

DETECTOR CONTROLLER SUBSYSTEM

DETECTOR CONTROL

DETECTOR COMMAND INTERPRITATION
DETECTOR CONTROLLER CONFIGURATION
DETECTOR CONTROLLER STATUS GENERATION
DETECTOR STABILIZATION
DETECTOR RESET
DETECTOR READOUT
ANALOG / DIGITAL CONVERSION

IMAGE INTEGRATION CONTROL

SHUTTER CONTROL
INTEGRATION TIMING
PREFLASH TIMING

IMAGE DATA TRANSFER CONTROL

IMAGE DATA TRANSMISSION
IMAGE DESCRIPTION HEADERS

DATA
ACQUISITION
SYSTEM
INTERFACE

COMMON TELESCOPE DATA ACQUISITION SYSTEM (DJ)

ACQUISITION CONTROL

DETECTOR CONTROLLER CONFIGURATION
DETECTOR CONTROLLER CONTROL
DETECTOR CONTROLLER STATUS MONITORING
DETECTOR CONTROLLER ERROR RECOVERY

IMAGE DATA TRANSFER

IMAGE DATA RECEPTION
IMAGE DATA ERROR CHECKING
IMAGE DATA ERROR RECOVERY

POST ACQUISITION PROCESSES ON IMAGE

IMAGE STICHING
IMAGE DATA NORMALIZATION
IMAGE DATA STACKING

IMAGE DESCRIPTOR COLLECTION

TIME AND RUN NUMBER DESCRIPTOR HEADER GENERATION
INSTRUMENT DESCRIPTOR HEADER COLLECTION
TELESCOPE DESCRIPTOR HEADER COLLECTION
MISC DESCRIPTOR HEADER COLLECTION
HEADER COLLECTION ERROR RECOVERY

