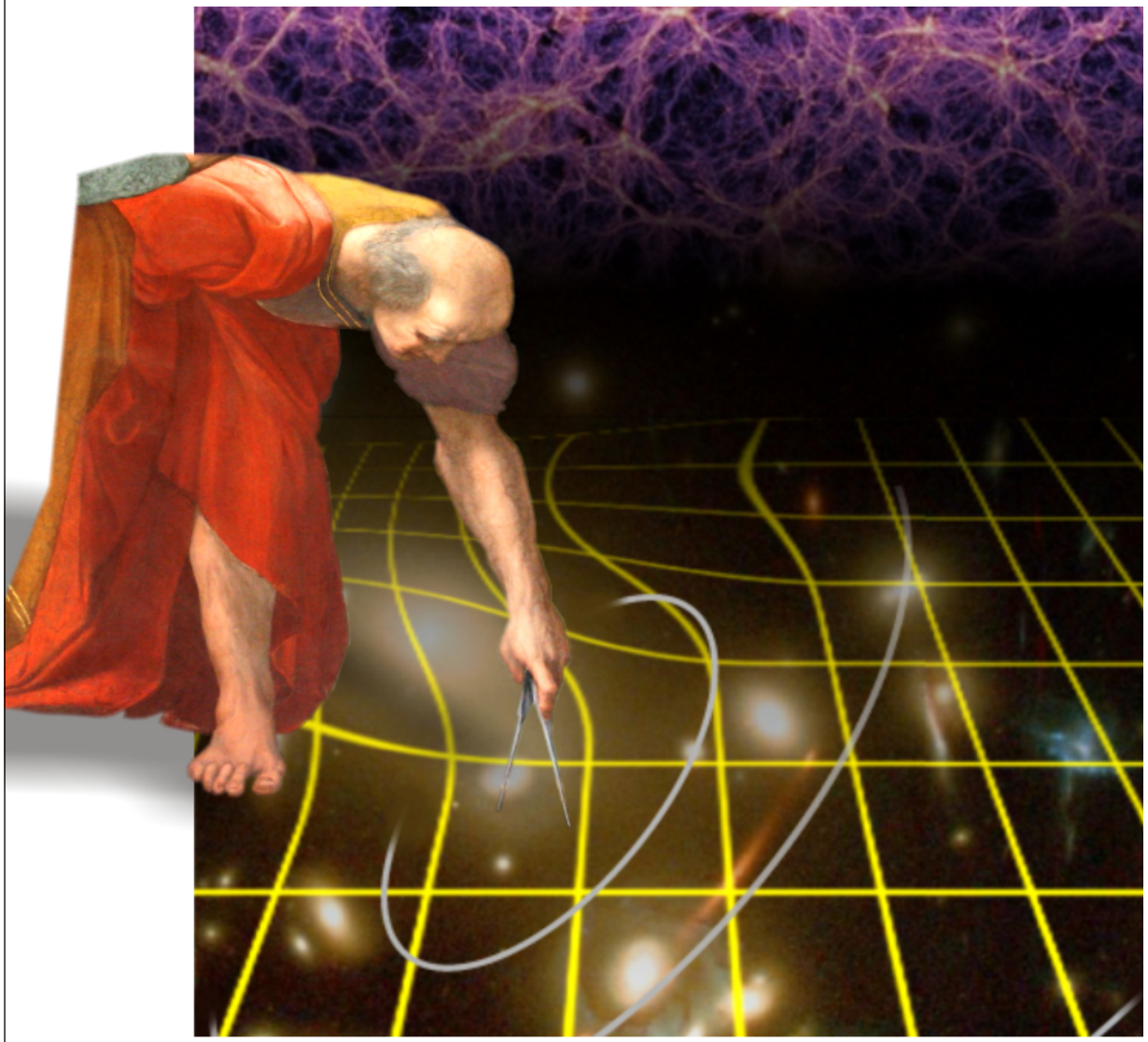


OU-VIS status and prospects

H. J. McCracken
C. Grenet, P. Hudelot (IAP)
for the OU-VIS team

What does OU-VIS do?

