European
Southern
Observatory

ESO CALL FOR PROPOSALS

P117

Contact us:
https://support.eso.org/

Proposal Deadline:
23 September 2025, 12:00 CEST

Call for Proposals

ESO Period 117

Proposal Deadline: 23 September 2025,

12:00 noon Central European Summer Time

Issued 13 August 2025

The European Southern Observatory (ESO) invites proposals for observations at ESO telescopes during Period 117 (1 May 2026 – 30 April 2027). The conditions and policies for proposing for observations are outlined and linked in this document. The Call for Proposals follows the ESO Optical/Infrared Telescopes Science Operations Policies document.

ESO stands for respectful interactions. Participation to ESO activities, including those described in the Call for Proposals, should comply with the ESO Code of Conduct.

Approved: _____ Digitally signed by Andreas Kaufer
Date: 2025.08.11 11:52:53 -04'00'

Andreas Kaufer

Director of Operations

on behalf of the Director General

The preparation of the ESO Call for Proposals is the responsibility of the ESO Observing Programmes Office (OPO), with support from ESO staff throughout the organisation. This document is a fully linked PDF file with links that allow the reader to navigate within the document (internal links, in orange) or to open a web browser (external links, in blue). The Table of Contents is bookmarked within the PDF file. For questions regarding the preparation and submission of proposals to ESO telescopes, please contact the ESO Operations Helpdesk.

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ESO Call for Proposals editor: Annalisa De Cia

Contents

1 General terms

ESO proposals may be submitted by any group or individual. The Principal Investigator (PI) is the primary responsible for the proposal, on behalf of all co-Investigators (Co-Is), and may delegate certain privileges to a Delegated Principal Investigator (dPI). More information and policies on the responsibilities of the proposing team are described in Sect. 5.1.

All members of the proposing team are required to have an ESO User Portal account with updated email addresses, affiliations and scientific keywords. Affiliations are used to assess potential conflicts of interest in the review process.

If **Artificial Intelligence** services are used to help prepare a proposal, the PI remains fully responsible for the content of the proposal and for ensuring the text is properly referenced according to normal scientific standards. They must ensure that the use of generative models does not infringe anyone else's intellectual property and does not result in scientific misconduct, for example, in the form of plagiarism.

Proposals are submitted via the p1 **proposal preparation tool**. Co-Is can be added by submitting their User Portal email and will receive a notification when they are added to (or removed from) a proposal. An application programming interface (API) for the p1 proposal interface is now available (see the p1 API Tutorial webpage). Submitted proposals can be updated (un-submitted and resubmitted) until the deadline. Guidelines for the usage of the tool p1 and the proposal preparation are presented in Sect. 4 and on the p1 introduction webpage.

The various **programme types** (Normal Programmes, including the joint VLT/I–ALMA and VLT/I–XMM proposals, Large Programme, Monitoring Programmes, GTO, GTO Large, Calibration Programmes and Director's Discretionary Time Programmes) are defined in Sect. 5.2 and summarised in Table 3. ESO encourages the community to submit proposals for Normal Programmes requesting large amounts of time, up to their maximum time request. ESO has been actively working to ensure that the review process is science-driven and reduce the bias against resource-intensive proposals.

The proposal **dual-anonymisation** is mandatory and important for reducing unconscious bias. Rules, guidelines, and examples are described on the Dual-Anonymous Guidelines webpage. Failure to abide by these rules may lead to the proposal's disqualification. Personal information on the proposing team can be disclosed only in the following fields of the proposal, which are not distributed for review: "Investigators", "Background and Expertise", "Previous Usage" and "Applicants' Publications".

Scientific keywords are important for the assignment of proposals to the reviewers. Users must select at least two **scientific keywords**, and at most five keywords (ten keywords for Large Programmes). The keywords must be selected in decreasing order of relevance (i.e., the first selected keyword is the most relevant), in the proposals as well as in the User Portal. This is important for a better assignment of the proposals to the reviewers. No keywords are required for Calibration Programmes. Scientific keywords are listed in Appendix A.

For most programmes, the maximum total length of the **"Scientific rationale"** (or scientific description) is 2 pages, including figures and references. Figures and tables are optional and restricted to the second page. For Large Programmes, the maximum total length of the "Scientific Rationale" is 5 pages, where up to three pages should be used for text, and up to two pages for figures and tables, placed at the end.

The **observing modes** include Service Mode (SM), Visitor Mode (VM) and Designated Visitor Mode (DVM). These are described in Sect. 5.4. The "Mode Justification" field of the proposal should be used to justify the preferred mode and eventual alternatives to be considered.

All proposers must include time for all **overheads** (telescope + instrument) in their proposals (see the Overheads webpage). For both La Silla and Paranal instruments, the p2 demo web interface can be used to prepare mock observations and estimate the total execution time including overheads.

Proposing teams must avoid **duplications** of observations that are equivalent to those already in the Archive (see the Science Archive Facility webpage) or planned by the Guaranteed Time Observations (GTO) proposals (see GTO Plans for Period 117). The GTO description and policies are presented in the GTO policy webpage and in Sect. 5.2.4.

The definitions of the **observing conditions** can be found on the Observing Conditions webpage, which shows the probability of the combined sky transparency and turbulence categories being realised throughout the year at Paranal. Incorrect constraints on observing conditions cannot become more stringent after the final submission of a proposal and are binding for the observations.

Any **time constraints** must be clearly provided in the run definition to ensure that they can be considered during scheduling. Mentioning time-critical aspects only in the text is not sufficient.

Seeing at Paranal is better than 0.5″ about 10% of the time, while episodes of precipitable water vapour smaller than 0.5 mm are encountered six to seven nights per year (Kerber et al. 2014, MNRAS 439, 247), mostly during the Chilean winter. ESO encourages the unique science that can be carried out under these **excellent conditions**. The best chances to access such excellent observing condition is for proposals with targets distributed over a range of Right Ascensions (RA).

ESO encourages programmes that can effectively exploit the **worst observing conditions** on the VLT. More specifically, ESO invites proposals that request turbulence category 85% or 100%, thin/thick clouds and have no moon constraints and no time constraints. A webpage on Any-weather proposals provides more information. Any-weather proposals must present a coherent science case for the scientific evaluation. In the interest of maximising scheduling flexibility, proposing teams are encouraged to consult the Forecast of telescope pressure webpage.

The **evaluation of proposals** is done through the Distributed Peer Review (DPR) or the Observing Programmes Committee (OPC) and the Expert Panels, covering a broad range of scientific areas. ESO is actively working on improving the assignment of proposals to reviewers, based on their expertise (through the scientific keywords). Proposing teams should make sure that proposals are self-contained and that the scientific context of their proposals and its relevance for general astrophysics are emphasised in a way that can be understood by their peers regardless of their expertise. Proposals are evaluated based on their scientific merit and the importance of their contribution to the advancement of scientific knowledge. If the proposal is a resubmission of an old proposal then the feedback by the reviewers should be addressed in this new submission. If significant problems are identified in the review feedback provided by the OPC or DPR, the PI may contact the ESO Operations Helpdesk to highlight the possible issues. ESO will then review the cases individually to determine the appropriate course of action.

ESO is employing the **DPR** for roughly half of the submitted proposals. The DPR is assigned to Normal, Monitoring and GTO proposals requesting less than a maximum value (see Sect. 2.1). By submitting a proposal, the PI (or dPI) formally accepts to possibly serve as a reviewer in case their proposal is assigned to the DPR. Proposals that include observations with a Visitor instrument or joint observations with other facilities (e.g., joint VLT/I–ALMA) are reviewed by the Expert Panels, regardless of the time request. The DPR rules and guidelines must be followed. Failure to abide by these rules may lead to the proposal's disqualification. More details and background information on DPR at ESO can be found in Patat et al. (2019, The Messenger, 177, 3), Jerabkova et al. (2023, The Messenger, 190, 63) and Jerabkova et al. (2025, The Messenger, 194, 33). The PI can delegate the reviewer's role to one of the proposal co-Is when specifying the co-I list. Reviewing more than 20 proposals within the DPR scheme is strongly discouraged. Delegation of DPR reviews to one of the co-Is is strongly recommended for PIs that wish to submit more than 2 proposals eligible for the DPR.

Please read the online documentation and **User Manual** (including the Calibration Plan), accessible from the Instruments webpage, for detailed information on the instruments not covered in this document.

For **VLTI** users needing assistance to prepare their VLTI proposals, the community-supported VLTI Expertise Centres – distributed throughout Europe – can offer in-depth support. They also offer support for observation preparation, advanced data reduction and analysis. Further guidelines for VLTI programmes can be found in Sect. 4.6.

For any other requests for support or questions regarding preparation and submission of proposals to ESO telescopes, please submit your enquiries through the ESO Operations Helpdesk.

Useful information about Phase 1 can be accessed from the Important Links webpage (e.g., telescope pressure and definitions of observing constraints). Any updates after the release of this Call for Proposals will be listed on the Late Breaking News webpage.

2 Information for this Period

ESO invites proposals for observations at ESO telescopes in Period 117 (1 May 2026 – 30 April 2027). The ESO proposal submission deadline is:

> 23 September 2025,
> 12:00 noon Central European Summer Time.

It is the PI's responsibility to resolve any problems related to submitting their proposal well before the deadline. ESO cannot provide support beyond one hour before the deadline. Congestion in the proposal submission system may occur, especially in the last hour before the submission deadline. PIs and Co-Is will receive a confirmation e-mail upon submission. No changes to submitted proposals can be accepted after the deadline.

The Instruments offered in Period 117 are reported below. Acronyms are defined in Appendix B.

Paranal			
Telescope	**Focus**		
	Nasmyth A	**Cassegrain**	**Nasmyth B**
UT1		FORS2	KMOS
UT2	FLAMES		UVES
UT3	SPHERE	X-SHOOTER	CRIRES
UT4 - AOF	HAWK-I	ERIS	MUSE
ICCF	ESPRESSO		
VLTI/UT	GRAVITY MATISSE Visitor Focus		
VLTI/AT	GRAVITY MATISSE PIONIER Visitor Focus		

Table 1: Paranal instruments offered in Period 117.

La Silla		
Telescope	**Focus**	
	Nasmyth B	**Fibre fed from Cassegrain**
3.6m	n/a	HARPS NIRPS
NTT	EFOSC2 ULTRACAM Visitor Focus	n/a

Table 2: La Silla instruments offered in Period 117.

The main functionalities of these instruments can be found in the Instruments Summary Table.

The important recent changes regarding La Silla and Paranal instrumentation and facilities are presented in the Recent Changes in Instrumentation webpage, and reported for convenience in Sect. 2.2 for the VLT, Sect. 2.3 for VLTI, and Sect. 2.4 for La Silla instruments. Please also consult the News section for the individual Instruments (e.g., the MUSE News).

