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March 26, 2001

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1 ISDC Status: PK

Extensive testing of V1 sofware ongoing

Need to firm up V1 'very soon' - this means end of May for j_verify

Otherwise ISDC waiting for better data on time schedule from ITs

PICSIT MAY not make it to the launch

MAY be a 6 month launch delay, but ESA will avoid this at all costs

Not much happened in V2 integration since last meeting

Pipelines parallelised to deal with one SCW at a time, but running many SCW pipelines at once followed by 'wrap up' for OGs etc. This requires added layer of scripting and changes in current prototype pipeline application scripts. However will be more efficient since median observation contains about 100 SCWs!

'Intermediate' observations (SCWs) will be done during fine-tuning slews - but who owns these 'lost' observations?

May be data rights problems with using slew data for calibration - will be easiest to avoid all data from proposal observations.

Søren Brandt to be our instrument Representative?
AI 18.1: On NJW to discuss identity of Instrument Representative at DSRI. Due: May 2001

With Configuration Control procedure all changes must be done through SCREWS and half of all requests denied by CC board. Changes within CC code become very slow because of board review. Some ideas rejected for lack of resources. Also because it's better to live with known bugs than introduce new ones.

2 Component Status: CAO

- See CAO's overheads for figure of Science Analysis Pipeline Overview
- Basically, all of V1 and V2 delivered in preliminary versions except: j_verify, j_dead_time_calc and j_ima_refined_recon
- j_data_preparation becomes scw_pipeline and is an application. Diagram should indicate other non-JEMX executables in this pipeline.
- j_calib_auto becomes /rev_file_pipeline and is also an application. Diagram to indicate other non-JEMX executables running before and after this application.
- All the other pipelines now become scripts.
- j_performance and j_bkg_interactive are GUI applications
  AI 18.2: On CAO to choose between j_verify and j_prp_verify. Due: End March 2001
- gti_create and gti_merge are responsiblity of ISDC, specifically Reiner Rohlfs

3 V2 Consolidation

- See V2 consolidation checklist with CAO's overheads
- Additional points for the checklist are:
- — all ∗.par files to be delivered with empty input strings
- — every used *output* member of a group to have an override DOL
- — In help file ∗.txt under 'ERRORS' there should be the following information: the error code number; what it means and corrective action to take.
- No progress on j_data_binning since december.
- All binning programs should use IJD not OBT.
- OBT to IJD conversion done by DAL3AUX for blocks of events—not for single events
- inSWG is used for Read Only data structures and outSWG are for Read/Write or Write Only data structures.
- Both inSWG and outSWG should be provided for all components
- NJW working on consolidation of j_ima_shadowgram now.
  AI 18.3: On PK to circulate email about mode enumeration to SDAST. Due: ASAP

4 ADD

- ADD corrections to be done for next revision handed out to all SDAST
  AI 18.4: On NJW to investigate unfulfilled SRDs 18.21.4 and 18.21.6. Due: End May 2001
  AI 18.5: On PK to talk to Tim Lock about SCREWS/updating SRD. Due: End March 2001
  AI 18.6: On CAO to update and circulate The Figure. Due: ASAP
  AI 18.7: On PK to circulate chapter 18 of current SRD. Due: ASAP
  AI 18.8: On CAO to make list of changes to SRD. Due: End April 2001

- Complete re-write of j_performance required (normal work)
- More useful TBD messages required for most components
- TBDs must also have dates for final decision
- Under ‘Resources’ should be a numerical estimate of CPU time and memory required for one 1000s SCW
- Everyone to check the SRDs for each component with description in Chapter 2, and use `\SRD{}` command
- Everyone to check their entries in Chapter 3, the Overview
- Peter to update NRT, Consolidated and Offline processing figures
- Sami to check which version of BKG handling is in version 6.0
- Everyone to check their applications against The Figure
- Everyone to check for correct input parameter names
- CAO to remove the completion status table from ADD
- Version 6.1 should be made available by next consortium meeting in June 2001.
- No override DOLs for the children of the IMOD group - all such names to be removed from parameter name list.
- Whereever this is straightforward, ”Resources” should also indicate how the resource use scales with duration of ScW/mode/precisionLevel ...

