Dual-Anonymous Guidelines for e-MERLIN proposal preparation and submission

Based upon the ESO Dual-Anonymous guidance and re-used with permission by e-MERLIN TAG Chairperson. Updates written, verified and agreed by e-MERLIN operations team, TAG Secretary and TAG Chair (September 2023).

Updated April 2025 by e-MERLIN TAG Chair.

Introduction

e-MERLIN has so far used **single-anonymous peer-review** (SA) in its time allocation process. This means that the principal investigator (and more in general the proposing team) does not know who the reviewer/s will be, while the reviewers are provided with information on the team. This usually consists of the applicants' names, affiliations, publications relevant to the subject, previous usages of the given facility and so on. Implicitly and/or explicitly this implies that this information is used to judge the proposal quality and the ability of the team to carry out the proposed project. On the one hand this may be useful to provide the reviewers with more background for evaluating the science case, but on the other it may constitute a source of systematics, averting the focus of the review from the science case to the quality of the proposing team.

As a first step to moving away from SA, the e-MERLIN TAG reviewed proposals in Cycle 16 with the following information redacted:

- removed the principal investigator's (PI) and co-investigators (CoIs) name(s) from the front page of the proposal distributed to the reviewers;
- removed all the affiliations and e-mail addresses;

Despite these actions, the reviewers were in some cases still able to identify the teams, as the proposal text itself provided the information regarding the publication record, previous work in the given field and previous usage of the facility. Once this information is there, it is to be expected that it is used, consciously or unconsciously, possibly diverting the discussion and the evaluation from the science case and introducing systematic effects which are not related to the effective scientific merit of the application. Gender bias is one of them (see Patat 2016 for a statistical study on time allocation at ESO).

This issue is addressed by the **dual-anonymous peer review** (DA). In this paradigm neither the applicants nor the reviewers know each other's identity. DA has been already deployed by some organizations and is considered as the most effective form of peer-review (see for instance Mulligan, Hall & Raphael 2013). DA has been adopted by many widely used facilities, including ESO, HST, and ALMA. A recent study by Johnson & Kirk (2020) has shown that anonymisation can nearly eliminate gender systematics from application processes. Their analysis shows that when the identities of the team were known, about 50% of the discussions include some mention of the Principal Investigator

or the team. And that gives an obvious opportunity for unconscious bias to creep back into the process. In addition, as shown by the outcome of HST Cycle 27, DA has also the potential of levelling the playing field between new and established researchers (Reid 2019, slides #9 and #10).

The problem of systematics affecting minorities can also be addressed by implementing pro-active measures on the Organisation's side, like 1) raising the awareness in the panels, and 2) forcing quotas. However, this creates additional issues. The first is that unconscious bias is so automatic in human beings that it is very difficult to overcome even with intensive training. The second causes a backlash against minorities, because it creates the impression that what is achieved by them is not based on merit but just the result of the forced quotas. As argued by Johnson & Kirk (2020), DA addresses both problems, because it "*eliminates the possibility for bias to occur, rather than trying to overcome it, and because* ***it is difficult to argue that removing names from proposals is giving an unfair advantage to anyone".***

In the DA approach, the applicants still provide all the information about the proposing team, but this is not displayed in the proposal version that is distributed to the reviewers. The information is stored by the organization that facilitates the process and disclosed to the reviewers only after the scientific evaluation and final ranking are completed.

Following the Cycle 16 dry run, **e-MERLIN has decided to move to the DA for Cycle 17.**

To ease the transition for PIs during this process, the TAG will *not reject any proposals outright during cycle 17 or cycle 18 for breaches of this guidance.* However, PIs will be informed of any breaches found in their proposals and will be expected to make any changes for future cycles. From cycle 19 onwards, proposals which breach these guidelines will be subject to potential rejection by the TAG (see Types of anonymisation violations section in this document for more information). These guidelines were put together based on the experience gained at the European Southern Observatory [eso.org].

This document provides guidelines for assisting the applicants in the anonymisation of their proposals.

