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Meeting

Nov 26
2012

Everything you need to know about the Calibration Reference Data System in 10 minutes

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What is it?

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- The replacement for HST's CDBS (Calibration DataBase System)
  - For both JWST and HST
- Different approach for bestref functionality
  - Rules for mapping data to reference files now located in text files.
- With the complete set of rules files, bestref can be run anywhere.
  - No network connection needed to STScI.
- Code very portable, embedded in JWST pipeline libraries

Example Rules File
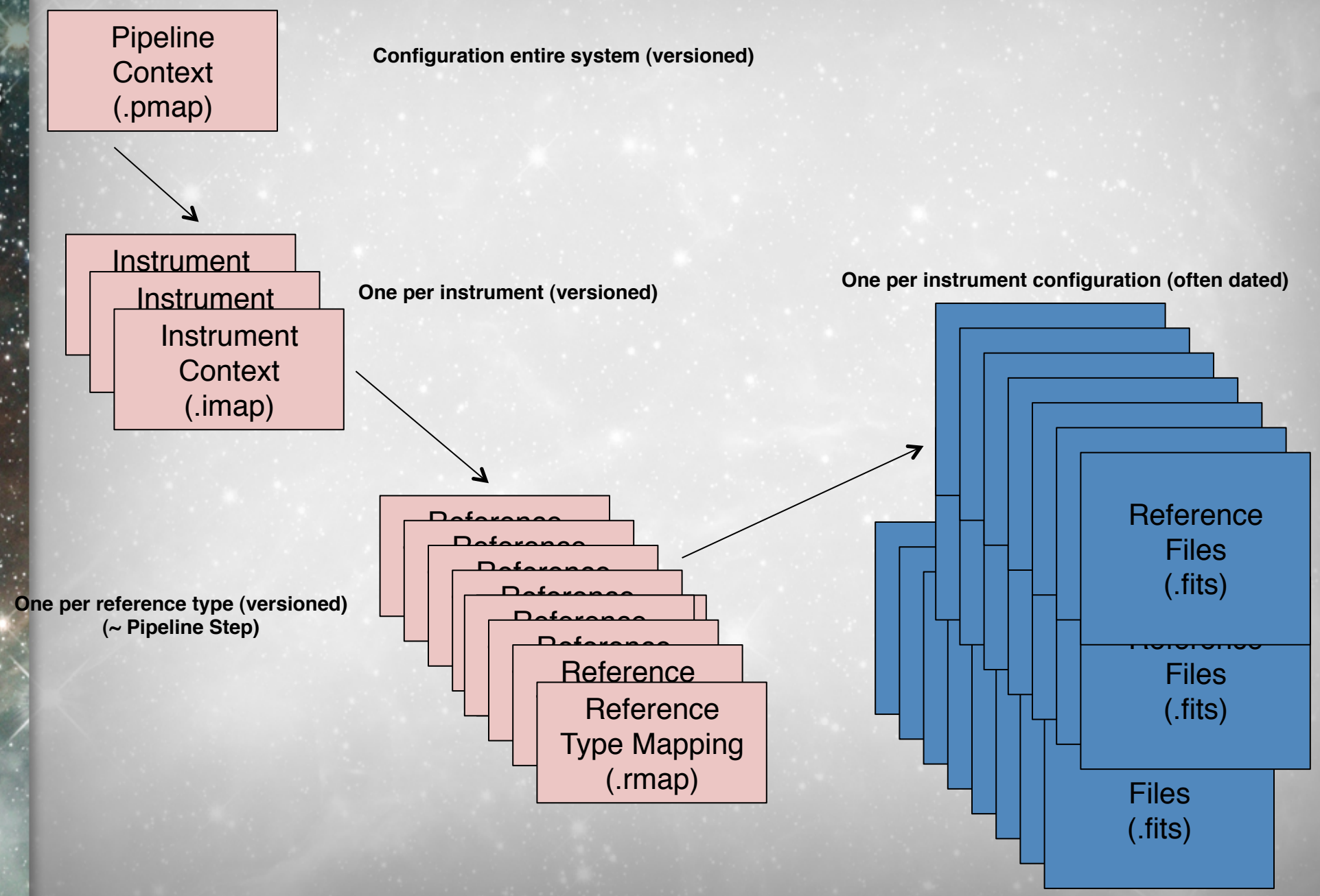
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```
header = {
    'derived_from' : 'generated from CDBS database 2012-10-24 17:13:14.151232',
    'filekind' : 'DARKFILE',
    'instrument' : 'STIS',
    'mapping' : 'REFERENCE',
    'name' : 'hst_stis_darkfile.rmap',
    'observatory' : 'HST',
    'parkey' : (('DETECTOR', 'CCDAMP', 'CCDGAIN'), ('DATE-OBS', 'TIME-OBS')),
}

