

GTC Japan 2016

NVIDIA AI DRIVING PLATFORM AND AI SUPERCOMPUTER XAVIER

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CONTENTS

- NVIDIA AI DRIVING PLATFORM
DRIVEWORKS AUTOCHAUFFEUR
- NVIDIA NEXT GENERATION
AI SUPERCOMPUTER XAVIER

NVIDIA AI DRIVING PLATFORM
DRIVEWORKS AUTOCHAUFFEUR

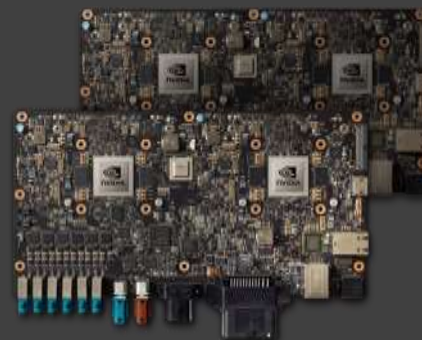
NVIDIA DRIVE PX 2



AutoCruise
highway cruise capability



AutoChauffeur
point to point



Full Autonomy
no driver

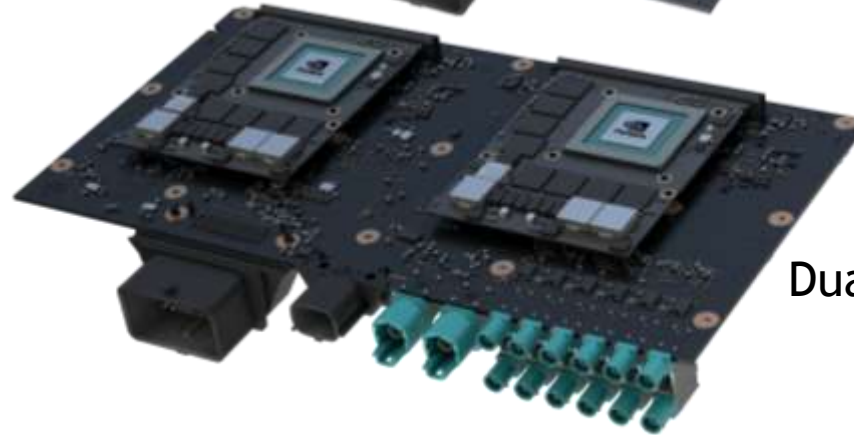
DRIVE PX2

FOR AUTOCHAUFFEUR AND FULL AUTONOMY DEVELOPMENT

- Dual Tegra Parker
- Dual Discrete GPUs
- 12 CPU Cores
- Pascal GPU
- 120 SPECInt
- 20DL TOPS
- 80Watt
- 12 simultaneous LVDS camera inputs



