



ESO/UC-92
Date: 24.08.2018

EUROPEAN ORGANISATION FOR ASTRONOMICAL
RESEARCH IN THE SOUTHERN HEMISPHERE

APPROVED

USERS COMMITTEE

**42nd Meeting, Garching
26 and 27 April 2018**

MEETING MINUTES

Draft Minutes**UC**

Chairperson: Olivier Absil Belgium (BE)
Vice-chairperson: Karina I. Caputi The Netherlands (NL)

UC members:

Wolfgang Kausch Austria (AT)
 Michaela Kraus Czech Republic (CZ)
 Lise Bech Christensen Denmark (DK)
 Talvikki Hovatta Finland (FI)
 Nicolas F. Bouché France (FR)
 Maria-Rosa Cioni Germany (DE)
 Maria Teresa Beltran Italy (IT)
 Łukasz Wyrzykowski Poland (PL)
 Nuno Peixinho Portugal (P)
 María Rosa Zapatero Osorio Spain (ES)
 Sofia Ramstedt Sweden (SE)
 Miroslava Dessauges Switzerland (CH)
 Danny Steeghs United Kingdom (UK)
 Sebastian Lopez Morales Chile (CL)
 Caroline Foster Australia (AU)

Invited to Special Session

Frédérique Motte France (FR)
 Cécile Favre Italy (IT)
 Luke Maud Leiden ARC Node, The Netherlands (NL)
 Jan Brand, Marcella Bologna ARC Node, IT – remote connection
 Massardi, Rosita
 Paladino, Kazi Rygl,
 Elisabetta Liuzzo
 Anita Richards Manchester ARC Node, UK – remote connection
 Ka Tat Wong IRAM ARC node, France – remote connection

On behalf of ESO

Xavier Barcons ESO Director General (DG)
 Andreas Kaufer Directorate of Operations / La Silla Paranal
 Observatory (DOO/LPO)
 Rob Ivison Directorate for Science (DSC)
 Steffen Mieske Paranal Science Operations (PSO)
 Michael Sterzik Data Management and Operations Division (DMO)
 Olivier Hainaut Data Management and Operations Division (DMO)
 Marina Rejkuba User Support Department (USD)
 Martino Romaniello Back-end Operations Department (BOD)
 Leonardo Testi ESO ALMA Support Centre (EASC)
 Martin Zwaan ALMA Regional Centre Department (ARC)
 Evanthia Hatziminaoglou ALMA Regional Centre Department (ARC)
 Ferdinando Patat Observing Programme Office (OPO)
 Francesca Primas Observing Programme Office (OPO)
 Sandra Castro Science Operation Software Department (SCS)
 Pascal Ballester Science Operation Software Department (SCS)
 Michele Zamparelli Science Operation Software Department (SCS)
 Bruno Leibundgut Directorate for Science (DSC)
 Antoine Mérand Directorate for Science (DSC)

Invited to Special Session

Felix Stoehr ALMA Regional Centre Department (ARC)

Minutes taken by

Federico Lelli ESO Fellow (DSC)

1. CLOSED SESSION

No meeting minutes are taken for the closed session.

2. OPENING OF THE UC MEETING

The Chair, **Olivier Absil**, opens the 42nd Users' Committee meeting.

2.1. Adoption of the Agenda and approval of the minutes

The draft minutes from the 41st UC meeting have been approved prior to the mid-term telecon in November 2017. The draft agenda is adopted without comments.

3. UPDATE ON ESO'S PROGRAMME

Xavier Barcons, Director General of ESO, presents the highlights and updates on the ESO's programme ([attachment](#)).

Discussion following the presentation:

N. Bouché asks whether HARMONI is the only instrument on track among the future E-ELT instruments and wonders in particular about the status of MICADO. **The DG** confirms that MICADO and other instruments are delayed although the delay is not very large – this is a concern and will be closely monitored. He points out that for example MATISSE had a larger delay.

4. REPORT FROM LA SILLA PARANAL OBSERVATORY

Andreas Kaufer (Director of La Silla Paranal Observatory, LPO) and **Stefan Mieske (Paranal Science Operations)** present an update on the La Silla Paranal Observatory ([attachment](#)).

Discussion:

S. Lopez Morales asks clarifications regarding the statement that MUSE users are mainly applying for “normal” seeing conditions and points out that there may be confusion in the related ESO form between seeing and image quality. **S. Mieske** clarifies that MUSE users should indeed insert a request for seeing in the ESO form, but they are generally not pushing for more stringent image quality that could be achieved with adaptive optics.

5. REPORT FROM END-TO-END VLT OPERATIONS

Michael Sterzik (Data Management and Operations, DMO) and **Olivier Hainaut (DMO)** report on news from end-to-end VLT Operations ([attachment](#)).

6. ARCHIVE SERVICES DEMO

Martino Romaniello (Back-end Operations Department, BOD) shows the new services of the ESO Science Archive: the web based ESO Archive Science Portal, and the programmatic and tool access points ([attachment](#)).

Discussion:

O. Absil asks if the new Archive Science Portal will allow to query the archive by instrument. **M. Romaniello** confirms that this is the case.

M.-R. Cioni asks how far back in time the archival data go. **M. Romaniello** replies that all raw data is stored, whereas for processed data the availability depends on the data collection. For example, UVES products go back to 2000 as ESO could not recover the automatic processing of data from the first six months of operations. Usually, the archival data goes back to the beginning of the science operations of

every individual instrument. Products from Public Surveys are linked to the respective time schedule of the public releases.

7. REPORT FROM ALMA OPERATIONS

Leonardo Testi (ESO ALMA Support Centre, EASC) presents updates on ALMA operations ([attachment](#)).

8. REPORT FROM THE ALMA REGIONAL CENTRE

Martin Zwaan (ALMA Regional Centre, ARC) reports on news from ARC ([attachment](#)).

Discussion:

M. T. Beltran asks if ALMA calibrated Measurement Sets could be made available for download to PIs for a short period of time, like 15 days. **M. Zwaan** replies that this is a possibility to consider and that a similar strategy has been implemented at the NRAO.

9. REPORT FROM THE OBSERVING PROGRAMME OFFICE

Ferdinando Patat (Observing Programme Office, OPO) reports on telescope proposal submission and OPC matters including some follow-up on the Time Allocation Working Group report ([attachment](#)).

