



Knowledgebase > ESO Proposal (Phase 1) > This is my first ESO proposal. Any tip for a good start?

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

- Scientific rationale
- Immediate objectives

You can also add figures to help the peer referees better understand the proposal goals.

TIP 1: The very first tip to write a good proposal is to have a very good idea! ;-)

However, there also some practical tips that expert users collected to guide young scientists in writing their first proposals. Here we report some of them and hope they could be of some help.

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 is the nature of your proposal it would be helpful to structure your scientific rationale in this way:

- *Opening Sentence*. This should be a real 'grabber' of a sentence. Its purpose is to catch the attention of your reviewers immediately.
- *Current Knowledge*. The purpose of this component is to inform everyone at the review-panel table with respect to what is currently known, thereby allowing them to grasp the importance of the observations you will propose. In essence, what you are doing is setting up presentation of the gap in the knowledge base / unmet need that will be your application's subject. You should present here your hypothesis or need or a combination of the two, depending on the nature of your proposal.
- *Gap in the Knowledge Base / Unmet Need*. You can offer either a gap in the current

base of knowledge or an unmet need. The purpose of either approach – gap or need – is to delineate the subject of your proposal. The sentence must be simple, direct and must link back to the ‘current knowledge’ component as the deficiency that logically must be addressed next in order to advance the field.

- *Gap / Unmet Need as an Important Problem.* The purpose of this component is to assure that reviewers understand that continued existence of the gap / unmet need represents an important, basic problem that needs to be resolved.

- *What's to be done?* The purpose of the last paragraph is to introduce reviewers broadly to what will be proposed and to convince them that the proposed observations is the ultimate solution.

TIP2: The purpose of the Scientific rationale section is to introduce conceptually what you will detail in later parts of the application. It is intended to ‘hook’ the reviewer’s interest, thereby making him/her want to read the details of how you plan to do what is proposed

TIP3: Setting up appropriate linkages between the individual components that constitute the Scientific rationale section is the key to establishing a linear progression of logic that will lead reviewers to a position of advocacy.

TIP 4: Keeping in mind who will be the reader is a key aspect for writing a successful proposal. As clearly state in the [ESO Call for Proposal](#), the panels are supposed to cover a broad range of scientific areas. Thus, even if your proposal focuses on a very narrow area of research, make sure to emphasize its relevance also for general astrophysics, in a way that can be understood by your peers regardless of their expertise. In other words you need to find a balance between the level of details that will satisfy the expert reader and at the same time make your proposal enjoyable by a non expert. This is the trickiest aspect of the proposal writing. If you want to better understand who will be your reader, have a look at the [ESO Distributed Peer Review \(DPR\) approach](#).

How to structure the Immediate Objectives section

The purpose of this component is to define what will be accomplished by the proposed observation. This objective must link back to the gap in the knowledge base / unmet need that you delineated in the first section, because the objective of any proposal must be to fill the gap / meet the need.

-*The specific aims paragraph.* Once the objectives are clear, you can list the specific aims of the observations. This will present the specifics of what you propose. The purpose of your specific aims is either to test the parts of your central hypothesis or, if you are writing a purely need-driven application, to convey the tasks that will be

undertaken to meet the need. With respect to linkage, your aims must grow out of, and be completely concordant with, your central hypothesis or objective.

- *The payoff paragraph.* The purpose of the 'payoff' paragraph, as its name implies, is to tell reviewers what they can expect to get from the proposed observation if they decide to approve your proposal. It is an especially important paragraph with respect to developing advocacy for obtaining your telescope time.

Tags

proposal

rationale

tip