Dual Parkers on Top



Dual Discrete Pascal GPUs
on the Bottom

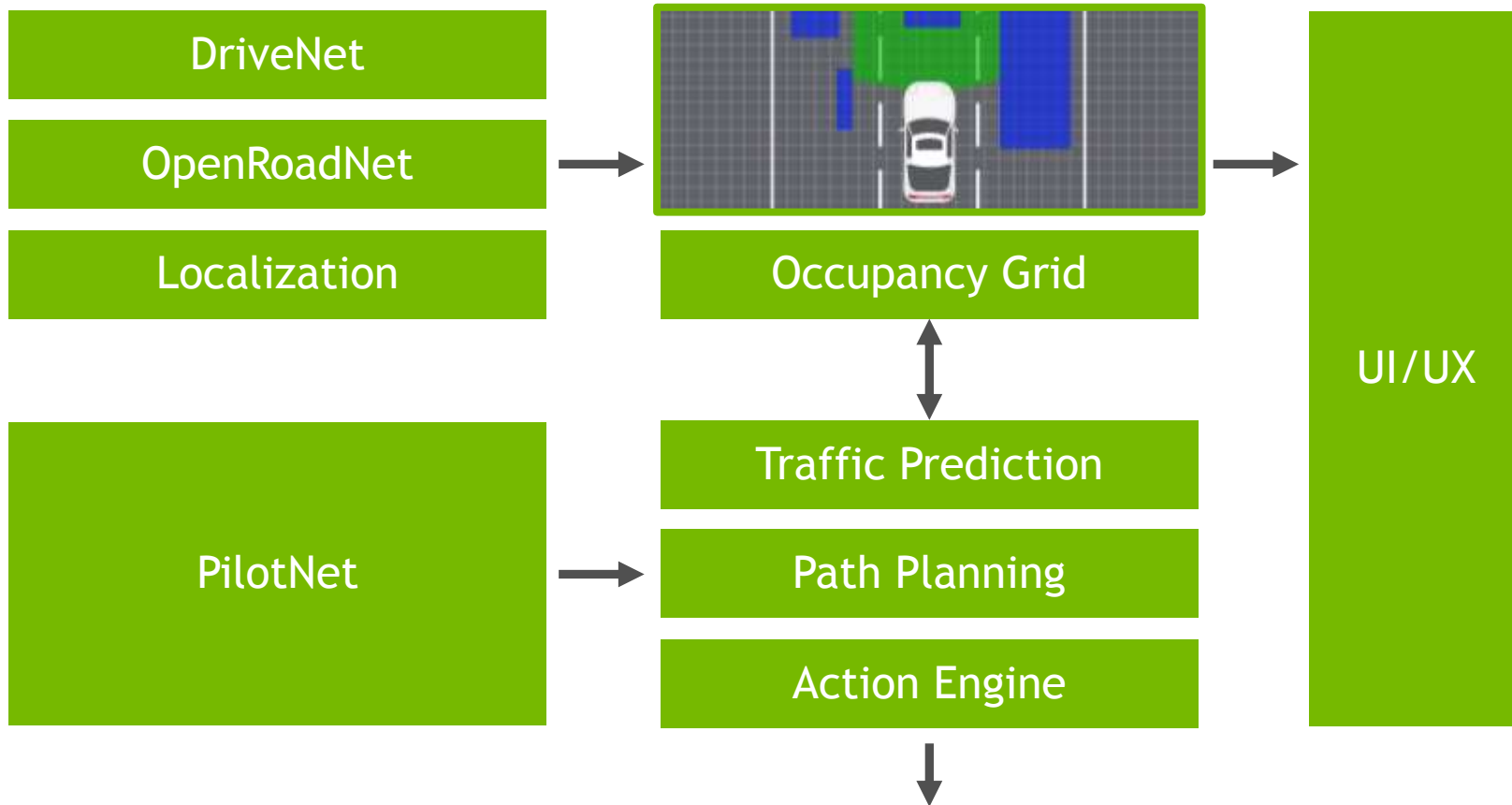
NVIDIA DRIVE PX 2

AUTOCRUISE

- Tegra Parker SoC
 - 1.3 TFLOPS GPU
 - 6 CPU Cores
 - Integrated ISP
- 8 GB LPDDR4
- 64 GB eMMC
- 64 MB Boot ROM
- Automotive IO
- Connect & fuse data from up to 8 cameras, LIDAR, radar, ultrasonic sensors
- Includes DriveWorks software & SDK
- 125 x 125 mm
- 10 W



