
Model of the Galaxy and VO

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Evolution in model operation

- Presently : “asynchronous” (batch execution on a computer cluster, retrieval of results on FTP server, ...)
 - Recent requests on “web service” type operation
 - Stellar counts in a given sky direction (*JMMC*)
 - Use of stellar distribution for calibration of optical/NIR follow up observations of GRBs (*J.Greiner, MPE*)
⇒ new experimental mode :
“HTTP” output and GET method for “short” simulations
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IVOA Theory use case

Description

offer a service which supplies a realistic distribution of the Galactic stellar content in a given sky field.

Could be used in Virtual Telescopes; could be combined with other simulators (e.g. galaxy cluster simulators, Kuiper belt simulators, etc.)

- service is located in a registry
- the user supplies input parameters (limiting magnitudes, field positions, ...)
- gets back observational parameters of a Galactic stellar distribution
- this output can be combined with the output of other simulator(s) and input in e.g. an instrument simulator.

Principal actor(s)

- Astronomer
- Instrument developer

IVOA Theory use case

End Result

catalogue of Galactic simulated stars with observational parameters and with all necessary informational metadata

Other actors

- galaxy cluster simulators
- instrument simulator / image generator
- Registry

Pre-conditions

- detailed description of the Galactic star simulator in a Registry
- definition of a protocol to access simulated data
- availability of other astrophysical simulators and of instrument simulator

IVOA Theory use case

Flow of events

1. definition of observation parameters (photometric bands, ...)
2. search Galactic star simulator in a Registry
3. check the availability of chosen observational parameters
4. if yes query the Galactic star simulator for given field(s)
5. possibly get simulation from fore-/background simulator(s)
6. combine the simulations and input the result in an instrument simulator or image generator

Post-condition

catalogues of simulated Galactic stars supplied in a standard format (VOTable) with all necessary metadata informations.