Discussion:

D. Steeghs asks whether OPC nominations should be pre-filtered based on the candidates' experience or whether ESO prefers to have a larger pool of candidates. **F. Patat** replies that pre-screening is welcome. The general guidelines are that an OPC proper member should be at least at the associate professor level, while an OPC panel member should be at least on a second post-doc, but these guidelines are flexible. There is some internal screening by OPO, but the final word is on the Nominating Committee, which can apply further cuts or come back to the OPO for clarifications.

L. Christensen asks why rapid response mode (RRM) and ToO cannot be part of multi-semester programmes. **F. Patat** replies that this is just a technical issue that will be addressed soon. In P102 submission of ToO Large Programmes was already possible.

N. Bouché asks why the OPC database sometimes automatically rejects nominations. **F. Patat** replies that the software does not accept nominations for people that served in the OPC less than 10 semesters (5yr) ago, or because the name is still in the database.

K. Caputi asks what fraction of A-ranked and Visitor Mode programs that were part of the Survey of Non-Publishing Programmes (SNPP) did not lead to a refereed publication between cycles 78 and 90. **F. Patat** replies that this is of the order of 50%, consistent with the analysis presented in the Messenger and SPIE articles by Sterzik et al.

10. NEW PHASE 1 PROPOSAL SUBMISSION DEMO

Demo of the new Phase 1 proposal submission system is shown by **Francesca Primas (OPO)** and **Olivier Hainaut (DMO)** ([attachment](#)).

Discussion:

W. Kausch asks if ESO will provide written instructions for the new Phase 1 proposal submission system. **F. Primas** replies that a one-page step-by-step document will be prepared. **O. Hainaut** adds that no public instructions will be provided, but information will be provided to specific groups of people (beta-testers) that will test the new system.

11. REPORT FROM THE UC CHAIR

O. Absil presents the main results from a community survey that yielded more than 500 completed answers ([attachment](#)). These results are summarized in the [UC report](#) that is public, while detailed feedback is in the [appendix](#) available from the UC meeting webpage, but password protected.

12. CLOSED SESSION (UC only)

No meeting minutes are taken during the closed session.

13. OLD RECOMMENDATIONS

High priority

(by order of priority)

UC41.R.01: to continue putting a high priority on the development, support, and improvement of pipelines. The ability of optimally exploiting data is a concern of ESO users. Some specific recommendations based on the UC poll are listed here:

- to improve documentation on pipelines, including on the recipe parameters in Reflex, and on the installation procedures;
- to explore how to make bug reports (issue tracker) on ESO pipelines available to the community;
- to provide information on the frequency of (future) pipeline upgrades, and to consider updating the pipelines faster following identified issues;
- to provide working optimal extraction for pipelines and all ADPs for all spectroscopic instruments (and XSHOOTER in particular), especially in the case of faint sources;
- to continue the on-going improvements of the SPHERE pipeline to bring it up to the same quality and usability as for the others as soon as possible;
- to use Gaia as a reference catalog when an astrometric solution is calculated.

Documentation and installation. The April 2018 releases had updated documentation, including Reflex parameters (see also **UC41.R.06** below). The recommended method of installation of ESO pipelines follows software engineering standards, which include RPMs for Linux and MacPorts for OS X. Any problems with installation procedures should be reported to usd-help@eso.org so that ESO can follow-up on the issues.

Public bug reports. This has been investigated. While it would be technically possible to expose the ticketing system to the world, we prefer not to. The reasons are *i)* the issue tracker system contains very technical information at the low-level of code implementation; the information in these tickets is extremely technical. In particular, it does not provide useful information to users; for instance typical user questions regarding pipeline recipes or problems with data reduction; *ii)* the tickets are an internal communication tool which can contain references to specific users and datasets (which can be confidential). ESO has made public the FAQs related to data processing and pipeline, which are available on the web (<https://www.eso.org/sci/data-processing/faq.html>).

In the context of the release of the new interfaces and services for the ESO Science Archive, we are experimenting with the UserEcho feedback platform (<https://userecho.com>). Among other features, it allows users to initiate public discussion threads to which both other users and ESO can, then, contribute to. It is meant to complement, not replace the ticketing system of usd-help@eso.org. Its performance and user acceptance will be assessed to evaluate whether to employ it further, including potentially expanding it to other tools/areas.

Frequency of pipeline releases. A software release entails a non-negligible effort, which needs to be tensioned against development activities. Pipelines for operational instruments are usually released once a year in April. More frequent releases are considered in case of major upgrades. Pipelines for instruments that just entered operations also often have additional releases throughout the year, depending on their development status. In order to optimize the use of resources, bug fixes and minor upgrades for any given pipeline are usually bundled together and made available in a single release, which may result in a longer release cycle. New pipeline releases are announced through a mailing list,

which interested people can subscribe to by sending an email to eso-pipelines-announce-join@eso.org.

Spectral optimal extraction. An optimum extraction method has been implemented for the CRIFES+ pipeline. We plan to import the relevant routines into the High-level Data Reduction Library, and to upgrade other individual pipelines using these routines. Perspective release date for X-Shooter is 2018Q4.

SPHERE pipeline. The SPHERE pipeline version 0.31 has been released on December 22, 2017. It includes the determination of zeropoints and Strehl ratios for all IRDIS standard filters (J/H/Ks, no catalogue data for Y available) and the V/N_R/N_I filters for ZIMPOL. For the IFS wavelength calibration, an error was fixed in the cube creation and improved parameter settings. In addition, the wavelength calibration recipe now provides a wavelength calibrated cube of the arc lamp calibration frame, that allows the user to verify the quality of the wavelength calibration. The IFS wavelength calibration is rather convoluted and there are still some remaining issues with QC.

Work is still in progress on the IRDIS distortion recipe and on the processing of ZIMPOL polarimetric standard stars. Target release is 2018Q2. As part of the work on the ZIMPOL polarimetric standard stars an error was fixed on the recipe that determines the modulation efficiency of ZIMPOL polarimetric data. The result was always negative, which - when applied to the science data - created wrong results (and not just wrong sign) for the Q and U frames and thus for the polarization angle.