IMAGE FORMATTING AND STORAGE

IMAGE DATA FILE FORMATING
IMAGE DATA FILE STORAGE

IMAGE SERVING

CLIENT FILE REQUEST PROCESSING
IMAGE TRANSMISSION
IMAGE TRANSMISSION ERROR RECOVERY

INSTRUMENT
CONTROL
SYSTEM
INTERFACE

THIS DOCUMENT

LOGICAL DEFINITIONS

CONTROLLER IDENTIFICATION
CONTROLLER ADDRESSING

FUNCTIONAL DEFINITIONS

COMMAND SET
MESSAGE SET

PHYSICAL DEFINITIONS

COMMAND PROTOCOLS
MESSAGE PROTOCOLS
ELECTRICAL INTERFACE

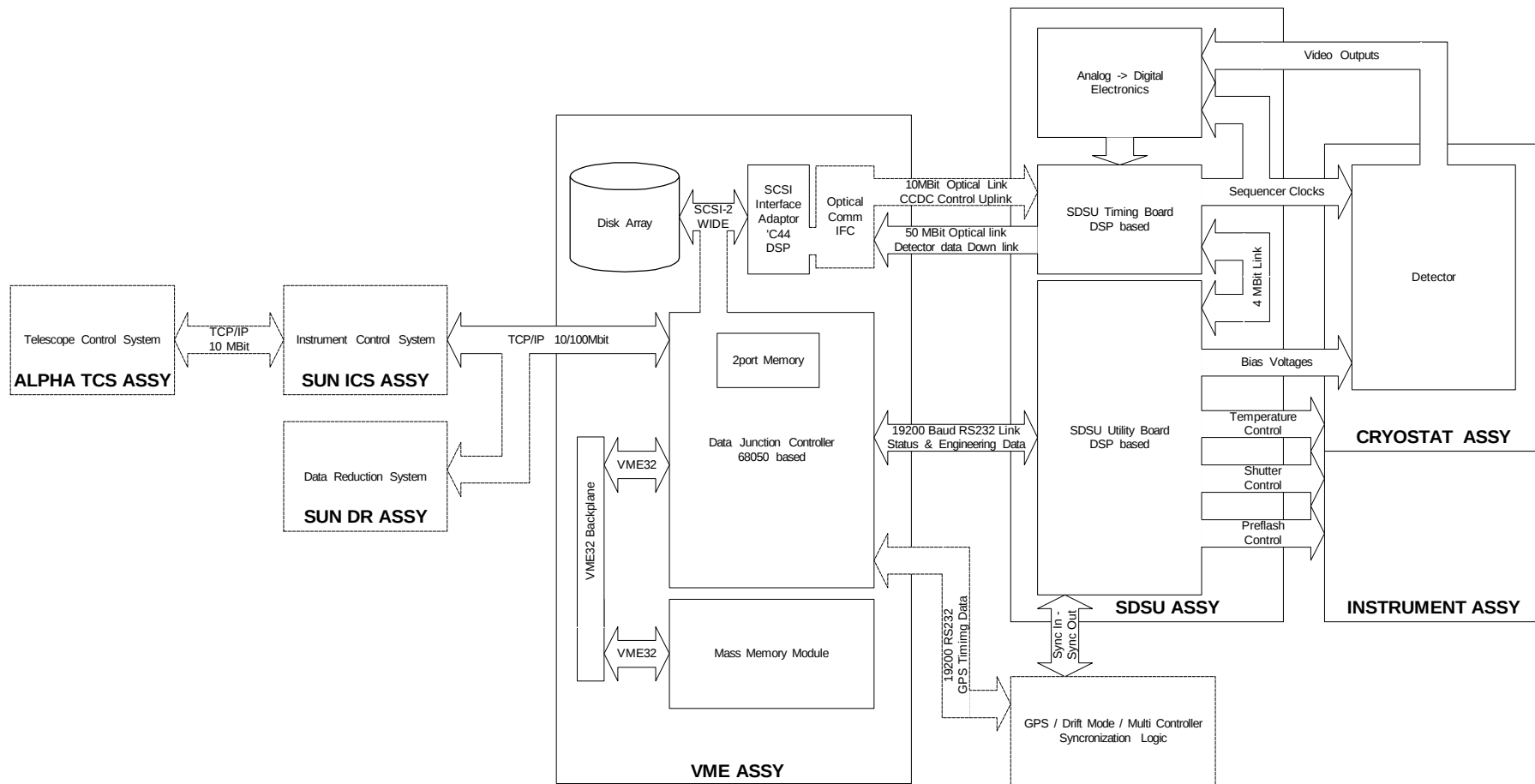
words words words

Yet Another Document

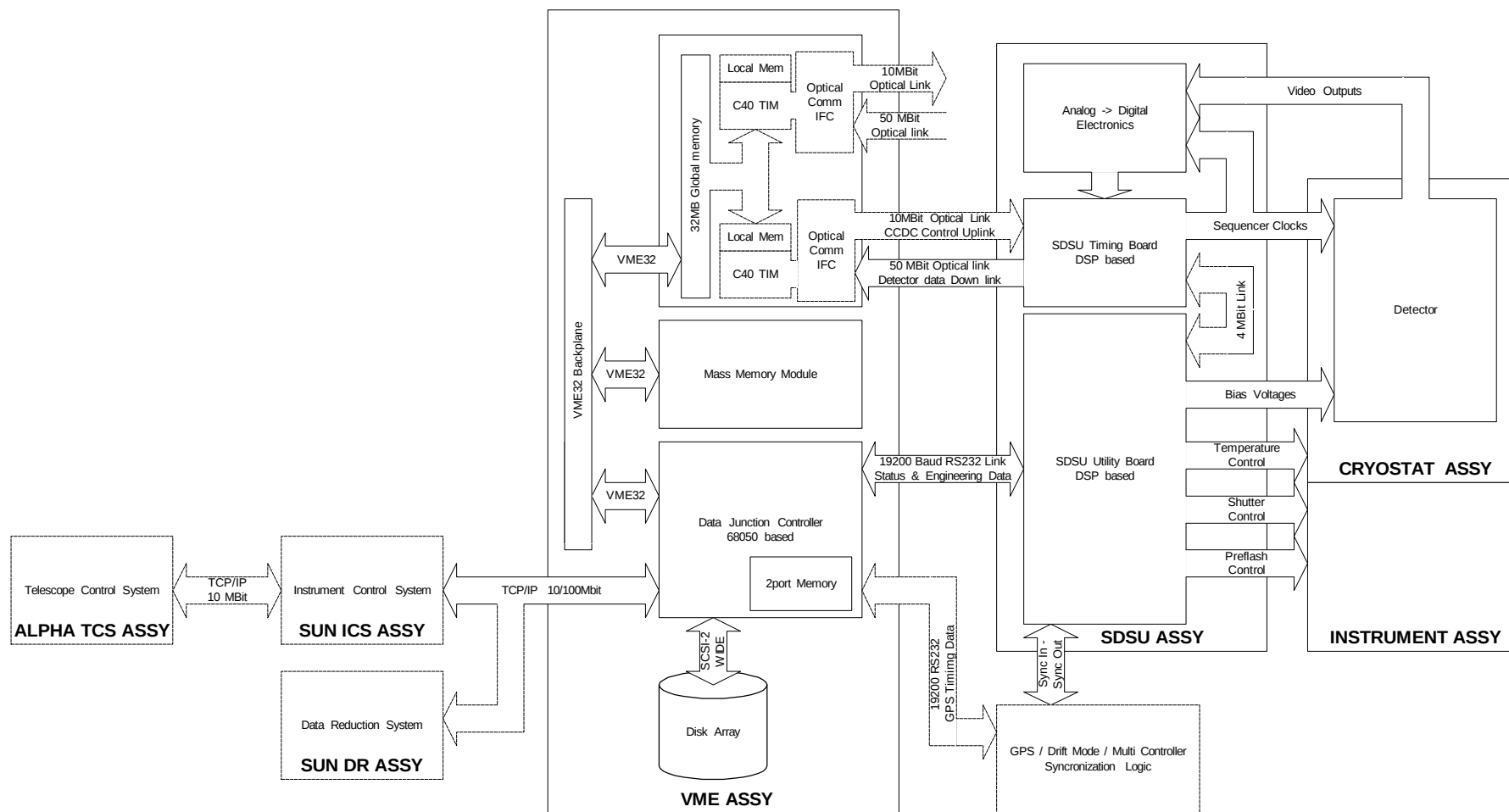
DISTRIBUTION OF PROCESSES AND
APPLICATION OF THIS DOCUMENT



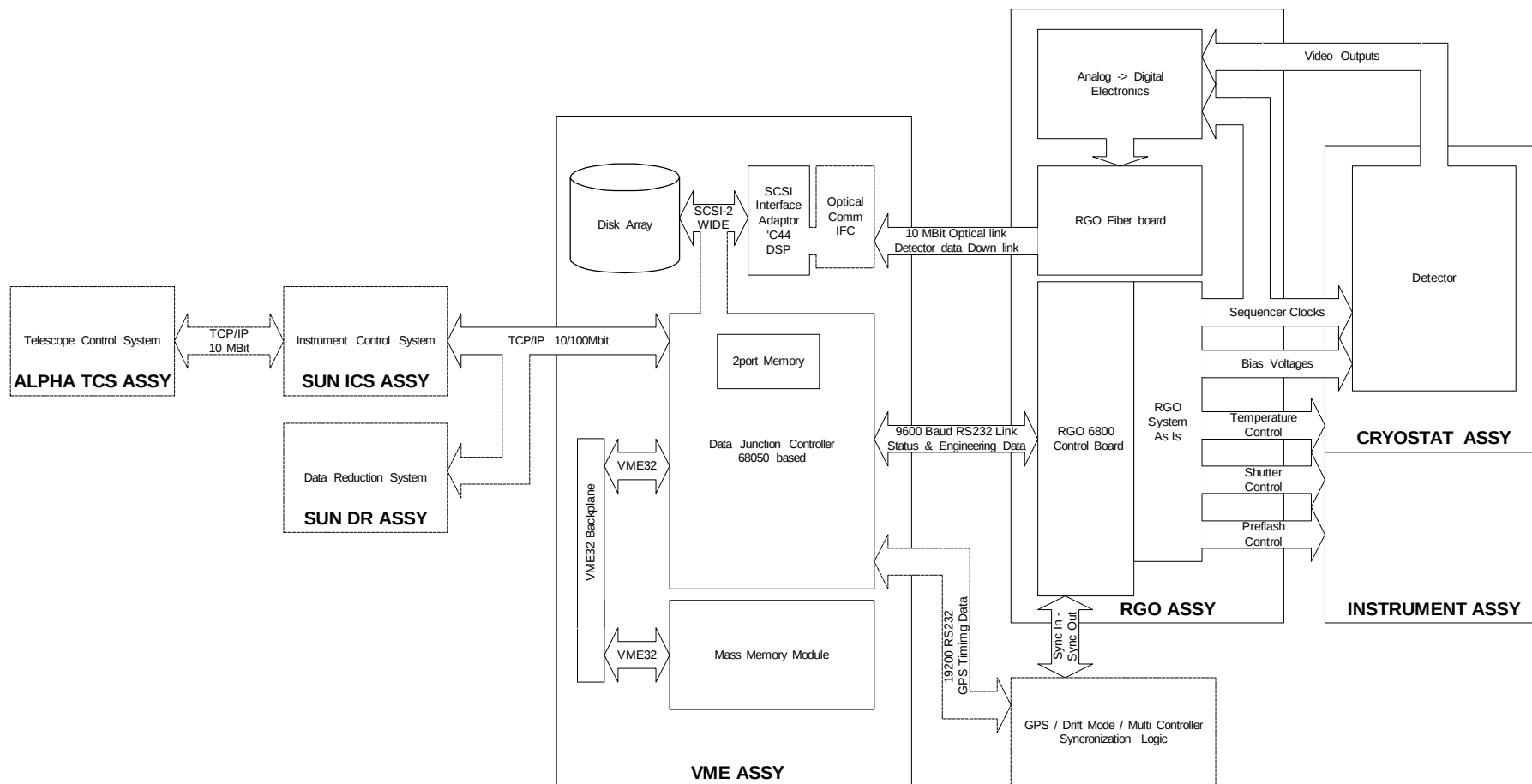
DATA ACQUISITION TOPOLOGY - SDSU NORMAL



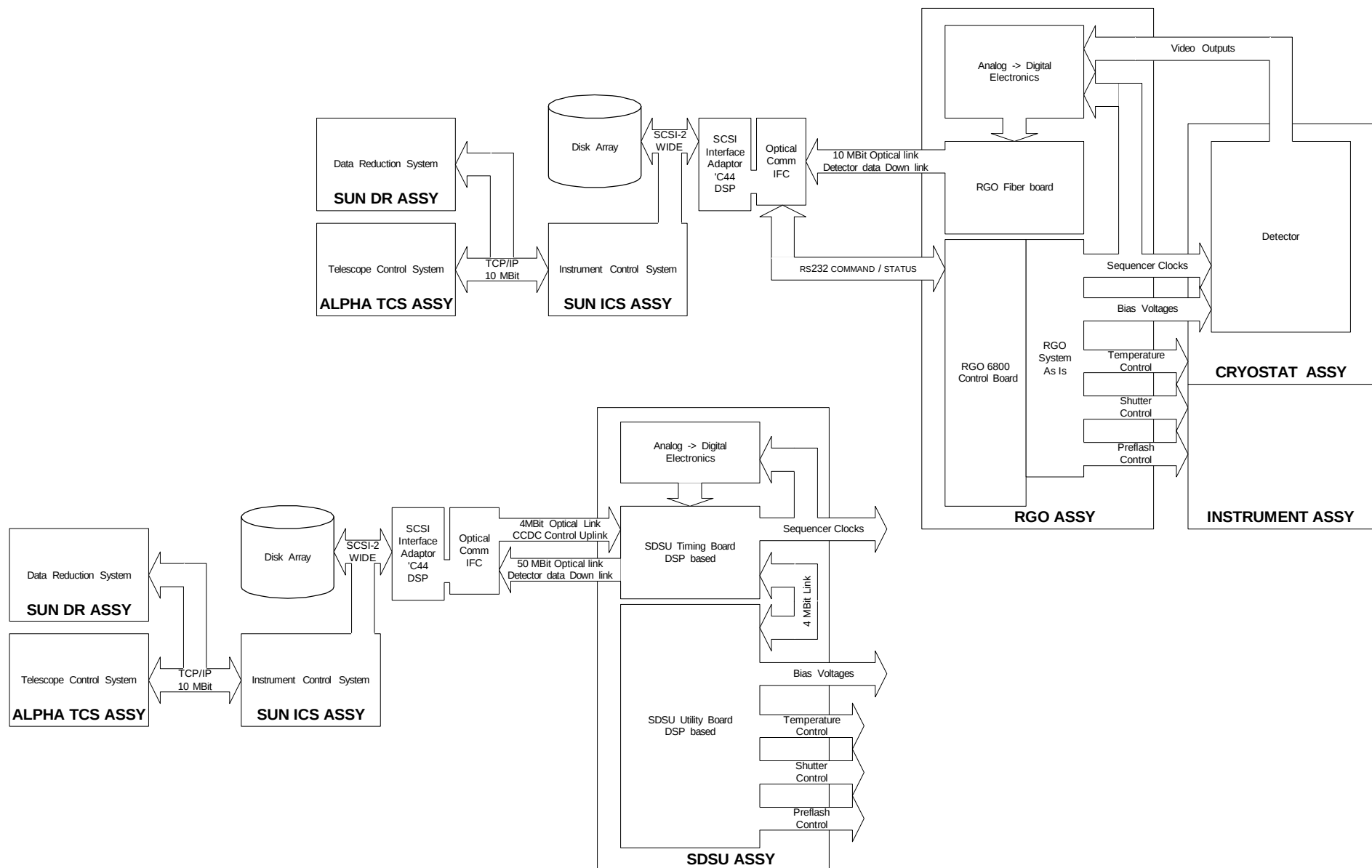
DATA ACQUISITION TOPOLOGY - SDSU INFRARED



