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Continental

Continental ARS540 Powered by Xilinx

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Overview of News

- The Xilinx Automotive Grade (XA) Zynq® UltraScale+™ multi-processor system-on-chip (MPSoC) is powering Continental's new Advanced Radar Sensor (ARS) 540.
- Xilinx 16 nanometer technology provides the performance power to do the complex signal processing need to create a point cloud that includes data on range, azimuth, elevation and relative speed.
- Continental's ARS540 is the industry's first production ready 4D image radar that can support vehicles from SAE L2 to L5.

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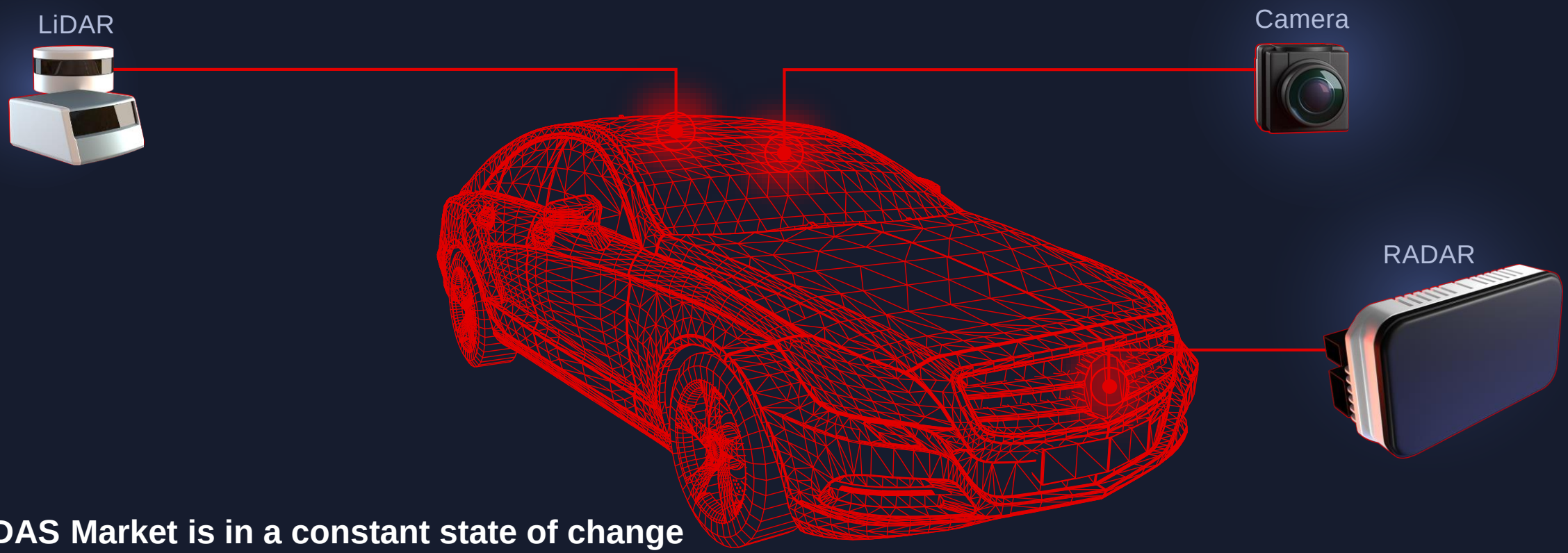
ADAS & AD Sensor Innovation



ADAS Market is in a constant state of change

- Sensors targeting 300 meter range
- LiDAR technology evolving rapidly with multiple approaches
- Camera resolution and field of view increasing for AI/ML
- RADAR innovation to 4D Imaging RADAR

Note: Not representing actual vehicle architecture; Sensors are for illustrative purposes

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Long Range 77GHz – RADAR Sensor

DESCRIPTION

› ARS540 is a high performance premium long range radar sensor which enables highly automated driving in combination with other technologies. It provides best radar performance in a state-of-the-art sensor size.

