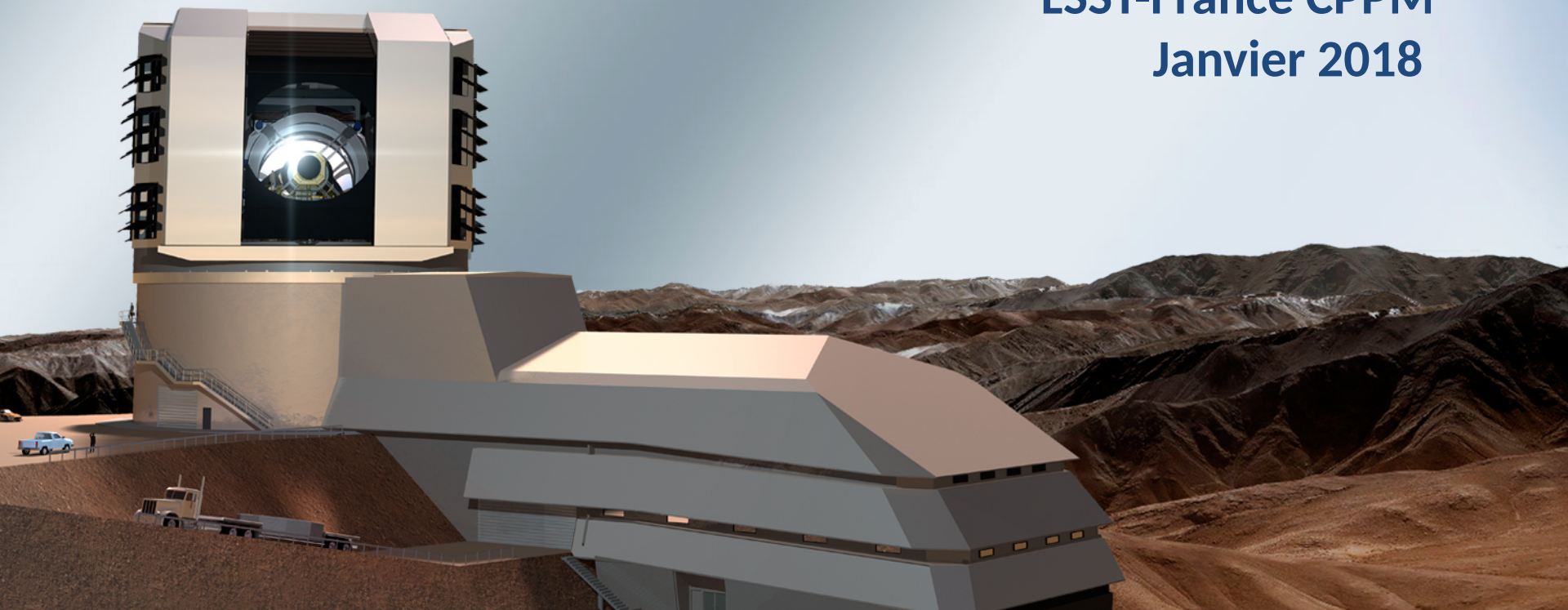
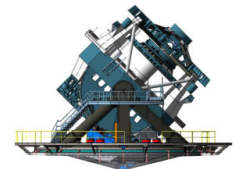


DESC - DC2

Dominique Boutigny

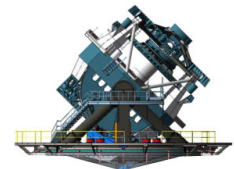
LSST-France CPPM
Janvier 2018





- DC2 is a key component of the DESC Science Road Map
- DC2 Planning Document being written now :
<https://www.overleaf.com/read/jwbjvjnszkzf#/43020815/>
- Effort coordinated by Chris Walter (Duke) within the SSIM group – Slack channel #desc-ssim
- Characteristics
 - Main survey
 - 300 deg² – 10 years
 - cadence : minion_1016
 - (ugrizy) = (56, 80, 184, 184, 160, 160) x 30 fields ~27,000 visits
 - Ultra-DeepField
 - 1.25 deg² – 10 years, embeded in a corner of the main survey
 - ~20,000 visits
 - Brighter-Fatter, Tree-rings, Cosmic-rays, bleeding, X-talk