DRIVEWORKS AUTOCHAUFFEUR ARCHITECTURE



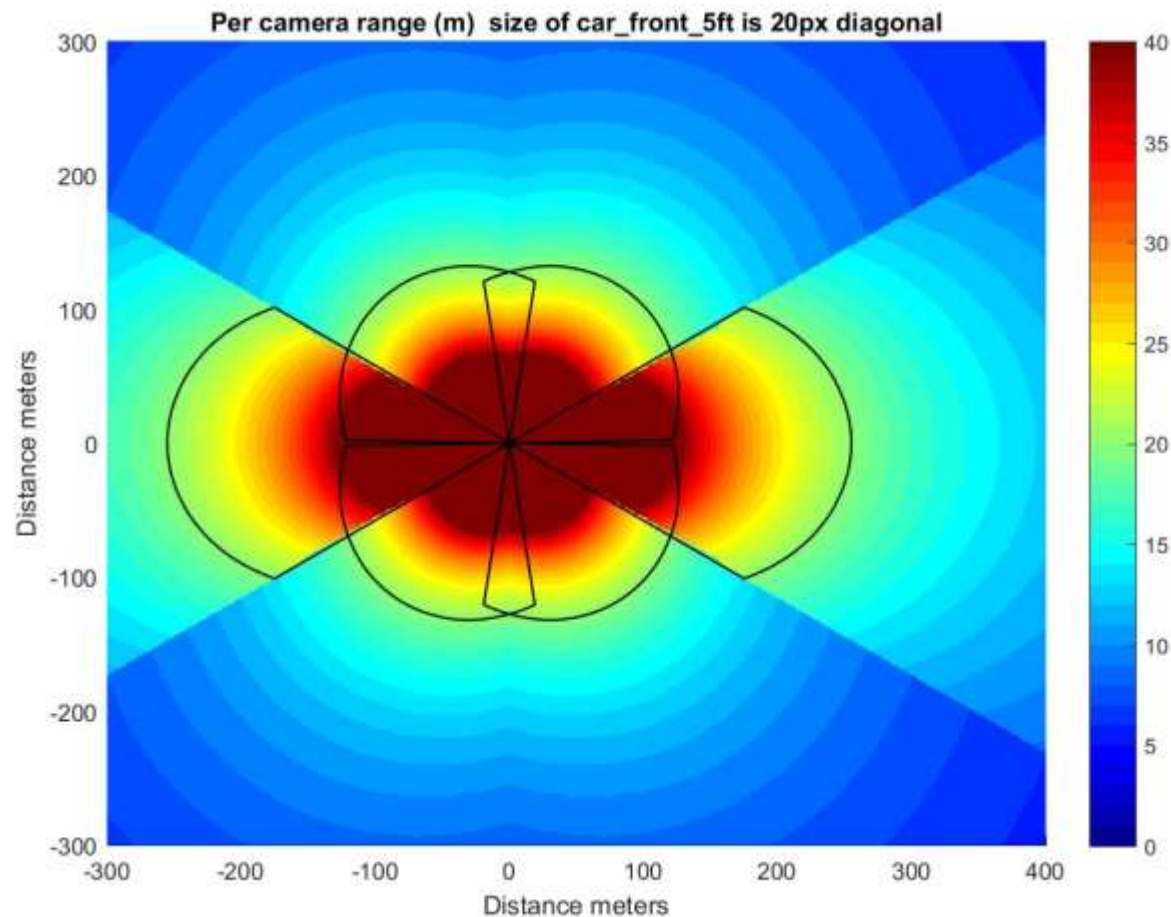


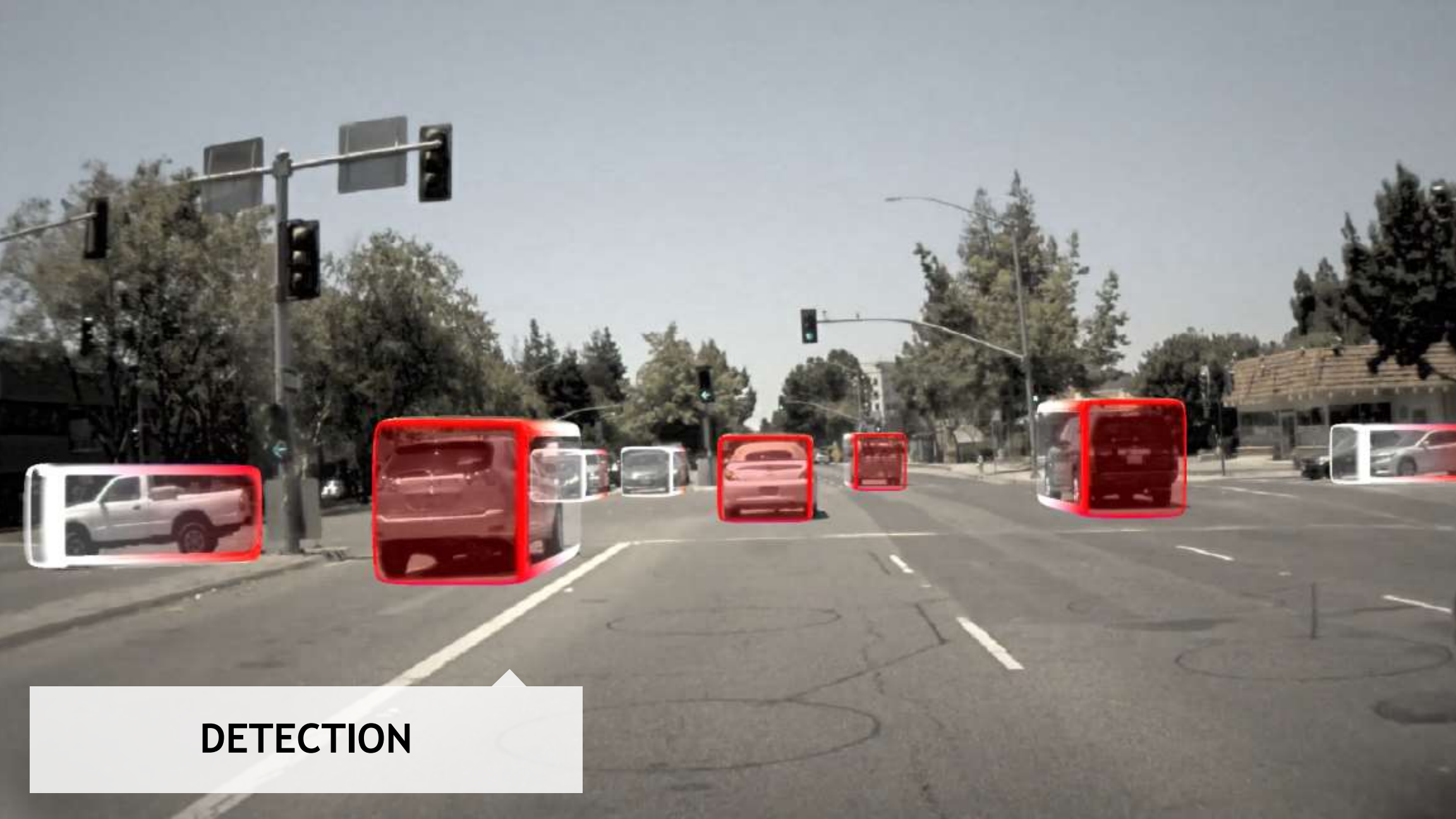
PLATFORM VEHICLE

PERCEPTION

6 cameras providing
a 360degree surround view

All cameras: 2.3Mpix
Front and rear: 60d HFOV
Side: 100d HFOV





DETECTION

