

SOFTWARE DE ANÁLISIS PARA EURECA

SRON

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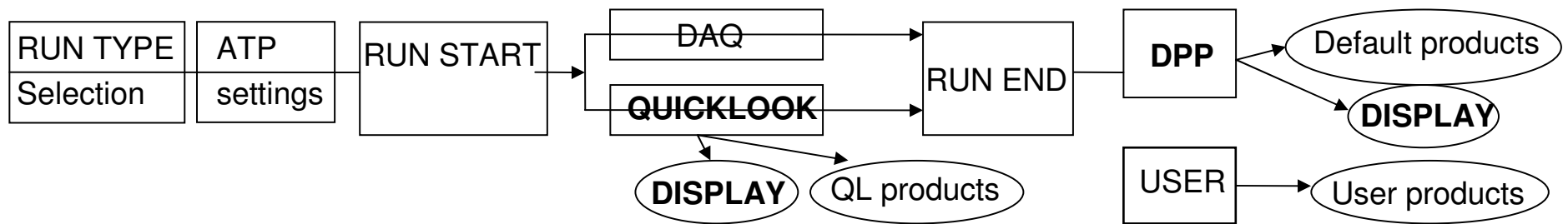
ISDC

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Reiner Röhlf

Jornada XEUS - Santander, 22 Febrero 2008

Mandate: Default Pipelines (DPP) & Quicklook (QL)

