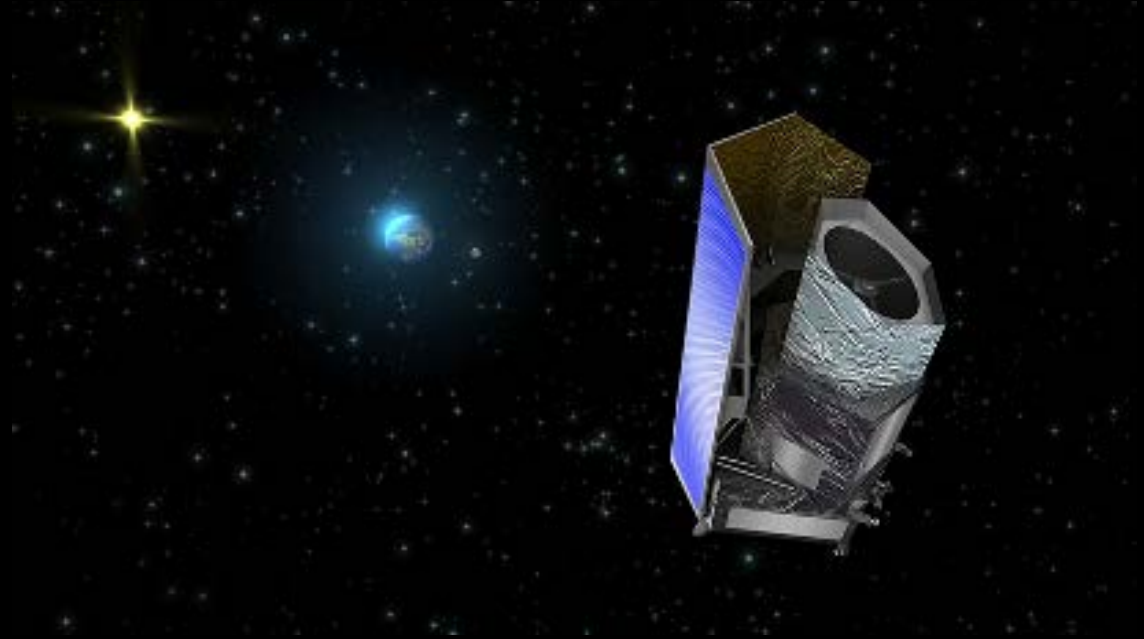


# Euclid

## Science Ground Segment (SGS) Processing Operations Concept



M. Poncet (CNES)  
On behalf of Euclid EC SGS System Team

**SciOps 2017**



- Euclid Project & SGS
- From Euclid pipeline to SGS Architecture
- Processing concepts
- Conclusions



- **Euclid Project & SGS**
- From Euclid pipeline to SGS Architecture
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M2 mission in the framework of the **ESA Cosmic Vision Programme**

Euclid mission objective is to map the geometry and understand the nature of the dark Universe (**dark energy and dark matter**)

Actors in the mission: **ESA** and the **Euclid Consortium** (institutes from 15 European countries and USA, funded by their own national Space Agencies)

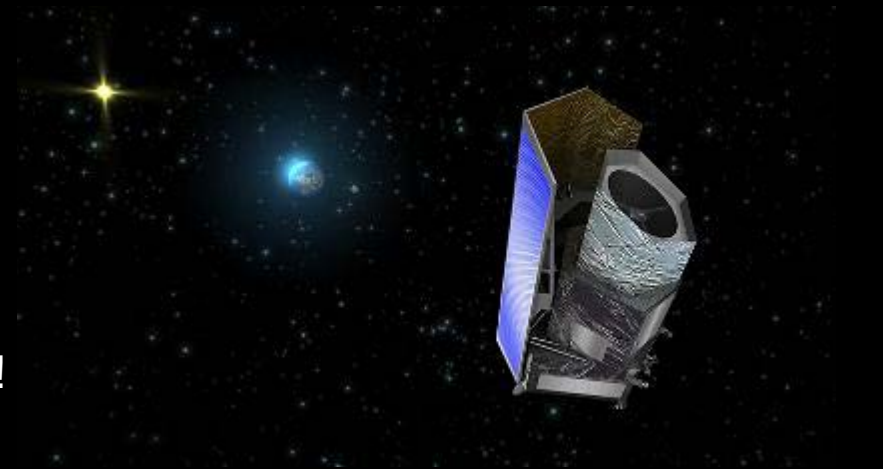
Euclid Consortium:

16 countries

220 labs

~1500 members

One of the biggest on going collaboration !



<http://sci.esa.int/science-e/www/area/index.cfm?fareaid=102>

<http://www.euclid-ec.org>



# Euclid at a glance

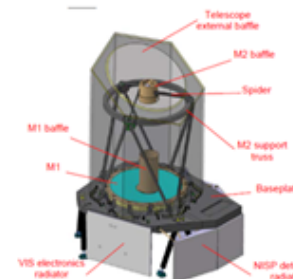


Soyuz@Kourou

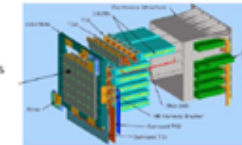
Q4 2020



PLM+SVM: 2010-2019



VI-FPA



VI-RSU



VI-Cal. Unit



VIS imaging: 2010-2020

(VIS team)

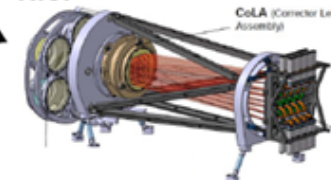
VIS

NIR spectro-imaging

2010-2020 (NISP team)

