

# Gaia Source DM

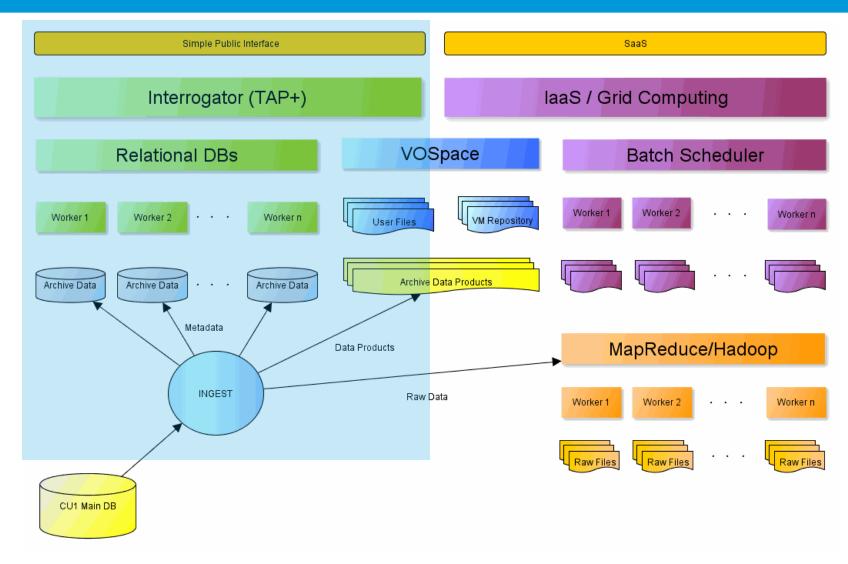
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### **Gaia Archive Architecture**





## Gaia Archive requirements for TAP+



#### **Private data**

• Users should have their own data/catalogues close to the archive

#### **Gaia DM**

 Gaia has its own DM that is propagated and used for all the software developed in the consortium

#### Crossmatch

 Crossmatch between Gaia catalogue and user catalogues to be executed as a user ADQL function

### Big output results

 TAP server should be able to handle very big catalogues and very big output responses

# TAP+ implementation: Gaia DM



### DM Preserved in TAP\_SCHEMA? (TAP?)

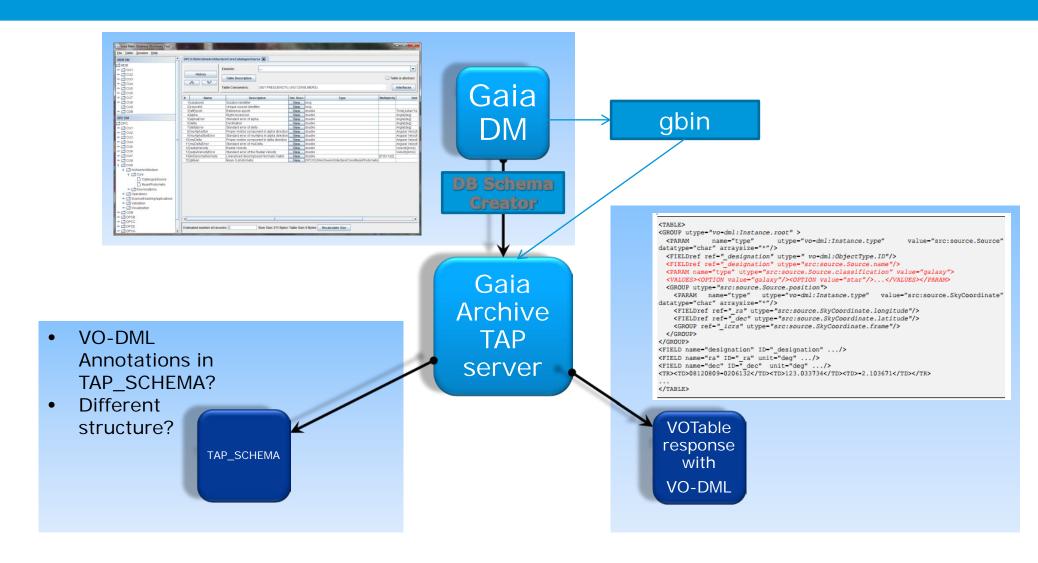
- Gaia DM should be preserved and propagated through TAP response
- Should TAP\_SCHEMA reflect this DM? How?
- DM exploration? Cleaner/self-consistent solution?