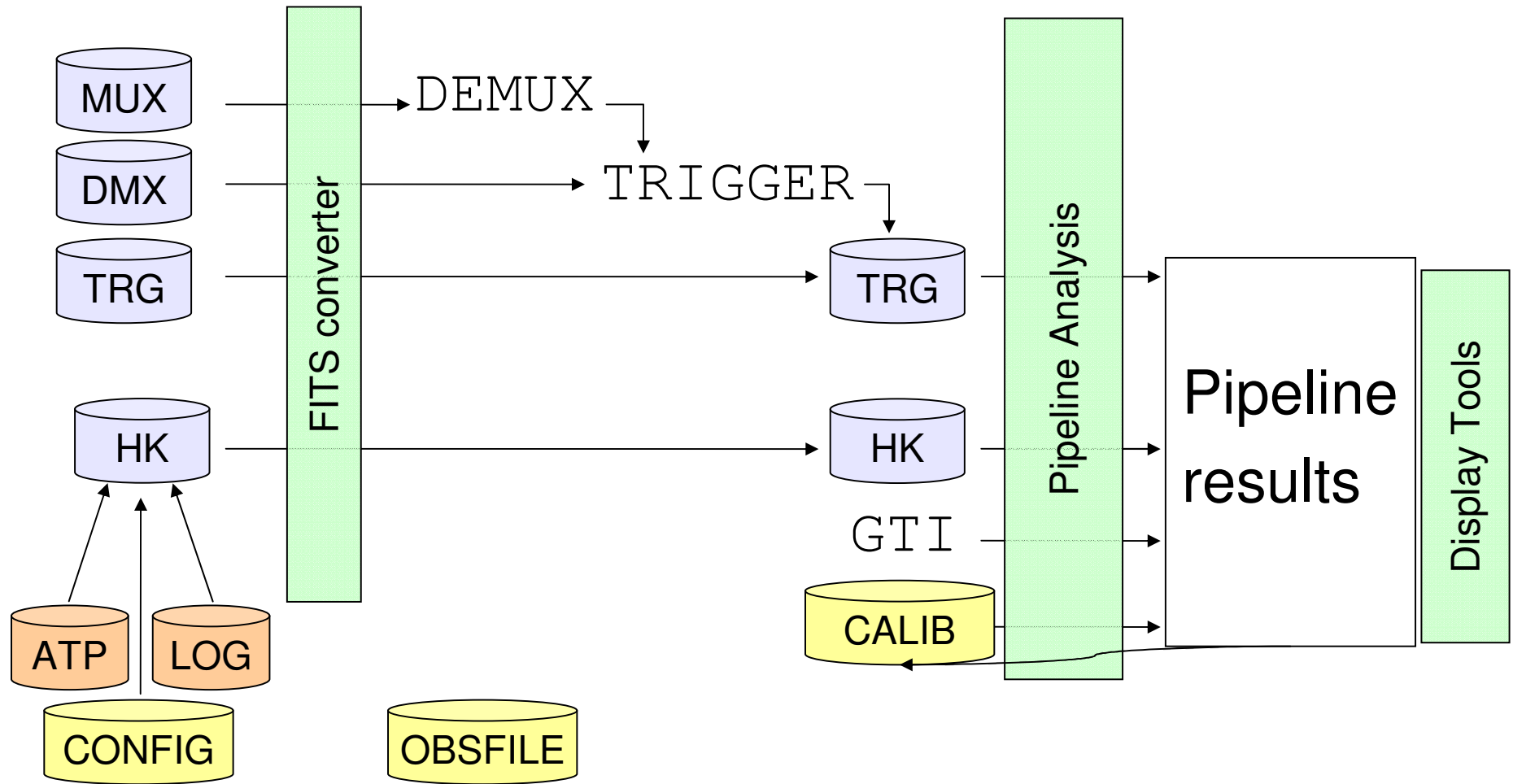


- Cater for all Instrument Modes (Science & Characterization)
- Meet high-rate requirements
- Allow for correlation between 2 fast ADC signals or ADC/HK
- Maintain source code repository and version control
- Run/Config/Calib databases
- GTI tool (user-set HK limits) + data selection

SCIENCE (S)	Pulse parameters — Image analysis (multipixel) Noise baseline
CHARACTERIZATION (C)	1D/2D Oscilloscope (uncorr/corr ADC data) Spectrum analyser Network analyser

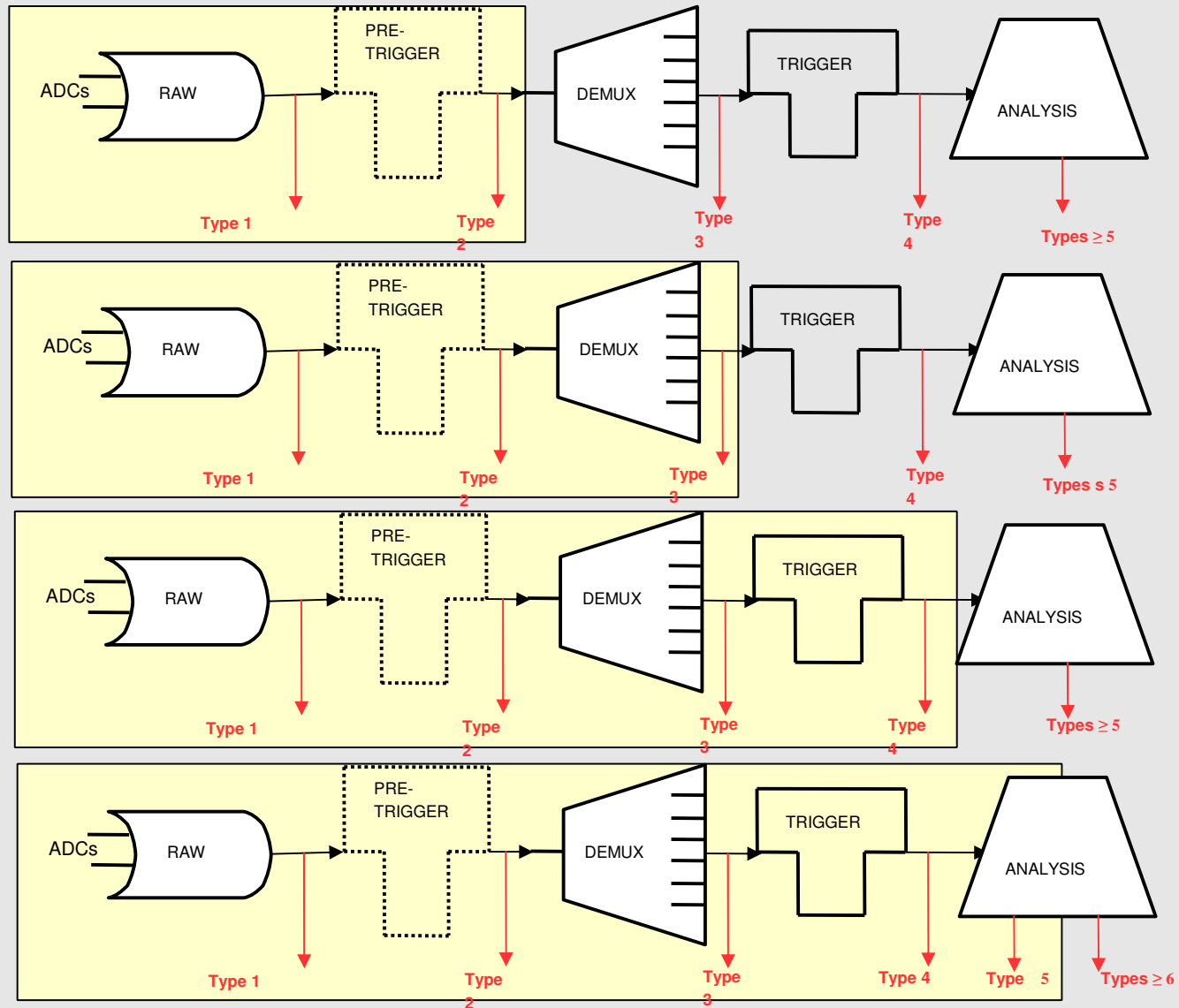
FITS
Linux
C++
GSL, FFTW
gcc
perl
Latex doc

