Formal languages and methods for designing and verifying avionics, space and transport systems

Due to safety constraints, avionics, aerospace and more generally transport systems often have to go through certification. This requires testing, and a design process based on a set of tight rules. However, due to their increasing complexity, there is clearly no guarantee that such tight rules and rigorous testing will lead to error free systems. An alternative approach for helping embedded (transport) system designers is formal methods, i.e. fundamental languages, techniques and tools for design, analysis, validation or transformation of systems in a provably correct way. Indeed, formal techniques, in particular formal specification languages and associated proof tools, could be an advantageous alternative or at least a good complement which would facilitate a significant reduction in test phases. Several formal languages methods, tools and techniques have been applied for the development of such systems in different parts of the world and they have been put into practice during the development of actual, specific programmes (aircraft, space vehicle…).

This thematic track is devoted to compile the state-of-the-art in formal methods applied to the development of avionics, aerospace and transport systems. It will highlight on the recent advances in the use of these methods. Particularly welcome are reports, research and position papers, issued either from the academic or industrial worlds, presenting

- original contributions
- work-in-progress
- position papers
- experiments on industrial case studies.

The Special Track will be part of the 2008 ISoLA International Symposium on Leveraging Applications of Formal Methods, Verification and Validation.

Topics of interest include (but are not limited to):

- specification, design and architecture languages
- validation and verification methods for critical embedded systems, such as model checking, proof based techniques…
- functional requirements engineering
- methods for human-machine interface verification
- case studies and project results in the context of avionics and/or aerospace applications.

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