SURROUND DETECTION

6 cameras, 360-degree view

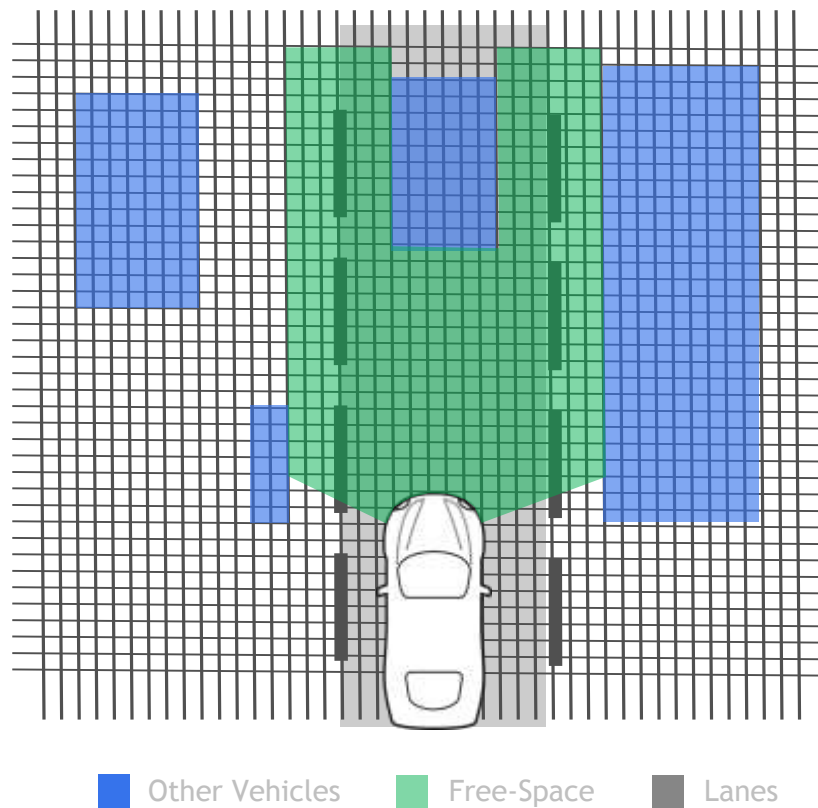


FREE SPACE

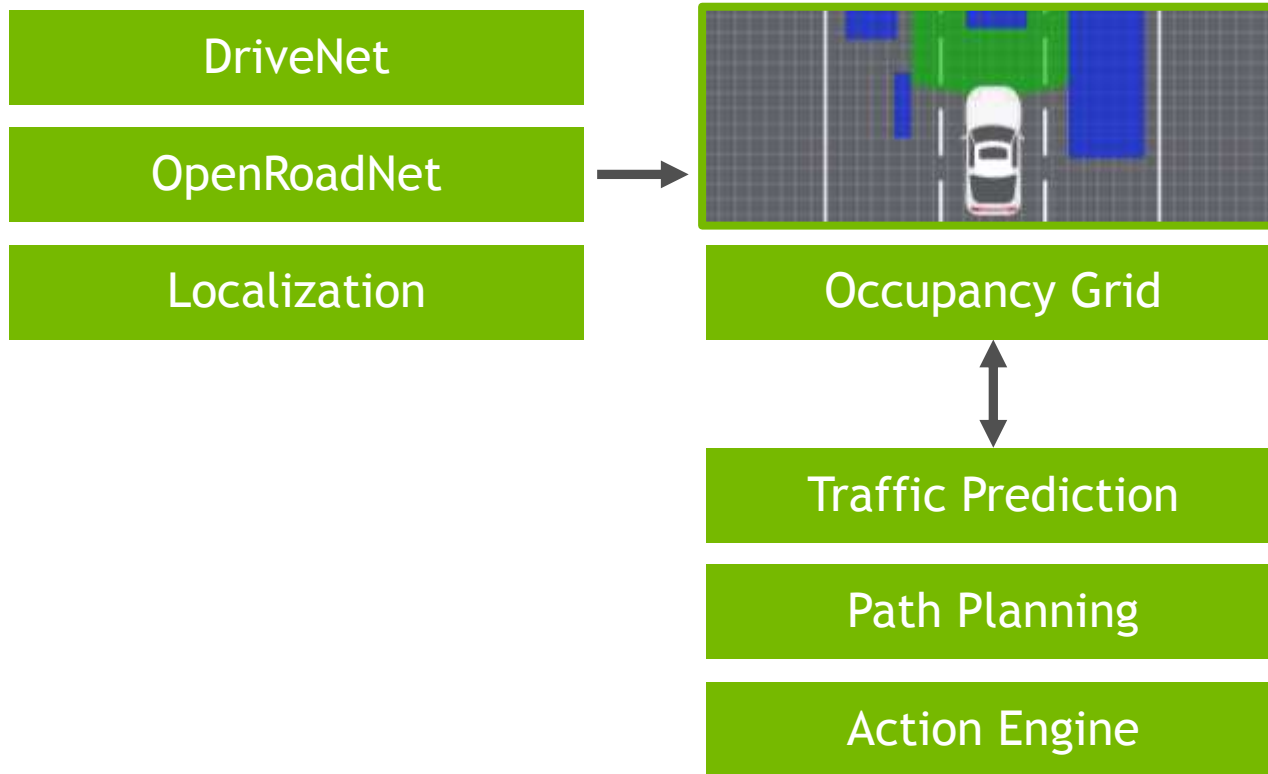


OCCUPANCY GRID

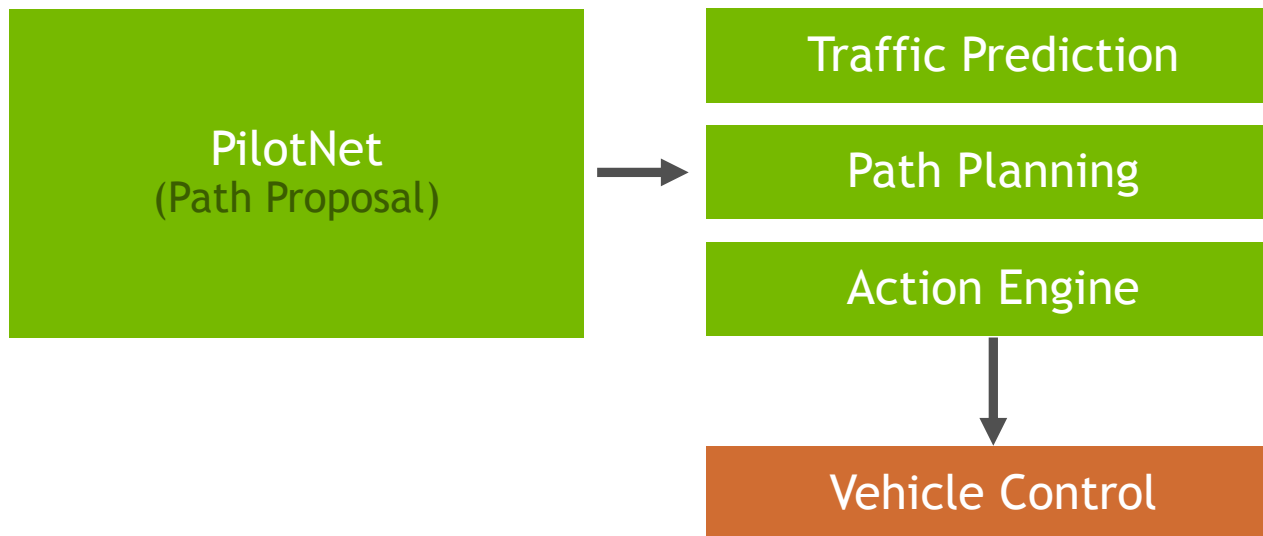
Other Vehicles
Roads
Lanes
Road Rules
Free-Space
Map Objects
Elevation

