

# Drive Automotive Innovation from the Inside Out

Triple Shift Left



# Automotive Functional Safety and Reliability

Synopsys chip design and IP solutions build-in safety mechanisms—such as dual-core lockstep and triple mode redundancy—and feature a comprehensive analysis and functional safety test platform for periodic and mission mode testing, device aging, soft error analysis, and analog fault simulation.

Our verification platform is a complete solution to verify for quality and functional safety powered by key safety-critical technologies for fault analysis, traceability, and FMEA (failure modes and effects analysis).

Synopsys tools are certified to ISO 26262 Tool Confidence Level (TCL) 1 to accelerate quality and functional safety qualification.



# Triple Shift Left

Disrupting the automotive development process



## Shift 1: Smarter, Safer Automotive SoC Design

Using automotive-grade IP

Implement dedicated functions on silicon—faster. Synopsys offers the broadest portfolio of pre-designed, pre-verified, reusable automotive IP blocks that you can easily integrate into your chip, including ARC processors with vision, neural network, and sensor fusion capabilities; interface IP; embedded memories; logic libraries; and security IP.

Our DesignWare IP is ASIL ready, ISO 26262 certified, meets stringent AEC-Q100 reliability standards, and supports automotive quality management to help accelerate the development of ADAS, connected vehicle and infotainment, and MCU designs.



## Shift 2: Parallel Software and Hardware Development

Using virtual prototyping solutions

Identify software problems up to 18 months earlier—before hardware is available. Synopsys virtual models and virtual prototyping solutions provide early access to silicon chips and virtual ECUs, allowing software development to start months earlier. They also enable collaboration across the supply chain of OEMs, Tier 1s, and semiconductor companies throughout the automotive software development lifecycle.



## Shift 3: Comprehensive Software Security Testing

Using software integrity solutions

Synopsys tools and services empower companies across the automotive supply chain to build security and quality into all stages of the software development lifecycle (SDLC). We identify risky design flaws, control defects, and asset vulnerabilities. We also detect third-party components, security vulnerabilities, license use, and weaknesses in code.

Our solutions help companies align with ISO 26262, MISRA, and other emerging automotive cybersecurity standards.



# Synopsys Powers the Chips that Fuel Automotive Innovation—From Silicon to Software

## Autonomous



FABU Technology selects Synopsys' DesignWare IP portfolio to deliver intelligence in ADAS and autonomous driving SoCs

## Embedded Vision



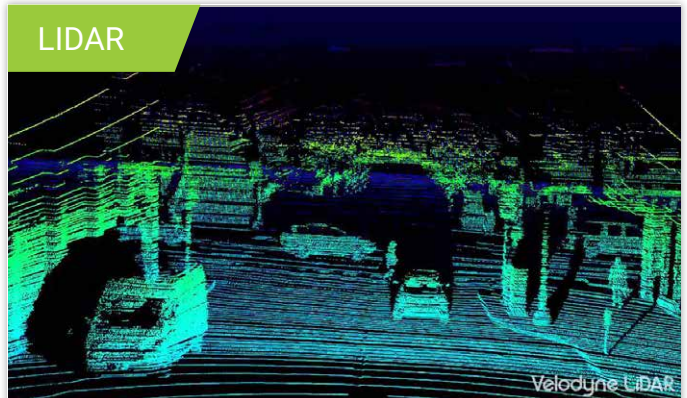
Arbe Robotics selects Synopsys' IP to enable its high-resolution Imaging radar to achieve the highest automotive safety level for autonomous vehicles

## COMPUTER



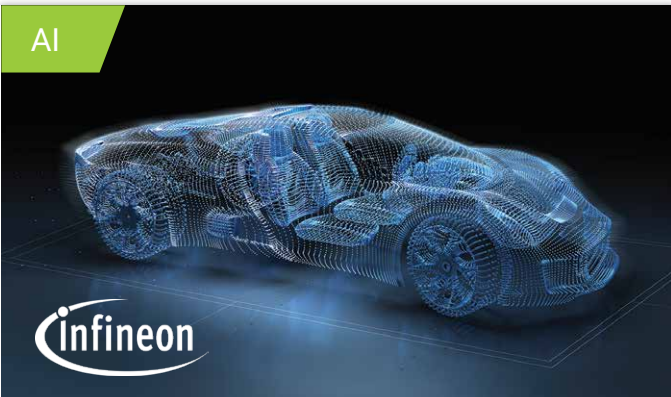
Supercharge computer development with virtual hardware. This new approach will shave nearly 10 months from program Source: Hansen 2018

## LIDAR



Synopsys ARC® EV7 Vision Processor with neural network applies deep learning to LiDAR point clouds

## AI



Infineon accelerates artificial intelligence in automotive applications with Synopsys ARC EV Processors



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The future of automotive depends on silicon chips running faster, integrating more capabilities, and processing massive amounts of software code—all while consuming less power—reliably. But as the automotive supply chain changes, chip reliability and code quality are critical success factors. Synopsys is disrupting the automotive development process with Triple Shift Left by helping you build safety and security into your chips, faster; start software development up to 18 months earlier; and identify critical defects and vulnerabilities in software code early to increase quality throughout development and testing. From silicon to software, we help you meet new goals for functional safety, reliability, and security that power the innovation in your automotive designs.



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EMPLOYEES

**30+**  
YEARS IN  
BUSINESS



**\$3B+**  
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REVENUE



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