Telescope Time Allocation Tools

External Review of the Proposal Panel Review Process

guide prepared for software version 0.2.0.1

Contents

1 | Purpose of This Document

This document is intended to describe the functionality of the Proposal Panel Review (PPR) process in the Telescope Time Allocation (TTA) tools from the perspective of the Science Review Panel (SRP) Member and the SRP Chair. As this is an early release of the tools, care is given in this guide to note the expected behavior and the limits of the application. The *Telescope Time Allocation: System Description* and *Telescope Time Allocation: Algorithms* documents are the authority on definitions and implementation details of the tools.

This document is applicable for the version 0.2 release and the internal review by the NRAO and GBO staff. Note, this document does not detail the TTA Group Member or Feasibility (e.g., Technical) Reviewer role in the PPR process. A previously prepared guide details the Proposal Creation process.

The proposals in this guide are synthetically generated: proposal data[1] is generated with no relation to actual proposals submitted to the NRAO. Proposal titles are randomly drawn from publicly available proposal metadata or randomly generated. Any similarity to proposals submitted to the NRAO is by coincidence; the review material in this document is for demonstration purposes only and should not be interpreted as a real review of a proposal.

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[1]See the NRAO's data policy at https://science.nrao.edu/observing/policies/docs/manuals/users-policy/.

2 | Overview of the TTA Tools Review Process

A detailed overview of the *Proposal Panel Review* (PPR) process is available on-line at `https://science.nrao.edu/observing/proposal-types/proposal-review-system`. Note, the TTA tools' implementation of the PPR process follows dual anonymous peer review guidelines; information that can identify the authors has been redacted (e.g., name, institution).

The PPR process consists of different phases and sub-phases, and this guide discusses the *Review Process* phase, which encompasses the *Individual Science Reviews* sub-phase and the *Consensus Reviews* sub-phase. Section 3 provides a brief guide for Science Review Panel (SRP) Members during the *Individual Science Review* sub-phase, while Section 4 details the *Consensus Review* sub-phase. A SRP Chair assumes all responsibilities and capabilities as a SRP Member, with a few additional ones outlined in Section 5. Figure 2.1 depicts the key sub-phase transitions and responsibilities for the SRP Chair and SRP Member.
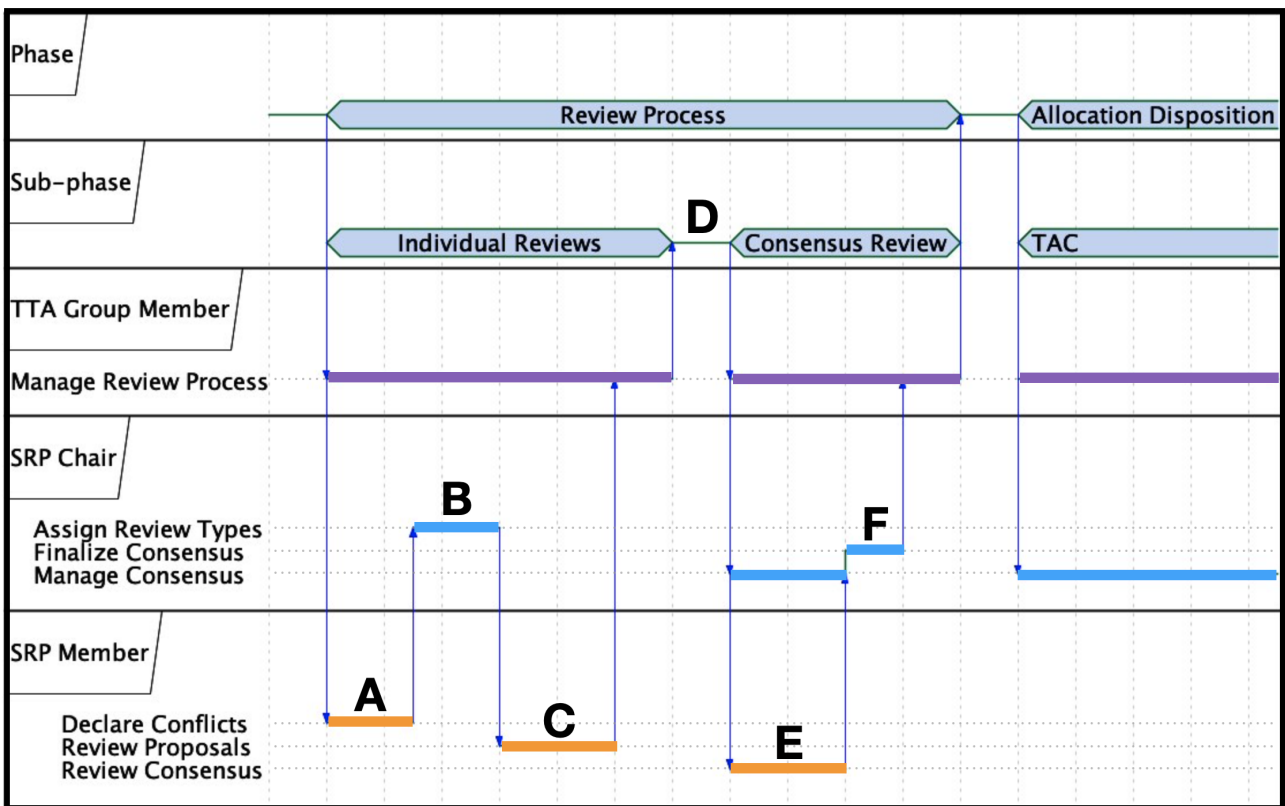