NISP

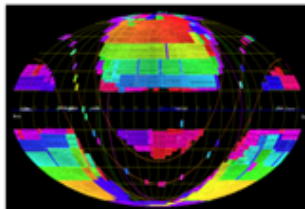
NI-OMA



CoLA (Corrector Lens Assembly)



Surveys: 2010-2028 (Survey WG)



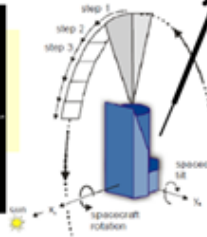
6 yrs - 15,000 deg<sup>2</sup>

Commissioning - SV

Euclid operation:

5.5 yrs: Euclid Wide+Deep

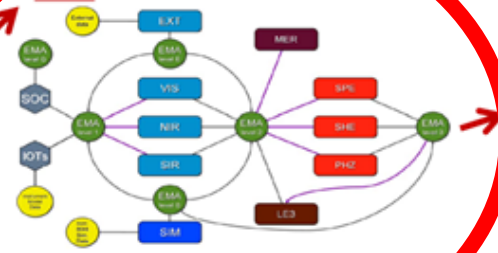
+: SNIa, mu-lens, MW?



Ground data



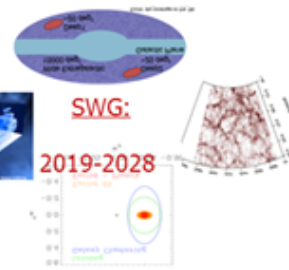
SGS: 2010-2028



20-30 PB data processing (EC-SGS team)

SWG:

2019-2028



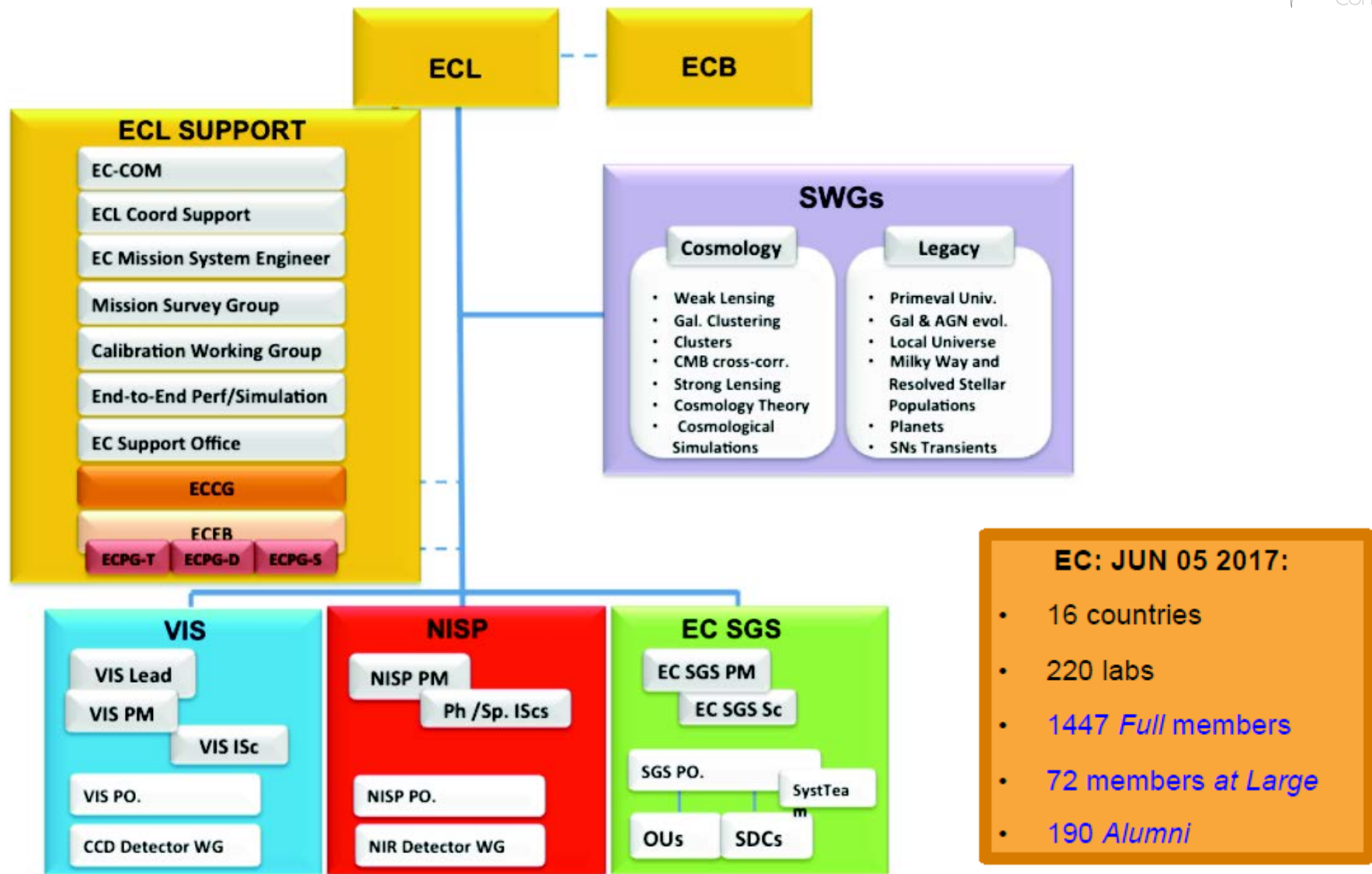
Science analyses

1



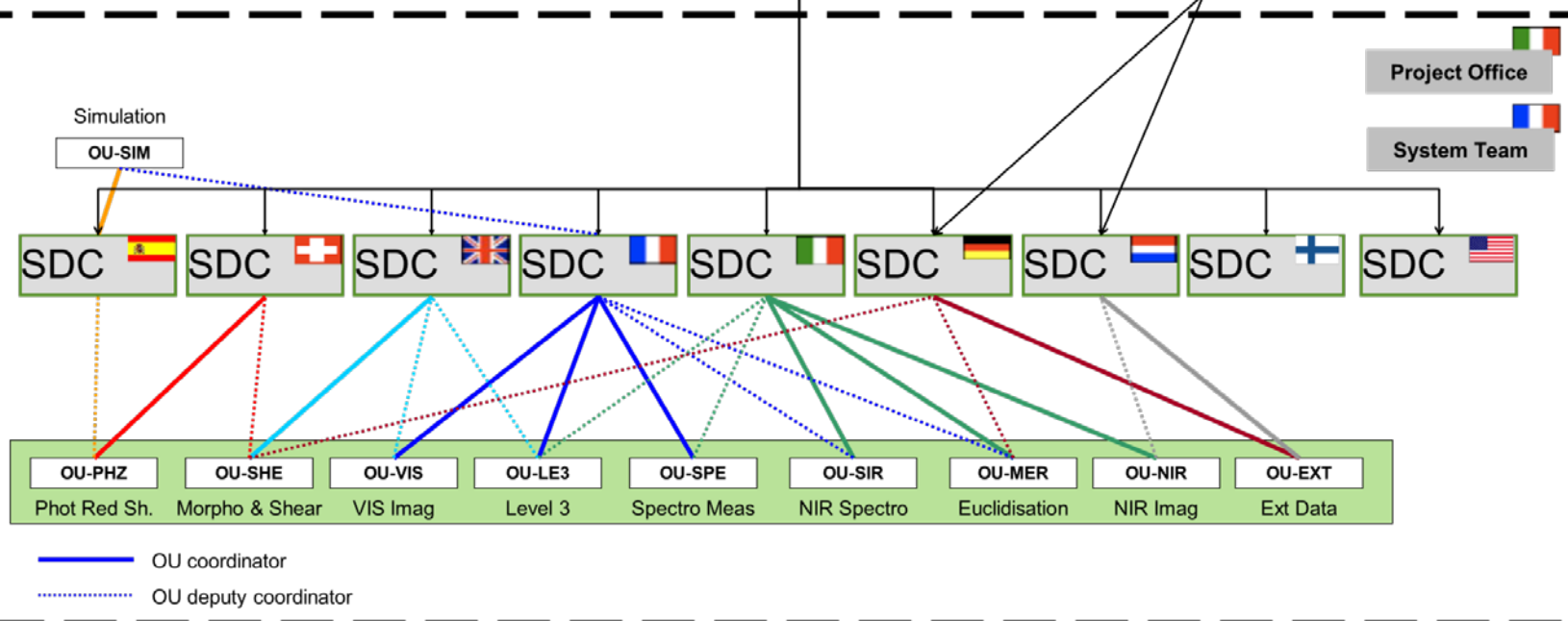
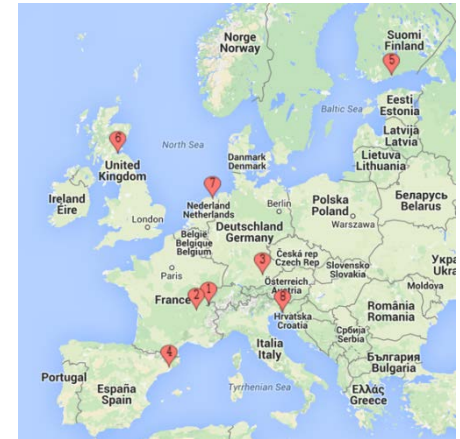
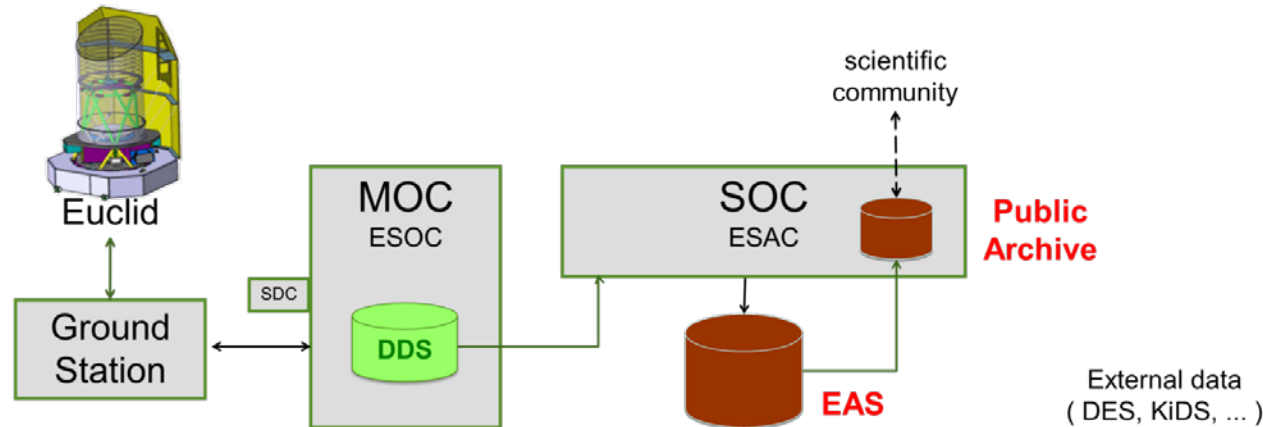