A second batch of improvements was identified. It includes: provision of correct World Coordinate System (angle and scale, for arbitrary position angles and both _field- and pupil-stabilized observations); correct and robust determination and later application of object position from OBJECT,CENTER frames (also for 2-dimensional ZIMPOL raw data) in order to correctly stack individual frames; documentation of the algorithms used to determine QC parameters; addition of exact observing date and parallactic angles in individual products; addition of the central wavelength of each plane in the IFS science products as well as of IRDIS imaging science products in the header; provision of Strehl ratio for each individual frame of OBJECT,FLUX or other non-coronagraphic data; provision of contrast for each individual coronagraphic frame (IRDIS and ZIMPOL imaging data).

The impact that devoting to them the required level of resources would have on other activities is being evaluated. The expectation is that it will not be negligible, likely affecting the archive release of reduced data from other instruments, so the opportunity of doing so must be very carefully evaluated.

If executed, the outcome of this second batch would fix all bugs known to date. Additional further work would still be needed to bring the pipeline to full shape in terms of science data processing and quality control instrument monitoring.

Gaia as reference catalogue. Gaia provides coordinates in the ICRS reference system, while ESO currently uses the FK5 system. The use of ICRS is transparent to any application with accuracy requirements no more stringent than 0.1 arcsec: the distinctions between ICRS, FK5 and dynamical equator and equinox of J2000 are currently not significant. Still, an effort is ongoing to move to ICRS as a future-proof solution. The move has impact on a large number of sub-systems and needs to be planned and executed with extreme care. This is currently in the planning stage. When available, an appropriate Gaia catalogue will be used for pointing and guiding at the telescope. Contacts with the Gaia Team are ongoing.

Discussion:

O. Absil asks whether the community may be involved in developing ESO pipelines using sharing platforms like GitHub or other Python platforms. **M. Rejkuba** mentions that there was the science data forum, but it received only 52 comments since 2008 (10 yr), so it has been taken down recently. There is more effort in maintaining Frequently Asked Questions. **P. Ballester** points out that ESO pipelines are used for data quality control, so open-development is not possible due to need for strict control and robustness in operations. One possibility is to have an operational pipeline and a public pipeline but keeping them in sync would be very complex.

O. Absil asks what the impact is of using ESO resources to improve the SPHERE pipeline. **M. Romaniello** replies that the most immediate impact is delaying publishing data products from VIMOS possibly indefinitely. **O. Hainaut** adds that ESO would need to stop the development and maintenance of all other pipelines for two years in order to bring the SPHERE pipeline to full science grade. The team has chosen a middle ground approach. **M. Sterzik** mentions that Grenoble has developed their own SPHERE pipeline, but their approach cannot be simply integrated in the ESO framework since one

needs an operational pipeline.

UC41.R.02: to continue improving transparency by publicizing the following information:

- **development roadmap for the Phase 1 & 2 tools;**
- **results of the study on the expected OB success rate vs. length (depending on seeing constraint);**
- **results of the study on the VM technical downtime;**
- **development of the eavesdropping mode (including as a means to assist less experienced visitor astronomers).**

Development roadmap: A Messenger article with a description of the global roadmap (including P1, P2, ETC, and all the other projects considered) has been published in the ESO Messenger (March 2018). A series of articles will then present each of the main projects.

OB success rate vs. length: A Messenger article is being planned to address this and in part also R.05 (promoting VM) and at the same time discussing the advantages and limitations of SM – one of the limitations is max OB length of 1h, that however has been shown to be a still valid assumption for the efficiency reasons.

VM technical downtime & Eavesdropping: These items were publicised via the ESO newsletter. Eavesdropping is officially offered since P100 for designated Visitor Mode. Usage for ToO is under testing.

Discussion:

O. Absil suggests advertising ESO Messenger articles in the Science Newsletter because this is more frequently read by the users than the Messenger itself.

UC41.R.03: to accelerate the delivery of the new Phase 1 preparation tool.

There are constant and repetitive complaints from the users, and currently it is envisaged for delivery in 2020-21.

The P1 system includes several “modules”: Definition of the cycle, submission of a proposal, management of the OPC, handling of OPC meetings. The system being developed is a complete overhaul of the tools and of the underlying infrastructure. Consequently, it is not possible to release the modules one after the other: we need to deploy the whole package at once. For next phase of development, we are considering increasing the resources. It is however not possible to advance the release date by much.

Discussion:

O. Hainaut mentions that the delivery of the new Phase 1 preparation tool may be slightly anticipated if the exposure time calculator is implemented in a second stage. **K. Caputi** points out that the community is asking for an easier way to write proposals and that the integration of the exposure time calculator is good but secondary.

UC41.R.04 (ALMA-specific):

- **to allow the ARC contact scientist to edit the Scheduling Blocks during Phase 2, in particular the target coordinates;**
- **to speed up the ticketing process, and to better monitor the quality of the answers;**
- **to homogenize the level of data products distributed to the users, in particular for spectral line observations where the following should be provided for each SPW: (i) map of the whole band with continuum subtracted, (ii) map of the whole band with continuum+line, and (iii) map of the continuum;**
- **to ensure that ALMA polarization observations requiring 3 hours or more of parallactic angle coverage for proper calibration are performed in blocks of at least 3 hours.**

ALMA has very precise policies that define how much coordinates can be changed by the PI during Phase 2. For larger coordinate changes, change requests need to be submitted. Contact scientists

have never been able to edit SBs and it is not foreseen that this will happen. This is the responsibility of the PI.

ARC staff have been monitoring the statistics of ALMA Helpdesk tickets more closely over the last year. Out of 637 tickets that were handled during the last year, 20 were open for more than three months, 14 of which are waiting for user feedback.

Regarding the data products: since there is a move toward more pipeline-produced imaging products, the images and cubes delivered to the users will indeed become more homogeneous. Making cubes of the full spectral coverage is happening now in the imaging pipeline, apart from those cases where 'mitigation' is applied. This mitigation causes the imaging pipeline to make smaller cubes for those cases where full imaging would be too computationally expensive. Long baseline projects are most affected by this.

Finally, efforts are ongoing to improve efficiency in full polarization calibration, and also to ensure the robust collection of PI data. We note that full polarisation observing is deferred to Cycle 7.

UC41.R.05: to promote the use and highlight the benefits of VM; to consider funding a 2nd visitor astronomer if (s)he is a student.

