Data Management Operations

User Support
Back-End Operations
e2e Data Flow System Developments
Consolidated discussion of recommendations

- we analyse and consider *all of them seriously*
- we work on and implement *most of them*
- some are long-term efforts
  - e.g. "improve pipelines"
  - e.g. Archive Science Portal, release vers.2 (20.April)
    - [http://archive.eso.org/scienceportal/home](http://archive.eso.org/scienceportal/home)
    - announcement in Science Newsletter
User Support
Visiting Astronomers travel office

- Unrests in Chile (since October 2019)
- Emergency situation due to COVID-19

Science Verifications

- MATISSE
- NAOMI + PIONIER and GRAVITY
- ESPRESSO 4UT
- GRA4MAT getting ready...
Users Feedback

Satisfaction with usefulness of reply from ESO

P2PP and p2: user satisfaction with ease of use

p2 finding chart generator
Usefulness vs. alternatives

Did you use the p2 API?

No opinion: 4.6%
Dissatisfied: 0.0%
Very dissatisfied: 0.0%
Satisfied: 27.6%
Neutral: 5.7%

Yes: 5.4%
No, I didn’t know it exists: 33.8%
No: 60.8%
Back-End Operations
ESO publication statistics incl. archive enabled science

ESO Publications 1996-2019

No. referred papers

<table>
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<th>Year</th>
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<th>La Silla</th>
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Users Committee 44th Meeting, 29-30 April 2020
Archive-enable science output

Time evolution of VLT papers using archival data

Source: ESO Telbib (telbib.eso.org)
ESO Archive Science Portal: integration of ALMA data (query)
ESO Archive Science Portal: integration of ALMA data (download)
End-to-End
Data Flow System
Development
User Portal

- New account management / administration
- Information requested updated
  - Gender and seniority (wrt PhD year) to monitor for biases
  - Scientific and Technical expertise keywords (for OPC/review candidates)
  - Streamlined institutes for conflict detection (OPC),
    - Major clean-up of institute database
    - No more postal address
  - "I want to submit proposal" flag
  - Private information is GDPR-compliant, country list is UN-compliant, gender list is inclusive and pragmatic, …

- Integration with "single sign on", integration with P1
  - P1 enforces that users update their portal information
Staged deployment:

- P104: DDTs only
- P105: normal proposals
  - 850 proposal submitted 😊, positive feedback 😊; ESOform retired 😊
- P106: support for large programs, surveys
  - Used for SV, 4MOST, P106 ongoing

Next:

- Administrative interfaces, OPC handling, etc...
- Integration with Exposure Time Calculators
performance:

- 1074 proposal submitted
  - incl. 44 LP for the first time
  - 165 started, but did not submit
- April 22: >1.000.000 API calls
- April 23 (deadline): ~467.000 API calls, ~12.8 requests/sec
La Silla Data Flow System fully aligned with Paranal

- Same tools, same database, same infrastructure

==> Support P2 APIs for programmatic preparation of OBs, advanced dVM for upcoming instruments, remote via LOEM

- P2PP fully retired
ETC –v2 status

- New simulation engine
- New server infrastructure + web interface like P1, P2
- Some project instruments already integrated as "standalone" - see etc.eso.org
  - 4MOST
  - CRIRES+

Next

- Implement FORS2 as baseline VLT instrument
- Integration with P2 (retrieve OB info, return SNR info)
- Next:
  - Integration with P1
  - Deploy other instruments
Addenda
P2/VES

Observing Night 7 Oct 2019 - night time: 00:01 - 08:58

22:44 Start UTC 00:33
Dial in offset to start of the night

Labels show moon angular distance, red indicates violation of observing constraints. Click on a target in the legend to hide its curve.

2: 2824477 NGC 6000
15:49:49.556, -29:23:12.500
UT: 02:21, LST: 22:45
0.8° / 13.4
Req. Airmass 2.8 violated by 13.4
"Observation Preparation Framework”

- Upcoming: upload of custom background images for SkyView and automatic production of fc
Archive Science Portal v2
(cube data interactive previews)
Archive Science Portal v2
(polygons, e.g. GW contours)
Data Processing and QC

Quality Control (QCv2)

- Redefinition of tasks between DMO and LPO
  - Timeline: end of 2021, with intermediate milestones

- Strengthening of science output
  - QC0+ (Observatory): online observation grading, science processing (online and archiving and distribution)
  - QC1+ (Vitacura): final observation grading, master calibration certification, OB-level science products
  - QC2 (Garching): in-depth science certification, generation of final archival science products, science product enhancement

Data processing

- Redefinition of data processing tools for QC and science (external and internal)
- Provisional code name: ESO Data Processing System (EDPS)
- Timeline: end of 2021, with intermediate milestones
Generalized Turbulence:

- T expands traditional seeing to serve all instruments, including different Adaptive Optics and VLTI requirements
- $T = \text{function of}$
  - (Seeing, Ground Layer Fraction, Coherence Time)
- $T = \% \text{ of realization of the conditions (10\%, 20\%\ldots)}$
- Integrated with P1, P2, ETC (to make conversion between science requirements and required $T$), OT, ORANG
- As of P105

New Prog ID 0105.A-0123(B) --> 105.20U9.002

- P1, P2, OT, PL, Archive
- As of P105
Python at ESO

- Project to integrate the ESO PL with Python
  - CPLib, HDRLib, Recipes callable from Python
  - ESOrex can call Python code
  - ETA: 1yr

- Overall transition of all our Python code to Py-v3

- Study started:
  - How to embrace and distribute Python
    (without being submerged by infinite diversity of packages)
Impact of Satellite Constellations

- Simulate constellations
- Probabilistic impact on observations
  - Low impact on NTT-VLT-ELT (<% during twilight)
  - Moderate on VST-VISTA (~% during twilight)
  - High on wide surveys on large telescope (V.Rubin=LSST, ~30+% at twilight)

--> PR eso2004 and A&A paper (more in prep)

- Mitigation
  - Discussions with satellite operators (LSST, 4MOST as edge cases – short term)
  - Discussion with IAU, ESA, AAS, RAS... for UN, COPUOS, UNESCO (long term)
  - Probabilistic schedule