

Annotating TAP responses on the fly with IVOA data models

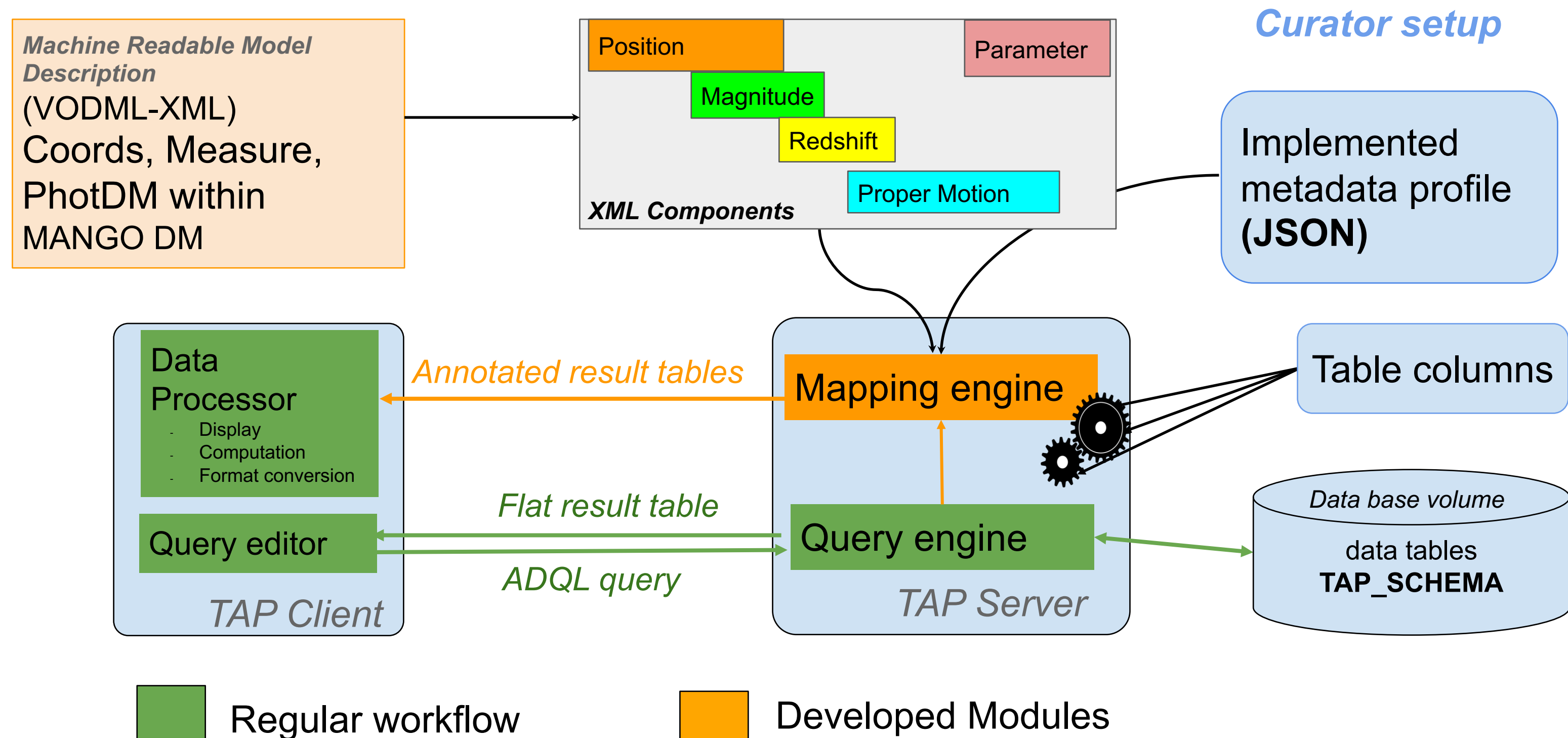
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Annotation scenario



How do we convey the datamodel elements matching the columns provided in the TAP response

- 1- The user sets up a **query** . ex : “select * from chandra.chandra-table”
- 2-The server program checks the query and lists the data model components required from the VODML description of the models: Mango, Coords for instance, etc.--> **Tree of Components**
- 3- The annoter gets the annotation profile (currently in JSON format) defined by the data curator as a list of components served by the TAP server. It contains the binding of **data model elements** and **column references** to reach data model leaves.
- 4- The TAP service interprets the query and stores the response temporarily.
- 5- The **Annoter program** feeds the XML annotation block with all necessary components.
- 6- The **Annoter** wraps the Annotation block in the as a VOTable resource and inserts it at the top of the usual VOTable TAP response.

