

CAPABILITY BRIEF

# RTI Connex Cert for Connex Drive

AUTOMOTIVE CONNECTIVITY PLATFORM FOR FUNCTIONAL SAFETY-CRITICAL SYSTEMS

## HIGHLIGHTS

- Ability to meet stringent safety certification standards
- Commercially supported ISO 26262 ASIL D Certification Package
- Small memory footprint and support for low-power CPUs
- Platform-independent certification
- Future-proof and flexible

## OVERVIEW

Intelligent systems in functional safety environments are held to extremely high standards. Whether these applications are in next-generation Electrical/Electronic (Next Gen E/E) architectures, ADAS or V2X, they all rely on real-time data exchange to support real-time control and automated insight. With its small code size and fully deterministic behavior, Connex Cert for Connex Drive offers the portability and reliability demanded by these systems. It also works in devices with minimal memory, flash, CPU power or even no operating system.

By abstracting out low-level networking and communication details and providing a flexible integration framework, Connex Cert for Connex Drive reduces development time and cost by minimizing the amount of device or application-specific code that has to be created, saving developers from having to potentially write tens of thousands of lines of custom code.

Connex Drive is TÜV SÜD-certified to ASIL D to meet the Safety Life Cycle requirements set forth by ISO 26262. Connex Drive also includes all the necessary Safety artifacts and Safety Manual, which can significantly reduce FuSa Life Cycle efforts for system integrators.

Connex<sup>®</sup> Cert for Connex Drive<sup>®</sup> significantly reduces the time and cost of developing distributed, safety-critical systems by providing an off-the-shelf Certification Package. With the new platform-independent ASIL D TÜV SÜD certified software, there is no need for recertification if the vehicle OS or network interfaces changes, enabling developers to use the same framework from prototype to production.

Connex Drive is also compliant with the concept of Safety Element out of Context (SEooC), which is defined in ISO 26262-10 as the method for using components in a vehicle that were not originally designed for that specific project.

In practical terms, this design approach protects system integrators in the automotive world. The platform-independent certification not only allows for the reuse of embedded software, but also protects a certified environment from disruption, even if individual software elements or components are modified or discontinued.

## DESIGNED FOR SAFETY-CRITICAL APPLICATIONS

**Safety certification:** RTI Connex Cert for Connex Drive is certified as a SEooC to ISO 26262 ASIL D. RTI provides services to support certification efforts by developing the necessary certification artifacts, including system review, support, and full contextualization. Certification evidence is licensed separately.

**Small code size:** With minimized lines of source code, Connex Cert for Connex Drive provides a cost-effective foundation for rigorous certifications. And because it supports the DDS standard, applications are easier to develop, integrate, evolve and maintain

**Deterministic behavior:** The code is developed using process guidelines that ensure deterministic behavior. All memory allocation is done at startup, and no memory is freed at run-time.

## COMPREHENSIVE MESSAGING SOLUTION

**Peer-to-peer communication:** Connex Cert for Connex Drive uses an innovative, completely decentralized architecture that delivers consistent low latency, high throughput and scalability. Applications directly exchange data in a true peer-to-peer manner - no servers, message brokers or daemon processes are involved that could act as bottlenecks or single points of failure.

**Real-time Quality of Service (QoS):** Applications have comprehensive control over and visibility into real-time behavior, including timing, deadlines, resource utilization, and system state. QoS can be specified per-topic and per-subscriber.

**Optimized Publish-Subscribe:** Data can be reliably multicast to multiple applications and devices for extremely efficient streaming data distribution. With multicast, messages can be routed and filtered by the network switch, instead of by the middleware or application software.

**Wire efficiency:** The Real-Time Publish-Subscribe (RTPS) protocol is extremely wire efficient. Data is sent in a compact binary representation. Most metadata is only exchanged once, at discovery time.

## OPTIMIZED FOR SMALL-FOOTPRINT APPLICATIONS

**Low memory requirement:** Connex Cert for Connex Drive features a library that links with developer applications. The library size is optimized for small-footprint applications and memory allocation is kept to a minimum.

**Highly portable:** Connex Cert for Connex Drive is OS and network-interface independent. With the new platform-independent ASIL D TÜV SÜD certified software, there is no need for recertification if the vehicle OS or network interfaces changes, enabling developers to use the same framework from prototype to production.

To learn more about Connex Drive, visit: [rti.com/drive](https://rti.com/drive)

## ABOUT RTI

Real-Time Innovations (RTI) is the largest software framework company for autonomous systems. RTI Connex<sup>®</sup> is the world's leading architecture for developing intelligent distributed systems. Uniquely, Connex 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 2,000 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<sup>®</sup> (OMG<sup>®</sup>) Data Distribution Service<sup>™</sup> (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 Connex Drive software today: [www.rti.com/downloads](https://www.rti.com/downloads).

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