Guidelines for applicants

This section provides the guidelines the applicants must follow for anonymising their proposals, to help conceal the identity of the team and to ensure a fairer evaluation process. These apply to the entire proposal with a few notable exceptions. The NorthStar tool includes 4 tabs: Applicants, Justification, e-MERLIN Observing Request and Additional Issues. The Additional Issues tab *should not be used* due to issues with NorthStar retaining data. Instead, it has been replaced by a new mandatory file, labelled *Additional Information File* and can be found and uploaded on the Justification tab. The *Additional Information File and the Applicants tab* are the *only* places in which information on the proposing team can be disclosed. **The information in the *Applicants* tab and *Additional Information File* will not be included in the material distributed to the reviewers** during the proposal review phase and will only be accessible to them after the ranking phase is completed. The ***Additional Information File*** should include the following information: Linked proposals, both on other facilities and previous usage of *e*-MERLIN facilities and a current status of those projects, whether the proposal is linked to a PhD thesis (include the PhD student's name and whether they are a co-I on the proposal), a list of relevant publications to this project by the applicants, a section on relevant background and expertise of the proposing team, a data reduction publication plan and finally any additional remarks that do not fit into the above sections. These should all be filled in appropriately.

These are the main criteria the users must comply with:

- Do not include applicant names or affiliations anywhere in the scientific justification. This refers to all anonymous parts of the document, including diagrams, figures, captions, watermarks, etc.
- The same applies to the proposal title, abstract, time justification and the technical justification.
- When citing literature and providing references, <u>especially in the case of self-referencing</u>, third person neutral wording must be used. For instance, the sentence *"as we have demonstrated in Galilei (1610)"* must be rephrased as follows: *"as shown by Galilei (1610)".*
- Future time awarded at other facilities for the same science case (and which has not produced any data yet) must be cited in an impersonal way, and referred to using the "*(private communication)*" expression. For example, the sentence: "*We have obtained 30 orbits of HST time (HST001) for...*" must be replaced by: "*Thirty orbits of HST time were awarded for... (private communication)".*
- Acknowledgments must be avoided, and so must references to possible grant funding (the latter can be listed in the *Additional Information File* on NorthStar).

Citing own work, data and models

One of the main difficulties encountered by the applicants while quoting in an anonymous way their previous work, data, data-reduction tools and/or modelling capabilities, is the fear that, in the lack of a proper and explicit citation, the reviewers would not trust them. Also, applicants may refrain from using the first person (though anonymous) fearing that this would to some extent violate the anonymisation guidelines.

In those cases in which the applicants wish to use the first person forms (e.g. "*As we have shown (private communication)*", "*The data will be processed with our pipeline*", ...), they should keep in mind that:

- The reviewers are instructed not to try to guess the team's identity by explicit searches on the web. This constitutes a violation of the reviewer's guidelines. For the same reason, team identities resulting from active searches by the reviewers, will not be considered as anonymisation violations.
- The reviewers are instructed to trust the statements made by the applicants even in the cases in which, because of the anonymisation, it is not possible for them to check directly in the literature.
- In case of doubts, the reviewers can ask the e-MERLIN operations team to verify the correctness of one or more statements. This will be performed by checking the content of the *Additional Information file* uploaded to NorthStar. It is therefore important that the applicants fill the *Additional Information file* with all the details they believe are necessary to verify the team's qualifications with respect to the proposed observations (expertise, data reduction, analysis, modelling).

Instructions for the specific cases are provided in the next sections.

Proprietary/unpublished work/data/codes

Here follows a summary on how to properly quote proprietary/unpublished work/data from the proposing team. For each case an example of anonymised reference is provided.

- **Published Proprietary models/codes** (published/advertised, developed by the applicants but not publicly accessible)

"C*alculations run with FANTASTIC code (private communication) predict that..."*

- **Unpublished Proprietary models/codes** (developed by the applicants, not published/advertised, not publicly accessible)

"Based on a model we have developed (in preparation) we predict that..."

- **Public data, unpublished results** (data publicly accessible to everybody, no publication)

"*After inspecting MERLIN archival data (programme ID CY12345), we have detected emission lines in...*"

- **Proprietary data, unpublished results** (data accessible only to the proposing team, no publication)

"*From the analysis of an existing X-SHOOTER spectroscopy data set we have selected a sample of suitable candidates...*"

- **Proprietary data, published results** (data accessible only to the proposing team, published)

If the statement refers to results contained in a publication:

"As shown by Author et al (2019), 3C273 is a perfect laboratory for ..."

If the statement refers to new results, not contained in a publication:

"The analysis of existing VLA data has revealed that..."

- **Paper submitted by the proposing team; manuscript not publicly available**

This covers the cases in which the proposing team has submitted a paper to a journal, but has not made it publicly available (e.g., in arXiv), so that it cannot be cited with a reference.

"As shown in a paper submitted by our collaboration (priv. comm.)"

"The expansion velocity is 450 km/s [3]." - "[3] Our collaboration, submitted." or "[3] Submitted (priv. comm.)"

