Pre-OTS Testing in Penticton
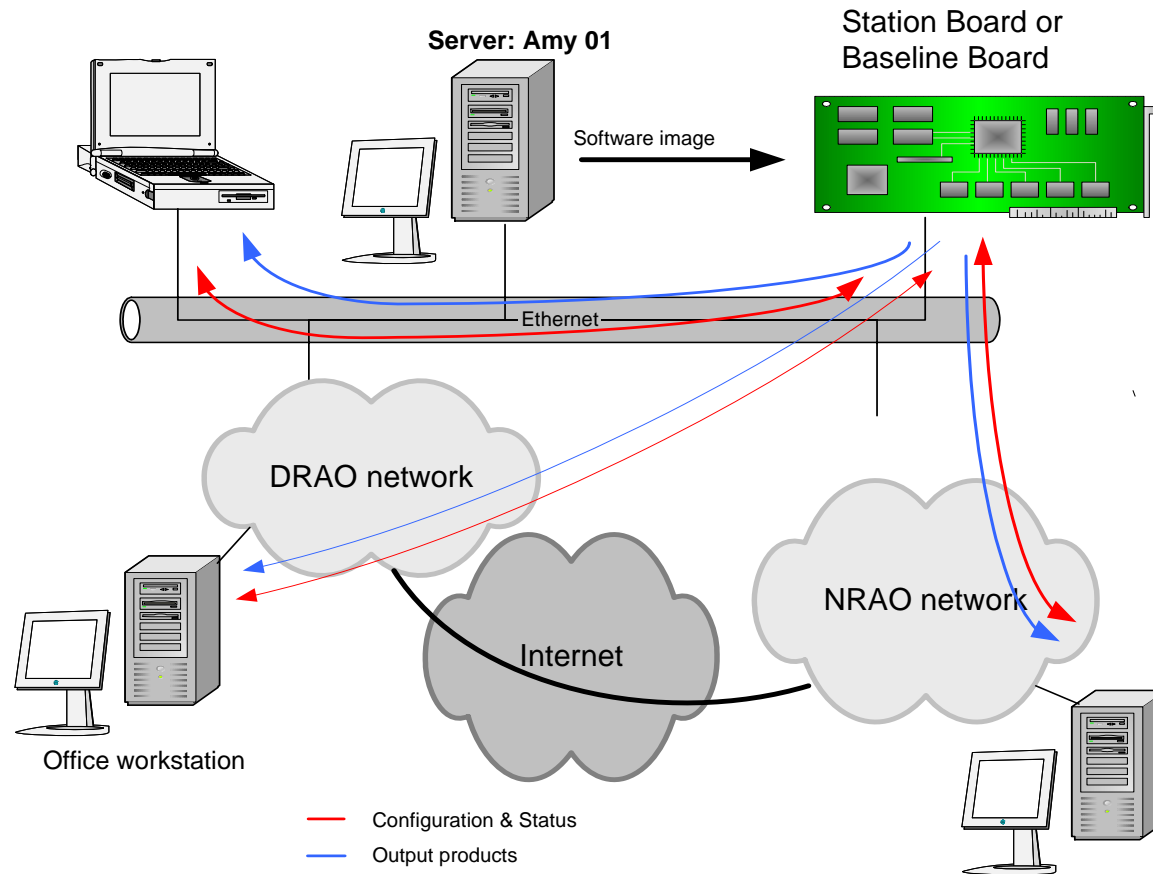
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Outline

- This presentation provides an overview of the software requirements for the testing of the Stage 2 board prototypes.

- Basic setup for Stage 2 testing.

- Control software

- Input

- Output:
  – Organization & storage of data & metadata

  – Examination of data & metadata

- Is anything missing bits ?

Setup for Testing of the Board Prototypes

Server: Amy 01

Station Board or
Baseline Board

Software image

Ethernet

DRAO network

NRAO network

Internet

Office workstation

Configuration & Status
Output products

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Software Requirements For the Stage 2 Acceptance Testing in DRAO Q1 2008

- Station Board and Baseline Board will be independently tested.
- At this phase test environment is rather low-level and manual.
- Control software:
  - CMIB software (Device Drivers, Module Access Handlers, Data Streaming). Some upgrades are needed.
  - GUIs developed for Stage 1 testing. Some upgrades are needed.
  - Power monitor & control (CPCC) HW and SW is not needed at this time.
- Input:
  - External input data is not needed, on-board test pattern generators will be used.
  - Externally generated (real-time) models are not needed, models will be prepared and loaded together with Test Vector.
- Output:
  - Output is stored in files and examined/analyzed by utility programs developed for Stage 1 (RTDD, Intelligent Diff, utility programs that capture BLB output).