2.1 General

- With this Period, ESO transitions to a Yearly Cycle (YC), with the Call for Proposals being released once per year (see the related Science Announcement and Patat et al. 2024, The Messenger, 193, 45). The duration of P117 is 12 months (1 May 2026 – 30 April 2027).
- The programmes offered this Period are Normal Programmes, including the joint VLT/I–ALMA and VLT/I–XMM proposals, Large Programme, Monitoring Programmes, GTO, GTO Large, Calibration Programmes and Director's Discretionary Time Programmes, and their basic properties are reported in Table 3. The definitions of programme types, in particular their minimum/maximum time request and duration, have been adjusted with the advent of the YC. More information of programme types can be found in Sect. 5.2.
- With the start of the YC, Normal Programmes, GTO Programmes, and Monitoring Programmes can request up to 200h. Large Programmes and GTO Large Programmes cover up to two Periods (two years) and must request a minimum of 200 hours of observing time.
- Due to the change to the YC and the uncertainty about the number of submitted proposals, in P117 the limit on the time request to qualify for the DPR will be set after the proposal submission deadline. Therefore, the review assignment (DPR or panels) will not be known to the PI at proposal submission time. By submitting a proposal, the PI (or dPI) formally accepts to possibly serve as a reviewer in case their proposal is assigned to the DPR.
- Joint VLT/I–ALMA proposals are offered this Period (see Sect. 5.3.4).
- Joint VLT/I–XMM proposals are offered this Period (see Sect. 5.3.5).
- GTO will be carried out in this Period with ERIS (UT4), GRAVITY, GRAVITY+ and MATISSE (UTs and ATs), NIRPS (3.6-metre) and ULTRACAM (see Sect. 5.2.4).
- The scientific keywords have been updated with the addition of 21 new keywords in total, in the fields of exoplanets (11), stars (5), galaxies (3), and cosmology (2). The updated scientific keywords are listed in Appendix A.
- To address the increased duty cycle resulting from the change to the YC, a Fast Track Channel (FTC) with staggered deadlines throughout the year will be introduced during P117. The change

follows the recommendations of the Time Allocation Working Group (Patat et al. 2018, The Messenger, 173, 11). The FTC will be offered initially one or two times per Period and will be announced via ESO Science Newsletters. The FTC will be available only for VLT/I Normal Programmes requesting less than indicatively 20 hours of observation time. The exact limit on the time request will be specified in the FTC call. There are no scientific constraints on proposals to be eligible to the FTC (e.g., no need to justify the urgency of proposals), except that no resubmissions will be allowed. A proposal submitted to the FTC will be systematically rejected if it is found to be a resubmission of a proposal previously rejected in the previous YC call. GTO Programmes will generally not be offered in the FTCs, unless a new instrument or mode covered by a GTO contract becomes available after the deadline of the regular YC. Further restrictions on, for example, RA, turbulence category, transparency, moon phase, and available instruments/modes may be imposed based on the status of the VLT/I and its observing queues. A maximum fraction of the total VLT/I observing time will be reserved to the FTC. This fraction is indicatively 15% and will be specified in the FTC call. FTC proposals will be evaluated with the DPR system. Approved FTC programmes will be scheduled for observations within a few months from the proposal submissions.

- One or two FTCs for P117 are foreseen to be possibly released in mid- and late 2026, indicatively. The exact timing of the first FTCs depends on the successful implementation of the FTC system, currently ongoing, and will be communicated at a later time through the Science Newsletters.

Programme types offered this Period			
Programme type	**Time request (h)**	**N. of Periods**	**Page limit**[a]
Normal	< 200	1	2
Large	≥ 200	2	$3 + 2^b$
Monitoring	< 200	2	2
GTO	< 200	1	2
GTO Large	≥ 200	2	$3 + 2^b$
Calibration		1	2
DDT[c]		1	2

Table 3: Programme types offered in Period 117 and their basic properties. [a] Page limit of the Scientific Rationale. [b] The last 2 pages are reserved for Figures. [c] DDTs can be submitted throughout the Period.

2.2 VLT

- The KMOS Public Surveys will span over 3 years (with a total of 285 nights), starting in late P116. This will increase pressure on UT1, due to the reduced amount of open time available.
- VISIR will be decommissioned in P117 (Q2 2026) and is no longer offered.
- The HAWK-I calibration plan does no longer include the observation of 2MASS touchstone fields for photometric calibration. If a photometric accuracy $<$ 0.05-0.1 mag is required, users must request special calibrations in their proposals and include this time to the total time request.
- Astronomers are encouraged to use the MUSE Wide Field Mode with Adaptive Optics because it is more efficient and suitable than non-AO for most science cases. Until now, a large fraction of MUSE observations were taken in Wide Field Mode without Adaptive Optics (NOAO) for a variety of reasons, mostly unfounded. While the NOAO mode is essential for programmes gathering information over the 582 - 597 nm wavelength, which is otherwise blocked by the Na Notch filter, the benefits of AO are many-fold. Not only AO operations at the telescope have become routine, but more importantly, image quality of AO supported cubes is consistently improved under all observing conditions - including poor seeing, light cirrus, or high wind speeds - and the performance remains stable during long exposure times. In case no Natural Guide Star is available, the so-called Tip-Tilt free mode uses the telescope field stabilisation still providing a significant improvement on image quality. That is, AO benefits are available without the need for a tip-tilt star. In addition, the pipeline processes AO and non-AO data equally well. The AO improvement on effective seeing is illustrated in Fig. 1. Because of the benefits discussed above, shorter exposure times are required in AO mode to reach equivalent image quality. In P116 the demand for MUSE WFM AO mode has increased (see Fig. 2) and more future programmes are likely to benefit from using AO in WFM.
- In the past periods, the number of programmes that qualified for any-weather queues was fairly large for UT2, UT3 and UT4.
- ESPRESSO 4-UT mode observations can be carried out in VM and DVM only.
- Although the ESPRESSO LFC has been unstable in previous periods, it is expected to be available in P117. Successful proposing teams requesting to use the LFC for wavelength calibration will need to notify USD during Phase 2 to check its availability.
- No VLT visitor focus is available in this Period.
- The Rapid Response Mode (RRM, see Sect. 5.3.1) is offered for specific instrument modes or settings, listed in Table 4.

2.3 VLTI

- The Gravity+ AO (GPAO) system offers Laser Guide Star (LGS) modes for the first time in P117. NGS-VIS and LGS-VIS modes are offered for GRAVITY and MATISSE, while LGS/NGS-IR is offered for GRAVITY only. The LGS limiting magnitudes for LGS-VIS and LGS-IR are $G_{RP} = 17$ mag and $K = 10$ mag, respectively. The NGS limiting magnitudes for Coudé guiding remain at $G_{RP} = 12.5$ mag in the visible and $K = 10$ mag in the infrared. The p2 tool for GRAVITY now includes an ObsPrep tab that supports the selection of a suitable Coudé guide star. Please consult the instrument and VLTI user manuals and web pages for the instrument-specific information and updated sensitivities.
- It is no longer required that VLTI runs have only one observing setup. VLTI observing setups with different baseline configurations or different instrument modes (e.g., MATISSE standalone and MATISSE GRA4MAT) should now be requested with multiple observing setups in the same run. An exception are runs with time-critical aspects or different observing conditions that need to indicate these constraints per run.

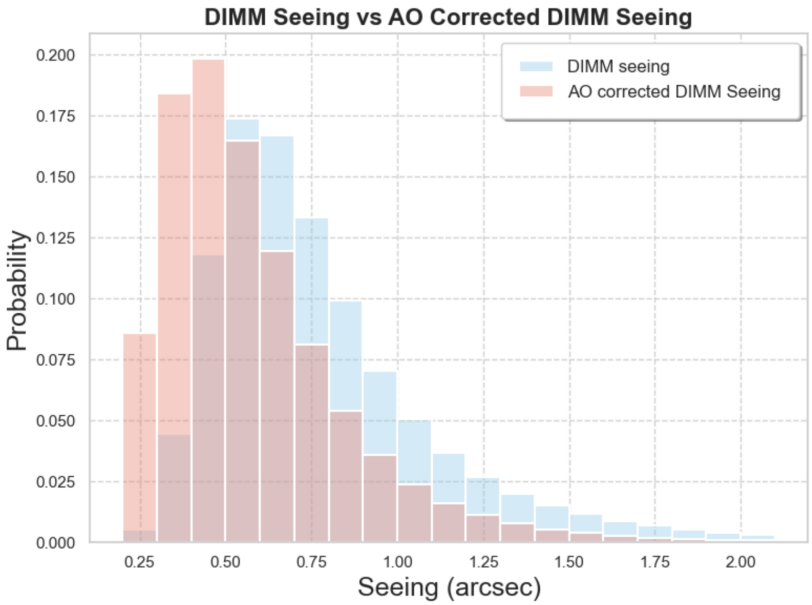

Figure 1: Probability distribution of effective seeing measured at the DIMM (blue) and after MUSE AO correction (red). The AO mode profile peaks at lower seeing and has a reduced right-hand tail.

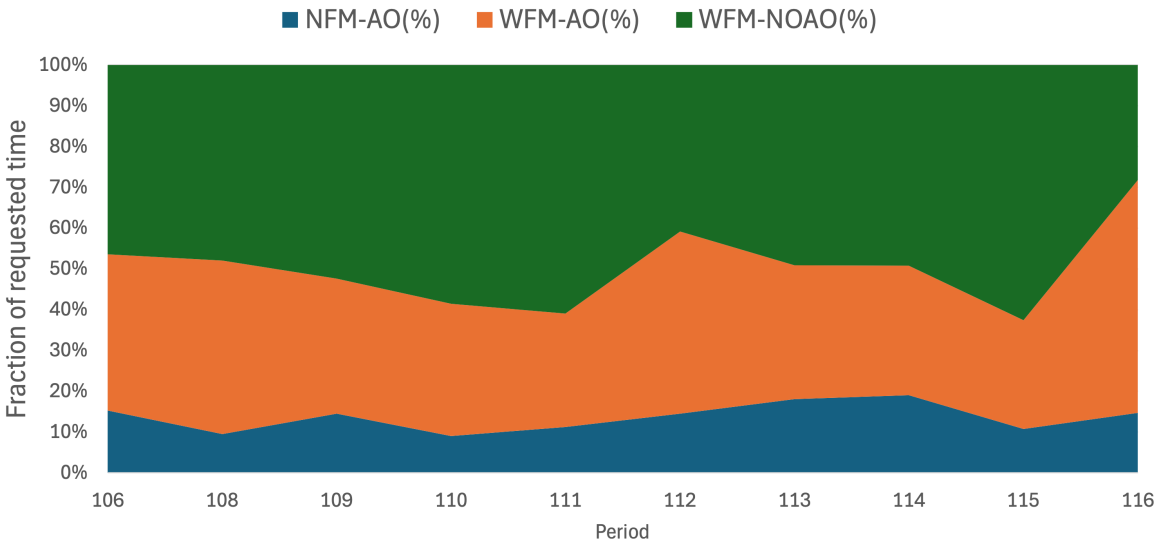

Figure 2: The fraction of requested time for MUSE observations in different modes: Narrow Field Mode (NFM-AO), Wide Field Mode with AO (WFM-AO), and Wide Field Mode with no AO (WFM-NOAO). In P116 the demand for MUSE AO modes has reached a peak above 70% of the MUSE requested time.

- ASGARD. A fraction of the observing time with the VLTI visitor instrument ASGARD is open to the community starting from P117, pending successful review of the observing proposals by the OPC/DPR. A preliminary coordination with the ASGARD consortium is mandatory. Interested users can contact the consortium through the ASGARD website. Proposing teams requesting the use of ASGARD should select the VLTIVISITOR instrument in p1.
- One VLTI Visitor focus is available in this Period, in addition to the use of ASGARD.

2.4 La Silla

- EFOSC2 is offered in P117, with plans to be decommissioned after SOXS enters stable operations (Sect. 3.1). Proposing teams should be aware that the programmes that have been allocated time

Rapid-Response Mode (RRM)	
Instrument	**Modes/settings**
FORS2	Broad-band imaging, longslit spectroscopic, imaging polarimetric and spectro-polarimetric modes
UVES	Standard wavelength settings
XSHOOTER	All modes
SPHERE	ZIMPOL imaging and polarimetry modes, IRDIS classical imaging mode, and IRDIFS in imaging mode
HAWK-I	All filters; brightness restrictions on objects in the field (see User Manual)
MUSE	All modes

Table 4: Instruments, modes and settings offered for RRM in Period 117.

in P117 on EFOSC2 will be executed on a best effort basis, depending on the availability of SOXS. In particular, the time allocated on EFOSC2 programmes may be shortened.

