

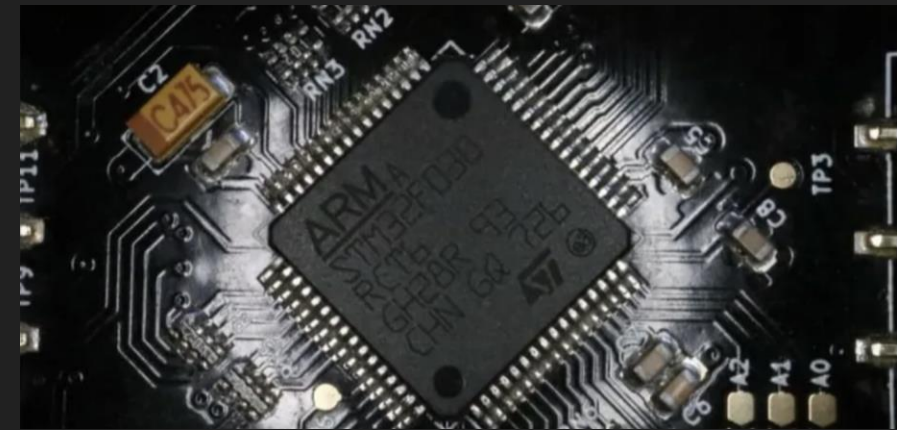
Multicore Avionics Operational Analysis

Lightning Talk 1: User Needs and Personas

Alex Bashara, Joe Dicklin, Hank Haldin, Anthony Manschula

Project Overview

- Multicore avionics systems
 - Meet the increasing compute demand of modern avionics software
 - Programs competing for resources between cores can introduce interference & affect execution timing behavior
 - Ability to examine and verify the effects of interference is critical for FAA certification
- Reference ARM-based SoC and bare-metal hypervisor
 - Run control applications with the system under extreme load
 - Collect and analyze data on worst-case execution time (WCET)



Problem Statement

- Our project addresses a need for a suite of open-source tools to characterize architectural interference in multicore avionics systems
 - Identify potential interference channels on a multicore platform
 - "Control tests" as a baseline that target each channel for use in analysis
 - Set of tools to apply stress and contention to the identified subsystems in a controlled manner
 - Set of tools/methods to demonstrate mitigation of interference channels
 - Integrate testing and analysis tools into unified suite

List and Description of user's personas

- Non-technical Nancy
 - Higher up manager
 - Bad with computers
 - Deals with client feedback
- Technical Timothy
 - SCRUM team lead
 - Project manager
 - Technical specialist
 - Embedded technologies expert



Nancy



Timothy

User Needs

○ Non-Technical Nancy

- Needs technical support from other departments to cover issues
- Needs a method to communicate with and understand the work of engineers
- Needs to be able to communicate the value of their department's work to other departments

○ Technical Timothy

- Needs a comprehensive tool suite to validate Multi-core SoCs
- Needs to satisfy FAA regulations and standards
- Needs to complete work assigned by engineering managers by deadlines

For the Audience

- Conclusion
 - The team must consider a wide variety of users' perspectives and technical abilities. Our product must be accessible to both technical and non-technical employees.
- Questions?

