Optimizing Digital Cockpit Performance and Architecture with HPCC for a leading OEM

Discover how Acsia's innovative solutions and technical expertise enabled a leading Tier-I supplier to overcome critical challenges in optimizing the performance and architecture of their digital cockpit solution, ensuring they met their production deadlines.

Technology & Business Landscape

In October 2023, the Indian automotive industry was at the forefront of integrating high-performance computing clusters (HPCC) into vehicle systems. This advancement significantly enhanced the capabilities of advanced driver-assistance systems (ADAS) and autonomous driving technologies. The use of HPCC in electric and autonomous vehicles enabled real-time data processing, which improved safety and overall vehicle performance.

Modern HPCC systems allowed for the consolidation of multiple electronic control units (ECUs) into a single high-performance unit. This integration supported advanced functionalities such as real-time navigation, vehicle-to-everything (V2X) communication, and sophisticated driver monitoring systems. Additionally, HPCC-powered digital cockpits merged infotainment, instrument clusters, and head-up displays into a unified, user-friendly interface, enhancing the driving experience by providing seamless connectivity and intuitive features.

Collaborative efforts by industry leaders, including Visteon and Qualcomm, focused on developing next-generation digital cockpits and HPCC solutions. These efforts aimed to deliver advanced vehicle features more efficiently, reflecting a broader trend towards more sophisticated, secure, and user-centric automotive technologies. India's alignment with these global innovations underscored its commitment to advancing automotive technology and improving vehicle safety and performance.
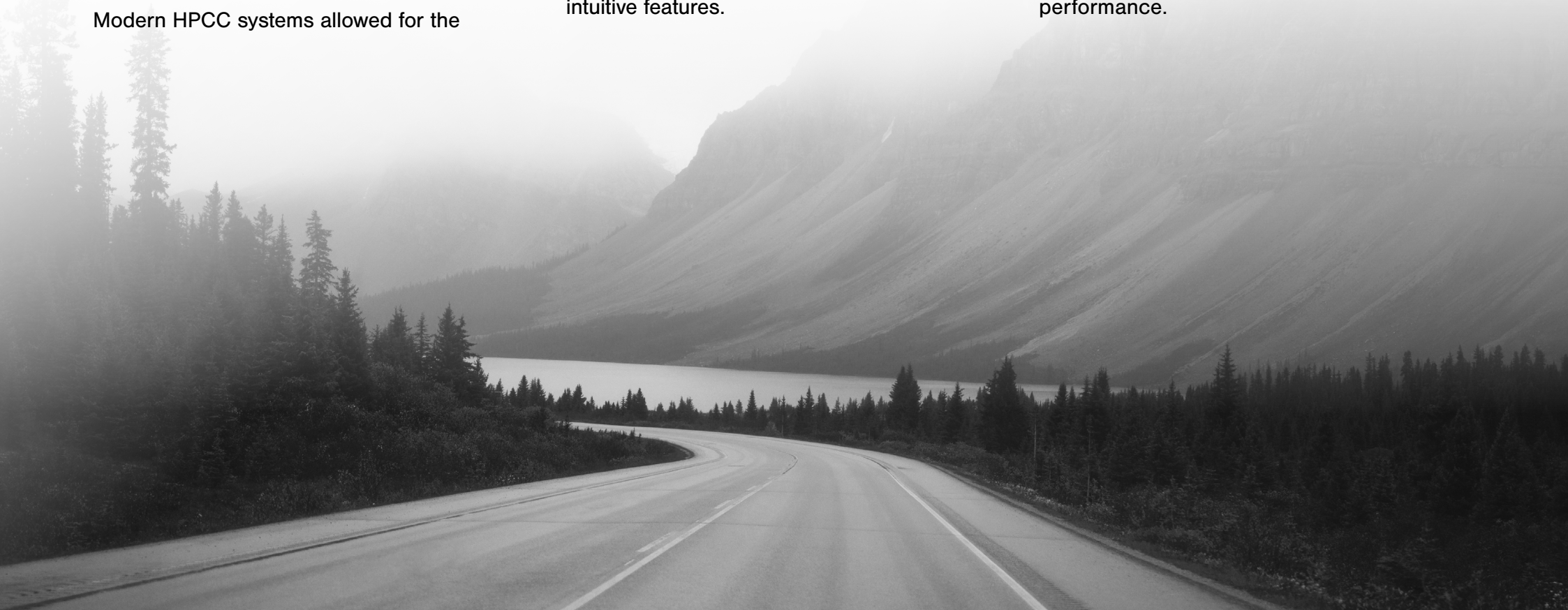
Customer Problem Statement