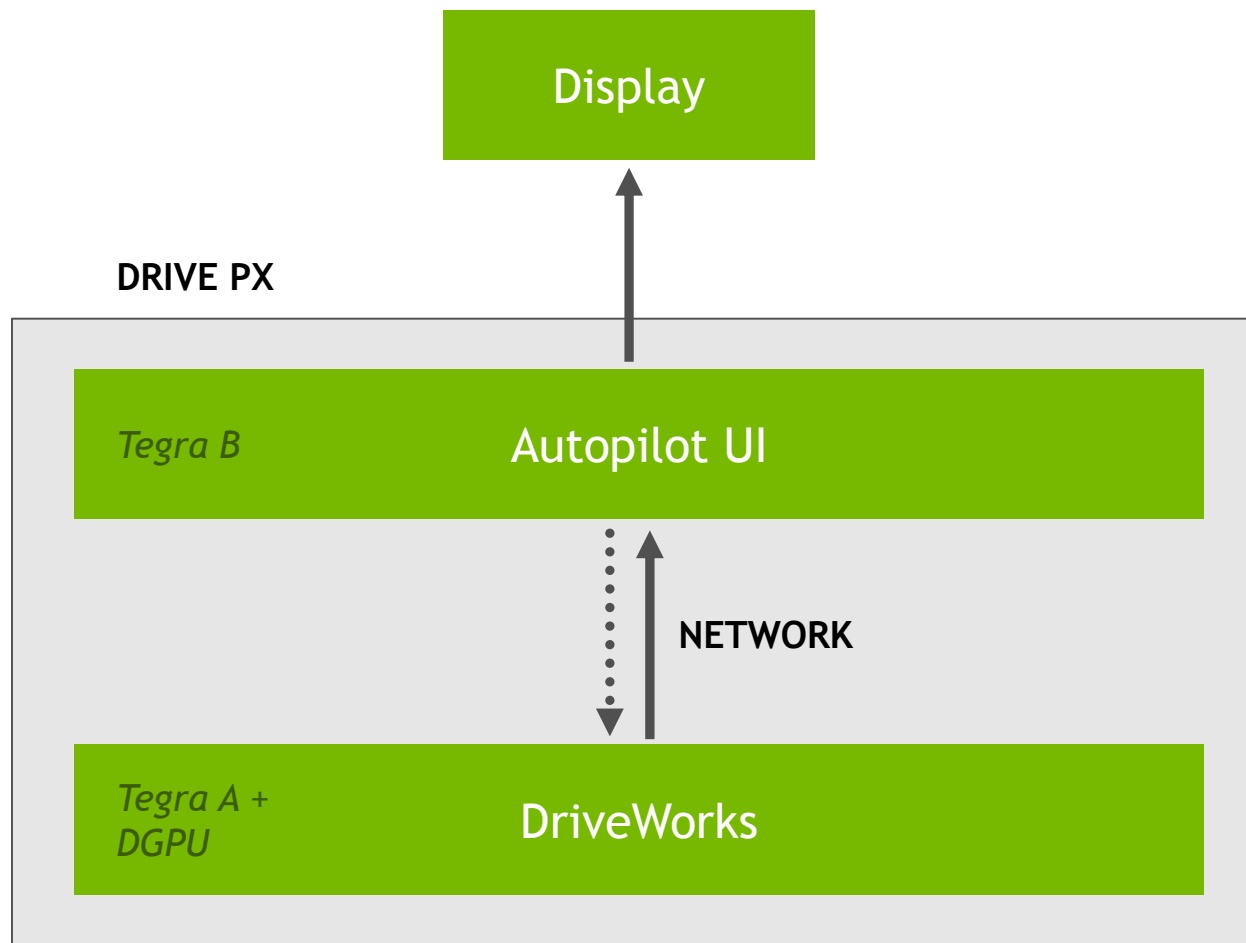


OCCUPANCY GRID



PATH PLANNING



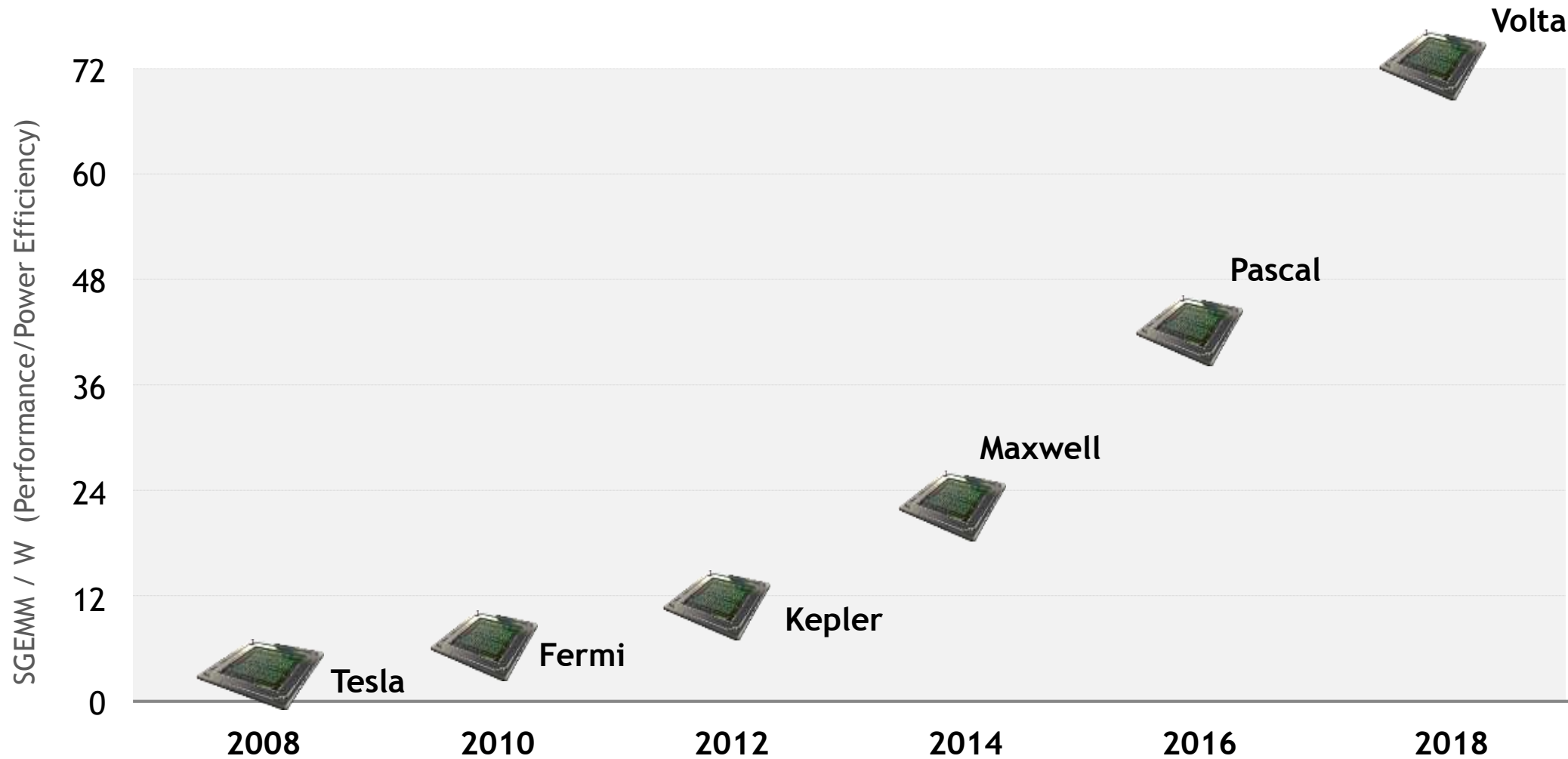


USER EXPERIENCE



