Monsoon Software for DES

M. Haney
UIUC
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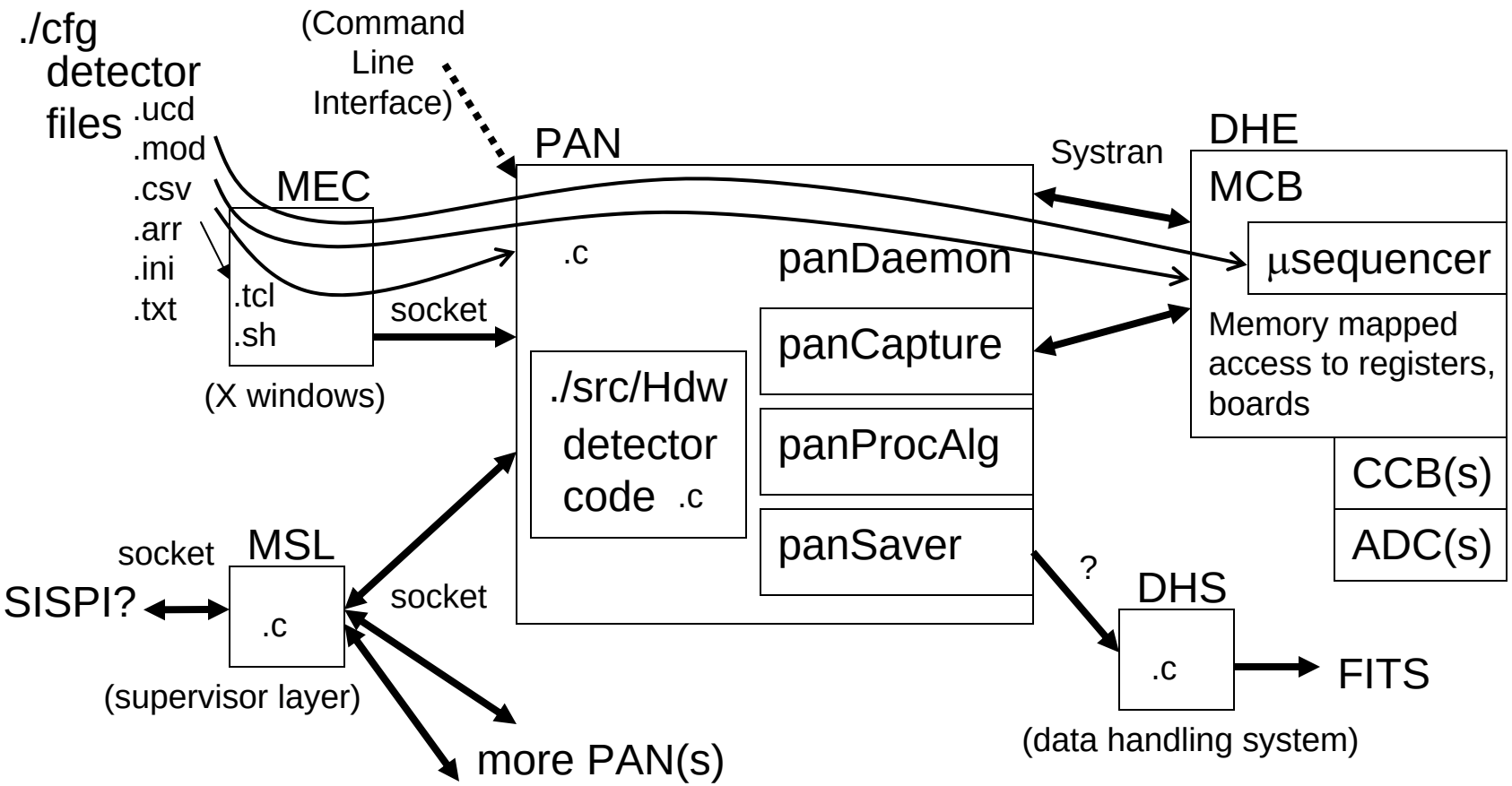
My limited understanding…



