

# MIVOT

## What is it for

And How Keep Relax With It

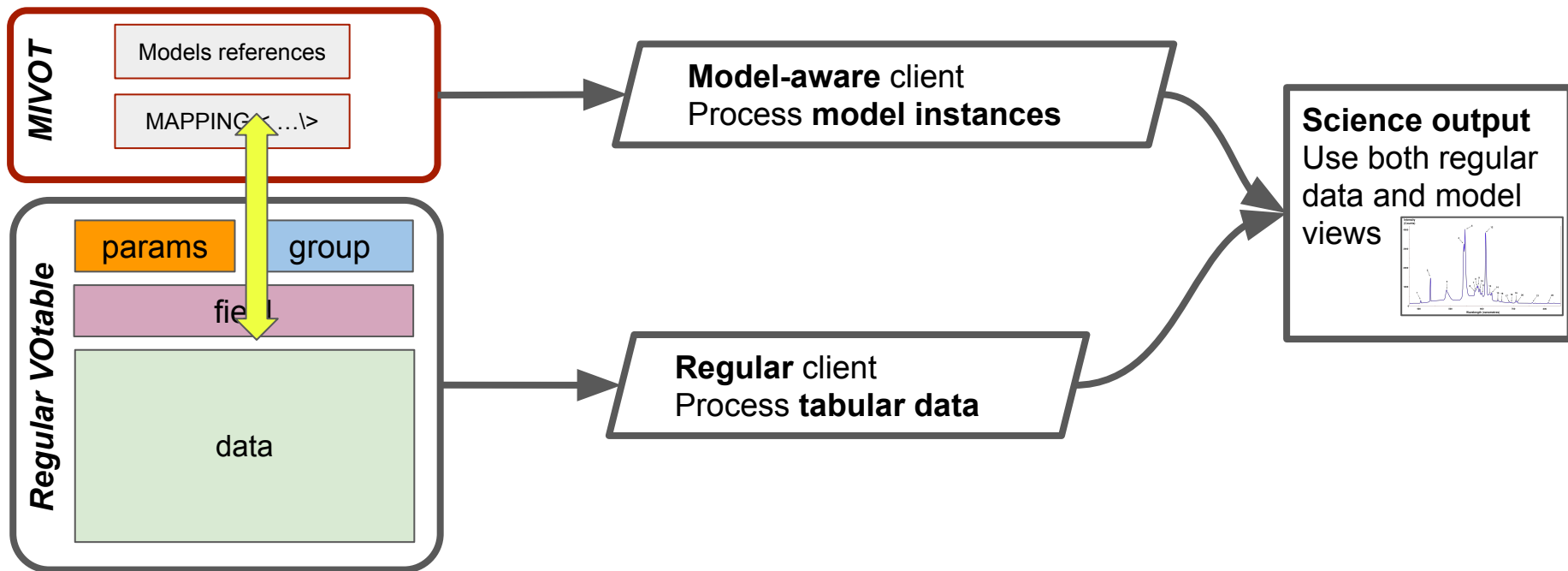
<https://wiki.ivoa.net/twiki/bin/view/IVOA/DataAnnotation>

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Gilles Landais, Gerard Lemson, Jesus Salgado*

