

III

Requirements, Design Analysis, Validation, and Certification

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The key to an avionics system or subsystem design, which provides dependable service at a low cost of ownership, is the requirements definition. Requirements engineering [IEEE Software, 1994] is now a recognized field considered by major professional societies such as the IEEE as one of the initial steps in systems engineering as well as subsequent steps in the development process illustrated in Figure III.1.

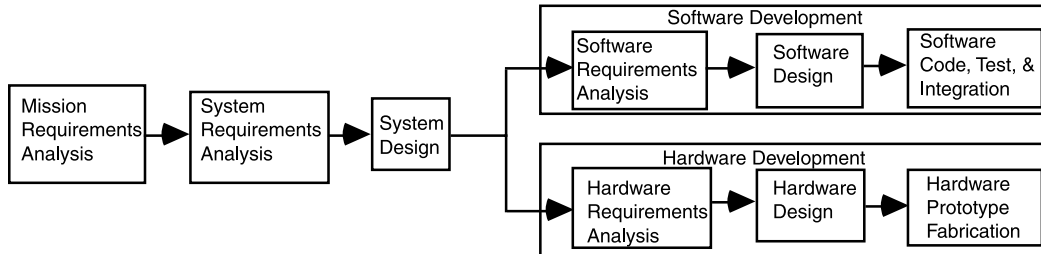


FIGURE III.1 Requirements in system development.

This section presents key processes that result in a reliable and affordable avionics system. These processes are setting requirements, reliability allocation, design analysis using simulation and modeling, validation of the design using formal methods, and processes for certification. The important issue of electromagnetic effects on the design and operation of avionics is also addressed.