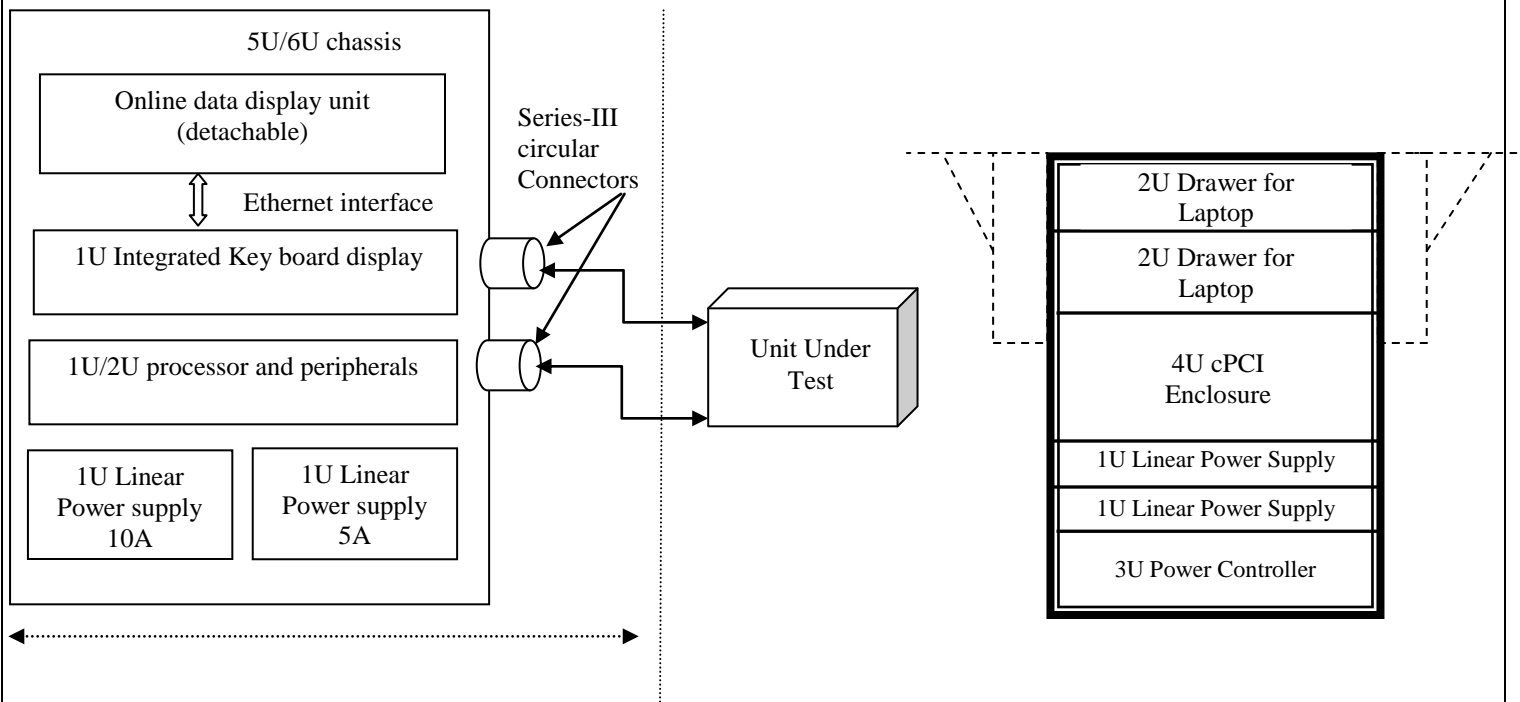


**Section 1 : Objective Description**

Portable Test Bed Systems to check the functionality of all of the subsystems of a system as well as the associated harness in standalone mode, in integrated mode and during various environmental tests, designed with around latest hardware & software platforms.

Simulation for functioning and testing of the embedded units at various places like assembly room, during environmental test and during integration with the other subsystems.

**Section 2 : System Block Diagram**



| Integration  | Software Development                     | Products                              | Services                             |
|--|--|---------------------------------------|--------------------------------------|
| Avionics / Space Instruments / Telemetry Solutions | RTOS based System Software Development   | Industrial PCs / cPCI / Panel Systems | Support of Industrial/Rugged Systems |
| VME / cPCI / PMC based Solutions                   | BSP / Device Driver Software Development | and VME based Systems                 | and Automated Solutions              |
| Machins Vision Solutions                           | Software Testing - IV & V / NRT / SQA    | Industrial / Rugged Monitors          | System Management Services for       |
| SCADA / Labview / Safety_C8 based Solutions        | Software Porting                         | and Operator Stations                 | High End Servers - VME / Unix based  |
| Data Logger / Data Recorder Systems                |  | Acquisition Interfaces PMC / VME      |                                      |
| Tailored Real Time / Data Acquisition Solutions    |  | FIP / cPCI and PCI based              |                                      |

**Section 3 : Description of Operation**

MIL-1553 interface/ RS422 interface/ Ethernet interface connectivity between the test bed and the units.

