

COOPERATION

NXP teams with Green Hills Software on platform for autonomous driving

The partnership of NXP and Green Hills Software adds certified OS for safety-critical, production-focused autonomous driving. The S32 series of micro-controllers supports Classical CAN and CAN FD.

NXP Semiconductors and Green Hills Software have announced a strategic partnership focused on production-grade ADAS (advanced driver assistance systems) and autonomous driving applications. The partnership, and the addition of Green Hills' Integrity real-time operating system (RTOS), expands the growing ecosystem surrounding NXP's S32 portfolio for ADAS and central compute systems. Together, the companies aim to deliver high-volume, production-grade electronic control units (ECUs) that foster the development and testing of life-critical autonomous applications, they explained.

Many of the consumer-grade autonomous platforms used in today's self-driving pilots and experimental offerings do not offer the safety and security required for high-volume automotive production, the companies said. NXP and Green Hills have provided carmakers and tier 1 suppliers with the technology required to produce millions of cars over the years. This joint experience is being leveraged to tackle the next levels of autonomous development for SAE Levels 2, 3 and beyond.



(Source: Adobe Stock)

NXP offers its S32 family for autonomous driving, which includes NXP's scalable portfolio of functional safety products for ADAS. The S32 family is designed to address the performance, safety, and near-term commercial needs of Levels 2 and 3 driving, while providing an eye to longer-term release in Level 4 and 5 autonomous vehicles. NXP's S32 micro-controller [has been already selected](#) by eight of 15 automakers for upcoming models. The AEC-Q100-qualified S32K family provides ISO CAN FD connectivity. The [S32S micro-controller features](#) up to eight CAN FD interfaces.

Green Hills brings its Integrity RTOS technology as the centerpiece of its software platform for autonomous driving. For over twenty years, the product's architecture has been chosen when fail-safe assurance is mandated for mission and life-critical systems in markets spanning aircraft flight controls to surgical robotics. Independent accredited organizations have certified Integrity or Integrity-178 at the safety and security levels for embedded applications including automotive (ISO 26262 ASIL D), aircraft avionics (DO-178 Level A), robustness security (Common Criteria EAL 6+), industrial (IEC 61508 SIL 3), and railway (EN 50128 SIL 4). Green Hills also provides its Multi IDE tools suite and C/C++ run time libraries that are pre-qualified to ASIL D and SIL 4 to support customers' critical application development.

The first demonstration of the NXP and Green Hills collaboration shows how life-critical path planning and vehicle control software can run in safe and secure Integrity RTOS partitions on the NXP Bluebox embedded autonomous driving platform. The demonstration is an example of the initial technology challenges and solutions involved in developing ECUs.

"The focus of the autonomous driving ecosystem has shifted from performance at any cost to safety for mass production roll out. We are pleased to partner with Green Hills Software and welcome its Integrity safety operating system with our roadmap for autonomous driving," said Kamal Khouri, vice president and general manager, Advanced Driver Assistance, NXP. "Both companies offer their proven automotive DNA for this collaboration, to provide customers a trusted and realizable platform made for the rigors of autonomous vehicle industrialization."

"The NXP S32 portfolio is impressive for its performance, safety, and scalability," said Dan Mender, vice president, Business Development, Green Hills Software. "We are pleased to partner with NXP to apply our safety and security leadership with technology already proven in automotive, avionics, and military systems. "The Integrity RTOS with Multivisor secure virtualization and Multi IDE provide the essential software foundation to protect and secure mission and life-critical autonomous functions."

[CW](#)