NVIDIA NEXT GENERATION AUTONOMOUS AI PROCESSOR XAVIER

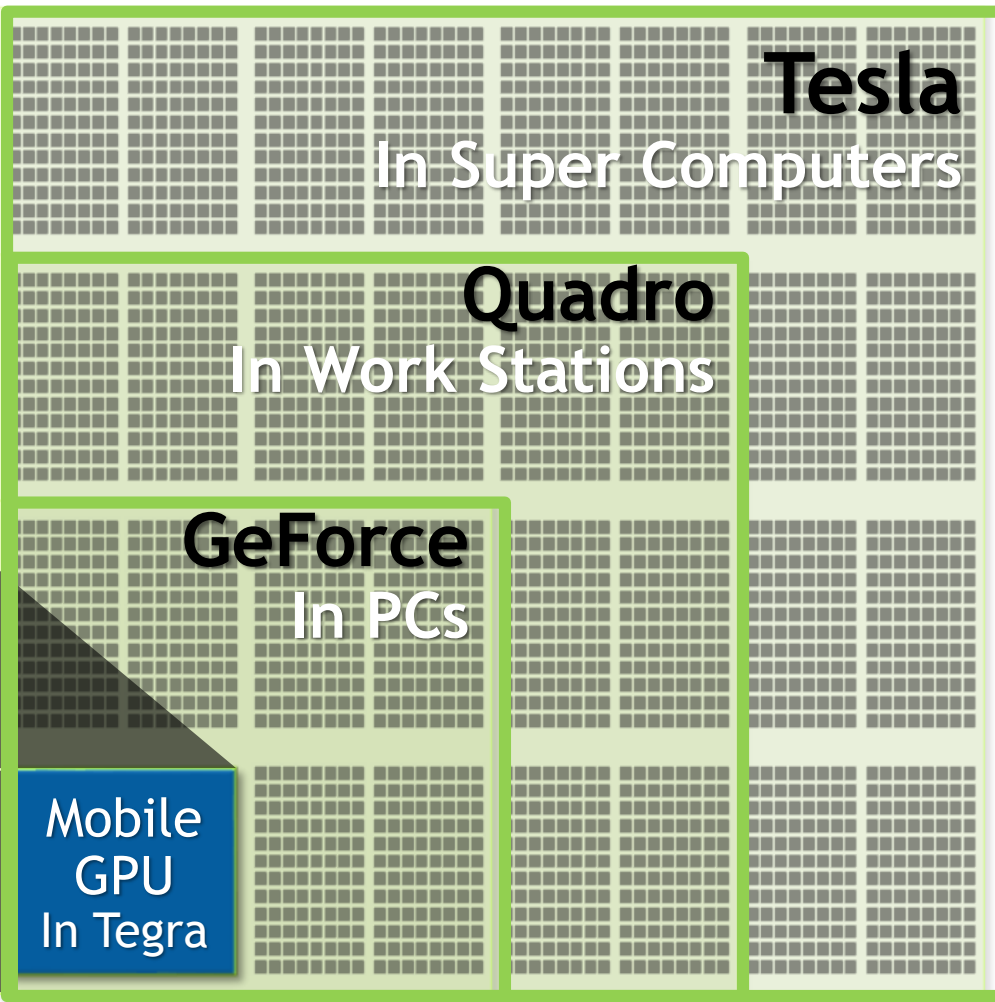
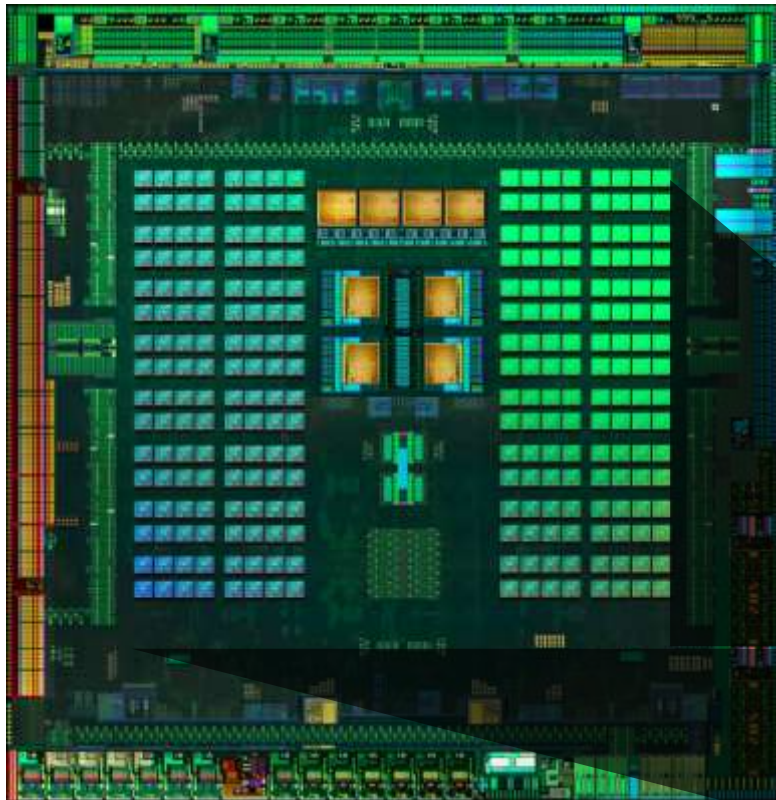
SOLID GPU ROADMAP