- HARPS and NIRPS can be operated simultaneously to collect spectra from 380 nm to 1919 nm (with a gap from 689 nm to 974 nm) in a single acquisition. Users requesting to use both NIRPS and HARPS should select the NIRPS instrument in P1 and declare the intention of using both instruments in the Special Remarks field of the proposal.
- The NIR LFC for NIRPS is now functional (data analysis is on-going) and will be available during P117 on a best effort basis.
- ULTRACAM: This PI instrument is offered to the ESO community for observations at the NTT in P117. Operation of this instrument requires the presence of the instrument team. ULTRACAM programmes will preferentially be scheduled contiguously on periods of several nights. For questions on the instrument and observation strategies, users shall contact the instrument PI, Prof. Vik Dhillon (vik.dhillon@sheffield.ac.uk), at least two weeks prior to submitting their proposal. The ULTRACAM consortium is committed to support the PIs and observers from the ESO community that have been awarded telescope time with ULTRACAM. The ULTRACAM team will support the execution of the observations and the subsequent data reduction to allow the scientific exploitation of the data obtained with ULTRACAM.
- The visitor focus of the NTT continues to be available during Period 117, see Sect. 2.6.

2.5 Restrictions to Large and Monitoring Programmes

- CRIRES: Previous restrictions on modes allowed in Monitoring Programmes have been removed.
- ESPRESSO: Previous restrictions on the use of the 4-UT mode for Large Programmes have been removed.
- Monitoring Programmes for ESPRESSO are only offered in 1-UT mode.
- The cooling pump of the PIONIER detector is currently not performing, and the temperature sensor of the detector is not functional. This situation may affect the performance of the instrument. While a spare for the pump has been identified, the temperature sensor problem remains. A direct consequence of the instrument status is that no Monitoring Programs are offered for this Period.
- EFOSC2: In P117 Large Programmes are offered for one Period only.

- EFOSC2 is not offered for Monitoring Programmes, given its decommissioning plan (see Sect. 3.1).
- HARPS and NIRPS are not offered for Monitoring Programmes, given the operational constraints.
- ULTRACAM, HIRISE, and other visitor instruments are not offered for Monitoring and Large Programmes.

2.6 Visitor instruments

Visitor instruments can be mounted at ESO telescopes to permit innovative observations by teams with their stand-alone instruments or to test new instrumental concepts for the development of new facility instruments. The requirements for visitor instruments are substantially reduced compared to the requirements for a fully integrated facility instruments.

The VLT visitor focus is not offered in Period 117. One visitor focus is available in the VLTI laboratory for interferometric instruments. Proposing teams requesting the use of a VLTI visitor instrument should select the VLTIVISITOR instrument in p1. In Period 117 visitor instruments can be mounted at the NTT telescope. The Cassegrain visitor focus of the 3.6-m telescope will no longer be offered, as long as NIRPS/HARPS are operating.

The links below provide some guidelines and technical information for proposing a visitor instrument:

- For the NTT: Visitor Focus
- For the VLTI: Visitor Focus and Applications for Use of the VLTI Visitor Focus

3 Expected changes

3.1 Instrumentation

The expected future changes regarding La Silla and Paranal instrumentation and facilities are presented in the Expected Changes in Instrumentation webpage, and included here for convenience. Please also consult the webpages on VLT/I & La Silla Instrumentation Development.

- MOONS. The Multi-Object Optical and Near-infrared Spectrograph (MOONS) reached Provisional Acceptance Europe (PAE) in December 2024. Due to technical issues the shipping is delayed to November 2025 and commissioning on UT1 Nasmyth A is planned from June to September 2026. The instrument is planned to be fully available in P118, and possibly offered earlier, in P117 (Q4 2026), through the Fast Track Channel.
- FORS2 & FORS-Up. The FORS Upgrade project (FORS-Up) is an upgrade of FORS1. FORS2 will stay in nominal operation until FORS-Up is available. The Multi-Object Spectroscopy Unit (MXU) and Polarisation mode will not be available during commissioning of the upgraded FORS instrument, currently planned for Q1 or Q2 2027. The full operational capability of FORS-Up, encompassing all current modes, is expected to be achieved during P118.
- ERIS. The ability to perform blind offset acquisitions for AO guide stars with G_{RP} <18 mag and G_{BP} >19 mag (Gaia magnitudes) by using an offset star with $G_{BP} < 19$ mag within 2′ is being implemented and will hopefully be offered in a future period. If successful, this will increase sky coverage of the LGS mode, especially at high galactic latitudes.
- The demand on UT4 has remained high in recent years. ESO has taken several actions to alleviate the situation, including the second generation deformable secondary mirror Phase A study (see Science Announcement).
- 4MOST, The 4-metre Multi-Object Spectroscopic Telescope (4MOST) instrument's Provisional Acceptance Europe 2 (PAE 2, on the VISTA telescope) was reached in June 2025. The VISTA telescope has been upgraded to facilitate the installation of 4MOST. Science operations are expected to start in Q1 2026 at the earliest.

- VISTA will not be offered in a regular Call for Proposals in the near future, because the spectroscopic Public Surveys for 4MOST have already been scheduled.
- SOXS. The Son of X-Shooter (SOXS) has reached PAE and has started commissioning at the NTT. The instrument is expected to be fully available in Period 118, and possibly earlier, pending successful commissioning of all subsystems. The documents defining the SOXS Science Policy and GTO target protection criteria, presented at the "SOXS day" in July 2025, will be made available to the community in due time. In regular operations, SOXS will serve the GTO Programmes and community-driven programmes in roughly equal parts.
- EFOSC2 will be decommissioned when SOXS will successfully commission all subsystems and will reach stable operations.

4 Practical guidelines

This section presents some practical guidelines, in addition to what is presented in Sect.1, and including additional support for less experienced users.

Observing proposals must contain a title, abstract, scientific keywords, definition of the observing runs (including desired instruments and observing conditions, e.g., seeing in V band at zenith or turbulence parameter, atmospheric transparency, lunar illumination), a description of the time already awarded to the proposed project, any special remarks (optional), a scientific rationale (scientific description), a target list, a justification for the requested lunar phase and constraints, time, telescope, observing mode, any special calibration, a description of any duplication with ESO Science Archive and with GTO targets justification, and a summary of the proposed observations. The "Scientific Rationale" contains two sections: "A) Scientific Rationale" and "B) Immediate Objective". In addition, the following non-anonymised information must be included in the proposals: a list of co-investigators, the background and expertise of the proposing team, their previous usage of ESO telescopes, and their recent publications.

All Phase 1 proposals must be prepared and submitted using the web-based proposal submission tool p1. Further details can be found in the p1 introduction and p1 help webpages. The p1demo website can be used for tests, to get familiar with the tool. Proposing teams are also encouraged to consult tutorials and p1-related videos from the Users Workshops.

Proposers should select the relevant programme type when creating their proposal in p1. Programme types are defined in Sect. 5.2.

A PDF file containing the "Scientific Rationale" of the proposal must be uploaded by the proposers. Templates and instructions are available at the p1 help webpages or directly in p1. The formatting of the templates should be used, without modifications, including figure captions.

A calculation of the observing time needed to accomplish the scientific goals must be carried out and summarised in the proposal. Further justification of the observing constraints can be provided in the "Lunar Phase and Constraints Justification" field. It is therefore important that proposers consult technical documentation or instrument experts regarding the instrument capabilities and sensitivities. The overheads webpage provides a summary table of all the overheads that should be accounted for. A more detailed computation can be obtained by running tests on the p2demo version of the web-based tool p2 for the preparation of La Silla and Paranal observations (Phase 2). Instrument-specific performance and observing conditions are described in the respective User Manuals (available for all Instruments) and briefly summarised on the Observing Conditions webpage.

Links to useful proposal preparation software tools (e.g., the ESO Exposure Time Calculators (ETCs), the Ephemerides and Position, Airmass, Extinction Calculators, weather information, Archives and Catalogues, the Skycat tool) can be found in the Observing Tools and Services webpage. Information on standard stars and sky characteristics, as well as additional tools, are available on the Observer's Tools and Generic Standard Stars webpage.

In case you need practical assistance to prepare your proposal, please contact the ESO Operations Helpdesk. This platform can be used for all questions related to the proposal submission (how to prepare your proposal, clarification of error messages, etc.), as well as questions concerning technical requirements of the planned observations, instrument performance, science operations policies, etc.

4.1 Proposal preparation checklist

Below is a basic checklist for the preparation of your proposal:

- ❑ Start with a compelling scientific idea. Define scientific goals, immediate objectives (i.e., what observations are needed to reach the scientific goals) and target sample.
- ❑ Understand what instruments/modes are offered in the Call for Proposals.
- ❑ Understand the technical capabilities of the instrument(s) you need to reach your scientific objectives. For this, refer to the Instruments User Manuals and webpages.
- ❑ Create/update your ESO User Portal account.
- ❑ Create a proposal draft in p1.
- ❑ Include your co-Is in p1, giving them access to the proposal, and coordinate with them throughout the proposal preparation and submission. All co-Is must have up-to-date User Portal account.
- ❑ Upload the (updated) scientific rationale.
- ❑ Work out the exposure times needed (see Sect. 4.3), visibility of the targets, observing constraints, and, optionally, time constraints.
- ❑ Complete all fields of the p1 proposal, including title and abstract, scientific keywords, targets, runs, association of targets to runs, observations details, remarks and justifications, information on previously awarded and future time requests, previous usage of ESO facilities, and applicants' publications. Incomplete fields or errors to be solved are highlighted in red in the proposal summary.
- ❑ Submit your proposal. Resubmissions (un-submitting and resubmitting a proposal) are allowed before the deadline, overwriting any previous submissions.

Submitted proposals can be updated (un-submitted and resubmitted) until the deadline.

This list should be used for general guidance only. Proposing teams are responsible for the full preparation of their proposals. Further guidance on how to prepare competitive proposals is given in Knapen et al. 2025, NatAs, 9, 951. Additional practical information is offered in the following sections.

4.2 Designing the observing runs

An observing programme, as described in a single proposal, may consist of one or more observing runs.

Investigators are requested to specify the observing mode of each run: Service Mode (SM), Visitor Mode (VM), or Designated Visitor Mode (DVM), depending on their availability. The observing modes are described in Sect. 5.4. Proposers should request Service Mode for observations that benefit from the short-term scheduling flexibility offered by this mode. Visitor Mode runs are encouraged for complex observations and/or for those users who have never visited Paranal, even if the observations are straightforward. Users should make use of the "Mode Justification" field of the proposal to justify their preferred mode or why an alternative mode should also be considered. Changes from the requested observing mode may be implemented by ESO due to scheduling and/or scientific priority reasons. If a certain instrument mode is offered exclusively in either Service Mode or Visitor Mode, this overrides these scheduling considerations.

An individual run can contain observations of multiple targets, as well as observations at multiple epochs (e.g., using the 'repeat' option). Multiple runs should only be requested for observations with different instruments and/or for different observing modes (SM, VM, DVM), run type (normal, ToO, pre-imaging), and/or for differing observing conditions (e.g., turbulence category, sky transparency, etc). In particular, Service Mode runs should not be split according to time-critical windows, nor used to group targets according to their Right Ascensions or magnitudes. Proposers should split Visitor Mode observations at different epochs (e.g., due to different target RAs) into separate runs. Proposals may request a mix of Visitor/Service Mode observations if they are split into separate runs. The definition of a single run

differs for Service Mode and Visitor Mode observations; further guidelines are available in Sect. 5.4.1 and 5.4.2, respectively.

