

Qualcomm's insights on the future of ADAS and cockpits

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Q&A with Qualcomm

The automotive landscape is changing, influenced by technological advancements, and shifting consumer preferences across different regions.

In the cockpit market, mainland China is focusing on rapid innovation and AI integration to improve in-vehicle experiences. European consumers prioritize safety, convenience and sustainability, while US consumers emphasize entertainment and personalization along with safety. These regional differences lead original equipment manufacturers to adapt their cockpit solutions to meet specific market needs.



Source: Getty/metamorworks

Qualcomm is collaborating with major OEMs and tier 1 suppliers to provide efficient and scalable computing solutions. These solutions are based on one-chip and one-board central computing solutions, depending on the specific performance and fitment requirements. The company values both software-defined and AI-enabled vehicles, using AI capabilities to enhance user engagement and vehicle functionality. This approach allows OEMs to implement software updates and improve interactions, contributing to safety and convenience for users.

As cockpit and autonomous driving markets evolve, Qualcomm's strategies aim to address the automotive sector's varying demands. In the autonomous driving space, there is a focus on hands-free highway and city driving and the development of robo-taxis in mainland China, supported by AI models.

Qualcomm differentiates itself through its experience in developing computing intellectual property (IP) and offering a variety of systems-on-chips (SoCs) for diverse applications. The company has established partnerships with major OEMs, including General Motors (GM), Renault and BMW, offering both full-stack solutions and customized engagements tailored to specific customer needs. Qualcomm is also working to balance end-to-end solutions with safety-focused architectures in autonomous driving.

In this context, Owen Chen, Senior Principal Analyst at S&P Global Mobility, interviewed Mark Granger, Vice President of Digital Cockpit Product Management at Qualcomm, and Anshuman Saxena, Vice President and Head of ADAS and Automated Driving Products at Qualcomm, to discuss these market trends and technical drivers.



Anshuman Saxena

Owen Chen: Who are Qualcomm's lead customers for autonomous driving in mainland

China, Europe and the US?

Anshuman Saxena: Our initial ADAS design wins included G M for Super Cruise. With the next generation, we expanded our offerings to include vision perception and a full stack, in addition to our SoCs, which inherently include the development toolchains. We now have multiple chip and stack customers, such as Renault and BMW, with more announcements expected soon. Another model involves our collaboration with Sony Honda Mobility (SHM) and AWS, where we enabled SHM to perform ADAS reprocessing using our cloud-based data flywheel product for the rapid deployment of ADAS improvements through massive amounts of data. Our global growth with SoC-only solutions includes additional customers, such as Leap Motor, Chery, Volkswagen (VW), Honda, BAIC, SGM and Hyundai.

Owen Chen: In your view, how do priorities for autonomous driving differ across regions — specifically between mainland Chinese, European and US consumers and OEMs?

Anshuman Saxena: There are various use cases for autonomous driving, such as robo-taxis, which share the common goal of replacing the driver in autonomous taxis. For most consumers, the trend has been toward hands-free highway driving and navigation on pilot (NOP) systems, where users can set a destination, and the vehicle will navigate accordingly. Mainland China is leading the way in bringing these systems to market, supported by increasingly advanced end-to-end AI models. Meanwhile, global automotive companies are enhancing their technology solutions through an incremental approach, focusing on features that enable in-lane hands-free driving for a subset of vehicles, while maintaining a strong emphasis on safety and comfort.

Owen Chen: How does Qualcomm balance end-to-end approaches, such as Vision-Language Models with safety-focused modular architectures in autonomous driving? Do you see conflicts between these approaches, and might different regions adopt different strategies — for example, more end-to-end adoption in mainland China versus stronger safety-oriented approaches in Europe?

Anshuman Saxena: We achieve this balance by collaborating with a wide range of partners through various engagement models and learning from the industry. When we refer to end-to-end (E2E) solutions, we focus on three main elements: the scene encoder, which involves multi-modal sensor fusion; the decision transformer, which aids in optimal path planning; and the safety guardrails, which enable the system to be repeatable and meet regulatory requirements. Conflicts typically arise within specific architectures. However, our approach is to be inclusive of all elements. Ultimately, we envision a transition toward E2E models that incorporate safety guardrails in various forms of coexistence.