DATA AQUISITION TOPOLOGY NAOMI MODEL



DATA AQUISITION TOPOLOGY - RGO CONTROLLER



DATA AQUISITION TOPOLOGIES - STAND ALONE SYSTEMS

DATA JUNCTION SOFTWARE

ACQUISITION CONTROL

VER:- 0.0 IMPLIMENTED:- 970801
PROJECT MANAGER:-

IMAGE DATA TRANSFER

VER:- 0.0 IMPLIMENTED:- 970801
PROJECT MANAGER:-

DATA POST PROCESSING

VER:- 0.0 IMPLIMENTED:- 970801
PROJECT MANAGER:-

HEADER COLLECTION

VER:- 0.0 IMPLIMENTED:- 970801
PROJECT MANAGER:-

DATA FORMAT AND STORAGE

VER:- 0.0 IMPLIMENTED:- 970801
PROJECT MANAGER:-

IMAGE SERVING

VER:- 0.0 IMPLIMENTED:- 970801
PROJECT MANAGER:-

IFC LOW LEVEL VME DSP

VER:- 0.0 IMPLIMENTED:- 970801
PROJECT MANAGER:-

IFC LOW LEVEL SCSI DSP

VER:- 0.0 IMPLIMENTED:- 970801
PROJECT MANAGER:-

DETECTOR CONTROLLER SW

SDSU SOFTWARE

TIMING DSP

VER:- 0.0 IMPLIMENTED:- 970801
PROJECT MANAGER:-

UTILITY DSP

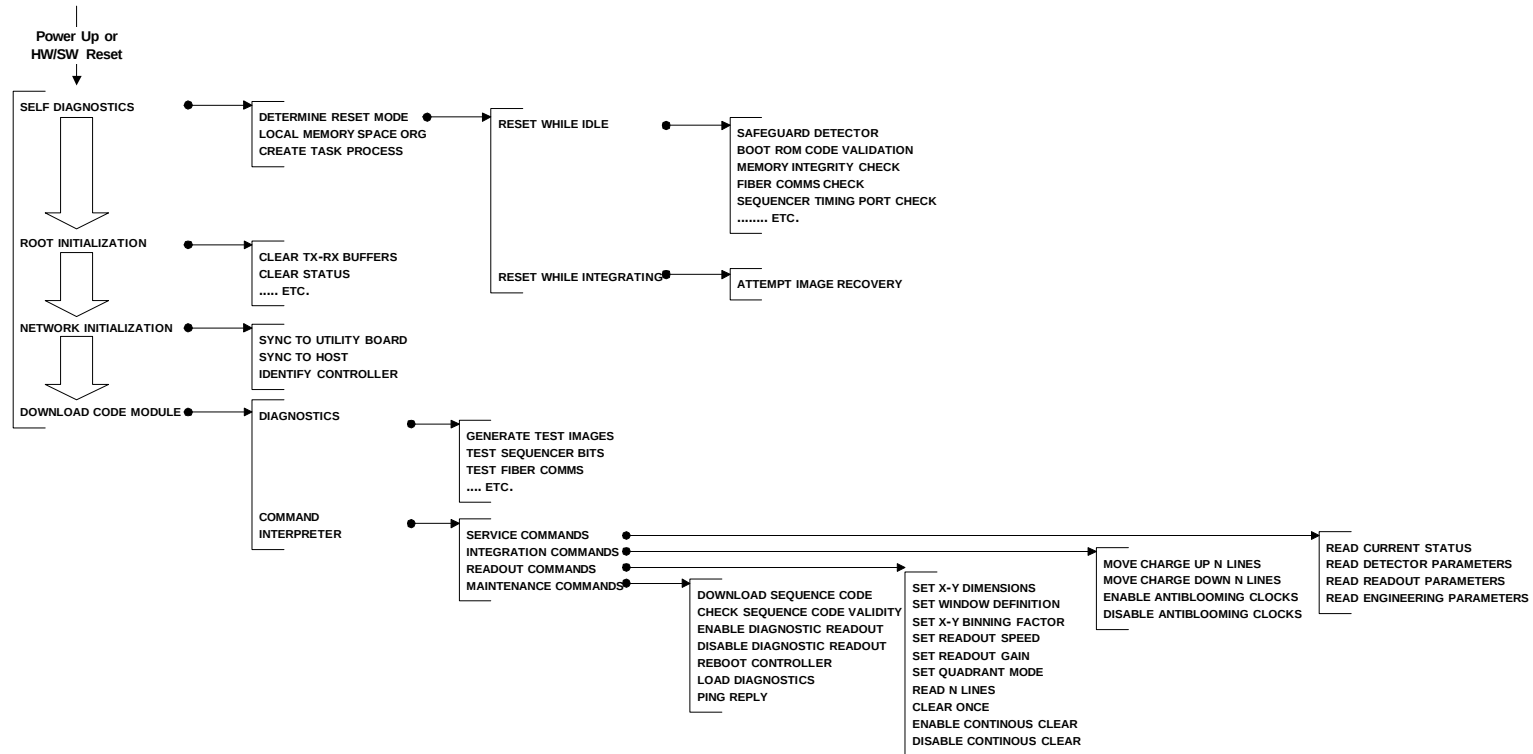
VER:- 0.0 IMPLIMENTED:- 970801
PROJECT MANAGER:-

