Imaging Radar Goes Global: How Scalability and Efficiency Are Powering the Rollout

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Global imaging radar roll-out set to accelerate

Motional continues to employ long- and short-range lidar sensors so that the vehicle can clearly detect the shapes of objects that are within their range in fair weather conditions, but it complements those devices with twice as many radars.

2022~2023 (EU+US)

- IMR adoption in PV, small volume
- IMR adoption in Robotaxi
- Launch of L3 in PV

2024~2027 (China)

- Wide entry IMR adoption in China
- Entry IMR adoption in Robotaxi
- 1st entry IMR in volume production for L2+ PV

2028~2030(Global)

- Wide IMR adoption
- Launch of enhanced L3 and L4 in PV

Automated driving revolution: Mercedes-Benz announces U.S. availability of DRIVE PILOT – the world's first certified SAE Level 3 system for the U.S. market

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Source: https://media.mbusa.com/releases/automated-driving-revolution-mercedes-benz-announces-us-availability-of-drive-pilot-the-worlds-first-certified-sae-level-3-system-for-the-us-market

Level 3 highly automated driving available in the new BMW 7 Series from next spring.

10.11.2023 PRESS RELEASE TOP AGED

+++ Highly automated driving as a new option for customers in Germany +++ For the first time, the vehicle takes over the task of driving in full – including in the dark +++ New hands-free function means drivers can switch to other in-vehicle activities while travelling at up to 60 km/h (37 mph) +++

Source: https://www.press.bmwgroup.com/global/article/detail/T0438214EN/level-3-highly-automated-driving-available-in-the-new-bmw-7-series-from-next-spring?language=en

DiDi Autonomous Driving Debuts Mass-Production-Ready L4 Robotaxi Model, Unveils Latest Updates in Partnership with GAC Aion

2025 / 04 / 12 Guangzhou

Source: DiDi Autonomous Driving Debuts Mass-Production-Ready L4 Robotaxi Model, Unveils Latest Updates in Partnership with GAC Aion News Detail- DiDi official website

Nio Onvo launches L60 to take on Tesla Model Y, and wider competition

Phate Zhang
Sep 19, 2024, 6:13 PM GMT+2

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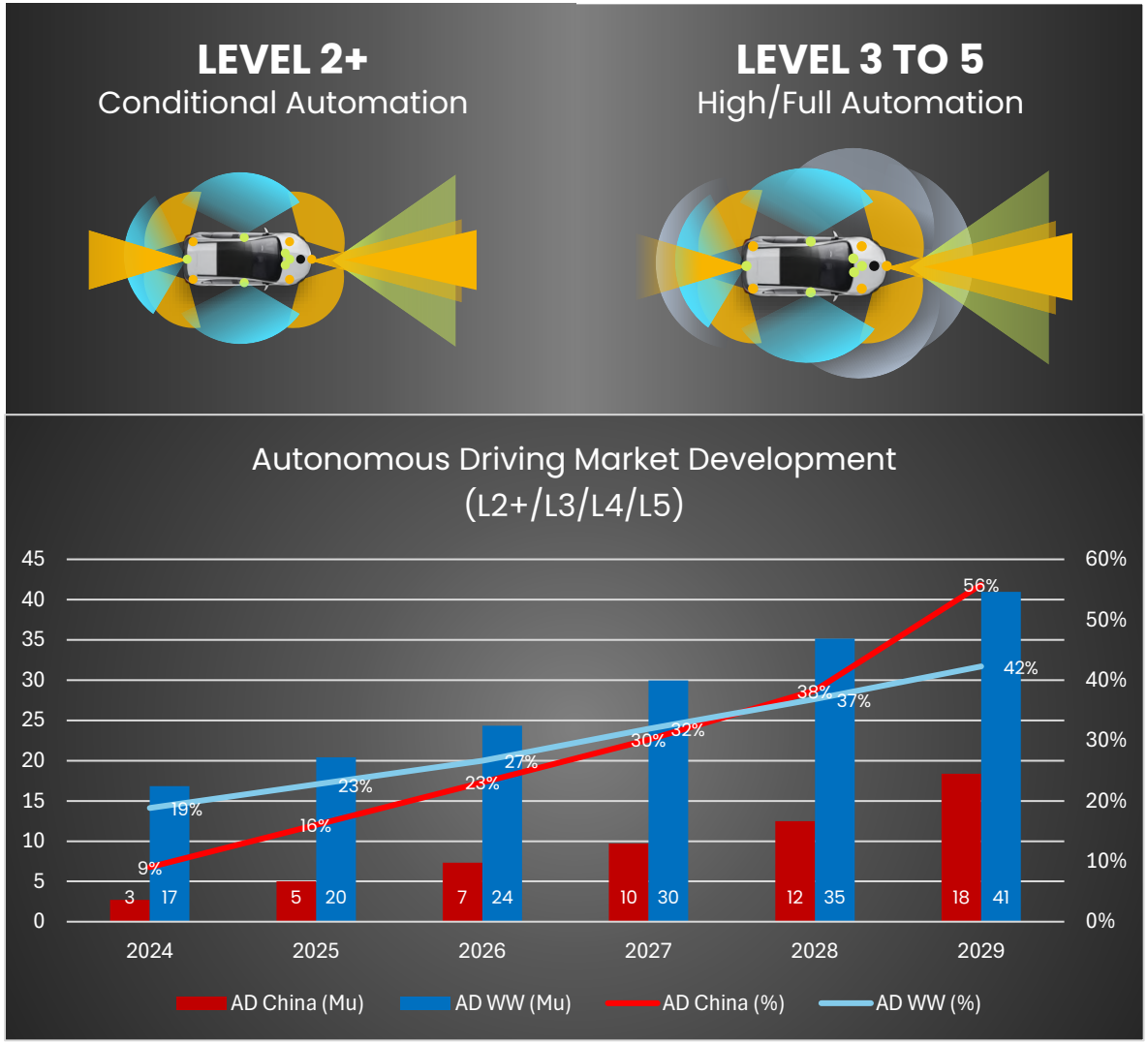
Nio's sub-brand Onvo has officially launched its first model, the L60, which is priced much lower than the Tesla Model Y, but brings more interior space and better features.

