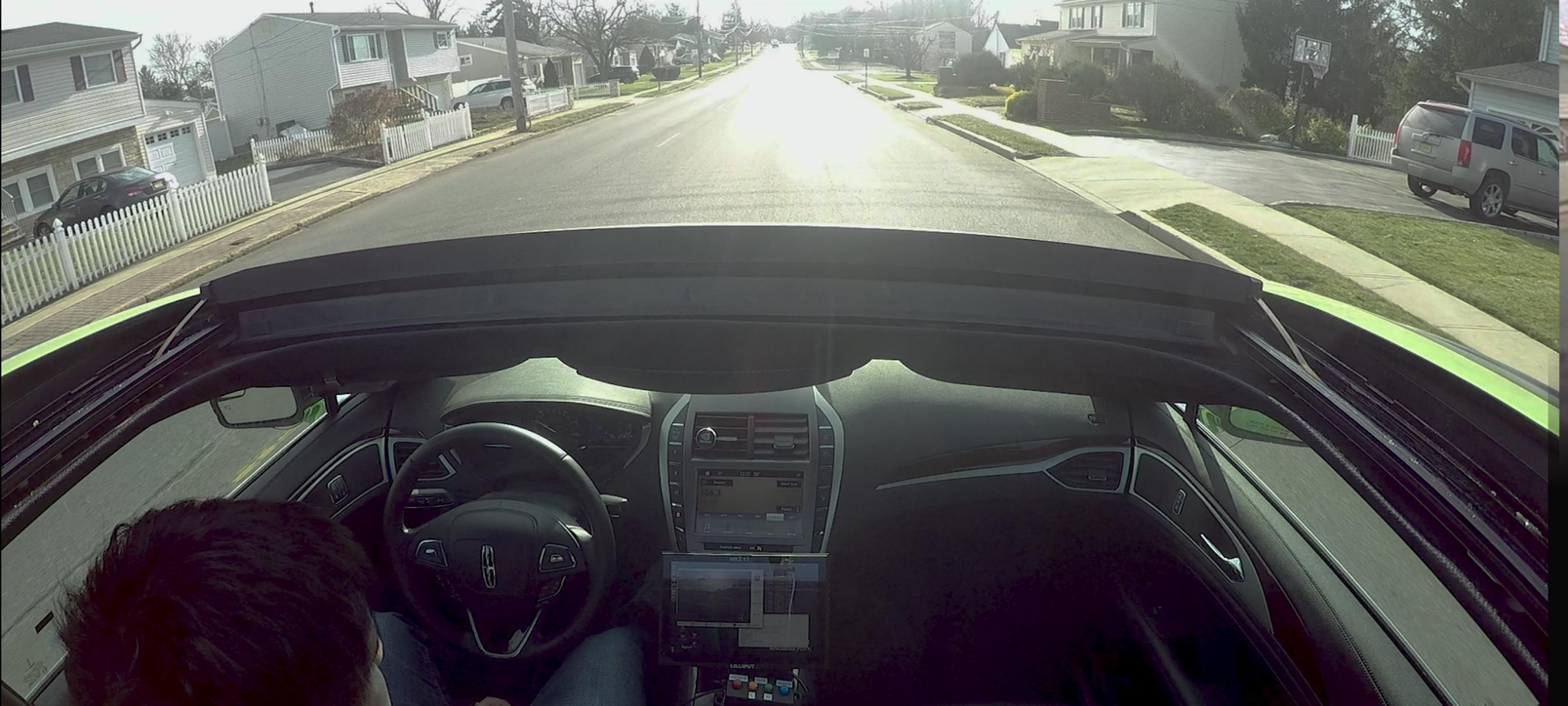
NVIDIA DRIVE AV







DRIVE XAVIER



8-Mile Autonomous Route

Holmdel, NJ, December 19, 2017

- 23 intersections
- 8 hard turns
- 2 stop signs

ANNOUNCING BAIDU AND ZF SELECT NVIDIA DRIVE XAVIER

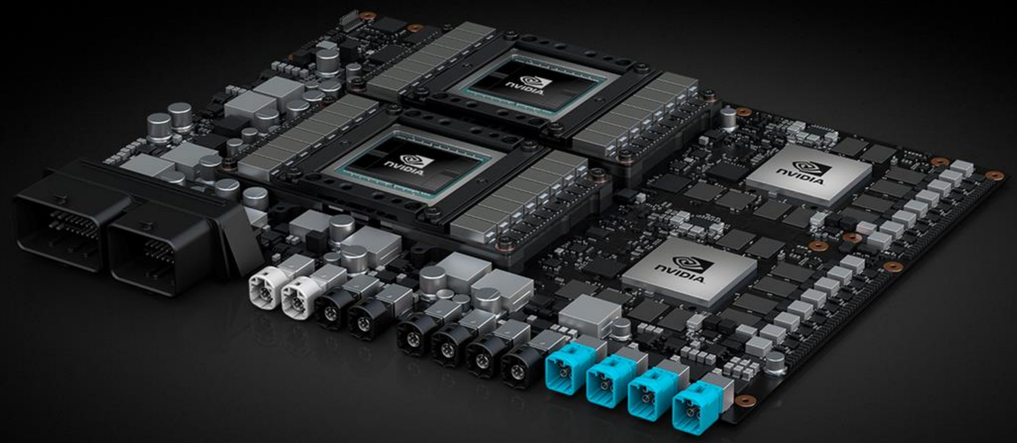
AV COMPUTER FOR CHINA

NVIDIA DRIVE PEGASUS

ROBOTAXI AI COMPUTER

320 TOPS for AI Inferencing