Various digital and discrete input outputs at the circular connectors.

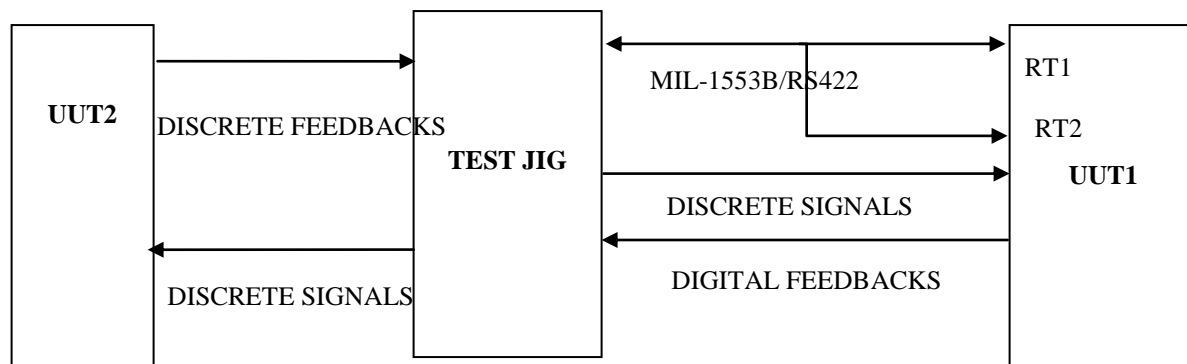
Supply of Hardware, Test Software for all the interfaces, and integration of the all the items as shown in diagram above excluding the unit under test.

The system shall consist of a housing in which the following components will be mounted:

- ✓ Power supplies.
- ✓ Integrated keyboard display
- ✓ Online data monitoring unit
- ✓ Processor unit consisting of
  - A single board computer
  - MIL-1553B interface card
  - Optically isolated Digital inputs TTL compatible
  - Optically isolated discrete inputs
  - Timer counter module
  - Rs-422 board
  - Multifunction (ADC, DAC) board, bipolar, differential

System will be configured to operate either in manual mode or either in auto mode.

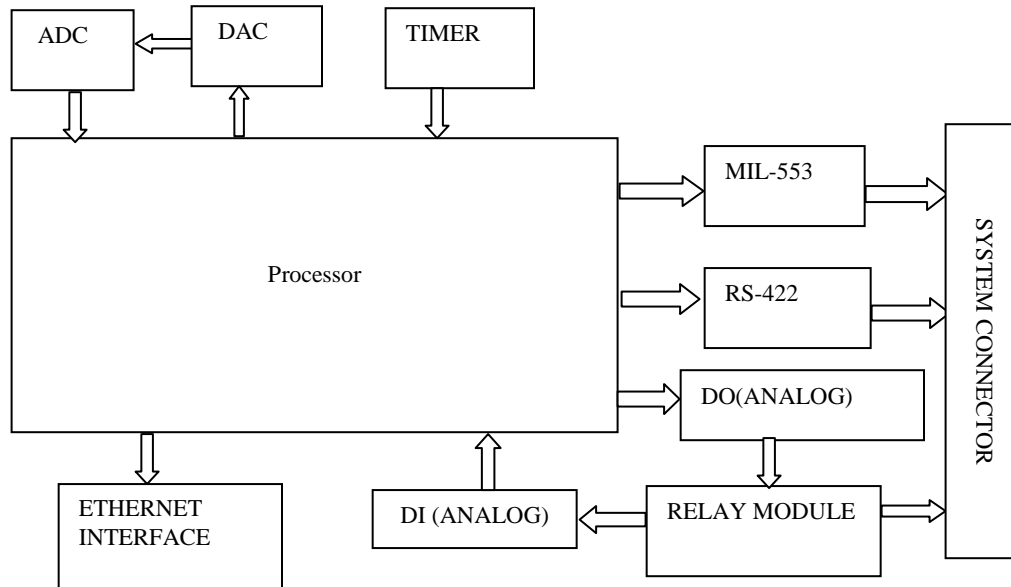
Interfacing to multiple units:



| Integration  | Software Development                     | Products   | Services   |
|--|--|--|--|
| Avionics / Space Instruments / Telemetry Solutions | RTOS based System Software Development   | Industrial PCs / cPCI / Panel Systems                      | Support of Industrial/Rugged Systems and Automated Solutions       |
| VME / cPCI / PMC based Solutions                   | BSP / Device Driver Software Development | and VME based Systems                                      |  |
| Machins Vision Solutions                           | Software Testing - IV & V / NRT / SQA    | Industrial / Rugged Monitors and Operator Stations         | System Management Services for High End Servers - VME / Unix based |
| SCADA / Labview / Safari / CB based Solutions      | Software Porting                         | Acquisition Interfaces PMC / VME / IP / cPCI and PCI based |  |
| Data Logger / Data Recorder Systems                |  |  |  |
| Tailored Real Time / Data Acquisition Solutions    |  |  |  |

