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Certification; 2.2.2.2. DO-331: Model-based development and verification; 2.2.3. A sophisticated methodology for the development of complex onboard systems; 2.3. Methodology of rapid development in seven stages; 2.3.1. Presentation of the different stages; 2.3.2. Advantages of the methodology; 2.3.3. Example of the benefits of using our model-based methodology; 2.3.4. Instantiation of the methodology with different tools

2.3.4.1. Summary of compatible tool chains 2.3.4.2. Organization of the architecture of the software solution; 2.3.4.3. Design: modeling with Simulink and Stateflow; 2.3.4.4. Transforming into the language C with Gene-Auto; 2.3.4.5. Execution with a strengthened onboard operating system; 2.3.4.5.1. Glueing and compiling code; 2.3.4.5.2. Integration with Sysgo PikeOS; 2.4. Chapter summary; Chapter3: Implementing the Prototyping Methodology to Develop a Next Generation Avionic Router; 3.1. Introduction to next generation aeronautical communication domains

3.1.1. Avionic and aeronautical network domains 3.1.2. Communication standards and protocols for next generation aeronautics; 3.1.3. The benefits of a next generation avionic router: secure next generation router; 3.1.3.1. Interconnecting avionic domains with a next generation router; 3.1.3.2. Mutualization of ground-board aeronautical links by a next generation router; 3.2. Implementing the SNG router; 3.2.1. Architecture of the SNG router software; 3.2.2. Routing functionalities (IPv4); 3.2.2.1. The principles of routing for the SNG; 3.2.2.2. Implementing routing functionalities

3.2.2.2.1. Description of the structure of the routing table

Sommario/riassunto

The design, implementation and validation of avionics and aeronautical systems have become extremely complex tasks due to the increase of functionalities that are deployed in current avionics systems and the need to be able certify them before putting them into production. This book proposes a methodology to enable the rapid prototyping of such a system by considering from the start the certification aspects of the solution produced. This method takes advantage of the model-based design approaches as well as the use of formal methods for the validation of these systems. Furthermore, the use