Owen Chen: How does Qualcomm view mainland Chinese OEMs developing their own autonomous driving chips?

Anshuman Saxena: Qualcomm is focused on differentiating itself through our technological advancements, a long history of computing IP development for AI processing, differentiated CPUs, a best-in-class camera pipeline, and solutions for thermal design in electrical/electronic (EE) architectures that support both electric and internal combustion engine (ICE) vehicles. These differentiators in Qualcomm SoCs are highly valued, and we have a significant customer base in mainland China driving advancements in ADAS.



Mark Granger

Owen Chen: Who are Qualcomm’s lead customers for cockpit solutions in mainland China, Europe and the US?

Mark Granger: We are engaged in shipping products with various major OEMs and a number of automotive tier 1 suppliers and contract manufacturers (CM) that supply to these OEMs. There are several public releases regarding our partners, including LiAuto, NIO, GWM, Mercedes-Benz, Volvo, Stellantis, GM, Ford and Rivian.

Owen Chen: How do engagement models differ regionally?

Mark Granger: There are regional differences in the ecosystem partners involved in delivering complete solutions, including tier 1 suppliers, software independent software vendors (ISVs) and operating systems. Within a single geography, differences among OEMs are also evident. While many OEMs still rely on a traditional tier 1, 2 and 3 working model, an increasing number are recognizing the importance of software and technology. This shift is prompting them to collaborate directly with tech companies, such as Qualcomm and take greater ownership of their software, especially among new electric vehicle manufacturers.

Owen Chen: How do priorities for cockpit experience differ across regions — specifically between mainland Chinese, European and US consumers and OEMs?

Mark Granger: All three regions are progressing toward software-defined vehicles and improved digital experiences. The mainland Chinese market is notable for its rapid innovation, AI assistance and ecosystem integration. In Europe, the focus is on convenience, safety and sustainability, while the US emphasizes entertainment, convenience and personalization. OEMs are adapting cockpit experiences to align with these regional expectations, influencing the future of in-vehicle technology globally.

Owen Chen: What is Qualcomm’s view on one-chip versus one-board central computing solutions, and which one represents the premium/high-end version of Qualcomm’s central computing future strategies?

Mark Granger: Qualcomm anticipates that both one-chip and one-board central computing solutions will coexist in the market, depending on OEM architecture choices and the required performance, robustness, and scalability. Customers seeking maximum performance for both cockpit and ADAS/AD applications will usually opt for one-board solutions for their premium offerings. These OEMs can also benefit from the high degree of software compatibility between Snapdragon Cockpit and Snapdragon Ride Flex SOCs, enabling quicker deployment of single SOC

solutions.

Owen Chen: Does Qualcomm see cockpit innovation as part of a software-defined car or an AI-defined car?

Mark Granger: Qualcomm views cockpit innovation as an evolution that includes both software-defined and AI-defined paradigms. Traditionally, software-defined vehicles have focused on flexibility, upgradability and modularity through robust software architectures, enabling automakers to enhance vehicle features, personalize user experiences and quickly respond to market demands.

The next frontier involves AI-defined vehicles, where AI plays a key role in in-cabin intelligence and user engagement. For Qualcomm, cockpit innovation involves leveraging advanced AI capabilities — such as natural language processing, driver monitoring, adaptive interfaces and predictive personalization — built on powerful and flexible software foundations. This approach enables OEMs to provide seamless software updates, smarter interactions and proactive safety systems.

In essence, Qualcomm envisions the cockpit as a convergence point, combining the adaptability of software with the intelligence of AI. These concepts are complementary; AI represents an evolution within the software-defined architecture, enhancing the in-vehicle experience, safety and convenience for drivers and passengers.

Owen Chen: How do you see AI shaping the vehicle software over the next five to ten years?

Mark Granger: AI is set to enhance the interface with vehicles, enabling more proactive and personalized interactions that make the in-vehicle experience more intuitive and efficient. Specifically, edge AI will facilitate fast, secure and tailored experiences for users.

Moreover, AI will influence not only the in-vehicle experience but also the development of the underlying software for the cockpit. This will lead to a quicker pace of innovation and a reduced time to market for new features.

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