**Section 4 : Building Blocks**

Building Blocks and Internal interface of the system:



1 PMC-1553-DDC Module



2 IP – 48ADM – Analog to Digital Converter



| Integration  | Software Development                     | Products  | Services   |
|--|--|---|--|
| Avionics / Space Instruments / Telemetry Solutions | RTOS based System Software Development   | Industrial PCs / cPCI / Panel Systems and VME based Systems | Support of Industrial/Rugged Systems and Automated Solutions       |
| VME / cPCI / PMC based Solutions                   | BSP / Device Driver Software Development | Industrial / Rugged Monitors and Operator Stations          | System Management Services for High End Servers - VME / Unix based |
| Machins Vision Solutions                           | Software Testing - IV & V / NRT / SQA    | Acquisition Interfaces PMC / VME / IP / cPCI and PCI based  |  |
| SCADA / Labview / Safety / CB based Solutions      | Software Porting                         |   |  |
| Data Logger / Data Recorder Systems                |  |   |  |
| Tailored Real Time / Data Acquisition Solutions    |  |   |  |

3 IP-SoftDAC – Software Programmable DAC



4 IP Cyclone FPGA with RS485/RS422/TTL Parallel I/O



5 Ethernet Switch



6 IP-opt-IN – Digital Input Module

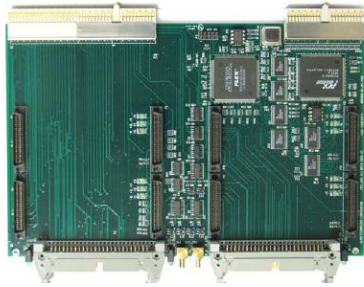
7 IP-opt-OUT – Digital Output Module

8 Single Board Computer



| Integration  | Software Development                     | Products   | Services   |
|--|--|--|--|
| Avionics / Space Instruments / Telemetry Solutions | RTOS based System Software Development   | Industrial PC's / cPCI / Panel Systems and VME based Systems | Support of Industrial/Rugged Systems and Automated Solutions       |
| VME / cPCI / PMC based Solutions                   | BSP / Device Driver Software Development | Industrial / Rugged Monitors and Operator Stations           | System Management Services for High End Servers - VME / Unix based |
| Machins Vision Solutions                           | Software Testing - IV & V / NRT / SQA    | Acquisition Interfaces PMC / VME / IP / cPCI and PCI based   |  |
| SCADA / Labview / Safari_C8 based Solutions        | Software Porting                         |  |  |
| Data Logger / Data Recorder Systems                |  |  |  |
| Tailored Real Time / Data Acquisition Solutions    |  |  |  |

9 cPCI-4SIP Carrier module



10 Programmable Power supply



11 Laptop



12 Panel PC



| Integration  | Software Development                     | Products  | Services   |
|--|--|---|--|
| Avionics / Space Instruments / Telemetry Solutions | RTOS based System Software Development   | Industrial PCs / cPCI / Panel Systems and VME based Systems | Support of Industrial/Rugged Systems and Automated Solutions       |
| VME / cPCI / PMC based Solutions                   | BSP / Device Driver Software Development | Industrial / Rugged Monitors and Operator Stations          | System Management Services for High End Servers - VME / Unix based |
| Machins Vision Solutions                           | Software Testing - IV & V / NRT / SQA    | Acquisition Interfaces PMC / VME / IP / cPCI and PCI based  |  |
| SCADA / Labview / Safety_C8 based Solutions        | Software Porting                         |   |  |
| Data Logger / Data Recorder Systems                |  |   |  |
| Tailored Real Time / Data Acquisition Solutions    |  |   |  |

**Section 5 : Deliverables with Brief Specs**

| SL No. | Deliverables  | Remarks |
|--------|---|---------|
| 1      | 4U- cPCI-Enclosure  |         |
| 2      | Single Board Computer with Software support for windows, RT Linux, Linux-works, Qnx |         |
| 2.1    | PMC-1553-DDC Module configurable as BC/RT/MT  |         |
| 2.2    | IP-opt-IN - Digital Input Module  |         |
| 2.3    | IP-opt-OUT - Digital Output Module  |         |
| 2.4    | Relay board   |         |
| 2.5    | Timer counter module  |         |
| 2.6    | IP Cyclone FPGA with RS485/RS422/TTL Parallel I/O Board                             |         |
| 2.7    | IP-SoftDAC - Software Programmable DAC  |         |
| 2.8    | IP - 48ADM - Analog to Digital Converter  |         |
| 3      | Ethernet Switch   |         |
| 4      | Programmable Power supply   |         |
| 5      | Laptop [or] Panel PC  |         |
| 6      | Integrated keyboard display 1 U size  |         |
| 7      | cPCI-4SIP Carrier module  |         |