- **Paper submitted by the proposing team; manuscript publicly available**

This covers the case in which the proposing team has submitted a paper to a journal and has made it publicly available (e.g., in arXiv) so that it can be referred to.

"This star is very peculiar [4]" - "[4] Brahe et al. 2023, https://arxiv.org/abs/999.99999"

"As recently shown by Brahe et al. (2023, https://arxiv.org/abs/999.99999)"
All these formulations are sufficiently ambiguous and can be safely used in the text. Of course, you can (and you should) be explicit in the NorthStar *Additional Information file* as this contains non-anonymised sections (e.g. *Publications list*, *previous usage* etc). This will give the reviewers the opportunity to check the correctness of the anonymised statements, once the review is completed, should they believe this is critical for the specific case.

Continuation/follow-up proposals

In many cases a proposal is a continuation or a follow-up of a recently approved project, led by the same team. The data and the results from that proposal (especially in the case of a pilot programme) may play a crucial role for the new submission and hence need to be properly referred to. This is a particularly tricky case, one of those in which reaching 100% anonymity is hard. Depending on the status of the data (proprietary/public) and the results (unpublished/published), the considerations presented in the previous section do apply to this case as well.

The general guideline is that whatever option the applicants decide to use, the identity of the proposing team must remain sufficiently ambiguous. For instance, a sentence like:

"This is the continuation of an approved proposal. The analysis of the data obtained so far has shown that Jupiter has at least four satellites (Galilei 1609)."

violates the anonymisation guidelines. Although the reference is quoted in an impersonal form, it does not leave any doubt on the identity of the applicant.

Understandably, the applicants may wish to signal to the reviewers that the current proposal is linked to a previous allocation. This is achieved by indicating the instrument and the time already

allocated to the project in the appropriate sections for awarded time on e-MERLIN and other facilities in the *Additional Information file* uploaded to NorthStar. A comment can be added to provide more details, in a fully anonymous way, for example

"Allocated in Cycle 12. Completed. Paper submitted."S

or

"Allocated in Cycle 14. Incomplete data-set.", etc).

Programme ID/s and/or literature references must not be listed in the *Science Justification* or *Technical Justification* sections of the proposal. More explicit details can be provided in the *previous usage of e-MERLIN facilities* and *Additional Remarks* sections of the *Additional Information file.*

For the purposes of signalling to the referees that the current submission is a continuation of an already approved programme this should be sufficient.

Here follows a few examples on how previous allocations and corresponding results should be referred to in the *Science Justification* and *Technical Justification* sections of the proposal.

Unpublished results

1. "*An analysis of existing e-MERLIN data (private communication) has shown that...*"
2. "*Based on the analysis of data obtained in previous cycles, we have now refined the sample...*"
3. "*Recently, a pilot study has revealed that ... (private communication). We propose follow-up observations to...*"

Published results

In the following examples, *Explicit et al.* are both the authors of the paper/s and the applicants

1. *"A study of a sample of 17 galaxies has shown that 90% them are the products of major mergers (Explicit et al. 2019). With this proposal we plan to extend that study to a sample of 231 galaxies. This will enable..."*
2. *"Explicit et al. (2020) have shown that HeI6678A can be used to determine ... We propose to exploit this technique to..."*

Caution in using the explicit reference/s must be exerted depending on the sentences that precede and follow the citation. If an obvious connection can be made between the publication and the time already allocated to the same project (if specified in the dedicated section), it is more appropriate to use the implicit version suggested for the unpublished results:

1. *"A pilot study of a sample of 17 galaxies has shown that 90% of them are the products of major mergers (private communication). With this proposal..."*
2. *"It has been recently demonstrated that HeI6678A can be used to determine ... (private communication). We propose to..."*

Generic references to previous allocations

1. *"Time was already allocated to this project for the RA range 0-12. This proposal extends the request to the RA range 12-24."*
2. *"Time was already allocated to this project. Only 50% of the observations were carried out. With this proposal we plan to complete the sample."*

Complying with the above guidelines requires working on the grammar and structure of the scientific justification. Consequently, it will not be possible to re-cycle previous material without reviewing it in the light of the anonymisation requirements. The proposing teams should take this into account when planning their submission/s, because text anonymisation requires some extra effort.

Non anonymised sections

The following sections:

- *The Applicants tab on NorthStar*
- *The Additional Information file on to be uploaded directly to NorthStar, which should include:*
  - *Previous usage of e-MERLIN/MERLIN Facilities*
  - *Linked proposals to other facilities*
  - *Is this observing programme part of a thesis project?*
  - *Relevant publications*
  - *Relevant Background & Expertise*
  - *Data products publication plan*
  - *Additional Remarks*

must be filled as usual (i.e. in a non-anonymous way). An overleaf document has been prepared and can be found on the e-MERLIN website which includes these sections and suggestions for each section.