- OU-VIS defines **algorithms** that are implemented by the SDCs to process VIS images …
- These algorithms are used to….
  - Take **raw images from the VIS camera** and produces **cosmic-shear ready images**
  - **Astrometrically and photometrically calibrate** the individual VIS images
  - Produce **stacked images** and **catalogue** for legacy science
  - Derive the i**nstrument PSF**
- Wide survey contains **14,000 square degrees** (several hundred CFHTLS-like surveys)
- "**Do no evil**": all processing steps are driven by need to minimise additive and multiplicative biases in the the cosmic shear measurement

Minimising biases

$$\widehat{\gamma} = (1+m)\gamma + c.$$

Massey et al. 2012

Cropper et al. 2012

$$\xi_{ij}(\theta) \equiv \langle \gamma_i^A \gamma_j^B \rangle(\theta),$$

Additive bias

$$\widehat{C_{ij}(\ell)} = (1 + \mathcal{M}(\ell)) C_{ij}(\ell) + \mathcal{A}(\ell).$$

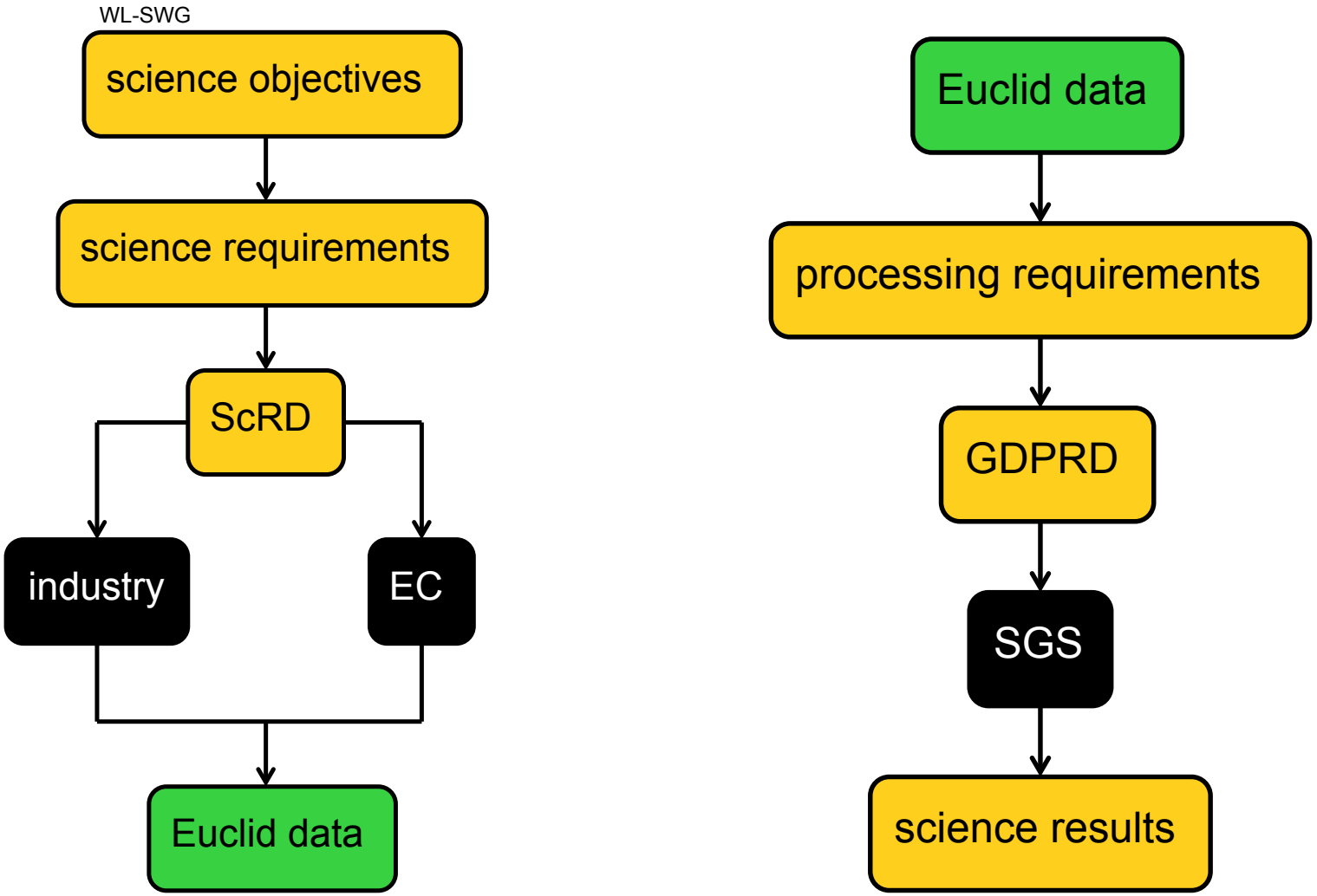
Multiplicative bias

$$\mathcal{A} \leqslant 10^{-7} \quad \Rightarrow \quad \sigma^2[|c|] \leqslant 10^{-7}$$