Funding a student as second observer is unfortunately beyond the available budget. Instead, it is encouraged to consider having students be the first observer and have experienced colleagues connecting via the Paranal Observatory Eavesdropping Mode (POEM) remotely in case funding for the second observer is limited.

Medium priority

(by order of priority)

UC41.R.06: to continue

- **participating in country-led workshops on how to prepare ESO proposals;**
- **holding regular workshops/schools on data reduction, and providing remote connection as well as access to the tutorial sessions in online videos;**
- **developing video tutorials, cookbooks, etc.**

ESO provides, upon request, seminars and training sessions on proposal writing best practices. The interested countries should contact OPO. A two-day workshop was held in Finland in Feb 2018.

In 2017 ESO delivered a series of presentations on ESO proposal preparation traveling to 5 Australian cities upon invitation by the Australian community. Further ESO participation is foreseen in the upcoming "ITSO/AAO Observational Techniques Workshop" to be held in Sydney in May 2018.

In March 2018 ESO hosted a LPO users workshop with a programme tailored partially according to preferences of the participants (<https://www.eso.org/sci/meetings/2018/Users-Workshop.html>) and it included remote participation. A NEON observing school was held on La Silla in February (https://www.eso.org/sci/meetings/2018/lasilla_school2018.html).

Online video tutorials and cookbooks development is an ongoing activity.

Discussion:

C. Foster asks whether it may be possible to enable "hands-on" sessions remotely. **M. Rejkuba** replies that ESO wants to keep the human interaction with the users, so there are no plans to do exclusively remote sessions.

UC41.R.07: to improve the reproducibility and transparency of observations stored in the archive by making OBs public after the observations are publicly available; to explore how to make example OBs available for various science cases that beginners can grab to prepare their own.

The Phase 2 tutorials have step-by-step description how to prepare typical OBs for every instrument and most used observing modes. The User Support Department plans to update and further expand the tutorials as the new web-based p2 tool is released for support of Service Mode in 2018.

The headers of fits files contain all the information that is present in the OBs, and the headers are publicly available for all data in the archive. Data reduction pipelines use the header information.

Discussion:

O. Absil mentions that the information in the FITS header is not enough for non-expert users for reverse-engineering the OBs and repeating the observations of another team. He suggests attaching snapshots of the OBs in the archival data. Several ESO participants pointed out that (i) it is not trivial to attach OBs to files in the archive; this would require development of new tools and would thus slow down other activities, (ii) there is intellectual property in how the PIs have set up the OBs; it is not part of the ESO mandate to make observing strategies publicly available; (iii) observers may contact the PI of a specific project if they want to figure out how the OBs were set up. **O. Absil** proposes to ask about making OBs public to users in the next poll. **M.-R. Cioni** adds that they may also ask users whether parts of the proposal should be made publicly available with the new tool.

UC41.R.08: to allow for multi-cycle ToO proposals, and to consider allowing Large programs to include ToO targets.

The first request is contained in the Time Allocation Working Group report and will most likely be implemented. As for the second, ESO offered ToO runs in LPs in Call for Proposals for P102.

Discussion:

D. Steeghs asks whether RRM will also be included. **F. Patat** confirms that it will be in the new system and it is also being considered whether to include it in the existing system, such that it could be available from the next period.

UC41.R.09: to clarify the timing and scheduling of the decision process for carrying-over A-ranked proposals; to clarify the fact that all non-completed A-ranked proposals are carried over by default.

The policy for carryover decisions is part of the VLT/VLTI Science Operations Policy: <http://www.eso.org/sci/observing/policies/cou996-rev.pdf>

It specifies that for category A programmes, ESO retains the right to declare a programme “substantially completed” or to carry it over to at most the next useful period.

In practice, all A-ranked proposals are considered for carryover, and unless there are special reasons that caused delays in execution or affected scheduling (e.g. late OB submission or changes with respect to proposed programme), the carryover is granted for one useful visibility period (that is typically 1 yr depending on the target visibility). All PIs are informed by e-mail by the head of USD at the time the next Call for Proposals is issued (approx. 4 weeks before the CfP deadline). This is specified in the Call for Proposals (page 31 of CfP for P101). The following sentence:

“All PIs of programmes in this group are informed about one month prior to the next Call for Proposal deadline about the carryover eligibility of their programme.”

has been added to the Phase 2 page that explains the Programme Priority Groups:

<http://www.eso.org/sci/observing/phase2/SMPPhilosophy/ProgrammePriority.html>

UC41.R.10: to calibrate the Z and Y bands of VIRCAM independently of 2MASS; to characterize all near-infrared imaging filters across ESO instruments and provide color terms for them.

The request as phrased by the UC is very broad and it is not clear which specific action is required. We

note that CASU is self-calibrating the on-going surveys to self-consistent internal Z and Y mags, so they can be transferred later to any standard system by shifting the entire data set by certain offsets. If the UC feels that more action is needed, a more specific recommendation should be formulated towards ESO.

Discussion:

M.-R. Cioni points out that ESO imagers that operate similar filters are not cross-calibrated with each other; the UC asks for transformation equations among different filters using standard stars. She adds that the UC will reformulate the request in the new recommendations. This is different from the specific Z and Y bands calibration for VIRCAM, which is indeed being addressed by other programmes.

UC41.R.11: Miscellaneous

- **to provide the UC with a list of all active ESO users (from member states) to enlarge the poll participation;**
- **to send email notifications by default to PIs about the observation of their run(s);**
- **to provide suggestions to users about improving the technical side of their proposals, once they prepare Phase 2;**
- **to provide a wired connection for laptops at Paranal: to easily get large data sets on observers machines for analysis and bringing home;**
- **to offer FORS2 with the blue CCD in service mode;**
- **to make it an option with FPOSS fibre priorities that some targets must be assigned a fibre;**
- **to offer direct trips to the mountain if users request it, and if it is possible within the current ESO transport scheduling;**
- **to clarify/publicize the policy regarding charging users using the bus to go to La Silla for technical work on PI instruments/telescopes.**

Active ESO users: A list of active ESO users (both LPO and ALMA), where active is defined as users who either submitted a ESO or ALMA proposal or downloaded ESO archive data over the last 2 years, has been provided upon request to the UC, and a similar list can be provided upon request also in the future. Please note that for now downloading data from the ESO Science Archive requires authentication via User Portal. This is scheduled to change with the release, planned at the end of 2018Q1, of the new archive services. In order to allow anonymous download of non-proprietary data as was requested, we will lose the ability to exhaustively identify active archive users. This was considered as an acceptable trade-off between enhancing the ease of use of the science archive and the need to characterise its use.

