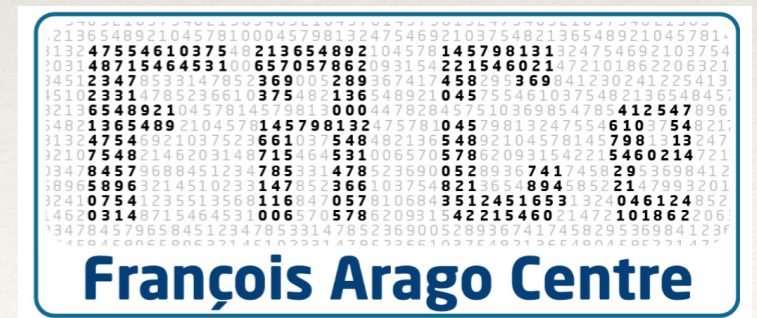


Journées Succès - Grenoble - Octobre 2017

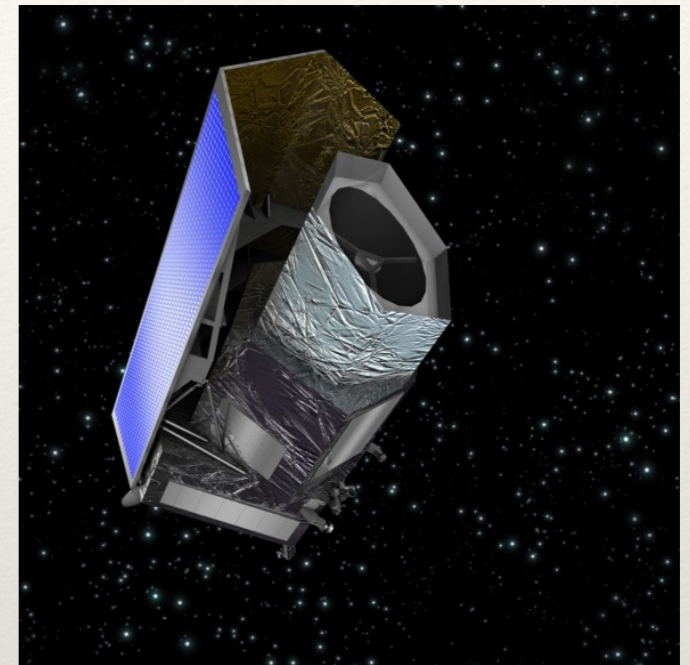
Utilisation du cloud dans Euclid

Rémi Fahed - APC
Cécile Cavet - APC



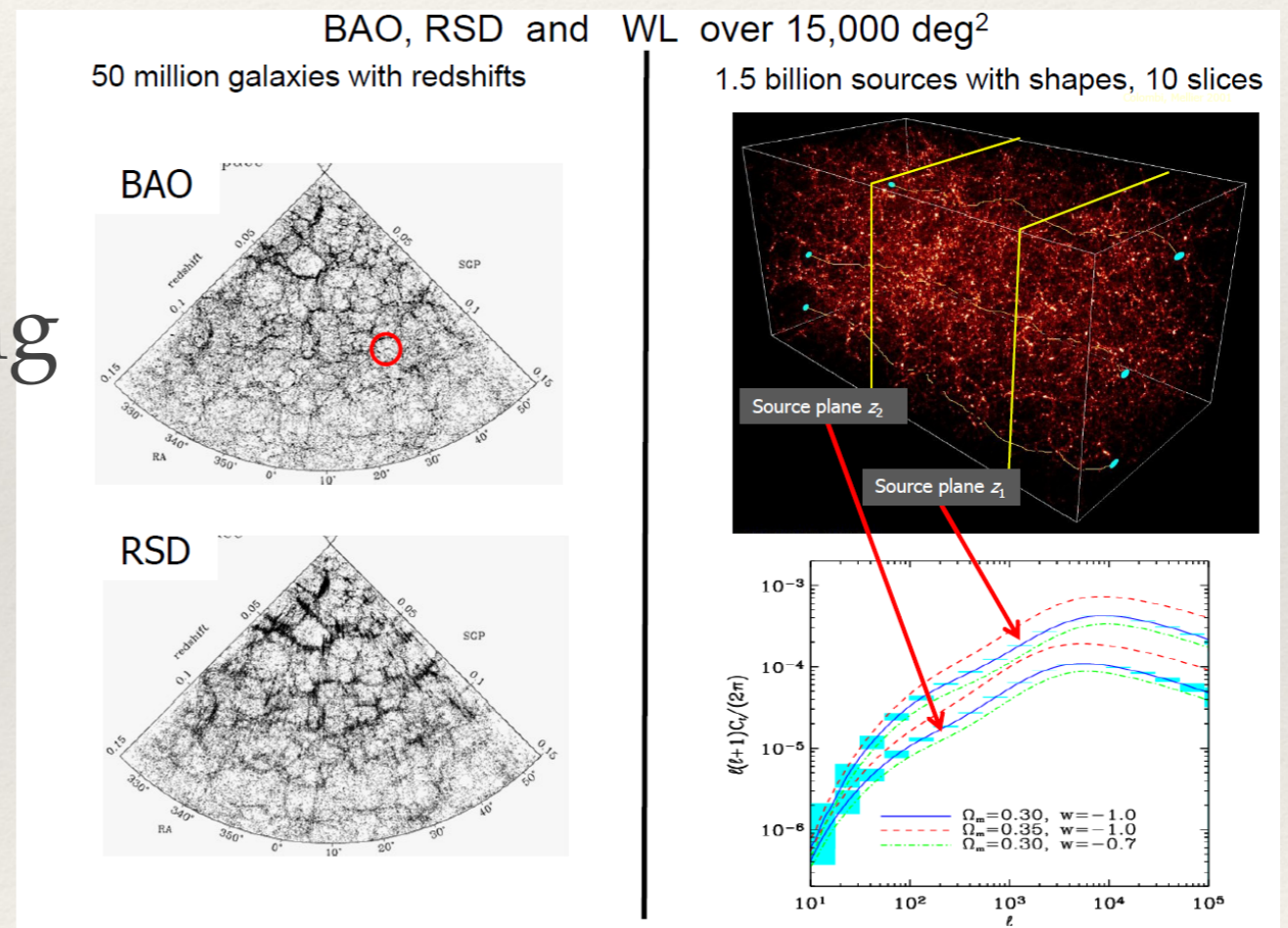
The Euclid Mission

- ❖ ESA medium class astronomy and astrophysics space mission
- ❖ Launch planned for 2020
- ❖ Understanding why the expansion of the Universe is accelerating and what is the nature of the source responsible for this acceleration which physicists refer to as dark energy