Memory Bandwidth >1 TB/s
400W

Data Center in the Trunk



ANNOUNCING AURORA AND NVIDIA TO BUILD AUTONOMOUS VEHICLE COMPUTE PLATFORM

ANNOUNCING
UBER AND NVIDIA TO
BUILD SELF-DRIVING UBERS

320+ PARTNERS DEVELOPING ON NVIDIA DRIVE

ANNOUNCING NVIDIA DRIVE FUNCTIONAL SAFETY ARCHITECTURE

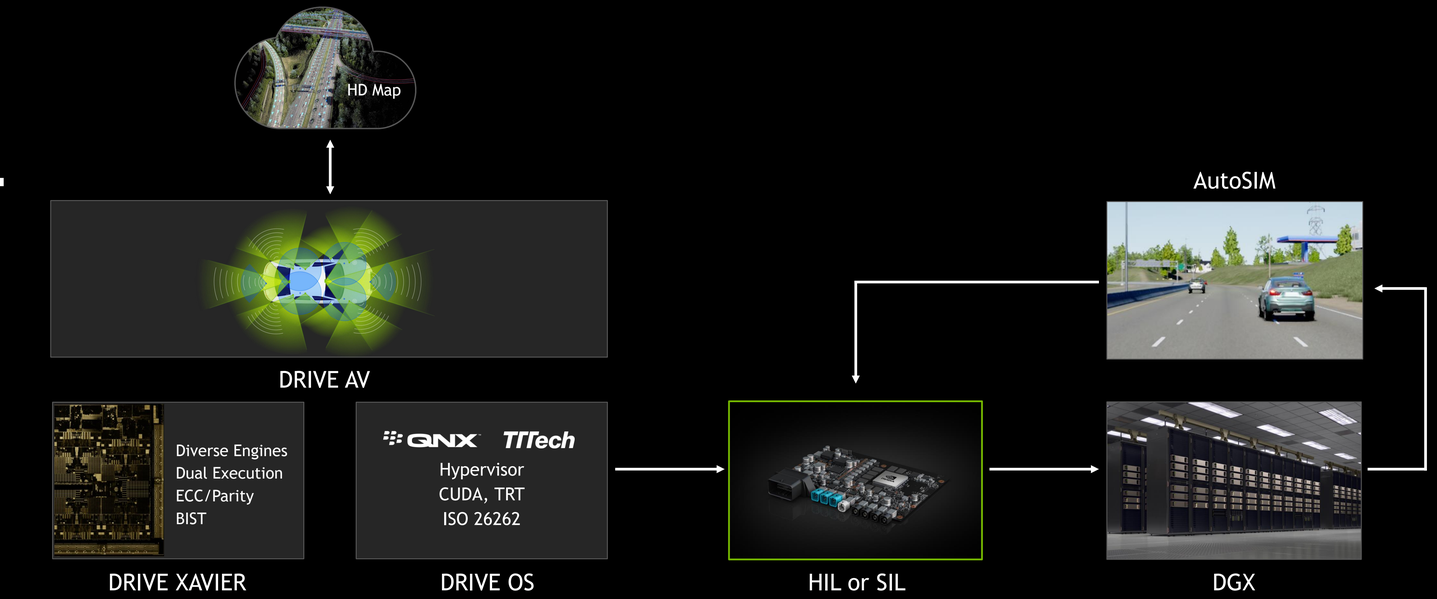
System Operates Safely Even when Faults Detected