Background and Expertise section of the Additional Information file

As part of the DA implementation, the applicants are now required to fill in the *Additional Information file* to be uploaded to NorthStar. One section is labelled *Relevant Background and Expertise.* This is meant to be a short description of the background, expertise and roles of the various team members in the context of the science case discussed in the proposal. For small teams the applicants may wish to provide a sentence for the qualifications of each member, while for larger teams, only the leading roles need to be specified. Here follows an example.

A. N. Other has expertise in e-MERLIN Data reduction which is requested in this proposal. J. Bloggs is an expert in spectral line data reduction and theory and J. Doe a student of A. N. Other working on their PhD thesis using data from this project. The team has a strong radio background, specifically in

spectral line data reduction and analysis, as well as theoretical knowledge of the wider field. The team have published 3 papers on this source in the last 4 years, including obtaining time on the VLA (project code: 22G-012) and EVN (project code: EV0123b) which provides a complementary dataset. This project is supported by ERC grant 0123456789a.

Important note

Users must not add comments with PDF editors to their justifications as, depending on the editing software, the author/s of the comments is/are visible when displaying the uploaded PDF, hence disclosing their identities.

Guidelines for reviewers

Starting with Cycle 17 anonymisation is mandatory and the dual-anonymous procedure is also enforced on the reviewers' side. The reviewers should follow these guidelines:

- The review must aim at selecting the most promising proposals, not the best proposing teams;
- The ranking is purely based on the scientific merit of the proposals: the pre-meeting review and the panel discussions must focus on science only;
- The background and expertise of the applicants with *e*-MERLIN or other scientific facilities is not to be considered during the evaluations;
- The reviewers should not try to guess the PI's or the team's identity. Actions taken in this sense by the reviewers will be considered as violations of these guidelines;
- For the same reason, team identities resulting from active searches by the reviewers, will not be considered as anonymisation violations;
- The chairs of the panels must refocus the discussion whenever this moves to the team identity, expertise or publication record;
- The main purpose of the anonymisation is to reduce the sources of "distraction", which may influence the objectivity of the process;
- The reviewers should flag to the *e*-MERLIN TAG Secretary all the cases that they believe do not comply with the anonymisation rules spelled out in these Guidelines;
- In principle, only open violations will be considered for proposal rejection. Although the specific cases will require a closer scrutiny, open violations are those which clearly indicate that the proposing team did not make any effort to obfuscate their identity;
- In general, the applicants have done a good job when the identity of the team is reasonably ambiguous;
- Cases in which the identity of the team cannot be derived directly from the proposal, but it can be determined by deliberate web searches by the reviewers (which are anyway highly discouraged), cannot be considered as a violation of the rules;
- The reviewers must consider that it is impossible to reach 100% anonymity in all cases. There will always be certain cases in which it is impossible to conceal the identity of the teams. This is a fact that has to be accepted.
- In their final comments to the applicants, the panels should provide feedback in case the proposal does not comply with the anonymisation rules, clearly indicating the specific instances where the violations occurred.
- As a rule, the reviewers should trust the statements made by the applicants about their declared achievements, data reduction, analysis and modelling capabilities, although these are kept anonymous. In case of doubt, the reviewers may ask the *e*-MERLIN Operations Support Team to verify the correctness of the statements made by the applicants.

Types of anonymisation violations

The anonymisation violations identified by the reviewers (both from the TAG and the external reviewers), will be categorized into three classes:

1. **Major violations** - those revealing directly and unambiguously the identity of the proposing team (e.g., "*As we have shown (Galilei et al. 1609)").* Major violations are flagged to the *e*-MERLIN secretary and lead to the disqualification of the proposals.
2. **Minor violations** - those revealing unambiguously but indirectly the team's identity. In these cases, the identity cannot be deduced from the proposal's content, but may be derived by secondary sources (e.g., including project names which are quoted in cited publications). Minor violations do not lead to proposal disqualification, but will turn into a warning to the PI, asking them to fix the issue/s for future submissions.
3. **No violations:**
    a. The team's identity remains ambiguous (e.g., there is more than one possibility);
    b. The team has thoroughly followed the anonymisation guidelines and it is impossible to fully hide their identity (e.g., very well-known teams working on very specific science cases);
    c. Cases in which the identity is found by explicit searches by the reviewer.

