Interferometer Sensing and Control (ISC)
CDS Electronics and Beyond

ISC Breakout Presentation
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AdLIGO ISC What's New?

- **Much will change**
  - » **Manufacturing and Design**
    - **With the limited staff, we must effectively use out-sourcing**
      - Board level testing done outside
      - Contract design where possible
    - **Key design personnel can't become mired in secondary duties**
      - Parts research and ordering can't be done by engineers
      - Better use of technicians for fleshing out test plans etc.
      - Creation of a process that allows site personnel to become involved with building subsystems
    - **Electronics must be more modular**
      - We want to build a mountain of LEGO type chassis with a subsystem rack recipe. Especially useful for common building blocks like AA and AI
      - Pre-fabricated racks that are fully loaded and tested prior to installation
      - Careful attention to the module-level design for efficient racks and cabling
      - Remember, there are no more "*cross-connects*"

More What's New

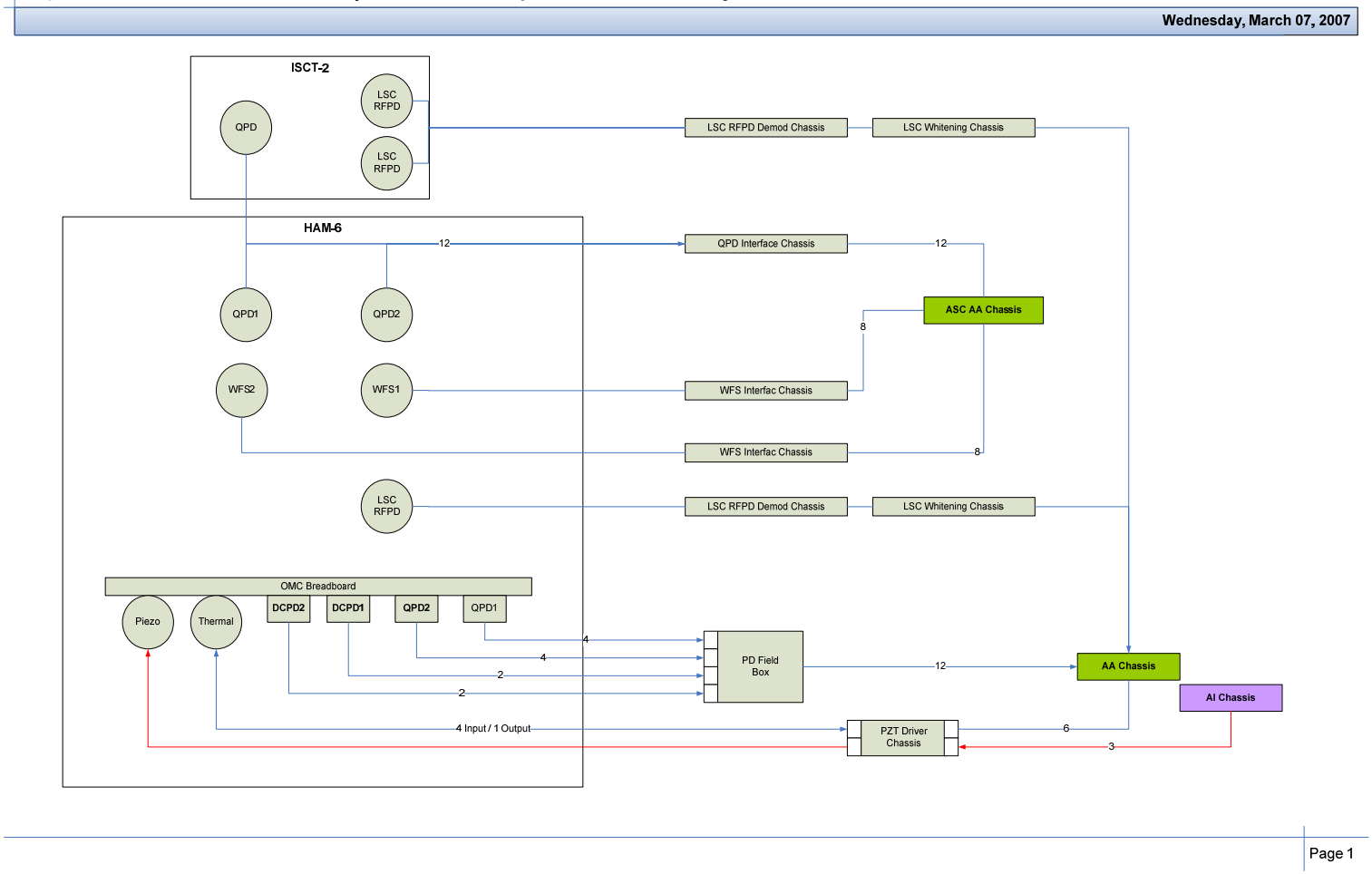
- **Monitors on designs to facilitate commissioning and repair**
  - Permits cabling from the back of the rack
  - Discourages wear-and-tear on critical connections
- **More up-front work, less back end commissioning**
  - The use of an automated system emulator
  - We must avoid installing equipment with the notion that we can fix it during commissioning. That didn't work last time
- **Better planning and documentation**
  - System block-diagrams are the norm now
  - Documentation has taken leaps forward
  - Wiki based module test procedures and travelers