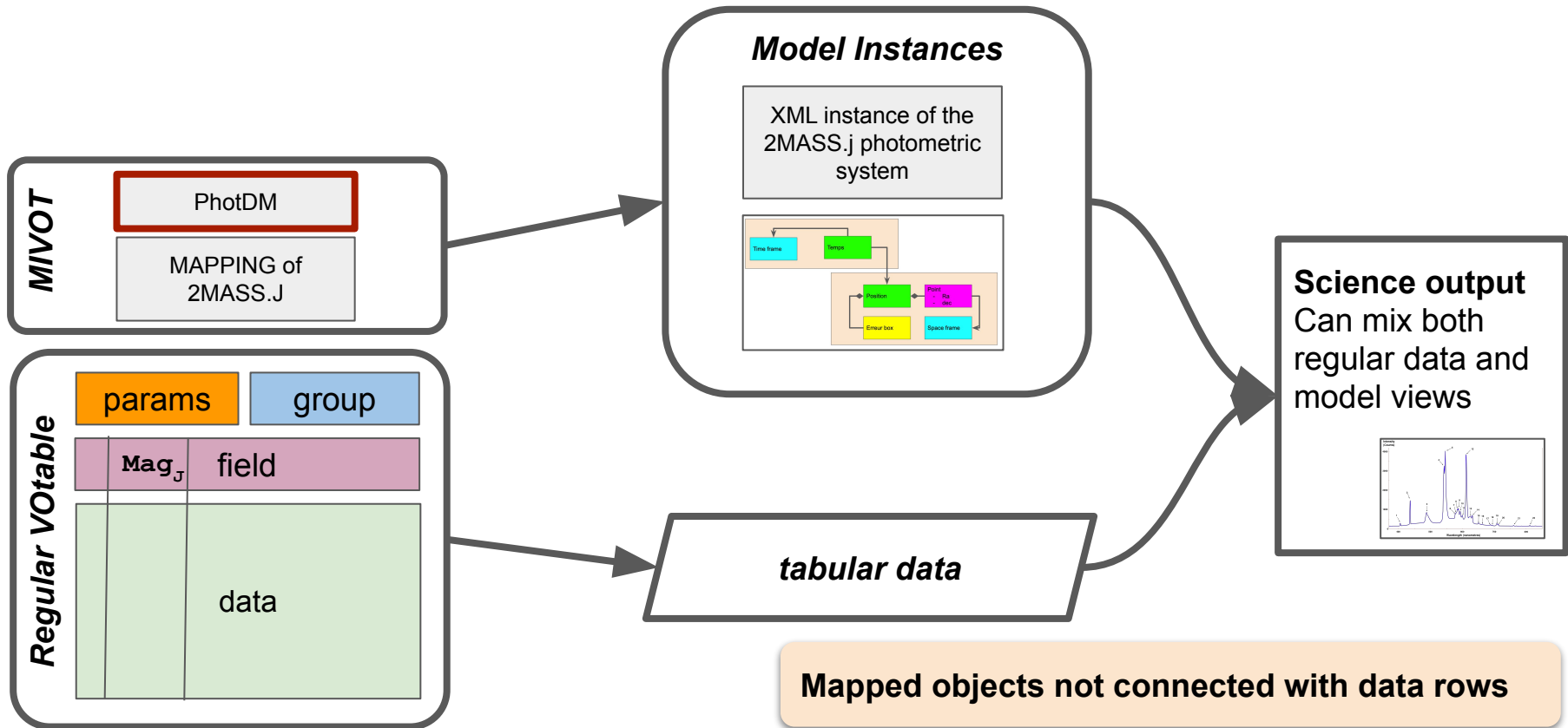
Locktown 6 - Oct 2022

# General Purpose

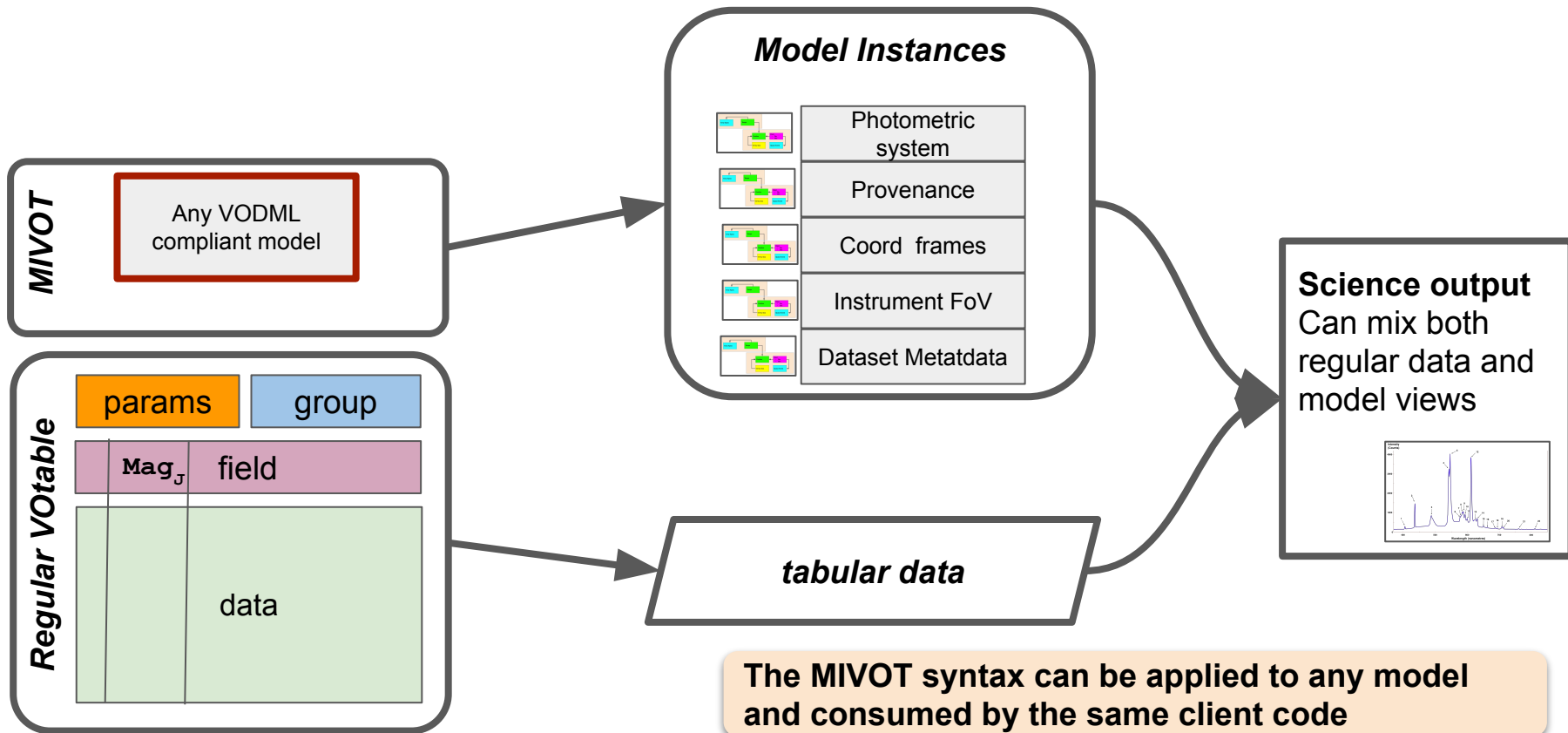
Adding something - Replacing nothing



# Simple Case: extended meta data

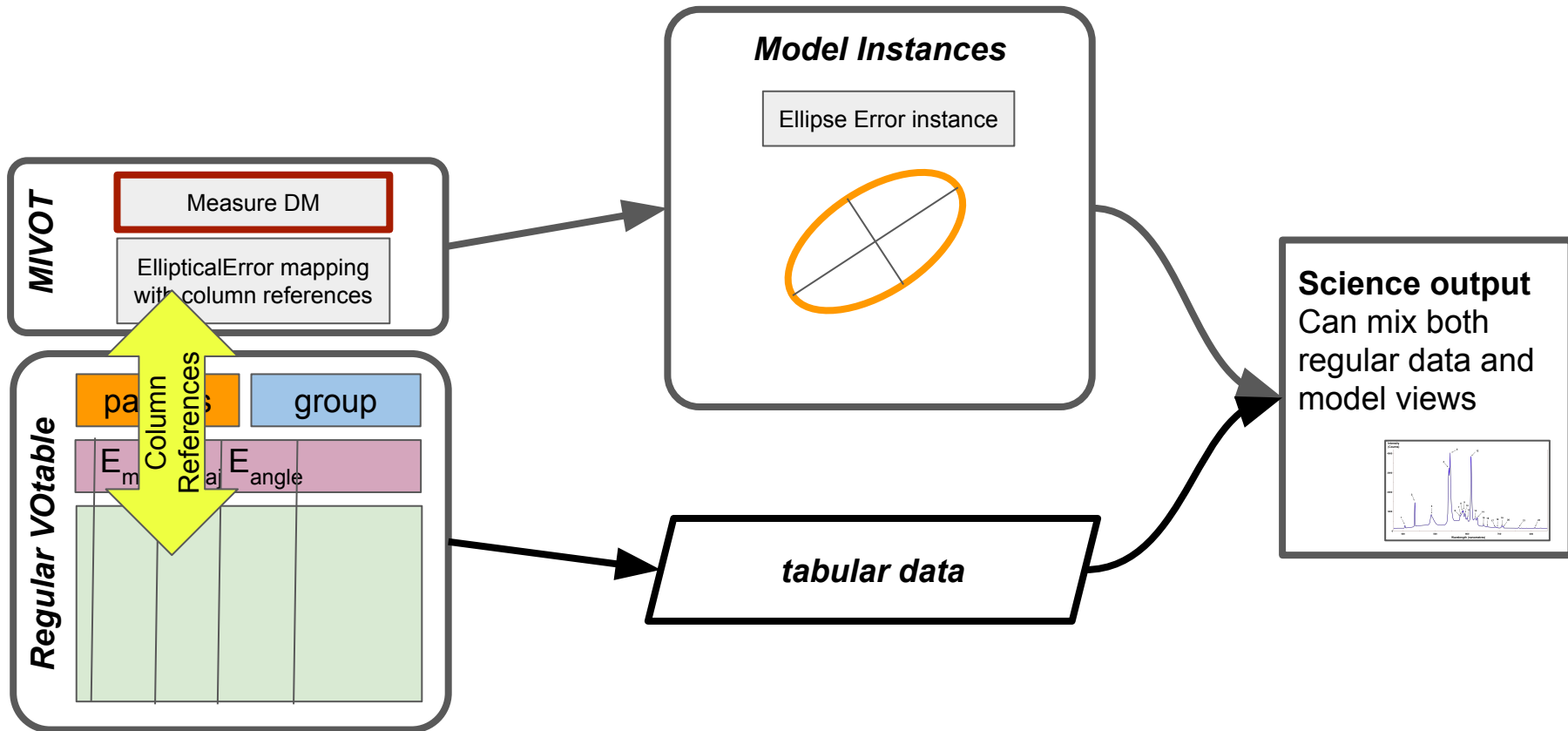


# Simple Case: extended meta data



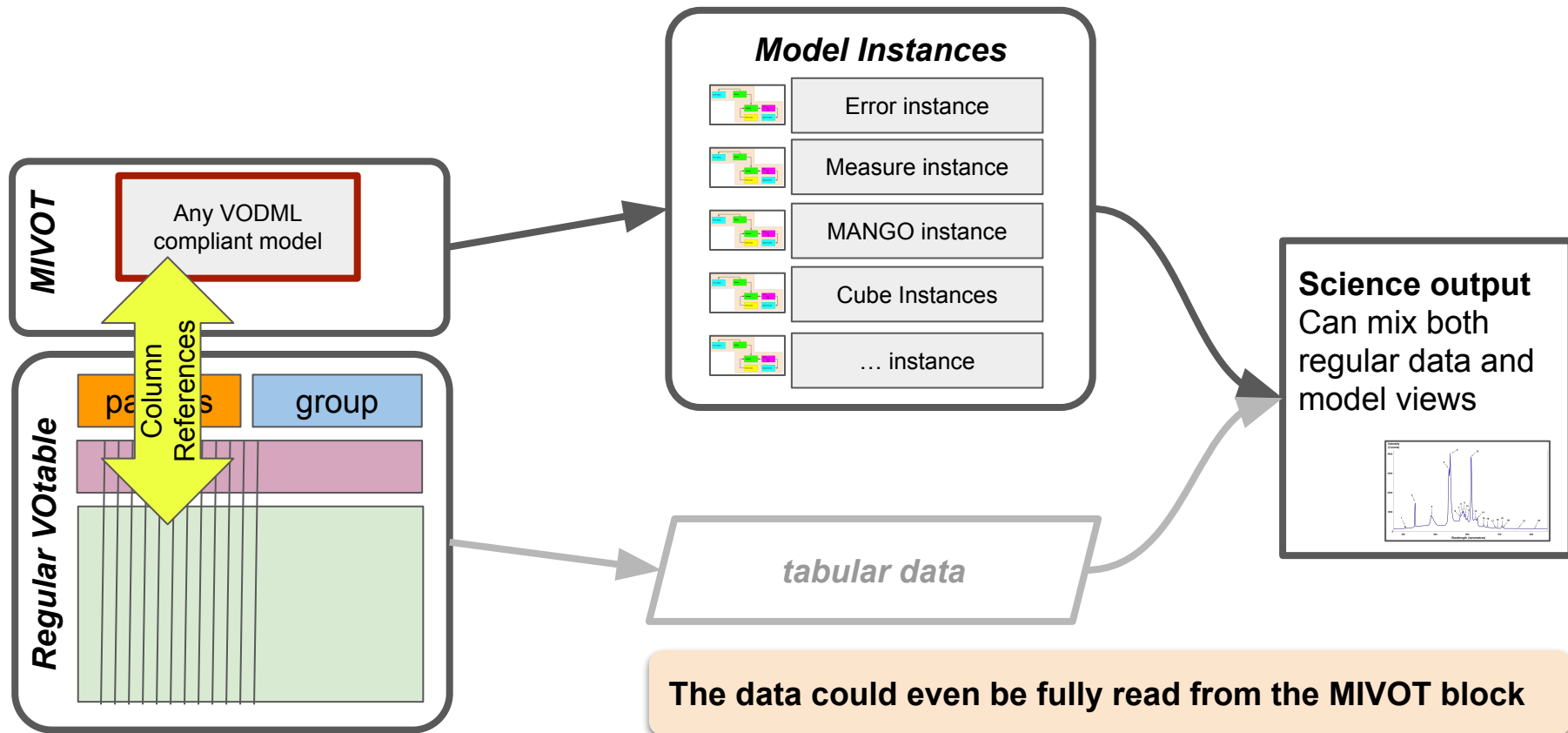
# Less Simple Case

Getting model instances set with row values



# Less Simple Case

Getting more and more complex objects by using the same pattern



The data could even be fully read from the MIVOT block

