OUSIM Meeting - Marseille 2016

Agenda

Wednesday Jan, 13

SDC production

10.00-12.30 Running SIM in SDC-ES

12.30-13.30 Lunch

13.30-14.30 SIM roles of SDC-FR / SDC-FI and SOC

14.30-16.00 SIM integration solutions to SDC-FR / SDC-FI

16.00 - 16-30 Available resources for 2016

16.30-17.00 Configuration management of simulations

17.00-18.00 Distribution and archive

Running SIM in SDC-ES

- **Understand how the current SIM pipeline works**
  - Nadia and Pau talk

SIM Roles for SDCs and SOC

- **New simulation roles**
  - Currently SDC-ES has been the only SDC producing simulations
  - We need to clarify the resposabilities and scopes of each SDC that will produce simulations
    - Channel
    - Validation
    - Technical development (IAL, EAS)
- Coordination and communication for SDC development and production

- SOC use cases presentation by Roland and Luca

SIM integration solutions to SDC-FR / SDC-FI

- **How SDCs (and SOC) will integrate the SIM pipeline**
  - Is the IAL ready for large simulation productions?
  - BT has limited support (Only Pau). Which job manager use if IAL not ready?
  - CentOS7 or SL6?
  - Sharing simulated data:
    - Own distrubution portal
    - SDC-ES webdav
    - DSS/EAS integration*

Available resources for 2016

Summary of resources that can be dedicated in 2016 to simulations:

- SDC-ES
- SDC-FR
- SDC-FI

Configuration management

As specified in the Production Plan:

- descriptive name [i.e. SimulationChallenge1a]
- how they were produced [Tag version of the code]
- where they are located [EAS url of the output products]
- what are the parameters of the simulations [EAS url for the Simulation Request]
- note that all associated input catalogues (stars and galaxies) and the MDB realization parameters used are specified in the Simulation Request and thus, can be traced
- when has this been produced [Date + Status: Complete/Running/Scheduled]
- additional comments

Current information in the wiki:

see wiki page: http://euclid.roe.ac.uk/projects/sgv/wiki/SR1c_

Distribution and Archive

Currently sharing the following data set for each simulated exposure (task):

- the **main data** directory with the FITS image files: data/
- the input **stellar catalogue**: i.e. EUC-TEST-NIPTASK-2015-11-30T085704.955myTUStarCatalog.fits
- the associated **stellar spectra** catalogue: i.e. EUC-TEST-NIPTASK-2015-11-30T085704.955myTUStarSpectra.fits
- the input **galaxy catalogue**: i.e. EUC-TEST-NIPTASK-2015-11-30T085704.955myTUGalaxyCatalog.fits
- the associated **galaxy spectra** catalogue: i.e. EUC-TEST-NIPTASK-2015-11-30T085704.955myTUGalaxySpectra.fits
- the simulator **configuration** file: i.e. EUC-TEST-NIPTASK-2015-11-30T085704.955imagem_conf.txt
- the simulator **standard output**: i.e. EUC-TEST-NIPTASK-2015-11-30T085704.955imagem_std.out
- the simulator **standard error** output: i.e. EUC-TEST-NIPTASK-2015-11-30T085704.955.xml.err
- the **input task** xml: i.e. EUC-TEST-NIPTASK-2015-11-30T085704.955.xml
- the **output task** xml: i.e. out_EUC-TEST-NIPTASK-2015-11-30T085704.955.xml

The **galaxy stamps** files (in FITS data cubes) is available in the True Universe input tables (see below).

The model **parameters** is available in the Mission Parameters Set table

Sharing simulated data options

- Own distrubution portal
- SDC-ES webdav
- DSS/EAS integration*

Agenda

Thursday Jan, 14

09:00 - 09:30 Coffee
09:30 - 10:00 TU star & galaxy catalogues overview 30'
10:00 - 11:00 TU spectra reconstruction library
11:00 - 12:00 TU thumbnail generation library
12:00 - 12:30 Exporting TU catalogue
12:30 - 13:30 Lunch ( )
13:30 - 14:30 Validation codes : results and organization
14:30 - 15:15 VIS simulation validation tests
15:15 - 16:00 NISP-S/P simulations validation tests
16:00 - 16:15 Coffee
16:15 - 17:00 EXT simulations validation tests
17:00 - 18:00 E2E discussion

