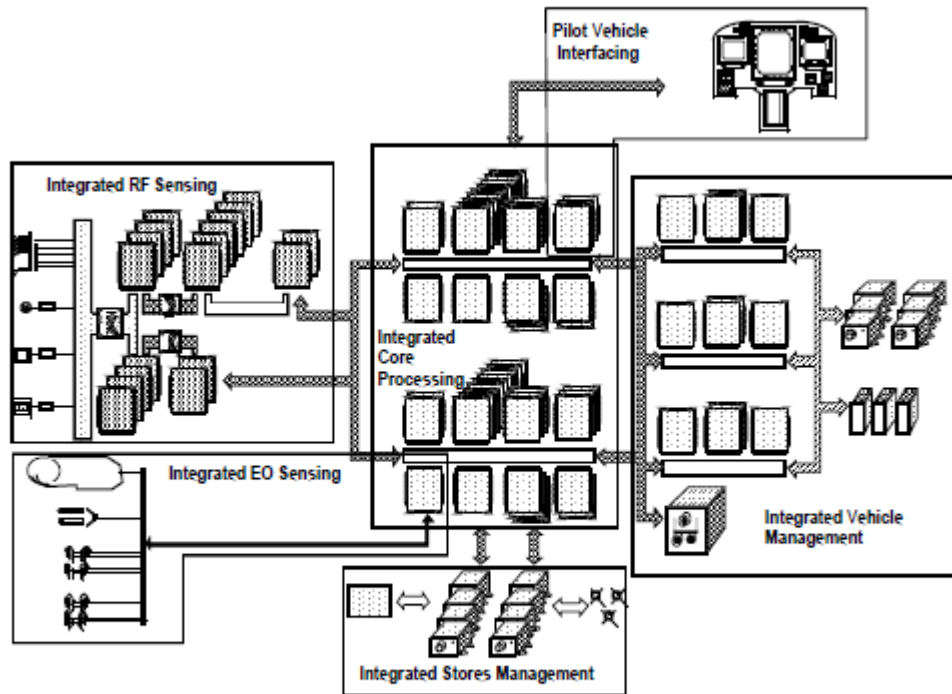## Typical avionics subsystems

Figure 4.7 FTGA – Pave Pace Architecture

Data Bus

It provides a medium for the exchange of data and information between various Avionics subsystems.

It provides the Integration of Avionics subsystems in military or civil aircraft and spacecraft.

Protocol

❖ Set of formal rules and conventions governing the flow of information among the systems.
❖ Low level protocols define the electrical and physical standards.
❖ High level protocols deal with the data formatting, including the syntax of messages and its format.

Types

Command/Response : Centralized Control Method
Token Passing   : Decentralized Control Method
CSMA/CA   : Random Access Method

Topology

It describes how the systems are interconnected in a particular fashion.

LINEAR NETWORK

Linear Cable
All the systems are connected in across the Cable

RING NETWORK

Point to Point interconnection
Datas flow through the next system from previous system

SWITCHED NETWORK

Similar to telephone network
Provides communications paths between terminals.

MIL STD 1553B:

The MIL STD 1553B is a US military standard which defines TDM multiple source-multiple sink data bus system. It is widely used in military aircraft in many countries. It is also used in naval surface ships, submarines and battle tanks. The system is a half duplex system.

- The system was initially developed at Wright Patterson Air Force base in 1970s.
- Published First Version 1553A in 1975
- Introduced in service on F-15 Programme.

Elements of MIL-STD-1553B

- ❖ Bus Controller (BC)
- ❖ Remote Terminal (RT)
- ❖ Monitoring Terminal (MT)
- ❖ Transmission Media

The basic bus configuration is shown in figure 4.8. The system is a command response system with all data transmission being carried out under the control of the bus controller. Each sub-system is connected to the bus through a unit called a remote terminal (RT). Data can only be transmitted from one RT and received by another RT following a command from the bus controller to each RT.