Figure 2.1: Overview of important sub-phase transitions and responsibilities for the SRP Members and SRP Chair within the *Review Process* phase. The bold letters indicate the actions a TTA member, SRP member, or SRP Chair must take to advance the system.
A — SRP member can certify their conflicts (§ 3.1 – 3.3);
B — SRP Chair can assign REVIEW TYPES to reviewers (§ 5.1);
C — SRP members can enter and finalize their *Individual Science Reviews* (§ 3.4 – 3.6);
D — TTA member can initiate the Consensus sub-phase on a per-panel basis;
E — SRP member can complete the Consensus Reviews (§ 4.1 – 4.4);
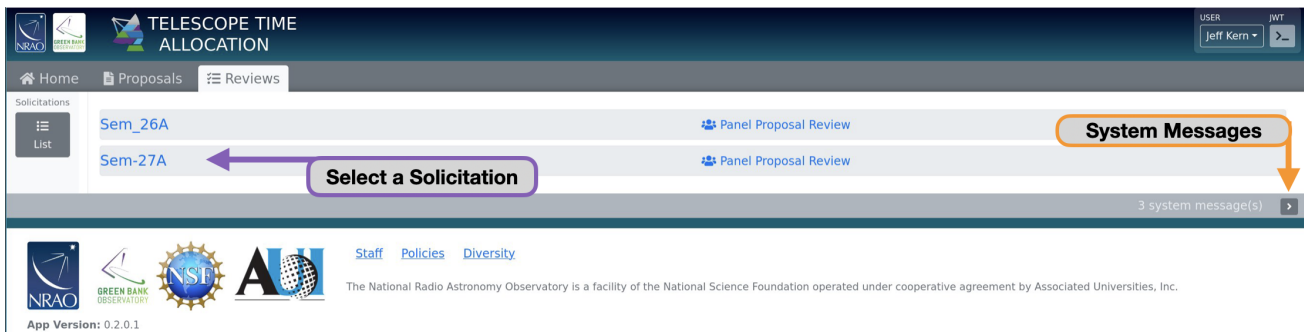F — SRP Chair can finalize the Consensus Reviews (§ 5.3).

3 | Individual Science Reviews

3.1 | Logging in and accessing the Review Process
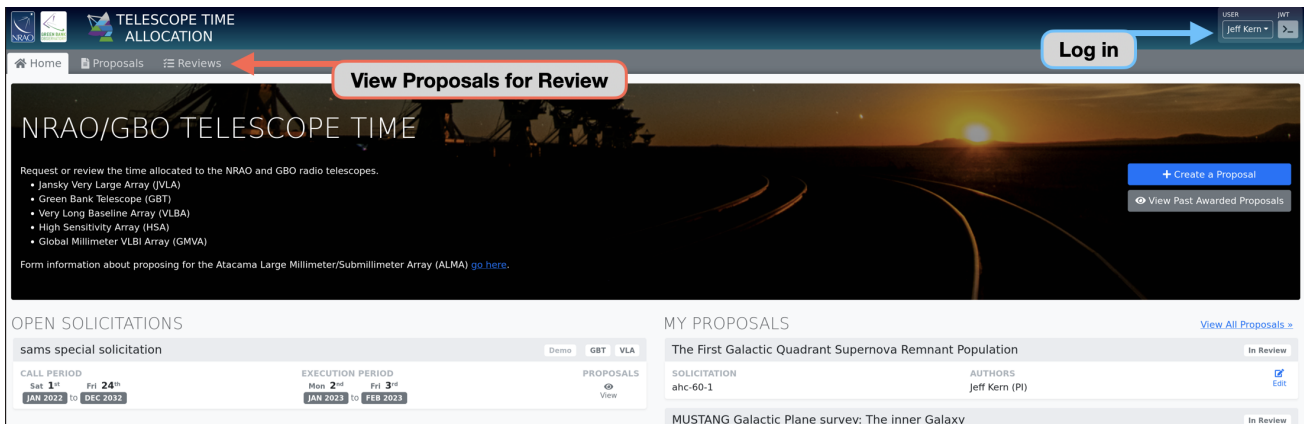
Figure 3.1: Select your user account from the drop-down menu. For this review, select an account without the 'TTA' label. Once logged in, select the Reviews tab.

3.2 | Accessing the Science Review Panel

Figure 3.2: Only Solicitations for which a SRP Member has an active role in the Review Process are displayed. Selecting the Solicitation will direct the reviewer to their assigned panel.

> **Note.**
>
> For this review, select the Solicitation specified in the instructions.

