

PRODUCT BRIEF

# QNX Platform for ADAS



As advanced driver assistance systems (ADAS) evolve from discrete single function systems, such as blind spot monitoring and lane departure warning to integrated active safety systems and automated driving technologies, a new set of software challenges has emerged. The need for high performance computing is intersecting with the need for functional safety, changing the very nature of the hardware and software in these next generation systems. The QNX® Platform for ADAS has been designed to address these challenges by providing a flexible, safe and stable software environment that leverages the performance advances in silicon while maintaining ISO 26262 functional safety certification. The QNX Platform for ADAS will allow automakers to build the next generation of ADAS systems and pave the way for automated driving in the years to come.

#### High performance – optimized for today's silicon

The complexity of automotive system on chips (SoCs) has skyrocketed due to the need to meet the realtime, compute-intensive requirements of active safety elements, such as vision processing, sensor fusion and control algorithms while still maintaining stringent power budgets. The new breed of SoCs contain multiple application cores and purpose built hardware accelerators. The QNX Platform for ADAS provides a high performance foundation for these new SoCs – by combining symmetric multiprocessing on application cores with support for built in accelerators such as vision processing engines or graphics processing units (GPUs). Whether the application is a four camera surround view system, a single camera forward facing collision avoidance system or a sensor fusion hub, the QNX Platform for ADAS offers the building blocks needed to leverage the processing power of the today's silicon.

#### Standards-compliant for safety-critical automotive systems

The QNX Platform for ADAS is built upon the QNX OS for Safety which is certified by TÜV Rheinland to ISO 26262 ASIL D. This certification also includes tool chain qualification for the C compiler, assembler and linker as TCL 3. The microkernel

architecture inherent in the QNX OS for Safety ensures that any system faults are contained so that it affects only the faulty component. Failed components can be restarted dynamically while the system continues to operate. QNX adaptive partitioning technology further safeguards the operation of the safety-critical components by ensuring they are never starved of CPU cycles. This microkernel architecture reduces the scope of certification as traditional OS services are now contained in separate, hardware-protected address spaces in the same manner as applications.

#### Lower development costs through software reuse

Software reuse is key to maintaining high quality software while keeping development costs as low as possible. This is why the QNX OS has rich support for the POSIX IEEE 1003.1 standard, a wide variety of Internet Engineering Task Force (IETF) request for comments (RFCs). The QNX Platform for ADAS extends the notion of software reuse by providing an AUTOSAR adaptation layer that allows reuse of existing AUTOSAR software, a device independent multi-camera input framework. In addition, the QNX Platform for ADAS provides a complete vision reference implementation with pre-integrated software components from QNX ecosystem partners.

## Flexible platform approach for multiple ADAS and active safety applications

The QNX Platform for ADAS has been built as a foundation to support a variety of ADAS and active safety applications. For example, by combining the multi-camera framework with support for accelerated vision processing and 3D OpenGL ES graphics rendering, a surround view system can be realized. Alternately, a single camera forward facing safety system can be constructed by combining the camera input framework with object detection and recognition algorithms from QNX ecosystem partners.

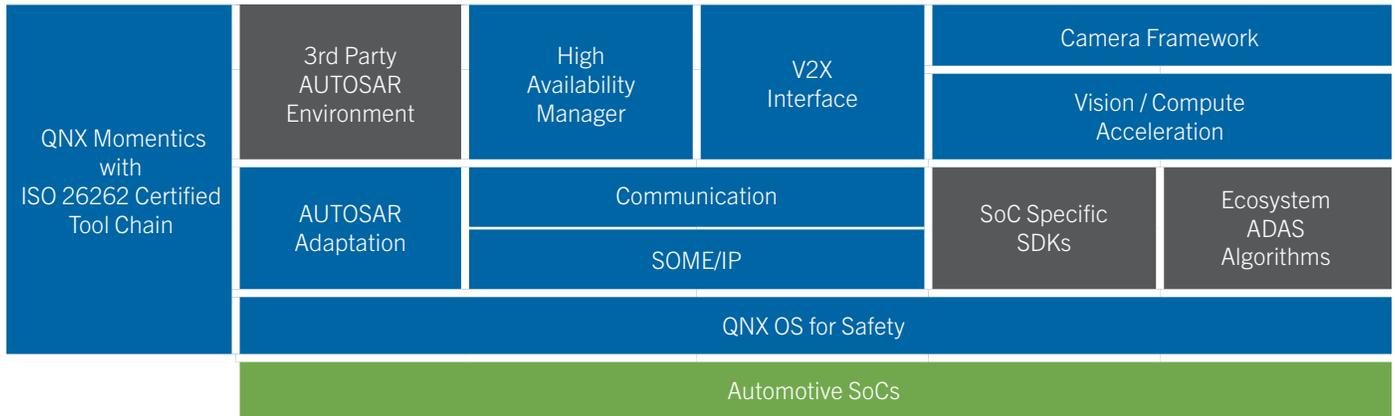


Figure 1: QNX Platform for ADAS 1.0

### Product package

- Multi-camera framework
- SOME/IP communications
- AUTOSAR adaptation
- V2X interface

**Note:** The QNX Platform for ADAS must be installed with an existing QNX SDP 6.5 SP1 development seat (not included).

### Hardware support

- ARM
- x86

**Note:** Feature support varies by hardware, contact QNX sales for list of available platforms and feature set.

### Vision reference implementation

- Single camera vision system
- Ecosystem algorithms for lane departure warning, forward object detection and classification, traffic sign recognition

### Professional services

- System integration and optimization
- Board support package development
- ISO 26262 safety case construction
- ISO 26262 system hazard and risk analysis
- Functional safety design consulting

## About QNX Software Systems

QNX Software Systems Limited, a subsidiary of BlackBerry, is a leading vendor of operating systems, development tools, and professional services for connected embedded systems. Global leaders such as Audi, Cisco, General Electric, Lockheed Martin, and Siemens depend on QNX technology for vehicle infotainment units, network routers, medical devices, industrial automation systems, security and defense systems, and other mission- or life-critical applications. Founded in 1980, QNX Software Systems Limited is headquartered in Ottawa, Canada; its products are distributed in more than 100 countries worldwide. **Visit [www.qnx.com](http://www.qnx.com)**

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