CES 2021

Development platform for automotive computing with CAN FD

At the CES 2021 (Consumer Electronics Show) digital exhibition, NXP announced the Bluebox 3.0. It is an expanded version of the company's flagship Automotive High-Performance Compute (AHPC) development platform. The Bluebox 3.0 supports CAN FD.

The platform allows designers to expand the performance and scope of their designs (Source: NXP)

Designed for software application development and validation ahead of silicon device availability, the product offers a way to address user-defined vehicles, safety Level 2+ (L2+) automated driving, and the evolving vehicle architectures for connected vehicles. The product offers designers a solution that can accelerate system development cycles and speed time to market, explained the company. The device combines in a centralized compute module, integrated processors, expanded I/O connectivity, and extensions with Kalray's MPPA processor-based PCIe cards enabling heterogeneous acceleration. Additionally, the development platform features CAN FD connectivity.

Carmakers have shifted their focus from the challenges of autonomous vehicles to the immediate practical opportunity to harness compute power for differentiated vehicles. User-defined vehicles allow consumers to add functionality for today's connected devices. The Bluebox delivers designers address differentiation and the associated vehicle networking architectures. Additionally, the platform delivers the performance required to build zonal architectures, computing systems, analyze driving environments, assess risk factors, and then direct the car's behavior.

"The evolution of vehicle architectures towards domain and zonal architectures is being driven by the need to address more complex requirements around user defined vehicles," said Arnaud Van Den Bossche, Director, Global Product Marketing for eCockpit and ADAS, NXP Automotive Processing. "Zonal architectures will deliver a server-style approach to automotive high-performance compute. NXP Bluebox 3.0 delivers the design foundation to innovate with these new vehicle networking architectures, helping to enable faster deployments."

By leveraging the company's 16-core Layerscape LX2160A processor, the platform doubles the processing performance from the previous generation. This increased performance, coupled with the expanded I/O interfaces, enhances the connectivity targeted for vehicle architectures. This includes two CAN FD interfaces compliant with ISO 11898-1:2015. The processing can accommodate radar, vision, and Lidar signal paths for advanced sensor fusion applications. It provides expansion options for AI (artificial intelligence) and ML (machine learning) acceleration with the Kalray Coolidge MPPA (massively parallel processor array) processors. These processors can be targeted for perception, prediction, pathfinding capabilities, and emerging connected services.

Additionally, the platform comprises NXP's S32G processor for vehicle networking and safety processing and checking for system-level ASIL D conformance. For in-vehicle networking, the multi-core processor provides up to 16 CAN FD interfaces.

NXP and Kalray are delivering jointly the Bluebox 3.0 Software Development Environment (SDE) that integrates the MPPA processors. This collaboration enables a common hardware and software platform for AHPC solutions. In addition to Kalray, the Bluebox 3.0 is also backed by an eco-system of partners. These partners include: Dspace, Embotech, Edge Case Research (ECR), Eprosima, Green Hills Software (GHS), Intempora, Micron Technology, Microsys, Real-Time Innovations (RTI), and Teraki.

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