RG0 SOFTWARE

6800 CONTROL

VER:- 0.0 IMPLIMENTED:- 970801
PROJECT MANAGER:-

SDSU SOFTWARE - TIMING DSP



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graph TD
    Reset[Hard or Soft Reset] --> SD[SELF DIAGNOSTICS]
    SD --> RI[ROOT INITIALIZATION]
    RI --> NI[NETWORK INITIALIZATION]
    NI --> CI[COMMAND INTERPRITER]
    CI --> Commands[SERVICE COMMANDS  
MAINTENANCE COMMANDS  
DIAGNOSTICS]
    Commands --> TBD[TO BE DETERMINED]
    TBD --> Actions[OPEN SHUTTER  
CLOSE SHUTTER  
PREFLASH ON  
PREFLASH OFF  
START INTEGRATION  
PAUSE INTEGRATION  
ABORT INTEGRATION  
READ STATUS  
READ SHUTTER TIMING VALUES  
READ INTEGRATION TIME  
READ TELEMETRY]
  
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Hard or Soft Reset

SELF DIAGNOSTICS

- DSP INITIALIZATION
- SAFEGUARD DETECTOR
- BOOT ROM CODE VALIDATION
- MEMORY INTEGRITY CHECK
- COMMS PORT CHECK
- LOCAL MEMORY SPACE ORG
- CREATE TASK PROCESS

ROOT INITIALIZATION

- CLEAR TX-RX BUFFERS
- CLEAR STATUS
- ETC.