NVIDIA ONE-ARCHITECTURE

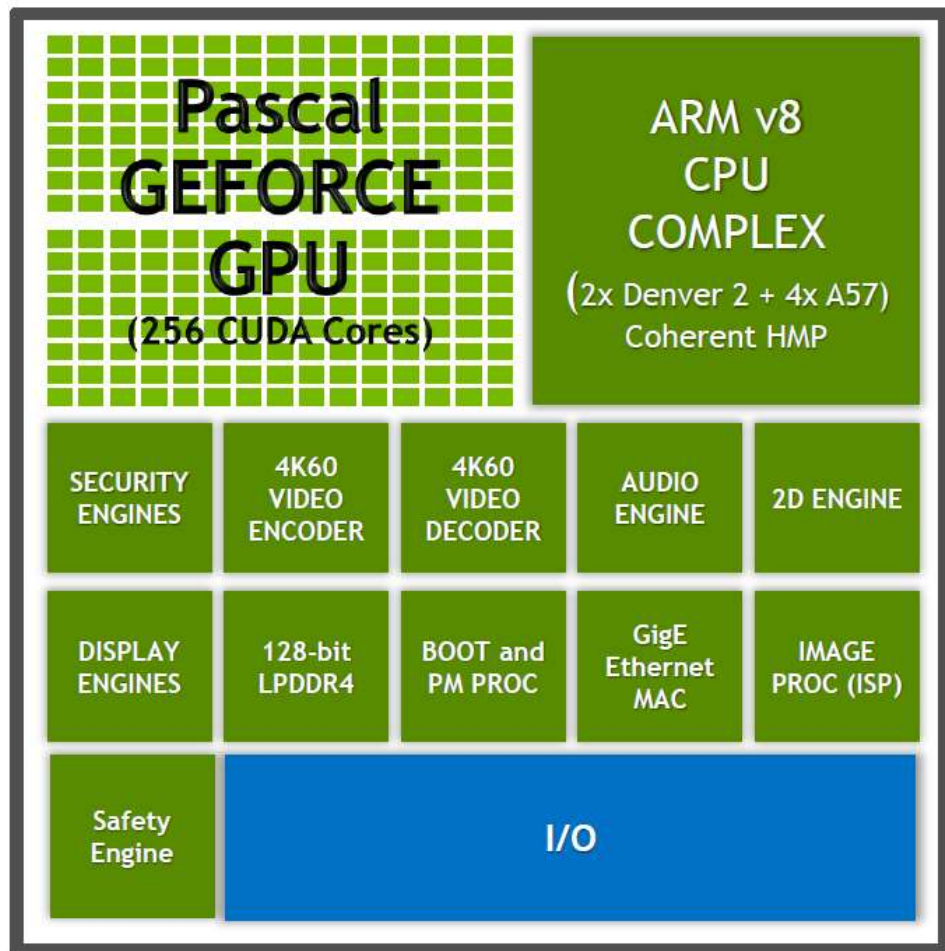
FROM SUPER COMPUTER TO AUTOMOTIVE SOC

Automotive Tegra



“PARKER”