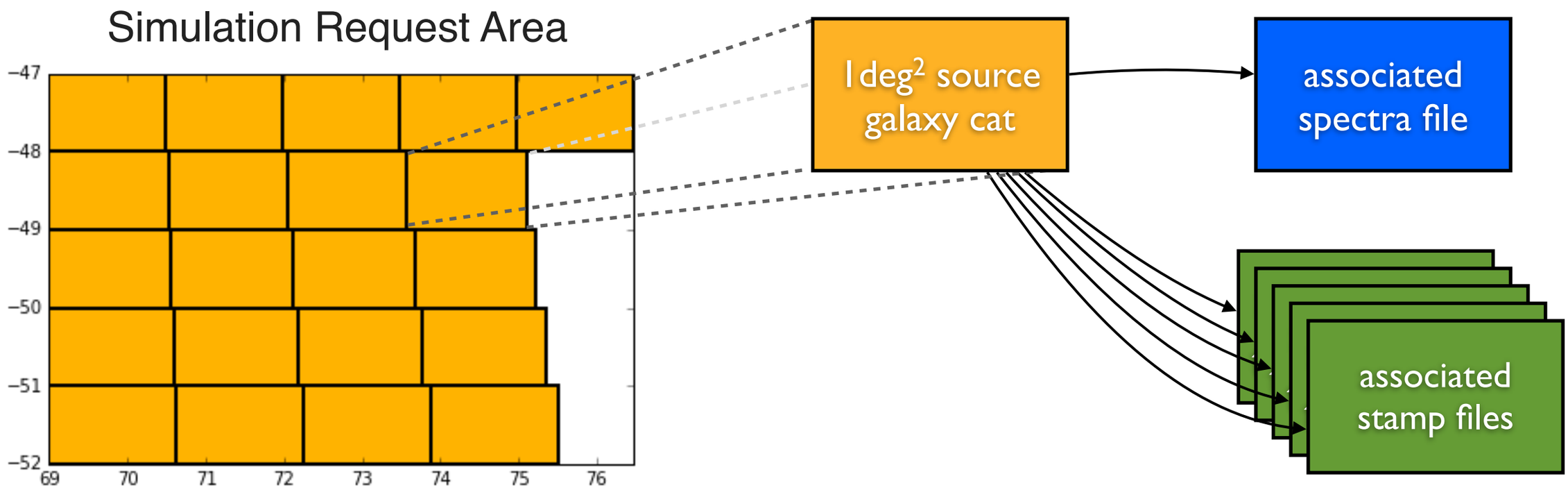
20:00 - 22:00 dinner: restaurant treize en vue http://www.13envue-breteuil.fr/

True Universe Star & Galaxy catalogue overview

- **Current True universe model**
  - Parent galaxy and star catalogues parametrized (no associated spectra or stamp)
  - Galaxy thumbnails associated to the catalogue in a pre-processing stage
  - TU module produces the associated spectra for each exposure

  ✤ Severe memory and i/o issues (very large and non-scalable files)

  ✤ Stamps and spectra not specific to the simulator needs



True Universe catalogue overview

- **Proposed TU modification**
  - Parent galaxy and star catalogues parametrized (no associated spectra or stamp)
  - Stamp and spectra generation inside the simulator using a shared TU library

✓ No intermediate files and fully scalable solution

✓ Stamps adapted to simulator needs

✤ Stamps need to be recomputed

Agenda

Friday Jan, 15

SC2 simulations & Roadmap

9.30 - 12.00 SC2 simulation status, issues

- True Universe
- MDB and TF
- Data Model
- Simulator Cores & Wrappers
- SDC production

12.00 - 13.00 SR3 and further plan

13.00 End of meeting

SC2 Simulations and issues

- **Final SC2 roadmap**
  - Provide test simulation set - 15/01/16*
  - **Provide single field simulation with all SC2 features - 01/02/16**
  - OU Algorithms freeze - 25/02/16
  - **Deliver complete SC2 simulation - 01/03/16**
  - SGS pipeline release - 25/03/16
  - SC2 start - 30/03/16
  - SC2 end - 10/04/16

SC2 True Universe

- **Stellar catalogue**
  - Available all sky simulation (besançon i > 25 mag)
  - 3 galactic latitudes (+ on 3 zodiacal light fields?) TBD now.

- **Galaxy catalogue**
  - Available one octant simulation (MICECAT v2 complete > 24 mag)
  - Require thumbnail simulation production

SC2 MBD

- **Mission Parameters Set**
  - Include the recently obtained parameters:
    - 0th and 2nd order dispersion for SIM realization
    - Optical Distortion
    - NISP cosmetic maps
  - Further parameters missing?