Elements of Monsoon Hardware

- Supervisor
  - Runs MEC, or MSL
- PAN – Pixel Acq Node
  - Runs:
    - panDaemon (control)
    - panCapture (data collection)
    - panProcAlg (data processing)
    - panSaver (DHS interface)
- DHE – Detector Head Electronics
  - Low level electronics, with microsequencer (i.e. runs sequence microcode)
- DHS – Data Handling System
  - Handles data storage

Elements of Monsoon Software

- MEC = Monsoon Engineering Console
  - TCL scripts; GUI
    - Provides read/write access (via PAN) to DHE memory-mapped registers
    - Automates DHE configuration by reading .mod files
      - “name=value” assignments
  - Socket connection to (one) PAN
- MSL = Monsoon Supervisory Layer
  - C
  - Socket to socket bridge
    - One to many
      - Supervisor to PANs
- PAN processes (4), DHE microsequence

Elements of Monsoon Configuration

- <_fp>.ini
  - Identifies filenames for .arr, .mod(s), .ucd
  - Additional initial settings, as appropriate

- <_fp>.arr
  - Array definition. Rows, cols, memory buffers
- <_fp>_DefaultSetup.mod
  - Clock+bias settings, ADC settings
- <_fp>_DefaultExp.mod
  - (additional) Exposure settings
- <_fp>_DefaultIdp.mod
  - Data processing settings (if any)
- <_fp>_DefaultSeq.ucd
  - Microsequencer code
  - Assembled from .asm source code

- note: Default files can be overridden by files named in <_fp>.ini

Elements of Monsoon Configuration

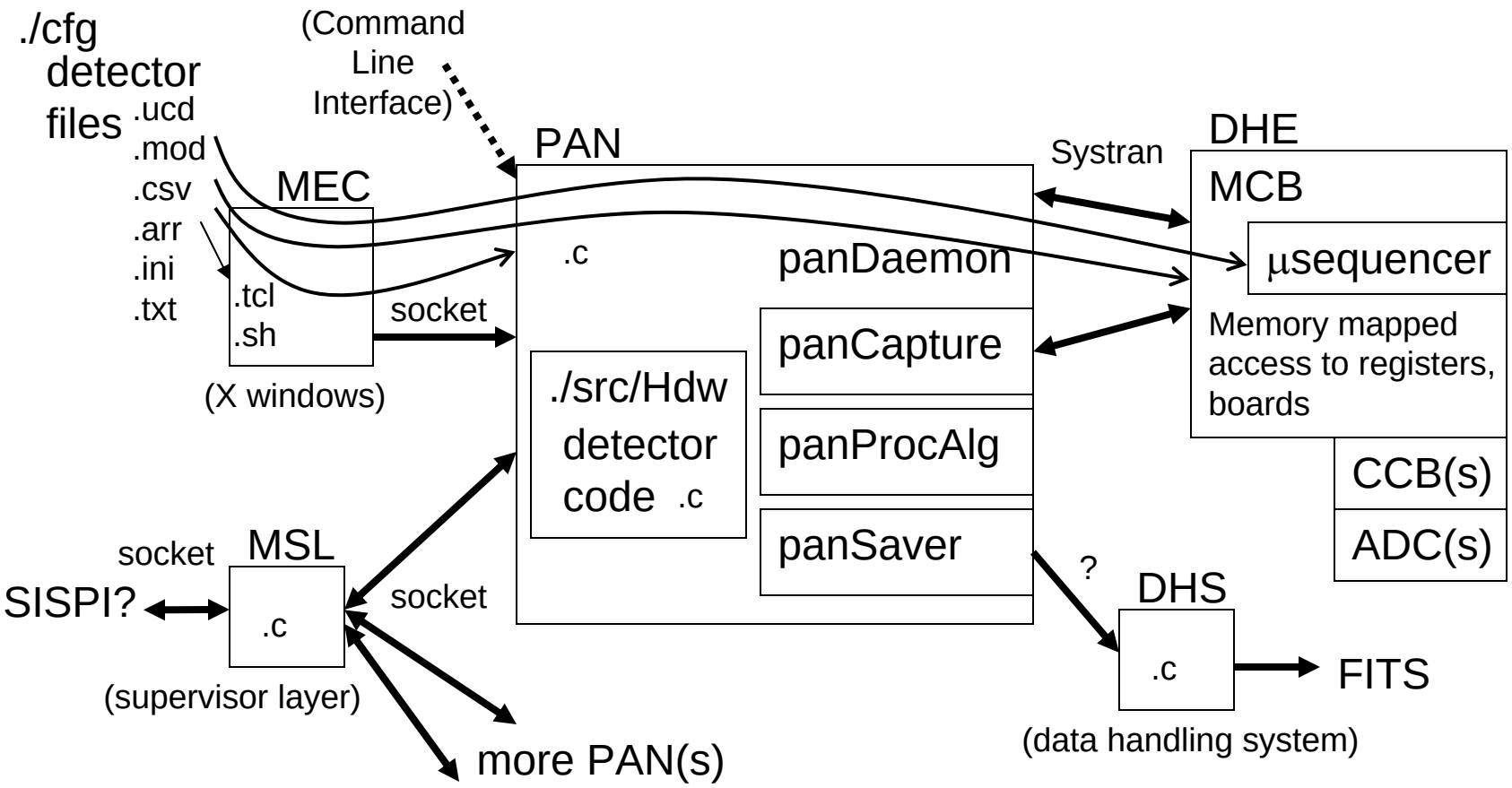
- <_fp>_Config.csv
  - Name, address, and properties (including calibration coef's) of DHE memory mapped locations
    - Controller board registers and microsequencer memory
    - Clock+bias registers
    - ADC registers
  - Name,, and properties of PAN software variables

