Extension for design of J1939-based CAN networks

Mentor, a Siemens business, today introduced Capital Systems Networks. It is an advanced software tool engineered to enable the creation of in-vehicle Classical CAN communications networks based on the J1939 standard.

(Photo: Mentor)

The solution provides technology to help engineers develop, optimize, and validate J1939 networks. Commonly deployed in heavy-duty commercial vehicles such as trucks, buses, and off-road vehicles, J1939 is a data networking standard used for in-vehicle communications and diagnostics. Commercial vehicles may incorporate as many as six separate Classical CAN networks, requiring new designs and rework for each new vehicle model.

As the number of processors, sensors, and electronic actuators deployed in commercial vehicles rises with each model-year, so too does the complexity of designing the data networks used to connect them. Despite this rising complexity, a lack of robust network design tools often forces engineers to rely on rudimentary, maintenance-intensive technologies such as spreadsheets incorporating in-house macros.

Designed to address these challenges, the Capital Systems Networks product enables holistic network development. As part of the extensive Capital tool suite, the tool integrates network and electrical design within a single environment, streamlining development of functional and physical designs for J1939 networks. By supporting a generative design process within a coherent electric and electronic (E/E) architecture, Capital Systems Networks helps speed network design, validation, and optimization.

The tool includes a library and unified dictionary of J1939 signals, functions, and features. This allows designs, ECUs, and even entire networks to be reused and tailored for specific vehicle models and variants.

"Capital Systems Networks is a sophisticated tool that addresses the massive complexity associated with today's automotive network designs," said Martin O'Brien, vice president and general manager of Mentor's Integrated Electrical Systems Division. "Designed for optimal scalability and re-usability, Capital Systems Networks' model-based solution enables a generative design approach offering the potential for 90 percent design efficiency improvement for J1939-based CAN networks, while at the same time handling several thousands of signals."

"Capital supports advanced platform architecture exploration, allowing us to generate rapid iterations and evaluate different implementation options directly within the design environment," said Rosa Talarico, CVPD ES system integration, networking and methodologies manager for CNHi. "This functionality, together with Capital's data reusability and scalability across multiple abstractions, allows us to dramatically reduce design cycles and speed time to market."

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