PDR for Processor Backplane (PB)

- **Version 0.51 of specifications written by Sam**
- **Reviewers:**

  Norman Gee

  Viraj Perera

  Uli Schaefer

  Richard Staley

- **Additional comments from Eric and Murrough**
- **Level of comments more limited than for other PDRs, as PB has much more restricted scope**
- **Preliminary Design Review held in Mainz on Monday 20th November**
- **Reviewers' comments addressed by Sam in comprehensive overview presentation:**

  Textual amendments

  "Controversial" issues

- **Overall conclusion from Review:**

  PB has evolved into a credible, well-specified design which is buildable and should perform well

- **Specific recommendations:**

  - **Correct all substantive typographical errors –**

    e.g. **signal names swapped in pin-lists**

  - **Add further clarification in several places –**

    e.g. **more details of geographical address lines**
    (e.g. distinguish PPr and CP/JEP TCM)

    current ratings on power/ground pins

    tolerances on signal trace impedances
    (±5% tight but desirable)

    details of pin lengths in custom connectors

    specify "standard" environmental conditions

    expand Glossary

  - **Collate all salient engineering specifications into a separate "check-list" for assessment by manufacturers –**

    e.g. **Bill of Materials**

    part numbers

    full dimensioning

    scale drawing of PB, showing all connectors, power bus-bars and mechanical bracing bars

  - **Only one VME bus master will be supported –**

    difficulty of correctly terminating VMEbus stubs in slots 1/2 ***(6U modules in 9U crates)***

    however, retain PB arbitration and interrupt signal traces for possible future use

- **VMEbus terminations:**

  on VME Processor Personality Card *(#1)*

  on TCM Adapter Link Card *(#21)*

- **CANbus termination:**

  120W on VME Processor Personality Card *(#1)*

  120W on TCM Adapter Link Card *(#21)*

- **Add standard 9-pin D-type CAN connector to rear of PB**

  (would allow JEMs to bypass TCM CAN bridge)

- **No extra dedicated +5V supply in TCM slot for CAN controller for power-up/down situation**

  (if necessary, provide +5V battery back-up on TCM – Uli to check with DCS group)

- **Mechanical bracing of PB will be essential to prevent excessive flexing – the proposed scheme appears satisfactory**

- **Power distribution:**

  use "standard" stud-mounted bus-bars if possible, rather than custom crate-mounting

  connect power supplies to centre of bus-bars for minimum IR drop

- **Grounding scheme:**

  add a "chassis" ground plane to PB for LVDS cable screens ® total of 16 layers *(8 signal + 8 ground)*

  ESSENTIAL TO AGREE A SUITABLE SAFE GROUNDING SCHEME BETWEEN PPr AND CP/JEP SYSTEMS BEFORE PB IS MANUFACTURED – STILL UNDER DISCUSSION (PPr/CP/JEP)

- **IF POSSIBLE, avoid use of separate daughter-cards on rear of PB for CMM cable I/O**

  (re-organise pin-out, and attach cable directly on to PB using 2mm connectors?)

- **Define all fast *(³40 Mbit/s)* signal traces to be of 60W (±5%) impedance**

  (manufacturers will provide a test report on trace impedances after manufacture)

  (note – check PB connector impedance uniformity)

- **Design/manufacture schedule:**

  each reviewer to be responsible for checking that PB pin-out and net-list is correct for his/her own module design before sign-off

  informal engineering review of netlist and layout *(Viraj)* – end-January 2001

  pay OM to assess final layout before manufacture – March 2001

    (CPM schedule may demand VME-- "bricollage" for initial testing)

  long lead-time *(8-9 months?)* for custom PB connector sizes –

    "customise" standard connectors by cutting to size

    order all custom connectors now?