

Brought-in beats embedded in India's connected car race

In a market where cost efficiency is paramount, the opportunity to utilise 'brought-in' connectivity cannot be ignored, Visteon India tells **Freddie Holmes**

The car has changed significantly in recent decades, and technological advances have enabled an increasing level of automotive electronics. Where mechanical elements once worked in isolation, much of the car is now interconnected via a digital network and can now be controlled electronically. The cockpit itself has also been revamped, and has facilitated the complete overhaul of a large automotive supplier.

In 2014, Visteon doubled down in electronics with the acquisition of Johnson Controls' electronics division, and proceeded to offload a raft of unwanted businesses. The company is now the largest Tier 1 supplier focused exclusively on the fast growing cockpit electronics segment, and is looking to emerging markets for further expansion.

Arun Devaraj has been with the company throughout its transition toward cockpit electronics. Based in Chennai, he currently serves as Director of Global Core Software in the Electronics Product Group, and has seen a wealth of change not only in the company, but in the connectivity space as a whole. In developed markets, he tells *Megatrends*, the car has transitioned away from basic 'bring your own device' (BYOD) connectivity to something requiring 'octa-core' computing capability.

The next-gen cockpit

New cars today feature anywhere between 20 and 150 electronic control units (ECUs), which require "many



Frugal innovation: Visteon India is focusing on leveraging the capability of brought-in devices to minimise investment in embedded connectivity technology

different microprocessors carrying out many different functions," says Devaraj. The capabilities of silicon chips are growing "exponentially," he adds, and Visteon is looking to improve the car's processing power by adding cores – moving from dual core, to quad core and now octa-core. "That presents a great opportunity for consolidation," he notes.

Specifically, it means that the instrument cluster, infotainment system and head-up display (HUD) can be consolidated into one system, which allows relevant and contextual information to be displayed to the driver more efficiently and effectively. "This is the essence of what we are accomplishing with our SmartCore platform," he says, which he describes as being a highly security-focused approach to cockpit module consolidation.

What has traditionally been controlled via separate control modules can now be carried out through a single multi-core processor. As a result, the vehicle's instrument cluster can display not only typical readouts such as speed and fuel economy, but also driver assistance features and navigation. Importantly, SmartCore allows these various ECUs to be separated and secured, meaning that entertainment software cannot interfere with driving critical units.

In July 2015, the shortfalls of a connected vehicle without ECU separation became apparent as a Jeep Cherokee was reportedly hacked via its infotainment system. Among other things, this enabled remote control of its steering and braking. "With the plethora of ECUs that are in the car today, many of them can be connected, and the risk is obviously very high," affirms Devaraj.

The move to octa-core will enable Visteon to consolidate the instrument cluster, infotainment and HUD into one system



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The company's next-generation infotainment platform, Phoenix, is based on three principles: being app developer friendly, fully upgradable, and highly secure. The architecture is also based on open standards, which allows for collaborative development among app communities. "Algorithm developers will be able to create domain hardware based on current smartphone technology," suggests Devaraj. "The software community can build apps right into it, and it is easier to integrate different features such as voice recognition or navigation, compared to the current landscape."

The power of the smartphone

This is important for emerging markets such as India, where brought-in devices like smartphones and USB

dongles are the primary form of connectivity in the car.

Visteon India is developing solutions through a process it terms 'frugal innovation'. The focus here is on leveraging the existing capabilities of a brought-in device, and thus minimising an OEM's investment in the vehicle itself. "In India, about 80% of car sales are in the A- and B-segment, so it is about frugal innovation where solutions leverage 'brought-in' connectivity," explains Devaraj.

India, he says, currently has around 235 million smartphones in use – a relatively small percentage for a population of more than 1.2 billion people. However, the new car market totalled 2.6 million units in 2015, and it is "highly probable that every car owner in India is going to have a smartphone," he points out.

"Here, we are talking about using the computing power of the smartphone or USB device to bring in the driver's information. You can bring in your own apps, and it is all beautifully integrated into the head unit to provide content."

For example, the Apple CarPlay and Android Auto smartphone apps provide the connected features available in upmarket embedded infotainment systems. Voice recognition and navigation, for example, can be brought into the car, "so the OEM is not investing that much into the head unit per se, but is still able to offer similar content to the end user," explains Devaraj.

At this point, he is keen to highlight that being frugal does not mean compromising on quality. "It is about providing the best experience to the user considering the aspirations of the

Indian user, their purchasing power and infrastructure limitations," he says. "It is about providing a disruptive solution whilst keeping the market scenario in mind."

Lagging infrastructure, but not for long

Part of the reason behind the popularity of smartphone-based connectivity is the country's maturing infrastructure. Whereas developed countries have widespread access to 3G and now 4G, many emerging markets still have to deal with connectivity black spots in some areas. "When you talk about emerging countries, infrastructure is a significant bottleneck," admits Devaraj. "We do still see patches in the ability to provide even 3G coverage."

dramatic change in the telecoms space, and that will drive the demand for connected services.

Emerging need for security

Cyber security is a hot topic for the automotive industry as a whole, and Visteon's latest Phoenix platform places key importance on getting it right.

Phoenix adheres to the SAE J3061 cyber security standard, which means that hackers are blocked by a secure end-to-end system that spans from the network to the hardware itself. "One of the key foundations of the J3061 standard is the secured development cycle," he says. "That is what we are trying to bring into the Visteon DNA by validating our input, output, and being threat safe."

Over the next few years there will be a dramatic change in the telecoms space, and that will drive the demand for connected services

India is not sitting back, and the country is investing heavily to change this, he says, with 4G connectivity becoming "a must-have for telecom providers". In May, mobile network Reliance Jio launched a trial 4G service in India, which will eventually be rolled out for full commercial use. The company is also reportedly developing a connected car module that connects to a vehicle's on-board diagnostics (OBD) port to create a Wi-Fi hot spot.

"The landscape is changing very, very fast, wherein it is not just the urban and city areas, but also the rural areas that are getting connected today," says Devaraj. He predicts that in five years, India's state of connectivity will be drastically different to today: Over the next few years there will be a

Devaraj admits that cyber security is probably not high on Indian customers' list of priorities. India has a long way to go when it comes to rolling out highly connected vehicles, he explains, but he expects this to change once connected cars become commonplace in the market. Many A-segment cars already feature 7" infotainment screens, which he believes is an indicator for future connectivity opportunities.

Looking ahead, Visteon is making moves to expand its capabilities on a global scale. In March 2016, the company brought-in a former Siemens, Harman and Elektrobit executive as Chief Technology Officer, and in July acquired smartphone connectivity specialist AllGo. The latter is expected to boost its ability to cater for brought-in connectivity.