A leading Tier-I automotive supplier faced critical challenges in aligning their digital cockpit solution with the performance and stability requirements of their OEM partner. The system, based on a Qualcomm chipset with a QNX cluster and Android infotainment running on a QNX virtual machine, was not meeting performance KPIs. With the vehicle launch deadline looming in, the client required a reliable partner to review the entire program's architecture, identify gaps, and support in fixing those issues.

Acsia Solution

Acsia was engaged to analyze the system and software architecture and provide solutions for the most critical software issues identified by the client. Our scope included:

System Software Engineering

Reviewing and enhancing the base system architecture.

Performance Engineering

Addressing performance bottlenecks and improving system stability.

Video, Graphics & Display

Enhancing the video and graphics performance for a smoother user experience.

Android Framework & System Networking

Optimizing the Android framework and network performance.

A dedicated team of 15+ engineers from Acsia supported the OEM alongside the Tier-I supplier to implement these improvements.

Business Outcome & Impact

Thanks to Acsia's intervention, the client was able to resolve the critical performance and stability issues in time, meeting the OEM's production deadlines. The successful collaboration ensured that the vehicle launch proceeded as planned.

Key Learning

This project underscored Acsia's ability to handle complex infotainment projects and hypervisor-based architectures. Our expertise in end-to-end system architecture, performance engineering, and innovative problem-solving proved crucial in delivering results under tight deadlines.

Expert Speak

Gururaj Gopal Kulkarni
Delivery Leader

"Our primary objective was to thoroughly analyse the existing system and software architecture to identify the root causes of the performance and stability issues. By leveraging our deep expertise in system software engineering and performance optimization, we were able to provide targeted solutions that not only addressed the immediate problems but also enhanced the overall robustness of the digital cockpit system."

Gloria Joseph
Delivery Leader

"The success of this project was a testament to our team's dedication and technical prowess. Working closely with the Tier-I supplier and the OEM, we implemented critical enhancements within a very tight timeframe. Our collaborative approach and ability to quickly adapt to the client's needs were key factors in ensuring that the vehicle launch proceeded as scheduled."
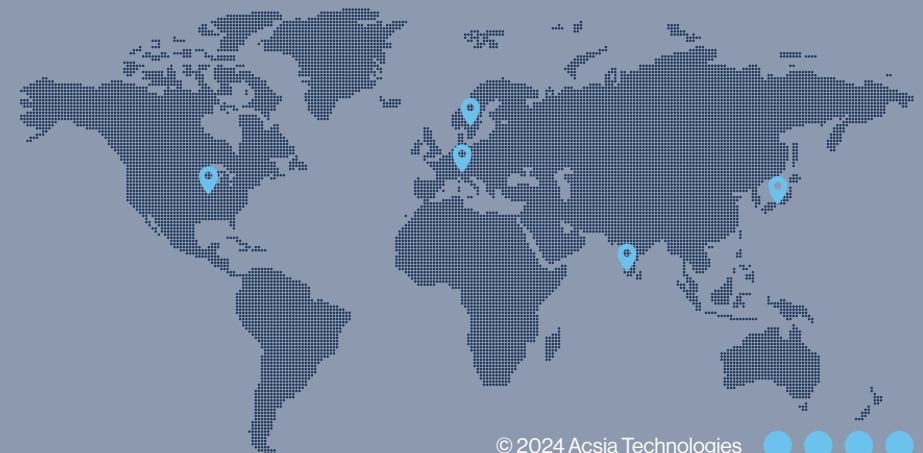
About Acsia Technologies

Acsia is a global leader in automotive software powering Digital Cockpits & Displays, e-Mobility, and Telematics. We use our expertise to develop solutions that simplify complex problems and create safer, sustainable, and more compelling driver and passenger experiences. With a presence across the United States, Germany, Sweden, Japan, and India, we collaborate with top carmakers and Tier-I suppliers.

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