Gaia :moving to operaitons

William O'Mullane

LSST
Tucson
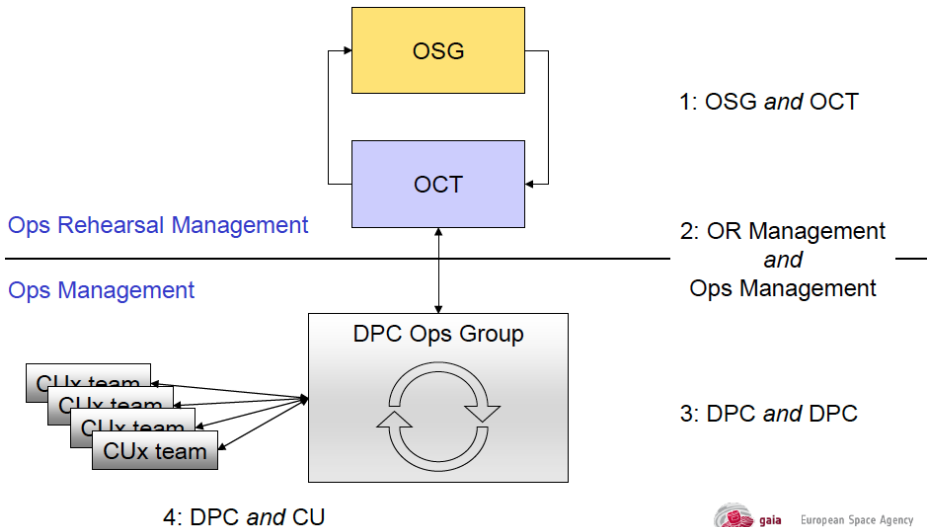Arizona

Jan 11th 2017 DMLT Tucson

- Agile works well for development - there is a product to be built

- Operations uses that product, finds bugs which need fixing, needs enhancements

- Development does not disappear but does tend more to maintenance

- Configuration control is even more important...

- Operations are more procedural, a little more repetitive (we hope), routine (we really hope)

- It is a different mindset - a stable running system is the prime objective

- We choose to have operations rehearsals for Gaia - These are not software test campaigns we had those as well.
- OR#1:
    - 3 days of NSL data
    - DPCE (SCI) operations
    - Other DPCs data reception only
- OR#2:
    - 5 days of EPSL data (less volume over time)
    - All DPCs operational - almost all daily chains
    - Commissioning activities (payload experts introduced)
- OR#3:
    - 8 days of EPSL data
    - All DPCs operational - all daily chains
    - Commissioning activities (payload experts continued)

- on OR#1
  - Mindset has to change from development to operations
- after OR#2
  - Again, the SCIs came late; too late to allow DPCE to conduct any substantial testing and integration. This would lead to the same consequences as seen already during OR#1
  - In plain words: completely unknown SW behaviour, limited to no robustness of systems to unexpected events and data, processing break-down after about 30hours of data
- UB statement after OR#2
  - The design of the OR was not adequately set and many details were missing.

OSG

OCT

1: OSG *and* OCT

Ops Rehearsal Management

2: OR Management
and
Ops Management

Ops Management

DPC Ops Group

CUx team
CUx team
CUx team
CUx team

3: DPC *and* DPC

4: DPC *and* CU

gaia   European Space Agency

- Basic roster on second OR .. Daily 1h telecons to exchange on findings
  - Started well, but seemed to cool down after about a week
  - Use of Mantis to track issues and to raise them to MOC/Project/Astrium
  - Some work seems to be hidden in FL reports; unawareness of where to find raw FL results
- Operational awareness of PEs improved
- Finally, also HK data (other than attitude) were looked at
- The responsibility of the PEs for on-board changes was exercised
  - a bit ad-hoc, but still the need for CC seems accepted (at least by most)
  - CCB process executed for VO sequence and ALPT (the change of compression parameters was not part of this exercise)
  - Needs for improvement
    - Definition of the process of how to request final approval
    - Detailed process during commissioning (Astrium is in charge)

Large Synoptic Survey Telescope

- Procedures are the building blocks for operations
    - 118 procedures in DPCE Procedure Handbook + CSG Gaia Ops Procedure
    - Half of them were used in OR4. Many of them were out of date or not validated. Some new ones have been identified
    - We operators must be trained and educated on their regular use
- Procedure Handbook in pdf is not very friendly for operators
- Proposal to move the handbook to entries in eLog more handy and friendly. Can be tracked and controlled in the same way (Currently like that - others looking at JIRA/Confluence)
- logging more of a problem

Rocio Guerra Ops Manager Gaia ESAC

- Operations rehearsals took a lot of time tom plan - so they were not more than once a year.

- It is not acceptable to have system diverge in this time period

- Need a continuous (super)integration at least on a monthly basis -

- Done with the trunks

- Need a plan including
  - Schedule basically to reserve time for this
  - Objectives - can be to improve on finding from one of the operations rehearsals
  - Input dataset - can reuse again from ops rehearsal or reduced version

- Who is the science operations manager ?
- Who are the operations people ?

- . . .

- OPS are hard .. we need to practice

The following table has been generated from the on-line Gaia acronym list:

Acronym	Description
ALPT	ALong-scan Phasing Table
CC	Change Control
CCB	Configuration Control Board
DPC	Data Processing Centre
DPCE	Data Processing Centre ESAC
EPSL	Ecliptic Pole Scanning Law
FL	First Look
HK	Housekeeping (also denoted H/K)
LSST	Large-aperture Synoptic Survey Telescope
NSL	Nominal Scanning Law
OR	Operations Rehearsal
PE	Payload Expert
ROE	Regular Operations Exercise
SCI	Schedule-Critical Item
SW	Software (also denoted S/W)
UB	University of Barcelona (Spain)
VO	Virtual Object