



# zetta auto

Our answer to cutting-edge communication technologies  
for the future of the automotive industry.

# Zetta Auto is the unified solution for in-vehicle and V2X communication for the automotive market by TTTech Auto and ZettaScale.

Targeting service-oriented architectures (SOA) for in-vehicle communication, Zetta Auto builds upon ZettaScale's open core Eclipse Cyclone DDS, a proven, performant, interoperable, scalable and real-time capable implementation of OMG Data Distribution Service (DDS) and Eclipse Zenoh a next generation pub/sub/query protocol with incredible high performance and scalability and exceptionally low resource usage. Zetta Auto extends these core technologies with automotive features such as integration with Time Sensitive Networking (TSN) to provide end-to-end communication properties and compatibility with AUTOSAR Classic RTE communication on Microcontrollers (MCUs).

It also comes with an integrated tool suite that enables users to configure, monitor and record & replay communication data as well as their TSN network. Zetta Auto Certified, coming in early 2024, will furthermore offer an ISO 26262 ASIL-D certified version of the in-vehicle stack.

Looking beyond the vehicle, customers currently find it technically challenging communicating and managing data in the cloud-to-microcontroller continuum. This is due to the diverse set of environments, requirements, and technical solutions. Thanks to the seamless interoperability with the Zetta Platform, Zetta Auto will make it possible to seamlessly manage and communicate data between the cloud and the vehicle.

**Note:** *Zetta Auto is currently available in Early Access for select customers and some features are still under development. Zetta Auto is scheduled to be widely available by Q4 2023.*

# Zetta Auto USPs



Suitable for prototype and production systems, enabling seamless transition between development phases



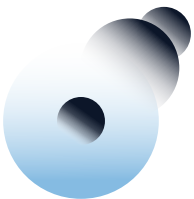
ISO26262 ASIL-D certification in progress



Safe and performant inter-process communication



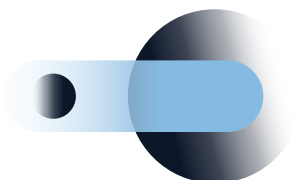
Build upon a cross-industry proven open core



End-to-end timing properties with Time Sensitive Networking (TSN) integration



Integrated tool suite for DDS and TSN



Unified communication for the Software-Defined Vehicle, in-vehicle and V2X.

## Highlight product features

### In-vehicle communication stack

#### SOA communication with Cyclone DDS for the automotive industry

- Build your in-vehicle communication stack on a standards-based solution compliant with: OMG DDS v1.4, OMG IDL4 v4.2 and OMG DDS-RTPS v2.5 specifications.
- Brings developers a best-in-class user experience with C, C++ and Python APIs.
- High performance zero-copy shared memory management, fully abstracted for the user.
- Broad automotive ecosystems support across operating systems (Linux, QNX) and automotive middlewares: MotionWise – TTTech Auto's Safety Middleware, ROS2 and Autosar Adaptive.

#### Built together with TSN for end-to-end predictable communication

- Zetta Auto leverages TSN (IEEE 802.1Qbv Time Aware Shaping) and unleashes both DDS and TSN to achieve communication timing properties.
- Includes end-to-end tool for the configuration of TSN networks, topology design, traffic scheduling and deployment of the result.

#### Resource-efficient and performant microcontroller solution with Zenoh Pico<sup>1</sup>

- Optimized MCU stack and integrated tooling that enables access to DDS topics through AUTOSAR Classic RTE.
- Minimal resource usage and optimal performance in comparison to XRCE-DDS implementations for resource-constrained environments.

## V2X communication stack

#### Pub/sub/query from cloud-to-vehicle

- Built on Zenoh protocol<sup>1</sup>, Zetta Platform<sup>2</sup> and fully integrated with Cyclone DDS
- Unified data in motion, data at rest and computations from microcontrollers up to the data center
- Location-transparent abstractions for high performance pub/sub and distributed queries across heterogeneous systems
- Supports a continuously expanding set of Protocol and Storage plug-ins, such as MQTT, REST and a variety of storage providers

<sup>1</sup> more info at [zenoh.io](https://zenoh.io)

<sup>2</sup> more info at [zettascale.tech/zetta-platform/](https://zettascale.tech/zetta-platform/)

# Tool Suite

## Monitor, configure and test your network with NetLens

- Provides a dashboard to capture the Key DDS computational entity, Data & metadata they exchange and their QoSes.
- Detects QoS conflicts, datatype, and configuration mismatches.
- Provides System-wide view of the network topology and the helps making health monitoring.
- Operates in headless and GUI based mode from any place in the network.
- Measurement tool for key performance indicators such as latency, throughput and roundtrip time in your own system.

## Plan your TSN network with Slate

- Provides GUI to define the network topology and visualization of the schedule.
- Supports Windows and Linux.
- Schedule your network traffic based on supported TSN profiles: 802.1AS, 802.1Qbv, 802.1Qbu, 802.1Qci and 802.1CB.
- Deploy schedule in supported TSN switches through a standard configuration process (YAML).
- Integrate into custom toolchain via CLI.