IVOA Theory use case

Basic assumptions

existence of simulations of Galactic stars on all the sky stored in a data base

Key references

Poster at ADASS XV

A.C. Robin et al., 2003, A&A, 409:523-540

Besançon model of the stellar populations of the Galaxy, on-line version

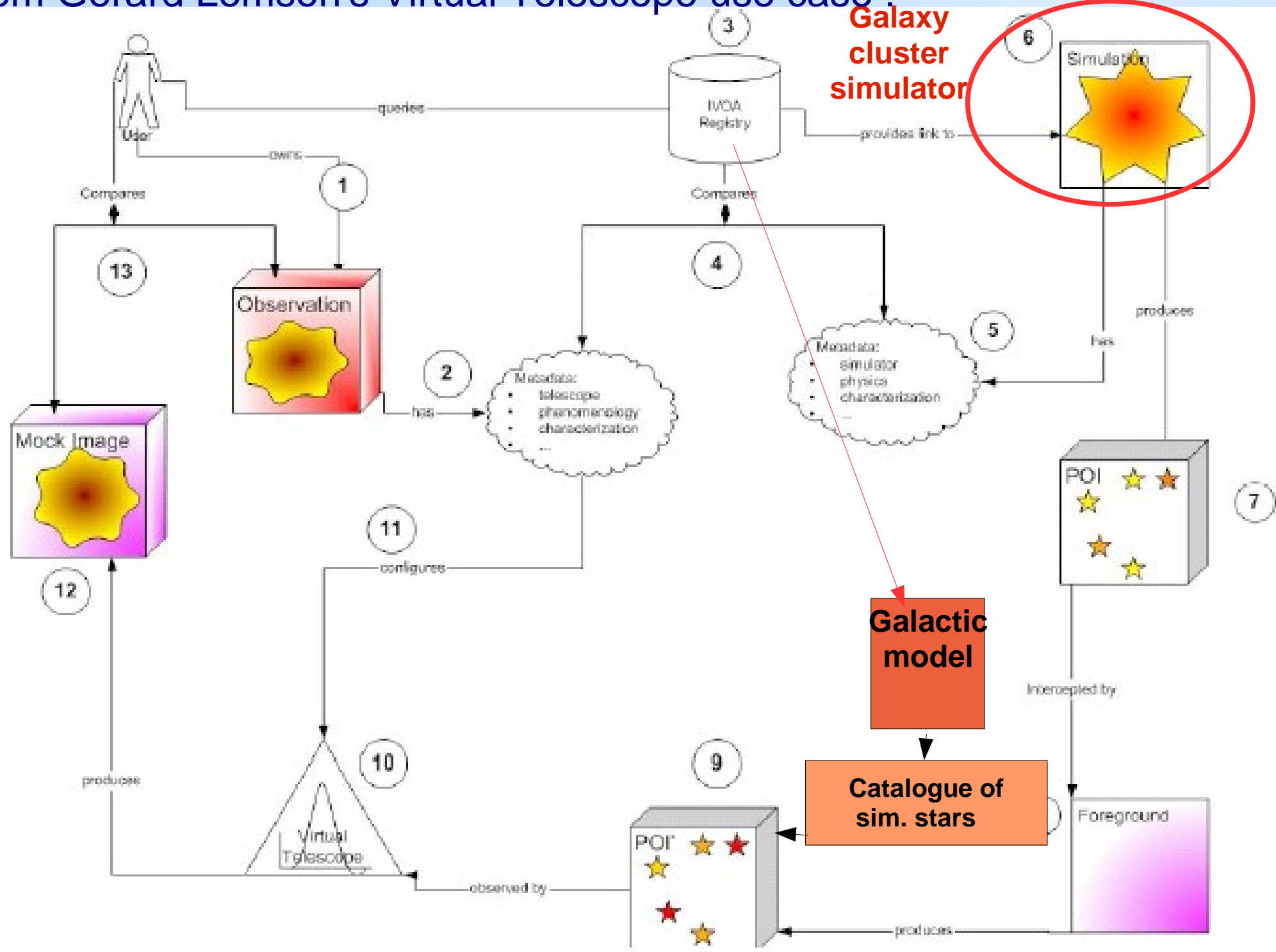
Requirements on IVOA working groups

DM/Theory IG: Simulation Data Model

DAL: Access protocol for simulated data

Registry: Possibility of fine parameter query description in registries

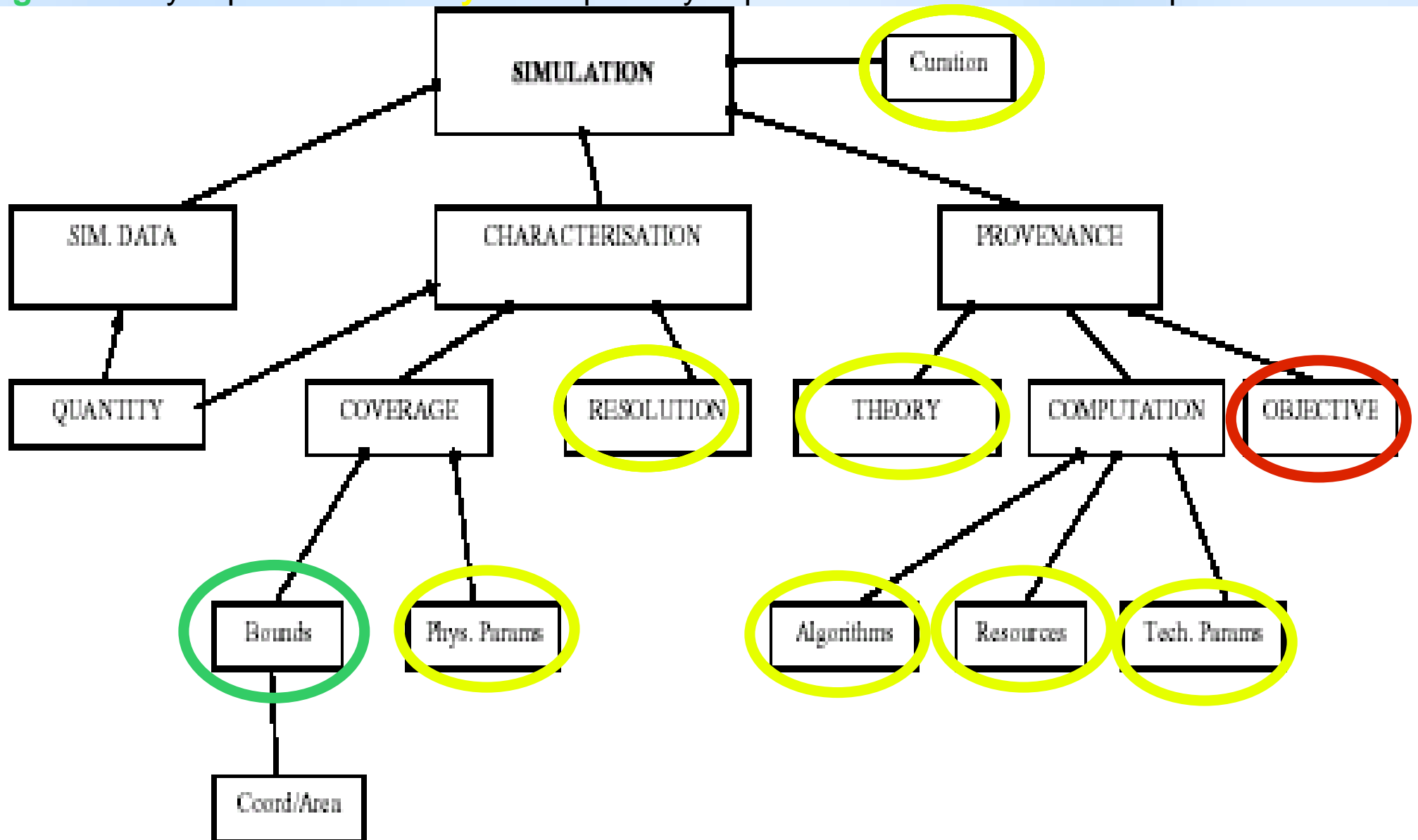
From Gerard Lemson's Virtual Telescope use case :



Galaxy model and simulation data model

Comparison of metadata supplied in the VOTable output of the model
and the draft for a simulation data model (L. Shaw and N. Walton)

green: fully implemented yellow: partially implemented red: not implemented



Output of the Galaxy model service

- Since beginning of operation of new version (end 2003), trend to get more often “big” simulation catalogues (100Mb → > 10 Gb)
 - longer computation times needed
 - In a VO perspective, need to change in the operational mode :
 - Pre-compute “comprehensive” simulations
 - User queries that access and possibly extract part of these simulations
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Protocol to access simulation data

- From the above, emerged the need of what could be a “SMAP” (*Simple Model Access Protocol*) derived more or less from SIAP
 - Request in a n-dimension “parameter space”
 - including sky coordinates, magnitudes in different passbands, ...-
 - VO Table output
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Access to theory/simulation data

- Cambridge meeting (27-28 February 2006) : start of the development of “SNAP” (*Simple Numerical Access Protocol*) derived from SIAP
⇒ SNAP designed for cosmological simulations (*SMAP* to be developed in parallel with *SNAP*)
 - Specific requirements for a *SMAP*:
 - VOTable output (model yields catalogues)
 - “Mosaicing” mode needed, not only “cutout” and “pointed” (following *SIAP* standard)
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