$$\mathcal{M} \leqslant 4.0 \times 10^{-3} \quad \Rightarrow \quad 2\langle m \rangle \lesssim 4.0 \times 10^{-3}.$$

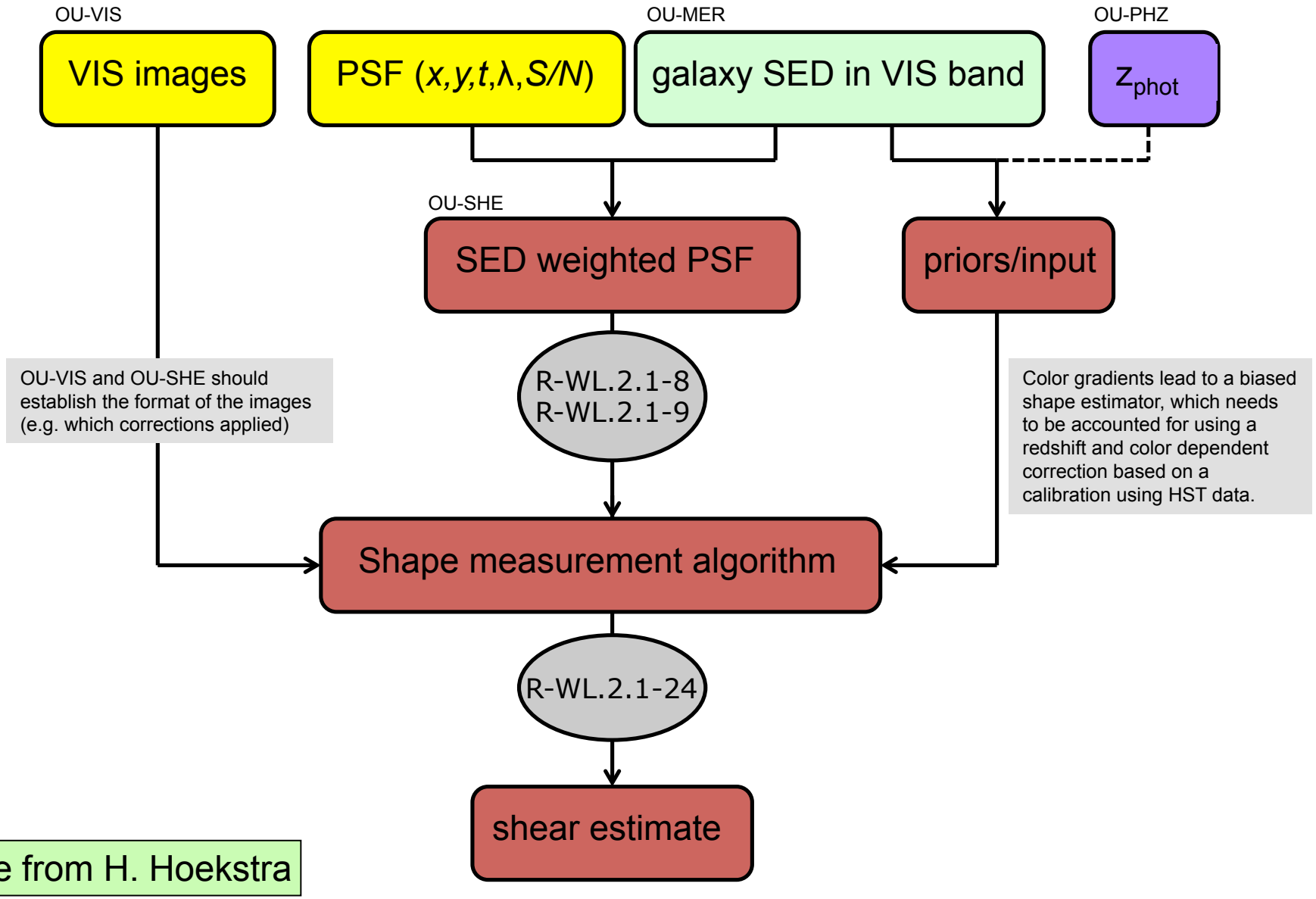
Requirements-driven processing

EUCLID CONSORTIUM