Scope of Work

- **What are we changing, what needs to be done?**
  - **For the ISC, just about everything**
    - With no more cross-connects, almost all of the Euro-card format electronics will be re-designed and re-packaged
    - Default standards are differential signal transmission and 19 inch rack mounted RFI chassis
  - **Gee Rich, do you mean everything?**
    - Yes, here's a smattering
      - Continued low noise ADC/DAC design and prototyping
      - LSC photodiode redesign
      - ASC photodiode redesign
      - LSC Demodulator board redesign
      - ASC Demodulator board redesign
      - RF distribution system specification development
      - MC/CM Servo
      - IO RF System

Planning at the block diagram level

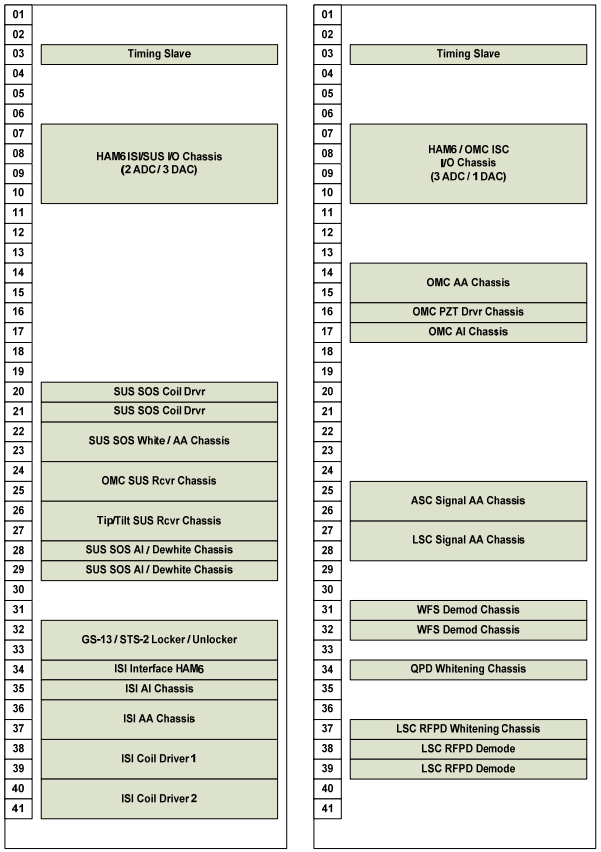
Figure 3: HAM6 / ISCT2 ISC Components– Conceptual Electronics Layout



Planning at the rack level

Figure 4: HAM6 ISI/SUS and HAM6/ISCT2 DC Readout/ISC Controls – Conceptual Rack Layout

Wednesday, March 07, 2007



Two Racks to be supplied as part of Eligo:

1) One rack to house single stage ISI controls for HAM6, plus Tip/Tilt SOS mirror controls. This rack may later be updated in AdvLigo to include controls for ISI in HAM 5.

2) Second rack is for ISC signals. Only items in rack slots 1U thru 17U are to be installed for Eligo. Remaining parts will be installed in AdvLigo (25U thru bottom of rack).

3) Two separate CDS FE computers (not shown) will be provided to control and monitor systems in these racks.

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