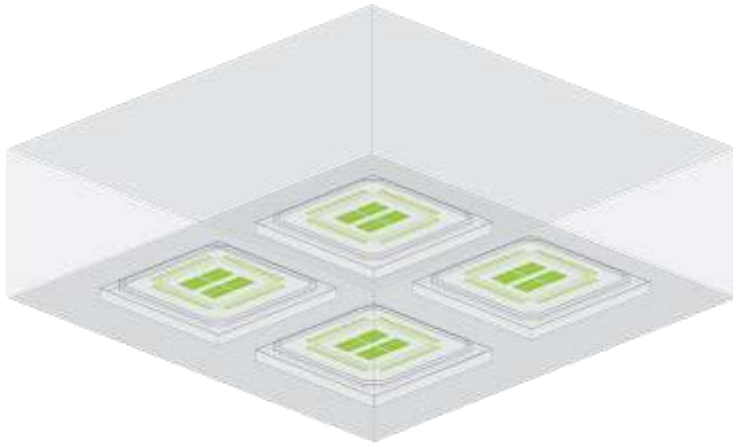
From IEEE HOT CHIPS 2016



- NVIDIA's next-generation Pascal graphics architecture
- NVIDIA's next-generation ARM 64b Denver 2 CPU
- Functional safety for automotive applications
- Hardware-enabled virtualization architecture
- Improvements to SoC architecture to enable modularity and ASIC development efficiency
- Industry-leading 16nm FF process

NEXT GENERATION

Today
PASCAL GENERATION



DRIVE PX 2

2 PARKER SOC + 2 PASCAL GPU
20 TOPS DL
120 SPECINT
80W

Next
VOLTA GENERATION



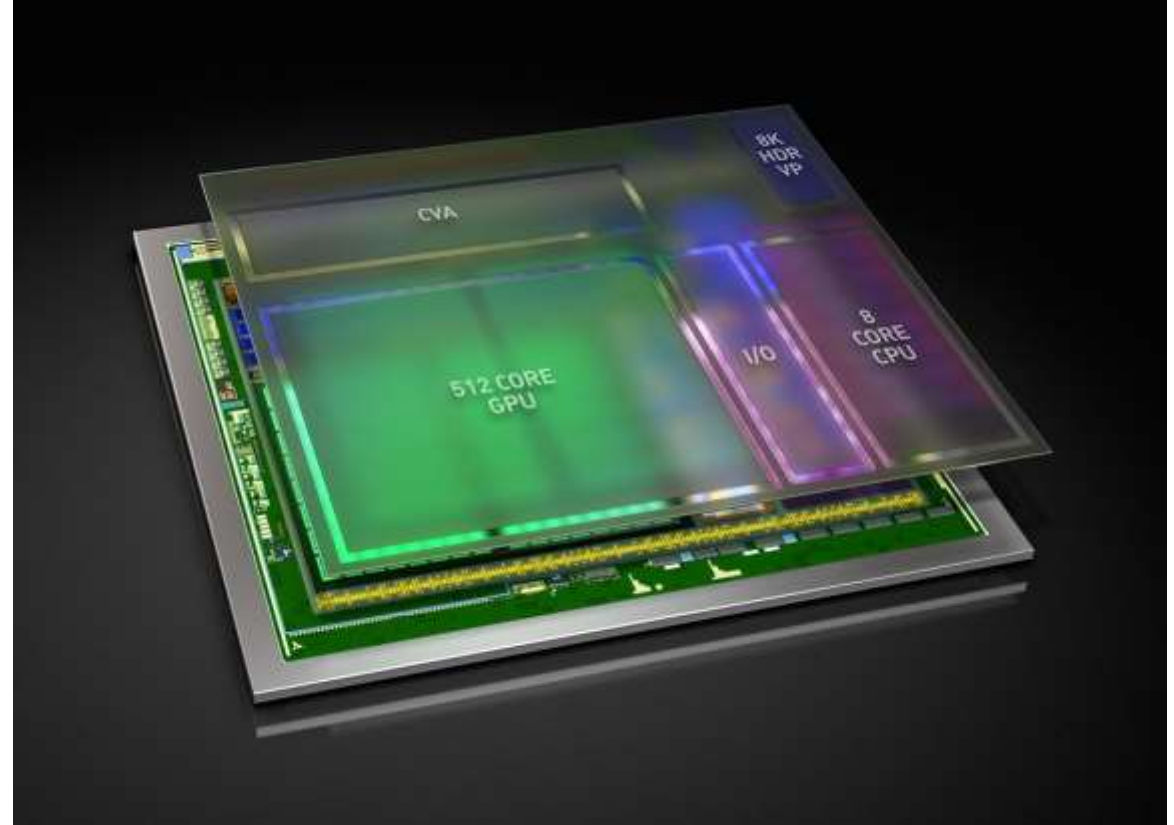
XAVIER

1 XAVIER SOC
20 TOPS DL
160 SPECINT
20W

INTRODUCING XAVIER

AI SUPERCOMPUTER SOC

- 7 Billion Transistors 16nm FF
- 8 Core Custom ARM64 CPU
- 512 Core Volta GPU
- New Computer Vision Accelerator CVA
- Dual 8K HDR Video Processors
- Designed for
ASIL C Functional Safety



THANK YOU

