

Zurich University of Applied Sciences

Overview

The Zurich University of Applied Sciences (in German language: Zürcher Hochschule für Angewandte Wissenschaften - ZHAW) is the largest University of this kind in Switzerland, with a strong presence both nationally and internationally. Among the ZHAW's distinguishing features are interdisciplinarity and a close connection to everyday working practice. The ZHAW is located in Winterthur and consists of different departments such as economics, law, health care, life sciences, architecture, aviation, transportation, and engineering. Over 20 institutes and 30 centres network their resources to provide business and industry with customised services.

The Institute of Embedded Systems - InES

The Institute of Embedded Systems (InES – <http://ines.zhaw.ch>) as a part of the School of Engineering is a Master Research Unit with activities in the fields of design and implementation of real-time systems (i.e. embedded software, microelectronics, communication technologies). About 40 professionals (lecturers and research assistants) work in the institute in the areas of education, R&D, and consultancy. The most important research area is industrial communications, focused Ethernet based networks with deterministic and real-time behaviour, synchronization capabilities, and/or high availability mechanisms.

The institute is an active contributor in different standardization bodies and fora:

- as founding member of the ETHERNET Powerlink Standardization Group (EPSG - <http://www.ethernet-powerlink.org/>)
- as ProfiNet Competence Center (PNCC - <http://www.profibus.com/pall/support/pccs/article/01363/>)
- as vice-chair in the IEEE 1588 working group (<http://ieee1588.nist.gov/>)
- as experts in IEC TC65, where real-time and high availability protocols for Ethernet for industrial applications are standardized



The institute's main competences are protocol analysis, design and implementation, logic design (VHDL), embedded software, real-time operating systems, protocol hardware acceleration, physical and link layer operation, Ethernet switching.

Topics of Workshop Contributions

These topics are directed to the requests of the workshop organization, i.e. to open and standardized Ethernet based synchronization solutions:

1) IEEE 1588

- Short introduction to the Precision Time Protocol (PTP)
- Different mappings (lightweight version)
- Transparent clocks
- Limiting factors of PTP applied in Ethernets
- Relevance in industry (silicon providers and application sectors)

2) Synchronous Ethernet

- Operational principle
- Relevance in industry (silicon providers and application sectors)

3) IEEE 1588 vs Synchronous Ethernet

Workshop Participation

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