



Case Study

QNX and Freescale: Driving Automotive Infotainment

When a major automotive Tier 1 needed a prototype of an in-dash infotainment system to wow a potential customer, they turned to Freescale's i.MX 6 series applications processors and QNX software to make it happen.

Infotainment systems for automobiles require highly responsive human-machine interfaces (HMI) with rich graphics, together with reliability that meets stringent automotive quality standards. Technologies such as speech recognition, high-resolution color displays and 3D navigation systems that gained popularity in mobile devices are becoming pervasive in modern vehicles as consumers ask for the newest technology in their cars. GPS systems, for example, need fast processors and excellent graphics to quickly render real-time directions and traffic conditions. This requires a combination of powerful processors and sophisticated software: in this case, Freescale's scalable, multicore i.MX 6 series processors and the QNX CAR reference infotainment platform.

When a major supplier to automotive manufacturers decided to use Freescale's i.MX 6 series applications processor along with the QNX platform for their next in-dash infotainment system, the silicon was still in development. "Both QNX and Freescale were there from the start to understand the customer's project milestones and ensure deliverables from both companies would line

up with their schedule," said Kerry Johnson, product manager at QNX Software Systems. "It was all about making sure we knew what we were signing up for and having a clear path to get us there."

Well before first silicon for i.MX 6 processors was available, QNX and Freescale were already engaged. Together, the companies jointly developed a support plan outlining responsibilities and delivery dates for the key elements needed to enable the market. QNX also worked closely with Freescale's graphics partner, Vivante, to provide highly optimized hardware acceleration for graphics. Andy Gryc, product marketing manager at QNX Software Systems, noted that "Freescale, QNX and Vivante banded together, rolled up our sleeves and held face-to-face workshops to solve issues and deliver a best-in-class solution to the customer. We were all there working with first silicon bring-up with the OS."

As an added challenge, QNX and Freescale had to implement multicore support on the ARM® architecture, something the two companies had never faced together. "QNX has been a symmetric multiprocessing operating system for over a decade. We started down this path with Freescale back when it was just multiprocessing and not multicore," said Romain Saha, strategic alliances manager at QNX Software Systems. "Along the way, QNX developed



Both QNX and Freescale have extensive expertise addressing the automotive market. However, it is only by working closely together that the two companies are able to deliver a complete, optimized hardware and software solution. That a customer was able to develop an advanced prototype in a highly compressed timeframe is a testament to the success of their collaboration.

a multiprocessing optimized tool chain—tools that customers are using to facilitate their transition from a uni-processing to a multicore model. QNX provides an environment that allows developers to extract the maximum performance from multicore processors. Adding ARM support was straightforward.”

The groundwork the two companies did paid off early on. “An automotive OEM, our customer’s customer, wanted to see a demonstration of our customer’s (the Tier 1’s) infotainment platform at CES. The Tier 1 only had three months to pull this together,” said Kerry Johnson. “By leveraging the investments that QNX and Freescale had made up front and by basing their design on the QNX CAR platform, they were able to build it in time to successfully demo at CES. This is a remarkable achievement when you consider the complexity of today’s infotainment systems.”



QNX CAR Application Platform

The QNX CAR application platform is a pre-integrated software stack with production-proven QNX technologies and dozens of software ecosystem partners. This reference implementation and reskinable HMI allow development teams to easily create world-class infotainment systems.

QNX CAR includes a wide array of QNX technologies: the QNX Neutrino® RTOS (already deployed in more than 20 million vehicles), a powerful multimedia framework, a best-in-class acoustic processing library, HTML5-based HMI technology and hundreds of services and utilities.

QNX Software Systems offers RTOS technology, development tools, feature-rich middleware, professional services, and an integrated ecosystem for rock-solid embedded design and dramatically fast development time. To learn more, visit qnx.com.

Freescale i.MX 6 Series

Freescale’s i.MX 6 series is a scalable multicore platform that includes single-, dual- and quadcore families based on the ARM Cortex™-A9 architecture for next-generation consumer, industrial and automotive applications. By combining the power-efficient processing capabilities of the ARM Cortex-A9 architecture with 3D and 2D graphics, as well as high-definition video, the i.MX 6 series provides a new level of multimedia performance.



For more information about Freescale i.MX products, visit freescale.com/imx

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