Interfaces



TRIGGER = "event" recognition (S: pulse, non-pulse; C: single reading)

Evolution On-board / Ground Segments



Analysis modules

Implemented

as of January 2008

DEMUX

TRIGGER

GTI

RESAMPLE

IVPROC

RTPROC

SPECTRUMANALYSER

TESNOISESPEC

LCTRANSFREQ

SQUIDIV

SQUIDIPHI

SQUIDVPHI

SQUIDFLL

COMPLEXIMPEDANCE

PIXELNOISE

OPTIMUMFILTER

ENERGYRESOL

PULSESHAPE

HOLZERGAUSS

single pixel
multi pixel

PILEUP

CROSSTALK

LIGHTCURVE

IMAGEGENERATE

S

C

Repository / Version Control

implemented

Repository

<http://venus.ifca.unican.es/~eureca/websvn>

Repository for software development and version control:
(Subversion managed + WebSVN access+ backup system)

Bugzilla

<http://venus.ifca.unican.es/bugzilla>

Report System: tracking software bugs and change requests
users can submit/check bug reports

Pipeline

parameter file + param_gui task + perl code
demo: demux -> energy_resol -> holzgauss

GUIs / Displays

unit_test//gti_create.par

ParamGUI

input parameter files:

ParamFile1: Run_124-23_2_dmX_ivr.fits [browse] Save

ParamFile2: Run_124-23_2_dmX_ivp.fits+2 [browse] Save As

ParamFile3: Run_124-23_2_dmX_ivp.fits[RAW_ADC_DATA] [browse] Load

ParamFile4: [browse] Reset

ParamFile5: [browse] Run

limit file:

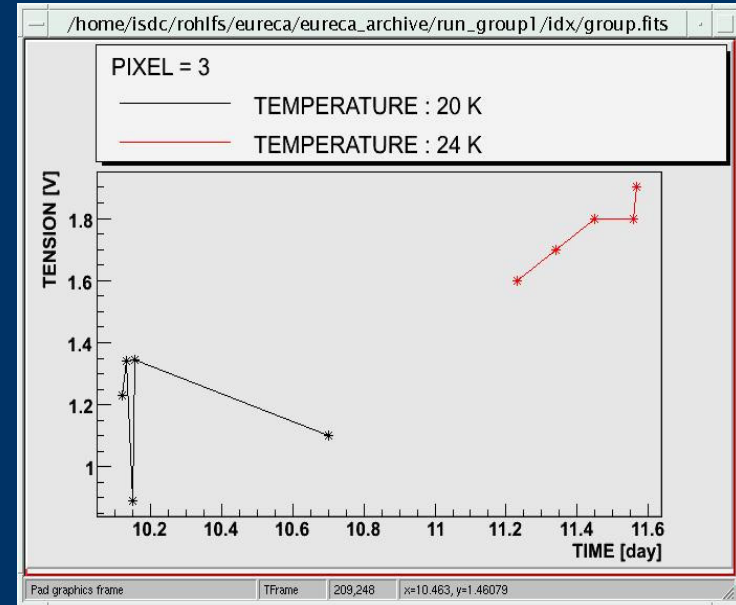
LimitFile: limits.fits [browse] Quit

output GTI file:

Merged_GTI_Name: merge_all Help

Result: gti_124.fits hidden

CharacDisplay



/home/isdc/rohifs/eureca/dev/displays/param_display/abc

paramDisplay

EURECA

- RAW_ADC_DATA TMAXFIT 1.5025 ms
- RAW_ADC_DATA NR 3.96002
- RAW_ADC_DATA ENERGY 7.12107

Legend of markers/lines/boxes to represent c TPave 481,242 x=5.54151, y=118.739

Characterization Display

X - Axis: M: TIME Y - Axis: M: TENSION Multi Plot Parameter: single plot

Apply

Ok

Cancel

Print

ps-File

Quit

Measurement Parameter Filter:

PIXEL	TEMPERATURE	MAG_FIELD
no filter value	no filter value	no filter value
3	20	15
5	24	

Tentative agenda for 2008

- **February: start new work on X-ray analysis.**
 - **April: standardization issues resolved**
 - **May: X-ray data pipeline (beta) available. Move on to rest of CAL pipeline (IV, Noise Spectrum, Complex Impedance) Feed ISDC with first index files. Event display (beta) ready.**
 - **June: interface IFCA/ISDC verified**
 - **August: full X-ray pipeline ready for heavy testing at SRON**
 - **November: CAL pipeline ready for test at SRON**

 - **February 2009: BESSY campaign (CAL must be ready)**
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Conclusions / Open issues

Software architecture is in place:

**platform, language, compiler, libraries
data format (FITS), I/O data structure
some analysis tasks (modules), utilities
GUIs and display tools
repository, version/compatibility control**

But a good number of modules to be done

**No standard data taking protocol nor std input file format
No obs / config / calib archives
No example of untriggered data**

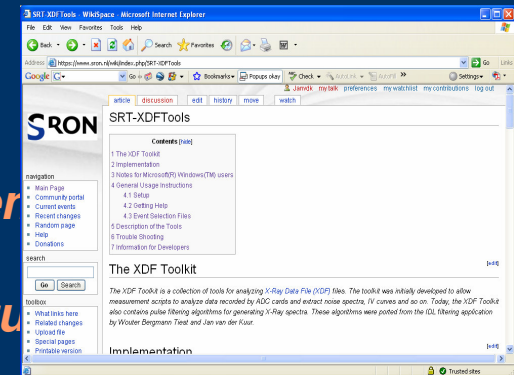
XDF (wiki) documentation to become public