All observing constraints must be specified for all instruments, including the precipitable water vapour (PWV). Time (scheduling) constraints must be specified correctly in the proposal. Missing or inaccurately specified constraints are unlikely to be considered by the scheduler. Observing constraints and targets are binding. The related policies are presented in Sect. 5.6.

Known targets must be specified in the proposal. If targets are not known at the time of submission, but can be provided by more than one week before the execution, this should be described in the Special Remarks (see policies in Sect. 5.7.1). Target of Opportunity runs (see Sect. 5.3.1) must be requested if a reaction time within one week is required to observe the new targets.

Proposers are particularly encouraged to simplify any time constraints as much as possible to increase the chances of their observations being scheduled. Guidelines on the handling of time-critical OBs are available at the Time-critical OB execution policy page.

4.3 Exposure Time Calculators (ETCs)

Proposing teams are recommended to use the latest version of the ETCs available in the ETC webpage. Proposers are requested to describe all details necessary to reproduce their ETC calculations in the "Time Justification" field of their proposals, to justify the time and observing constraints requested. Failing to do so may result in the Observatory concluding that the programme is not feasible. The version number of the ETC should be included as well.

The sky background values used in the ETCs generally reflect actual conditions on Paranal. The ETCs require the turbulence categories or the image quality (IQ) to properly estimate the observing time necessary to complete the programme. Proposers should ensure that the observing conditions specified in the proposal are consistent with those used in the ETC, including the requested sky transparency and lunar phase. Non-photometric sky transparency can be simulated by adding 0.1/0.2 mag to the object magnitude for CLEAR/THIN–CIRRUS conditions, respectively.

4.4 Preparation of the observations

Observations at all ESO telescopes are carried out by executing Observation Blocks (OBs) provided by the users. La Silla and Paranal observers must use the Phase 2 preparation tool (p2) for the creation of OBs. Complete information on the preparation of OBs in Phase 2 can be found on the Phase 2 Observing Preparation webpage.

Proposing teams with runs allocated in Service Mode will be required to specify their observing programme by submitting a Phase 2 package in advance to ESO. This package consists of OBs, including finding charts, a Readme form and, if applicable, ephemerides. Please consult the Service Mode Guidelines and OB Rules and Recommendations webpages.

All Paranal Visitor and designated Visitor Mode users are asked to prepare their observations using the web-based tool p2. Please consult the VM Guidelines webpage. For general definitions related to Phase 2 preparation, visitors should read the Phase 2 workflow webpage before arriving at Paranal.

Additional support for VLTI users can be found in Sect. 4.6.

Due to the reduced operations at La Silla, OBs scheduled in DVM must be submitted using the p2ls web interface by the Phase 2 deadline. Please note that observations will be executed by a telescope operator and contact with the PI is therefore very limited. Additional support for La Silla users can be found in Sect. 4.7.

4.5 ToO programme execution

Target of Opportunity (ToO) observations are defined in Sect. 5.3.1. Successful proposers of ToO runs will have to prepare OBs for their observations well ahead of the beginning of an observing Period. If the targets are unknown, ToO OBs will have to be "dummy" OBs with default values for target coordinates,

integration times etc. At the time of occurrence of the predicted event, the PI of the programme (or one of their delegates) will be required to copy one of the template OBs and update it with all the missing relevant information (target, exposure time, filters, Finding Charts, etc.) and trigger ToO observations. See the ToO and RRM procedures webpages for further details.

4.6 Specific information for VLTI programmes

Proposers of VLTI observations with PIONIER should check the feasibility of their proposed observations with the visibility calculator, VisCalc, available from the ETC webpage. Visibility calculations for GRAVITY and MATISSE are included in the dedicated GRAVITY and MATISSE ETCs. At Phase 2, users are also encouraged to select a suitable calibrator star for their planned observations using the CalVin tool, which is also available from the above link.

VLTI observation type: For each observing run, one or more observation types that best describe the proposed observations must be specified:

- snapshot: standalone concatenations without further links to other observations in terms of time links or filling the uv plane;
- time series: time series of concatenations that are repeated once or more often over the period, as a guideline, due to the need to cycle through different AT configurations, possible cadences are either a few days in a row, or not more than 2-3 times per Period per AT configuration;
- imaging: a set of concatenations with different baseline configurations to fill the uv plane for the purpose of image reconstruction; in this case, special care is taken at execution to uniformly fill the uv plane; it is highly recommended to request imaging in SM; imaging in VM should have a strong science case justification;
- astrometry: GRAVITY dual-feed observations with the purpose of extracting astrometric information.

Third-party tools may be used under the responsibility of the proposers, while ESO cannot offer support nor check their accuracy.

Naming convention for AT configurations: AT configurations are requested by generic names ("Small", "Medium", "Large" and "Extended"). The standard configurations are described in more detail in the VLTI Configurations Overview webpage.

Imaging slots (ISLs) for VLTI-AT: ISLs are periods of about 2 weeks typically centred around new moon in February, May, August and November of every year, during which VLTI-AT goes through all configurations in pure SM, primarily executing "imaging" proposals. ISLs are also used for other VLTI observation types ("snapshot", "time-series", "astrometry") SM programmes according to their priorities. PIs of GTO Programmes, Large Programmes and programmes requiring Visitor Mode are requested to adhere to this restriction for their planning. The exact time location of ISLs will be indicated in the public schedule at the start of Phase 2.

VLTI preparatory imaging: VLTI preparatoring imaging can help identify the target at the VLTI and confirm its magnitude, as well as exclude possibly extended, crowded, or embedded targets. Any required VLTI preparatory imaging is to be executed with a normal imaging instrument of sufficient angular resolution and in the same band as the intended VLTI instrument, not with the VLTI instrument itself. A separate run for VLTI preparatory imaging must be specified in the proposal.

4.7 Support to La Silla users

HARPS, NIRPS, EFOSC2, ULTRACAM, and Visitor Instruments in La Silla are offered in VM and DVM only, with restrictions on the latter. Runs with a duration of less than three nights may only be scheduled in DVM. In certain cases, exceptions may be made for highly-ranked La Silla runs that require DVM observations. Proposals for long runs are strongly encouraged on the La Silla telescopes. Splitting of runs into sub-runs that have durations of less than a half-night should be avoided. Runs

requesting observations that take up less than one night may be rejected on operational grounds. Runs of Visitor Instruments are normally scheduled in blocks of at least three nights and they may be rejected at scheduling if this condition cannot be met.

Users who wish to participate to the HARPS/NIRPS time-sharing coordination for exoplanets search programmes requiring nominal sampling and standard instrumental configuration shall contact Prof. François Bouchy (francois.bouchy@unige.ch) at least two weeks prior to submitting their proposal. Proposals approved to participate to the HARPS/NIRPS time-sharing must add '3.6m time-share' tag from the Tags section of the P1.

Because approved Director's Discretionary Time Programmes (DDTs, defined in Sect. 5.2.6) at La Silla telescopes are carried out in Visitor Mode override, La Silla users should be aware that their time allocation may be reduced to allow approved DDTs to be executed. There will be no compensation in case of La Silla VM override.

4.8 Monitoring in Service Mode

Monitoring a target in Service Mode in a particular Period is carried out on a best-effort basis only. A monitoring sequence may be interrupted by long periods of unsuitable weather conditions, Visitor Mode scheduling or instrument unavailability. All the time needed to monitor targets in one observing Period should be included in one single run, even if multiple targets/fields are required.

4.9 Pre-imaging

If pre-imaging for observations with a spectroscopic mask (e.g., with FORS2) is required, a separate pre-imaging run must be specified in the proposal, to be executed in Service Mode. Failure to do so will result in the deduction of the time necessary for the pre-imaging from the allocation to the main part of the proposal. See the FORS2 webpage for more details.

4.10 Calibration plans

ESO provides a standard set of calibrations for all Paranal instruments, the so-called calibration plan. The primary purpose of the calibration plan is to provide instrument and sky calibrations in order to reduce the science observations. In addition, the calibration data are used to monitor instrument performance via a daily Quality Control process, executed by Paranal Science Operations. The calibration plans are provided in the respective instrument user manuals and cover both day-time (instrument internal) and on-sky calibrations.

Service Mode runs: Given ESO's calibration plan, most Service Mode proposals do not need to request time for calibrations. The calibration plan combined with ESO's Quality Control process guarantees that those data can be securely calibrated. Programs requiring night-time calibrations that would allow to go beyond the precision delivered by the calibration plan should request the required additional calibration time in the proposal.

Visitor Mode runs: The execution of night-time calibrations are the visiting astronomer's responsibility. The visitor should be aware that 30 minutes per night are reserved for the Observatory to comply with the standard calibration plan. These calibrations ensure a baseline calibration accuracy for the benefit of the ESO Science Archive Facility.

4.11 Data reduction software

In collaboration with the instrument consortia, ESO maintains data reduction pipelines for most of the VLT/I instrument modes. The ESO pipelines, including download links and pipeline user manuals, can be found on the VLT/I pipelines webpage. The same ESO pipelines are deployed on Paranal and used to process data for the Quality Control process. Information about Paranal data processing, Quality Control and instrument performance monitoring is provided on the Quality Control webpages.

5 Definitions and policies

The Call for Proposals follows the ESO Optical/Infrared Telescopes Science Operations Policies document. Some of these policies are summarised in this section, along with more detailed definitions.

5.1 Proposing team

In each submitted proposal, one single person, namely the Principal Investigator (PI), is the primary responsible, and the PI may delegate certain privileges to a Delegated Principal Investigator (dPI). Both the PI and dPI can submit, retract, and/or delete a proposal, although the ultimate responsibility for the content of the proposal lies with the PI. The PI also acts as the official contact between ESO and the proposers for all later correspondence (Phase 2 information, data distribution, etc.). By submitting a proposal, the PI takes full responsibility for its contents, including the names of CoIs, and PI, dPI (if applicable), and their collaborators agree to follow the ESO policies and regulations, including the conditions specified in the present Call for Proposals.

PIs and Co-Is identify themselves uniquely in Phase 1 proposals by their User Portal credentials. Each individual is allowed to have only one account in the User Portal database; multiple accounts must not be created. Failure to comply with this restriction may lead to the rejection by ESO of the corresponding proposals.

5.2 Programme types

Programme types are described below and summarised in Table 3.

5.2.1 Normal Programmes

Normal Programmes are limited to a time request of less than 200 hours.

5.2.2 Large Programmes

An ESO Large Programme is defined by the following:

- A programme requiring a minimum of 200 hours of ESO telescope time.
- A programme that has the potential to lead to a major advance or breakthrough in the field of study, has strong scientific justification and legacy value, and a plan for a quick and comprehensive effort of data reduction and analysis by a dedicated team.
- Large Programmes can span either one or two consecutive Periods.
- All ToO run types (see Sect. 5.3.1) can be submitted as part of Large Programmes.

ESO strives to execute Large Programmes over shorter periods of time. The community should submit Large Programmes that do not extend over a number of Periods larger than that set by their scientific requirements.

During the Period of execution of a Large Programme, and upon its completion, the PI is expected to report regularly to the OPC on the programme's progress. They may also be asked to outline the progress and/or outcome of the programme at ESO Large Programmes and Surveys workshops (e.g., 2015 Workshop).

