CAPABILITY BRIEF

RTI Connext Drive for Electric Vehicles

ENABLING REAL-TIME DATA TRANSPORT FOR NEXT-GENERATION EVs

HIGHLIGHTS

Enables reliable, real-time data transport for Next-Generation Electric Vehicle (EV) architecture components, from ECUs to Central and Zonal Gateways

Offers an automotive-grade data-centric software framework that can optimize cost, network distribution, safety and security

Supports broad integration of different automotive platforms in a common architecture, including Time-Sensitive Networking (TSN) support

Provides a safety certification pathway to achieve up to ISO 26262 ASIL D

RTI Connext Drive® is designed to help automakers evolve EVs to fully embrace software-defined vehicle architecture. Tomorrow's vehicle designs must be able to overcome communication constraints, as well as provide flexibility, scalability, compatibility and upgradability on different hardware components. To win the race to market, EV manufacturers need a proven pathway to safety certification for their next-generation vehicles.

TRANSITIONING TO THE ELECTRIC ERA

Autonomous vehicles (AVs) have introduced a major disruption across the automotive industry. While AVs will certainly bring monumental change to the way we travel, there is another disruption happening behind the scenes. Arguably, the rise of EVs and the definition of the Software-Defined Architecture (SDA) is even more disruptive to the industry than autonomous vehicles.

However, unlike the slower and still-undefined progress of AVs, EVs are taking over: The SDA disruption is happening now, and it's poised to transform the industry. Today's SDAs are anticipated to be the pillars of the new electric era.

Next-generation electric vehicles will require significant upgrades to move beyond traditional vehicle architecture, in order to address the major limitations that the automotive industry is facing today. For automakers, some of these new innovations could open up new business opportunities.

THE RISE OF NEXT GEN E/E ZONAL ARCHITECTURE

The automotive industry is undergoing an unprecedented shift as manufacturers race to develop connected and autonomous mobility solutions. However, because modern vehicles often include over one hundred Electronic Control Units (ECUs), manufacturers are well aware of the interoperability challenges posed by ECUs and the need to integrate, simplify and free up space under the hood for new functionality.

This imperative has given rise to Next-Generation Electrical/Electronic (Next Gen E/E) Zonal Architecture. The central aspect of this trend is the transition toward consolidating vehicle computing capabilities to optimize not only cost, but also power distribution, security, flexibility and weight.

Connext Drive provides the data-centric software framework needed to efficiently manage this complexity. Further, Connext Drive is designed to integrate new and evolving technologies, enabling it to seamlessly support Next Gen E/E Zonal Architecture in tomorrow's autonomous vehicles.

THE FUTURE OF ELECTRIC MOBILITY: ECU CONSOLIDATION AND COMPUTING CENTRALIZATION

Centralizing the computing capabilities in one high-performance computer is enabled by end-to-end communication and data-centric software components. Based on the Data Distribution Service™ (DDS) standard. Connext Drive offers a variety of advantages for manufacturers engaged in creating scalable and future-proof EVs. These benefits include:

- Enabling the given functionality for each vehicle zone: ECUs, Central Gateway and Zonal Gateway.

- Simplification of the overall wiring harnesses (currently the third-highest component cost) through TSN support.

- Support for communication libraries certified for systems up to ISO 26262 ASIL D

- Evolving from classic automotive products into new architectures that include ADAS and telematics applications, making it possible to compete in new markets with dedicated product offerings.

- Providing a proven connectivity framework that is used by ROS 2, AUTOSAR Classic/OSEK and AUTOSAR Adaptive for autonomous vehicles.

REAL-WORLD EXAMPLE

Li Auto: With the development of intelligent in-vehicle systems, communication between components has become more complex and critical. The adoption of advanced sensors such as Lidar, radar, etc., alongside the need to support more sophisticated data models and application algorithms, have imposed tremendous challenges in the Next Gen E/E Architecture. In addition, the requirements of functional safety (FuSa) and cybersecurity must also be considered from day one. The RTI Connext Drive connectivity framework helps to accelerate Li Auto's EV development in this challenging landscape.

ABOUT RTI

Real-Time Innovations (RTI) is the largest software framework company for autonomous systems. RTI Connext® is the world's leading architecture for developing intelligent distributed systems. Uniquely, Connext shares data directly, connecting AI algorithms to real-time networks of devices to build autonomous systems.

RTI is the best in the world at ensuring our customers' success in deploying production systems. With over 1,700 designs, RTI software runs over 250 autonomous vehicle programs, controls the largest power plants in North America, coordinates combat management on U.S. Navy ships, drives a new generation of medical robotics, enables flying cars, and provides 24/7 intelligence for hospital and emergency medicine. RTI runs a smarter world.

RTI is the leading vendor of products compliant with the Object Management Group® (OMG®) Data Distribution Service™ (DDS) standard. RTI is privately held and headquartered in Sunnyvale, California with regional offices in Colorado, Spain and Singapore.

Download a free 30-day trial of the latest, fully-functional Connext software today: https://www.rti.com/downloads.

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