BENEFITS & FEATURES

› Direct and independent measurement of four dimensions (range, doppler, azimuth, elevation)
› 300 meter range
› Multi-hypothesis tracking for better prediction of high complexity scenarios
› Cyber Security
› Real height measurement
› Classification of traffic participants & infrastructure
› Radar-only VRU detection by means of micro-doppler technology
› Auto alignment
› Highest availability of all ADAS technologies

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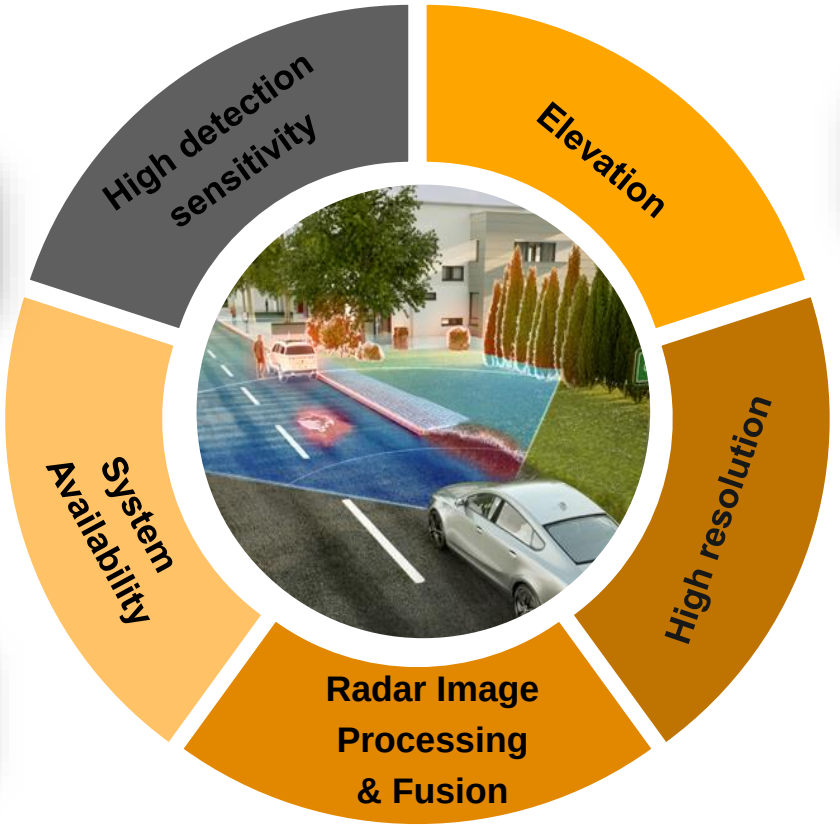
Radar for Automated Driving

Next Generation



Non overridable ground obstacles



Source: ADAC

Adverse weather conditions



Complex traffic scenarios




Source: Swiss Park

Underrideable elevated objects



Stationary targets / early & comfortable System reaction


Road boundaries / Land marks

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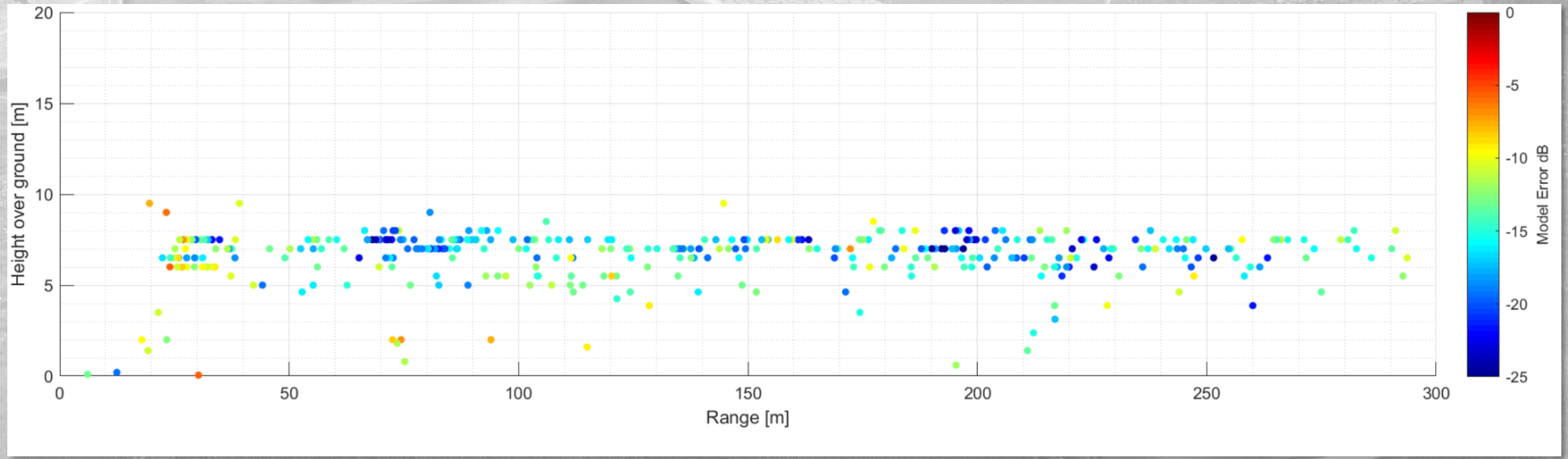
4D-Radar
Elevation Measurement Capability