Holistic System — Process & Methods, Processor Design, Software, Algorithms, System Design, Validation

ISO 26262 ASIL-D Safety Level

Partnership with BlackBerry QNX and TTTech

New AutoSIM Virtual Reality 3D Simulator

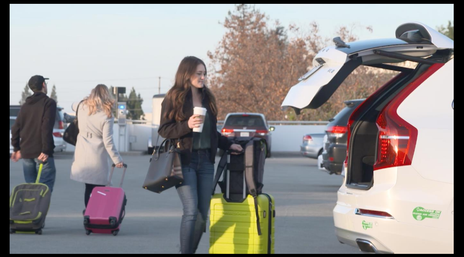


NVIDIA AUTOSIM
RUNNING ON NVIDIA DGX

NVIDIA DRIVE AV
RUNNING ON NVIDIA DRIVE XAVIER (HIL)
OR NVIDIA DGX (SIL)
447
15.7 m
-0.63 s
-14.3 deg

NVIDIA DRIVE IX

Surround Perception | Speech Recognition & Synthesis | NLP | Eye Tracking | Head Pose | Gesture Recognition



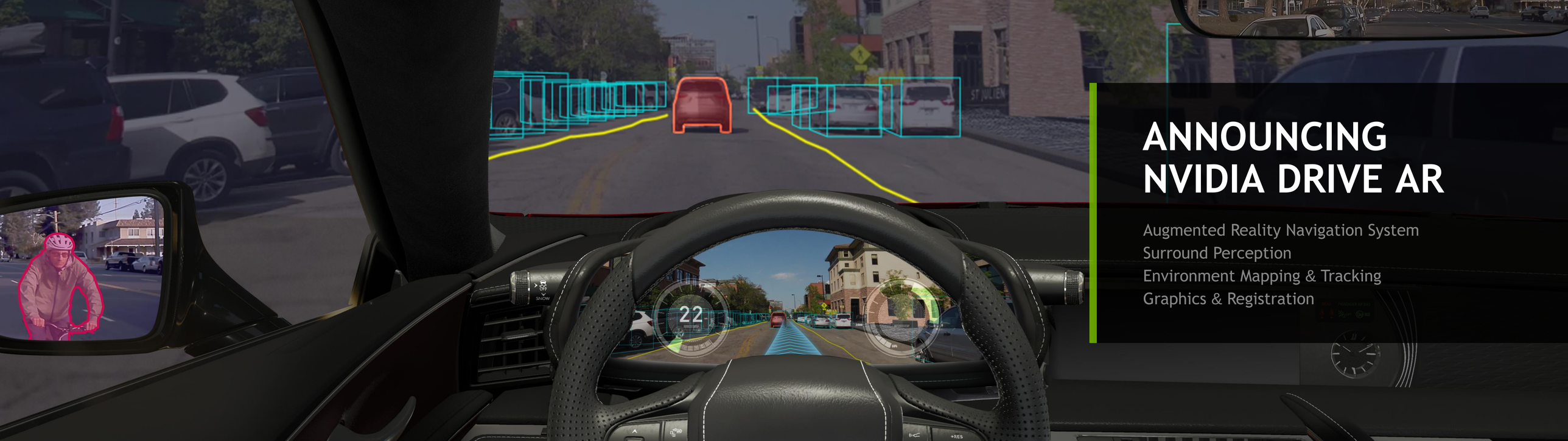
Automatic Trunk Opening

Eye Gaze

Distracted Driving

Drowsy Driver

Cyclist Alert



ANNOUNCING NVIDIA DRIVE AR

Augmented Reality Navigation System
Surround Perception
Environment Mapping & Tracking
Graphics & Registration

