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NEWS RELEASE

# Building a Bridge for a Mobility Power Trip

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Today's cars and trucks are on a power trip – with an increasing need for more features and functions.

Driver assistance systems … automated modes … convenience features … and connectivity to personal devices, the outside world and the cloud – all consume energy. Inside automobiles, this hunger for power takes the form of electronic control units (ECUs). Traditionally, every electronic function—such as infotainment, navigation, instrument displays or driver assist systems—has required a separate ECU with increasing processing power to direct its operation.

Until recently, microprocessors weren't capable of handling multiple functions. Now, with consumers demanding more electronic features in their rides, new cars have been devouring ECUs as rapidly as they can be installed. It's not unusual for new vehicles to house 100 microprocessors – and that number is expected to reach 200 by 2020.

Modern mobility vehicles are one of the most complex products on the globe, integrating up to 100 million lines of software code; that figure will likely double in the next 10 years. In view of this increasing complexity, it is imperative that progress take place intelligently. The industry must effectively manage the cognitive load, and work within the situational awareness limitations of the vehicle and its environment.

So how does the auto industry address the power tripping issues noted above, and ensure development times keep pace with the consumer electronics industry? It's a daunting task, but not insurmountable. Since consumer devices last two to three years and the mobility/vehicle lifecycle is currently 11-12 years, the industry is looking at over-the-air software updates and hardware upgrades to keep pace with the consumer electronics industry.

These solutions also need to reuse software assets and create products that do not need to be redesigned in order to implement the latest consumer wants and needs. Visteon has developed technology that consolidates the functions of two, four, eight or more ECUs by taking advantage of the tremendous increase in computing power of today's microprocessors.

The SmartCore™ system uses Visteon-developed virtualization that allows a multicore SOC (system on chip) microprocessor to run many functions by splitting up the processor's power for use by a variety of devices. At the nucleus of this virtualization technology is security, which is achieved by keeping the virtualization software code to a minimum and running multiple operating systems unmodified. This isolates safety-critical elements from non-critical elements and from the outside world.

SmartCore also uses a component modeling software architecture that is written in modules, like LEGO® blocks. This allows the same basic code elements to be used for all levels of vehicle design, with additional blocks of code inserted for luxury vehicles. Previously, entirely separate and unique code—100 million+ lines— needed to be written for low-, mid- and high-end cars.

Visteon SmartCore™

This challenging path for mobility provides the inspiration to innovate new and creative solutions. Domain controller architecture solutions such as SmartCore will serve as a foundation for exciting vehicle experiences that enable drivers to be more productive and relaxed in connected and autonomous vehicles.

is leader of emerging technologies at Visteon Corporation. Since joining Visteon in 2000, he has served in various roles, from engineering, program management and business development to his present position. His responsibilities include identifying and developing the next generation of connected vehicles, fusion and mobility solutions. Key to these solutions is the seamless mobility experience that customers will expect in future vehicle environments.