PIs of successful proposals for Large Programmes (including GTO) are required to provide all data products (processed images and spectra, processed integral fields spectrograph data cubes, catalogues) for ingestion and publication into the ESO archive. More information on the science data products is available on the ESO Science Data Products Standard document. Proposals that waive proprietary rights are encouraged. PIs of Large Programmes are asked to carefully complete the Data Product

Delivery Plan of the proposal providing detailed information on the data quality assessment and data reduction. In case of instruments supported by the availability of ESO Data Streams, the proposers should detail the additional steps applied to the data products for their Large Programme, in addition to the calibration/reduction levels applied to the ESO processed science data. They are also required to include the planning for the publication of data products (both in terms of content and timeline), which must be finalised within two years of the completion of the data acquisition for the programme. In the case of instruments supported by ESO Data Streams, the proposers must provide the timeline for ingestion and publication of their higher-level reduced products in the ESO science archive. Large Programme proposals must include a precise timeline for the publication of data products in order to comply with ESO's policies. Such data publication is intended to be done through the ESO archive: any availability of data products from other project-specific web pages, or refereed publications e.g., CDS, is not compliant with the ESO science policies.

Publication of data products in the ESO science archive ensures the storage, dissemination and usage of the Large Programme data conjointly with the entire ESO archive science content. Furthermore, the minting of the DOI associated with any data collections enables higher traceability of the science data products, citation and usage. Guidelines for the submission of these data products, including a description of the required metadata and formats, can be found on the Phase 3 webpages.

5.2.3 Monitoring Programmes

Monitoring Programme (MP) enable users to request a limited amount of time to monitor targets (or classes of targets) over more than one Period and are defined by the following criteria:

- requiring less than 200 hours of ESO telescope time.
- requesting two consecutive Periods.

Both Service Mode and Visitor Mode observations are allowed. For Service Mode runs, the time request for each Period should be contained within a single run (per instrument and per constraint set) to enable observations within time-linked scheduling containers.

All ToO run types (see Sect. 5.3.1) can be submitted as part of Monitoring Programmes.

Monitoring Programmes will be evaluated in the same way as Normal Programmes but must be amongst the highest-ranked programmes in order to be scheduled.

The instrument restrictions for Monitoring Programmes are listed in Sect. 2.5.

5.2.4 Guaranteed Time Observations (GTO) Programmes

Guaranteed Time Observations (GTO) arise from contractual obligations of ESO vis–à–vis the external consortia who build ESO instruments and are described in the GTO Policy page.

GTO teams can submit proposals for Normal (GTO Programmes) and Large Programmes (GTO Large Programmes), and are subject to the same restrictions and requirements of Normal and Large Programmes, respectively. GTO teams should specify the appropriate GTO contract keyword in the p1 proposal preparation tool.

GTO runs must be conducted in Visitor Mode. The only exceptions are those explicitly stated in the contractual agreement between ESO and the corresponding external consortium. However, ESO may exceptionally transfer some GTO runs from Visitor Mode to Service Mode for operational reasons, such as the availability of certain VLTI baselines or instruments. Should some GTO be transferred from Visitor Mode to Service Mode, a penalty of 20% of the observing time applies. Some GTO Programmes require ToO runs, if this option is explicitly mentioned in the GTO contract.

GTO teams are requested to submit a target list ahead of every Call for Proposals so that their targets can be protected against duplicated observations with the same instrument set-up. Target protection for GTO Large Programmes can span up to two Periods. The list of GTO protected targets are published in the GTO Programmes webpage. Each Period GTO teams are required to provide the complete lists of

the targets of the GTO Programmes that they proposed for or that will be executed in that Period. The protection applies also to targets specified by the GTO Consortia after the proposal submission deadline, provided that place-holder entries were provided in the target protection lists.

The nominal proprietary period of GTO Large Programmes remains with a maximum of one year starting as soon as the data have been ingested into the ESO Archive. Exceptions to this rule must be authorised by the Director General, and must be requested before the proposal is submitted.

All GTO proposals will be evaluated and ranked together with Normal and Large Programme proposals in order to provide feedback to the GTO teams on the scientific standing of their GTO Programmes. In exceptional cases, poorly ranked GTO proposals may not be scheduled. GTO policies are summarised in the ESO Optical/Infrared Telescopes Science Operations Policies document.

The following table provides a detailed description of the current commitment to GTO consortia.

GTO Contract	Telescope	Instrument	First Period	Last Period(1)	Total entitlement (nights)	Remaining time (nights)(2)	Time in P117 (nights)(3)
ERIS-consortium	UT4	ERIS	111	118	195.0	77.5	38.7
GRAVITY-consortium-AT	VLTI-AT	GRAVITY	97	117	132.1	1.3	1.3
GRAVITY+(4)	VLTI-UT	GRAVITY+	114	119	69.3	49.9	16.6
MATISSE-consortium-UT(4)	VLTI-UT	MATISSE	103	117	37.5	2.1	2.1
MATISSE-consortium-AT	VLTI-AT	MATISSE	103	119	173.0	27.7	9.2
NIRPS-consortium	3.6m	NIRPS/HARPS	111	118	725.0	274.3	137.2
ULTRACAM-consortium(5)	NTT	ULTRACAM					37.0

(1) The period numbering refers to the new yearly-based cycles.

(2) At the start of ESO Period 117. Corrected for the losses in P105.

(3) Average forecast: (remaining time)/(remaining periods).

(4) Nights with all 4 UTs.

(5) This is part of an agreement between ESO and the ULTRACAM Consortium, lasting until March 31st, 2027. The entitlement is agreed on a cycle-by-cycle basis and it includes the compensation for the support provided to the community.

NOTE: The total entitlement may include approved compensations for technical losses and possible contractual modifications. For P117 the accounting is indicative. Possible losses in P115 and P116 are not accounted for.

5.2.5 Calibration Programmes

ESO operates many complex instruments with many possible configurations and observing modes. Although the Observatory executes a rigorous calibration plan for each instrument, ESO does not have the resources to fully calibrate all potential capabilities of all instruments. On the other hand, the astronomical community has the opportunity to perform calibrations for certain uncalibrated or poorly calibrated modes, or to develop specialised software for certain calibration and data reduction tasks. Calibration Programmes allow users to complement the existing calibration of ESO instruments and to fill any existing gaps in the calibration coverage. Up to 3% of the available observing time may be made available for Calibration Programmes.

Regular workshops are also held to bring together instrument scientists and astronomers to discuss their experiences and identify challenges to continuously improve the calibration of ESO's instruments, such as the 2017 ESO Calibration workshop.

Proposers should clearly state in the "Scientific Rationale" what are the limitations of the existing calibration plan and the expected improvement that can result from the proposed observations. Moreover, the proposal should emphasise the relevance and the overall scientific gain of the calibration techniques and products resulting from these observations.

Calibration Programmes are reviewed by ESO with regards to their technical and operational feasibility and presented to the OPC for approval.

Successful proposers will be required to deliver documentation, data products and software to ESO to support future observing programmes. The procedure to be followed is described on the Phase 3 webpages. The raw calibration data, as well as the advanced calibration products that are obtained as part of Calibration Programmes are non-proprietary and made available to the entire community through the ESO archive, and the respective instrument webpages. The PIs of Calibration Programmes are required to deliver to ESO the resulting Advanced Data Products within one year of the completion of the corresponding observations. Scientific publications that make use of the data or results of Calibration

Programmes will have to make reference to the corresponding proposals.

5.2.6 Director's Discretionary Time (DDT) Programmes

The description and policies of Director's Discretionary Time (DDT) Programmes can be found on the DDT Policy webpage.

The DDT definition below is valid for the first part of P117 and will be revisited with the introduction of the first Fast Track Channel.

Up to 5% of the available observing time may be used for DDT proposals in the current Period. These programmes are generally of short duration ($<$ 5 hours), though a longer time request may be granted if justified by a strong science case. Only DDT proposals belonging to one of the following categories will be considered:

- proposals of ToO nature requiring the immediate observation of a sudden and unexpected astronomical event;
- proposals requesting observations on a highly competitive scientific topic;
- proposals asking for follow-up observations of a programme recently conducted from ground-based and/or space facilities, where a quick implementation should provide break-through results;
- proposals of a somewhat risky nature requesting a small amount of observing time to test the feasibility of a programme.

DDT proposals may be submitted at any time. They must be prepared using the p1 proposal submission tool. Approved DDT proposals are carried out in Service Mode on Paranal or in Visitor Mode override on La Silla.

DDT proposals are reviewed by a DDT committee, which issues recommendations to the Director General, or their delegate. Urgent requests must be clearly identified in the Special Remarks field of the proposal. Very few non-time-critical DDT proposals are foreseen to be approved so proposers should provide a clear justification why the programme should be considered for DDT allocation and why it was not submitted through the regular cycle. In the absence of such a justification, the proposal will not be considered for DDT allocation, and the proposers will be encouraged to resubmit their proposals in the next regular cycle. As a general rule, proposals originally submitted in the regular cycle and that were not allocated time should not be submitted as DDT proposals.

5.3 Run types and other proposal properties

Run types are summarised in Table 5.

5.3.1 Target of Opportunity (ToO)

The content of this section is reported on the ToO policy webpage.

ESO recognises two categories of Targets of Opportunity:

1. Unpredictable ToOs are those concerning unpredictable astronomical events that require immediate observations. The occurrence of such events cannot be anticipated on a sufficient timeframe to allow them to be the subject of a proposal prepared by the regular proposal submission deadline. They qualify for application to DDT proposals (Sect. 5.2.6).
2. Predictable ToOs are those concerning predictable events in a generic sense only. These are typically known transient phenomena and follow-up or coordinated observations of targets of special interest, triggered by the proposing team.

Run types	Properties
Normal	General purpose
RRM	Automated Rapid Response Mode system within 4 hours from trigger
ToO-Hard	Execution as soon as possible or at most within 48 hours
ToO-Soft	Scheduled for execution within 7 days
Pre-imaging	Pre-imaging for observations with a spectroscopic mask. FORS2 only.

Table 5: Basic properties of different run types. Target of Opportunity runs are described in Sect. 5.3.1.

Target of Opportunity observations are requested strictly as ToO runs pertaining to any programme type. ToO runs are defined as runs for which the target and/or observation epoch are not known at proposal submission, typically by more than one week before the observation needs to be executed.

Three different types of ToO runs are defined:

- Rapid Response Mode (RRM), for observations to be triggered via the automated Rapid Response Mode system within 4 hours after an event;
- Hard ToO runs, for manually triggered observations that must be carried out as soon as possible or at most within 48 hours of receipt of the trigger by the Observatory, or that involve a strict time constraint (i.e., that must be executed during a specific night);
- Soft ToO runs, for manually triggered observations, which can be scheduled for execution within a time window of 7 days.

Targets that are unknown at the time of the proposal submission but can be observed more than one week after they have been identified can be observed as part of normal (non-ToO) runs.

ToO runs will be evaluated in the same way as normal (non-ToO) runs. However, they must be amongst the highest-ranked runs in order to be scheduled.

RRM observations have overriding priority over other observations, unless the latter are strictly time-critical. This is assessed by ESO before the start of the Period (and at the approval of DDT Programmes during the Period), based on information provided in the proposal. Visitor Mode runs that have time-critical observations that cannot be moved to other nights (typically planetary transit where only one window is available during the scheduling Period or simultaneous observations with another facility) are protected against RRM triggers. The list of protected runs is available on the RRM-protected runs webpage. RRM triggers will be accepted during Service Mode and Visitor Mode runs. An RRM trigger cannot interrupt an already on-going RRM observation.

