PRO-VE 2026 Special Session

Time Sensitive Networks for Distributed Safety-Critical Systems

Scope

The evolution of industrial environments towards Industry 5.0 relies fundamentally on the seamless, resilient, and safe exchange of data across physical and digital boundaries to allow ubiquitous and safe interaction between human operators, embodied AI, and autonomous systems. This special session addresses the fundamental infrastructure required for effective cooperation within these dynamic settings, focusing on the convergence of deterministic communication technologies, such as Time-Sensitive Networking (TSN) and 5G/6G, with functional safety protocols. We specifically explore how this convergence, alongside distributed measurement systems and Digital Twins, can guarantee trust, enhance system resilience, and prevent failures in dynamic environments. Redundant communication channels, such as those enabled by lightweight publish-subscribe protocols like MQTT, further strengthen this resilience by ensuring continuous data flow even under partial network failures. By bridging the gap between high-level collaborative strategies and the strict requirements of real-time Cyber-Physical Systems, this session aims to collect new architectural standards for secure, wireless, resilient, and mobile collaboration. We invite contributions investigating network-aware control, resilient connectivity, synchronized sensing, and safety-critical wireless frameworks that sustain the life cycle of evolving hybrid communications networks.

Session Organizers

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Topics/ Keywords

- Time-Sensitive Networking (TSN)
- Functional Safety and Safety-Critical Systems
- Industrial Wireless Collaborative Networks
- Collaborative Digital Twins
- Resilient and Fault-Tolerant Communication Architectures
- Network-Aware and Adaptive Control under Uncertainty

Submission procedure

Special sessions are included in the main Conference and follow the same reviewing process.

10 Apr 2026 - Abstract submission (optional)
8 May 2026 - Full paper submission
19 June 2026 - Results notification
3 July 2026 - Camera-ready version
26-28 October, 2026 - Conference

Acceptance of papers is based on the **full paper** (up to **16** pages). Each paper will be evaluated by three members of the International Program Committee.

When submitting on the web site, you have to select the name of the special session.
Submission procedure via Easychair available on: http://www.pro-ve.org, with copy by email to the chairs of the special session.