# Euclid Consortium (EC)





# Euclid Science Ground Segment (SGS)

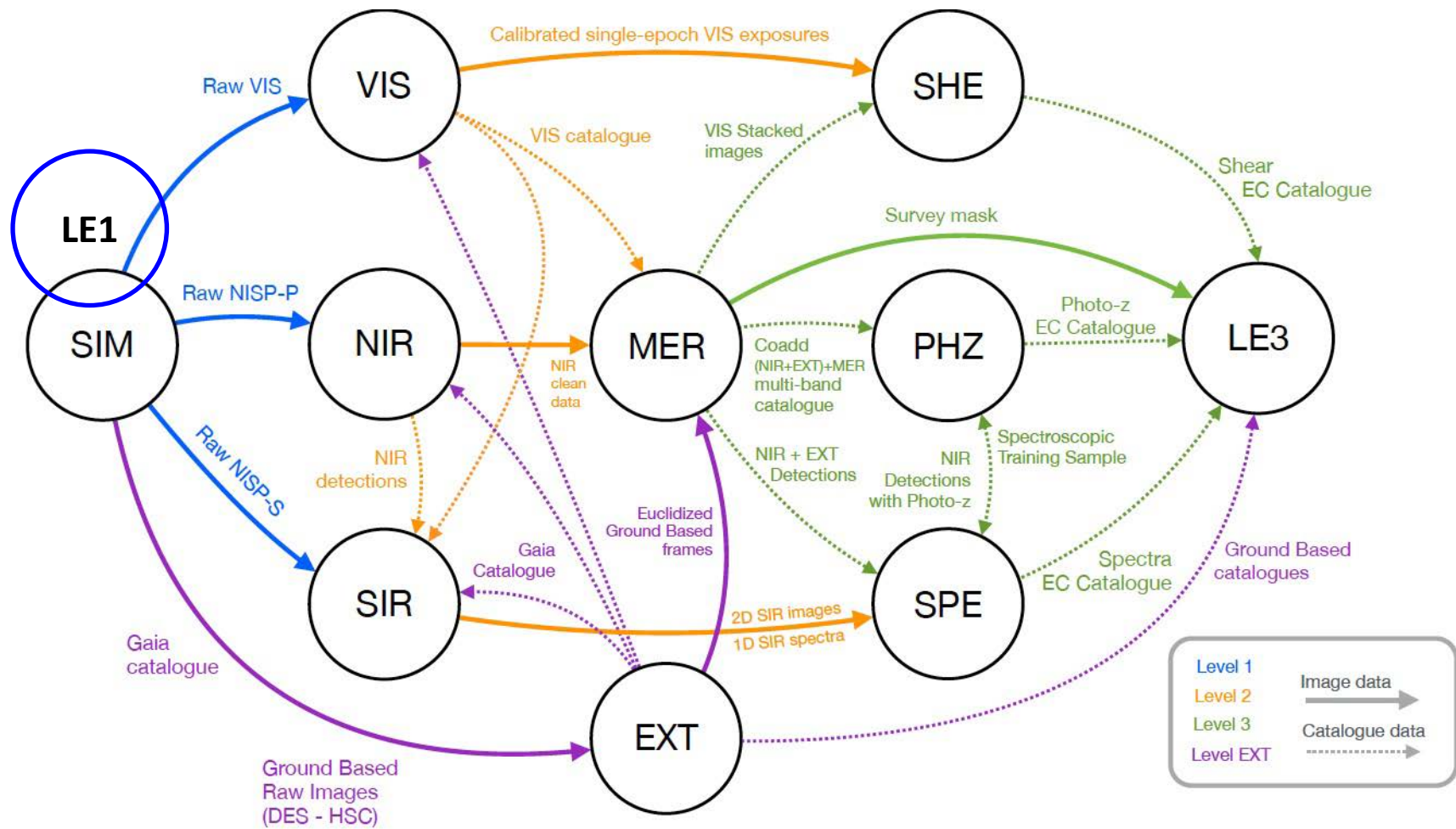




- Euclid Project & SGS
- **From Euclid pipeline to SGS Architecture**
- Processing concepts
- Conclusions