Output of elevation-high-resolution-tracker shows bridge of 6.5m height



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ARS540
What‘s New?

Radio Frequency (RF) Performance

- First time **real elevation measurements**
- New antenna arrays which offer digital beam forming in elevation as well → **4D-Radar**
- **Increased number of antenna channels**:
  up to 12x TX + 16x RX = 28 (1.75 x ARS430)
- **Virtual antenna channels**:
  12 x TX * 16 x RX = 192 channels (8 x ARS430)
- Stepped Frequency Modulation for **improved range resolution** in all FoV
- **New RF/Antenna** interconnect

Low Frequency (LF) Performance

- New processing platform → **XILINX**
- Increase of processing power for Raw Data Processing by factor 20
- Increase of processing power for Object Tracking by factor 10
- High scalability (flexible size of RAM and Flash modules), modularity

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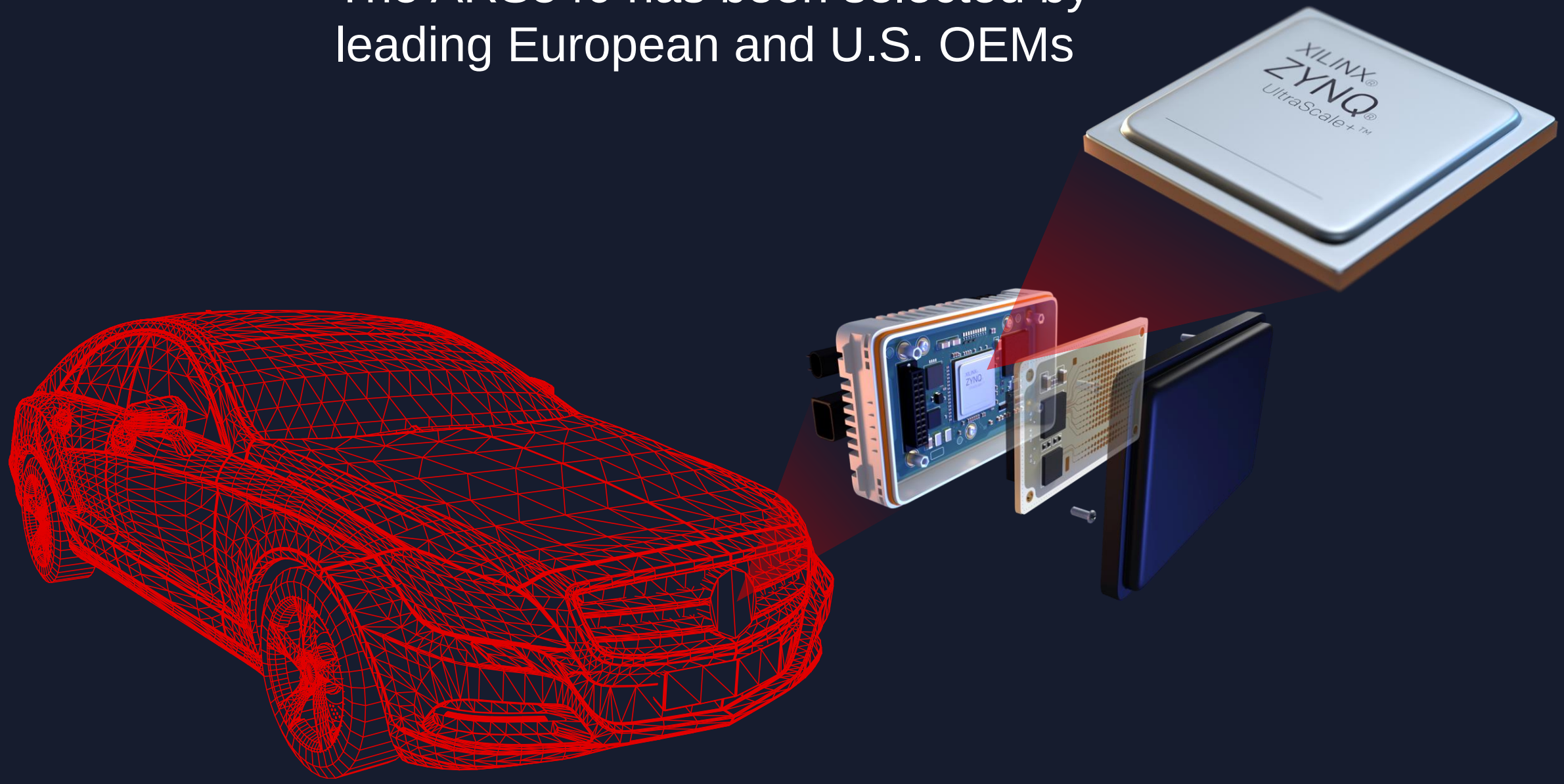
The ARS540 has been selected by leading European and U.S. OEMs



