

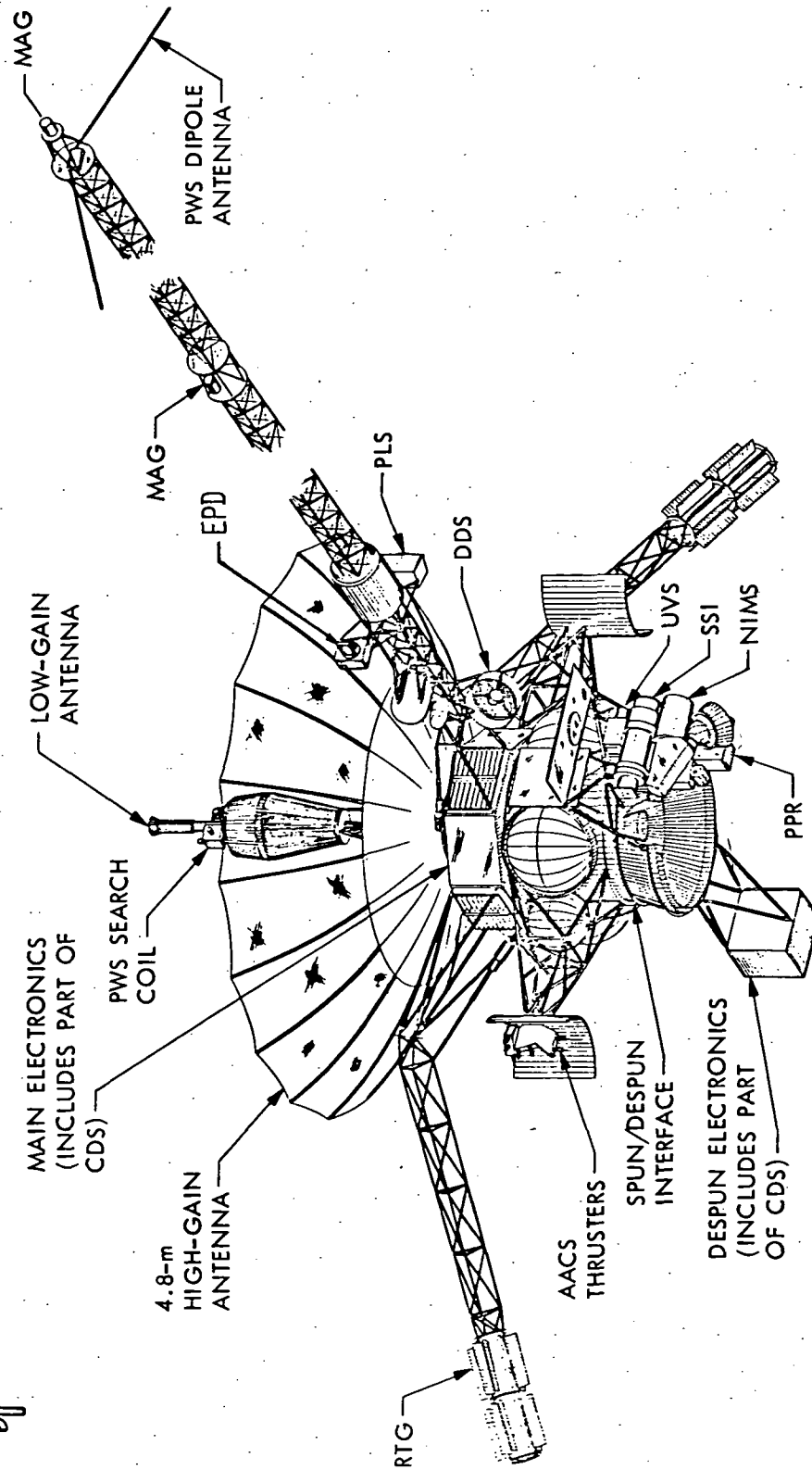
## A COMMAND & DATA SUBSYSTEM FOR DEEP SPACE EXPLORATION BASED ON THE RCA 1802 MICROPROCESSOR IN A DISTRIBUTED CONFIGURATION

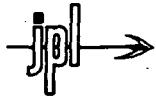
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The Command and Data Subsystem (CDS) is an RCA 1802 CMOS microprocessor-based subsystem that acts as the central nervous system for the Galileo Orbiter Spacecraft. All Communication between the ground and spacecraft flows through the CDS. The CDS also distributes commands in real time, arithmetically expanded from a data base loaded from the ground and in response to spacecraft alarms.