# Client side SAMP example

SAMP target can show up a rich source rendering

carsid	SeqNr	raj2000	dej2000	xpos	ypos	magAuto	magErrAuto	magisoU	magisoErrU	magaprU	magaprErrU	maglimU	n
W3m3m3:88321	88321	210.37151	51.771923	6863.0000	11733.0000	24.920200	0.11808200	26.754700	0.0536444000	25.310800	0.0449209000	28.351700	2
W3m3m3:88172	88172	210.37164	51.770921	6861.3100	11713.6000	24.851200	0.0930044000	28.885000	0.3793260000	27.251200	0.2591400000	28.352600	2
W3m3m3:87537	87537	210.36895	51.769707	6893.5000	11690.0000	25.341400	0.1656110000	28.220400	0.1422650000	27.967000	0.4956700000	28.358000	2
W3m3m3:88245	88245	210.36610	51.771210	6927.4500	11721.6000	24.281900	0.0933712000	26.856600	0.0726261000	26.257300	0.0649414000	28.347700	2
W3m3m3:88518	88518	210.36348	51.773120	6959.2400	11755.7000	24.865000	0.1121920000	27.368100	0.1111320000	26.418400	0.1357420000	28.337700	2
W3m3m3:87537	87537	210.36904	51.767285	6892.1300	11643.1000	24.322300	0.0180625000	24.322300	0.0160835000	24.183900	0.0175022000	28.358600	2
W3m3m3:87530	87530	210.36484	51.767225	6942.5200	11641.7000	23.807300	0.0653874000	26.375000	0.0593371000	25.746600	0.0661883000	28.329000	2
W3m3m3:87086	87086	210.36645	51.764277	6922.9900	11584.7000	23.408000	0.0543857000	26.172900	0.0536505000	25.736400	0.0692225000	28.325400	2
W3m3m3:86991	86991	210.36682	51.763641	6918.5100	11572.4000	23.772000	0.0661601000	26.250600	0.0526556000	25.822600	0.0708024000	28.326000	2
W3m3m3:86720	86720	210.36642	51.761955	6923.1500	11539.8000	24.933000	0.1505030000	27.242000	0.0705395000	25.768900	0.0685046000	28.322800	2