(Image credit: Onvo)

Source: https://cnevpost.com/2024/09/20/nio-onvo-launches-l60/

Global AD market drives growing demand for imaging radar

The Performance Dimension



Imaging Radar

Performance

- L2+ ⇔ L5
- Moderate take-rate
- 🇪🇺 🇺🇸

Diversified market ⇕ **Bifurcated needs**

Entry

- L2+ ⇔ L3
- High take-rate up to 100%
- 🇨🇳

Global AD market drives growing demand for imaging radar

The Architecture Dimension

Imaging Radar

Performance

- L2+ ⇔ L5
- Moderate take-rate
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Diversified market ⇕ **Bifurcated needs**

Entry

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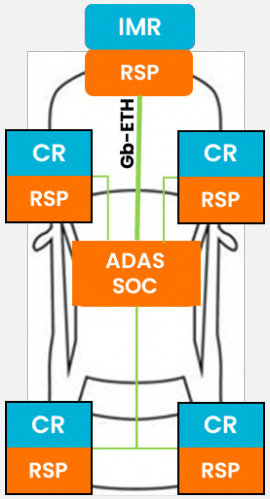
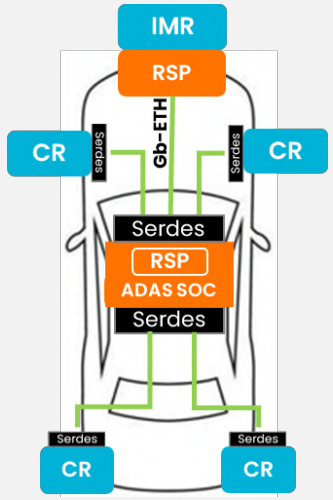
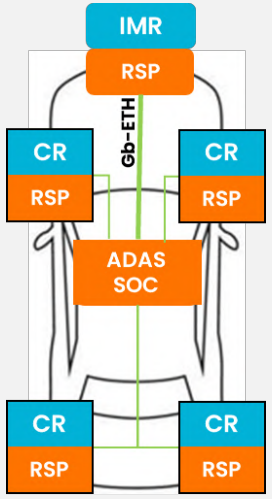
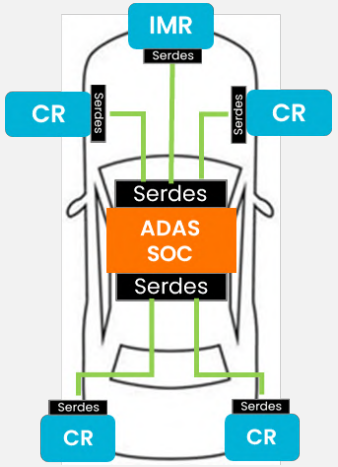
- High take-rate up to 100%
- 

	2026	**>2030**
	 Edge processing	 Central processing
	 Edge processing	 Central processing
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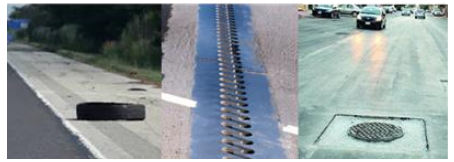
Growing challenges create opportunities for growth

More capable, efficient and scalable solutions are essential

Technical challenges

Debris / Surface Obj (Over-drivable?)