3.3 | Declaring Conflicts

Figure 3.3: SRP Members must declare any and all conflicts they may have before proceeding with the science review. They are required to select either `Available` or `Conflicted` for each proposal, and if the latter, they must provide a reason. If the SRP Member is an author of a proposal, it is marked as `Automatically Conflicted` and cannot be modified. Once all conflicts have been declared, the SRP Member can certify the conflicts to continue with the review.
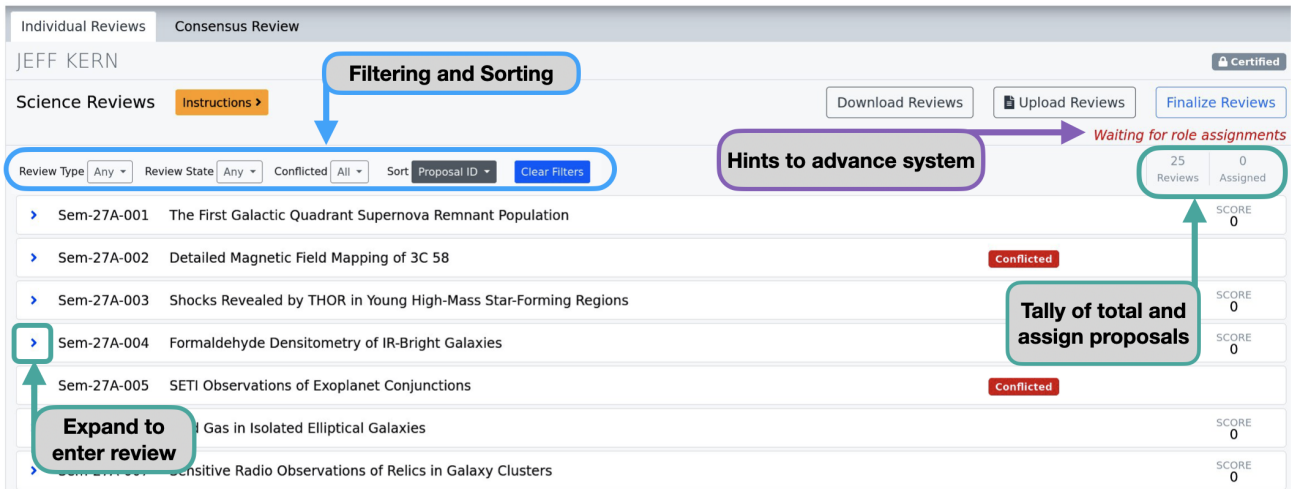
> **Note.**
>
> SRP Members should declare and certify their conflicts promptly. The SRP Chair cannot assign REVIEW TYPEs to a reviewer until their conflicts have been certified.

> **Important!**
>
> Once conflicts are certified, a SRP Member cannot further modify their conflicts.

3.4 | Accessing Independent Science Reviews

Figure 3.4: In the list of proposals, each row displays the `Proposal ID`, `Proposal Title`, and the INDEPENDENT SCORE (displayed as `Score` and initially 0). If the SRP Member is conflicted on a proposal, it is marked as conflicted. Clicking the blue chevron will expand the row to display the proposal and reveal the review editor. Reviews can be entered manually per proposal, and the download and upload tools offer options for bulk editing. Refer to Section A.2 for detailed explanations of these features.

> **Note.**
>
> The SRP Chair will assign REVIEW TYPEs to reviewers. SRP Members are responsible for reviewing the proposals that they have been assigned a REVIEW TYPE of `Primary`, `Secondary`, or `Tertiary`. Once the assignments are made, a REVIEW TYPE will be displayed on each row. Note, if no assignment is made for a proposal (i.e., REVIEW TYPE of `None`), the REVIEW TYPE is not displayed.
>
> It is not required to enter reviews with a REVIEW TYPE of `None`. SRP Members are welcome to read any non-conflicted proposal and may provide comments/scores. For proposals with a REVIEW TYPE of `None`, the comments and scores are for note-taking purposes only and will **not** be included in the Consensus Review.

> **Important!**
>
> If a proposal is specified in the uploaded file, the `Comments` and `Scores` will be **overwritten** even if the reviews were previously saved or completed.