### **Output response OO complaint (TAP?)**

- Compulsory output of TAP response is a single table VOTable
- Other output formats are allowed that could reflect better the Gaia DM (Gaia bin – a.k.a. gbin) so they should probably be implemented
- In the case of VOTable format, a VO-DML could/would be implemented

# Gaia DM propagation





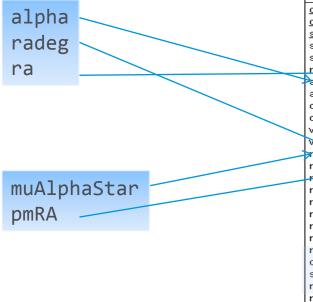
### Gaia DM definition



- Gaia DPAC is a quite big consortium distributed across Europe and other countries
- Work is divided into different Coordination Units (e.g. archive in under CU9)
- All the participants of the different coordination units can propose changes into the DM
- A Coordination Control Board (CCB) accept/reject changes per CU (in operations)
- Result: Collaborative process but, sometimes, not clear coordination

# Gaia CatalogueSource + External Catalogues





CatalogueSourceImpl dmVersion: String dmVersionClass: Class serialVersionUID : long solutionId: Iona sourceld: long refEpoch : double alpha : double alphaError: double delta : double deltaError : double varpi : double varpiError : double muAlphaStar : double muAlphaStarError : double muDelta : double muDeltaError : double radialVelocity : double radialVelocityError : double muR : double muRerror: double matchedObservations : short observed : boolean superseded : boolean nObs:int[] nOutliers : int[] f2:float chi2:float[] deltaQ:float excessNoise: double excessNoiseSig:double paramsSolved : byte rankDefect : int decomposedN:float[] primaryFlag: boolean relegationFactor: float astrometricWeight : float[] gMean: MeanPhotometry rvConstancyProbability : double

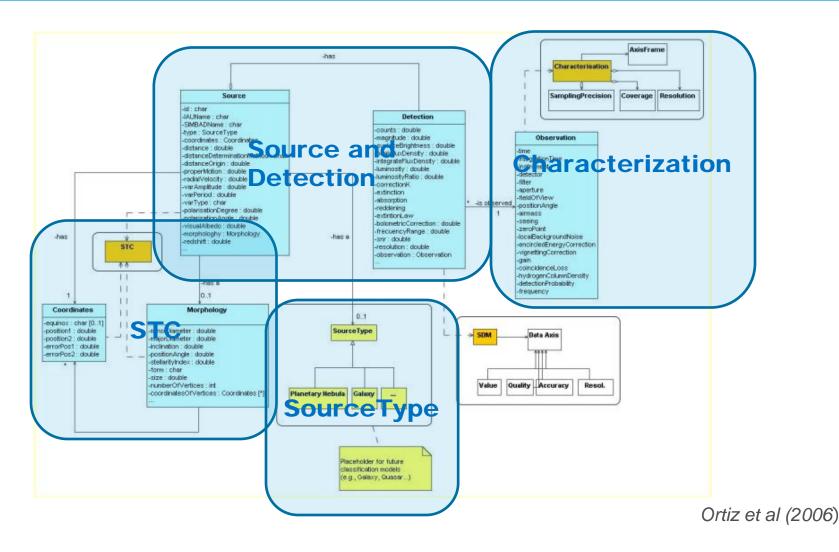
randomIndex : long ran : Random

Tycho2OriginalXmlmpl dmVersion : String dmVersionClass: Class serialVersionUID : long id:lona tvc1:int tvc2 : int tvc3:int mRAdeg : float mDEdeg:float emRA: int emDE:int pmRA: float pmDE:float epmRA:float epmDE : float bt:float ebt : float vt:float evt : float radeg : float dedeg : float eRA:float eDE:float epRA: float epDE:float posflg:char ran : Random

TMassOriginalXmlmpl dmVersion : String dmVersionClass : Class serialVersionUID : long id: long designation: String ra : double dec : double errMai: float errMin: float errAng : float iM:float jMsigcom : float hM:float hMsigcom : float kM:float kMsigcom : float extKey: long jDate : float ran : Random