Notification about observations: ESO Service Mode users get automatic message when they prepare their observations. This message has been revised and includes now information how to subscribe to receive e-mail notification whenever their OBs are executed. Given that some PIs delegate the handling of their observations to their data or Phase 2 delegate, we prefer to provide the information how to follow-up the observations progress, but not push it by default. It is a responsibility of each individual user and there are different preferences depending on the run size. This is in line with the UC recommendation from several years ago.

Technical improvements suggestions: During the Phase 2 review, the USD support astronomers advise on the improvements of technical side of the observations and suggesting how to optimize the observing material. It is unclear what further feedback on the proposals is requested.

Wired connections for laptops: A configuration change is in preparation to implement such a connection for visitors, while maintaining the security of the network.

FORS2 with blue CCD in Service Mode: given the fact that the CCD exchange takes a full day plus verification on sky, having both CCDs in service mode is at the moment not considered operationally feasible. The problem of CCD exchange will be removed when a CCD upgrade for FORS is made. A respective project is currently planned, and its timeline will depend on the available resources.

FPOSS: The useful suggestion regarding the FPOSS fibre priorities will be taken into account in case of a future upgrade of FPOSS. Please note however that FLAMES is a “frozen” instrument, meaning that no resources for its upgrade, or upgrade of its software are currently foreseen.

Trips to the mountain: direct trips to the mountain have been accommodated in the past as exceptions. After the evaluation of the logistical implications it has been decided to offer this on a more regular basis starting from April 2018.

Policy about bus charges to La Silla: The policy is stated on the page with instructions for visiting

astronomers:

<http://www.eso.org/sci/observing/travel/visas-instruc.html#fincond>

hosted projects have the rates included in the agreement they sign with ESO, with a link to the page above to check for updates.

Discussion:

The possible effect of a new privacy law is discussed: it may not be possible for ESO to share e-mail addresses without the consent of the users. Possible approaches will be investigated with the help of legal experts.

O. Absil remarks that there will be no requested log-in in the new web-interface of the archive and that information on users will be lost. **M. Romaniello** clarifies that log-in will still be required to access the proprietary data. He adds that unauthenticated access to public data was implemented because users want to download data with one click; however, they can still choose to authenticate in order to have additional functionalities (like data download history). Once all relevant functionalities will have been ported, the old interface will be eventually decommissioned, but this is not high priority.

14. GENERAL DISCUSSION

This part is grouped according to broad themes that were discussed during this session.

Feedback from the OPC/ALMA TAC

O. Absil points out the necessity of having better feedback from the Time Allocation Committees and proposes to have structured feedback instead of a free comment box for the OPC panels. **F. Patat** replies that in the new system the OPC members will be requested to give specific grades on different aspects and to comment on those aspects. Regarding the quality of the comments, the chair of the panel is supposed to check them and ESO has no means to go back, because it would require reading the proposals and evaluating each single comment. ESO has now decreased the number of proposals for each reviewer. Since they have the same amount of time for the proposals review, hope is that this will improve the quality of the review comments. **M.-R. Cioni** points out that the new tools will take a few years before being active and asks whether structured feedback (with specific questions) may be implemented before that. **F. Patat** replies that ESO can ask for structured feedback but will have no means of enforcing it with the old system. **S. Lopez** is concerned that the new system with three referees may be less robust to biases and it would be easier to kill a proposal. He wonders if there is a study that could test that. **F. Patat** replies that they have performed simulations with bootstrapping techniques and while there is some difference between three and six referees, it is always possible to identify the top and bottom quartiles. The increase in robustness goes with the square root of the number of reviewers. **N. Peixinho** confirms that when he served on a panel, a similar test was conducted, and everybody agreed on the top and bottom ten proposals.

M. T. Beltran asks whether the bias against Chilean proposals in the ALMA TAC has been studied as a function of topic / science field. **L. Testi** replies that this is difficult to do because one loses statistics, however they noticed that Chilean and Asian proposals improve after the face-to-face discussion in the TAC suggesting that this bias may be also partly related to language.

Nomination of OPC members

O. Absil asks whether the OPC tool may be improved by allowing users to check the history of past nominations, check the current list of OPC members, and edit entries (e.g., removing people from the database). **M.-R. Cioni** comments that some users wonder why they never get called and it is unclear if their names are still in the database. **F. Patat** took note of the requests. Some of them could be implemented now, but there are limitations. The revised tool will be part of the new P1 system. He suggests adding this point to the UC recommendations.

Proprietary period

O. Absil notes that execution of some programmes is spread over considerable time, sometimes more than one period and asks whether ESO can consider having the 1-year proprietary period starting at the time that the last OB of the science program has been completed, providing that this is justified in the proposal. **B. Leibundgut** suggests to include this point in the recommendations, so it may be considered when writing the new science policy for VLT, VLTI, and E-ELT. **N. Peixinho** wonders if it is known how many papers are published by archive researchers scooping the PI, before the entire programme is completed. **M. Romaniello** notes that this could be checked, but what we do know is that sometimes PIs take 6-12 months to even download their data. **A. Kaufer** remarks that in the past ESO was shipping all data at the end of the programme, and this was when the time would start ticking. The users wanted to have faster data access. Given the science policy that gives 1 yr proprietary period from the moment data are made available, it should be clarified if this means that the access should not be immediate through the archive. Otherwise different programmes would have different total proprietary period depending on how long it takes between the first and the last observation.

La Silla

O. Absil would like to have some clarification about the future operations for the new instruments in La Silla and in particular whether the Eavesdropping and ToO mode will be available. **S. Mieske** replies that the Eavesdropping mode is in the development plan and suggests including this point as a strong recommendation. **B. Leibundgut** and **A. Kaufer** specify that NIRPS and SOXS will be run in “special” service mode as a result of negotiations with the consortia that built the instruments. When ESO made a call for new instruments for La Silla, it also included operations. The framework for future operations in La Silla is still being discussed and more specific information will be available once agreements with consortia can be reached. It will be Service Mode like operations.