selector = Match({
    ('CCD', 'AIBICID', '1l2l4l8') : UseAfter({
        '1996-10-01 00:00:00' : 'h1v1208eo_drk.fits',
        '1997-03-03 00:00:00' : 'hcg1440so_drk.fits',
        '1997-03-13 00:00:00' : 'hcg1440to_drk.fits',
        '1997-03-21 00:00:00' : 'hcg14410o_drk.fits',
        '1997-03-24 00:00:00' : 'hcg14411o_drk.fits',
        '1997-04-14 00:00:00' : 'hcg14412o_drk.fits',
        '1997-04-29 00:00:00' : 'hcg1452lo_drk.fits',
        '1997-05-05 00:00:00' : 'hcg14537o_drk.fits',
        '1997-05-12 00:00:00' : 'hcg14538o_drk.fits',
        '1997-05-19 00:00:00' : 'hcg14539o_drk.fits',
    }),
    ('CCD', 'AC',  '16') : UseAfter({
        '1997-04-14 00:00:00' : 'hcg14712p_drk.fits',
        '1997-04-29 00:00:00' : 'hcg14529q_drk.fits',
    }),
                    ….
```

CRDS Rules File Hierarchy

Pipeline Context (.pmap)

Configuration entire system (versioned)

Instrument
Instrument
Instrument Context (.imap)

One per instrument (versioned)

One per instrument configuration (often dated)

Reference
Reference
Reference
Reference
Reference
Reference
Reference
Reference Type Mapping (.rmap)

One per reference type (versioned)
(~ Pipeline Step)

Reference Files (.fits)

Reference Files (.fits)

Files (.fits)

New capabilities

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- Delivery of reference file does not trigger use in operational pipeline

- Possible to test new rules and reference files before using in operational pipeline

- Can support multiple rules configurations.

- Can recreate previous recommendations from any time

- More streamlined interface for submitting reference files and rules

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Completed Builds 1 & 2

- Build-1 (January 2012) Basic bestref functionality
  - Core best references library
- Build-2 (September, November 2012) Initial user interface for submission
  - Integration with STPIPE
  - JWST build-1 rules and references
  - HST rules generation and test (for now)
  - HST file certification
  - File browsing
  - File differencing
  - Web Best Reference prototypes
  - Simple File Submission
  - Batch File Submission (prototype, needs generalization)
  - Automatic Instrument, Pipeline Context Updates
  - Reference File Retrieval Service

Future Builds 3 & 4

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- Build-3 (January 2013) Revised user interface
    - Web
        - Generalization of automatic rules updates to more Selector types.
        - Build-2 fixes and enhancements from feedback
- Build-4 (April 2013) Needed utilities
    - Web
        - DMS-535 Ensure all files archived before use allowed
        - DMS-540 Web interface for querying what the best reference files are
            - Dataset Best References, Explore Best References
    - Command line
        - DMS-545 Show where in list of data sets which will use different reference file due to change in rules (crds.file_bestrefs)
        - DMS-547 Tool to show active reference files in use for given context(s)   (crds.list)
        - DMS-548 Tool to show active files associated with specific instrument modes   (crds.list)
        - HST-1 Detect file reversions on context change and supply warning   (crds.reversions)
        - HST-2 Update local reference file directories with those needed by a context (or list of contexts) (crds.sync)
        - HST-4 Detect when new rule file doesn't cover modes covered in previous rule file
        - HST-15 Reject rules files with duplicate selection criteria for different files