

CASU processing for VST

VST ← V-ST-



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- experience from near-infrared processing for
 - all WFCAM & VISTA data
- optical mosaic camera processing experience
 - MegaCam, Subaru, INT WFC, ESO WFI

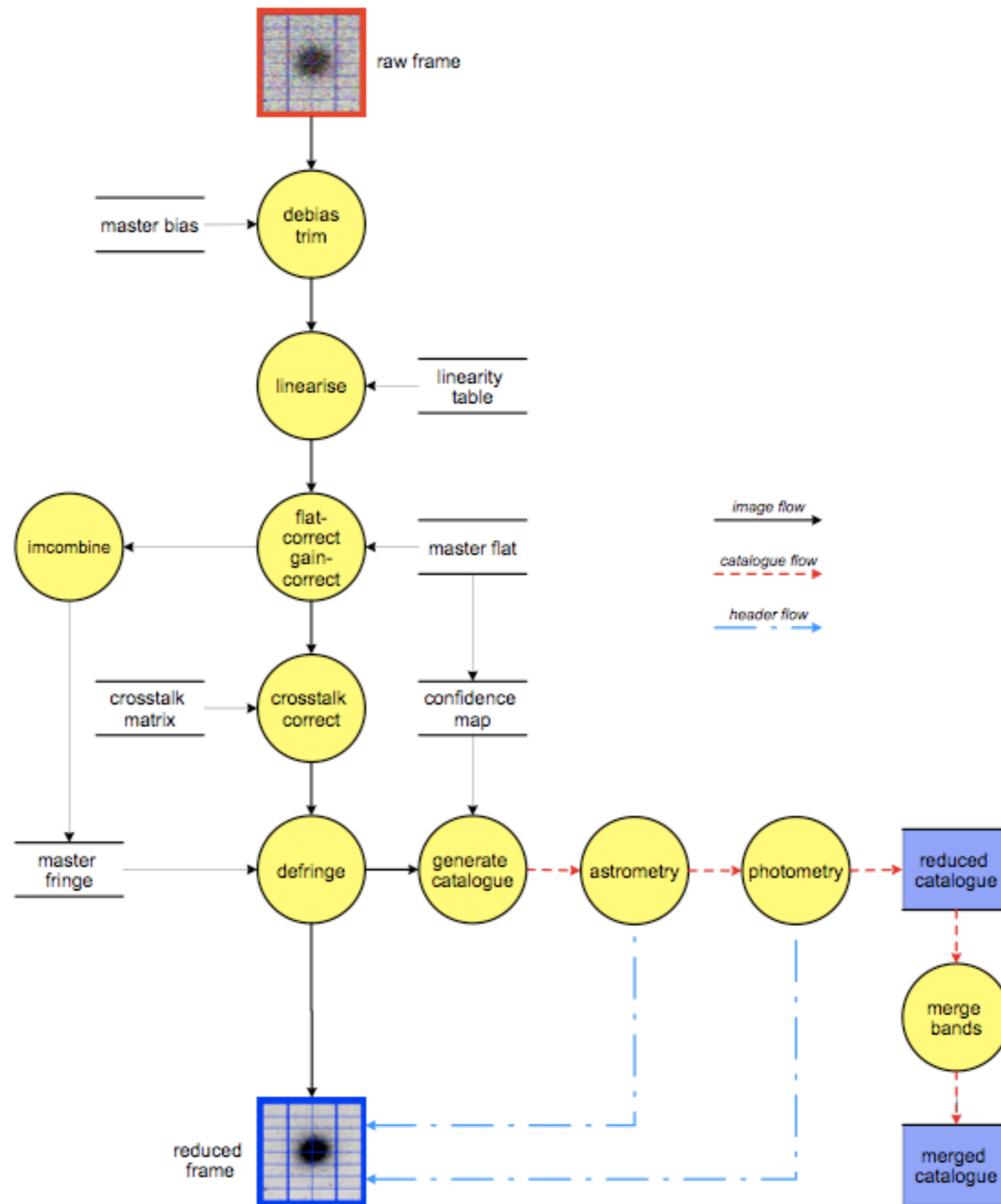
VST data flow

- raw data transfers (Rice-compressed MEFs ?)
- ingest & verification -> raw data archive
- off-line tape backups
- update calibration files as necessary
- parallel nightly processing
-> astrometric & photometric calibration
- check derived QC info & sample of images
- processing web page updates
- ingest to post-processing database
-> checks FITS headers etc....
- band-merged science products

CASU mantra

- MEFs as container -> simplifies bookkeeping
- use lossless Rice-compression -> (x 2-4 less space)
- FITS images and catalogue binary tables (CFITSIO)
- FITS headers record processing details
 - derived QC parameters
 - WCS astrometric calibration
 - photometric calibration
 - table/image fluxes in ADU, x,y positions
 - versioning and software details
- modular software -> C & perl/python scripts
- minimise external software dependencies

VST processing schema



Issues/features

- strategy to deal with gaps
 - ignore; dither for deeper stacks; offset exposures
- data rate $\sim 10\%$ of VISTA
- non-linearity; fringing in i,z bands; charge bleeding saturation \rightarrow "spikes"
- optical surfaces \rightarrow scattered light; bright star halos;
 \rightarrow illumination correction
- photometric calibration (H α - tie to r' ?)
- effects of astrometric distortion
- master calibration images - update frequency ?
- hardware, software & CPU requirements
- delivery of data products to ESO

Data products

- calibrated images & catalogues for single exposures
- confidence maps (weight, exposure, bad pixels)
- QC information for each detector/exposure
- [deep stacked images, tiles and catalogues if needed]
- homogeneous band-merged catalogues
- federation with 2MASS PSC
- database of all derived information, QC, logs
- assorted analysis assessment plots (CMDs), spatial distribution

Innovative software solutions

- nebuliser
 - removes complex background variations
 - enhanced object detection & parameterisation
 - despiker
 - removes diffraction spikes, charge bleeding artefacts, and saturated stellar cores
 - mosaicer
 - CASU tiling software developed for VISTA
 - psf'ers
 - automatically generates detector-level PSFs
 - and performs PSF photometry
- [examples of these, web pages and QC DB as part of talk]