



# Integrated DDS for secure, Safety-critical Systems

## PikeOS and RTI Connex<sup>®</sup>

With the growing demand of systems getting connected in the IoT, real-time applications have the need to use peer-to-peer communication. Data Distribution Services (DDS) is an open industry standard for data-centric connectivity, which uses the publish-subscribe communications model to make data distribution efficient and robust. DDS is getting more common in e.g. autonomous cars, trains or drones.

RTI Connex is a market leading commercial DDS solution. SYSGO has partnered with RTI to integrate the Connex DDS platform with SYSGO's hard real-time operating system (RTOS) PikeOS and embedded Linux distribution ELinOS to help customers to facilitate and optimize the development of their complex distributed systems.

### SOFTWARE PLATFORM & SECURITY SOLUTIONS

With SYSGO's certifiable PikeOS incl. Hypervisor, a variety of virtual partitions can be configured. PikeOS is developed for mixed criticality with real-time capabilities (supporting POSIX and Linux partitions). The DDS middleware framework running on PikeOS provides an open standard, which is easily interoperable for inter-partition communication and with external systems. It provides extensive Quality of Service (QoS) capabilities that allow the systems to get the right data from the right equipment to the right operators in real-time across several different data transports.

systems that can communicate across several different data transports while providing the fault tolerance, resiliency and Security required by Safety-critical applications.

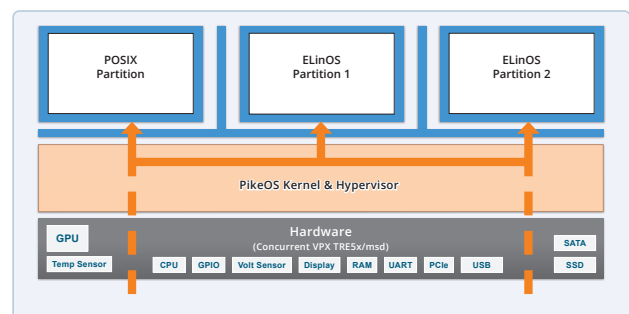
DDS middleware framework running on PikeOS provides a Modular Open Systems Approach (MOSA) to create a common data communications framework for Safety-critical

By a combination of RTI DDS Connex and PikeOS, customers benefit from:

- Minimized integration risks and lower cost
- Maximized reuse of previously integrated components
- Communications between software/hardware products are easier to establish and maintain
- Hardware and software conforms to relevant industry standards
- Pre-certified components for Safety / Security use cases

### EXEMPLARY DEMONSTRATOR

We are demonstrating a proven COTS hardware/software solution: The demonstrator is a joint effort from Concurrent Technologies, SYSGO, RTI and ENSCO to showcase a proven COTS hardware/software solution (that combines cockpit displays, data transport connectivity, Safety RTOS and Hypervisor on a TR E5x/msd - 3U VPX Module, i.e. based on Intel Xeon processor E3-1500 v5) and reduces integration and certification risk while accelerating time-to-market and deployment of secure, Safety-critical systems.



#### POSIX Partition

- Separate thread to fetch the aircraft data via UDP socket
- Separate thread publishes the flight location data

#### ELinOS Partition 1 +2

- Subscribe the flight location data from POSIX partition

**About RTI** - Real-Time Innovations (RTI) is the largest software framework provider for smart machines and real-world systems. The company's RTI Connex<sup>®</sup> product enables intelligent architecture by sharing information in real time, making large applications work together as one. RTI software runs the largest power plants in North America, connects perception to control in vehicles, coordinates combat management on US Navy ships, drives a new generation of medical robotics, controls hyperloop and flying cars, and provides 24/7 medical intelligence.

**About SYSGO** - Founded in 1991, SYSGO became a trusted advisor for Embedded Operating Systems and is the European leader in hypervisor-based OS technology offering worldwide product life cycle support. We are well positioned to meet customer needs in all industries and offer tailor-made solutions with highest expectations in Safety & Security.