

Synthesis Models in the VO

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Summary

I. What is a synthesis model?

II. The many synthesis models outputs (and uses)

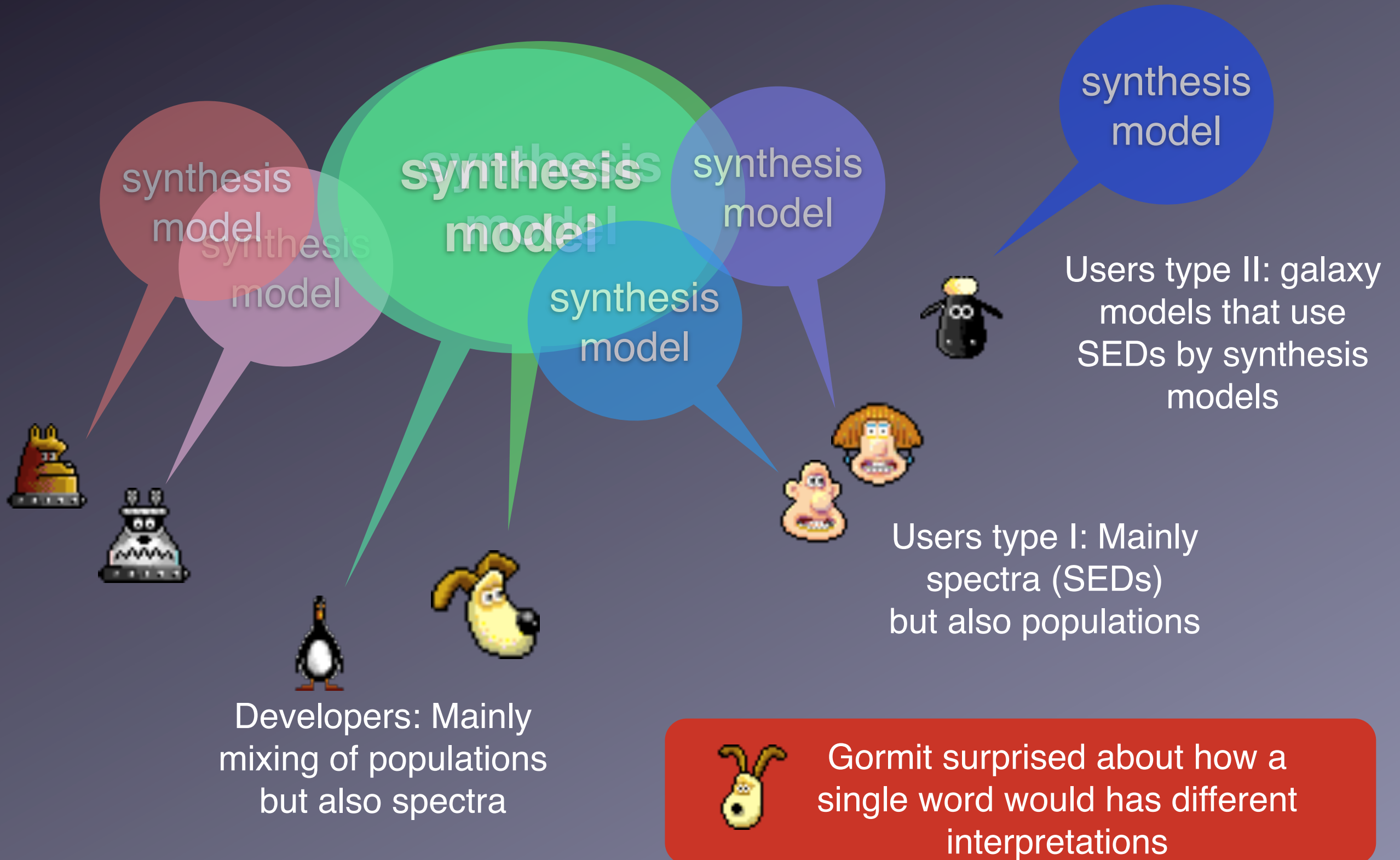
III. The case of spectra obtained by synthesis models