5 Lightcurve and spectra extraction: SL

- See SL’s overhead slides
- All binning time parameters to be given in IJD not OBT
- Good documentation needed to indicate where beginning of bins is used and where middle of bins is used
- timeZero is start time of binning i.e. beginning of first bin
- Binned time values given by centre of each bin
- Get rid of timeZeroSet parameter and instead use negative value of timeZero to indicate default binning beginning at start of SCW
- Same thing with timeStop - if negative then end of last bin is at end of SCW
- nPhaseBins and phaseBins for cyclic folding of period sources with bins of unequal length
- nPhaseBins equals Zero: no pulse folding
- nPhaseBins positive: do pulse folding using this number of bins, each given by vector phaseBins
- nPhaseBins negative: use —nPhaseBins— equally spaced bins of size phaseBins for pulse folding
- All this must be well documented

- precisionLevel parameter to determine coarseness of binning on detector and other smoothness determinants
- Pixel efficienty map of detector to be added to JMXi-DETE-MOD
  AI 18.9: On NJW to add detector pixel map to JMXi-DETE-MOD. Due: End May 2001
- SL to work from JMXi-SRCL-RES and not worry about whether sources are flagged or not
- BIG problems with REST data because individual events don't have unique OBTs - suggestions and possiblities abound. The outcome of all the discussion is:
  AI 18.10: On PK to study making DAL3 function for REST event/image times. Due: End April 2001
  AI 18.11: On SL to email JEM-X observers re preferences for REST binning. Due: End March 2001
- PK: REST events could just get randomized times within their respective integration intervals and then be treated just like all other events.
- SL: The basic binning of REST data should be the 'natural' binning provided by the time bins existing in the telemetry.

6 Ferrara Calibration: NJW

- X/Y scan of entire detector area—produces position correction matrices
- Response matrix upto 35 KeV
- Do we need more S/W for this calibration analysis?
- All calibration data obtained at Ferrara to be stored at ISDC in a specific format
- All data to come from instrument in diagnostic format—so a very big data file indeed
- Electronic calibration of ADC is done once per revolution (i.e. every 3 days) so should this be automatic (j_calib_electronic_fitting) or interactive (j_ical_electronic_fitting)?
  AI 18.12: On CAO to talk to SB about electronic calibration in ISSW. Due: End March 2001
- Energy calibration over entire energy range only done on few places on detector
- Whole-area scan only done at two different energies with 0.5 mm resolution
- Carl has already done gain variation measurements and found about 5% variation across the detector and found energy resolution at 6 KeV of about 14%
- No quantum efficiency measurements done yet
- Ideally instrument should be calibrated before June delivery to Alenia, but if time is tight could dismount detector after integration and take it for calibration
- We need a tool that converts data from diagnotic data structure to -RAW data structures
  AI 18.13: On PK/CAO to investigate diagnostic to RAW data tool. Due: June 2001
- We must have documentation on how we get from Ferrara raw data to -MOD and -CAL data structures

7 Script Architecture: PK

- All scripts to be parallelised to work on one SCW at a time - followed by an OG 'wrap-up'
- Solaris is primary platform and Linux is secondary—all ISSW should be able to run on both
- Median observation is 10^5–10^6 s so w/o parallelisation SA for an observation would take days
- Resource usage: anything below 50 Mb per executable acceptable
- Script style changed considerably when isdcClass in isdcroot became smarter—work done by James Peachey
- Now a 'constructor' initialises each script and accesses parameters w/o PIL—also done by James
- 'copyPARs' is new function that concatinates ∗.par files
- However, must make firm decisions pretty soon about levels at which users can control (or be bothered by) input parameters. Peter to keep current level of control.
- To use Peter's development directory setup:
- `\> /isdc/source/.login  --ISDC_ENV=/isdc/integration/jemx_int/sw_rep`
- Size of one pointing is about 1000 seconds but they can be longer, e.g. 10000s (maximum length defined during operations)—about 300,000–3,000,000 counts. Bear this in mind for resource estimates etc.

