

2nd Workshop on Avionics Systems and Software Engineering

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Abstract: Companies are struggling with the complexity of avionics systems. A lot of effort is required for the development of such systems. As appropriate tools and methods are supposed to be an effective lever, there is a high demand for increasing their efficiency. The AvioSE workshop continues to be a forum for people working on increasing the efficiency for the development of avionics systems.

Keywords: avionics; systems engineering; software engineering; formal methods; model-based; requirement; qualification; certification; simulation; process; tool

1 Introduction

Aerospace applications depend heavily on software and hardware, but complexity, both safety and security demands, and regulations make their development ambitious. Research progress in development efficiency can be observed to be of uttermost significance. AvioSE'19⁴ demonstrated successful exchange and collaboration in technological applications and in methodological approaches. For both areas there is still a large gap between the provision of research results and their wide industrial adoption. Fostering the cooperation between industry and research is the main objective for achieving significant technological progress and enable enhancements in the development process.

In addition, AvioSE'20 addresses **tools and their usage in aerospace**. The tools' underlying concepts, e. g. textual, model-based; the process, e. g. V-model, agile; the tool implementation, e. g. qualified, proprietary, in-house development, open source; and the tool ecosystem, e. g. manual conversion, seamless-tool chain, one-tool-for-all, differ. It shall be figured out with the participants, if there is a most promising approach for the usage of tools and how tools for new methods must look like to gain most benefit in the avionics domain.

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⁴ Annighoefer et al., 1st Workshop on Avionics Systems and Software Engineering (AvioSE'19), 2019. Annighoefer et al., Challenges and Ways Forward for Avionics Platforms and their Development in 2019, in IEEE/AIAA 38th Digital Avionics Systems Conference (DASC), 2019.

2 Workshop Objectives

The main objective of the workshop is to accelerate the transfer of knowledge between academia and industry. This workshop provides the enabling platform for these stakeholders to discuss technical, but also process, and educational topics.

The objectives of AvioSE'20 are three-fold: (1) It provides a forum for researchers from both academia and industry to present new methods, tools, and technologies from avionics systems and software engineering, e. g. model-based development, requirements engineering, formal methods, model-based methods, and virtual methods. Those contributions are presented in a scientific format, but the small character of the workshop allows detailed discussion. (2) **Tools and their usage in avionics** are selected to be the main topic of AvioSE'20. This is addressed interactively by inviting all participants to discuss aspects of the tools topic, i. e. tool properties, tool qualification, tool integration into the development process, tool implementation, and tool ecosystems. The objective is to bring people together in small breakout groups. This covers connecting academics and professionals with experts. Each breakout group shall figure out the most important issues of their aspect and propose ways how to address them. The results are made available to all participants with the presentations of the breakout groups' conclusions. (3) The AvioSE'20 also allows for a wild card topic that might show up during the workshop.

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