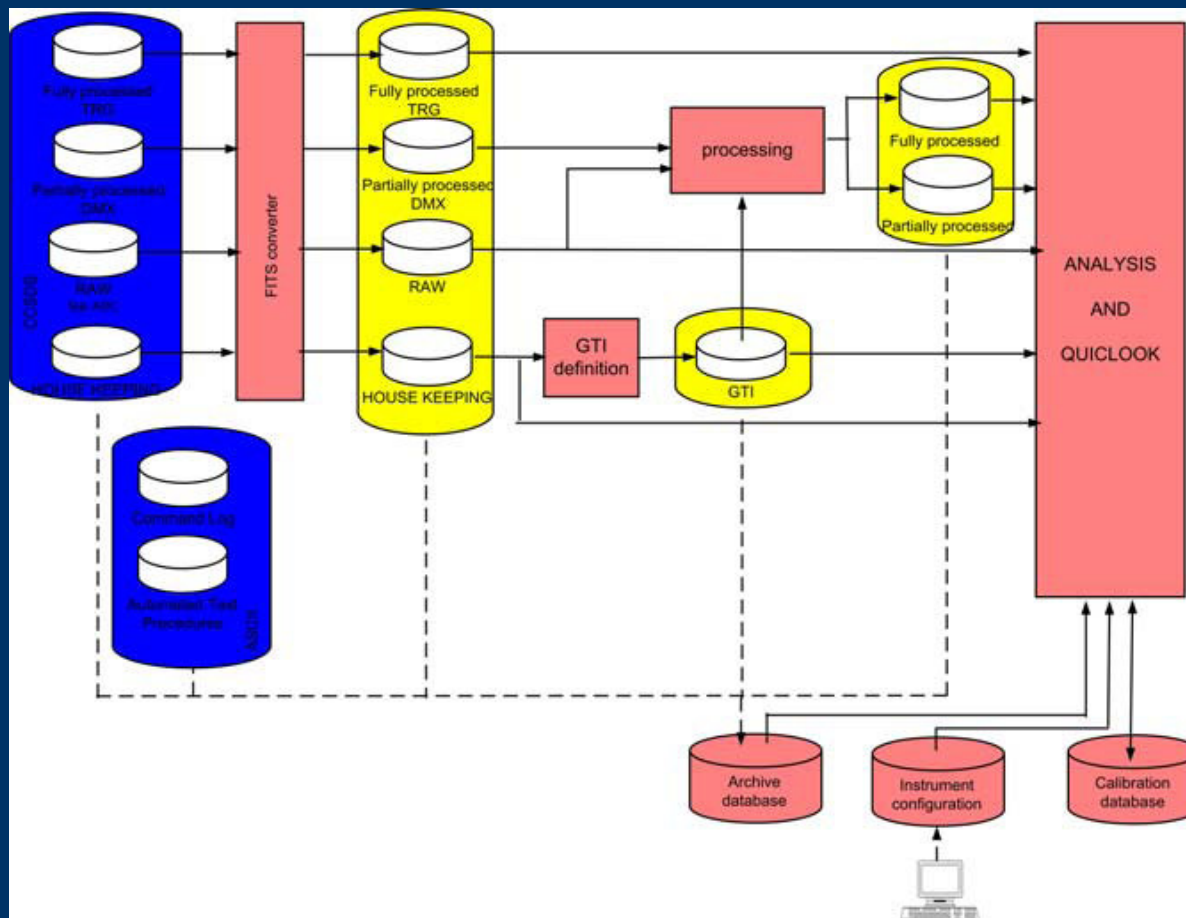
Updating basic requirements and top-level document