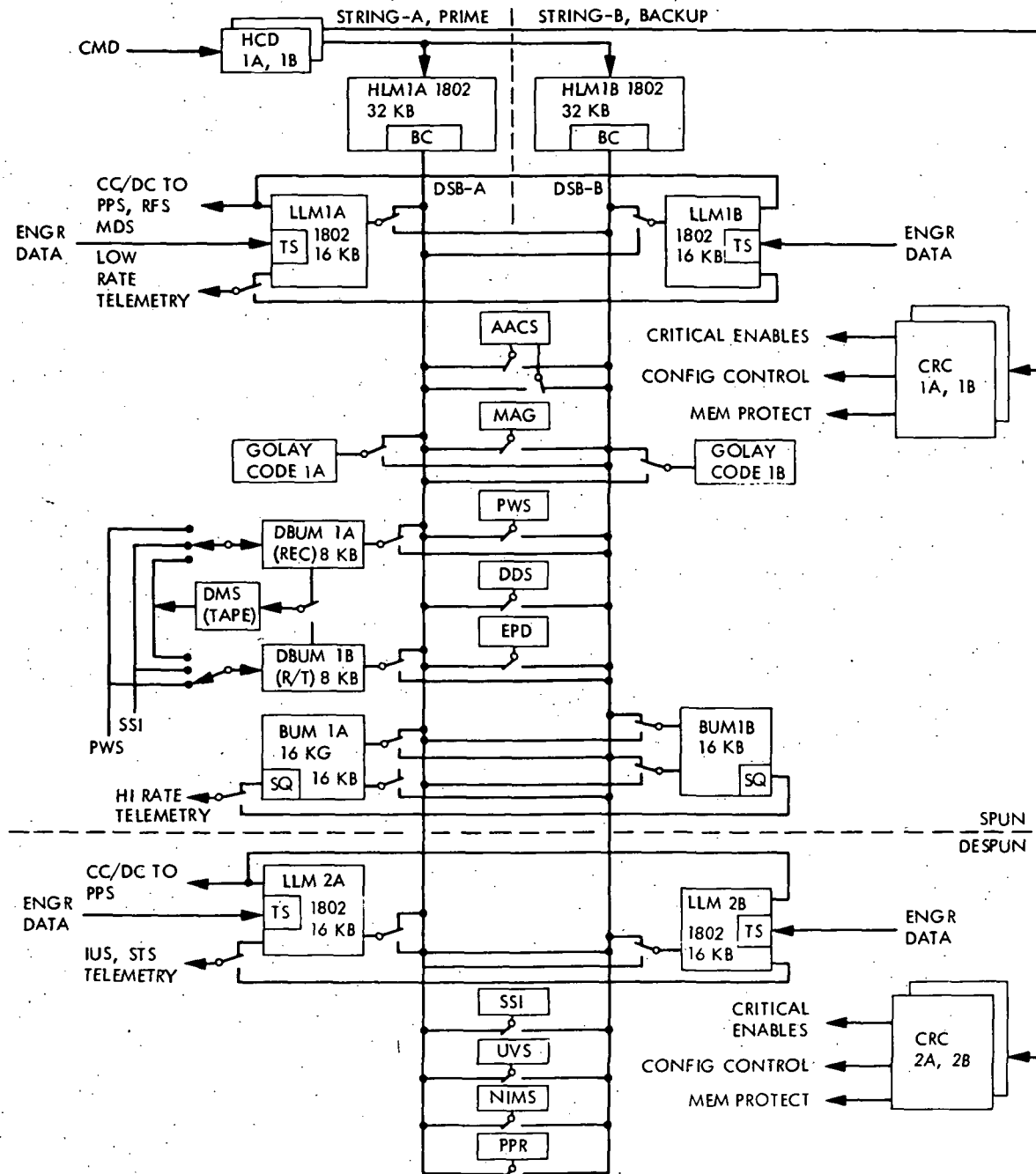
The distributed microprocessor system is configured as a redundant set of hardware with three microprocessors on each half. The microprocessors are surrounded by a group of special purpose hardware components which greatly enhance the ability of the software to perform its task.