3.5 | Entering Independent Science Reviews
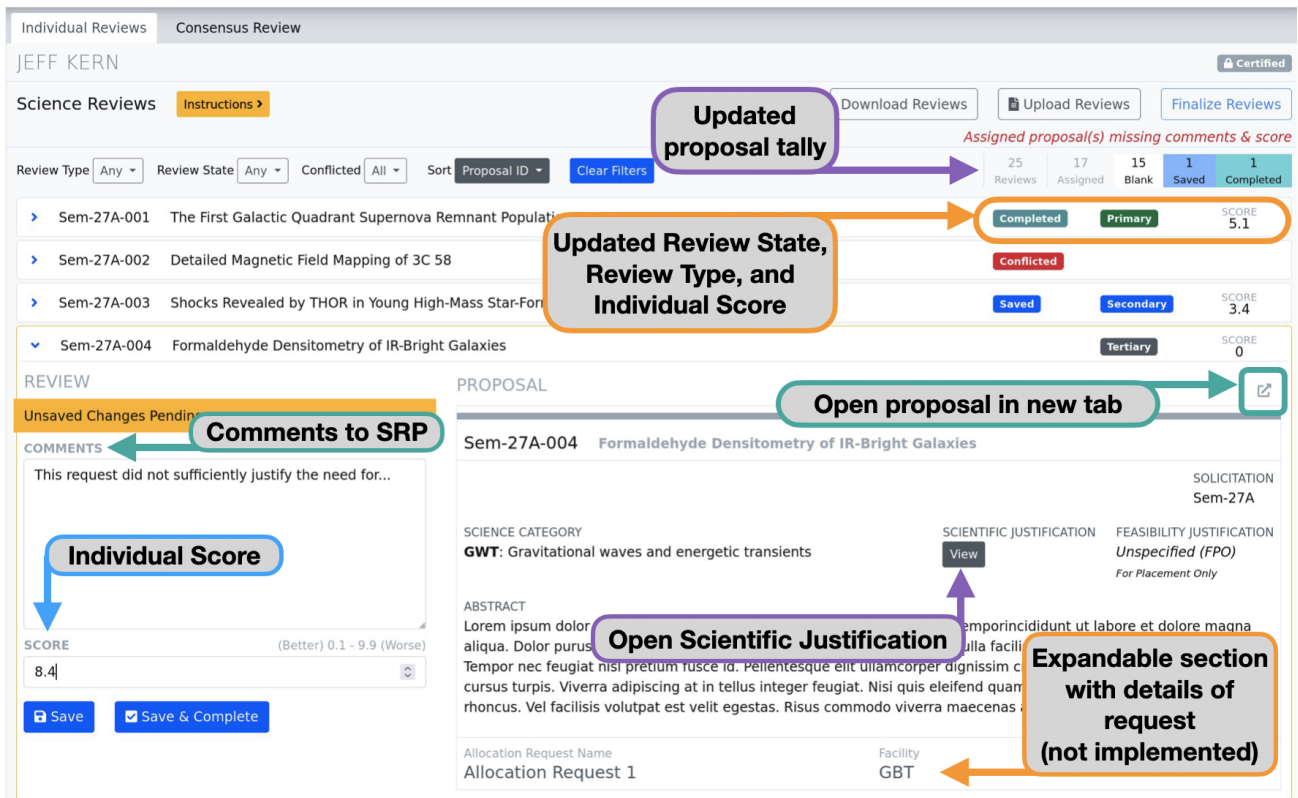
Figure 3.5: The expanded view displays the proposal along with two text fields: one for the COMMENTS TO SRP (displayed as `Comments`) and another for the INDEPENDENT SCORE (displayed as `Score`). A valid comment consists of at least one character and a valid score ranges between 0.1 and 9.9, with a lower number indicating a better-ranked proposal. Completing a review is a bookkeeping tool for the reviewer; a completed review may be modified until it is finalized.

> **Important!**
>
> Only limited information is available in the proposal at this time, as the proposals are simple prototypes to aid in the development of the review process. Future versions will offer an expanded view of the proposals, which will include information about the astronomical sources, hardware, and performance expectations of the Facility.
>
> The capability to download the proposals as PDFs and Scientific Justifications will also be available.

3.6 | Finalizing Independent Science Reviews

Figure 3.6: For reviews with a REVIEW TYPE of `Primary`, `Secondary`, or `Tertiary` that have a REVIEW STATE of either `Saved` or `Completed`, the *Individual Science Reviews* can be finalized. A prompt will then request confirmation of the ranking of the proposals. If confirmed, any further modifications to finalized reviews will not be possible. Note, only proposals for which the reviewer has an assignment are pertinent to finalization. Reviews without REVIEW TYPE assignment may remain unmodified.

> **Note.**
>
> SRP Members must finalize their reviews before the *Consensus Review* can begin.

■ **End of Individual Science Review phase**

- Upon finalization, the set of SRP Member's INDIVIDUAL SCORES is normalized with an average value of 5 and a standard deviation of 2. These normalized scores will be available to other panelist in the *Consensus Review* and are formally referred to as the FINALIZED NORMALIZED INDIVIDUAL SCORES or FNISs. Note, only the INDIVIDUAL SCORES that correspond to REVIEW TYPES of `Primary`, `Secondary`, or `Tertiary` are normalized.

- Once all the SRP Members on a panel have finalized their *Individual Science Reviews*, the TTA Group member can initiate the *Consensus Review* phase for the panel. At that time, the Consensus Review tab will be populated.

