



# Federal University of Santa Catarina

## Software/Hardware Integration Lab

### Call for Participation



Date: Nov 23, 2015

Time: 9:10

Place: CEM A207

## Trends for Flight Control Computers to be Used in UAV's Operating in Civil Airspace

### Peter Hartlmüller

Currently high reliable computing systems are built upon standard microPROCESSORS. However the trend on the high performance embedded computing market is moving towards multi core microCOMPUTERS using complex techniques to optimize the average performance. Dedicated on chip computing elements for special application domains further boost this trend. A deterministic behavior of the computing system is sacrificed along this way.

It is now the question, which computing architectures might be used in the future for safety critical computing systems with hard realtime constraints.

In the talk the special requirements put on flight control computers are explained. Current implementations are analyzed and possible future architectures are introduced. Special focus is put on implementations based on automotive microcontrollers or Systems on a Chip (SoC) since these exhibit interesting features, especially for flight control computers to be used in UAVs which operate autonomously in civil airspace.

Peter Hartmüller holds the Airbus endowed chair "Engineering of Safety Related Systems" at the Faculty for Electrical Engineering and Computer Science of the Technische Hochschule Ingolstadt, Germany. He has previously worked at the Lunds University of Applied Science and Daimler-Benz Aerospace. His main research interests are real-time systems and embedded systems. Prof. Hartmüller received a P.h.D. degree from University of the Federal Armed Forces, Munich (1986), a M.Sc. degree from the University of California, Santa Barbara (1981) and B.Sc. degree from the Technische Universität München (1980).

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