40

ANNOUNCING VOLKSWAGEN SELECTS NVIDIA TO INFUSE AI INTO FUTURE VEHICLE LINEUP

DRIVE IX Brings VW I.D. BUZZ to Life with AI

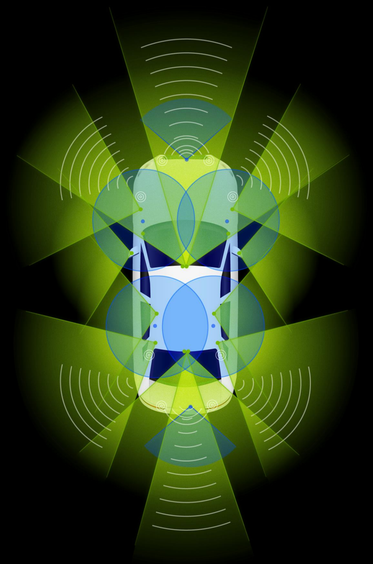
DR. HERBERT DIESS

CEO, Volkswagen

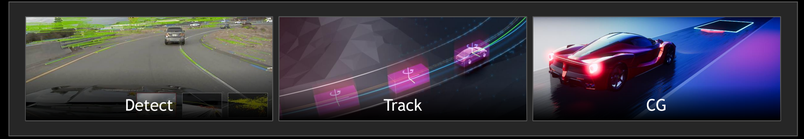
SURFBOARDS
FOR RENT
NVIDIA

FUTURE CAR IS SOFTWARE-DEFINED

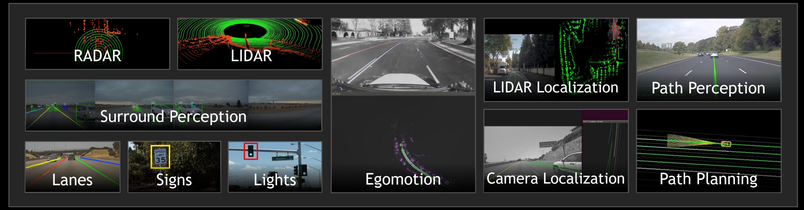
Powerful and Efficient AI, CV, AR, HPC
Rich Software Development Platform
Functional Safety
Open Platform



DRIVE IX



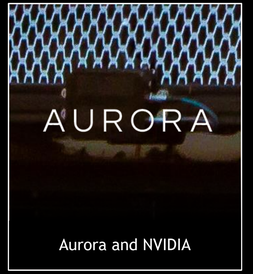
DRIVE AR

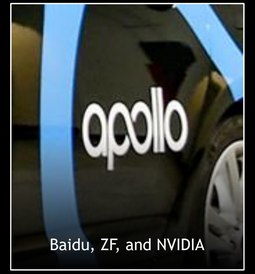


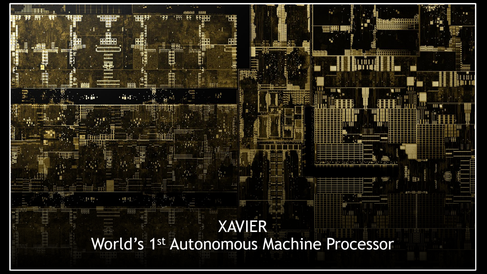
DRIVE AV

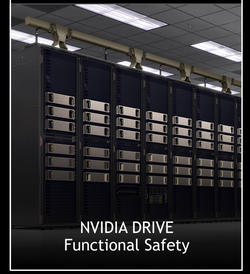
DRIVE XAVIER

INVENTING THE FUTURE









NVIDIA