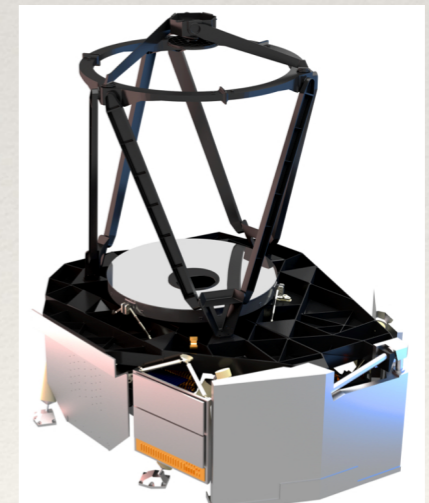
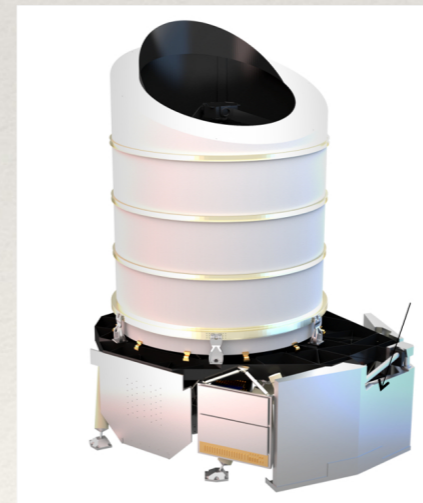
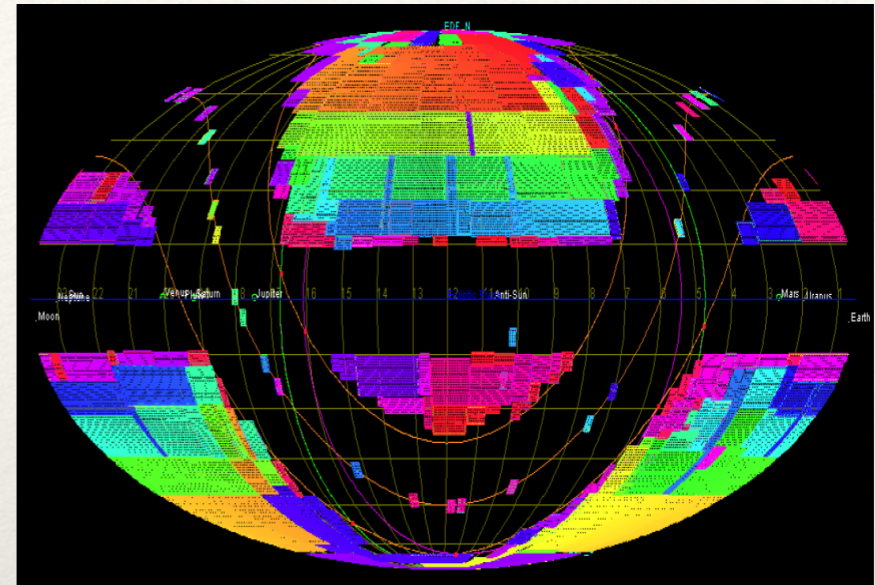
Euclid Science Goals

- ❖ Will use two cosmological probes:
 - ❖ Weak gravitational Lensing
 - ❖ Galaxy Clustering (Baryonic Acoustic Oscillations and Redshift Space Distortion)

