# RTaW-Pegase

RTaW-Pegase supports the design of safe and optimized networks including automotive, aerospace, industrial Ethernet and TSN networks, CAN (FD,XL), LIN, Arinc and wireless networks. Pegase speeds-up the design exploration, optimization and validation of next-generation Software-Defined Systems. In addition to timing-accurate simulation, Pegase computes precise upper bounds on communication delays and buffer usage, and offers advanced automated configuration algorithms to ensure the correctness and efficient use of HW and SW components.
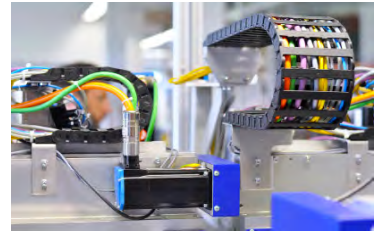

Trusted for over 15 years to design mission critical Electronic Architectures in the automotive, aerospace and industrial sectors

Modeling, Configuration and Simulation for Embedded Networks Networks and Real-Time Software

How RTaW-Pegase Enhances Your Network Design?

Evidence-based design — Pegase provides detailed performance metrics, including network loads, response times, jitters, and buffer usage, allowing you to predict system performance across various scenarios.The tool also offers features to compare different design and configuration options, supporting you throughout the entire development cycle.

Cost-optimize your networks — Pegase enables you to avoid over-provisioning of resources (processors, link speeds, memory in switches, unneeded technologies, etc). In addition, RTaW-Pegase includes design space exploration algorithms to optimize network topologies (e.g., number and location of switches), data streams routing and allocation of the software functions on the stations. Cost-performance trade-offs can be compared using built-in cost models.
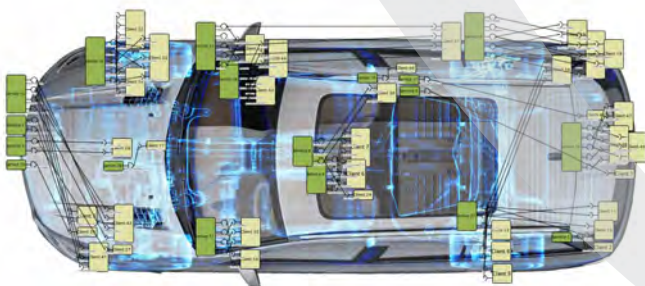

Future-Proof Design — Our Topology Stress Test® (TST) function predicts how much traffic your network can handle, helping you design for future scalability.

Results you can trust — RTaW-Pegase uses Network Calculus for timing verification, a method accepted in aeronautics certification. The core algorithms are detailed in peer-reviewed scientific publications – see the technical papers co-authored with our partners.

Proven Track Record — Since 2008, leading companies in automotive, aerospace, and industrial sectors have trusted RTaW-Pegase – see the companies that rely on us for their critical network design needs.

Reduce Time-to-Market — Our proprietary ZeroConfig-TSN® (ZCT) generative design algorithm accelerates TSN network design by up to 30 times or more.

Want To Know More about Pegase? Contact the product manager for a Webex demo and a free fully functional evaluation version.
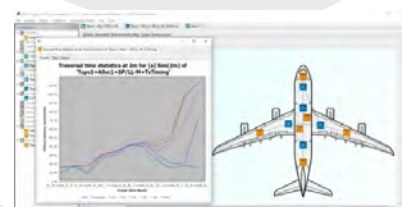
KEY FEATURES

- **Comprehensive Ethernet Support:** Supports automotive, aerospace, and industrial Ethernet, including 802.1Q TSN, AVB Credit-Based Shaper, Time-Aware Shaper, Asynchronous Traffic Shaper, frame preemption, frame replication, PSFP policing, AS-2020 clock synchronization, 10BASE-T1S, SOME/TP (TP), DDS, DoIP, and AVTP. Also supports Time-Triggered Ethernet and AFDX for arbitrary speeds and topologies.

- **Performance Evaluation of Heterogeneous Architectures:** worst-case analysis and timing-accurate simulation of communication architectures composed of CAN (2.0A, 2.0B, CAN FD, CAN XL, and ARINC825), switched Ethernet, AFDX, TTE, FlexRay, LIN, PON (ETA 2024/10) and ARINC429, interconnected through gateways.

- **Service-Oriented Communication with SOME/IP and DDS**, combined with dedicated TSN configuration algorithms, ensures reliable and timely delivery of services.

- **Support for Diverse Traffic Patterns:** Handles periodic and sporadic message transmission patterns, UDP and TCP transmissions, segmented messages (e.g., video streams and FTP traffic), and complex transmission patterns (e.g., DoIp protocol, patterns defined via Java plugin),

- **Comprehensive Support for Timing and Reliability QoS**: Supports FIFO, priority, AVB credit-based shaper, TSN time-aware shaper, frame preemption, Asynchronous Traffic Shapers, traffic policing (PSFP, IEEE802.1Qci), frame replication (FRER, IEEE802.11CB), TTEthernet (SAE AS6802) and round-robin frame schedulers,

- **Optimized Scheduling for TSN:** Provides optimized transmission schedules for TSN Time-Aware Shaper (IEEE 802.11Qbv), meeting stringent timing constraints.

- **Comprehensive Performance Prediction:** Offers both worst-case analysis and timing-accurate simulations, with a parallelized engine to predict worst-case and typical performance scenarios.

- **System-Level Modeling:** The Software-Defined Vehicles (SDV) module enables modeling, simulation, and worst-case analysis of software components on multi-core processors. System-level timing chains can be visualized via Gantt charts.

- **ZeroConfig-TSN**: a "push-button" approach to automate the selection and configuration of TSN networks,

- **Topology Stress Test** facilitates early-stage design decisions without full knowledge of communication requirements, allowing for exploration of topological and technological choices.

- **Optimized Configuration Algorithms:** Includes optimized priority allocation and routing algorithms, configuration algorithms for AVB credit-based shaper, TSN time-aware shaper and the asynchronous traffic shaper.

- Runs on any OS supporting Java

- **Seamless Data Exchange:** import/export configurations and results through Java plug-ins, CSV, XLS, XML, YANG (IETF/IEEE), and other industry-standard formats.

- **API availability:** RTaW-Pegase functionalities are also available through the Pegase Java library for integration into your own programs.

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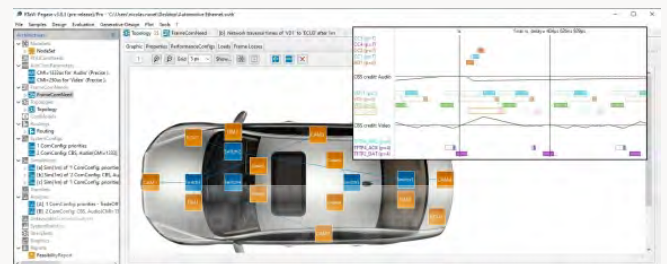
RTaW-Pegase received the Best Demo Award at the 32nd IEEE Real-Time Systems Symposium

Product homepage at

RTaW
RealTime-at-Work

RTaW-Pegase enables the safety of millions of vehicles across more than 35 OEMs