SC2 Data Model

- **LE1 data model homogenization**
  - Raw FITS data format - MEF
  - XML metadata format
  - SIM Planner metadata flow

SC2 - VIS SIM

- **SC2 VIS simulation needs**
  - Bias effect and the corresponding raw bias exposures
  - Non linearity effect and the corresponding non linearity exposures
  - Flat fielding effect with corresponding raw flat field exposures
  - CTI effect
  - PRNU effect
  - Ghosts
  - Cosmics
  - Distortion
  - Provide an external astrometric catalogue

SC2 - NISP-S SIM

- **SC2 NISP-S simulation needs**
  - Zeroth, first, and second order spectra
  - Spectra for both stars and galaxies
  - Optical distortions map (not single value)
  - Wavelength calibration relation
  - Random offsets between catalog sources and imaging and spectroscopic data
  - Random tilt of the grism
  - Some reasonable lambda- and position-dependent PSF

SC2 - NISP-P SIM

- **SC2 NISP-S simulation needs**
  - Imaging simulations: two layers (SCI+DQ)
  - Spectral simulations: two layers (SCI+RMS)
  - Pixel-to-pixel cross-talk in science data
  - Images data model compliant with FITS header
  - Galaxies in science images
  - Bad pixels in the science image and the list of inserted bad pixels
  - Cosmic rays in the science image and the list of inserted cosmic hits
  - Backround in the science image and the corresponding backround maps or model parameters
  - Astrometric distortions in the science image and the list of true coordinates for inserted objects
  - Dark and Bias in science images with
  - the corresponding dark and bias maps
  - Science images affected by flat-field and the corresponding flat-field map
  - List of true magnitudes for inserted objects