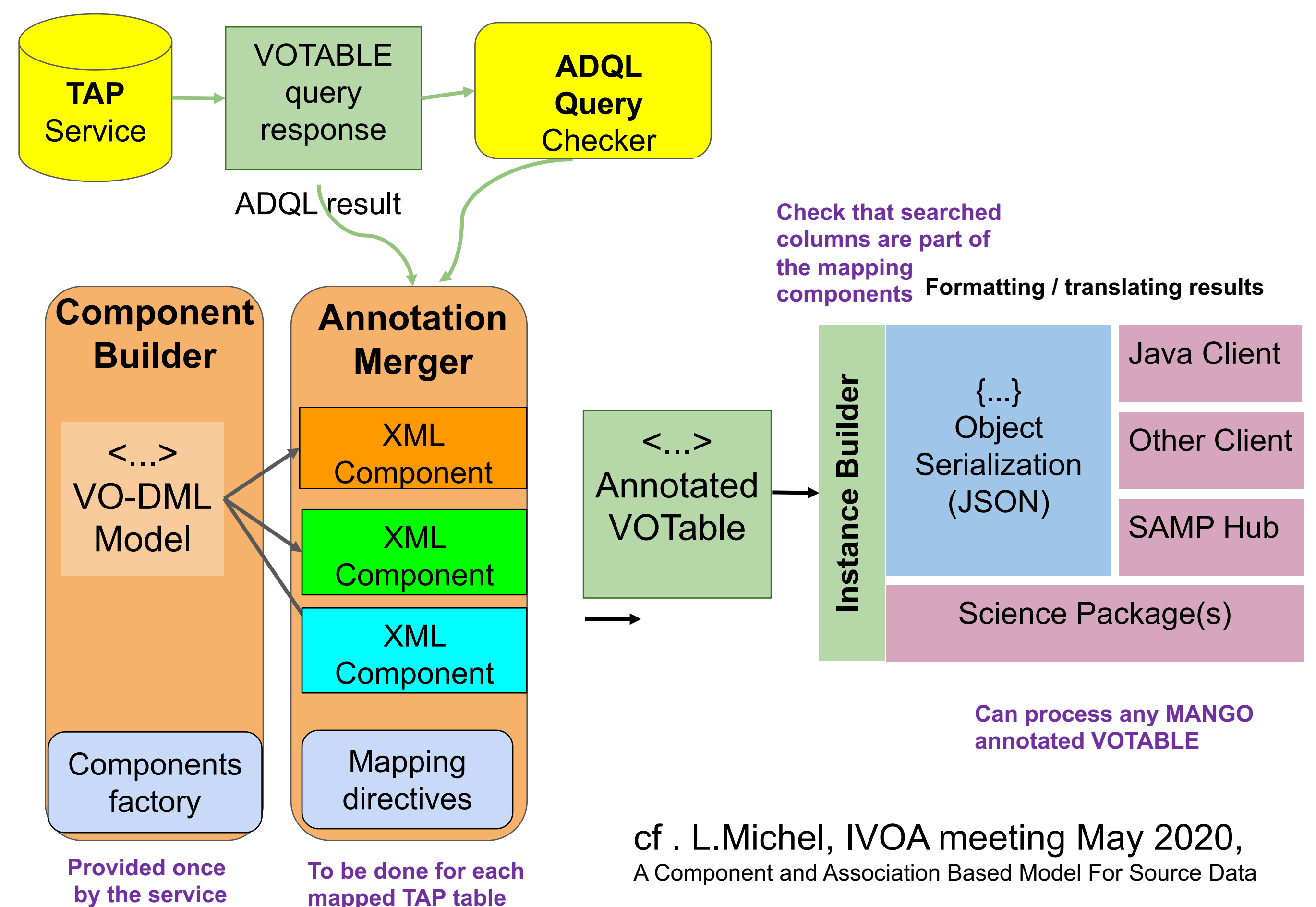
Prototype building blocks

The prototype is based on programs and components dictionaries developed by **Laurent Michel** for exercising two main specifications :

- a data model for catalog sources with attached data : [MANGO DM](https://github.com/ivoa-std/MANGO) <https://github.com/ivoa-std/MANGO>
- a mapping syntax [ModelInstanceInVOTable](https://github.com/ivoa-std/ModelInstanceInVOTable) <https://github.com/ivoa-std/ModelInstanceInVot>

