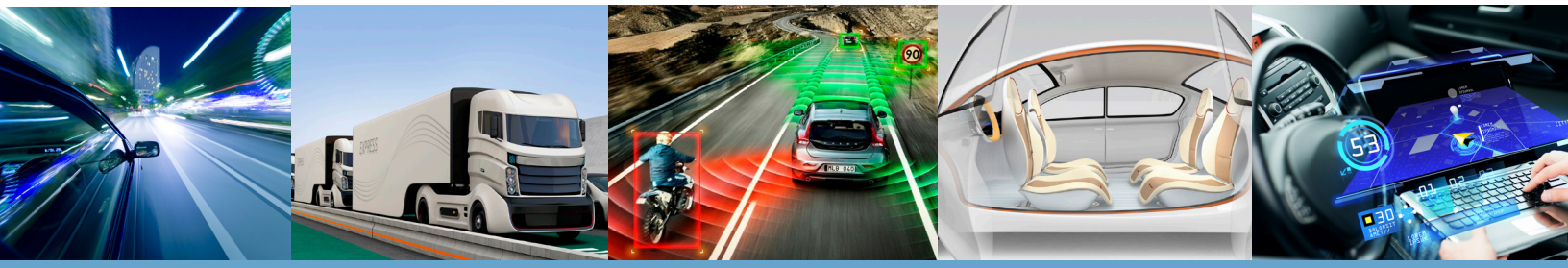
RTI in Autonomous Driving

Providing Safety, Resilience and Security



Autonomous car design requires a combination of revolutionary architectures and evolutionary technologies. It must seamlessly integrate multiple vendors, support compliance with evolving standards and enable continuous feature and performance improvements. RTI Connext® DDS accelerates development of robust autonomous driving systems and gives developers an efficient path from prototyping to production and safety certification.

Connext DDS Advantages

Addresses a wide range of connectivity and integration requirements

Provides a common interface to different sensor technologies, networks and protocols

Eases certification to ISO 26262 up to ASIL D and IEC 61508 to SIL 3

Ensures complete location transparency and application portability

Implements data-centric connectivity model with full visibility of data in-motion

Delivers low latency with real-time Quality of Service (QoS)

Meets demands of increasingly large-scale and complex systems

Provides self-forming and self-healing with no single point of failure

Enables data-level security with full support for confidentiality, integrity and access control

RTI Connext DDS provides core connectivity to autonomous driving applications as well as other safety-critical applications across many industries. It is used through the entire prototyping, development and certified production process.

A fully autonomous car is essentially a self-driving robot with some of the most demanding safety requirements in any industry. The Data Distribution Service (DDS) standard, implemented in the RTI Connext DDS product, has its roots in autonomous robotics and is widely adopted by the military, aviation and medical industries for mission-critical and safety-critical systems. DDS has an innate ability to effectively address the fundamental requirements of real-time systems, such as reliability, performance and integration at scale. This makes it invaluable for autonomous car manufacturers.

Connext DDS is the only middleware technology to deliver microsecond latency, safety certification, fine-grained security and proven operational readiness. It can be found at the core of unmanned air systems, NASA rovers, as well as Advanced Driver Assistance Systems (ADAS) and autonomy platforms of leading car manufacturers.

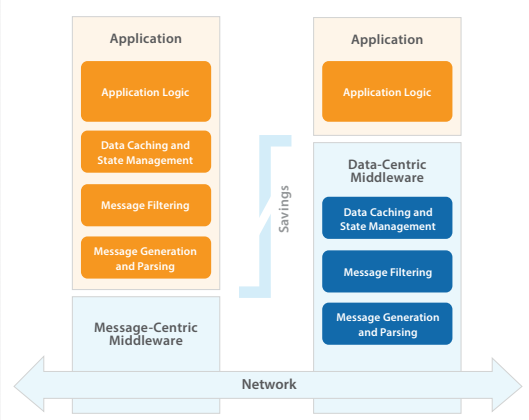
Autonomous car designers can leverage RTI's extensive experience with autonomous robotics, safety-critical systems and state-of-the-art architectures to simplify development, design, integration and certification.

Data Centricity and Autonomous Systems

Data-centric connectivity is a relatively new concept in distributed systems design. It originated in autonomous robotics and excels at simplifying complex integration and communication between individual robotic components. Researchers of autonomous vehicles at the Stanford Aerospace Robotics Laboratory pioneered the development of the core technology. In 2004, it was codified into the DDS standard.

Similar to a database, data-centric connectivity uses a well-defined data model as a shared interface for interaction between different components. Data-centric systems can be designed to detect and manage data model changes and adapt to these changes at runtime. This makes a data-centric connectivity approach very effective in any application with self-learning and/or self-remediation requirements, such as autonomous driving. In large projects, data centricity also helps minimize application interdependencies to enable parallel component development and rapid integration.

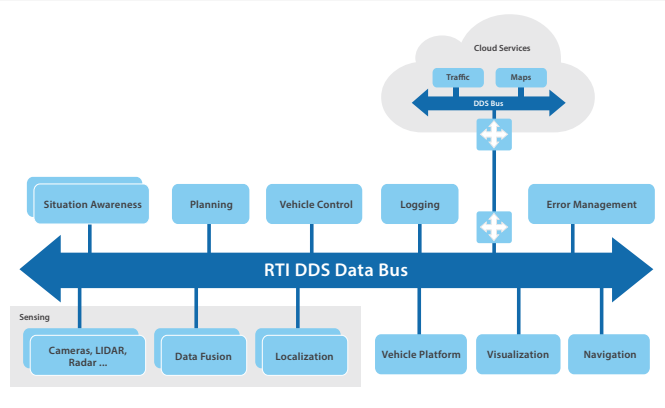
Unlike a message-centric model, a data-centric model encapsulates the functionality of data connectivity. It handles most of the functions that a message-centric model requires in an application, greatly reducing the application's complexity.



Why Choose RTI Connext DDS?

RTI Connext DDS addresses many critical requirements of ADAS and Autonomous Driving applications including:

- Quality of Service - a core feature of Connext DDS, delivers guaranteed latency and control over data flow and network bandwidth.
- Decoupling - middleware handles communication details, allowing applications to focus on the processing of data.
- Common data model - applications and systems share data using a common and well-defined data model across all components.
- Data-centric architecture - decoupling integration logic from system components with a data-centric architecture simplifies collaboration of global teams and suppliers.
- Scalability - Connext DDS can be efficiently used for many thousands of applications with hundreds of development teams worldwide.
- Real-world experience - Connext DDS has been developed with years of experience supporting customers with demanding industrial applications.



Connext DDS is the only middleware technology offering microsecond latency, ISO 26262 safety certification, fine-grained security and proven operational readiness for revenue-critical, multi-billion dollar automotive product lines.

About RTI

Real-Time Innovations (RTI) is the Industrial Internet of Things (IIoT) connectivity company. The RTI Connext® databus is a software framework that shares information in real time, making applications work together as one, integrated system. It connects across field, fog and cloud. Its reliability, security, performance and scalability are proven in the most demanding industrial systems. Deployed systems include medical devices and imaging; wind, hydro and solar power; autonomous planes, trains and cars; traffic control; Oil and Gas; robotics, ships and defense.

RTI is the largest vendor of products based on the Object Management Group (OMG) Data Distribution Service™ (DDS) standard. RTI is privately held and headquartered in Sunnyvale, California.

Your systems. Working as one.

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