IV. Open issues

V. Conclusions

I. What is a synthesis model? (1/2)

VO: An ongoing data model specification in an ongoing way to access it, except for spectra were there is a recommendation only used by very few applications



I. What is a synthesis model? (2/2)

Let's look articles about Synthesis models:

- Leitherer et al. (1999; Starburst99): 120 Figs. where 36 are a SEDs
(synthesis models in general)
- Bruzual & Charlot (2003): 20 Figs. where 5 are SEDs
(synthesis models in general)
- Cerviño & Luridiana (2006): 14 Figs. where 1 are a SED
(Evaluation of dispersion in synthesis models)
- Gonzalez Delgado et al. (2005): 53 plots where 23 are SEDs
(Implementation of High Spectral resolution SED in synthesis models!)

SEDs are about 1/3 of Synthesis models results!

II. The many synt. mod. outputs (and uses)

Output	Relevant Field
Stellar population inventory	<ul style="list-style-type: none">- Stellar evolution- Stellar clusters- IMF studies- Small scale star formation- Galaxies (starburst, spheroidal components, emission line systems)
SEDs	<ul style="list-style-type: none">- Stellar atmospheres- Star formation history of galaxies- Cosmology

III. The case of synt. mod. SEDs (1/2)

Although synthetic SEDs are only 1/3 of synthesis models results/use...

...and although **there are services** that provide these results...

...and although **there is an standard** to access it few years ago (SSAP/TSAP)...

...there are only two applications which access them as theoretical services (format=metadata VOSpec, VOSA)



III. The case of synt. mod. SEDs (2/2)

Maybe one of the points in the **summary talk from TIG** is that **there are working theoretical SEDs services and protocols** demanded by the science community. **But** (after at least 2 years) **they seem to be not relevant to be included by applications.**



The point is specially relevant, following executive committee directives, since in this case data providers are usually scientists. And if applications see their services, data providers (synt. models developers) will be the first interested in a wide scientific use of the VO

IV. Open issues (1/2)

Characterisation:

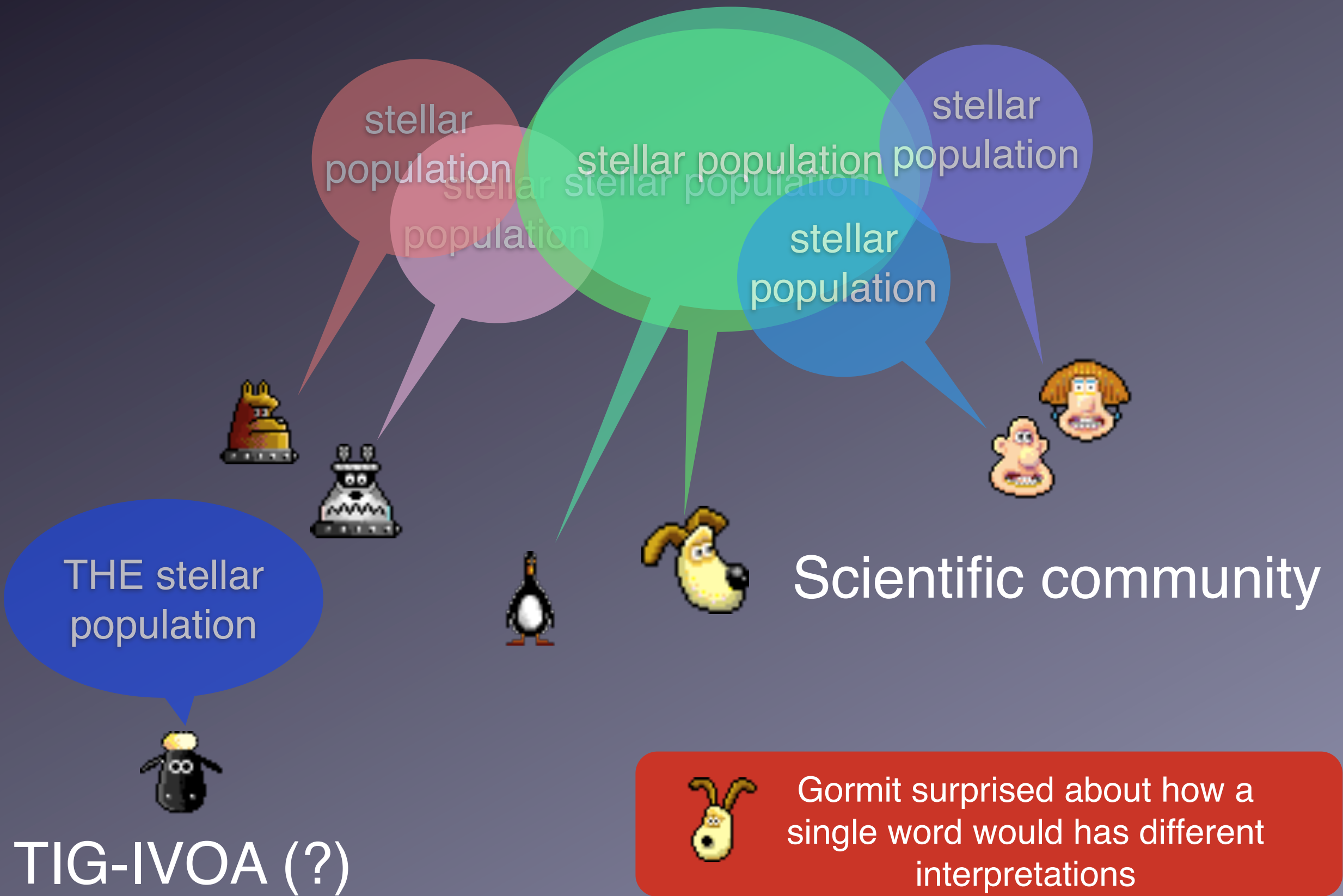
-  SSP SEDs characterisation (see Cerviño & Luridiana astro-ph/0711.1353 Euro-VO workshop)
-  **SSP stellar population characterisation (open)**

Data models:

-  **SSP SEDs: Spectra data model (+ SimDB fields (?)) (to be explored)**
-  **SSP stellar population data model: SimDB can provide some fields, mostly for characterization, but it is needed science community feedback for any theoretical data model.**
(maybe begin without DataModel and generate one, if needed, after community feedback, or...)

IV. Open issues (1b/2)

Should IVOA propose any DataModel in physical issues (theory models) where the scientific community do not have an agreement?