High Dynamic Range - Roadside VRUs

Vertical Clearance (Under-drivable?)

Complex Environment

Dense Interference Environment

- Increased sensitivity
- Extended dynamic range
- Improved ang. resolution (esp. elevation)
- More detections denser point cloud
- High linearity, active mitigation

Increased antenna count & data to process

Integration challenges

- Ant. count
- Cascading
- Hardware complexity
- Thermal

- Ant. Count
- Data & processing
- 20W max. limit

- Mounting space & location
- Aesthetic

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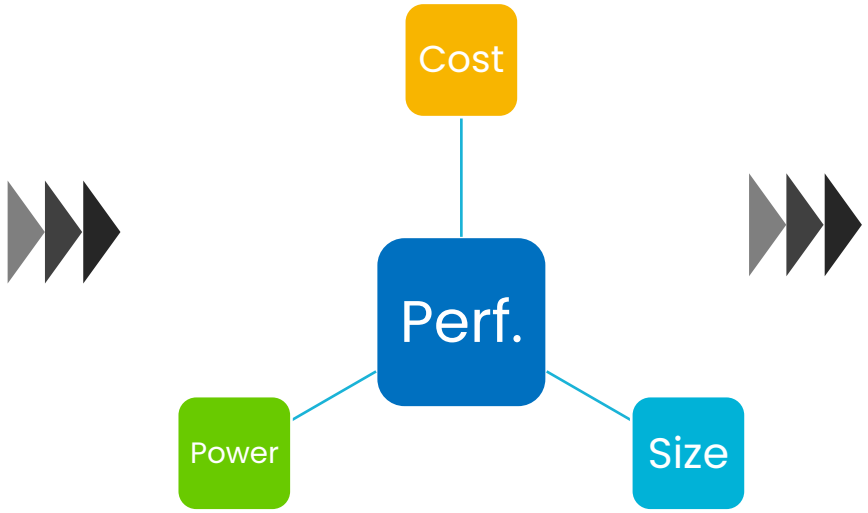


