22nd IEEE International Conference on Factory Communication Systems

SPECIAL SESSION SS7 – Real Time Communication for AGVs, UAVs and Self-Driving-Machines in Vertical Industries

ORGANIZED BY:

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DESCRIPTION

Moving and self-driving machines and robots like Automated Guided Vehicles (AGVs) and Unmanned Aerial Vehicles (UAVs) are important for different branches of industry nowadays. For factories and production, they play an important role by transporting assembly parts or resources. In agriculture, they are used for spraying crops, phenotyping and harvesting. Besides other, statically placed machines, these machines tend to move into different areas. Therefore, a classical wired connection using an industry class network stack for providing low latency and Quality of Service (QoS) is not possible. The only solution is to use wireless network technologies. One key challenge is here, to provide the needed QoS level. Due to the machine movement, the environment is constantly changing, as well as the wireless link conditions. To handle these challenges, the 3GPP has defined a way of combining Time Sensitive Networking (TSN), an amendment to the Ethernet standard by the IEEE, with 5G. However, the concrete combination of these two technologies is still an active field of research needing practical experience and applicable alternative approaches. Manufacturing requires a robust and reliable set of industrial processes that have been established over years with a set of proprietary solutions built on top of standard Ethernet. Those processes have been maturing over time and will remain in place until wireless TSN proves the required reliability. In this workshop state of the art work related to interoperability and benchmarking of those technologies i.e. Profinet, Ethercat, etc with wired and wireless TSN are relevant. Therefore, this session is made up for the topic of combining TSN (or other low latency networking) and wireless technologies, like 5G, for AGVs and UAVs in vertical industries. It welcomes contributions tackling current issues, presenting experience from testbeds and real-world scenarios and innovations for wireless TSN.

FOCUS

The Special Session focuses on (but is not limited to):

- Time Synchronization of TSN and 5G networks according to the 3GPP standards or alternatives
- Wireless TSN testbeds and benchmarking
- Enhancements of 5G URLLC
- Experimental results from real-world scenarios and / or simulations
- Management of wireless TSN networks
- Proposals for the handling of the configuration for the virtual TSN bridge on the 5G side
- Deployment of wireless TSN networks
- TSN using new Wi-Fi standards and industrial Wi-Fi

PAPER SUBMISSION: Instructions for paper submission are included in the conference website: https://hs-offenburg.de/wfcs26

IMPORTANT DATES

Regular/SS submissions:
Deadline: **January 11**, 2026
Notifications: **February 22**, 2026
Final versions: **March 1**, 2026

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