

ASIML-1553: A MARKUP LANGUAGE FOR MIL-STD-1553B AVIONICS BUS SCHEDULER AND INTERFACE CONTROL

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Abstract

Modern avionics is highly software intensive with various software components residing on different subsystems interfaced through avionics bus. Avionics system designer is responsible for defining the bus frame timings, message transmissions schedules and details of interfaces. These are translated into design and finally into source code by the designers of individual subsystems. Growing complexity of avionics software coupled with frequent changes has necessitated use of highly layered architecture with tight partitions and open standards in order to obtain better maintainability, testability, portability and ease of upgrade. Textual configuration files offer benefit over embedding the configuration details into the code in terms of development, testing and certification efforts. XML is emerging as the worldwide standard for defining configuration files. This paper proposes ASIMI-1553, a markup language for defining configuration files for avionics bus scheduler and interface control for MIL-STD-1553B bus. Data from a typical combat aircraft are taken as case study to discuss the advantages ASIML-1553 offers in terms of turn-around time, quality and reliability. ASIML-1553 can easily be adapted for interfaces other than MIL-STD-1553B such as ARINC-429 or Ethernet.

Keywords: Avionics, MIL-STD-1553B, ARINC, Ethernet, XML. Software Quality and Reliability, Open Standards

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