Station Board: S/W Needed For Stage 2 Acceptance Testing

- Drivers, Module Access Handlers and GUIs have been developed and are updated as necessary.

- Some changes needed for Stage 2 board, but no major impact.

- Still need some work in order to be able to fully re-configure Station Board using XML (from GUI).

- "Core" delay tracking SW has been implemented. Only partly tested. Need to implement XML interface.

- CMIB must be able to read models from the test vector file and feed them to the Delay Module.

Monitor & Control:

- Test GUI developed for Stage 1. Some upgrades are needed (see next slide).

Input:

- Utility software generates Test Vector File which includes models.

Output:

- WBC products, meta-data and monitor data. Data streaming on demand. Format: XML.

- Ability to listen to STB output and save it in file(s) is integrated in Station Board GUI.

- Intelligent Diff for STB output has been implemented (web-based).

- Real Time Data Display (RTDD) implemented, need to fix/complete open issues.

- Output is stored in files.

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Station Board GUI
Upgrades needed for Stage 2 acceptance testing

- Handling files, i.e. ability to select, configure and display file names for:
    - FPGA personalities,
    - Lookup tables, and
    - Test Vector for Delay Module.
- Ability to configure FPGAs from "VCI" style parameters (so that user does not need to specify configuration for each individual device) . Functionality partly implemented, need to add a new GUI command.
- Ability to save only one of the following two groups of parameters:
    - Observation specific parameters (derived from VCI parameters), or
    - Hardware specific parameters
- Board level commands and parameters, most notably to *start and stop test*; and to specify *test duration*.
- Integrate STB Output Listeners with start / stop test commands.

Baseline Board: S/W Needed For Stage 2 Acceptance Testing

- Device drivers and Module Access Handlers (MAHs) have been developed and are being updated as necessary.

- MAH and GUI for RXP FPGAs are being developed and will be tested when the board arrives (January).

Monitor & Control:

- MAH and GUI for RXP FPGAs are being developed and will be tested when the board arrives (January).

- Should consider adding some GUI functionality to save configuration for all the devices on the board and re-use the saved XML file to re-configure the board.

Input:

- Plan is to test Baseline Board independently, i.e. using data generated on the Baseline Board. No need for external data source.

Output:

- Utility programs developed for Stage 1: capture Baseline Board output (lag frames) and save data in files. These programs also performs some basic checks. Stage 2 acceptance testing can be performed using utility programs.

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Further Software Development

- In parallel with testing of Stage 2 boards, software for the Station Board and Baseline Board needs to add more and more functionality in preparation for the full integration and on-the-sky testing.

- For example, real-time software such as:
  - Delay tracking
  - DUMPTRIG generation
  - PHASEMOD generation

Summary

- Most of the software needed for the testing of Stage 2 prototype boards is available or being developed.

- Bruce and Kevin plan to spend some time at DRAO testing drivers, MAHs and GUIs.

- Sonja needs to add some upgrades to Station Board GUI to provide for full board configuration.

- Further work is needed on real-time Station Board software, board level control and coordination of devices.

- Need to implement start / stop command for test execution on Station Board.

The End

Station Board – Automated Test Execution

Plan is to test Station Board using Test Vectors generated off-line:

1. Utility s/w generates test vector & delay models and creates a file.

2. The test vector file must be copied in an appropriate directory on the boot.

3. **Test Vector File name is part of configuration data (can be specified via XML)**

4. **Need ability to first specify configuration data (and load test vector) and then start test.**

5. **Need ability to specify test duration (duration will be probably implemented in GUI, CMIB implements only start, and possibly stop).**

6. CMIB software reads "models" from the file and feeds delay module.

7. **STB Output Listeners are started at the same time as test, they close the files at stop time (more precisely when the first record with the time stamp past end time is received).**

8. Intelligent Diff is not integrated with the GUI. User has to use web-based tool.

Highlighted items are not available at this time, and should be implemented as soon as possible.