4 | Consensus Reviews

4.1 | Accessing Consensus Reviews
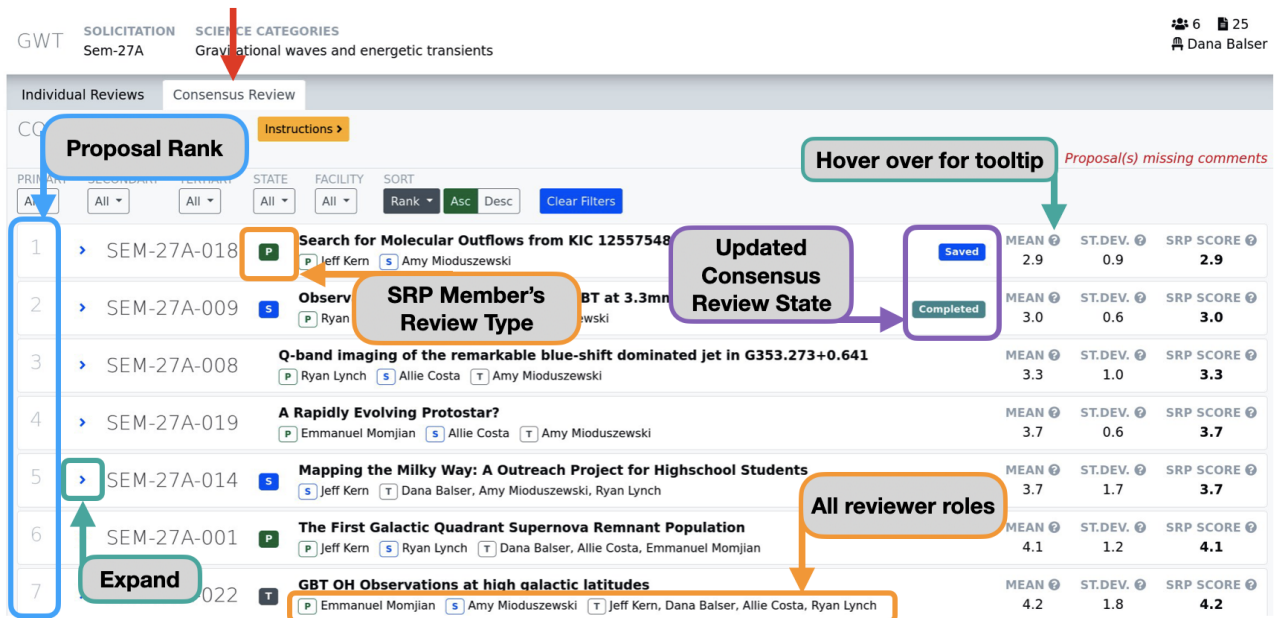
Figure 4.1: The Consensus Review tab presents the list of proposals within the panel. Each row displays the rank of the proposal in the list, `Proposal ID`, the `Proposal Title`, the REVIEW STATE (if available), the mean of the FNISs (displayed as `Mean`), the standard deviation of the FNISs (displayed as `ST.DEV.`), and the `SRP Score`. Refer to Section B for definitions of these quantities.

The SRP Member's REVIEW TYPE is denoted by a green, blue, or gray square icon, marked with either a 'P', 'S', or 'T', and a red square icon with a white slashed circle denotes a conflict. For further examples, see Section C.

> **Note**
>
> The rank of a proposal in the list is determined by the `SRP Score`, where a lower score is a better ranked proposal. The proposal's rank in the list is used to calculate the Normalized Linear Rank (NLR) at the end of Consensus.

4.2 | Inspecting and Entering the Consensus Reviews

Figure 4.2: Expanding a row provides further navigational sub-tabs and the Consensus Review editor, which contains two text fields: the `Comments for PI` and the `Internal Comments`. The `Comments for PI` has pre-fill prompts to guide the content of the review.

The Proposal sub-tab shows the same view of the proposal as that available in the Individual Reviews tab. The Feasibility sub-tab is not yet implemented but would show Technical and Data Management Reviews if available. The Reviews sub-tab contains the *Individual Reviews* associated with the proposal.

> **Note.**
>
> Only a `Primary` or `Secondary` reviewer can enter or modify the comment fields and `Save` or `Complete` the review. A review must be saved before being completed.

> **Important!**
>
> Completing a *Consensus Review* will prevent further modification of the comments by other SRP Members. This functionality is different than the completing an *Individual Science Review*.

4.3 | Viewing Co-panelists' Individual Reviews

Figure 4.3: The Reviews sub-tab shows the `Scores` (FNISs) and `Comments` associated with the proposal from the *Individual Science Reviews* associated with REVIEW TYPES of `Primary`, `Secondary`, and `Tertiary`.

> **Important!**
>
> The TTA tools offer a 're-vote' feature, allowing an SRP Member to adjust their score during the Consensus meeting. The SRP Chair or TTA Group Member is able to modify the FNIS, which will update the `mean`, `ST.DEV.`, and `SRP Score`.

4.4 | After the Consensus Meeting

- By the end of the Consensus meeting, the panel should reach agreement on the order of the proposals. The ranking is determined by the `SRP Score`, where a low number indicates a better ranked proposal. The position of a proposal on the list dictates the calculation of the Normalized Linear Rank (NRL) (see Section B).

- The `Primary` and `Secondary` reviewers are responsible for composing the `Comments for PI` and `Internal Comments`, the latter of which allows the SRP to make confidential comments about the proposal to Observatory Staff and the TAC. SRP Members should communicate via external methods (e.g., e-mail) to refine the comments. Once finished, the review should be marked as completed.