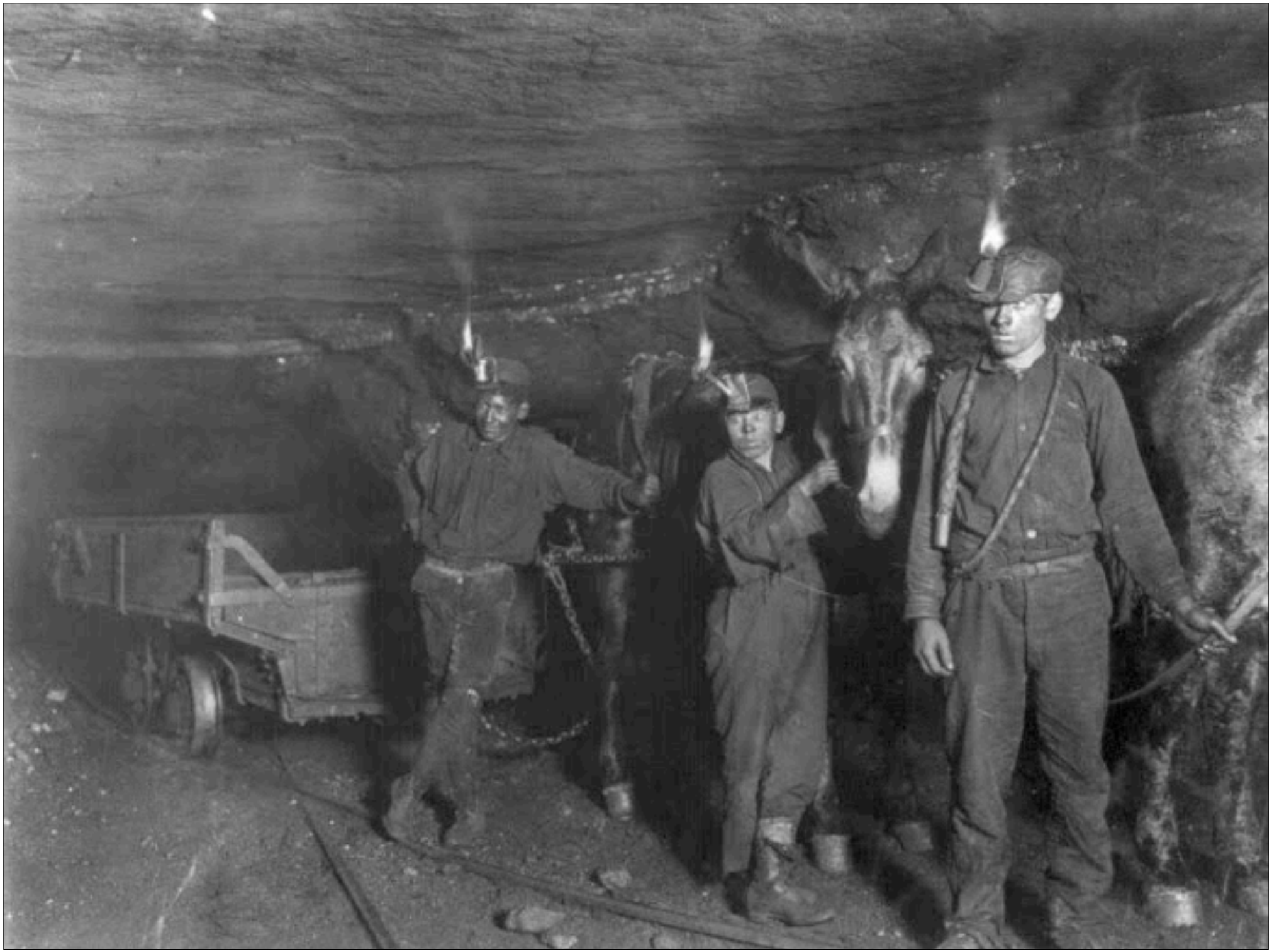


Slide from H. Hoekstra

Shear pipeline

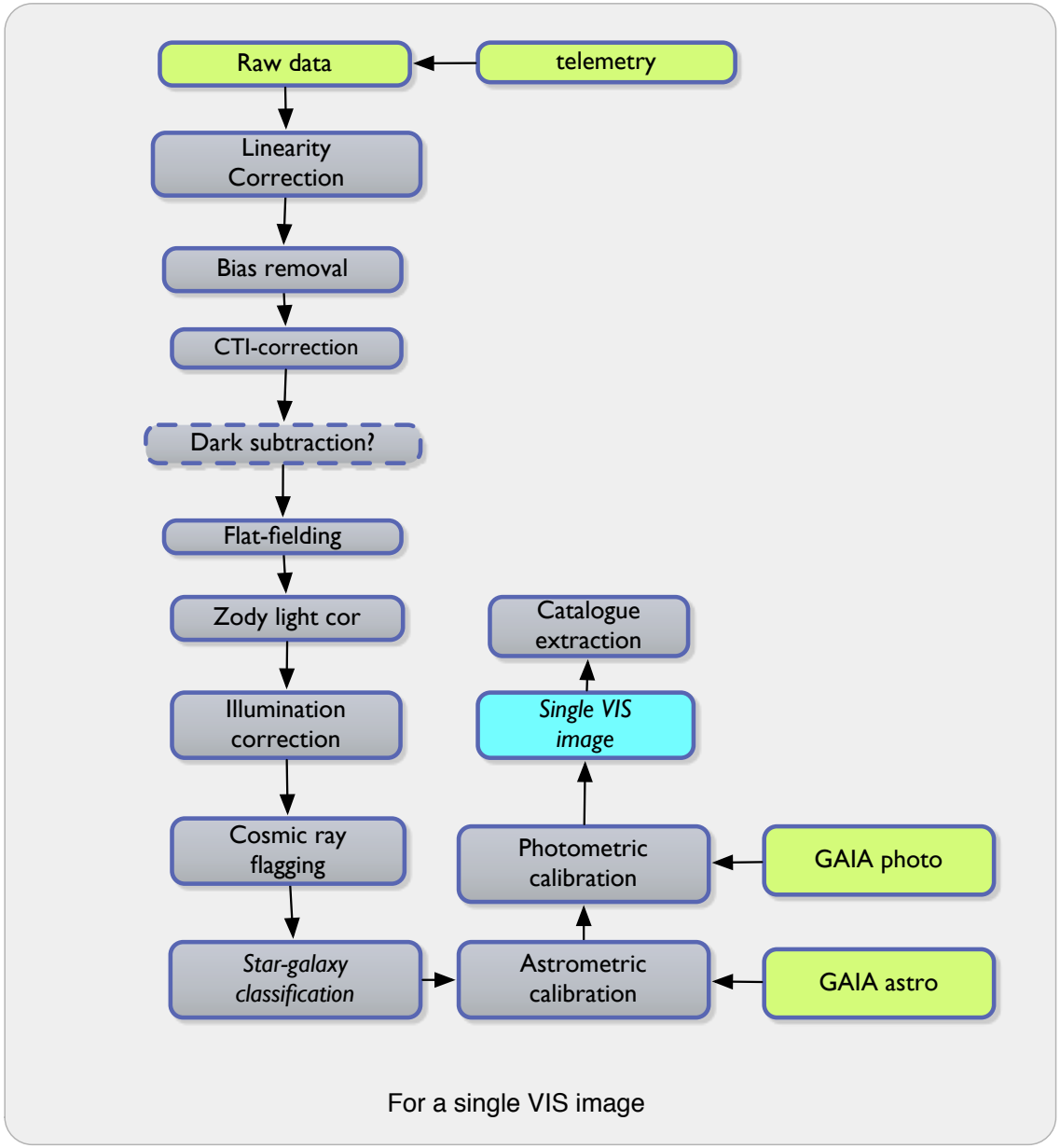


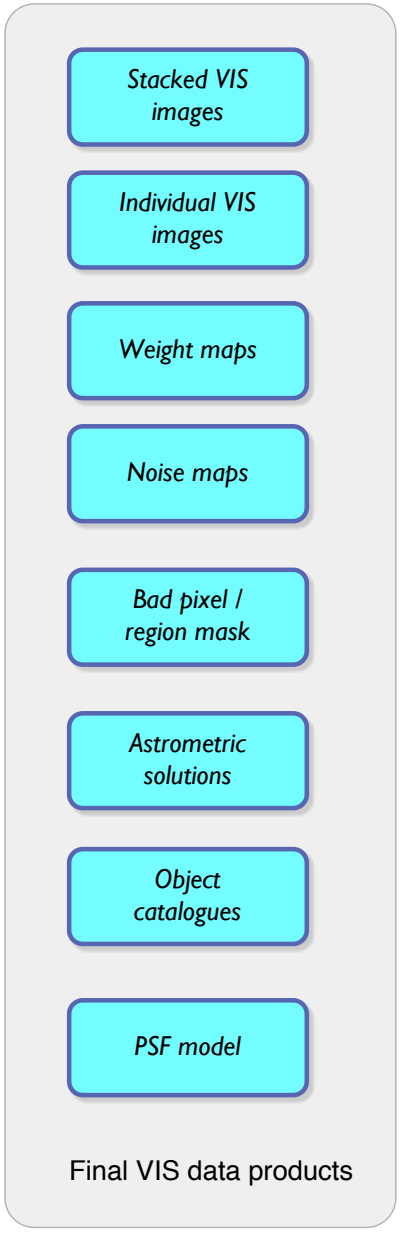
Slide from H. Hoekstra



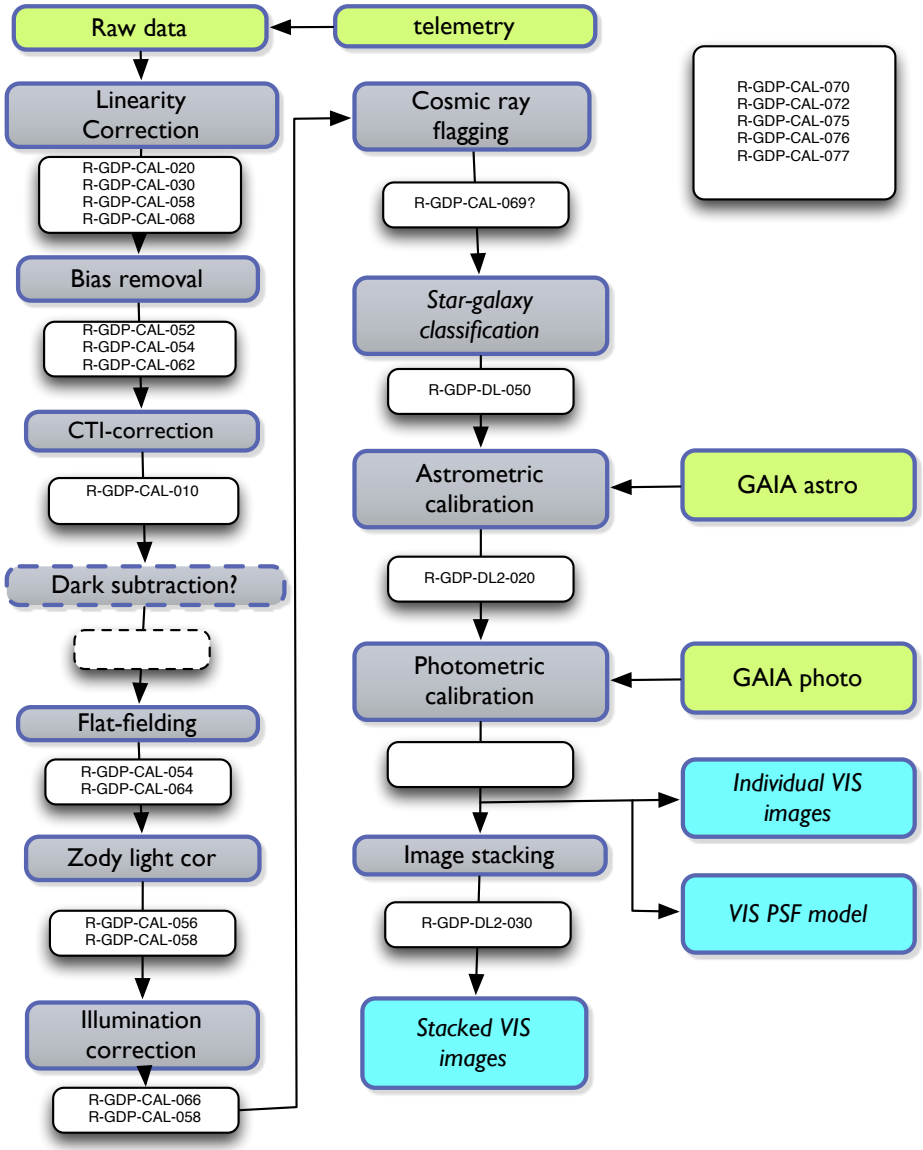