As noted in the introduction to this document, the TAG will *not reject any proposals outright during cycle 17 or cycle 18 for breaches of this guidance* to aid the transition of PIs to DA. As part of the TAG procedure, the TAG will note breaches of the DA guidance and PIs will be informed as part of the standard feedback if this is the case. From cycle 19 onwards, proposals which breach these guidelines will be subject to the potential penalties listed above.

An example of text anonymisation

The following examples are taken from the ESO dual-anonymisation guidelines document.

Non anonymised text

Since 1609 our group has been accumulating evidence that earth rotates around the sun (Galilei 1610). In particular, our observations obtained at the Earliest Sidereal Observatory (under programmes ESO001, ESO002; Principal Investigator: Galilei) have demonstrated that Venus shows phases with a pattern that cannot be reconciled with the geocentric theory (Ptolemy 0150). In addition, we have discovered that at least four satellites orbit around Jupiter (Galilei 1610), hence demonstrating that not all celestial bodies rotate around the earth.

We have also provided further evidence of the incorrectness of the Ptolemaic model (Ptolemy 0150) with the observations of the sun we carried out with ESO telescopes (programmes ESO003 and ESO004; PI Galileo). As we discussed in Galilei (1613), we concluded that the surface of the sun is disturbed by topological defects which are not stationary and evolve with time (see also Scheiner 1612 for an alternative interpretation by a competing team). This is in evident conflict with the claims that all celestial bodies are incorruptible and composed by perfect matter (Aristoteles 0350 BC; Ptolemy 0150 and references therein). With this proposal we plan to finally demonstrate that our preliminary conclusion that earth orbits around the sun (Galileo, Salviati & Sagredo 1632) is correct, by measuring the parallax of a sub-set of the stars included in the HSC (Hipparchus 0135 BC) accessible from the southern hemisphere. With these data we will be able to settle once and forever the matter on the chief world systems (Copernicus 1543 and references therein). We have been granted 30 orbits at the Highest Spheres Telescope (programme HST#0123) to cover the part of the HSC sample with parallaxes below the limit that can be achieved from the ground. This project is supported by the GDT Grant #0017 from the Grand Duchy of Tuscany.

The same text after anonymisation

Evidence that earth rotates around the sun has been accumulating since 1609 (Galilei 1610). In particular, it has been demonstrated that Venus shows phases (Galilei 1610) with a pattern that cannot be reconciled with the geocentric theory (Ptolemy 0150). In addition, it has been shown that at least four satellites orbit around Jupiter (Galilei 1610), hence demonstrating that not all celestial bodies rotate around the earth.

Further evidence of the incorrectness of the Ptolemaic model (Ptolemy 0150) was provided by the observations of the sun (Galilei 1613). These led to the conclusion that the surface of the sun is disturbed by topological defects which are not stationary and evolve with time (see also Scheiner 1612 for an alternative interpretation). This is in evident conflict with the claims that all celestial bodies are incorruptible and composed by perfect matter (Aristoteles 0350 BC; Ptolemy 0150 and references therein). With this proposal we plan to finally demonstrate that the preliminary conclusion that earth orbits around the sun (Galileo, Salviati & Sagredo 1632) is correct, by measuring the parallax of a sub-set of the stars included in the HSC (Hipparchus 0135 BC) accessible from the southern hemisphere. With these data we will be able to settle once and forever the matter on the chief world systems (Copernicus 1543 and references therein). Thirty orbits have been

granted at the Highest Spheres Telescope (private communication) to cover the part of the HSC sample with parallaxes below the limit that can be achieved from the ground.

Acknowledgements

These guidelines were put together based on the experience gained at the European Southern Observatory with permission.

References

Johnson, S. K & Kirk, J. F., 2020, *Dual-anonymization Yields Promising Results for Reducing Gender Bias: A Naturalistic Field Experiment of Applications for Hubble Space Telescope Time*. Publications of the Astronomical Society of the Pacific, 132, 034503. Doi:10.1088/1538-3873/ab6ce0

Mulligan, A., Hall, L., & Raphael, E., 2013, *Peer review in a changing world: An international study measuring the attitudes of researchers*. Journal of the American Society for Information Science and Technology, 64, 132-161. doi:10.1002/asi.22798

Patat, F., 2018, *The Time Allocation Working Group Report*, The Messenger, 173, 7-11. doi:10.18727/0722-6691/5091

Reid, N., 2019, *HST TAC process and recent statistics*, presentation given at the Dual Anonymous Proposal Review Workshop (Baltimore, September 25, 2019)

Further reading

The interested reader should refer to guidelines at the European Southern Observatory.