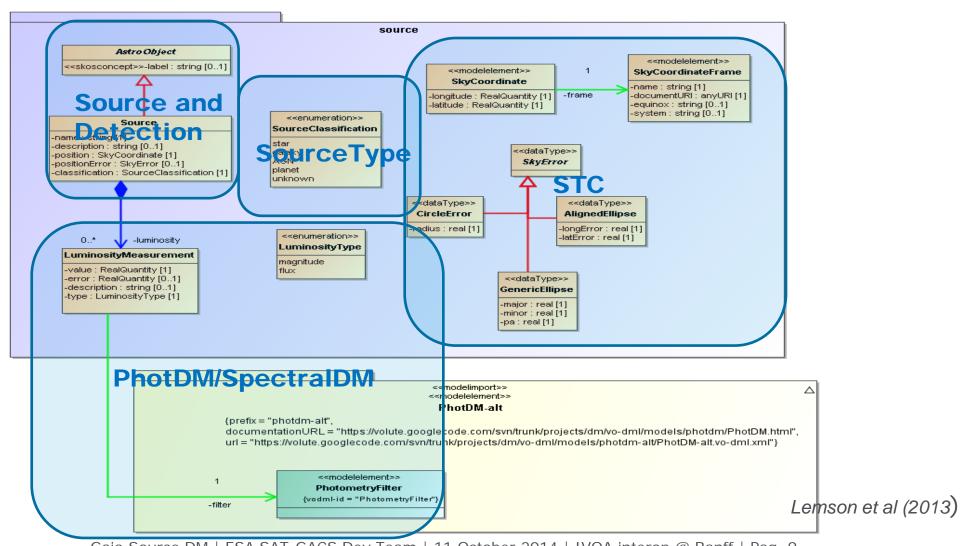
### **IVOA Source DM old draft**





### Source DM for VO-DML

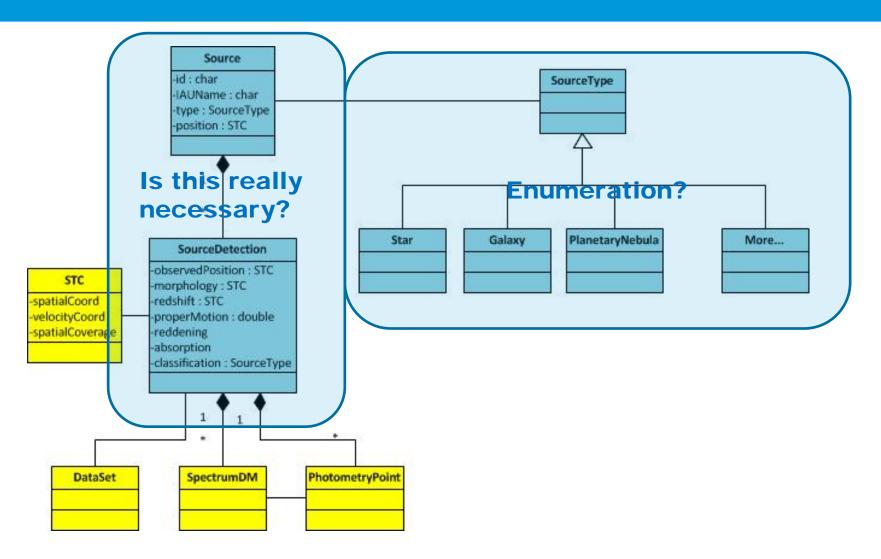




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# IVOA Source DM old draft – reloaded





### **Source DM beneficts**



### Simplified SourceDM due to DM reuse

- STC2
- PhotometryDM
- CharDM
- SpectralDM 2.0

## Mapping

- TAP responses with IVOA utypes. Easier combination of results
- Possibility to map DMs and recover original objects

### Support to DM definition

- Missions reuse IVOA DM concepts in the DM definition
- Operations between catalogues from different missions simplified
- Ideal situation: Use XMI->VO-DML workflow inside Project's Data Model processes/libraries

# **Proposal**



- SourceDM is becoming a requirement
- It will facilitate the development of some ongoing projects and a better characterization of old/current ones
- If agreed, it has to be decided if a simplified or a complex DM needs to be developed
- However: Many ongoing specs on the DM Roadmap.
  Roadmap has to be clean-up
- Proposal: Use partially project resources to help into the definition of a SourceDM that could be endorse by IVOA
- Of course... it is a TCG decision



### **THANK YOU**

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