4XMM J132944.0+471135 13 29 44.038 +47 11 35.20 IRAP NXSA

Source Details Det ML HR1 HR2 HR3 HR4 Detections  
1.90169E-13 1945.54 0.1400+0.0414 -0.5249+0.0360 -0.4955+0.0454 -1.0000+0.0386 1

Position 13:29:44.04+47:11:35.2 Flux 7.43E-13 DetML 1945.5400 HR1 0.1400 HR2 -0.5249 HR3 -0.4955 HR4 -1.0000 N.counts 24406+941

Observation - Unique Detection Parameters

Image Gallery

EPIC Data

EP Summary

Per Camera	M1	M2	PN
Catalogue Source Id 208301915010005			
Position			
Corrected RA DEC (J2000) 13:29:44.04+47:11:35.2	Filter Thin1	Thin1	Thin1
1 Sigma Statistical Error 1.8000	Exposure Time (sec) Not Set	Not Set	59750.8008
1 Sigma Systematic Error (pos. improv. yes) 2.322300	Off Axis (arcmin) 3.4027	2.6874	2.9322
Corrected LII BI (J2000) 06:59:38.53+68:34:21.4	Detection Max Likelihood Not Set	Not Set	1945.5400
Raw RA DEC (J2000) 13:29:44.04+47:11:35.2	Detection Flag FFFFFFFFFF	FFFFFFFFFF	FFFFFFFFFF
Detection	Detection Max Likelihood 1945.5400	Brightness Total Number of Counts Not Set	Not Set
Summary Flag 3.0000	Flux (photocounts) Not Set	Flux (photocounts) Not Set	24406.5996
			0.5212

SAMP message (XML, JSON...)

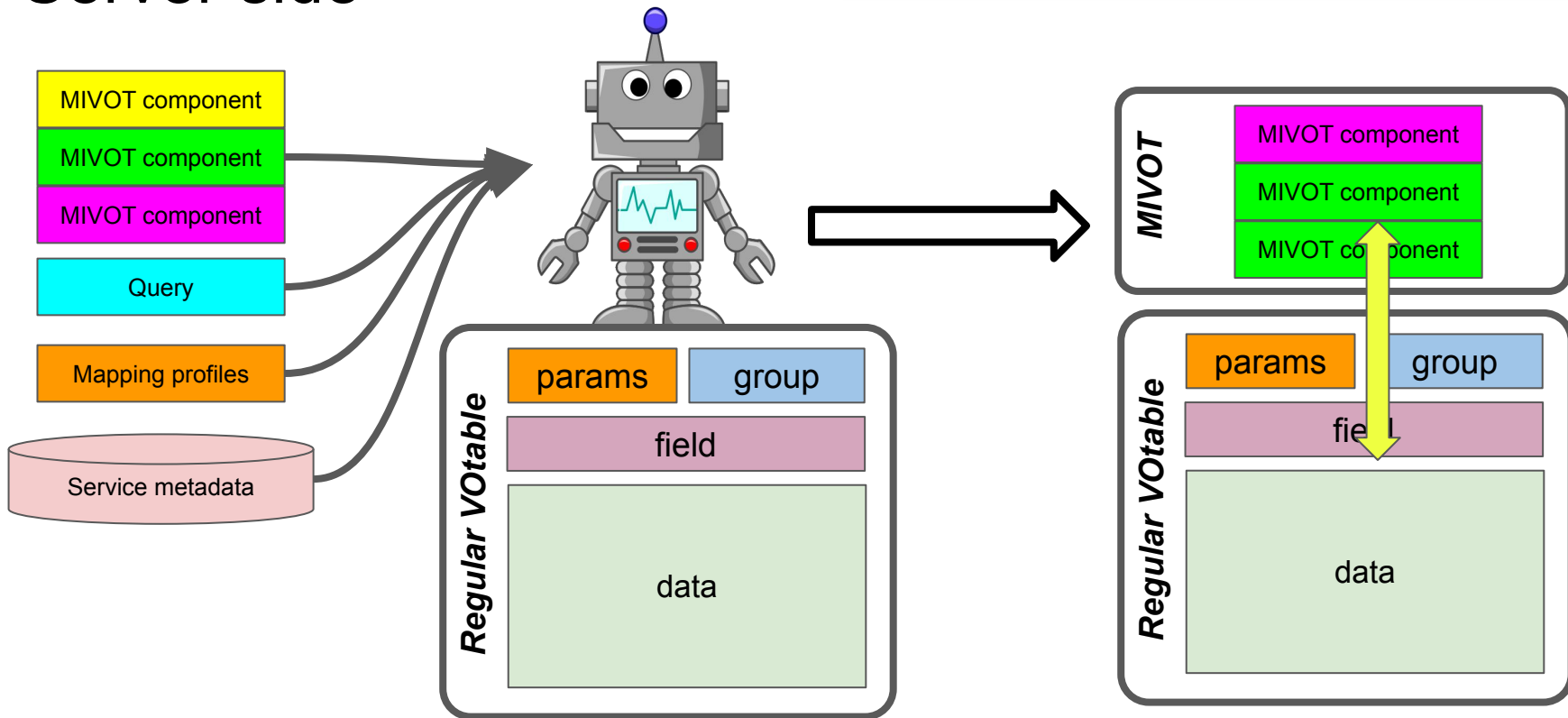
Instead of sending a position or a one-row table, we send a model instance describing in detail the pointed source