M.-R. Cioni expresses a concern about the adequate staffing of La Silla, noting that there was need to call back people that were retired for 3.6m mirror polishing. **A. Kaufer** reassures that users do not need to worry – the telescopes will be coated as planned. The specific example was to highlight the fact that La Silla is a constrained site operating under minimum resources, and this includes people.

D. Steeghs asks whether the policy of compensating Visitor Mode runs when 75% of the data is affected applies only to Paranal or also to La Silla. **A. Kaufer** replies that this policy does not apply to La Silla because there is only visitor mode and other observers would be affected by the rescheduling. It may be considered in the future if there is more flexibility in the scheduling.

RRM Observations:

M. T. Beltran asks what about the fraction of accepted RRM proposals that are not executed and particularly with respect to failed triggers. **F. Patat** points out that this can be high (up to 50%) and it is unavoidable due to technical reasons (e.g., another instrument is mounted on the telescope or there is a visitor that cannot be overruled). The proposers should factor this in when they propose for RRM observations.

Follow-up of Time Allocation Working Group Recommendations

O. Absil points out that the majority of the community agrees with the 1-year proposal Cycle and ESO can move forward with this change. **F. Patat** reminds that the shift to 1-yr proposal cycle for ESO would come along side with the fast turnover, with monthly or bi-monthly submissions.

New Phase-1 tool testing

With regard to the new Phase 1 tool testing **O. Absil** wonders if ESO has any recommendation on the test users profile. **O. Hainaut** replies that the beta testing will start at the end of May and will take about 2 months, so they expect consolidated feedback by August. The test users should have previous experience in observing and submitting proposals. Best could be users familiar with UVES and FORS2 because these two instruments are fully implemented and polished, but other instruments could be added. Ideally these testers will run full proposal preparation simulations, check the functionalities and

critically missing features.

Priority of Service Mode runs

M. Dessauges points out that some members of the Swiss community complained that the priorities in service mode runs are not always respected. **M. Rejkuba** explains that ranking priorities can be violated because one should also consider the object observability window and other observational constraints. Observers may group OBs for specific objects to increase their probability of being observed and completed, but ESO cannot guarantee they will be observed in strict order. There may be competition with other higher ranked programmes that take priority for the RA ranges of the highest priority target.

ALMA

M. T. Beltran remarks that about 60% of ALMA users have to re-do the calibrations and asks whether the PI could get calibrated Measurement Sets. **L. Testi** points out that the imaging of ALMA data should be redone in 100% of the cases because the provided images and/or datacubes are for reference only and are not science ready in most cases. He also mentions that the calibrated Measurement Sets are much larger than the raw data, so the policy is to store the raw data and the calibration information: the users can simply re-run the pipeline to apply the calibration tables and get the calibrated Measurement Set. The EU ARC may consider making the calibrated Measurement Sets available for download to PIs for a short period of time, similar to what has been implemented by the NA ARC. **M. Zwaan** mentions that in many cases it is faster to download the raw data and re-apply the calibration tables with the provided pipeline script, rather than downloading the calibrated Measurement Sets because they are about twice the size of the raw data.

M. R. Zapatero Osorio recalls that only 66% of high-ranked projects are completed and asks what ALMA is doing to improve the situation and what is the goal. **L. Testi** replies that the realistic goal is to be above 80% of completion; this was not reached in Cycle 4 due to bad weather that significantly affected the schedule. Moreover, these statistics concerns the full completion of science projects: it does not mean that there are zero data for the remaining 34% of uncompleted projects. **M. Zwaan** adds that A-ranked projects are carried over to the next ALMA cycle.

Quality of Phase-3 products

O. Absil asks whether there is a way for users to infer the quality of Phase-3 products. **M. Romaniello** replies that, as part of the Phase 3 verification process, every release of processed data is associated with a 5-10 pages document that provides information about the quality of the data.

15. CLOSED SESSION

No meeting minutes are taken for the closed session.

16. SPECIAL TOPIC: “The future of European ALMA user support”

ARC node representatives from Bologna, Manchester and IRAM connected via video link. In the room also joined the Leiden ARC node representative and community experts.

16.1. ESO Introduction

Evanthia Hatziminaoglou (ARC) introduces the Special Topic with a presentation on “Distributed user support structure in Europe and future plans” ([attachment](#)).

Discussion:

M. T. Beltran asks what is implied by “the ARC nodes aim to be a major actor in shaping ALMA”. **E.**

Hatziminaoglou clarifies that the ARC nodes aim to 'go beyond user support'. In addition to activities they are already engaged in, the nodes want to be more involved in observatory tasks, either in Chile or remotely, such as leading and supporting campaigns, reducing test data, preparing calibrator survey catalogues, etc.

16.2. Feedback from Expert User 1

F. Motte reports about the large program on the initial mass function (IMF) and provides feedback about the ALMA user support ([attachment](#)).

Discussion:

T. Hovatta asks what the difference between QA2 and QA2-light is. **M. Zwaan** clarifies that QA2-light is a quick data reduction that is done to check that all the observing settings are correct. This is done only for large programmes because they use a significant fraction of ALMA time.

M. Dessauges asks whether it would be possible to split large programmes over multiple ALMA cycles to facilitate handling large data quantities. **M. Zwaan** and **L. Testi** clarify that large programmes are always A-rated and will be carried over to the next cycle if they have not been completed. The current ALMA policy does not allow to submit multi-cycle projects. **F. Motte** mentions that multi-cycle large programmes would be good from the observers' point of view, but they would require a change in the ALMA policy.

M. T. Beltran asks whether large programmes should always involve somebody working at the ARC from the beginning. **F. Motte** replies that this is very useful, but it should not be mandatory. **L. Testi** points out that ALMA is offering the same type of services to all users. It would be inappropriate to privilege programs that include ALMA/ARC staff and/or to impose to external users that ARC members are co-investigators of large programmes.

16.3. Feedback from Expert User 2

C. Favre reports about her current ALMA projects and provide feedback on the ARC nodes and ALMA user support ([attachment](#)) commenting also on some possible improvements for CASA.

Discussion:

T. Hovatta points out that CASA is very slow, and this is not project-specific. Face-to-face visits to ARC nodes are not very useful because one has to wait for many hours before CASA completes a task. **S. Castro** replies that several CASA processes like cleaning are very heavy and they are working in implementing parallelization techniques. **C. Favre** reports that several people prefer to export the data in GIDAS and do the cleaning there because it is much faster.