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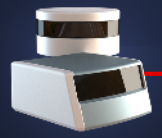
Xilinx Automotive ADAS & AD Focus Areas

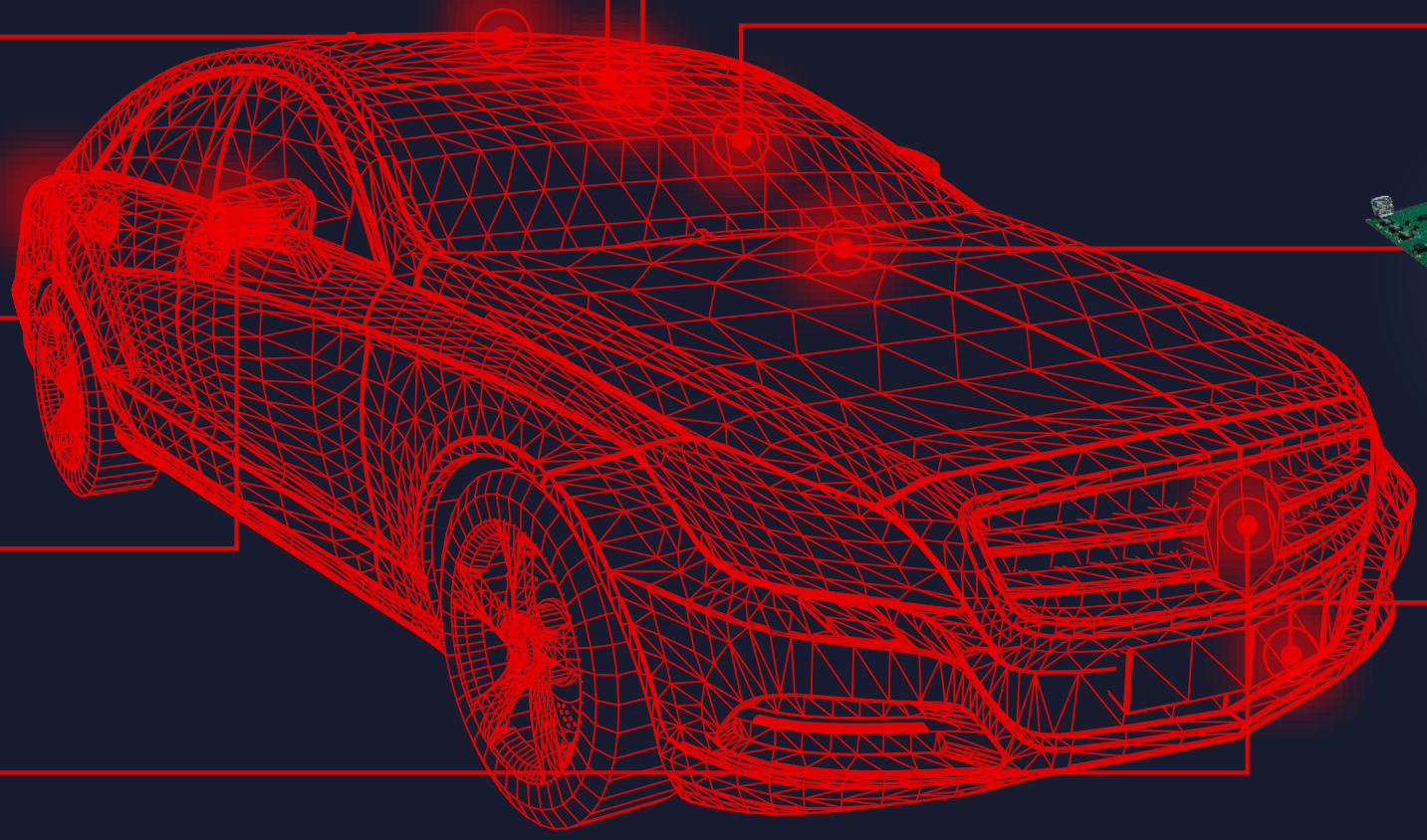
Full Display Mirror

Forward Camera

LiDAR



In-Cabin Monitoring Camera



Surround View Camera