Third Generation

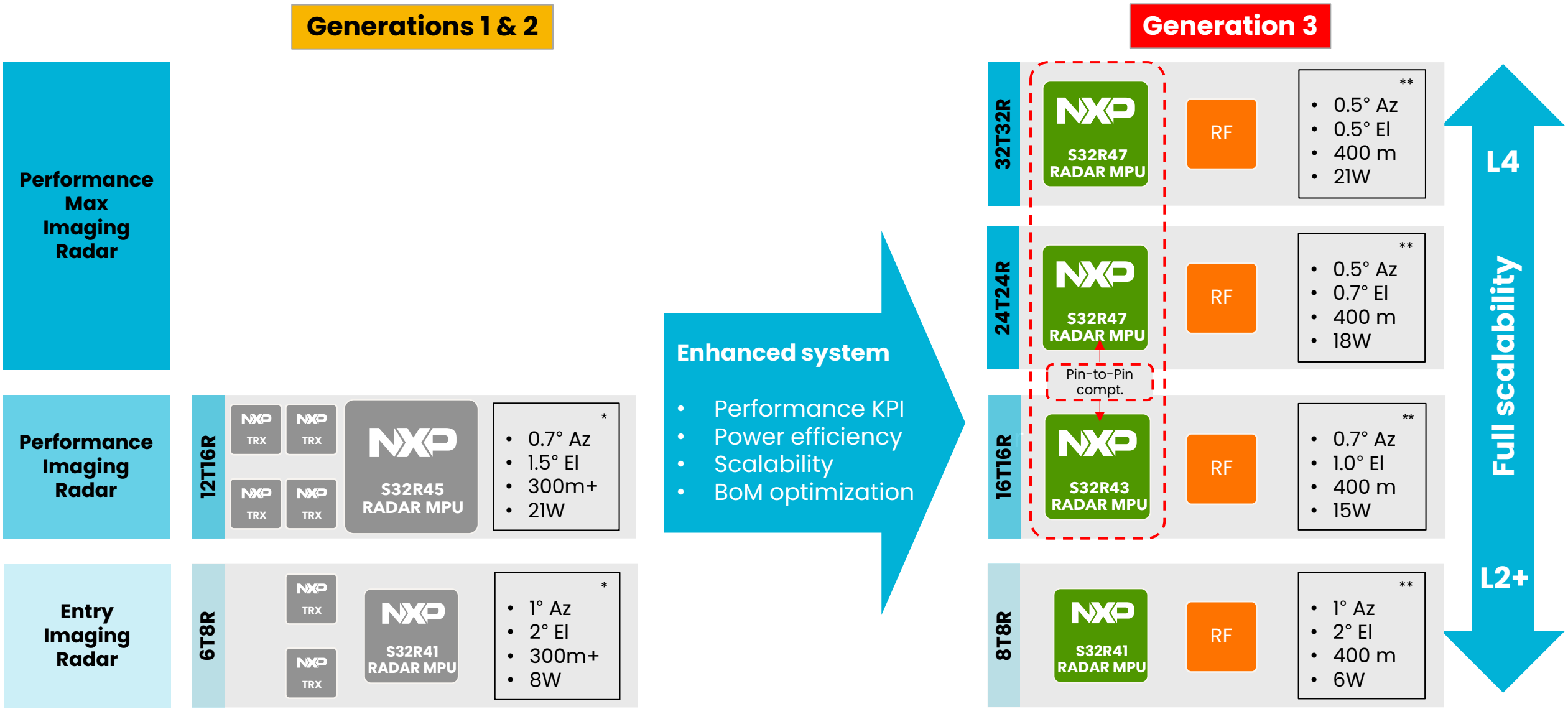
Imaging Radar Processor S32R47

Announcement on May 08
Customer sampling

- **~2x** performance
- **~3x** antenna count
- **>2.5x** power efficiency
- **~38%** smaller IC footprint

NXP's S32R47 imaging radar processor family delivers all

Performance, efficiency and scalability enabled by generations of production-proven technology

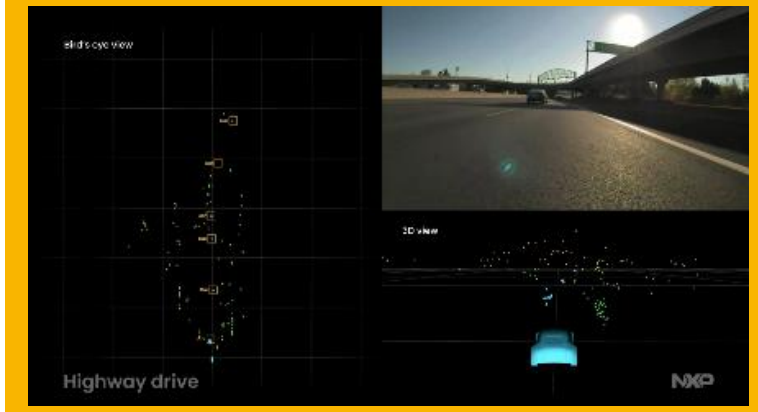


(*) Actual performance depends on system implementation by Tier-1
(**) Estimated / simulated

Technology Demonstration

24T24R Imaging Radar

HIGHWAY

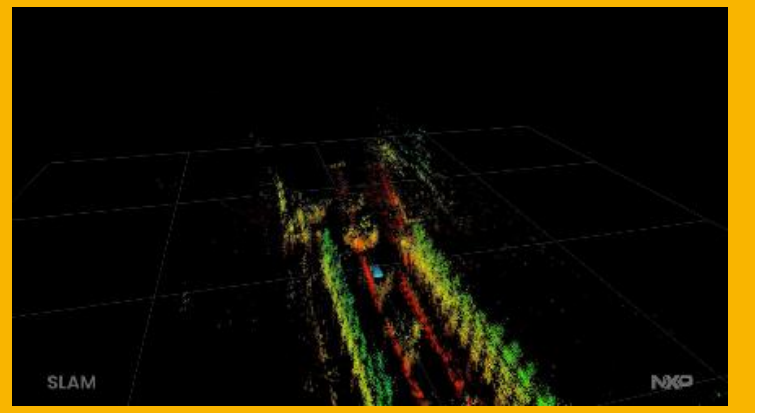


URBAN

NIGHT

VRU & BEBRIS

SLAM



Complete video available at https://www.nxp.com/company/about-nxp/smarter-world-videos/S32R47-USE-CASES-VID

Get in touch

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