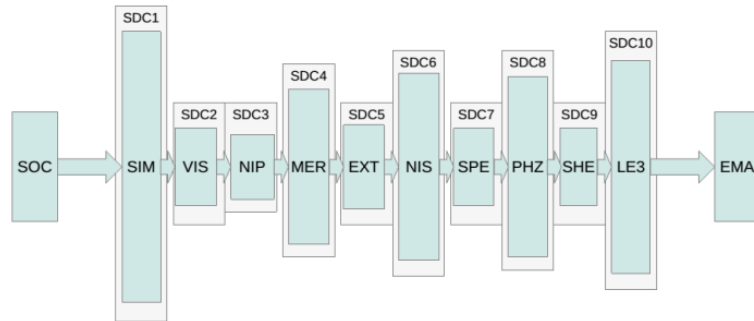
# Euclid pipeline



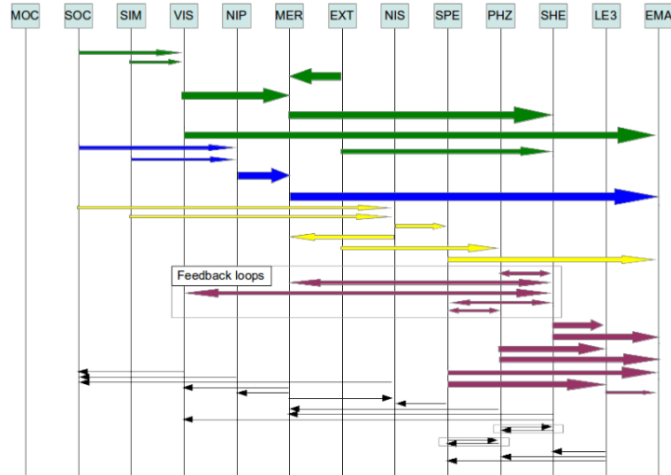


# From dedicated SDCs to Federated SDCs

## Dedicated SDCs



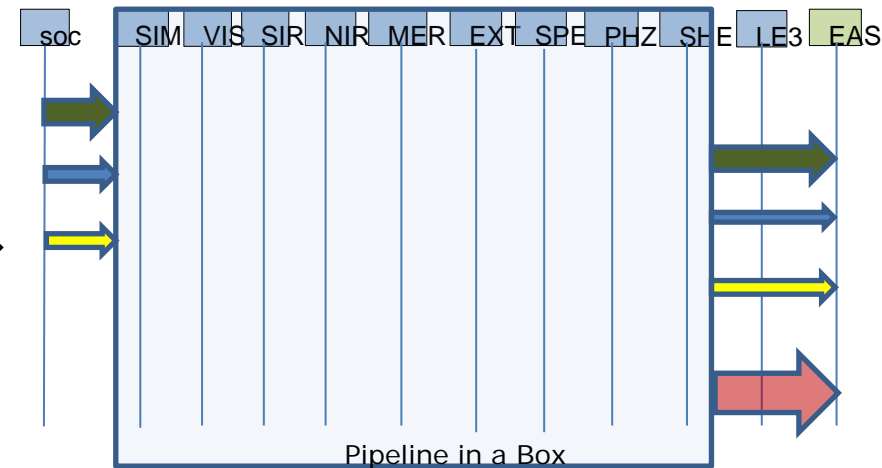
Unbalanced load



100+ PB in grand total

More Data transfer than processing ?

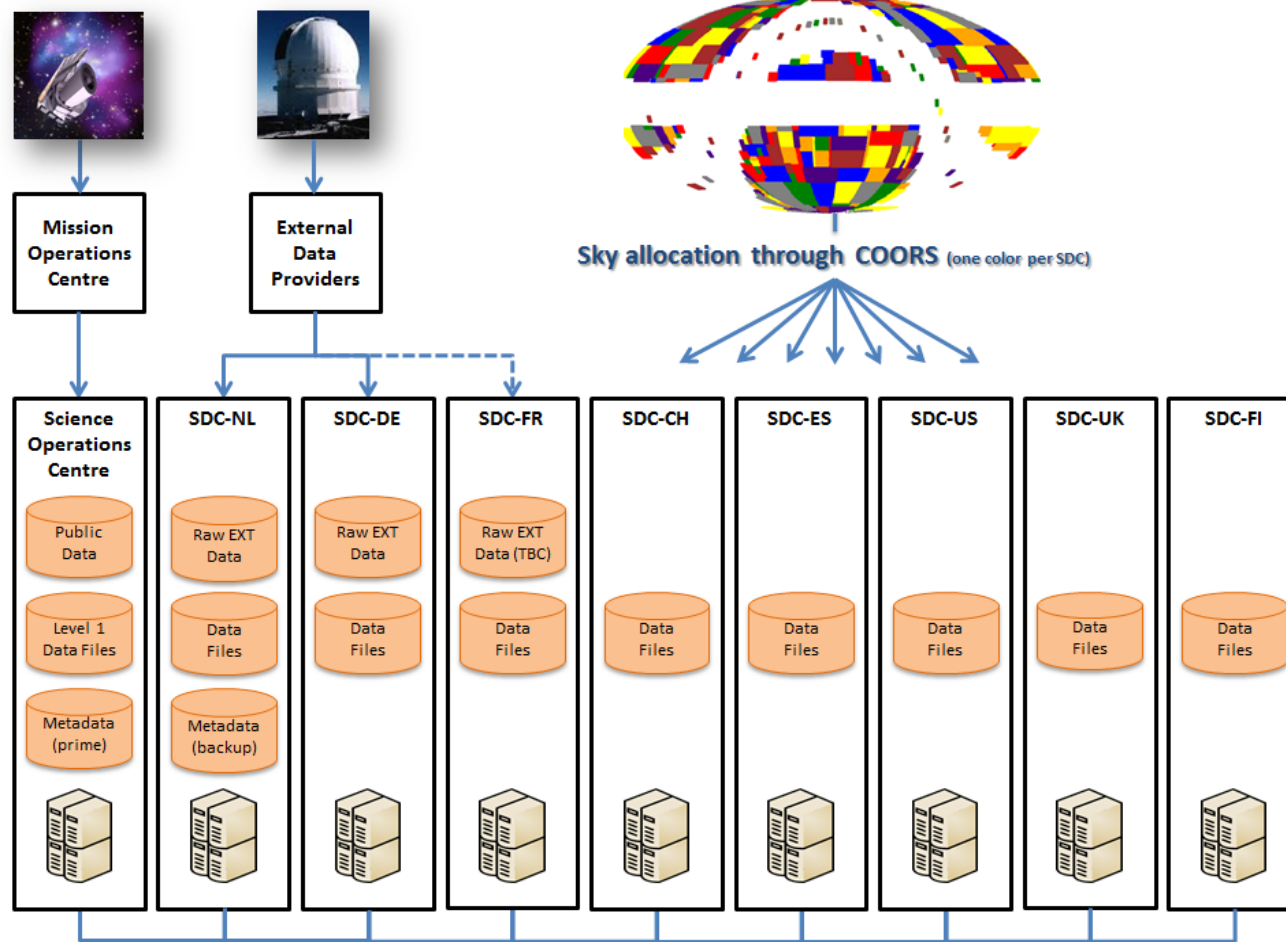
Whole pipeline  
in any SDC  
on quantum of data