> Rear

> Side

> Front

Domain Controller

> Gateway
> Compute Acceleration
> Data Aggregation, Pre-processing, and Distribution (DAPD)

RADAR

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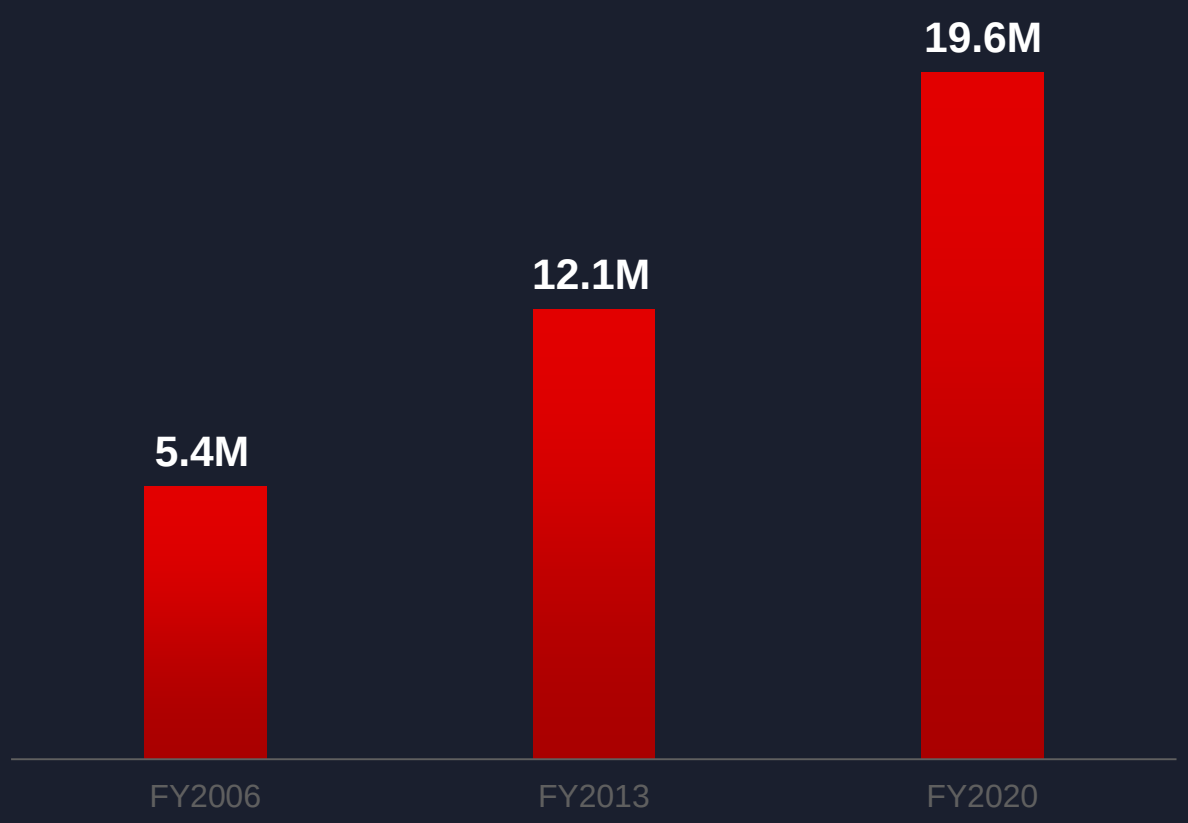
Xilinx Steady Growth in Automotive