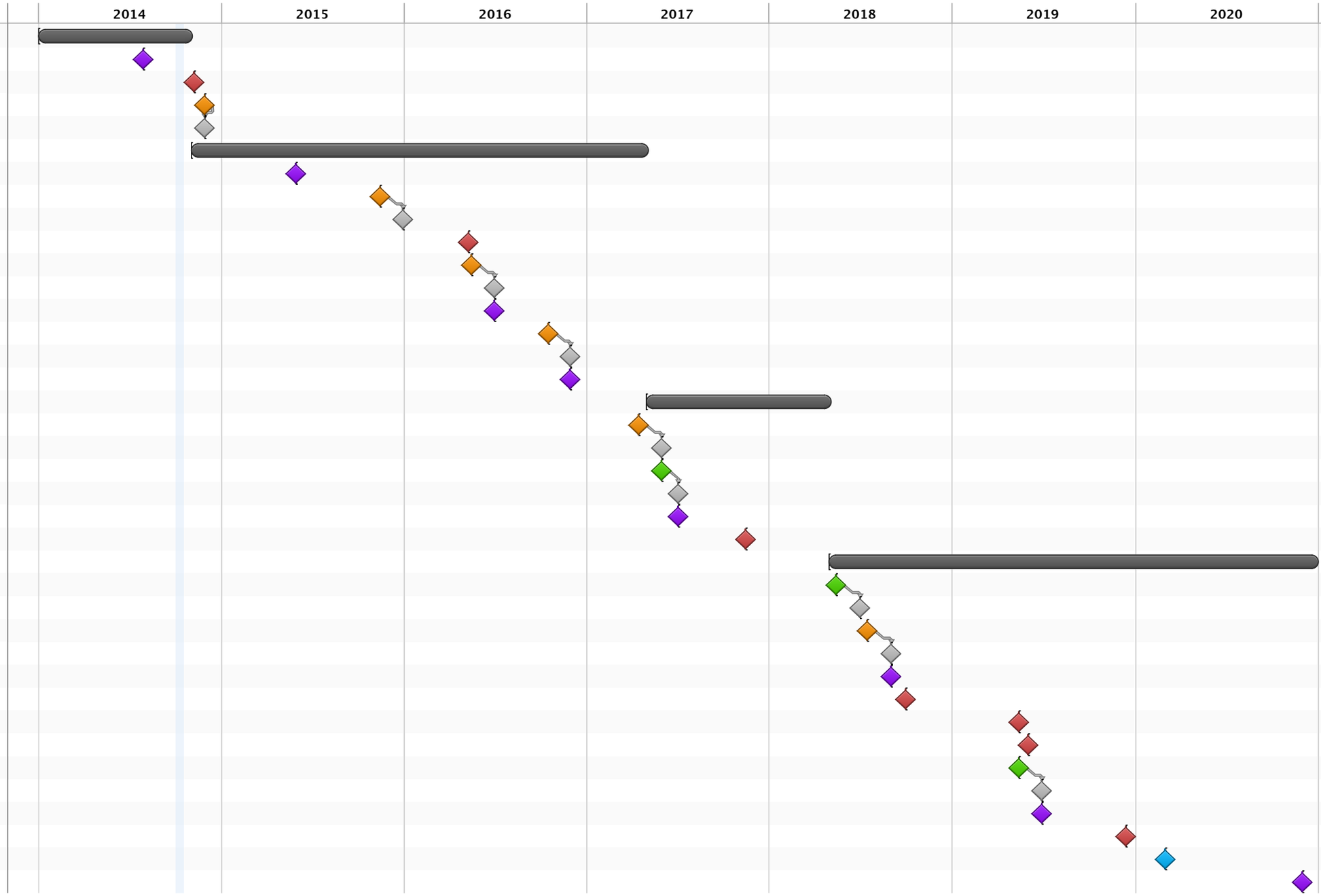
SC2 - SDC Production

- **Production at SDC-ES**
  - CentOS7 production issue
    - VMs tests
    - SL6 compatibility tests + Specific CentOS7 machines
    - Forward to other SDC
    - Delay simulation
    - Further issues?

- **SC2 simulation production roadmap**
  - SC2 simulator integration tests
  - TU data preparation
  - 3-20 (TBD) deg2 production of simulation for all 3 Euclid channels
  - Archive and distribution
    - EAS
    - Webdav door

SIM 2016 Plan

Title	End
1) SGS Prototypes	31/10/14
2) SR#2: Additional Simulation	30/07/14
3) SGS SRR	10/11/14
4) SR#1: SC#1 Simulation	30/11/14
5) SC#1	30/11/14
6) SGS Breadboards	01/05/17
7) SR#2: Additional Simulation	01/06/15
8) SR#3: Input Simulation for SC#2	15/11/15
9) SC#2	31/12/15
10) SGS PDR	10/05/16
11) SR#4: Input Simulation for SC#3	15/05/16
12) SC#3	30/06/16
13) SR#4b: Complementary Simulation	30/06/16
14) SR#5: Input Sims. for SC#4, SC#5 and SC#6	15/10/16
15) SC#4, #5 & #6	30/11/16
16) SR#5b Complementary Simulation	30/11/16
17) SGS Development	01/05/18
18) SR#6: Input Simulation for SC#7	15/04/17
19) SC#7	31/05/17
20) SR#7: Simulation Scenario for E2E#1	31/05/17
21) E2E#1	01/07/17
22) SR#6b: Complementary Simulation	01/07/17
23) SGS CDR	15/11/17
24) SGS Operational	29/12/20
25) SR#8: Simulation Scenario for E2E#2	15/05/18
26) E2E#2	01/07/18
27) SR#9: Input Simulation for SC#8	15/07/18
28) SC#8	31/08/18
29) SR#9b: Complementary Simulation	31/08/18
30) SGS SOVT1 Test	01/10/18
31) SGS QR	15/05/19
32) SGS SOVT2 Test	01/06/19
33) SR#10: Simulation Scenario for E2E#3	15/05/19
34) E2E#3	01/07/19
35) SR#11: Additional Simulation	01/07/19
36) SGS ORR	16/12/19
37) Launch	01/03/20
38) SR#12: Additional Simulation	01/12/20



SIM 2016 Plan

- **SC3 simulations**
  - November 2016
  - Volumes and simulated effects still TBD at OG/GD

- **E2E simulations - Cycle 2**
  - June 2017
  - 1. Joint Hardware + Operations + Data Processing. OUSIM + OUs (~20 fields x 6 sets x 1deg2)
  - 2. Science performance (WL + CL simulation) + Bypass simulations - identify residuals and level of bypass (2.000 - 20.000 deg2)
  - Overlap with SC3? Discuss at OG/GD

- **SHE Cat A 2016 simulation**
  - Early 2016
  - GalSim stamps seems a short-term realistic approach (till Lance's Oxford 3D model is available)
  - Require calibration fields
  - Deliver PSF at every galaxy position (or tool to reconstruct it)

SIM 2016 Summary Activity

- **Simulator upgrades**
  - New effects to be implemented with new instrument models
  - EXT simulator kick-off
  - Sim Planner upgrade and new Sim Request
- **SDC integration**
  - Parallel development and production at mutiple SDCs
  - IAL/EAS integration
- **True Universe refactoring**
  - Already started - major design update.
  - Scalable performance of library based TU
- **Verfication & Validation**
  - Setup V&V framework
  - Integration of automated checks with OUs support
  - SOC QLA tests
- **LE3 and bypass simulations**
  - Inherit CSWG production of LE3 catalogues
  - Study of residuals for bypass simulations