M. T. Beltran points out that the CASA viewer is also very slow asking if there is a plan to upgrade it. **S. Castro** replies that the viewer is going to be deprecated in order to use CARTA (Cube Analysis and Rendering Tool for Astronomy), which is a new visualisation project with several front-ends including one web-based. It was an ALMA development project in North America, but now led by Taiwan.

L. Testi points out that when users find a problem in the ALMA archival data, they should open a helpdesk ticket, so the ARC staff can check the problem and eventually change the content in the archive.

16.4. General Discussion on Special Topic

O. Absil asks how well the EU ARC is doing with respect to NA and EA ARCs. **E. Hatziminaoglou** replies that face-to-face support is implemented in all three ARCs but the NA ARC is centralized in Charlottesville, while the EA and EU ARCs have networks. The EU network is the most extended and

this may be the reason why EU is more productive than other regions with ALMA data.

M. T. Beltran asks whether ESO may economically support the ARC nodes if they fail to find National funds. **L. Testi** replies that ESO has no budget to do that, but it is working together with the ARC nodes to find external funds, e.g. like the current MARCUS Networking Activity within RadioNet, or the COFUND fellows in the past. **The DG** points out that ESO budget is limited and targeted to other projects; it cannot provide funds to support data analysis and data reduction. **L. Maud (NL ARC Node)** adds that people should be encouraged to visit the ARC nodes, so there is a clear demand and ARC nodes have good reasons to request funds to funding agencies. **M. T. Beltran** emphasises that it is not only important to get telescope time, but also publish data and for that she suggested that ESO and the funding agencies should work together to support also this final part. **The DG** answers that ESO is working with EU to support science.

D. Steeghs asks clarification about the interaction between nodes and the rest of the ALMA observatory regarding problems reported by the users. **L. Testi** replies that the EU ARC nodes work together under the coordination of the central EU ARC node at ESO, which is directly connected to the other ARCs in EA and NA as well as the Joint ALMA Observatory in Chile. When users have issues, these should be logged and solved via the helpdesk.

O. Absil asks about the main reasons for users visiting the ARC nodes. **E. Hatziminaoglou** replies that 80% is data reduction and the remaining 20% is split between archival research and proposal preparation. **M. Zwaan** points out that archival search at the ARC nodes is expected to increase in the future. **A. Richards (UK ARC node)** notes that sometimes researchers do not travel themselves to ARC node but give data delegation authorisation to ARC node staff to receive remote support.

O. Absil asks about the future of the ARC nodes and whether they will fulfil specific tasks. **L. Testi** replies that the ARC nodes are involved in the development of ALMA at two levels: (1) a short-term involvement like commissioning activities, calibration, databases; and (2) a long-term involvement to develop new ALMA capabilities. The long-term development of ALMA at ESO is done in collaboration with external institutes: there are open-call proposals for funds to which institutes in the ESO member states can apply to be funded to study or execute ALMA development activities. Several ARC nodes have been involved in the long-term development of ALMA through this scheme. **M. Zwaan** adds that ARC nodes contributed to commissioning and other activities. While before JAO did not know about people who could help, now this works much better.

L. Maud (NL ARC Node) points out that each ARC node is specialized in a different area and contributes in a specific way. **A. Richards (UK ARC Node)** recommends better communication among the ARC nodes executives to avoid duplicating tasks and repeating common mistakes.

M.-R. Cioni asks whether the ALMA data will be available in the ESO archive. **M. Romaniello** confirms that the plan is indeed to make ALMA processed data available via the ESO Science Portal.

O. Absil asks clarifications about the quality of ALMA archival data. **M. Zwaan** replies that the calibration information provided in the pipeline is science ready in most cases, but the images and cubes are not, so the users are supposed to redo the imaging. **F. Stoehr** mentions that there may be a change in the ALMA policy: currently the imaging is done to have reference information in the archive, but in the future it may happen that the imaging is tailored to the requests of the PI. **L. Maud (UK ARC Node)** points out that, even so, the PI may want to re-do the imaging because there are many possible options. **L. Testi** stresses that it is difficult to provide archival data that is good to everybody: this is a general problem for all archives. It would be useful to know what kind of data should be in the archive, taking into account that not everything is possible. **M. Zwaan** adds that it is important that the archive provides information, which users must read to make sense if data are suitable for a given science goal or need to be reprocessed.

M. T. Beltran asks whether the ARC may deliver combined images from different arrays (12-m array, ACA, total power, or even APEX). **M. Zwaan** replies that the ALMA is planning to add this functionality to the pipeline, but it is not high priority and it will probably not happen before Cycle 10. He points out that ARC nodes can help users with data combination and they are organizing schools and workshops on this specific aspect.

M.-R. Cioni mentions that German users are asking for a better preview facility in the ALMA archive and a faster download speed. **F. Stoehr** replies that both issues are in their priority list and will be solved.

T. Hovatta asks when ALMA will be in its final stage with full capabilities. **L. Testi** replies that the goal is to constantly improve ALMA capabilities and never settle on a “final stage”. Polarization capabilities will be slowly added and improved: in this cycle, circular polarization became available and the ALMA staff is now working on adding polarization to the ACA.

M. T. Beltran asks about the ‘data-rate problem’. **L. Testi** replies that this is not a problem but a feature of ALMA. The real-time data flow from antennas to correlator to the archive is particularly challenging, but ALMA already exceeds the nominal construction average data-rate and is improving in this aspect. The main problem is with the peak data-rate when all antennas are at work; the limitations are being investigated and data-rates will increase in the medium to long term.

O. Absil asks whether the ARC nodes network may provide new services in the future, perhaps related to other instruments like VLBI or SKA. **E. Hatziminaoglou** replies that, as ALMA becomes more “standard” among users, they are expecting a shift towards a more science-oriented and combined support from the ARC nodes. She also points out that the expertise varies among the nodes, and they provide different services (e.g., the Czech nodes provide support for Solar observations).

O. Absil asks about the work-load on ARC nodes and team members. **M. Zwaan** replies that Cycle 5 is “special” in this regard because there are six large programmes and five of them are led by European PIs. **M. Massardi (Bologna ARC node)** comments that the workload is indeed high even though the Bologna node is not currently providing support to a large programme. She also points out that nodes provide computing power for users and this aspect will become more critical for SKA. **L. Maud (Leiden ARC node)** states that the workload is acceptable, but work needs to be subdivided appropriately between science, user support and ALMA operations support.