Unit Shipments



Consistent Growth

- Double digit unit shipment growth over **15** years
- More than **190M** devices shipped
- More than **75M** devices shipped into ADAS

Tier-1s

Continental, MAGNA, veoneer, ZF, HITACHI, Neusoft REACH

OEMs

BYD, SUBARU, DAIMLER, WELTMEISTER 威马汽车

Startups

Baidu 百度 | apollo, pony.ai, OUSTER, robosense 速腾聚创, MINIEYE

Note: Only showing publicly-announced customer collaborations

Production deployments with our 28nm and 16nm families to fuel continued growth

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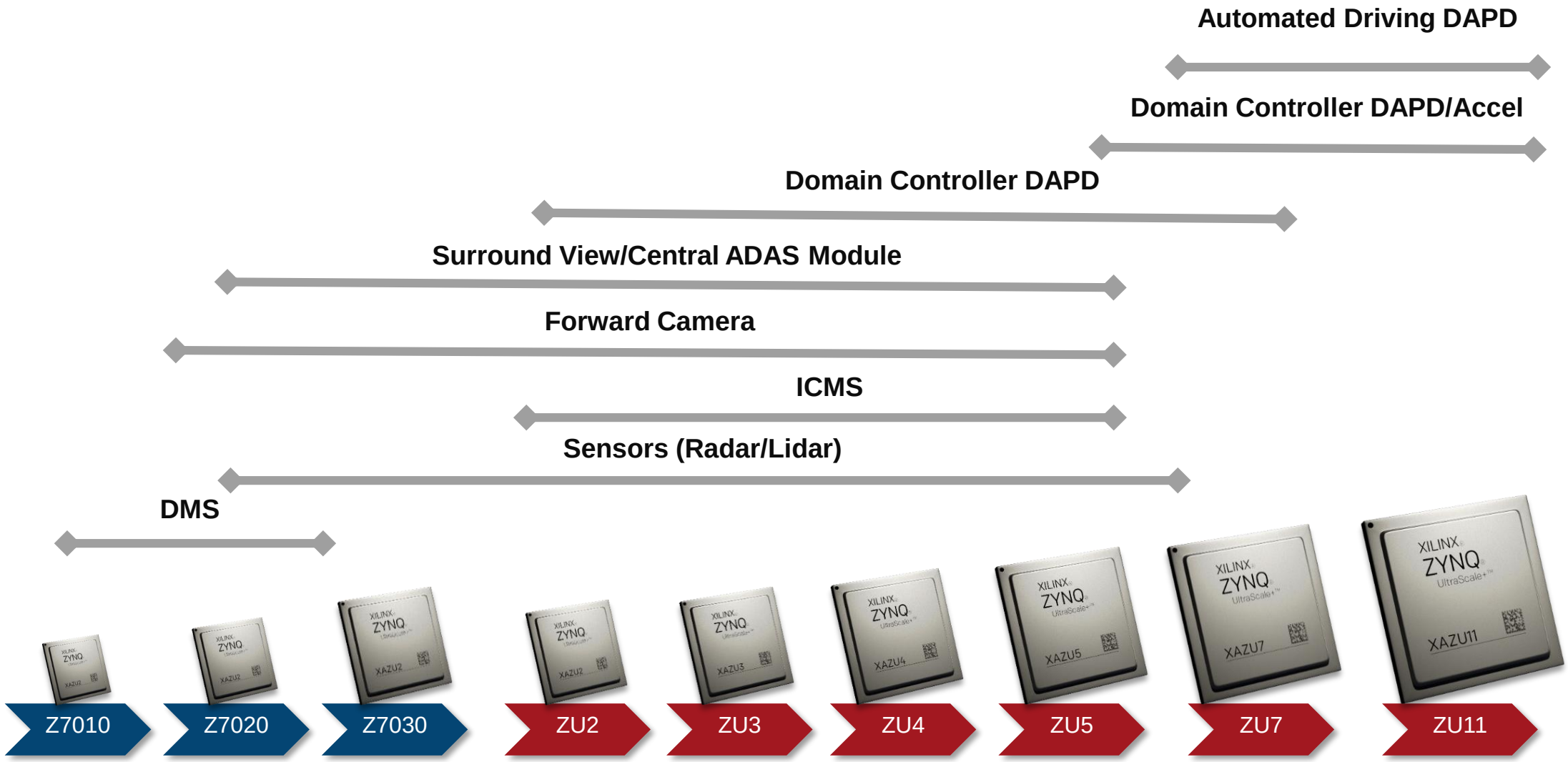
Xilinx Automotive SoC Devices