Move the code  
Not the data  
paradigm



# Move the code not the Data

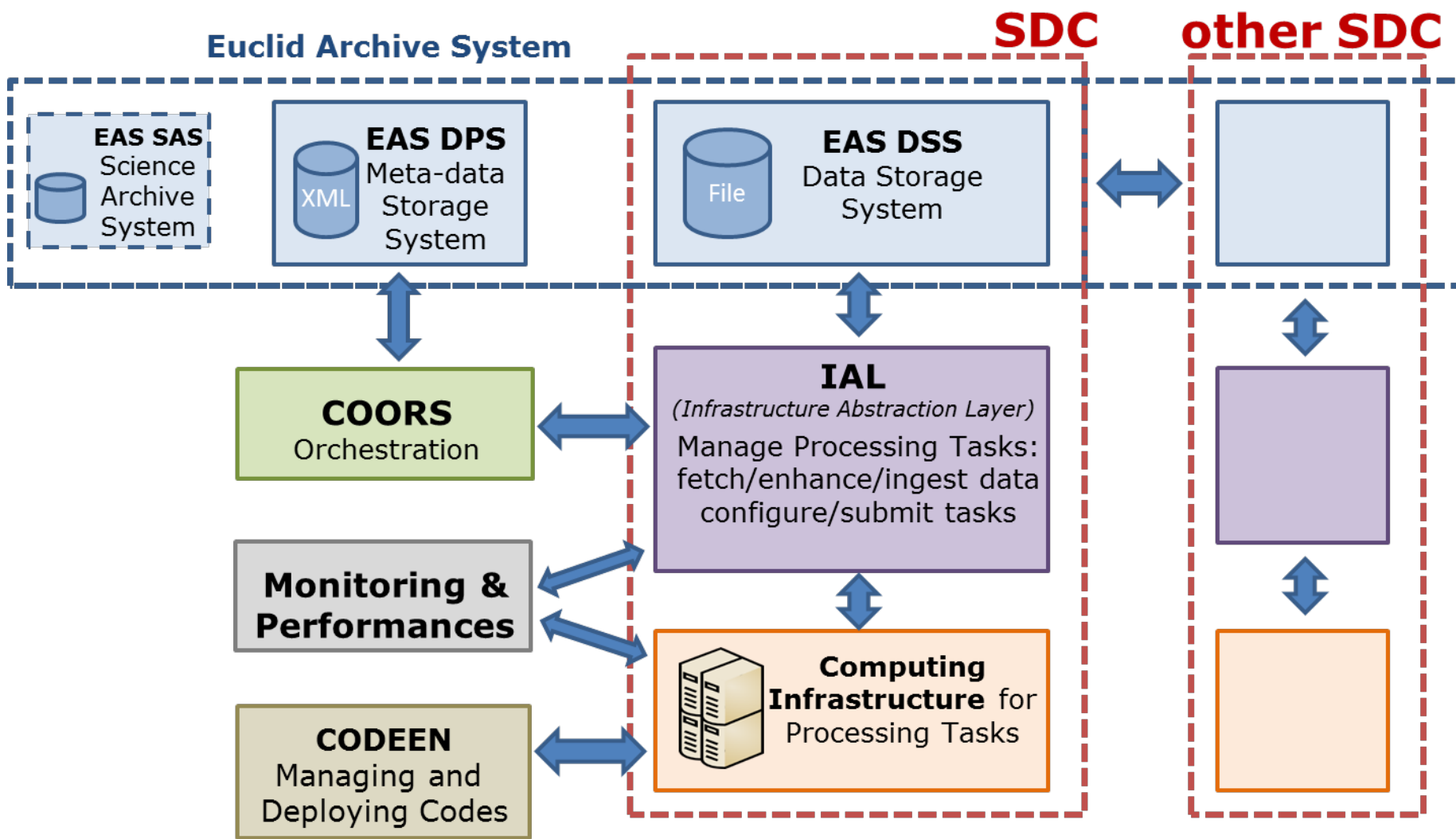


SDCs are both storage and processing nodes

Data storage and processing allocated by sky area

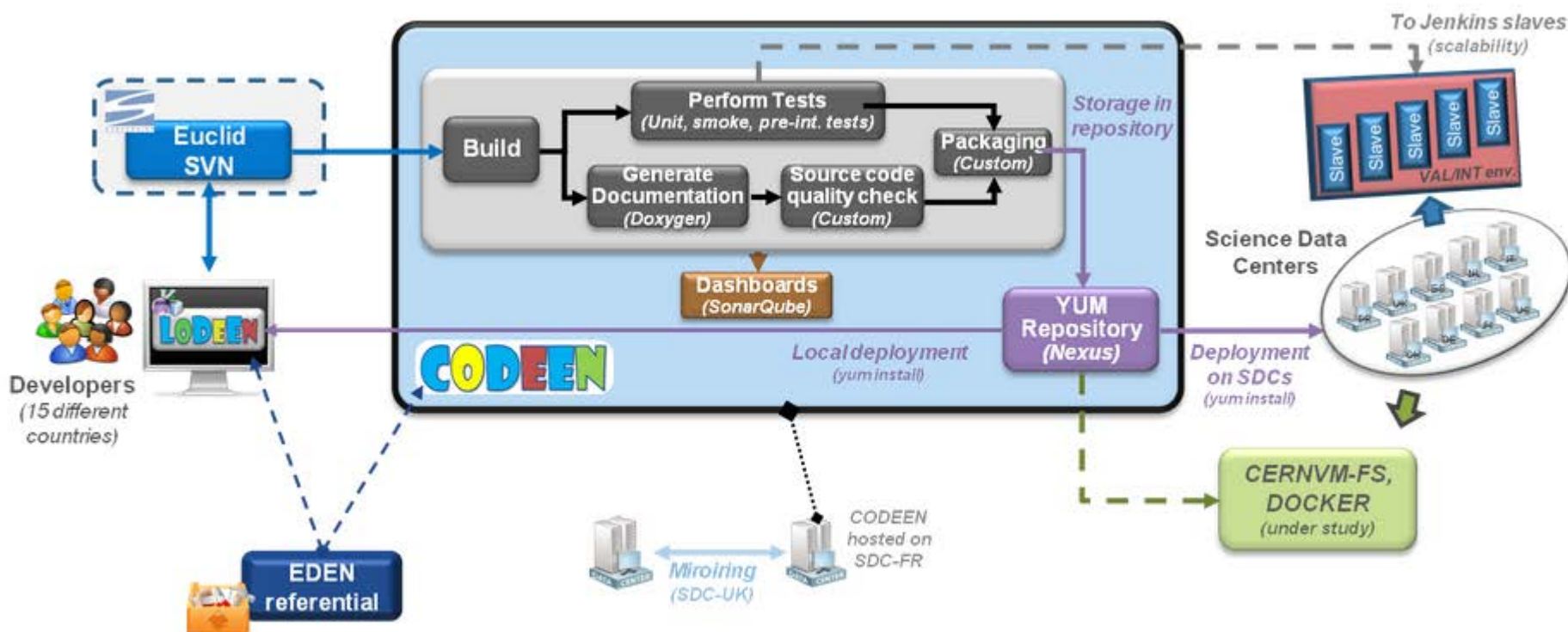