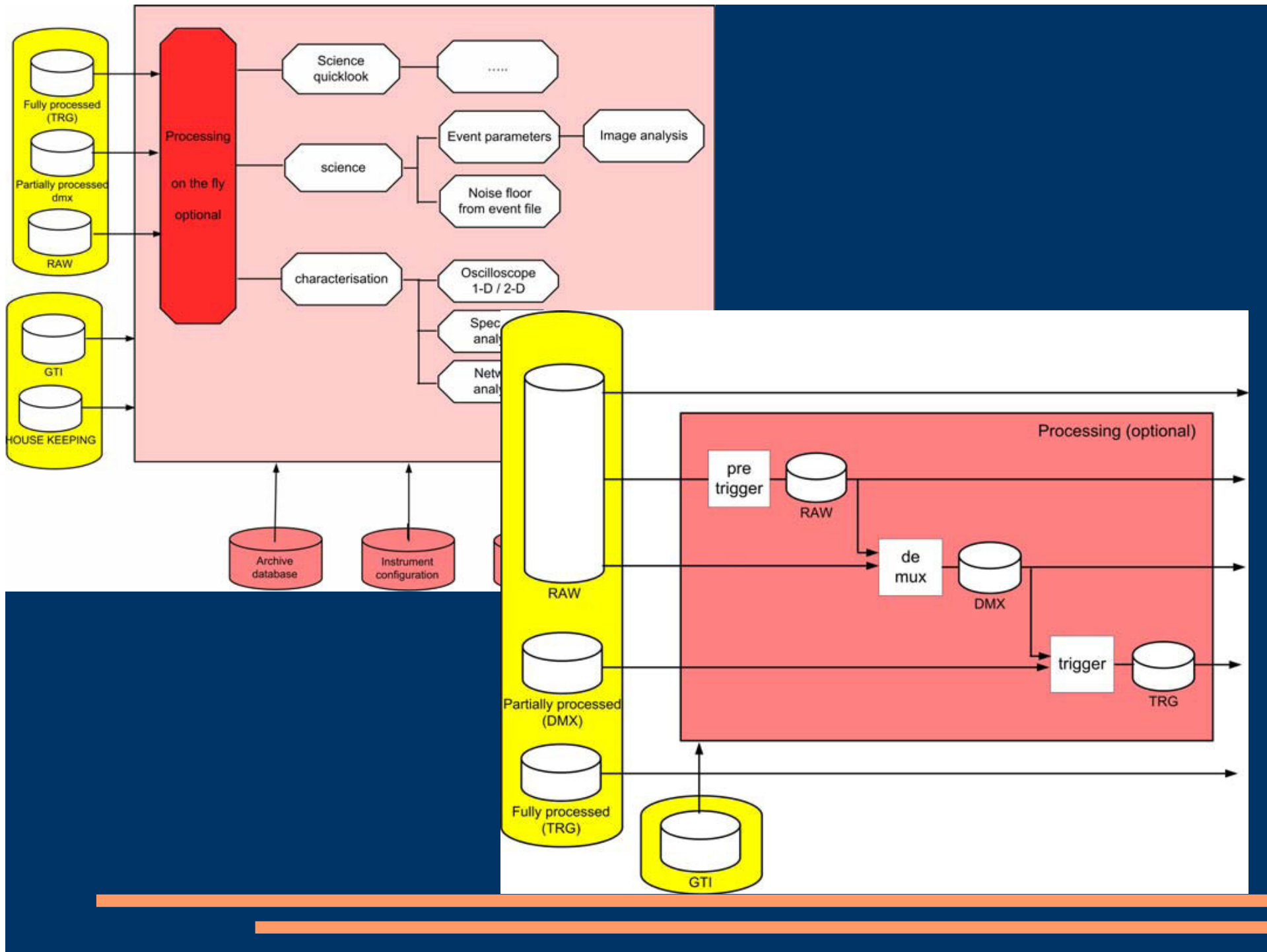
Seeking agreement on I/O data and directory structure

On-going discussion on quicklook facility

We should aim to have pipeline ready for SRON X-ray test by October'07







Quicklook

Strategy:

unique target file for QL pipeline

Target size:

process it every time a new chunk of data is dumped to it

Dir Structure: *(discuss)*

trade between lookback time and update rate

