Data Seeker

Description: **This tool serves as an interface between the MTA Scientist and the The scientist inputs the data types and values ranges (s)he is interested in. The tool queries the data from the database and returns a fits binary table with the requested data.**

`I think we should have a written spec to keep up with the design. While the first version of this is dated March 29, 1999. Versions date back to June 1997.`

Notes:

- Should be GUI or command line driven.
- GUI form should be callable from Data Inspector
- Tool should query for primary search critera multiple PSC are acceptable, but a boolean (and/or) must be specified.

Inputs:

- MTA data bases - currently listed at:

  `http://hea-www.harvard.edu/asc/mta/MTA_DATABASES.txt`

Outputs:

- Fits file, possibly fed into MTADIT.

Algorithm: One selects primary search criteria, secondary search criteria, then data types. For the cases when the criteria are true, the requested data types are recalled from MTA databases and placed in a fits binary table (including the status and variances).

Data Inspector should be able to go to the limits data base and extract limits and place those values on the screen (toggle)

Rules:

1. Primary Search Criteria:
   These are independent data by which all other data are referenced. I expect the filling out this page will be the first part of running this task. I expect that the time field will be required.

   - Time (Always required)
   - Mission time line parameters
     - S/C altitude from DIST_SATEARTH (ephem L0)
     - S/C atitude I am still looking for where this is going to be put.
     - S/C celestial pointing angle from AVG_RA,AVG_DEC -L1 AIPROPS
     - S/C pointing angle relative to the Sun from POINT_SUNCENTAN
     - S/C pointing angle relative to the Moon from POINT_MOONCENTA
     - S/C pointing angle relative to s/c velocity (ram vector)from POINT_RAMVECTOR (ephem L0)
     - PCAD mode from PCAD_MODE L1-AIPROPS
     - Aspect solution quality from ASPECT_MODE L1 AIPROPS
   - Observation Criteria
     - Obs ID from OBSCAT
     - Pointing ID from OBSCAT
     - SI Configuration from OBSCAT

2. Secondary Criteria
   This is a list of about 70 discreets
   (see http://hea-www.harvard.edu/asc/mta/MTA_DATABASES.txt). One should be able to specify the setting of some or all th these discreets. While not required, this would typically be the second part of running the tool.

```
example: (stuff in between the {} are on a pull down which defaults to
'ANY'. All ~70 items are listed as well as the exiting query.

CURRENT QUERY: TIME from Jan-01-2000 to Jan-05-2000
               PCAD Mode = Slewing or  Acquiring
       OBS ID    = 200*

SECONDARY SEARCH Criteria


...2PS5AON     {'OFF'|'ON'}        3SEAPENA   {'OFF'|'ON'}
2PREADS     {'IMAG'|'SPEC'}        3SEAPENB   {'OFF'|'ON'}
2PS5BON     {'OFF'|'ON'}           3SEAPSMA   {'OFF'|'ON'}
2PREBDS     {'IMAG'|'SPEC'}        3SEAPSMB   {'OFF'|'ON'}
2ELEASS     {'PMT1'|'PMT2'}        4HILSA     {'INSR'|'NINS'}
2ELEBSS     {'PMT1'|'PMT2'}        4HRLSA     {'NRET'|'RETR'}
2C1LVBS     {'BUSA'|'BUSB'}        4HILSB     {'INSR'|'NINS'}
2C2LVBS     {'BUSA'|'BUSB'}        4HRLSB     {'NRET'|'RETR'}
2IMHVBS     {'BUSA'|'BUSB'}        4LILSA     {'INSR'|'NINS'}
2S1HVBS     {'BUSA'|'BUSB'}        4LRLSA     {'NRET'|'RETR'}
2S2HVBS     {'BUSA'|'BUSB'}        4LILSBD    {'INSR'|'NINS'}
2SPHVBS     {'BUSA'|'BUSB'}        4LRLSBD    {'NRET'|'RETR'}
2OHIRADF    {'FALS'|'TRUE'}        4M5IRAX    {'DISA'|'ENAB'}
2OLORADF    {'FALS'|'TRUE'}        4M5IRBX    {'DISA'|'ENAB'}...
```

3. Data
   The data are currently stored in 13 MTA databases: ACIS thermal, ACIS electronics, ACIS DEA[1], HRC Electronics, HRC Thermal, ACA/PCAD maintainance, HRMA, SIM, grating electronics, EPHIN, S/C thermal, batteries, gyros, In addition, a source and line database are expected.

   Currently, I expect this to be implemented via a third page:

```
CURRENT QUERY:
    Primary Criteria
               TIME from Jan-01-2000 to Jan-05-2000
               PCAD Mode = Slewing or  Acquiring
       OBS ID    = 200*
    Secondary Criteria
               2S1HVBS     {'BUSA'}        CCFMTID     {'FMT2'}

return the following (check desired)
   ACIS thermal        XHRC Electronics    Grating electronics
   ACIS electronics     HRC Thermal        HRMA
   ACIS DEA             SIM                ACA/PCAD Maintainance
   EPHIN                S/C thermal        gyros
                        Batteries
   Sources              Lines              slots/fids
```

4. In the future version of this code there will be a fourth page where the user may choose which elements of the data base are returned, currently all are returned.

5. The default query returns < 1000 records to the final fits file. If more than a thousand records are generated. Then the data are resampled and variance regenerated.

6. The returned fits header includes all search criteria used.

[1] This data base is generated from L0 data products and not from MTA output

7. Development plan

   - 1.0 - March 15, 1999 - Only input criteria is time - outputs whole Data base
   - 2.0 - June 1, 1999 - All primary and secondary search criteria - outputs whole Data base
   - 2.5 - September 1, 1999 - All primary and secondary search criteria - outputs selected elements of data base.
   - 3.0 - December 1, 1999 - All primary and secondary search criteria, Data can be used as search criteria - outputs selected elements of data base.

Release: 4

Group: DSOPS

Analysis Domain: Temporal

DS Tool Class: 2

DS Tool Category: TRENDING

Spec Name: dataseeker.tex

Spec Category: New

Code Type: ASCDS:w

Code Source: New

This Revison: 0.5 - by SJW

Last Edit: March 29, 1999