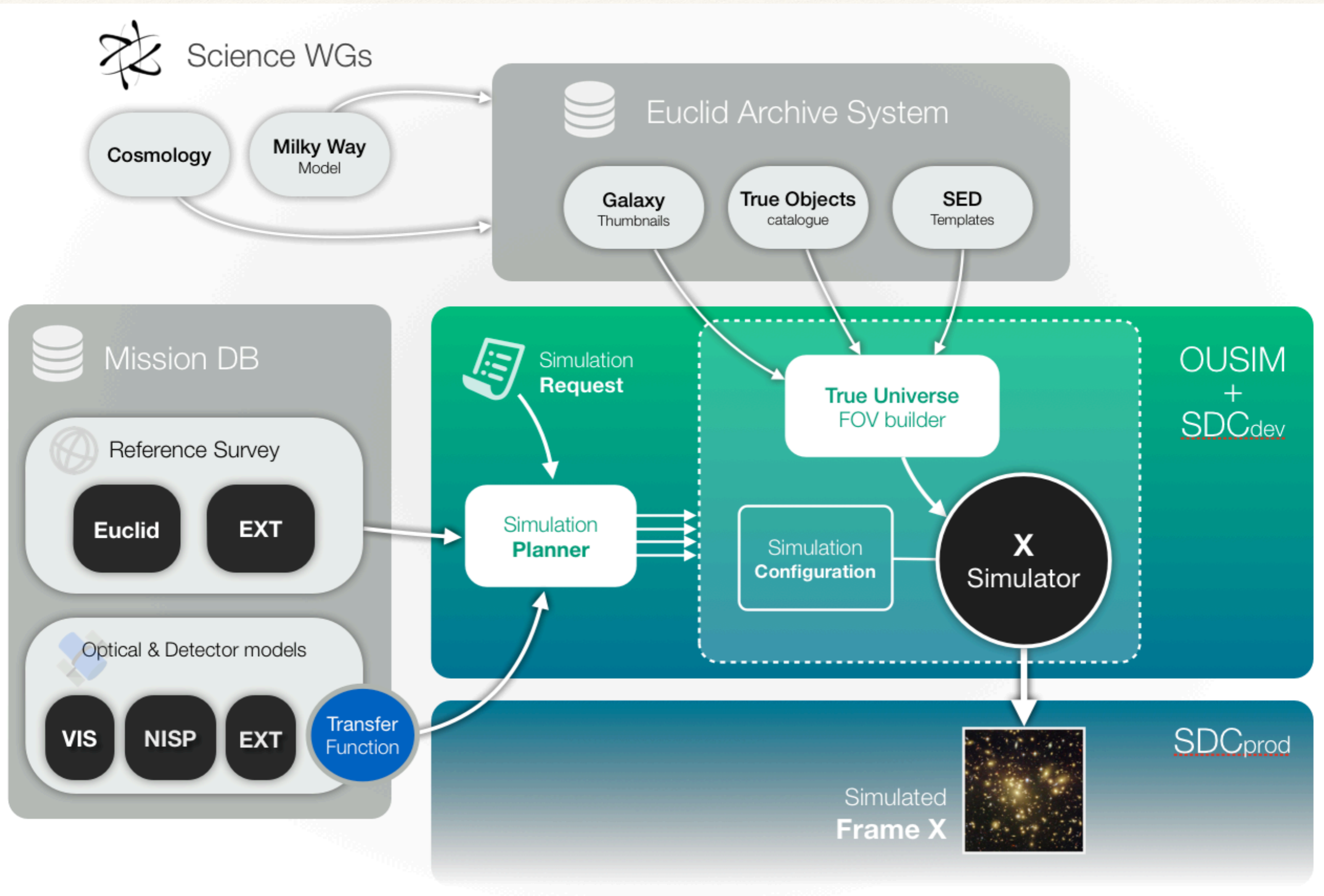


Euclid observations

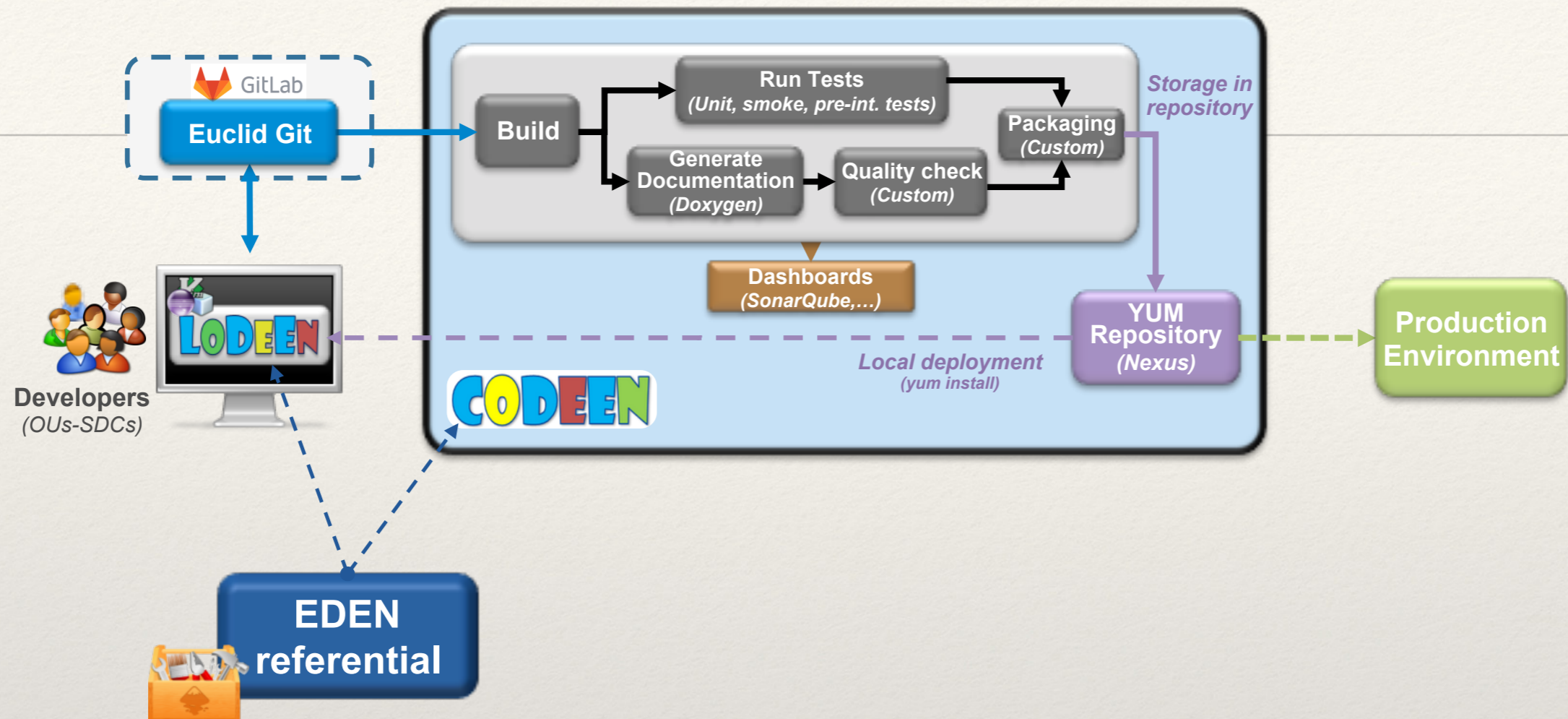
- ❖ 15,000 deg²
- ❖ IR spectro-imager
- ❖ Visible imager
- ❖ Ground based observations for photometric redshift measurement
- ❖ 10 billion sources
- ❖ 1 billion for weak lensing
- ❖ $\sim 10^7$ photometric redshifts measurements



Simulations



Euclid software infrastructure



- ❖ Build framework and utilities: Elements
- ❖ Constrained environnement:
 - ❖ CentOS 7
 - ❖ EDEN: list of available libraries
- ❖ CI/CD: Continuous test and deployment in SDCs (CODEEEN)

LODEEN VM



- ❖ Implements the Euclid constrained environment while still giving admin rights to the user
- ❖ If the code runs in LODEEN, it will run in production
- ❖ Allows the user to progressively adapt its code to the prod environment
- ❖ *caveat* : local VM => uses the local machine resources.

3 GB of RAM
Storage limitation
Run during the working period



Simulations: SimExt@APC

- ❖ Need for simulations in a context of low maturity of common tools and infrastructure :
 - ❖ Input catalogs size ~400 GB
 - ❖ Run time of about 4 days
 - ❖ Easy access to a Euclid environment for students
- ➔ Cloud VM is a good solution for these needs**

