To stay competitive in today’s market, autonomous and electric vehicle designs are becoming increasingly complex. As new vehicles continue to change and evolve, the smartest way to address that complexity is through software. This is particularly true when automotive manufacturers need to provide over-the-air-updates and add new features to vehicles on a daily or weekly basis, even after that vehicle is out on the road. However, without the right software architecture in place at the design stage, the process of building in new functionality and obtaining vital certification for production-ready vehicles can easily become protracted and costly.

There is a better way: RTI Connext Drive delivers a standards-based framework that manages complex data distribution for real-time connectivity across platforms for autonomous systems. Connext Drive is built on Data Distribution Service (DDS™), the proven connectivity standard for Next-Generation Electric/Electronic (Next Gen E/E) Zonal Architectures and the one used by AUTOSAR Adaptive and ROS 2 for autonomous vehicles. This standards-based approach delivers enhanced performance and massive scalability, while lowering risk.

With Connext Drive, automotive manufacturers now have the capabilities required to deploy Next Gen E/E Zonal Architectures and explore telematics applications or vehicle telemetry. Connext Drive offers a common development paradigm to safely and securely develop Advanced Driver-Assistance Systems (ADAS) and connected car systems, reducing both time-to-market and the overall complexity of software architecture.

Connext Drive is the first – and only – software that can integrate DDS, ROS 2, AUTOSAR Classic and AUTOSAR Adaptive, which allows automotive companies to work with the standard or standards that best meet their needs at different points in the development cycle. Connext Drive also includes a software framework and native SDK for developing and integrating autonomous drive applications and building in automotive-grade security.
CONNEXT DRIVE FEATURES

Connext Drive’s unique features improve the safety, security and reliability of autonomous vehicles:

New! DDS-based Toolkits. Connext Drive supports the collocation of different technologies, since it can operate natively based on DDS, or by providing direct connectivity within ROS 2 and AUTOSAR Classic and Adaptive. This enables developers to leverage data-centric connectivity with familiar ecosystem protocols:

• Connext Integration Toolkit for AUTOSAR Classic is a set of tools bridging AUTOSAR Classic ECU modeling and configuration workflows with Connext Drive, to achieve rapid, scalable communication for embedded, real-time and safe systems.

• Connext Integration Toolkit for ROS 2 includes a growing library of tools to simplify ROS 2 and Connext Drive ecosystem integration, providing ROS 2 developers with a bridge for creating true production-grade systems.

Safety Certification Pathway. Safety certification of software is the only mechanism to guarantee autonomous road vehicles. Connext Drive is TÜV SÜD-certified to ASIL D to meet the Safety Lifecycle requirements set forth by ISO 26262. Connext Drive includes all the necessary Safety artifacts and Safety Manual, which can significantly reduce Functional Safety Lifecycle efforts for system integrators, reducing risk, time and project costs. Connext Drive provides a proven path to the certification needed to put autonomous and electric vehicles into production and on the road.

Real-Time WAN Transport for Connected Vehicles. Connext Drive’s UDP-based Real-Time WAN Transport enables low latency and high throughput communications. Connext Drive seamlessly provides secure discovery and communications that meet the rigorous cybersecurity requirements of connected vehicles. Connext Drive supports shared memory, LAN, WAN and internet transports, allowing peer-to-peer and vehicle-to-cloud communications over complex and unreliable networks.

Enhanced Performance. With support for the latest Object Management Group® (OMG®) DDS-XTypes™ standard, applications benefit from network bandwidth savings, enabling flexibility for multiple Quality of Service (QoS) strategies. An optimized Dynamic Data implementation delivers enhanced serialization performance.

Efficient High-Bandwidth Data Distribution. Connext Drive enables rapid communication with throughput of over millions of messages per second using a data-centric databus, which allows data to flow when and where it’s needed: securely, at scale and with ultra-low latency.

Full Redundancy. Any sensor, data source, algorithm, compute platform or even network can be easily duplicated to provide higher reliability. The data-centric design allows the system to resolve this redundancy naturally.

Updated DDS Security. Connext Drive is compliant with the latest OMG DDS Security™ specification v1.1 and supports the latest OpenSSL v1.1.1. The latest updates to the RTI Security Plugins also support loading keys from an SSL engine to more easily integrate key storage.

To learn more about Connext Drive, visit: rti.com/drive.

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 1,800 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.