OPEN ARCHITECTURE PLATFORMS FOR AVIONICS APPLICATIONS: CHALLENGES IN SAFETY CRITICAL SYSTEMS AND POSSIBLE SOLUTIONS

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Abstract

Open Architecture Computing Platforms are the basis for competitive avionic systems. This platforms are standardized and can be used for various applications, reducing cost and risk. An additional advantage is the ease for porting of existing applications on updated avionics computing platforms i.e. in case of obsolescence. The basis for such platforms are powerful microprocessors. The trend in the consumer market to move from classical Single-Core Processors to Multi-Core Processors (MCP) based on Systems on a Chips (SOC)s imposes various limitations to the avionics industry. To demonstrate robust time and space partitioning for Multi-Core-Processors is challenging and in some cases even impossible. Certification challenges, existing guidance, possible solutions and possible way ahead are discussed in this paper.