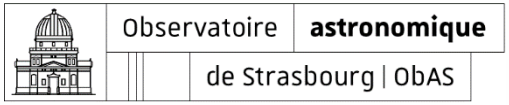
Does Aladin require DM?

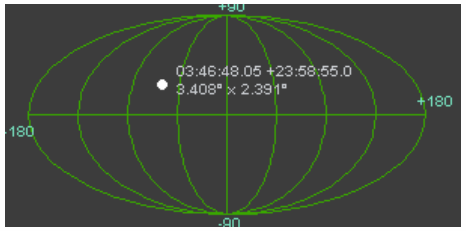
Interop meeting – 13-17 May 2019

Pierre Fernique

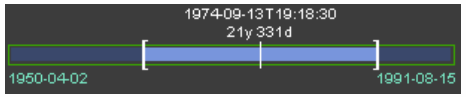


The key data in catalogs for Aladin

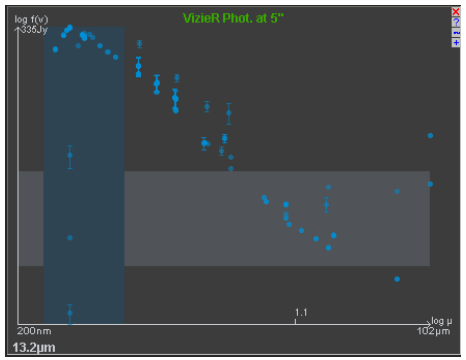
1. Aladin is Space oriented
   => it requires **RA,DEC**



2. It also manipulates Time
   => it required **JD**



3. It may display SED
   => it requires **Flux** & **frequence**



Other key data

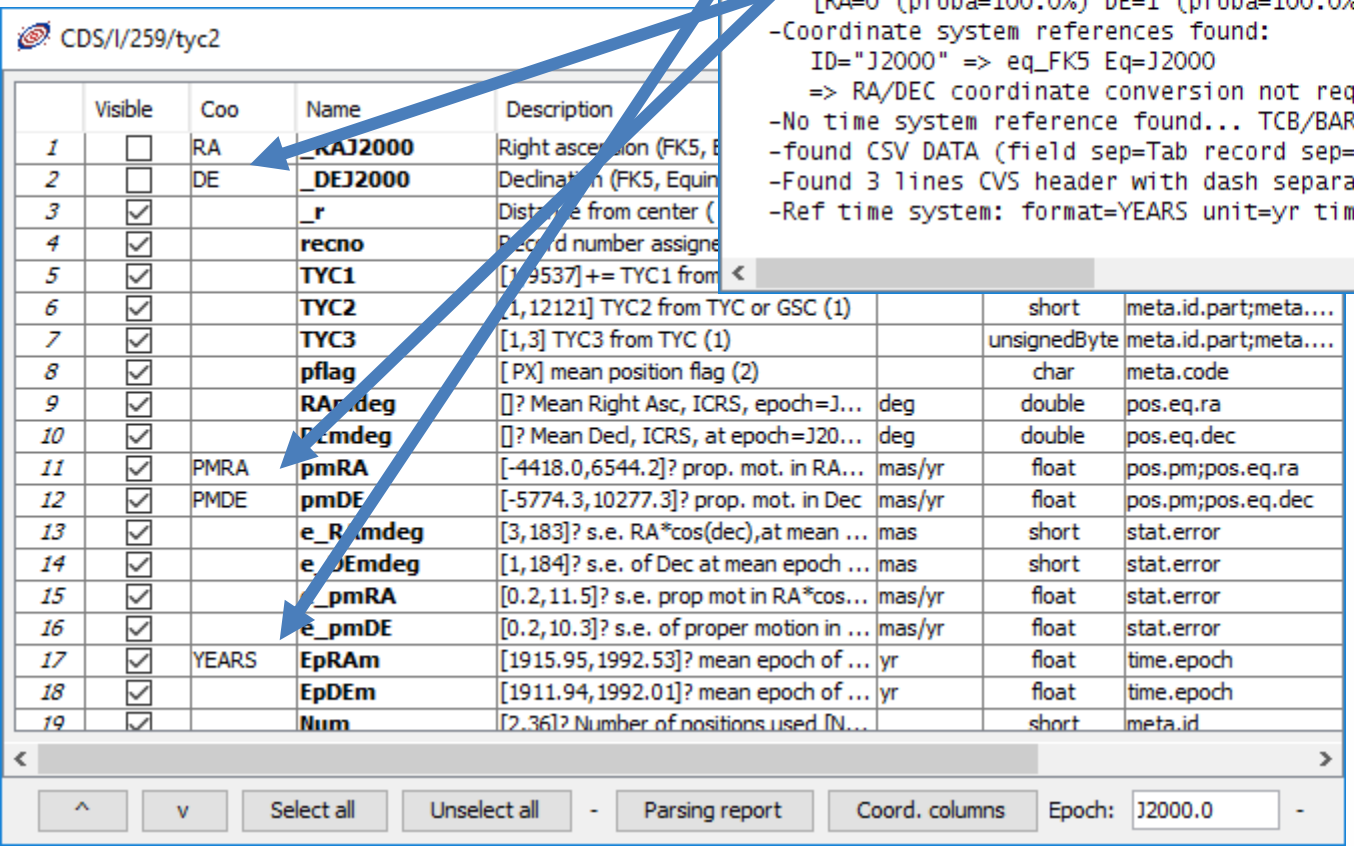
- Aladin must also recognize:
  - **Links** associated to a row or to a column value
  - **FoV** associated to a row