The observing strategy at execution must be the same as what was requested and approved in the proposal, and the triggers may not exceed the allocated time. The observations will be conducted in Service Mode and, in exceptional cases, ongoing programmes may be interrupted.

Eventual follow-up observations of a ToO target should use a normal (non-ToO) run, possibly with specific time constraints, if the observations take place more than one week after the reception of the first trigger for that object. Follow-up runs are allocated time only if the respective ToO is also approved.

RRM runs must be exclusively used for triggering the RRM system. Follow-up observations of a target observed using the RRM system must be requested through the activation of a hard or soft ToO trigger, or a non-ToO run, depending on the classification described above.

ToO (and RRM) runs are not carried over to a following Period. In case the programme includes a normal run for ToO follow-up observations, such runs can be exceptionally carried over to enable the planned follow-up, provided that the related ToO is triggered within the originally allocated period.

The RRM is offered for specific instrument modes (see Sect. 2.2 and Table 4). Users interested in using RRM for modes not currently offered for RRM should contact ESO through the ESO Operations Helpdesk at least two weeks before the proposal submission deadline.

ToO trigger and execution

For all approved ToO runs, generic Observation Blocks (OBs) must be submitted at Phase 2 using the p2 tool. These OBs are updated by the PI once the target is known. Information on OB preparation can be found in the ToO and RRM procedures webpages.

ToO observations will be executed after the proposing team will trigger them. OBs for hard and soft ToO runs will be scheduled for execution following the acceptance by ESO of an activation trigger.

Upon receiving an RRM alert indicating the coordinates of the target and the associated Observation Block (OB), any ongoing integration will automatically be terminated and the RRM OB will be executed, unless the procedure is aborted by the operator due to safety concerns. Following an RRM trigger the telescope will be at the target's location within about 6 minutes, not including any change of focus, and depending on the instrument and the target position.

RRM triggers can require a change of focus. If the RRM trigger requires a change of focus, the telescope is expected to point at the location of the target within about 12 minutes. The time required for the change-of-focus is not counted as part of the RRM runs.

For practical guidelines on ToO runs execution please see Sect. 4.5 and the ToO and RRM procedures webpages.

5.3.2 Non-Member State proposals

A proposal is designated as Non-Member State proposal if more than 2/3 of the applicants are from institutes not affiliated with an ESO Member State, the Host State, or with a party with which ESO has established a partnership which enables access to specific ESO facilities on an equal footing with ESO Member States, independently of the affiliation of the Principal Investigator. In cases where an ESO Member State proposal is rated equally during the proposal evaluation process with a Non-Member State proposal seeking to do similar science, preference is given to the ESO Member State proposal.

5.3.3 Host State proposals

Proposals whose PI is affiliated with an institute of the Host State (Chile) are counted as Host State proposals, independently of the fraction of non-member state CoIs.

Time allocation of qualifying Host State proposals is regulated by the "Interpretative, Supplementary and Amending Agreement" to the 1963 Convention between the Government of Chile and ESO (dated 18 April 1995). This states that "Chilean scientists who present meritorious projects shall have the right to obtain up to 10% of the observing time of ESO telescopes". For VLT and VLTI, at least half of this 10% shall be dedicated to projects of Chilean astronomers in collaboration with astronomers from ESO Member States.

Following the recommendations of the OPC, the ESO Director General grants observing time based on

the OPC ranking and the availability of telescope time.

5.3.4 Joint VLT/I–ALMA proposals

Joint VLT/I–ALMA proposals are proposals to observe primarily with ESO VLT/I that also request ALMA time. The joint VLT/I–ALMA proposals webpage reports their full description and policies.

- Joint proposals requesting ALMA time will comply with both ESO and ALMA Policies.
- ESO may allocate up to 50 hours of ALMA time per yearly Cycle on each of the ALMA Arrays (i.e., 12m, 7m, and TP).
- Joint proposals submitted to ESO cannot request ALMA time for VLBI or phased array observing modes.
- ALMA Large Programmes are not allowed when joint proposals are submitted to a partner observatory, and therefore the amount of ALMA time requested must be less than that of the ALMA Large Program threshold (see the ALMA Proposer's Guide for a definition of a Large Program).
- Only Normal VLT/I–ALMA joint proposals are offered at ESO.
- When submitting a VLT/I–ALMA joint proposal through ESO, the proposing team must include in their "Scientific Rationale" a strong justification for the need of both facilities in order to reach the proposed science goals.
- Joint VLT/I–ALMA proposal will only be approved or rejected for both facilities. Partial approvals will not be considered, as the concept is that the science goals of a joint programme can only be achieved acquiring data with both facilities.

Joint proposals will be allowed to request array configurations offered between the time the project will enter the ALMA queue (i.e., upon project preparation after proposal approval as indicated below) until the end of the ongoing ALMA Cycle, as well as those offered in the upcoming ALMA Cycle.

PIs are responsible for summarising the Technical Specification for the requested ALMA observations when submitting their proposal via the ESO p1 interface. PIs will provide the Technical Specification by uploading a PDF document produced from an ad-hoc template. The template is available to the user directly from the p1 interface (see the fac-simile template). The Technical Specification will be used for initial technical assessment. As indicated in the ALMA Proposer's Guide, an incomplete Technical Specification may lead to the rejection of the proposal on technical grounds.

The Joint ALMA Observatory will evaluate the ALMA projects based on the technical feasibility of the requested observations, the scheduling feasibility considering the requested array configuration and time constraints. It is the proposers' responsibility to provide a full and comprehensive scientific and technical justification for the requested observing time at both facilities. Both the ESO and ALMA observatories will perform feasibility checks of the approved proposals. They each reserve the right to reject any observation determined to be unfeasible for any reason. The rejection by one Observatory could jeopardise the entire proposed science programme.

PIs of Joint VLT/I–ALMA proposals should add the 'Joint VLT/I–ALMA' tag from the Tags section of the p1 proposal preparation tool.

5.3.5 Joint VLT/I–XMM proposals

ESO may award up to 290ksec ($\sim$ 80 hours) of XMM-Newton observing time. Similarly, the XMM-Newton project may award up to 80 hours of ESO VLT observing time. Proposals that request different amounts of observing time on each facility should be submitted to the Observatory for which the greatest amount of time is required. This applies to the duration of an XMM-Newton cycle, which normally extends over a year.

Proposers wishing to make use of this opportunity will have to submit a single proposal in response to either the XMM-Newton or the ESO Call for Proposals: proposals for the same programme submitted

to both observatories will be rejected. A proposal to ESO will be reviewed exclusively through the ESO proposal evaluation process. A proposal submitted to the XMM-Newton Observatory will be reviewed exclusively by the XMM-Newton OTAC. The primary criterion for the award of observing time is that both VLT and XMM-Newton data are required to meet the scientific objectives of the proposal. The project does not need to require simultaneous XMM-Newton and ESO telescope observations.

Target of Opportunity runs and "Triggered Observations" are possible in this cooperative programme. However, proposals requiring simultaneous observation with both facilities, with a reaction time of less than two working days from an unknown triggering date, will not be considered. It is the responsibility of the PI to inform both observatories immediately if the trigger criterion is fulfilled. It is the proposers' responsibility to provide a full and comprehensive scientific and technical justification for the requested observing time on both facilities.

Both the ESO and XMM-Newton observatories will perform feasibility checks of the approved proposals. They each reserve the right to reject any observation determined to be unfeasible for any reason. The rejection by one Observatory could jeopardise the entire proposed science programme.

Apart from the above the general policies and procedures currently in force for the final selection of the proposals, the allocation of observing time, the execution of the observations, and the data rights remain unchanged for both ESO and the XMM-Newton Observatory.

PIs of Joint VLT/I–XMM proposals should add the 'Joint VLT/I–XMM' tag from the Tags section of the p1 proposal preparation tool.

5.4 Observing modes

ESO's observing modes are Service Mode (SM), Visitor Mode (VM), and Designated Visitor Mode (DVM). A brief description of each mode is reported in this section, and their advantages are discussed in Rejkuba et al. 2018, The Messenger, 173, 2.

As part of the Phase 1 proposal, investigators are requested to specify which observing mode they desire. While every effort will be made to follow the proposed observing mode, ESO does reserve the right to allocate time in an observing mode that is different from the one requested. Note especially the restrictions of available modes detailed in Sect. 2 and 4.

The telescopes and instruments will be operated by Observatory staff only.

5.4.1 Service Mode (SM)

Service Mode (SM) observations are performed by the Observatory throughout the Period, when the observing conditions are suitable and without coordination with the proposing team at the execution time. Service Mode is offered on all Paranal observing facilities. It is also well suited for programmes that require the best observing conditions (which occur at unpredictable intervals) or for any weather programmes that have targets spread over a large range of RAs. More information on the Service Mode philosophy are discussed in the General Philosophy of Service Mode Observations webpage.

Please consult the Phase 2 webpages for the latest information on SM policies. The Phase 1 constraints are binding (see Sect. 5.6).

The SM OB rules webpage reports the full rules and advices for OB preparation, and a few that are related to the proposal preparation are mentioned below.

- All overheads must be included in the OB Total Execution Time. Guidelines are provided in the Overheads webpage.
- Some observing strategies cannot be supported in Service Mode; in particular, real-time decisions about the sequencing of OBs, complex OB sequencing, other than time-link containers, or decisions based on the outcome of previously executed OBs.
- OBs are normally executed non-contiguously. It is not possible to reduce acquisition overheads by requiring the sequential execution of OBs with the same target field. Exceptions to this are

made for OBs within concatenation scheduling containers; also see the programmes with linked time requirements item below.

- Multi-mode, multi-configuration OBs (e.g., combining imaging and spectroscopy) are normally not permitted in Service Mode.
- OB execution times (and OB concatenations) must be below 1 hour. In exceptional cases a Phase 2 Waiver Request for longer OBs can be submitted and considered for approval. In such cases, ESO will consider the OB successfully executed if the constraints were fulfilled during the first hour of execution, even if conditions degrade after that time. Proposers are especially encouraged to plan for OBs substantially shorter than one hour if the execution conditions are particularly demanding.
- Time constraints must be indicated in the proposals and in the OBs.

Once the OBs are fully prepared, they are reviewed by ESO to ensure full optimisation and compliance, and ultimately be accepted. Accepted OBs are executed by ESO staff based on their OPC-recommended priority (see Sect. 5.6.1 and the Programme Priority Groups webpage) and a proper match between the requested and the actual observing conditions.

Fulfillment of Phase 2 constraints.
ESO will consider an OB as successfully executed if all the conditions in the constraint set are fulfilled. OBs executed under conditions marginally outside constraints by no more than 10% of the specified value will not be scheduled for re-execution.

Programmes with linked time requirements.
SM is also intended to support programmes with special timing requirements. However, proposers planning such programmes should keep in mind that telescopes scheduling requirements include also VLTI-UT observations, technical activities and Visitor Mode runs, in addition to SM. Furthermore observing conditions cannot be predicted when a time-series is started. This means that timing sequences that are long or complex, timing links that are very restrictive, and time-series for observations requiring excellent observing conditions, are unlikely to be successfully completed. Proposers for programmes requiring time links are strongly encouraged to consider how they may simplify their timing sequences as much as possible, as this will minimise the risk that the observations become unfeasible. They should also read the Time-critical OB execution policy webpage. If a given OB cannot be executed within its intended observability window, it will be removed from the observing queue and will not be attempted again. If it was part of a time-linked series, then the time-series observation will continue with the next OB when appropriate. ESO will not restart a sequence of linked observations if the pre-specified timing constraints cannot be fulfilled. More details on how the p2 tool can be used to time-link, group or concatenate various OBs, are described on the Phase 2 preparation webpages.