# Euclid SGS Components





# Continuous Integration, Testing, Deployment





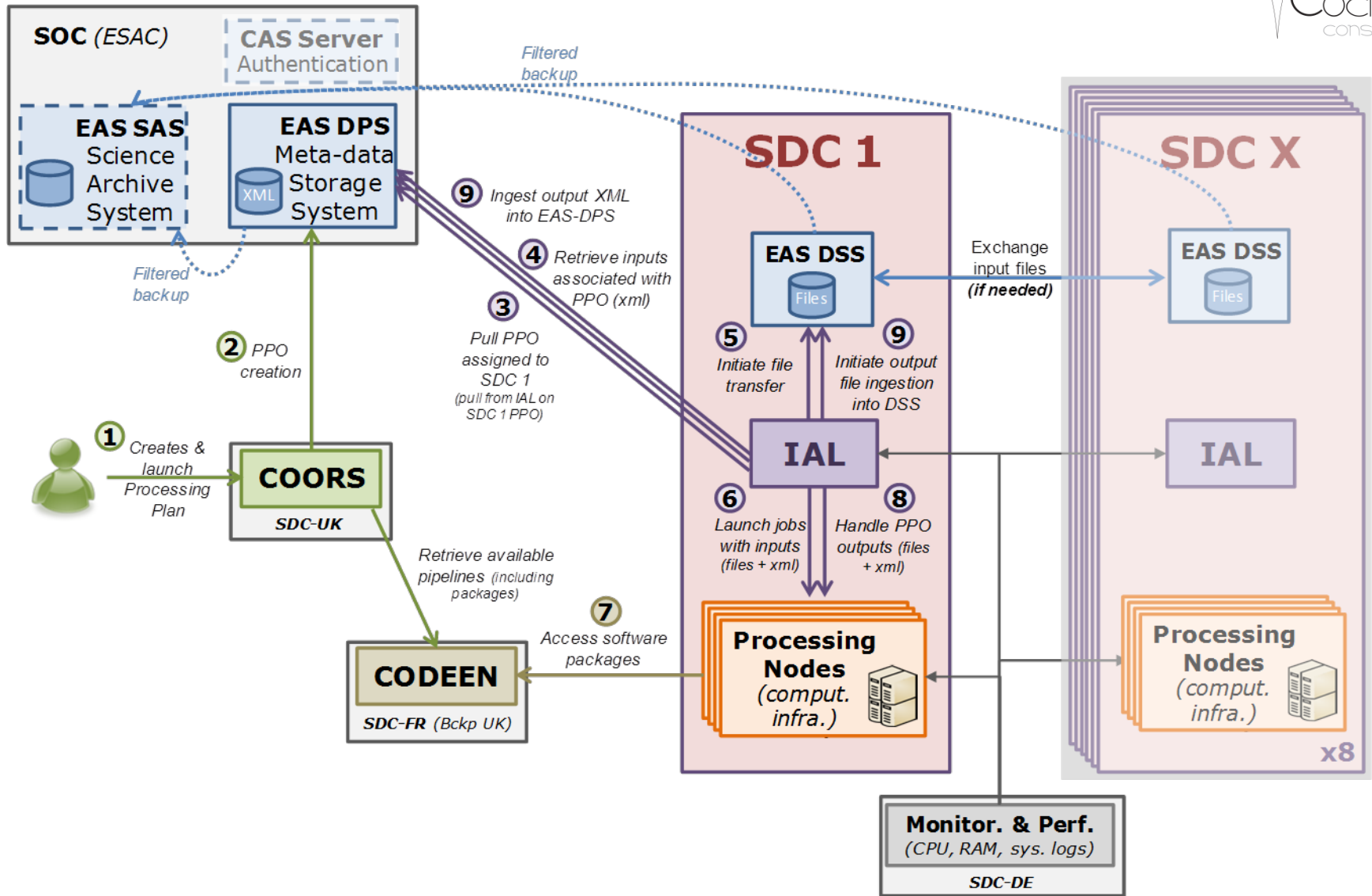
- Euclid Project & SGS
- From Euclid pipeline to SGS Architecture
- **Processing concepts**
- Conclusions