17. CLOSED SESSION

No meeting minutes are taken for the closed session.

18. RECOMMENDATIONS

The UC has collected the users’ opinion about several topics and in general regarding their experience in their use of ESO facilities and interaction with ESO. The UC is glad to report a high level of satisfaction of the community, and acknowledges ESO’s efforts to maintain the highest standards. Based on the users’ feedback and on the discussions during the UC42 meeting, the UC recommends ESO:

High Priority

UC42.R01: to consider starting the **1-year proprietary period of a normal programme run** at the time that that run is declared completed or terminated (rather than on an OB- per-OB basis, as it is the current practice). The rationale behind this recommendation is to allow successful PIs to be able to analyse and publish their complete datasets without the risk of partial results being published in advance by the community. Explore if this same recommendation can be applied to ALMA, although the UC understands that ESO cannot take a unilateral decision in this respect.

Note: *this recommendation does not apply to large programmes and ESO public surveys.*

UC42.R02: to provide **ALMA** PIs with **calibrated measurement sets** (MS) and keep them for at least a month. This will speed up the process of re-obtaining final science images in the cases that this is necessary.

UC42.R03: to provide the **OPC** a structured feedback form with guiding questions to fill in in order to produce their reports. The aim of this recommendation is to improve the quality and usefulness of the

OPC feedback. Some possible questions could be: *Is the programme competitive compared to other works in this area? Can the science goals be achieved with the proposed observations? Is there any scope for discovery and new ideas?*

UC42.R04: to investigate making the **new P1 tool** available to the community before the ETC is integrated to it, in order to speed up the new P1 tool release. Users have been requesting a new P1 tool since several years now. The integration with the ETC will be welcome, but is not urgent. Therefore, the UC considers that the release of the new P1 tool should happen at the earliest possibility, and not produce any extra delay due to the ETC incorporation.

UC42.R05: remote users

- to ensure accessibility to all ESO technical workshops / schools by providing remote access by default;
- to investigate ways to engage remote sites also with the hands-on aspects of workshops, supported via established technologies;
- to continue organizing ALMA tutorials and schools on data analysis (which include, e.g., combining data from different instruments).

UC42.R06: pipelines

- to investigate ways to engage the community, as well as data centres (e.g., the SPHERE Data Centre) in the distribution of their own pipelines;
- to consider using Python as a wrapper for pipeline recipes.

The goal of this recommendation is that ESO takes the initiative to request third-parties with their own public instrument pipeline software to share the distribution of it on a dedicated ESO webpage. At the very least, ESO should have a list of all this available software on such a webpage, such that users do not have to do their individual search for all the independent software dispersed over the community.

Important with Medium Priority

UC42.R07: to consider the detailed **comments from the users** gathered through the UC Poll (see Appendix to UC report) in the development of the **new P1/P2, pipeline and archive tools**.

Precisely, the UC considers that the release of the new integrated P1/P2 tool has top priority, and should be done as soon as possible, even without waiting for the incorporation of the ETC, in order to speed up its release (see UC42.R04).

The UC acknowledges the importance of the new archive tool release planned for 2018, which is being developed in parallel to the new P1/P2 tools. As we were shown at the UC42 meeting, this new archive tool includes visualization (a feature requested by the users in previous years). However, the UC considers that further development of the archive system beyond the 2018 release is not urgent, and full priority should be given to the release of the new P1/P2 tool as from 2019.

UC42.R08: to continue improving the **ALMA completion rate** for A-ranked and DDT programmes.

UC42.R09: La Silla issues

- to implement eavesdropping at La Silla as early as possible;
- to consider allowing for 3-night runs that share nights between the 3.6m telescope and the NTT;
- to accommodate time-critical observations;
To the UC's understanding, all observations at La Silla are currently in VM for a minimum of three nights. According to the users, this prevents the scheduling of some programmes that require execution with a more flexible time frame.
- to ensure steady technical support for the user and also, remotely, for the support astronomer, when necessary. The goal of this recommendation is to minimise visitor mode runs being affected by a technical fault for a significant fraction of their time. When these technical faults are unavoidable, then consider compensating PIs for their observing time loss.

UC42.R10: to provide **near-IR filter colour transformations** for all ESO instruments to a common near-IR filter set (any), such that users can combine different instrument data in a more straightforward manner.

UC42.R11: to continue investigating the **sources of bias** in the OPC / ARP grades, and consider applying possible remedies, such as those already tried by other observatories (e.g. placing PI/co-I list at the end of proposals, or hiding list of PI/co-Is overall).

Miscellanea

UC42.R12: to improve the **OPC nomination tool** to enable the UC the visualization and modification of previous nominations.

UC42.R13: to keep the UC informed about the progress on the **implementation of the TAWG's and SDMWG's recommendations**.

UC42.R14: to provide statistics of triggering success and possible future improvements of the **rapid response mode (RRM)**.

UC42.R15: to consider communicating, linking and highlighting all future important updates through the **ESO Science Newsletter**. According to the users, this is their preferred and most read ESO means of communication. Also include a yearly summary of the main UC recommendations in the Newsletter.

UC42.R16: to consider enlarging **FORS2's filter set** by including SDSS's filters in the upgrade.

UC42.R17: to consider using a **common metric to quantify image quality** (e.g., seeing, Strehl ratio) for both P1 and P2 in the new integrated P1/P2 system.

UC42.R18: to try to make the verbosity (log) more informative when a **data reduction pipeline crashes**, such that the user can more easily identify the likely cause of the problem.

UC42.R19: to make clear to users which systems (i.e. EsoRex, Gasgano, etc.) different **instrument pipelines** do (or do not) work on. This information could be collected on the ESO VLT Instrument Pipeline webpage and at the beginning of each corresponding instrument manual.

19. ANY OTHER BUSINESS

Andreas Kaufer remarks the importance of having UC meetings where optical/infrared ESO facilities and ALMA are discussed in synergy.

20. CLOSING REMARKS

The **Director General** thanks everybody for their participation and discussions. He remarks that the UC recommendations are very important for ESO to prioritize and progress in activities.