NETWORK INITIALIZATION

- SYNC TO TIMING BOARD
- SYNC TO HOST
- IDENTIFY CONTROLLER

COMMAND INTERPRITER

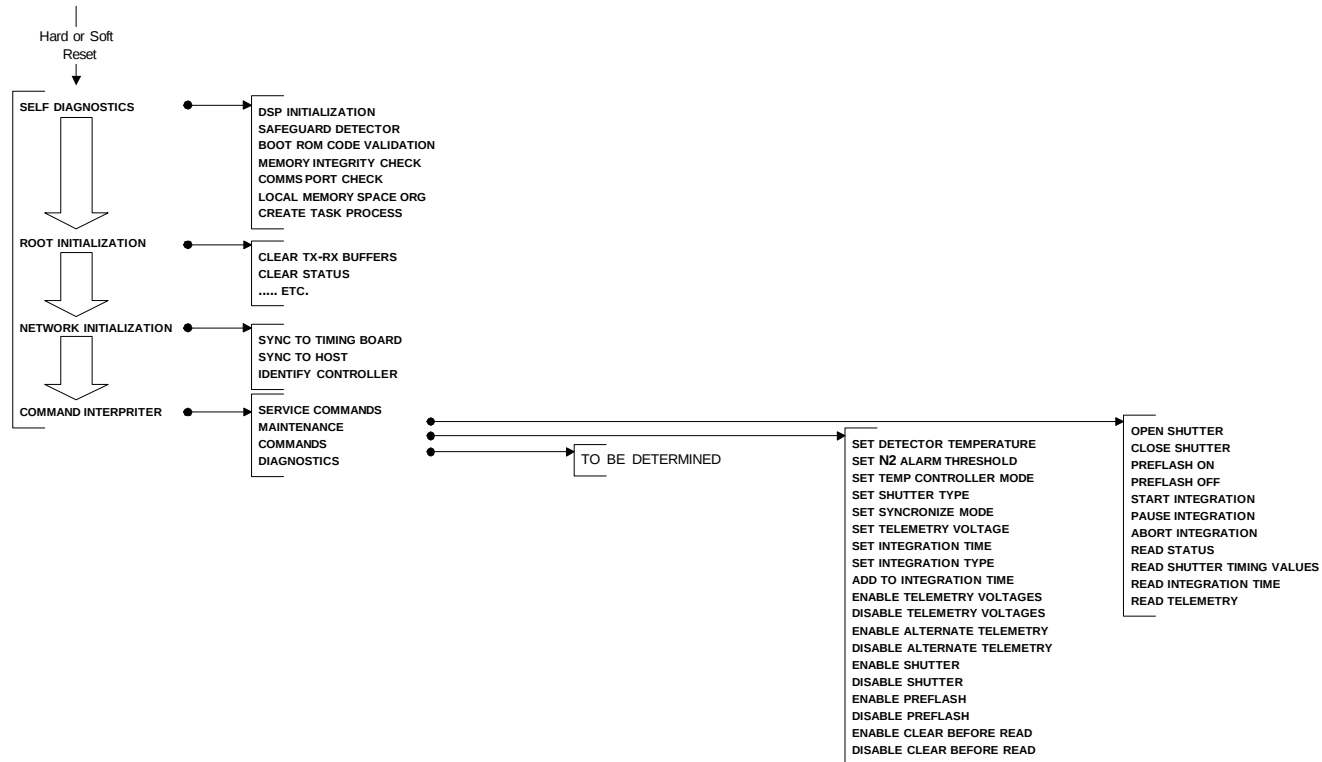
- SERVICE COMMANDS
- MAINTENANCE COMMANDS
- DIAGNOSTICS

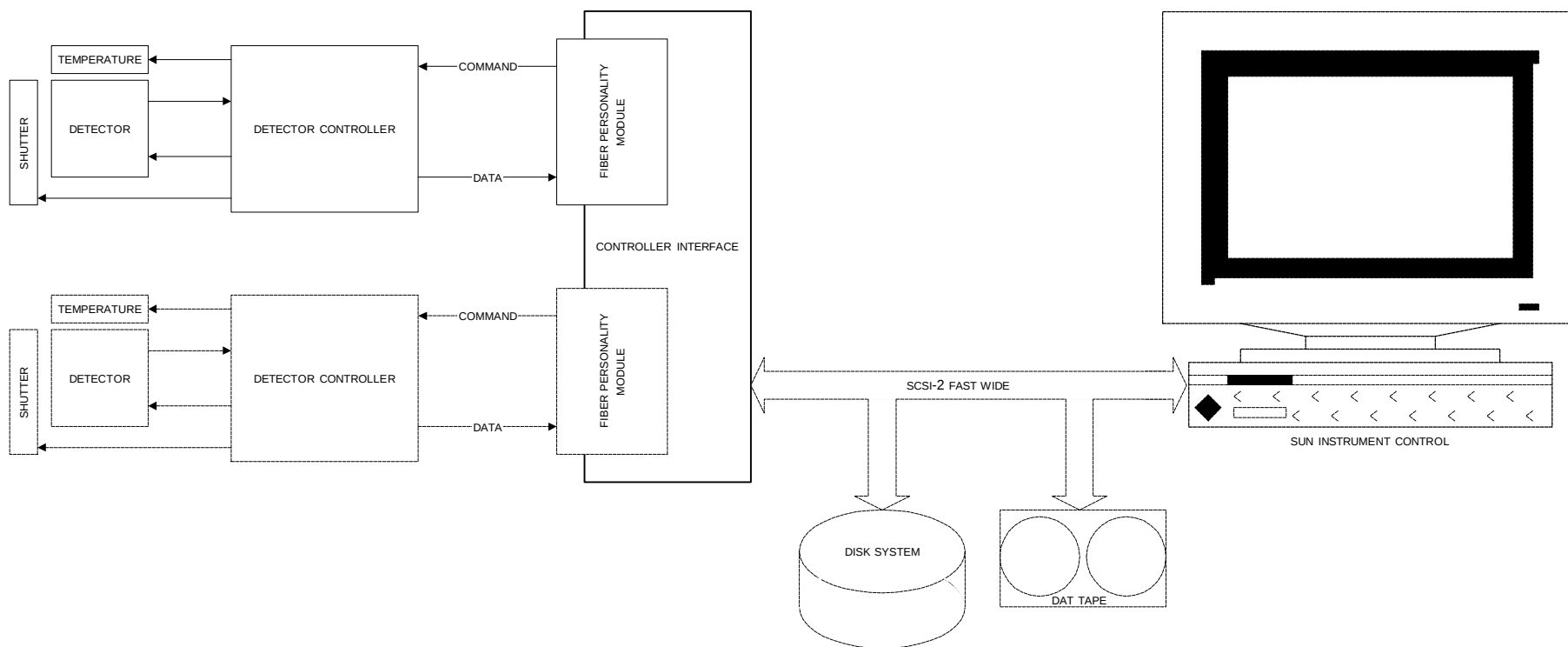
TO BE DETERMINED

- SET DETECTOR TEMPERATURE
- SET N2 ALARM THRESHOLD
- SET TEMP CONTROLLER MODE
- SET SHUTTER TYPE
- SET SYNCHRONIZE MODE
- SET TELEMETRY VOLTAGE
- SET INTEGRATION TIME
- SET INTEGRATION TYPE
- ADD TO INTEGRATION TIME
- ENABLE TELEMETRY VOLTAGES
- DISABLE TELEMETRY VOLTAGES
- ENABLE ALTERNATE TELEMETRY
- DISABLE ALTERNATE TELEMETRY
- ENABLE SHUTTER
- DISABLE SHUTTER
- ENABLE PREFLASH
- DISABLE PREFLASH
- ENABLE CLEAR BEFORE READ
- DISABLE CLEAR BEFORE READ

