This is my first ESO proposal. Any tips for getting started?

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The very first step in writing a successful proposal is to start with a great scientific idea! ;-)

The "Rationale" section of the ESO Phase 1 proposal in p1 is where you provide the scientific justification for your proposal. This section is divided into two main parts:

- Scientific rationale: in this part, you should explain the broader scientific context, motivation, and relevance of your proposed observations. You should also describe how your proposal fits into the current state of knowledge and what new insights it aims to provide.

- Immediate objectives: this part should clearly outline the specific goals of your observations and how they will address the scientific questions posed in the rationale.

You can also add figures to help the reviewers better understand the scientific background and science goals of your proposal.

→ The purpose of the Scientific Rationale section is to introduce, at a conceptual level, what will be presented in detail in later parts of the proposal. It should capture the reviewer's interest, motivating them to continue reading and learn more about how you plan to achieve your scientific goals.

→ Establishing clear connections between the individual components of the Scientific Rationale section is essential for creating a logical flow that naturally leads reviewers to supporting and advocate for your proposal.

→ Always keep in mind who will be reading your proposal. As stated in the ESO Call for Proposal, the review panels cover a broad range of scientific fields. Even if your proposal focuses on a highly specialised area of research, make sure to emphasise its broader relevance to general astrophysics and to explain it in terms that are accessible to non-experts. The challenge is to find the right balance between providing enough details to satisfy expert readers, while keeping your proposal interesting to a non-expert. This is the trickiest aspect of proposal writing. To better understand your audience, have a look at the ESO Distributed Peer Review (DPR) approach.

How to structure the Scientific Rationale

There are three general approaches to writing your proposal: (1) hypothesis-driven, (2) need-driven, and (3) a hybrid of the two. Whatever the nature of your proposal, it is helpful to structure your Scientific Rationale according to the following outline:

- *Opening Sentence*: this should be a true "grabber", a sentence that immediately catches the reviewer's attention.

- *Current Knowledge*: the purpose of this section is to present the state of the art of the field, allowing the reviewer to appreciate the significance of your proposed observations. In essence, you are setting the stage by describing the gap in the current knowledge or the unmet need that your proposal will address. Here, you should clearly state your hypothesis, need, or a combination of the two, depending on the type of your proposal.

- *Gap in the Knowledge/Unmet Need*: the goal of this part is to define the central goal of your proposal by identifying either a gap in the current knowledge or an unmet scientific need. This part should be simple and direct, explicitly linking to the "Current Knowledge" section. It should also highlight the deficiency that must be addressed to advance the field.

- *Gap/Unmet Need as an Important Problem*: the purpose of this component is to convince the reviewer that the identified gap or unmet need represents an significant and fundamental problem that must be resolved/investigated.

- *What's to be done?* The final paragraph should provide a broad overview of your proposed project, to persuade the reviewer that the proposed observations is an effective solution to the problem described above.

How to structure the Immediate Objectives section

The purpose of this section is to clearly state what will be accomplished by the proposed observations. This objective must be directly linked to the gap in knowledge/unmet need that you identified in the Scientific Rationale, which represents the ultimate goal of your proposal. It is useful to structure the Immediate Objective as follows:

- *Specific aims*: in this part, you should outline the concrete steps of your project. The purpose of the specific aims is either to test elements of your central hypothesis or, if you are writing a purely need-driven proposal, to describe the tasks that will be undertaken to address the need. Your aims must flow logically and align completely with your central hypothesis or objective.

- *The payoff paragraph*: in this part you should clearly state what the proposed observations will deliver if your proposal is accepted. This paragraph is particularly important for building reviewer advocacy, as it emphasises the scientific impact and value of granting telescope time to your project.

- Tags
- proposal
- rationale
- tip