VIS pipeline and VIS products

EUCLID CONSORTIUM



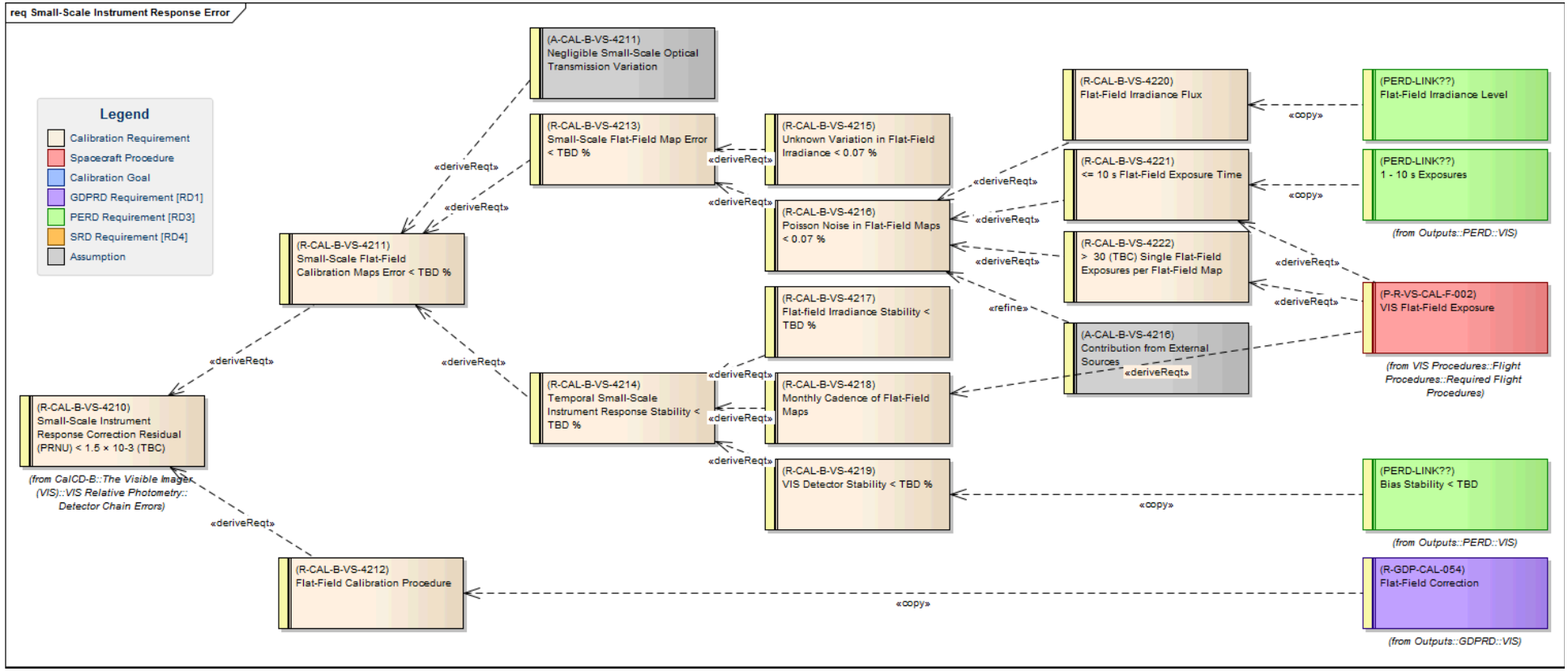


VIS flow-down

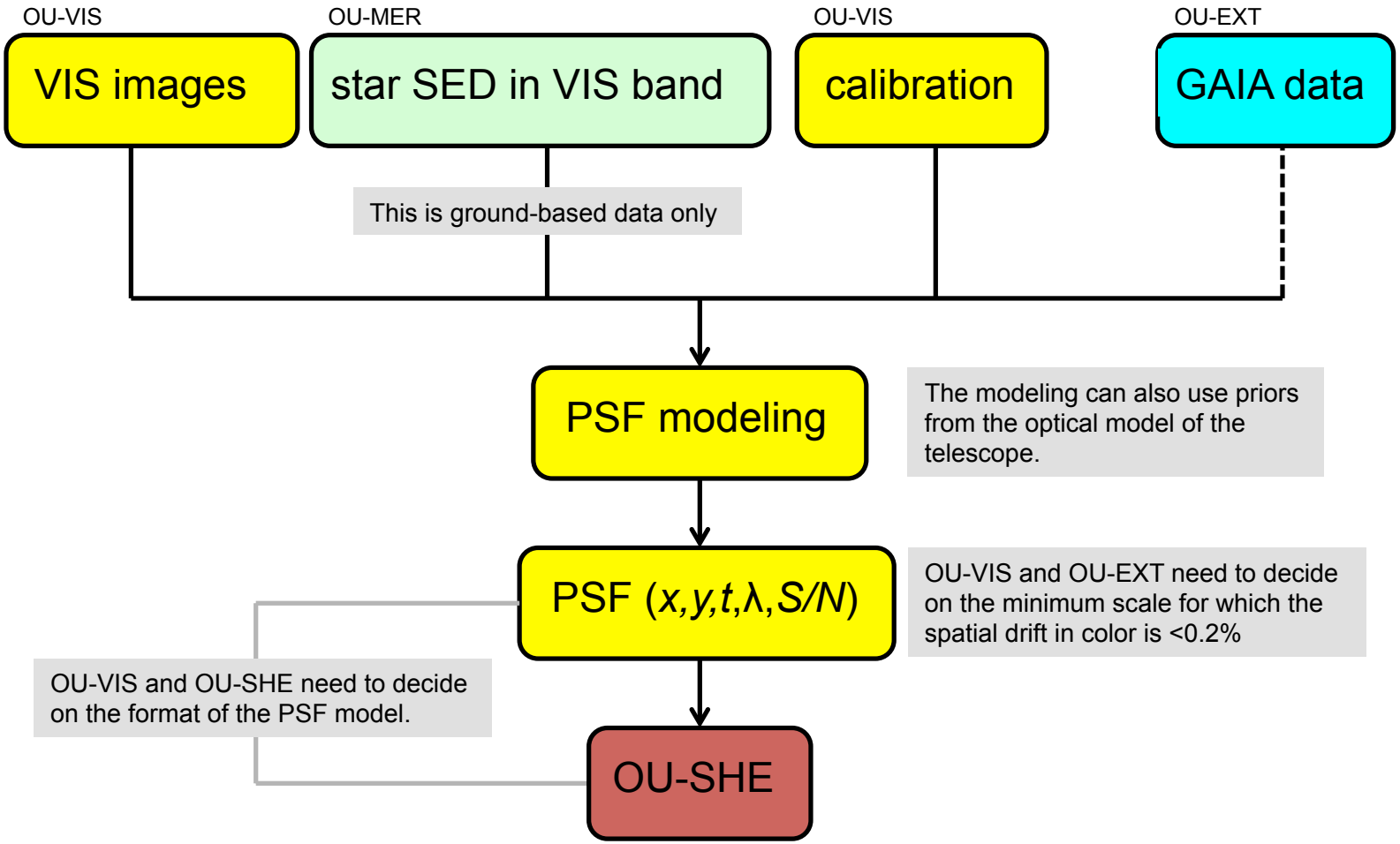


- In this simplified flow-down, only processing for individual images is shown
- Cadence of bias / flat field / dark images important
- How often are the PSF solutions / photometric solutions recomputed?
- What algorithms do we use to carry out these processing steps?

Connection to calibration



PSF modelling



Slide from H. Hoekstra

Tasks for OU-VIS

- Prepare for the ground segment review: do all the VIS processing steps have a corresponding requirement?
- Are all these requirements verifiable, and if is so by what method?
- Develop realistic simulations of VIS images containing **all known instrumental effects**
- Define verification tests for the VIS pipeline
- Define software spec for VIS pipeline
- Investigate imact of colour calibration on VIS pipeline