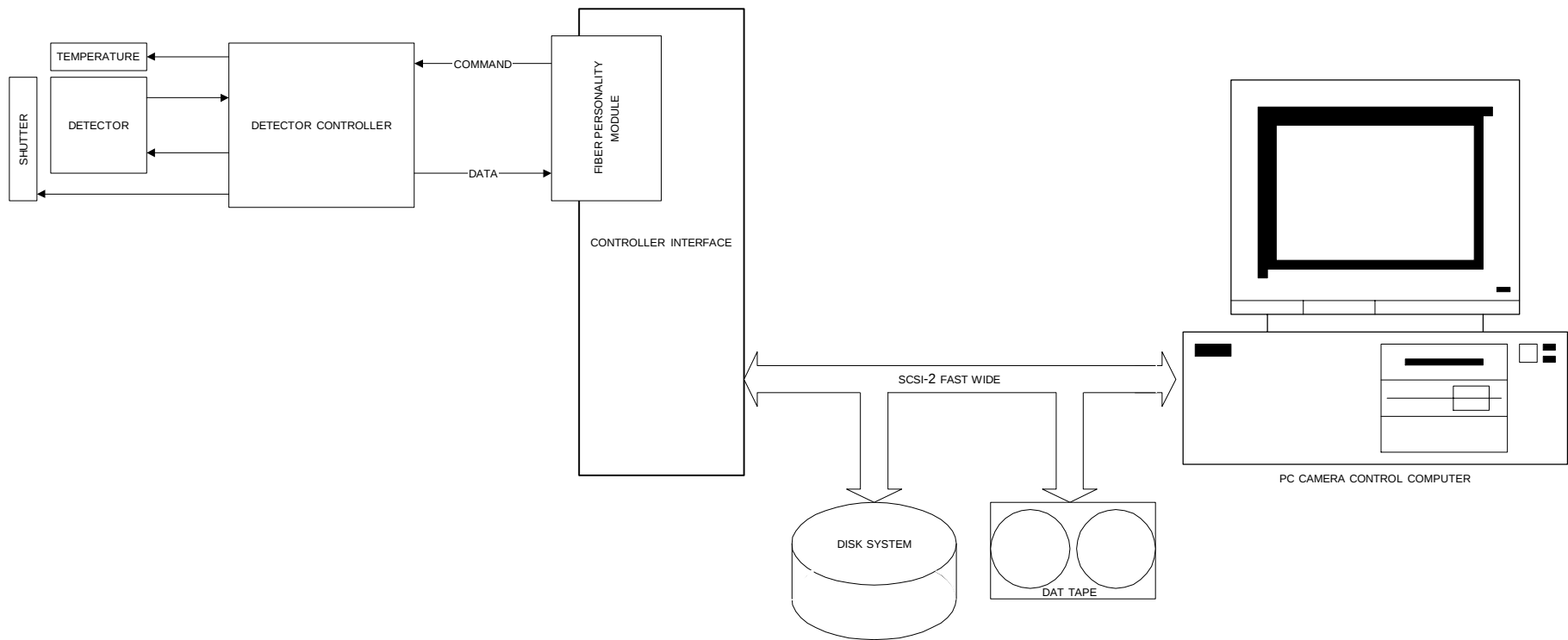
Actions:

- OPEN SHUTTER
- CLOSE SHUTTER
- PREFLASH ON
- PREFLASH OFF
- START INTEGRATION
- PAUSE INTEGRATION
- ABORT INTEGRATION
- READ STATUS
- READ SHUTTER TIMING VALUES
- READ INTEGRATION TIME
- READ TELEMETRY