IV. Open issues (2/2)

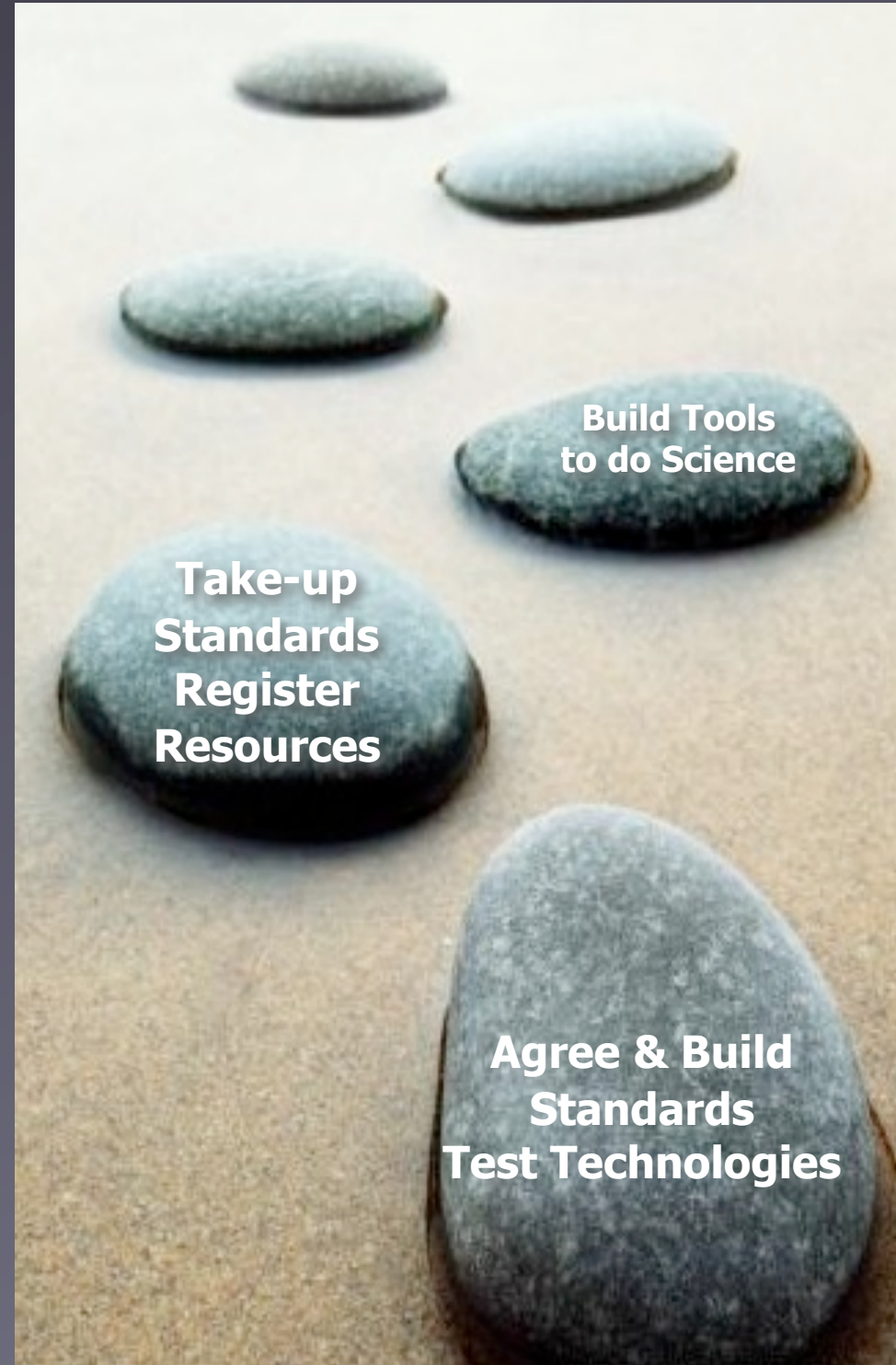
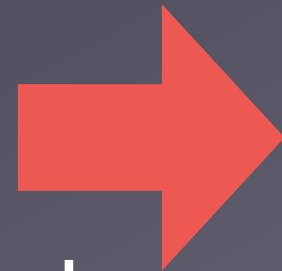
Data access (protocols):

- ⌘ Theoretical VO-services do not make sense (**from science community point of view**) if they are not accessible by VOtools/Applications.
- ⌘ Is it really needed a DataModel for any protocol? SSAP is the ONLY protocol with a DataModel. There is no DataModel for Images, or ConeSearch, or TAP!
- ⌘ SImDB only partially fills the DataModel Gap (covering some important aspects) but the DataModel problem will be still there (and often it is a scientific problem, not a semantic one).
- ⌘ S3 is a working protocol (with several uses cases and working services, ej: BATSI, CDM, Astrosismology seen today) but without an intrinsic DataModel. It is really needed something more to promote it as WD to DAL?

V. Conclusions

**Theory
(in IVOA)**

Still in the data
access phase



IVOA

Now in the interop.
phase