- After all reviews have been completed, the *Consensus Review* phase is concluded for SRP Members.

5 | SRP Chair

A SRP Chair has all of the responsibilities and capabilities as a SRP Member plus additional ones, which are detailed here. As such, it is assumed that the SRP Chair is familiar with the functionality of the SRP Member role.

5.1 | Assigning Review Types to SRP Members
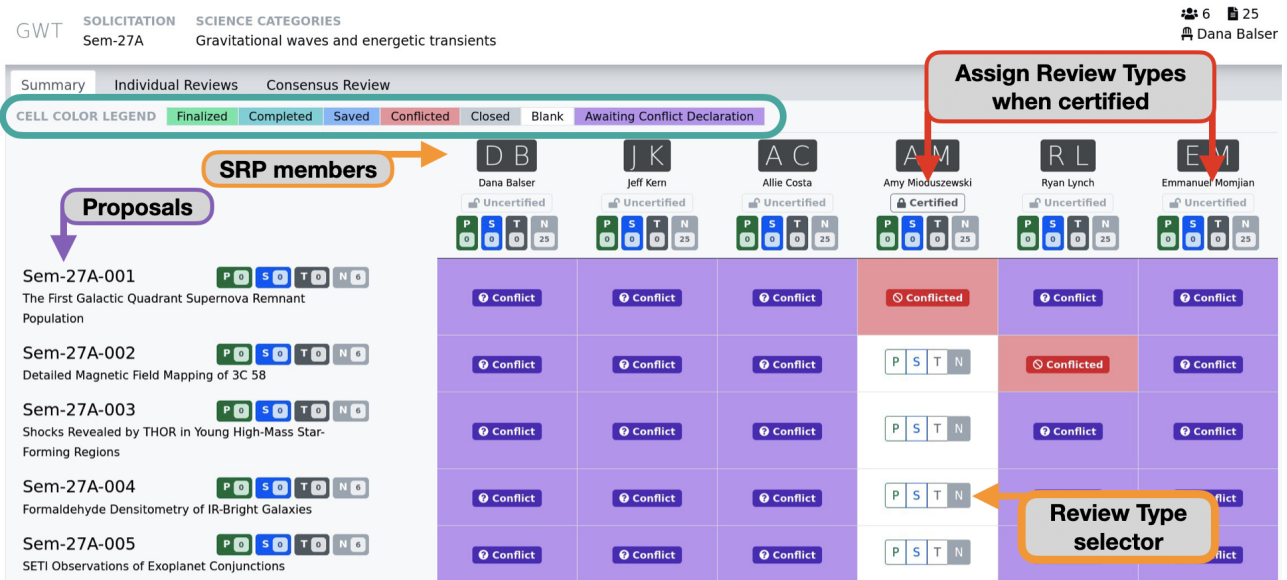
Figure 5.1: The Summary tab displays a grid of the SRP Members and proposals. The color of the cell indicates the conflict state (`Unknown`, `Available`, `Conflicted`) or the REVIEW STATE, which reflects the reviewer's progress. A legend is available at the top of the page. As SRP Members certify conflicts, save, complete, and finalize their *Individual Science Reviews*, the cell color will update to reflect their progress.

> **Important!**
>
> A SRP Chair cannot assign a REVIEW TYPE to a SRP Member until they have declared and certified their conflicts. It is not required to wait for all SRP Members to certify. The REVIEW TYPE may be modified until the start of Consensus, as long as the REVIEW STATE is not `Finalized` or `Closed`.

Figure 5.2: A REVIEW TYPE cannot be assigned to an SRP Member until they have certified their conflicts. Once a reviewer has been certified, a set of buttons appears for each cell, facilitating the assignment of a REVIEW TYPE for each proposal. These buttons are labeled as 'P', 'S', 'T', and 'N', representing `Primary`, `Secondary`, `Tertiary`, and `None` respectively. The system prevents the assignment of more than one `Primary` or one `Secondary` reviewer to a single proposal. However, any number of `Tertiary` or `None` assignments is permissible.

5.2 | Updating Scores in the Consensus Meeting

Figure 5.3: In the Consensus Reviews tab, the list of reviewers per proposal includes those that are conflicted so that SRP Chair may easily manage the meeting.

The 're-vote' feature allows a SRP Chair to adjust the ranking of a proposal within the list, should the panel choose to reorder the proposals. A SRP Chair can do so via two methods. The first is to modify one or more FNIS, which will trigger a recalculation of the `Mean` of the FNISs, `ST.DEV.`, and `SRP Score` for the associated proposal. The second method is to directly modify the `SRP Score`. If the latter, further changes to the FNIS associated with that proposal will not affect the `SRP Score`.

> **Important!**
>
> Once an `SRP Score` is directly modified, it can only be changed through a direct edit from that point on.

5.3 | Finalizing Consensus Reviews

Figure 5.4: SRP Chairs can edit, save, and complete any *Consensus Review* unless they are conflicted on the proposal in question. When the panel's *Consensus Reviews* are complete, the SRP Chair can proceed to finalize the *Consensus Reviews*. This will lock the comment fields, preventing any further modification. With this final step, the *Consensus Review* phase concludes for the SRP Chair.

