Chapter 9

Avionics Systems Integration

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1. Introduction

- Major avionic systems generally comprise a number of smaller sub-systems which are combined to form an overall system.
- The combination, interconnection and control of the individual sub-systems so that the overall system can carry out its tasks effectively is referred to as '**systems integration**'.
- The first major step towards integrating avionic systems was taken in the mid-1950s with the establishment of the 'weapon system' concept. These concepts were incorporated in the 1960s generation of aircraft, some of which are still in service.
- The concept requires a total system approach to the task of carrying out the mission effectively with a high probability of success. The aircraft, weapons and the avionic systems required by the crew to carry out the mission effectively must thus be considered as an integrated combination.

1. Introduction

- A major step towards facilitating the integration of avionic sub-systems in civil aircraft was taken in the early 1950s with the adoption of ARINC (Aeronautical Radio, Incorporated) specifications for avionic systems and equipment.
- Equipment made to an ARINC specification by one manufacturer should thus be completely interchangeable with equipment made by another manufacturer to the same ARINC specification.
- The use of avionic equipment qualified to ARINC specifications thus ensures a competitive situation enabling procurement to be made from manufacturers on a worldwide basis.

1. Introduction

ARINC

- ARINC is a non-profit-making organization in the USA which is run by the civil airlines with industry and establishment representation, which defines systems and equipment specifications in terms of functional requirements, performance and accuracy, input and output interfaces, environmental requirements and physical dimensions and electrical interfaces.
- For example, air data computers, attitude heading reference systems, INS, communication radio equipment, data bus systems, etc.