VLTI imaging programmes.
PIs of VLTI imaging programmes can request to repeat all observations of a time-critical imaging campaign if it was not finished within the requested time, under the following conditions: (i) the run is A-ranked (see definition in Sect. 5.6.1); (ii) the time interval during which the image needs to be completed (Imaging Time) is specified in the proposal; (iii) the Imaging Time is not shorter than one month, and (iv) the guarantee concerns not more than the ESO-recommended number of uv-points for imaging of 6 concatenations per configuration for -75 deg $<$ dec $<$ -30 deg and 4 concatenations per configuration for dec $>$ -30 deg. Possible additional points are taken on a best-effort basis, and expire outside the Imaging Time interval.

5.4.2 Visitor Mode (VM)

In Visitor Mode, the astronomer is present at the Observatory during the observations. Each approved VM run will be allocated specific calendar nights. One of the programme investigators will travel to the Observatory and execute the observations.

Visitor Mode enables direct interaction with the Observatory staff and flexible planning of the observations that includes the possibility to adjust the observing programme to the prevailing conditions. The Service Mode rules, such as 1h OB length, are not applicable. This can lead to lower overheads and more efficient use of allocated time. Visitor Mode is also conducive to training young astronomers in observing. Visitor

Mode may be necessary in case of complex observing strategies and/or modes not supported in Service mode. The latter should be specified in the "Observing Mode" box in p1 to ensure that the technical requirements for the mode selection are correctly accounted for during the telescope scheduling. The Observing Mode justification can also be expressed as a preference or point to the possibility of young astronomers' training.

Typical completion probability for Visitor Mode runs is very similar to that of the A-rank class Service mode observing runs due to 10-15% chance of complete weather loss in Visitor Mode. Therefore, on Paranal telescopes that also support Service mode, the Visitor Mode runs are scheduled when their scientific ranking is equivalent to that of A-rank Service mode runs on the same telescope. Lower-ranked Visitor Mode runs are considered for conversion to Service mode B- or C-rank (if suitable as filler) class proposals in case there are no technical reasons to prevent that.

Data acquisition for all ESO instruments will be done by executing Observation Blocks (OBs), i.e., observing sequences specified by the astronomer based on templates provided by ESO. VM investigators are strongly encouraged to prepare their OBs before arriving on the site using the p2 web tool for OB preparation. At the telescope, OBs can be created or further modified in real-time (except for the FORS2 MXU mode). VM investigators will be required to arrive on Paranal before the start of their observing run as follows: 24 hours for UVES, and 48 hours for all other instruments. On La Silla, visiting astronomers shall arrive 1 to 2 days before the start of the observations, and may leave the site up to 1 to 2 days after the end of their observing run according to the transportation schedule (see the La Silla Science Operations webpage). Observers should note that twilight during Visitor Mode runs is used by the Observatory and will be given to observers on a best-effort basis.

Programmes must be executed as specified and approved at Phase 1. The proposer should prepare a backup/alternative programme to be executed in place of the primary programme if the observing conditions are not ideal. The original science case and goals should be followed. Such backup programmes must be approved by ESO at least two weeks in advance of the observing run. Requests sent on shorter notice, in particular within less than 48 hours from the start of the run, may not be processed on time. In those cases, the corresponding data will not be accessible from the ESO Science Archive Facility until the request is approved. The corresponding requests must be submitted via the Change Request tab in p2. If the conditions prevent the Visiting Astronomer's primary programme to be executed the telescope will be used for the execution of Service Mode observations, if no backup programme is in place and Service Mode observations are possible on that telescope. Raw data are available for download shortly after acquisition.

VM proposers must include overheads for all science exposures. Guidelines are provided in the Overheads webpage.

Rarely the Observatory may interrupt Visitor Mode observations to allow Service Mode observations. In general, the Observatory does not compensate for weather or technical losses of observing time. However, compensation may be granted by the Director of the Observatory under exceptional circumstances.

VM observations may be interrupted by time-critical DDT (Sect. 5.2.6) or ToO runs (Sect. 5.3.1). As far as possible, the execution of observations for such programmes will be confined to scheduled Service Mode nights. Under exceptional circumstances, the Director of the Observatory may decide to interrupt VM runs to allow ToO observations. ToO runs in the Rapid Response Mode (RRM) may also interrupt VM observations. Policies regarding compensation in case of interrupted observations and other possible issues related to ToO observations can be found on the ToO policy webpage.

Additional information for users assigned Visitor Mode time can be found on the Visitor Mode Phase 2 Guidelines webpage.

5.4.3 Designated Visitor Mode (DVM)

Designated VM observations on Paranal are scheduled on specific dates/slots as if they were regular Visitor Mode runs, but they are executed by an ESO staff member, in close contact (e.g., via phone or video link) with the PI, or someone the PI designates to serve as the liaison with the Observatory.

ESO reserves the right to allocate telescope time in DVM instead of regular VM for any runs with a duration smaller than one night and a justified need for VM.

More details on DVM, including all requirements concerning the preparation of DVM runs are provided on the Paranal Science Operations webpages. As for normal Visitor Mode runs, users can request additional science targets, instrument setup changes and backup targets. However, such requests must be submitted at least two weeks in advance of the run, in line with the submission of the overall material to the Observatory. Otherwise, such requests will not be processed.

Due to the reduced operations at La Silla, the Designated Visitor Mode is generally restricted to runs requesting less than three contiguous nights. Nevertheless, runs requesting observations that take up less than one night may be rejected on operational grounds. OBs scheduled in DVM must be submitted using the p2ls tool for OB preparation by the Phase 2 deadline, following instructions given at the time of the webletters release. Observations will be executed by a telescope operator and contact with the PI is therefore very limited.

5.4.4 Nominal duration of the observing nights

While time requests are done in hours, VM and DVM allocations will be converted to fractions of nights, at 0.1n precision, considering the actual twilight-to-twilight night. This applies also to the conversion of allocated VM hours to nights for GTO entitlements. For SM GTO allocations the conversion factor is the average twilight-to-twilight night length (9.2 hours on Paranal, 9.1 hours for La Silla).

5.5 Policy regarding offered/available observing configurations

Users will be promptly informed if it becomes impossible to support some currently offered instrument mode, and may be asked to switch from Service Mode to Visitor Mode or vice versa. In general, runs requiring non-standard configurations will only be accepted in Visitor Mode.

The use of non-standard instrumental modes or configurations requires prior approval by ESO, as indicated in the instrument manuals. This approval must be obtained before submitting the Phase 1 proposal. Corresponding requests, including a brief justification, must be submitted through the ESO Operations Helpdesk at least two weeks before the proposal submission deadline. Failure to follow this rule may lead to the rejection of the proposal by ESO for technical reasons. Users who wish to request a new (own) filter to be installed, particularly in the cryogenic instruments (e.g., HAWK-I) must approach ESO via the ESO Helpdesk at least 3 months before submitting a proposal requesting that filter. Failure to follow these guidelines may lead to the rejection of the proposal by ESO for technical reasons.

5.6 Phase 2 Service Mode policy

Observing constraints, targets, and instrument setup requested in Phase 1 proposal are binding (see the webpage on the Agreement between Phase 2 material and Phase 1 request).

To optimise the use of ESO telescopes in Service Mode for a given Period, it is necessary to maintain a proper mix of runs requiring a variety of observing conditions, and with targets spread over the entire range of RAs. For this reason, proposers are requested in their Phase 1 proposal to specify not only the targets with accurate coordinates, but also the required observing conditions (lunar phase, turbulence category, sky transparency). Due to their essential role in determining the long-term scheduling of Service Mode time, the constraints specified at Phase 1 are binding. During Phase 2 preparation, the observing constraints can be relaxed, but cannot become more stringent.

Successful proposers will not be allowed to change the instrument setups, target lists and/or times per target that were requested at Phase 1 in their Phase 2 submissions, unless explicitly authorised by ESO. See Sect. 5.7.1 for more details on how to request waivers for Service Mode runs.

5.6.1 Service Mode run prioritization

The OPC-recommended priority for programme excecution are defined in the Programme Priority Classes webpage and reported below. All programmes allocated observing time in Service Mode are assigned to one of the following priority classes:

- **Rank A**: High Priority: These programmes are considered to have the highest scientific value and are executed first as observing conditions allow. ESO makes every possible effort to complete programmes in this class. This includes the possibility of carrying over programmes in this category to the next Period, in case that their degree of completion at the end of the allocated Period is too low for the fulfillment of the scientific goals, and if they are not time-critical. Large Programmes are automatically considered as high priority programmes. Within group A they are ranked higher than Normal Programmes. Target-of-Opportunity (ToO) runs cannot be considered for carryover status. As Monitoring Programmes span multiple Periods for the purposes of monitoring individual targets/fields this removes the necessity for carryover of most runs. Monitoring Programmes are considered for carryover after their last Period for up to one more visibility period. All PIs of programmes in Rank A are informed about one month prior to the next Call for Proposal deadline about the carryover eligibility of their programme.
- **Rank B**: Medium Priority: Programmes in this group have lower scientific priority than Rank A and are executed only when no Rank A programme can be executed. ESO tries to complete all programmes in this class, but incomplete programmes are terminated at the end of the allocated Period. The likelihood that any given Rank B programme is executed decreases as more stringent observing constraints are requested.
- **Rank C**: Low Priority: These programmes have lower scientific priority than those in Ranks A and B but have relaxed constraints (see below), which allows them to be scheduled when the external conditions are not suitable for the execution of any programmes in Ranks A and B. The programmes in Rank C would not have been scheduled if Visitor Mode had been the only observing mode offered by the Observatory. However, the flexibility of Service Mode scheduling allows in this way a scientifically valuable use of the telescope time even under conditions that would be unsuitable for the execution of higher-ranked programmes.

5.7 Observing programme execution

Observations in both Visitor and Service Mode must be executed as described in the Phase 1 proposal, including the instrument modes and specified targets. Departures from Phase 1 specifications and targets will not generally be allowed, unless a sound scientific justification exists, and provided that the change involves neither a significant increase in the pressure factor on oversubscribed regions of the sky nor a scientific conflict with another, already approved, observation.

Observations requiring the use of the Four Laser Guide Star Facility (4LGSF) are subject to the policies described in the VLT Laser Guide Star Facility Policies.

5.7.1 Target and setup changes

Observing constraints, targets, and instrument setup requested in Phase 1 proposal are binding (see Sect. 5.6 and the Agreement between Phase 2 material and Phase 1 request webpage).

Programme Change Requests are petitions to deviate from observations as proposed at Phase 1 (e.g., new or different targets, new instrument, new/different observing modes, etc.). The formulation of the scientific justification and the submission of such petitions is done via p2.

For any other departure from Phase 1 specifications a justification must be provided. For Visitor Mode runs, an email must be sent to paranal@eso.org at least one month before the beginning of the observations for runs scheduled in Visitor Mode. For Service Mode runs, these requests and associated justifications must be submitted via the Waiver option of the Change Request tab in p2 at least one week before the Phase 2 deadline. Instructions are available on the Phase 2 Waiver Requests and Programme Change Requests webpage.

Approved new targets and instrument setups will not be protected against target duplication from other programmes. Exceptions to this general rule will be made for requests issued by GTO Consortia. ESO reserves the right to reject the changes if they are insufficiently justified, conflicting with any other approved programmes, or imply significant changes in the overall distribution of scheduled targets in the sky. Observations of targets for which no authorisation has been obtained are not allowed at the telescope.