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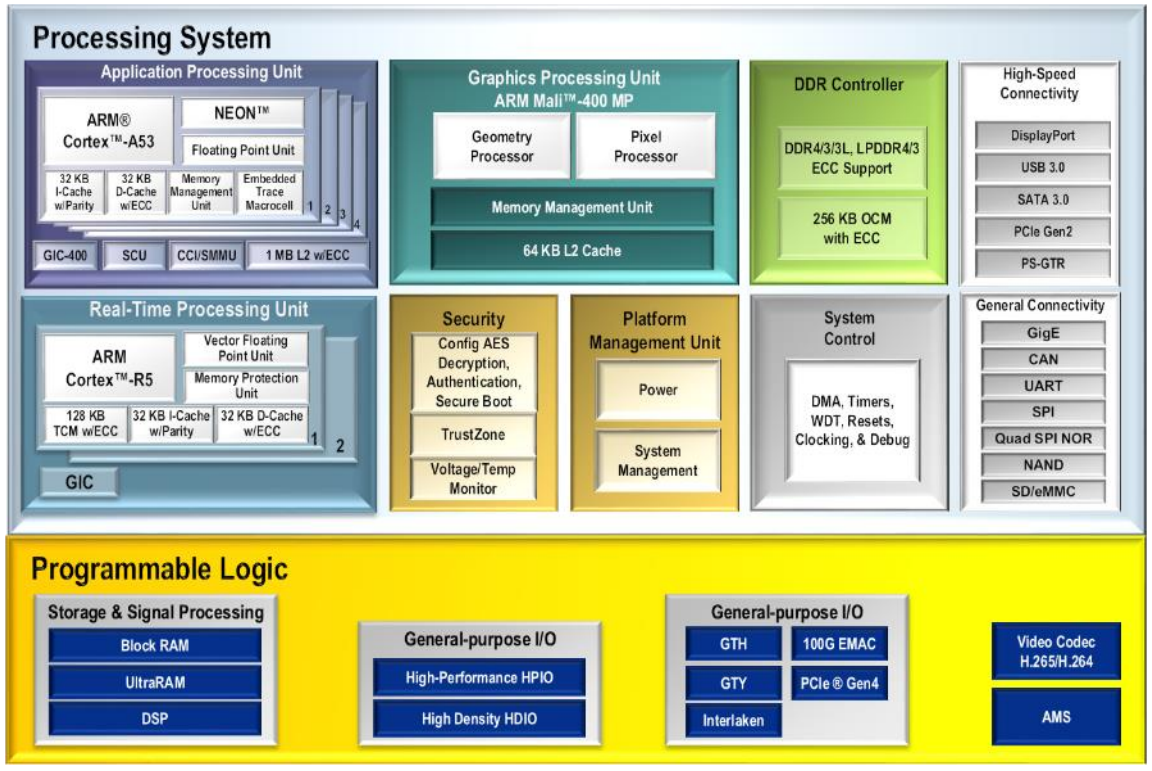
Zynq UltraScale+ MPSoC

Heterogeneous Multi-Processing at the Heart of the System

- Full Power Domain (FPD)
- Low Power Domain (LPD)
- Programmable Logic (PL)



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