CLOUDEEN VM

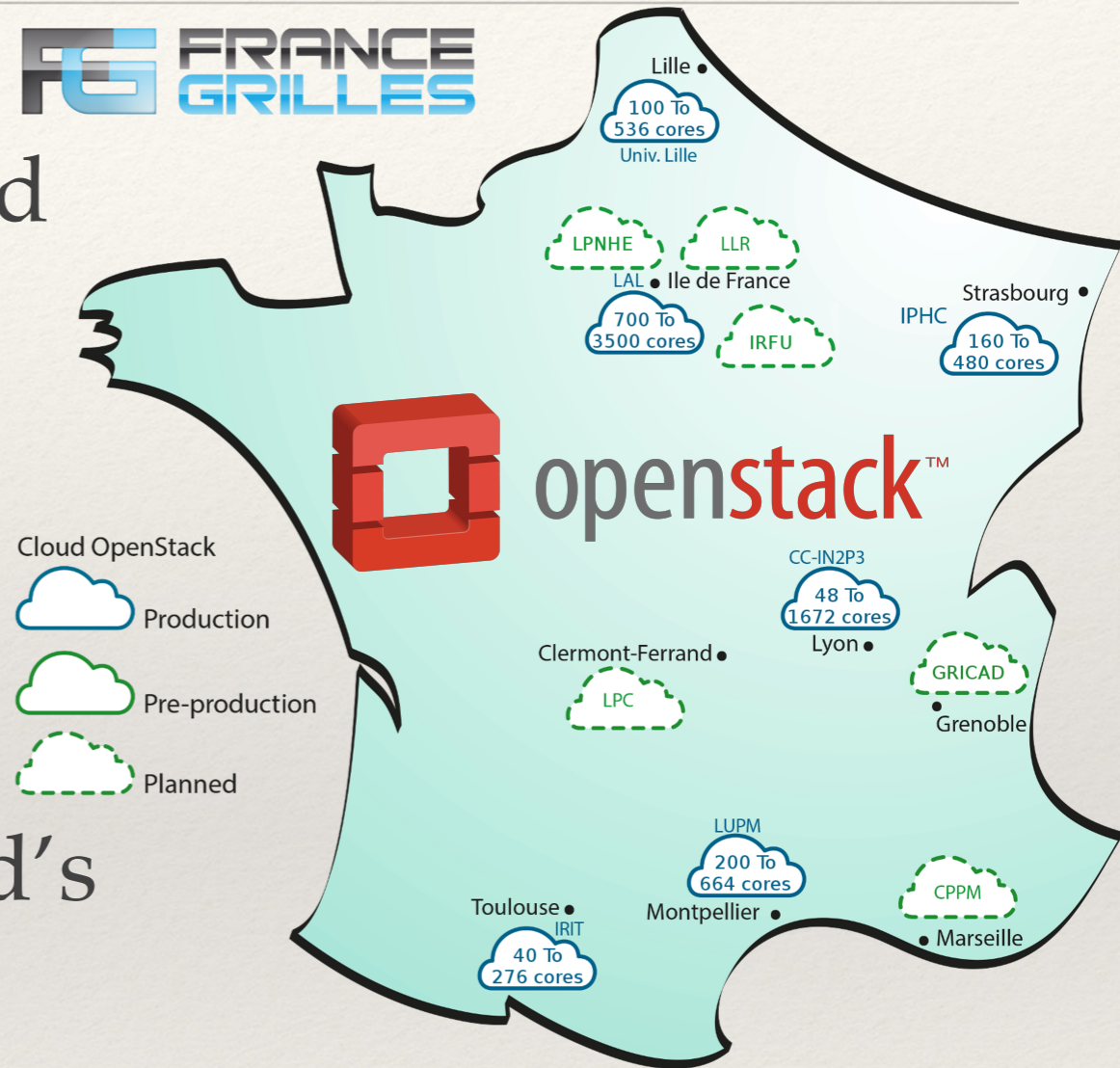


- ❖ LODEEN on the cloud: only for APC users (not Euclid consortium)
- ❖ Provide the same services as LODEEN but with distant access
- ❖ Allows access to more resources
- ❖ Allows longer running tasks (scalability tests)

8 GB of RAM
400 GB of storage

FG-cloud

- ❖ Federated french academic cloud infrastructures and expertise
- ❖ CLOUDEEN on FG-cloud:
 - ❖ 1rst: IPHC, group FG-cloud
 - ❖ 2nd: CC-IN2P3 (French Euclid's SDC), group htc-euclid
 - ❖ m1.large (4 CPU, 8 GB RAM, 10 GB disk) + persistent storage of 400 GB



Conclusion

- ❖ LODEEN user environnement is constraining local machine
- ❖ CLOUDEEN gives the access to scalable ressources and the ability to share environment and data with students
- ❖ In the futur, DOCKEEN (LODEEN with Docker) will provide multi-infrastructure access