Approved new targets and instrument setups will not be protected against target duplication from other programmes. Exceptions to this general rule will be made from requests issued by GTO Consortia.

Teams asking for observations that envision the need for additional or a change of targets, or for adapting their observing strategy after the start of the Period (following, e.g., Gaia data releases), must declare it with a note in the Special Remarks field of the proposal. The note must include the time scale and the expected cadence of the target change requests. In addition, the proposals must provide scientific and technical justifications for such approach in their "Scientific Rationale" and "Time Justification" field. The request will undergo a scientific review by the OPC/Expert Panels or DPR. Proposals that are scientifically highly ranked and can be supported in terms of target list changes and strategy requirements will be considered for scheduling. Targets or instrument setup changes requested after proposal approval are not protected against target duplication from other programmes. Deviations from this rule will only be considered under exceptional circumstances and will be treated in the same way as requests for extensions of the proprietary period.

5.8 Data rights, archiving, data distribution

For both Visitor Mode and Service Mode observations, the ESO Science Archive Facility is the primary source to data obtained with ESO/LPO telescopes. All data obtained with ESO facilities are ESO property, but by default ESO grants a 12-month proprietary period for science and acquisition data to the PI of the programme, which applies to each data file individually. The proprietary period starts as soon as the data are made available to the PI or respective delegates via the archive, i.e., as soon as the data are ingested, which typically happens a few minutes after the observation.

The information contained in the headers of all data files is immediately public. At the end of the proprietary period, the raw data and the abstracts of proposals are made public. In addition, for a selection of instruments (see the ESO Data Streams webpage), also the reduced data are made public. Exceptions to this ESO Data Access Policy, such as an extension of the proprietary period, may be granted in exceptional cases. The corresponding requests have to be justified in detail and submitted to the Director General for approval. Justifications based only on lack of time and/or resources to complete the data analysis will not be considered. Requesting a shorter proprietary period than the nominal 12 months is possible using the "Proprietary Time" pull-down menu when adding or editing observing runs in p1. Raw data from Public Surveys, Calibration Programmes and calibration data are not subject to a proprietary period and become publicly available as soon as they are ingested into the ESO Archive.

5.9 Publication of ESO telescope results

Publications based on observations collected at ESO telescopes must state this in a footnote to the article's title or in the acknowledgments, as outlined on the ESO publications policy webpage. The observing run ID(s) must be clearly identified by their ESO reference number(s).

5.10 Press releases and other communication products

Should you consider that your results are relevant for the wider public or journalists, please consider sending your paper to the Department of Communication (press@eso.org), preferably no later than when the paper is submitted for publication. Further information can be found in this ESO announcement about press releases.

ESO reserves the right to use for press releases any data obtained with ESO telescopes as part of programmes with allocated ESO time.

A Appendix. Scientific keywords

COSMOLOGY

cosmology: circumgalactic medium
cosmology: cosmic background radiation
cosmology: cosmological parameters
cosmology: dark ages, reionization, first stars
cosmology: dark energy
cosmology: dark matter
cosmology: diffuse radiation
cosmology: distance scale
cosmology: early universe
cosmology: gravitational waves
cosmology: inflation
cosmology: large-scale structure of universe
cosmology: lenses
cosmology: miscellaneous
cosmology: observations
cosmology: primordial nucleosynthesis
cosmology: theory

GALAXIES

galaxies: abundances
galaxies: active
galaxies: BL Lacertae objects
galaxies: bulges
galaxies: circumgalactic medium
galaxies: clusters
galaxies: distances and redshifts
galaxies: dust
galaxies: dwarf
galaxies: elliptical and lenticular, cD
galaxies: evolution
galaxies: formation
galaxies: fundamental parameters
galaxies: general
galaxies: halos
galaxies: high-redshift
galaxies: interactions
galaxies: intergalactic medium
galaxies: irregular
galaxies: ISM
galaxies: jets
galaxies: kinematics and dynamics
galaxies: Local Group
galaxies: luminosity function, mass function
galaxies: Magellanic Clouds
galaxies: magnetic fields
galaxies: nuclei
galaxies: peculiar
galaxies: photometry
galaxies: quasars
galaxies: Seyfert
galaxies: spiral
galaxies: star clusters

galaxies: star formation
galaxies: starburst
galaxies: stars clusters: individual
galaxies: statistics
galaxies: stellar content
galaxies: structure

INTERSTELLAR MEDIUM (ISM), NEBULAE

ISM: abundances
ISM: atoms
ISM: bubbles
ISM: clouds
ISM: cosmic rays
ISM: dust, extinction
ISM: evolution
ISM: general
ISM: Herbig-Haro objects
ISM: HII regions
ISM: jets and outflows
ISM: kinematics and dynamics
ISM: lines and bands
ISM: magnetic fields
ISM: molecules
ISM: planetary nebulae
ISM: supernova remnants

PLANETARY SYSTEMS

exoplanets: atmospheres
exoplanets: direct imaging method
exoplanets: gaseous planets
exoplanets: habitability and astrobiology
exoplanets: internal composition
exoplanets: microlensing method
exoplanets: planet system architecture
exoplanets: radial velocity method
exoplanets: star-planet interaction
exoplanets: terrestrial planets
exoplanets: transit method
planet-disk interactions
protoplanetary disks
solar system: comets
solar system: earth
solar system: interplanetary medium
solar system: Kuiper Belt
solar system: meteorites, meteors, meteoroids
solar system: minor planets, asteroids
solar system: moon
solar system: near earth objects
solar system: Oort cloud
solar system: planets and satellites
solar system: zodiacal dust

STARS

stars: abundances
stars: AGB and post-AGB
stars: atmospheres
stars: binaries
stars: black holes
stars: brown dwarfs
stars: chromospheres
stars: circumstellar matter
stars: coronae
stars: distances
stars: early-type
stars: evolution
stars: formation
stars: fundamental parameters
stars: gamma-ray burst
stars: general
stars: globular clusters
stars: gravitational waves
stars: Hertzsprung-Russell diagram
stars: horizontal-branch
stars: interiors
stars: jets
stars: kinematics and dynamics
stars: late-type
stars: low-mass
stars: luminosity function, mass function
stars: magnetars
stars: magnetic field
stars: mass loss
stars: massive stars
stars: neutron
stars: novae, cataclysmic variables
stars: open clusters and associations
stars: oscillations (including pulsations)
stars: Population II
stars: Population III
stars: pre-main sequence
stars: protostars
stars: pulsars
stars: rotation
stars: solar-type
stars: subdwarfs
stars: supergiants
stars: supernovae
stars: variables
stars: white-dwarfs
stars: Wolf-Rayet
stars: X-ray binaries

THE GALAXY

Galaxy: abundances
Galaxy: bulge
Galaxy: center
Galaxy: disk
Galaxy: evolution
Galaxy: formation

Galaxy: fundamental parameters
Galaxy: general
Galaxy: globular clusters: general
Galaxy: globular clusters: individual
Galaxy: halo
Galaxy: kinematics and dynamics
Galaxy: local interstellar matter
Galaxy: nucleus
Galaxy: open clusters and associations
Galaxy: solar neighborhood
Galaxy: stellar content
Galaxy: structure

THE SUN

Sun: abundances
Sun: activity
Sun: atmosphere
Sun: chromosphere
Sun: corona
Sun: coronal mass ejections (CMEs)
Sun: evolution
Sun: faculae, plages
Sun: filaments, prominences
Sun: flares
Sun: fundamental parameters
Sun: general
Sun: granulation
Sun: helioseismology
Sun: heliosphere
Sun: infrared
Sun: magnetic fields
Sun: oscillations
Sun: photosphere
Sun: radio radiation
Sun: rotation
Sun: solar wind
Sun: solar-terrestrial relations
Sun: sunspots
Sun: transition region
Sun: UV radiation
Sun: X-rays, gamma rays

B Appendix. Acronyms

4LGSF	4 Laser Guide Stars Facility
4MOST	4-metre Multi-Object Spectroscopic Telescope
AO	Adaptive Optics
AOF	Adaptive Optics Facility
AT	Auxiliary Telescope for the VLT Interferometer
for the VLT	
	Interferometer
CoI	Co-Investigator
CRIRES	CRyogenic high-resolution IR Échelle Spectrometer
DDT	Director's Discretionary Time
dPI	Delegated Principal Investigator
DOI	Digital Object Identifier
DVM	Designated Visitor Mode
EFOSC2	ESO Faint Object Spectrograph and Camera 2
ERIS	Enhanced Resolution Imager and Spectrograph
ESO	European Southern Observatory
ESPRESSO	Échelle SPectrograph for Rocky Exoplanets and Stable Spectroscopic Observations
ETC	Exposure Time Calculator
FLAMES	Fibre Large Array Multi Element Spectrograph
FORS2	FOcal Reducer/low dispersion Spectrograph 2
FTC	Fast Track Channel
GALACSI	Ground Atmospheric Layer Adaptive Corrector for Spectroscopic Imaging
GRA4MAT	GRAVITY fringe tracker used for MATISSE
GRAVITY	Second generation VLTI instrument in the K band
GPAO	GRAVITY+ Adaptive Optics
GTO	Guaranteed Time Observations
HARPS	High Accuracy Radial velocity Planet Searcher
HAWK-I	High Acuity Wide field K-band Imager
ICCF	Incoherent Combined Coudé Focus
IR	Infrared
IRDIS	InfraRed Dual-Band Imager and Spectrograph
ISL	VLTI imaging slot
KMOS	K-band Multi-Object Spectrograph
LGS	Laser Guide Star
LPO	La Silla Paranal Observatory
LST	Local Sidereal Time
MATISSE	Multi AperTure mid-Infrared SpectroScopic Experiment
MOONS	Multi-Object Optical and Near-infrared Spectrograph for the VLT
MUSE	Multi-Unit Spectroscopic Explorer
MXU	Multi-object spectroscopy with exchangeable masks
NFM	Narrow Field Mode (a mode of MUSE)
NGS	Natural Guide Star
NIRPS	Near Infra-Red Planet Searcher
NOAO	No Adaptive Optics
OB	Observation Block
OPC	Observing Programmes Committee
OPO	Observing Programmes Office
p1	web-based phase 1 proposal preparation tool
p2	web-based phase 2 proposal preparation tool
PI	Principal Investigator
PIONIER	Precision Integrated-Optics Near-infrared Imaging ExpeRiment
POEM	Paranal Observatory Eavesdropping Mode
PWV	Precipitable Water Vapour
RA	Right Ascension

RRM	Rapid Response Mode
SM	Service Mode
SOXS	Son of X-Shooter
SPHERE	Spectro-Polarimetric High-contrast Exoplanet REsearch
ToO	Target of Opportunity
ULTRACAM	High speed camera
USD	User Support Department
UT	Unit Telescope
UT1	Unit Telescope 1 (Antu)
UT2	Unit Telescope 2 (Kueyen)
UT3	Unit Telescope 3 (Melipal)
UT4	Unit Telescope 4 (Yepun)
UV	Ultra Violet
UVES	UV–Visual Échelle Spectrograph
VISIR	VLT Imager and Spectrometer for mid-InfraRed
VISTA	Visible and Infrared Survey Telescope for Astronomy
VLT	Very Large Telescope
VLTI	Very Large Telescope Interferometer
VM	Visitor Mode
WFM	Wide Field Mode (a mode of MUSE)
X-SHOOTER	UV-Visual-NIR medium resolution échelle spectrograph
YC	Yearly Cycle
ZIMPOL	Zurich IMaging POLarimeter

C Appendix. List of Links