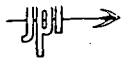
The presenter shows how the software architecture makes a distributed system of six microprocessors appear to each user as a single virtual machine, and collectively as a set of cooperating virtual machines that prevent the simultaneous presence of the several users from interfering destructively with each other.



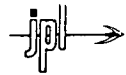
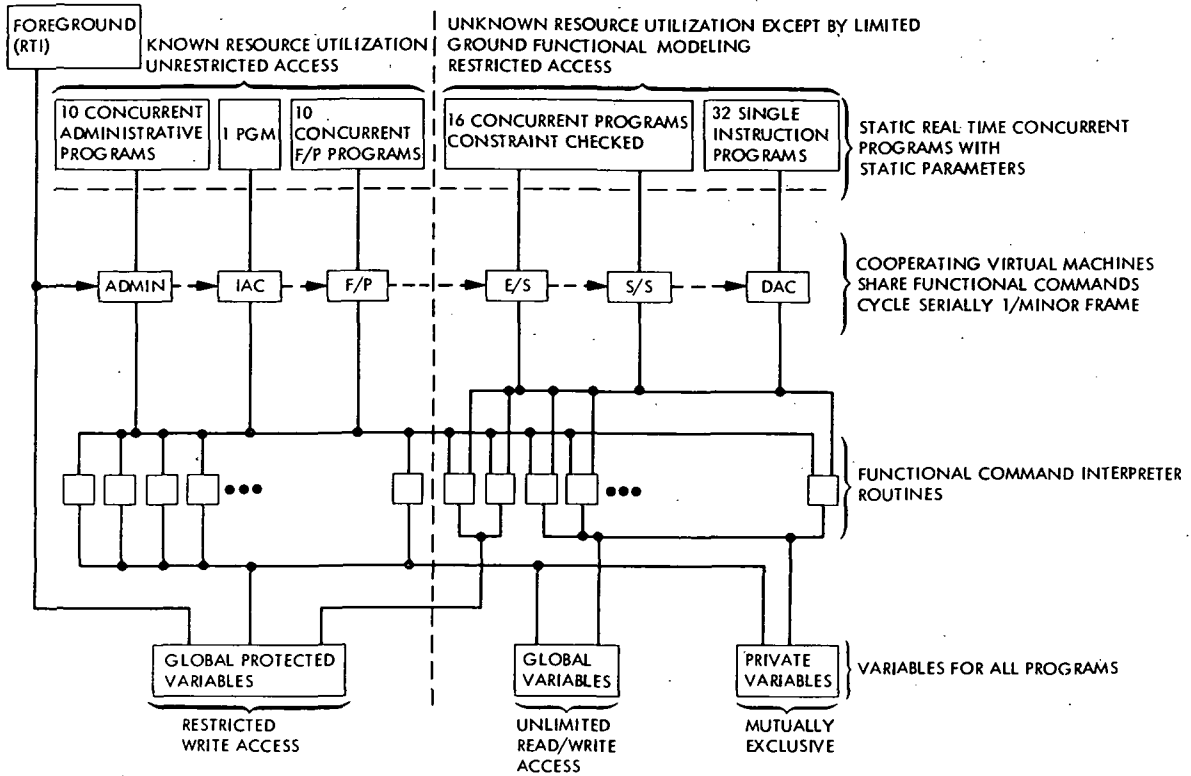


# GALILEO CDS FLIGHT HARDWARE CONFIGURATION





# GALILEO CDS FLIGHT SOFTWARE ARCHITECTURE



# HLM PROCESSOR TIME ALLOCATION

1. FOREGROUND EXECUTIVE
2. ADMINISTRATIVE PROGRAMS
3. IMMEDIATE ACTION COMMAND PROGRAM
4. FAULT PROTECTION PROGRAMS
5. ENGINEERING SEQUENCE PROGRAMS
6. SCIENCE SEQUENCE PROGRAMS
7. DELAYED ACTION COMMAND PROGRAMS
8. PROCESSOR TIME MARGIN