When the *Consensus Reviews* are finalized, the Noramlized Linear Rank (NRL) is calculated using the rank of the proposal in the list.

> **Important!**
>
> Completing a review will prevent further modification by SRP Members.

A | Auxiliary Features

A.1 | System Messages

There are different feedback mechanisms available to inform the user about the actions the application is taking.

- If an action (e.g., save) is unsuccessful, a system message is displayed with a red banner temporarily at the top of the screen with the error message. The history of the System Messages is maintained in an expandable list available on the bottom right of an editor; see Figure 3.2 for a reference.

- When a text field (e.g., `Comments`, `Internal Comments`) is modified, a yellow banner with the words "Unsaved Changes Pending" and a blue Save button will appear. The banner will persist until either a save is successful via the Save button or the form is returned to the last saved state (e.g., the modifications are undone by the user).

- In-line error messages may be displayed in red to help guide the user.

- Interactive prompts may pop-up that require the user to confirm an action.

A.2 | Individual Review File Download and Upload Tools

To externally edit *Individual Science Reviews* or edit in bulk, users can download a template using the `Download Reviews` widget, edit the reviews with an external editor, and use the `Upload Reviews` widget to upload the file.

A.3 | Download Tool

- The `Download Reviews` widget will down the proposals associated with a panel. The downloaded file functions as both a template for future upload (see below) and for exporting comments and scores in bulk. The downloaded file has headers of

    ```
    username, proposal_id, comments_for_the_srp, individual_score
    ```

  and is a csv format.

- The `Comments for SRP` and `Score` are blank and 0, respectively, if no modification to the fields has been saved in the TTA tools. Otherwise, the last saved entry will be downloaded.

- Proposals for which a user is conflicted are not included in the downloaded file.

A.4 | Upload Tool

- The uploaded file must have at least one row that contains the SRP Member's username, a `Proposal ID`, a valid `Comment for SRP`, and a valid `Score` in a csv format. It must also include the following line as a header.

    ```
    username, proposal_id, comments_for_the_srp, individual_score
    ```

- If the `Comments for SRP` includes commas, the entry should be framed by a set of double quotation marks to protect the entry. A different delimiter may also be used, which may

be a semicolon (;), pipe (|), or tab. The header should also use the modified delimiter, as the upload tool will attempt to automatically detect the delimiter using the header.

- The upload tool will fail if a `Proposal ID` is not associated with the panel or if the username does not match the log-in name.

- The uploaded file should not contain `Proposal IDs` that correspond to proposals for which the user is conflicted or that have REVIEW STATEs of `Finalized` or `Closed`. If a proposal is included, an error message will displayed and the file will not be uploaded.

- The upload tool will overwrite the existing `Comments for SRP` and `Score` on upload and automatically update the REVIEW STATE to Saved.

B | Definitions

- An *Allocation Request* contains the details of the requested observatory resources.

- A *Feasibility Justification* includes a Technical Justification and/or a Data Management Plan.

- A REVIEW TYPE is assigned by the SRP Chair per reviewer per proposal. The REVIEW TYPE are `Primary`, `Secondary`, `Tertiary`, or `None`. REVIEW TYPES can affect the information displayed in the UI and the level of access a reviewer may have to a proposal.

- A REVIEW STATE describes an *Individual Science Review* or a *Consensus Review* and is either `Blank`, `Saved`, `Completed`, `Finalized`, or `Closed`. The general behavior is described in Sections 3 and 4. Note, if a REVIEW STATE is `Closed` or `Finalized`, no further modifications can be made by SRP Chairs or SRP Members.

- A Science Review Panel (SRP) member can only belong to one SRP panel, though there may be multiple panels. They are expected to author an *Individual Science Review* for each proposal they are assigned a REVIEW TYPE. They participate in the Consensus meeting with other SRP members on their panel, which reviews all of the ISRs per proposal to form a consensus opinion.

- A SRP Chair has all the responsibilities and abilities of a SRP member and additional ones. They manage the panel reviews during the Review Process phase and are a member of the Telescope Time Allocation Committee.

- A Solicitation is an announcement from the observatory to the community to submit a request to use observatory resources (e.g., a Call for Proposals).

- The Telescope Time Allocation (TTA) Group Member is an authorized observatory staff who is responsible for administering the TTA process.

- Types of scores
  - INDIVIDUAL SCORE - a user input value per proposal per reviewer during the Individual Science Review phase.
  - NORMALIZED INDIVIDUAL SCORE - a calculated value per proposal per reviewer; it is the normalization of the INDIVIDUAL SCORE for all proposals per reviewer. The normalized distribution has a mean of 5 and a standard deviation of 2.
  - FINALIZED NORMALIZED INDIVIDUAL SCORE (FNIS) - initially a copy of the NORMALIZED INDIVIDUAL SCORE but can be modified during the Consensus meeting by the SRP Chair or TTA member (see Section 5.2).

- MEAN NORMALIZED SCORE - average of the reviewers' FINALIZED NORMALIZED INDIVIDUAL SCOREs per proposal.