8 Component Interfaces: ALL

- add precisionLevel for SL's binning coarseness
- remove all parameters for IMOD group override DOLs
- add input parameter for temporal gain variation model
- remove timeZeroSet for binning executables: use expanded range of timeZero instead
-

9 Interactive Background Analysis: SM

- See SM's overheads
- Sami will be visiting ISDC soon to discuss OSM/ROOT with RR
- GUI can be ignored and all executables invoked from command line with manually specified parameters if so wished
- OSM interface probably allows easy choice of option for IJD or OBT on displays
- There will be a ROOT wrapper for DS9 which is the standard ISDC tool for image manipulation
- NJW writes all image shadowgrams and SHOULD (see SRDs above) provide background shadowgrams, but should they be stored in skewed or corrected co-ordinates?
- Should we save instrument and diffuse shadowgram components separately?

10 Tools for IBH

- To display colour-coded detector maps
- To display indexed spectral model, given a spectral index number
- To calculate background model shadowgram with input options:
- — individual instrument/diffuse components
- — sum of components
- — time bin boundaries
- — energy bin boundaries
- Above can possibly be made from existing functions
- To display shadowgrams and do arithmetic with collections of different shadowgrams
- To display a background model by clicking on the spectral index map
- Must be able to zoom in on displayed maps to allow for fine selection of indices to display
- To browse bkg model database: spatial models, spectral models and scaling factors
- To make selection of spatial model first
- To select a subset of likely spectral models
- To create a spectral index map based on spatial model and chosen spectral models
- In automatic background analysis it must be recorded somewhere what parameters/scaling/database components were used to make the background model used for automatic analysis
- To extract a background model from empty field SCWs and add it to the database
- To store the test background model created with tool above in the background database
- To handle ingestion of new models into the official database
- To split a new test or observed model into instrument and diffuse components based on spatial modulation of the model
- To produce residual shadowgrams
- HIGH PRIORITY: during Commissioning Phase, create background models from empty field observations and store in database according to attitude, radiation level and orbital phase
  AI 18.14: On CAO/SL to create IBH document from overheads and tool list. Due: June 2001

11 Science Format: PK

- Image mosaicing is an already existing tool
- image_pick is already done by idx tools
- Russians (TBC) to code spec_pick to pick out spectra belonging to the one source we're interested in and make output that is fully XSPEC compatible (PHAII format)
- lc_pick will be ISDC responsibility, probably also provided by Russians.
- ISDC will support XRONOS in the sense of providing basic FITS files with lightcurve data, etc. compatible with XRONOS.
- DS9 is the ISDC standard for image manipulation

12 Performance monitoring: SM

- See SM's overheads
- What belongs to OSM and what goes into j_performance?
- Extraction of Big Table of performance parameters to be done by Sami—it will have about 5×10^6 rows if the parameters are not averaged, so should looking into using averaged parameters too, also because of limits of display time/resolution
- Table of HK parameter ratios to be made by CAO in data preparation
- Hardware team has responsiblity to make FITS table of all HK parameter limits
  AI 18.15: On NJW to see that IT provides list/table of HK parameter limits. Due: June 2001
- Instrument team must provide a list of HK parameters that operators must monitor in real time—this should be a fairly short list
  AI 18.16: On NJW to see that IT provides list of HK parameters for NRT monitoring. Due: June 2001
- ISDC has a webpage that displays all alerts produced by automatic OSM

13 Interactive calibration: CAO

- See CAO's overheads
- j_ical_electronic will likely be added to this application

14 Any other business

- The following AIs were deemed closed, cancelled or rejected: AI16.5, 001031_2, CAL1.1, AI38.1, AI17.5, AI17.8, V2_rev1.4
- The following AIs were moved to ongoing/normal work: AIV2.1, AIV2.2, AIV2.3, V2_rev1.2, V2_rev1.3
- Next meeting will be in eary June (TBC)

15 Action Items

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