Image simulation partly with ImSim (galsim based) and partly with PhoSim (photon tracer)



Planned studies from CL, LSS, PZ, SL, SN, WL, Sensor Anomalies

- Extragalactic catalog
 - From Outer Rim simulation (ANL)
 - Galaxy generation with semi-analytic Galacticus + MC resampling to scale up
 - Shear
- Milky Way Star Model
- DC2 input catalog generated using CatSim

ProtoDC2 catalog released and available at CC-IN2P3, accessible with the GCRCatalogs python module

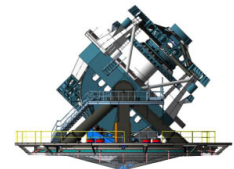
- See [slides](#) from DESC Seminar (Nov 17, 2017)
- DESC proto-environment available in `/pbs/throng/lsst/software/desc/`

```
source setup.sh
```

```
ipython
```

Or through `stackyter --desc`

A lot of validation to be done – Tests can be added to the *desqa* environment



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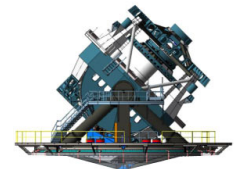
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Timeline

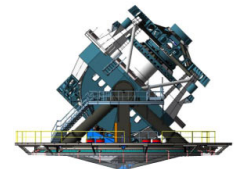


- protoDC2-v2 Extragalactic catalog : 10/31/2017
- Situation confused (to me) on the status of the first proto-DC2 Imsim / Phosim images
- Original idea was to have some 1.0 DM catalogs ready for the Sprint week in Argonne and some 1.1 DM catalogs for the SLAC DESC meeting
 - Some images have been produced, but production stopped to include code fixes
- DC2 Run 1.1 data release : 02/07/2018
- DC2 Run 2 data release : 06/22/2018
- Preliminary Science Results : 07/25/2018

At the moment the official plan is to run everything at NERSC (by adjusting the ratio ImSim / PhoSim in order to match the available resources)

- Contacted by Jim Chiang / Phil Marshall / Richard Dubois to provide Level 1 & 2 processing for DC2

~21,000 fits files already produced at NERSC in
/global/projecta/projectdirs/lsst/production/DC2/DC2-phoSim-2-r/output

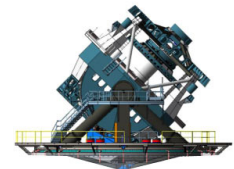


Contribute to the production of phoSim images using the French Grid (EGI)

- Contribution to be accounted in the framework of DESC International Operation
- LSST Virtual Organization already exists
- Coordination with Manchester (A. Forti) and BNL (P. Svirin)
 - See : https://www.gridpp.ac.uk/wiki/LSST_UK (needs a Grid certificate)
- Validated test bench at LAPP
 - 10 TB scratch deployed
 - Software distribution through CVMFS
- Will extend it to other IN2P3 nodes later

Open questions :

- Long term secured storage ? → Probably transfer to NERSC
- Integration within the official DESC workflow (based on SLAC workflow engine at the moment, later on Pegasus)
- Political will ???



Proposal to use DC2 as a data challenge for the DRP at CC-IN2P3

- Would require ~1.7 PB of storage
- CPU still to be estimated but we requested 50 M HS06.hours
- Would allow to test DM at a larger scale
- Requested resources fit Fabio's ramp up plans
- Would also allow to test data transfer between CC-IN2P3 and NERSC
- Excellent data set to test qserv and proto DAC / SUIT
- Interest to get a full DC2 copy at IN2P3 for science applications

Question :

- What do we do with level 1, which is outside the DRP scope ?

Remark :

- We can do the DM processing even without DESC blessing as we have “just” to get the files from NERSC (only limitation is the network)