The VizieR ObsCore – FITS validator for images & spectra

→ Invite authors to better use FITS standards,
   but also to guide them : the FITS validator

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□ What kind of validator ?

A validator to validate FITS quality header for images/spectra

- complete software like fitsverify which checks the FITS format

- validate FITS headers according to the FITS standards

- test compatibility with the VO standards (ObsCore DM)

- ObsCore mapping possible with FITS recommendations (Louys M.)

➡ But are they well used ?

obscore	FITS standards (ex)
target_name	OBJECT
s_ra	RA , WCS
Coord. syst.	RADESYS
s_dec	DEC , WCS
s_fov	WCS
s_region	WCS
s_resolution	WCS
t_min	TIME-OBS
t_max	TIME-END
t_exptime	EXPTIME
t_resolution	???
em_min	WCS
em_max	WCS
em_res_power	WCS
o_ucd	-- VO : fixed constant
pol_states	WCS-STOKES
facility_name	TELESCOP
instrument_name	INSTRUM

☐ (VizieR) Feedbacks

Diversity of serialisation

- The FITS dictionnary provided by Nasa are recommendations (!= standard) (https://fits.gsfc.nasa.gov/fits_dictionary.html)

- WCS: several projections used for positions and spectra LINEAR, multispec (WAT)...

- Different spectra serialization (into column, vector in columns)

Uncontrolled FITS header provided by authors

- The FITS format are widely conform (fits-verify checked)

- Authors are quite inventive / take some freedom with the FITS recommendations

  - Usage of exotic keywords (e.g.: POSRA, POSDEC)
  - Uncomplete WCS .. (e.g.:CUNITx not specified)

Motivations & strategy

To put authors FITS more close from the VO

- to improve re-usability & discovery

- decrease the workload needed to map FITS with ObsCore

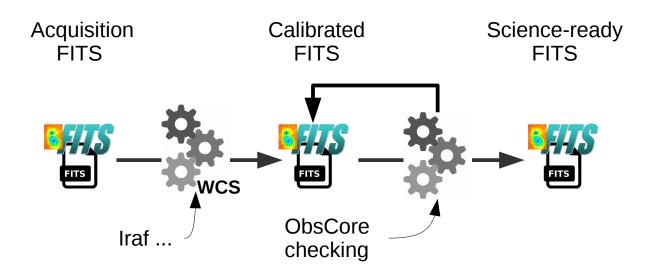**To guide authors to improve FITS quality header**

Today, the idea (in VizieR) consists to ask author contribution

- Mixed result – but improved when they are guided

- Authors are not lazy but they don't know how

  - How FITS header are reused
  - How to create FITS header reusable for the VO

☐ Implementation

Implementation of a FITS validator

Acquisition
FITS

Calibrated
FITS

Science-ready
FITS

WCS

Iraf ...

ObsCore
checking

- – Web application Based on Saada API

- – Detects keywords from a list
  (from FITS recommendations)

- – Detects a large variety of WCS projections

☐ Conclusions

Is it really a FITS validator ?

– Not really – because adapted to Saada and VizieR

– A mapping combining standards detection (WCS, keywords) and heurisitics methods (e.g.: search unit in description, comments..)

– The same process used in Fitvalidator and the VizieR submit web page (authors data submission)

➡ a FITS ObsCore-checking indicating the level of visibity in VO