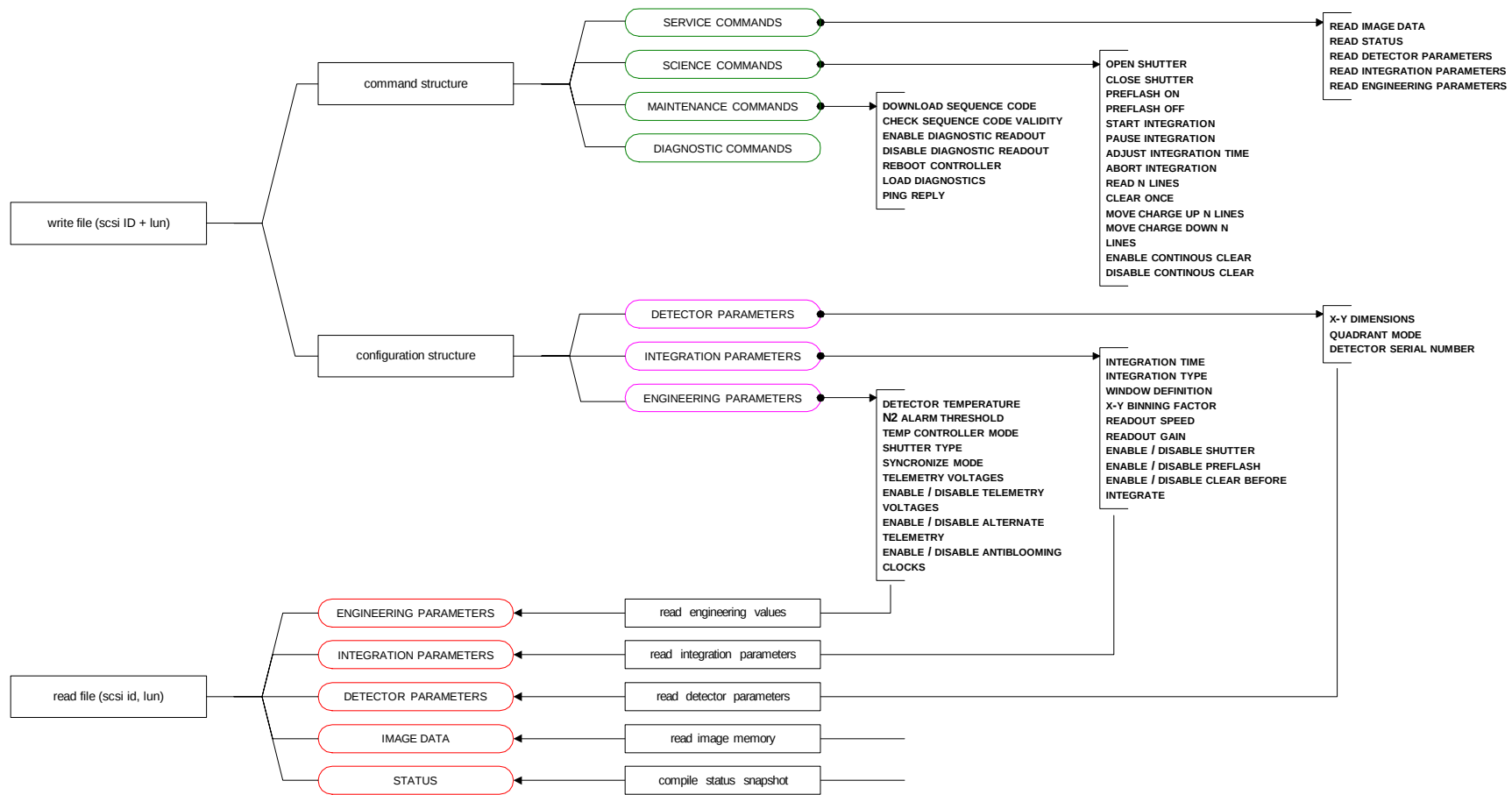


DETECTOR LABORATORY SCHEME



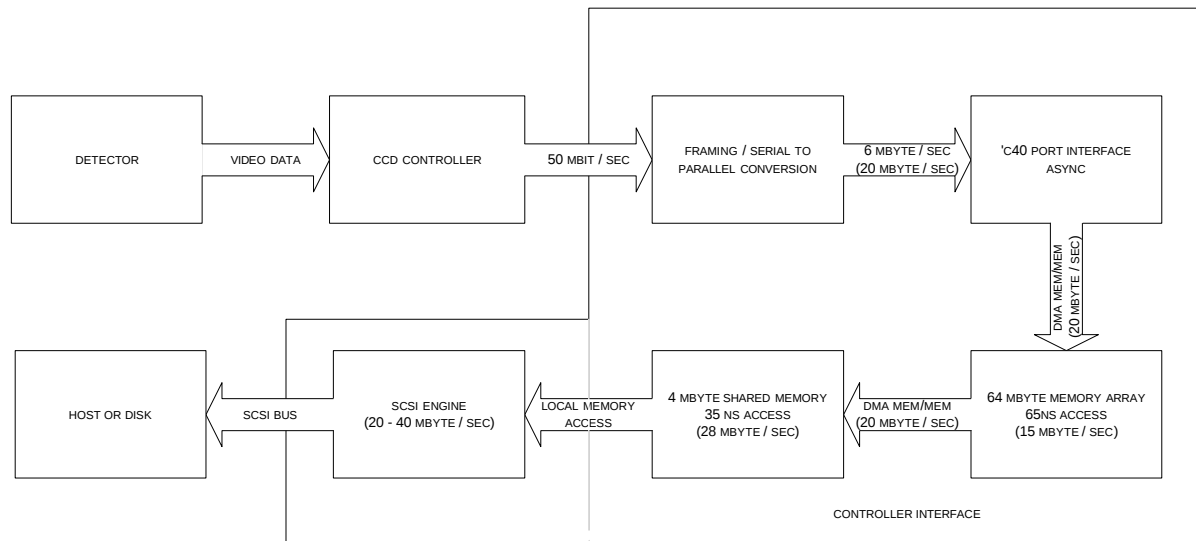
CoCam Scheme

- * PROVIDES IMAGE DATA FRAME STORE (64 MBYTE FIFO, WORM)
- * NOT TIED TO A PARTICULAR PROCESSOR FAMILY OR OPERATING SYSTEM
- * EACH INTERFACE CAPABLE OF HANDLING 2 CCD CONTROLLERS
- * 8 MPIXEL / CHANNEL IMAGE DATA INPUT LIMIT
- * UP TO 6 INTERFACES / SCSI CHAIN (I.E 12 CCD CONTROLLERS)
- * 10 MPIXEL / 20 MPIXEL IMAGE DATA OUTPUT RATE (ASYNC/SYNC)
- * NO MODIFICATION TO CCD CONTROLLER TYPES
- * PRICE APPROXIMATELY 3500 POUNDS / INTERFACE (1750 / CONTROLLER)
- * VERY MODULAR (VIDEO FRAME GRABBER, DIGITAL VIDEO, 30MIPS POWER)
- * SIMPLE / ROBUST / LOW POWER (3 BOARDS, 6 WATTS / INTERFACE)
- * SMALL SIZE (SIZE OF 5 1/4" DISK DRIVE)
- * NO SPECIAL HOST DEVICE DRIVERS NEEDED (LOOKS LIKE SMALL FIXED DISK)
- * EXTENSIBLE HOST INTERFACE PROTOCOL, USES NORMAL FILE STRUCTURE.



command hierarchy and sets

"MAKE IT SIMPLE TO INTERFACE CONTROLLERS"



- simple interface
- necessity mother of invention
- requirements
- result
 - hardware (off shelf)
 - (software)
 - (modular)
 - (common interface)
 - dictionary)
- development status
- delivery