MANGO Instance

```
< Source Instance
- Position
- Error
- Frame
- Flags
- Associated measures>
```

# Server side

The mapper post-processes the result table



Demo: On the fly annoter based on XMM data: <https://xcatdb.unistra.fr/xtapdb>





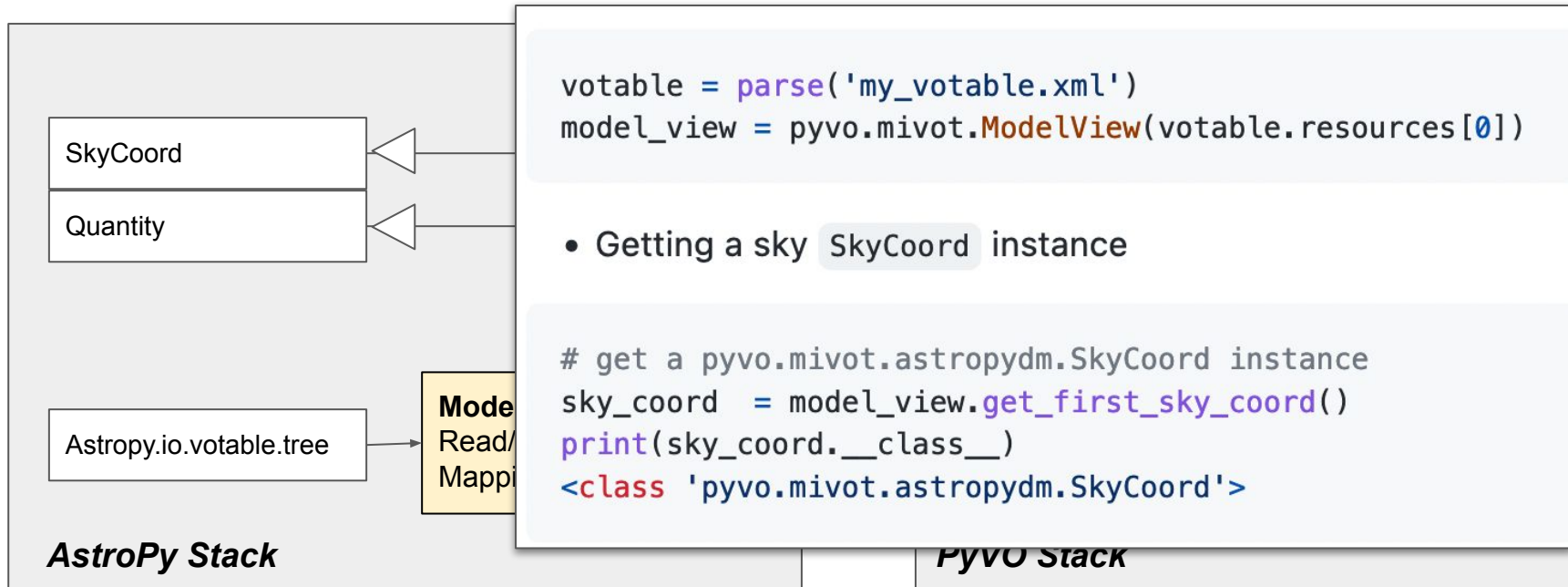




Extended Astropy objects are automatically built from the VOTable readout

# Client side: Pyvo API

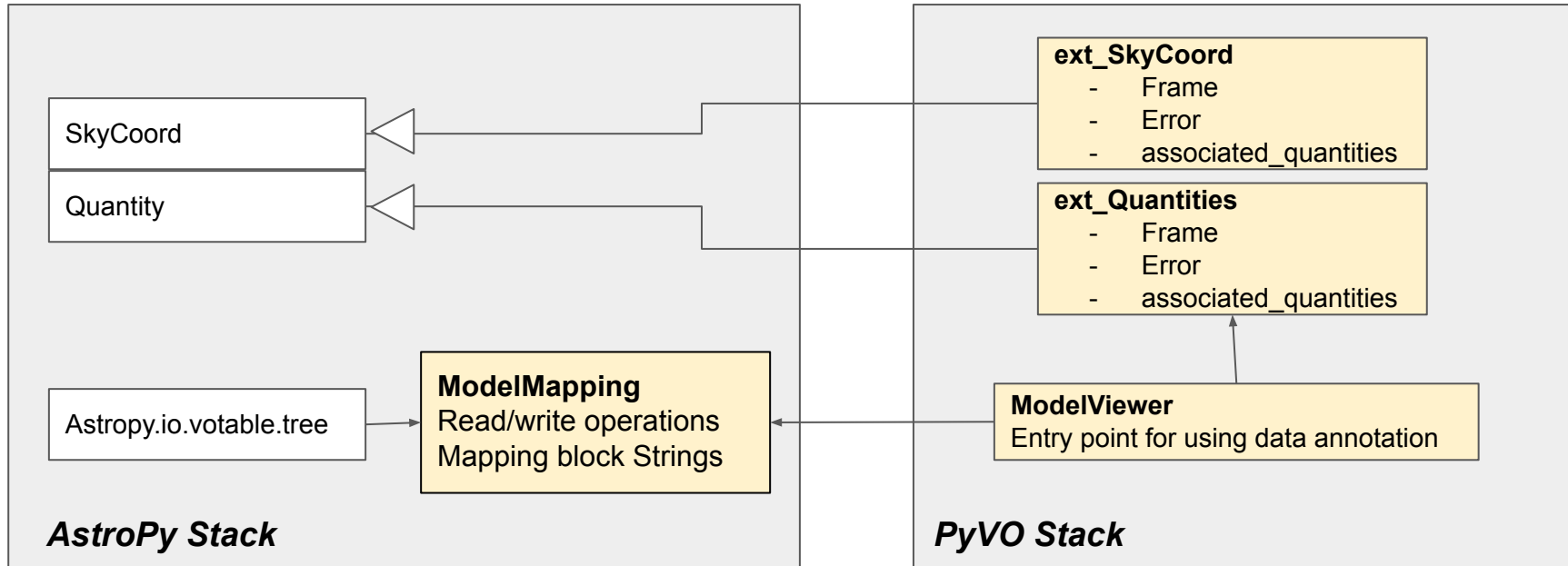
- <https://github.com/ivoa/modelinstanceinvot-code/wiki>



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# Moving toward using Mivot

- **Server side**

- Let's start with simple but useful things
- Exercise more complexity with new domain (HE)
- On the fly science product generation (CubeDM)

- **Client side**

- Keeping the working patterns
- Reading missing metadata
- Handling more complex objects (pos + complex errors ...)

- **Some reading**

- RFC <https://wiki.ivoa.net/twiki/bin/view/IVOA/DataAnnotation>
- GitHub
  - <https://github.com/ivoa-std/ModelInstanceInVot>
  - <https://github.com/ivoa/modelinstanceinvot-code>



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- **Source**

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- <https://github.com/ivoa-std/ModelInstanceInVot>
- <https://github.com/ivoa/modelinstanceinvot-code>



**We would be very happy  
● To get feedback on this work e.g. on the RFC page  
● To enlarge the circle of both contributors and testers**