- STANDARD DEVIATION OF THE MEAN NORMALIZED SCORE - the standard deviation of the reviewers' FNISs per proposal.

- SRP SCORE - a copy of the MEAN NORMALIZED SCORE but can be modified by the SRP Chair or TTA Group Member or via an update to the MEAN NORMALIZED SCORE. If it is modified by the SRP Chair or TTA Group Member, it can only be modified directly from that point on.

- NORMALIZED LINEAR RANK (NLR) - calculated for proposals per panel once all Consensus Reviews have a REVIEW STATE of Finalized. The proposals are assembled into an ordered list by their SRP SCORE. The index in the ordered list is denoted as R and the NRL for each proposal in the panel is then

$$\text{NLR} = \frac{R * 10}{N}, \tag{1}$$

where N is the number of proposals in the panel.

C | Common Icons in the UI
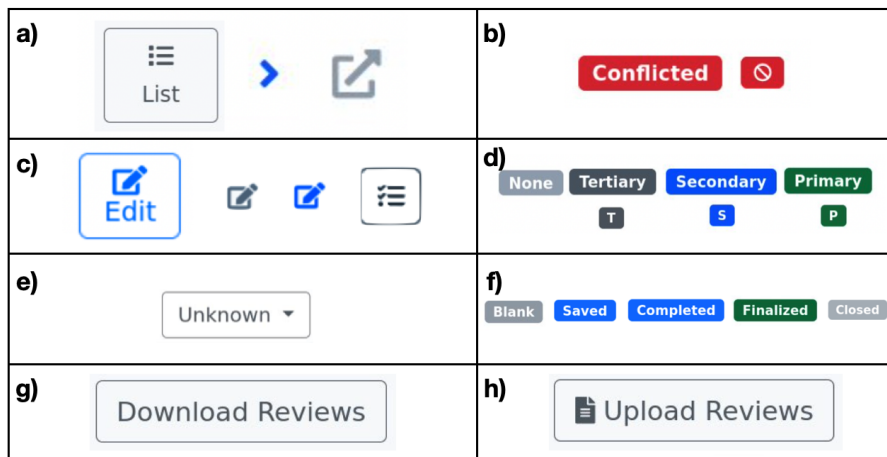
Figure C.1: Common buttons in the UI. See text for the descriptions.

Figure C.1 shows common buttons in the UI, which are described below.

a) Expand UI element (e.g., Figures 3.4, 3.5).

b) Conflicted badge: Reviewer is conflicted on a proposal (e.g., Figure 3.3).

c) Edit an element e.g. `SRP Score` editor (e.g., Figure 5.3).

d) Badges representing REVIEW TYPE (e.g., Figures 3.4, 4.1).

e) Option selector (e.g., Figure 3.3).

f) Badges representing REVIEW STATE (e.g., Figures 3.4, 4.1)

g) Download *Independent Science Reviews* template for upload (Figure 3.4).

h) Upload a file with comments and scores for *Independent Science Reviews* (Figure 3.4).

D │ Help

■ *I can't use the Certify Conflicts button.*

- Check that each Proposal is either marked as Available or Conflicted. If Conflicted, a reason must be provided.

■ *The proposals are missing a lot of information I usually need to do my review.*

- Yes, the proposals are prototypes right now. In future releases, they will have the full details of the request (e.g., sources, hardware, time, facility). However, the author information will not be available, as we will enforce a Dual Anonymous Peer Review.

■ *Why can't I save an Individual Science Review comment?*

- To save `Comments` in an *Individual Review*, you must also provide a valid score.

■ *The file upload does not work.*

- Check that the username supplied in the uploaded file matches the user account identically.
- Check that all rows in the file have a valid comment and score.
- Check that the proposals in the file are not listed as `Conflicted`, `Finalized`, or `Closed`.

■ *I can't use the Finalize button for my Individual Reviews.*

- You may not have been assigned a role yet by the SRP Chair. You may enter comments and scores but will have to wait until the Chair has assigned `Primary`, `Secondary`, or `Tertiary`.
- If you have been assigned roles, the Finalize button only is active when all of the proposals for which you have been assigned the role of `Primary`, `Secondary`, or `Tertiary` have REVIEW STATEs of Saved or Completed.

■ *Why can't I enter or edit a Consensus Review comment?*

- You may only enter or edit Consensus `Comments for the PI` or `Internal Comments` for proposals that you are the `Primary` or `Secondary` reviewer.

■ *I seem to have a lot more "power" than the guide describes.*

- Check that you are logged in as a regular user and not a TTA user.

■ *As a SRP Chair, my changes to the FNISs do not update the SRP Score.*

- If the SRP Score was previously modified by a direct edit, then updating the FNISs will not affect the SRP Score. See Section 5.2 for details.

■ *Can I poke around at the other parts of the application?*

- If you must.

■ *I made a mistake and can't undo it/ I broke something/ I'm stuck.*

- Try refreshing the page.
- Note the behavior in your feedback and contact Allie Costa (acosta@nrao.edu) for assistance.