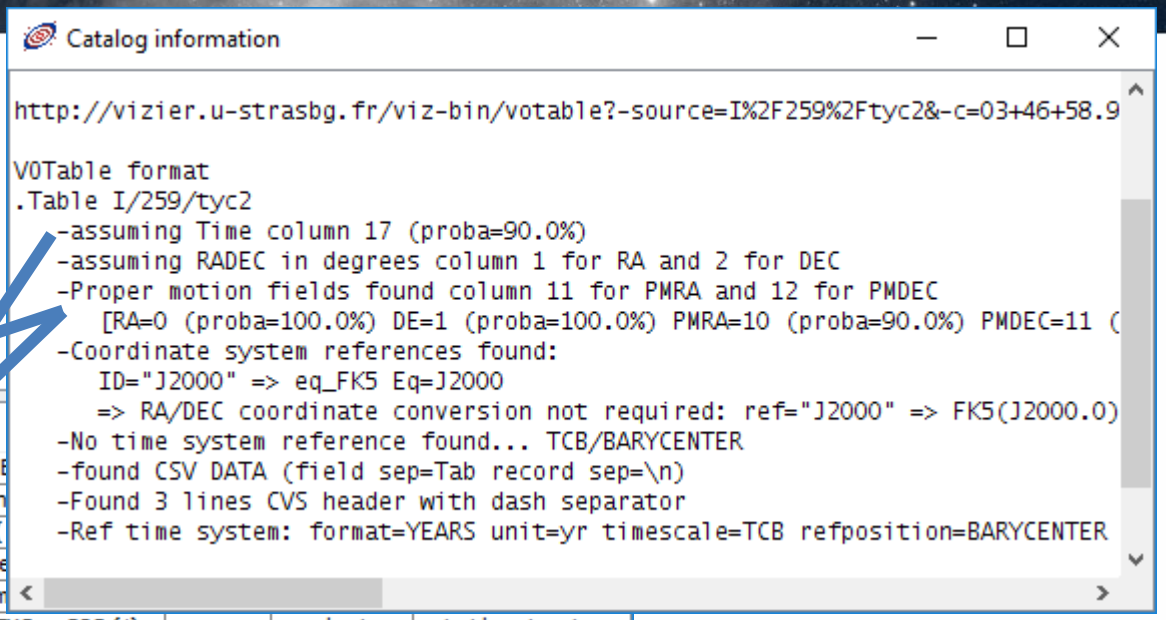
RA **DE** **JD** **Link** Link **Fov** Link Link

RAJ2000	DEJ2000	OBSERVATIO...	id	access	FoV	DATASET	PREVIEW	INSTRUME	OPT_ELE	DETECTO
217.27611	-62.72529	2000-05-08...	u67fb204r_drz	Display	FoV	Full metainfo	Preview	WFPC2	F450W	WFC
217.27611	-62.72529	2000-05-08...	u67fb205r_drz	Display	FoV	Full metainfo	Preview	WFPC2	F450W	WFC
217.27611	-62.72529	2000-05-08...	u67fb206r_drz	Display	FoV	Full metainfo	Preview	WFPC2	F450W	WFC
217.27394	-62.72373	2000-05-09...	u67fb304r_drz	Display	FoV	Full metainfo	Preview	WFPC2	F450W	WFC
217.27394	-62.72373	2000-05-09...	u67fb305r_drz	Display	FoV	Full metainfo	Preview	WFPC2	F450W	WFC
217.27394	-62.72373	2000-05-09...	u67fb306r_drz	Display	FoV	Full metainfo	Preview	WFPC2	F450W	WFC

Position & Time

Aladin uses **COOSYS** and now **TIMESYS** to find associated columns



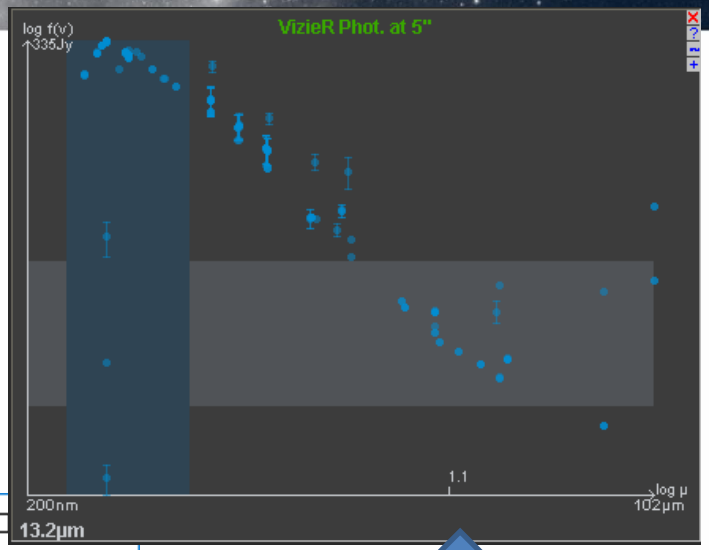


Otherwise, it uses **heuristic rules** based:

- Column name
- UCD
- Unit
- Utype
- Relative position of the column
- …

Flux & Frequence

- Aladin recognizes SED VOTable by GROUP and utype
  => based on **IVOA note 2011** – « *Providing Photometric Data measurements Description in VOTables* »



Catalog information

```
VOTable format
.Table allVizieR
   -SED system found:
      .frequence col #41
      .flux col      #51
      .fluxError col #61
      .SEDid col     #71
   -assuming RADEC in degrees column 1 for RA and 2 for DEC
      [RA=0 (proba=90.0%) DE=1 (proba=90.1%) PMRA=-1 (proba=0.0%) PMDEC=-1 co
   -Coordinate system refer
      ID="J2000" => eq_FK5
      ID="B1900" => eq_FK4
      => RA/DEC coordinate
```

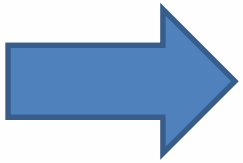
_RAJ2000	_DEJ2000	_tabname	_ID	_sed_freq	_sed_f...	_sed_e...	_sed_filter
56.871154	24.105136	I/270/cp...	recno=5863	2940.6	7.27		IRAS:100
56.871054	24.104888	II/338/c...	recno=29644	2940.6	7.27		IRAS:100
56.871152	24.105136	J/AZh/88...	recno=20	59601	10.5		Johnson:M
56.871153	24.105136	II/346/j...	recno=51016	59601	13.7		Johnson:M
56.87088	24.105289	I/342/f3	recno=8523277	674900	14.4	3.9	Johnson:B
56.871	24.1054	V/114/ms	recno=9798	68918	16.1	1.5	MSX:B2

The good and the bad

- **It works !**
- For Pos & Time, it does the job even with **FITS, CSV, IPAC, ASCII sextractor**, ... tables
- **Unit** is required, and **UCD** helps a lot
- It may have ambiguities :
  - Multiple instances without MAIN UCD
  - PMRA is already multiplied or not by cos(d) ?
- Limitations:
  - **Ref** COOSYS, TIMESYS mechanism should be **multiple**
  - Requires **xxxSYS** (ex: do we need ENERGYSYS ?)
  - **Links** and **FoV** are badly supported (no IVOA consensus, standard inconsistencies)
    => except in OBSxxx or EPNxxx (thanks to utypes and/or name convention)

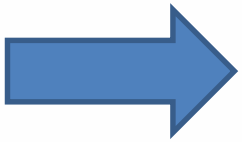
Concretely Aladin requires…

Dedicated GROUP/flagging method



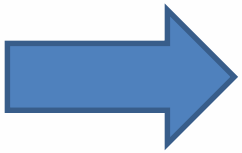
```
<xxxSYS ID=n attribut=… />
<FIELD ref=n …>
<FIELD ref=n …>
```

Alternate GROUP/flagging method



```
<GROUP *type>
        <FIELDref ref=n1>
        <FIELDref ref=n2>
</GROUP>
<FIELD ID=n1>
<FIELD ID=n2>
```

Basic flagging method

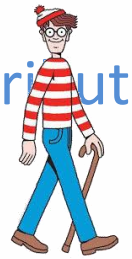


```
<FIELD *type…>
```

Where is the DM ?

Dedicated GROUP/flagging method

<xxxSYS ID=**n** attribut=… />
<FIELD ref=n …>
<FIELD ref=n …>



Alternate GROUP/flagging method

<GROUP ***type**>
<FIELDref ref=n1>
<FIELDref ref=n2>
</GROUP>
<FIELD ID=n1>
<FIELD ID=n2>

Basic flagging method

<FIELD ***type**…>

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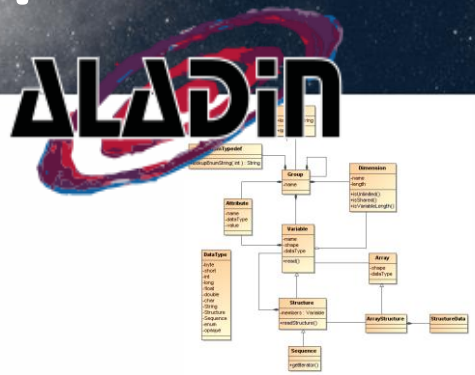

What does it mean ?

- **DMs serialized** in the data: **no.**
- **DMs as reference documents** describing some data meaning and logic : **yes**, obviously
- A way to recognize and possibly to group some columns based on the knowledge in the DMs documents: **yes definitively** !