

Keynote #2: On safety and real-time in embedded operating systems using modern processor architectures in different safety-critical applications

Dr. Michael Paulitsch

Dependability Systems Architect (Principal Engineer), Intel

Abstract

Modern systems in safety-critical systems in transport industries like railway, aerospace and automotive have different requirements on real time performance. One has tight real-time need, the other only real-time oversight. Understanding the difference can be critical to optimal operating systems approaches.

The talk argues on the approaches, presents the key differentiators, different industries and requirements. It briefly presents known approaches to guaranteeing real-time performance and outlines on needs in this area. It presents upcoming challenges with modern computing architectures like addressing real-time with architectures including more on-chip accelerators. Guaranteeing hard real-time performance could become harder to achieve with such architectures. However, system-level support of timing synchronization and coordination may help in this respect. Additionally new safety and security requirements may lead to additional OS service needs.

Bio

Michael Paulitsch is *Dependability Systems Architect* (Principal Engineer) at Intel, Munich, Germany, as part Intel Labs Europe, since 3/2018. His research interests are in dependable systems including security aspects of all types of cyber physical systems.

From August 2014 to March 2018, He has been *Head of Base Systems and Product Line Manager Vital Platform* of Main Line Systems at Thales Austria GmbH (part of Thales Ground Transportation Systems) in Vienna, Austria. In these roles he has been responsible for the execution and strategy of as well as research on a safety-critical computing and communication platform with security requirements – called Thales TAS Platform.

Before this, Michael has been Senior Expert of “Dependable Computing and Networks” as well as Scientific Director at Airbus Group Innovations in the “Electronic, Communication and Intelligent Systems” department based in Munich, Germany. There his work focused on dependable embedded and secure embedded computing and networks. From 2003 to 2008, he worked at Honeywell Aerospace in the U.S. on software and electronic platforms in the area of business, regional, air transport, and human space avionics and engine control electronics.

Michael Paulitsch published 50+ scientific papers in his area of expertise, participates in internal scientific conference committees and holds 25+ patents. He holds a doctoral degree in technical sciences from the Vienna University of Technology, Vienna, Austria with emphasis on *dependable embedded systems* and a doctoral degree in economics and social sciences with emphasis on *production management aspects*.