- SGS Management
- SGS infra monitoring & maintenance
- Processing Functions maintenance
- **Data Processing**
- Calibration
- Planning & Uplink
- Daily Processing
- Instrument operations
- User support
- Other specific activities



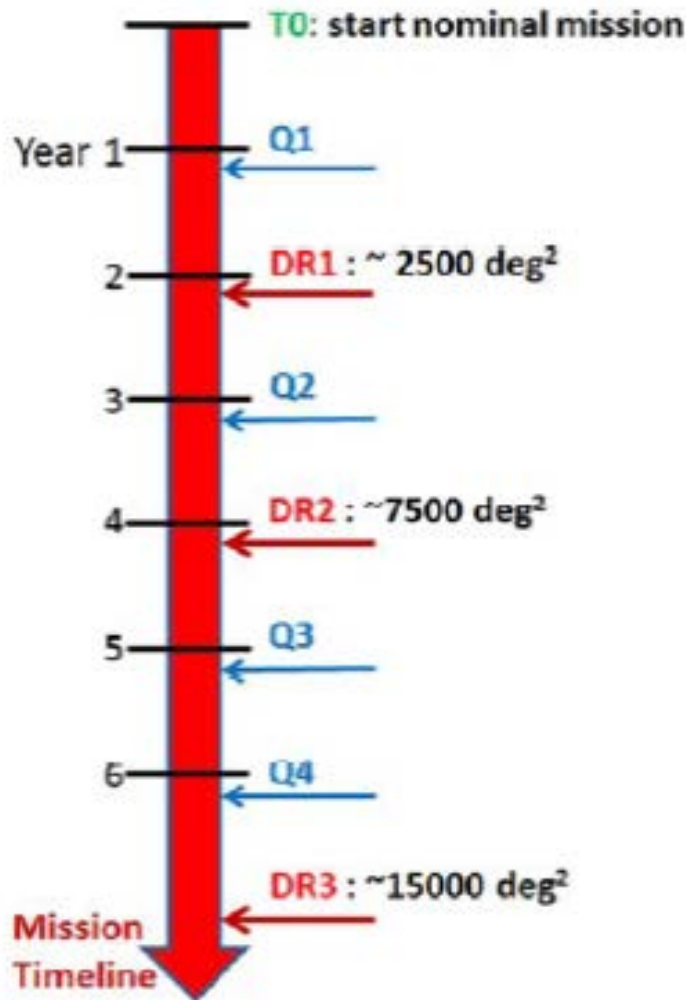
# Euclid SGS Processing Workflow





- SGS readiness
- Launch & Early Operation Phase
- Commissioning Phase
- Performance Verification Phase
- Routine operation phase
  - **Data releases**
- Post-operation phase





- **Qn – Quick Release**
  - Best LE2 products
  - For investigation
- **DRn – Data Release**
  - Official release inc. LE3
  - For science
  - Reduced proprietary period before distribution to the science community

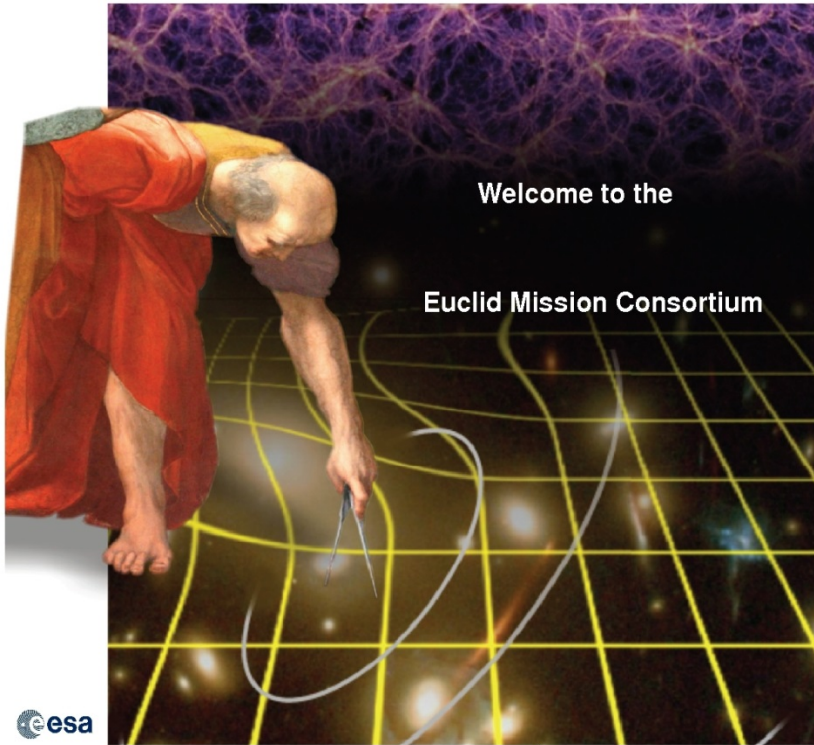


- Euclid Project & SGS
- From Euclid pipeline to SGS Architecture
- Processing concepts
- **Conclusions**



- Challenges to address in many fields
- Architecture model validated
- IAL, DSS, EAS & M&C in place
- VIS, NIR, SIR, MER, EXT, SIM prototypes in place
- Next steps
  - Pass the SGS Design Review
  - Integrate COORS component
  - Integrate SPE, PHZ, SHE prototypes
  - Assess SGS scalability





## Euclid Mission Consortium



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# Questions

