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# SIRTF Science Center QA and HK Processing

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## QA and HK - Software



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- The “LOADER” modules are C programs or Perl scripts that are executed automatically during pipeline processing.
  - The database used is Informix
  - The Web based tools are:
    - Run on an Apache server
    - Use the CGI standard
    - Perl scripts
    - Use the Perl DBI interface to the database
    - Use Java applets for image display and plots



## HK - General



- "HK" is "House Keeping" data subsystem. (AKA "IPM", Instrument Performance Monitoring") It's function is to store the HK data from the spacecraft in the operational database and then to provide easy access to it.
- It is composed of two primary parts:
  - "HKLOADER" is a batch module that runs during pipeline operations to save selected engineering data .
  - "HKDATA" is a Web based tool that is used to retrieve and/or plot the HK data.



## HK - HKLOADER Module



- The HKLOADER module is a Perl script that runs during pipeline processing.
- First it reads channels engineering data in “ecsv” (ASCII comma serarated) files that are received by the SIRTF Science Center.
- Then it re-samples the data to uniform sampling rates.
  - Different channels are sampled at different rates.
  - Rates vary between 4 seconds and 1 hour.
- And, finally, it loads the HK data into the central operations database.



## HK - HKDATA Tool



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- The HKLOADER module is a Web based tool that gives access to the HK data in the central database.
  - It filters on two factors:
    - channel number
    - time range (spacecraft clock times)
  - Then produces three types of output:
    - ASCII files containing the HK information
    - Plots (and overplots) of value vs. time
    - Scatter plots of one values in one channel vs. values in another



## QA - General



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- "QA" is the "Quality Analysis" subsystem. It's function is to support analysts in identifying non-nominal data products and to help determine what needs to be done to fix them.
  - It is composed of two primary parts:
    - "QALoader" is a batch module that runs during pipeline operations. It saves statistical values associated with each raw or processed product file. These statistics are saved in the central (Informix) database.
    - "SDAT" is a Web based tool that is used by QA analysts. It allows them to review all products before they are released.



## QA - "QALOADER" Module

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- The QALOADER module is a C program that runs automatically during pipeline processing.
  - The data flow is as follows:
    - The various pipeline modules compute statistical values and deposit them into a file.
    - The QALOADER module converts this file into SQL statements.
    - A standard Informix utility is called to execute the SQL and load the statistics into the database.



## QA - "SDAT" Tool



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- The SDAT tool is a set of Perl modules and Java applets that run in a Web based environment.
  - This tool does the following:
    - allow user to select an "AOR" (observation) of interest
    - allow user to "drill down" into the various data products (raw and processed) that are part of this AOR.
    - display images and plots and perform a few basic operations, such as contrast enhancement and "cut" plots.
    - update the status of the AOR and add comments.
    - see all status history of the AOR.