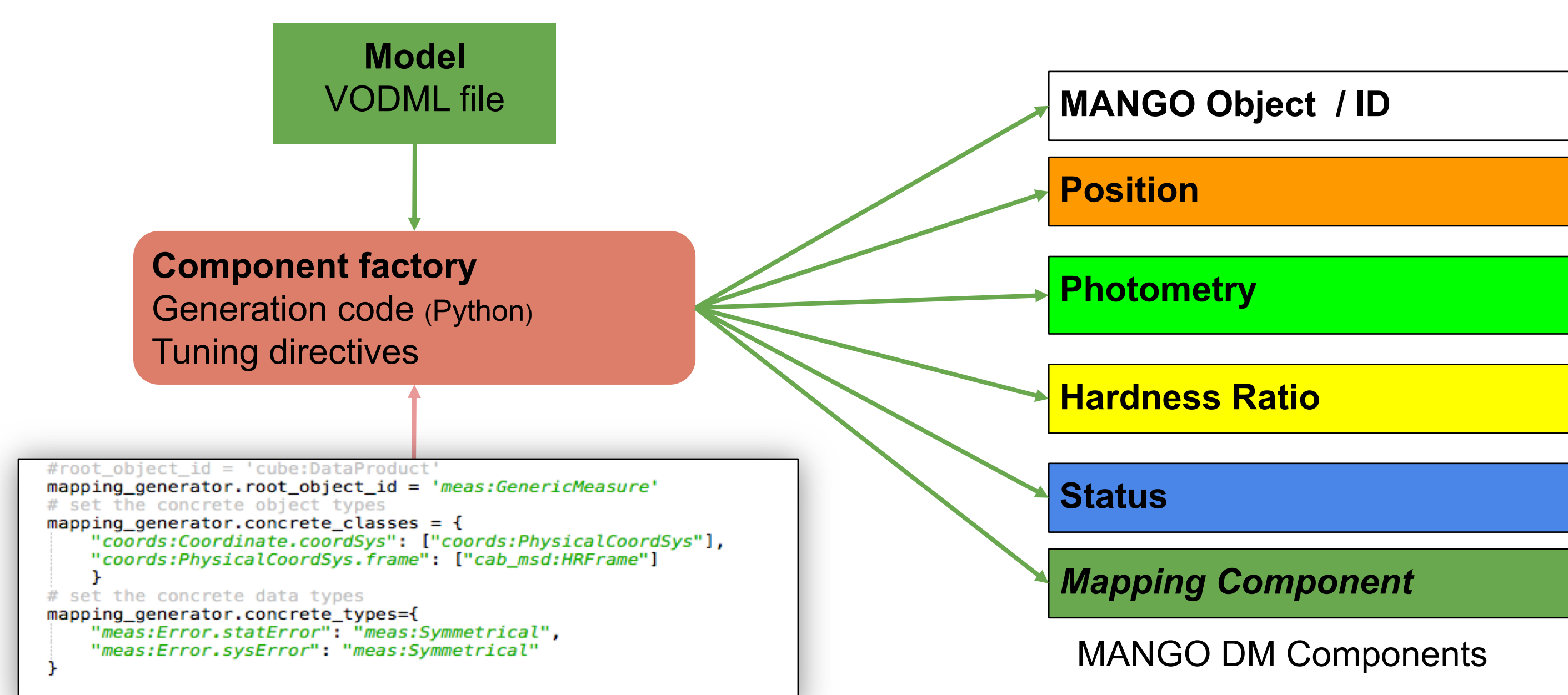
Appending the annotation block on top of the VOTable response is performed by extending the *WriteHeader* method developed by **G. Mantelet** in the [Volt TAP Library](https://github.com/gmantele/volt) <https://github.com/gmantele/volt>

The prototype is written in JAVA. It browses the VODML model definition and appends each XML components following the JSON config file provided by the service.



cf . L.Michel, IVOA meeting May 2020,
A Component and Association Based Model For Source Data

Building Mapping Components



- Must be done once for each data collection served by the service
- The mapping components are templates that can be reused for all data sets
- They can (must) be refined by the curator

Example for a Vizier annotated table from Chandra

- Model components: https://github.com/loumir/TAP-annoter/tree/main/tap_annoter/config/mapping_components
- JSON config: <https://github.com/loumir/TAP-annoter/blob/main/PAdass-chandra-table-profile.json>
- Final annotated table : <https://github.com/loumir/TAP-annoter/blob/main/PAdass-Annotated-Votable-Chandra.xml>

Further developments

- Explore and define a way to **store model related config resources** that are currently not supported by TAP_SCHEMA.
 - 1- in the TAP_SCHEMA by adding two specific tables named (TBD)
 - 2- in a file storage local to the server e.g. as XML or JSON files

- Adjust the annotation VOTable wrapping to the current **ModelInVOTable Mapping syntax**