- note: "address" = slot+register (i.e. absolute)

- <_fp>_guiCategrories.txt
  - Defines list order for top level TCL window for DHE peek/poke access
- <_fp>_attributeLogList.txt
  - Logs names from <_fp>_Config.csv processing

- monsoonAuth.cfg
- monsoonLocalClients.cfg
- sysTranBd.cfg

My limited understanding…



Where is the code?

- NOAO
  - Official source
    - Release = one or more .tar balls; NOAO CVS not accessible
  - Multiple releases available
    - Most recent: 20051103
  - Does not include “external” software
    - CFITSIO, FITSTCL, POSTGRESQL, Systran, TCK/TK
- DES CVS repository
  - Edited version of 20051103
  - Includes all external packages
    - setenv CVSROOT descvs@cdcvs.fnal.gov:/cvs/des
      setenv CVS_RSH ssh
      kinit -n <your_fnal_principal>
      cvs checkout uiuc_monsoon/monsoon1103mjh
      cd uiuc_monsoon/monsoon1103mjh
      source setup_monsoon_mjh
      make all
      source run_monsoon_mjh
- On various machines at Fermi, UIUC, other
  - Mostly running (very) old releases (e.g. spring 2005)

Other other

- Microsequencer file(s), mod file(s)
  - Walter, Inga, others?
  - None in CVS
- CSV file(s)
  - Juan, Inga, others?
  - None in CVS
- TCL scripts
  - Juan?
  - None in CVS

  - Or if they are in CVS, I can not find them…
    - Absense of “modules” file(?)

Change?

- What is the DES use case for “change”?
  - is Monsoon good enough as-is (for CCD testing) such that changes are unnecessary?
  - does DES propose changes to NOAO, and hope for them to be made for us?
  - will DES "take ownership" of some version of Monsoon, so that changes can be made independent of NOAO?
  - is there a middle ground, for both DES and NOAO to make (compatible) changes?

Changes submitted to NOAO

- 6 Jan 2006
  - Mostly to allow easy checkout and make by non-root users; some bug fixes
  - Several accepted by NOAO
  - Several to be considered
  - Some no
    - Nick and I have differing viewpoints…
  - Some confusion
    - LCK files; cfg handling; simulation
- Work in progress
  - Nothing “released” by NOAO, yet

Outstanding Issues

- “simulation mode” is chaos
  - Some of it works, under some conditions
    - Would be very helpful for supervisory development, FITS file header changes, new users, (non-CCD) testing, etc.
- Semaphores use /tmp/.LCK files
  - Cripples multiple (sequential) users
- soft_dev/src/Hwd/Detectors/
  - Contains focal-plane(?) specific PAN code (c)
    - Capture, descramble, expose, process, setup, shutdown
      - NOAO does not appear to have an “FNAL” or “DES” detector…

end