

September 12 – 15, 2017 - Limassol, Cyprus

Call for Papers / Invitation to Special Session

SS03. Flexibility, Predictability and Safety in Time-Triggered Systems

Special Session Organizers

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Aim:

Time-triggered (TT) systems are widely disseminated in the industrial domain, being the preferred choice when high predictability is a requirement. These systems set a strict globally synchronized framework that allows all intervening nodes to know when actions are expected, notably message transmissions. Consequently, contention for shared resources can be eliminated, integration can be achieved without global interference, end-to-end delays can be minimized and missing or out-of-time actions can be promptly detected, boosting predictability and facilitating safety. Paradoxically, global synchronization also sets a tight coupling among all system components that complicates global design in the project phase but also its adaptations or reconfigurations during the system lifetime, particularly when carried out online.

This complication is exacerbated by recent trends, such as Industry 4.0 or Industrial Internet of Things (IIoT), which call for the capacity to integrate online potentially large numbers of highly heterogeneous devices, subsystems and technologies. Carrying out online changes in current TT systems that typically follow a distributed approach to the global synchronization requires a global agreement on what and when to change that is hard to achieve and enforce.

On an orthogonal axis, virtually all systems have information generated by asynchronous events that, in such synchronized systems, has to be accommodated in a controlled way. This also represents a degree of flexibility of the whole framework but the referred accommodation inevitably generates delays and some bandwidth waste that bounds efficiency in the use of communication resources.

Therefore, this session aims at bringing together experts in TT designs from industry and academia, to discuss the challenges involved in and possible strategies to improving the flexibility of time-triggered systems without jeopardizing predictability and safety, with a look on existing frameworks and recent related works. In particular, we seek original works to be submitted as regular or work-in-progress papers to ETFA 2017 addressing some of the topics listed below, or other ones related to the main topic of this Special Session.

This special session will be focusing on (but not limited to) the following topics:

- Dynamic reconfiguration of TT real-time systems
- Online admission control for evolvable TT systems
- QoS management in flexible TT systems
- Fault-tolerance techniques for flexible TT systems
- Flexible TT communications protocols
- Efficient handling of events in TT systems

Submission of Papers: The working language of the conference is English. Papers are limited to 8 double column pages in a font no smaller than 10-points. Manuscripts must be submitted electronically in PDF format, according to the instructions contained in the Conference web site.

Paper Acceptance: Each accepted paper must be presented at the conference by one of the authors. The final manuscript must be accompanied by a registration form and a registration fee payment proof. All conference attendees, including authors and session chairpersons, must pay the conference registration fee, and their travel expenses.

No-show Policy: The ETFA2017 Organizing Committee reserves the right to exclude a paper from distribution after the conference at IEEE Xplore if the paper is not presented at the conference.

Author's Schedule:

Deadline for submission of special sessions papers:

April 9, 2017

Notification of acceptance of special sessions papers:

May 15, 2017

Deadline for submission of final manuscripts – special sessions:

July 2, 2017

<http://www.etfa2017.org>