Peer Review Method Using PREP for the Commercial Systems Data Link Organization

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1 Scope

This document details the Data Link processes related to the use of PREP for peer review activities. This will ensure all projects using this process will have a consistent, repeatable peer review process, which meets the objectives of DO-178B, DO-254, and ARP-4754A.

2 Peer Review Overview

A peer review is a close and critical evaluation of a work product (i.e. artifact) for compliance with standards and originating requirements. The goal of the peer review is to discover, and correct, defects at the earliest detection point in the product life cycle. It is expected the peer review process is a final check to ensure issues with the artifacts have been resolved; with few exceptions, issues should be detected and addressed by the use of good engineering practices and available tools. The efficient performance of peer reviews which detect quality defects requires trained and/or experienced peer review leaders. This process is not intended to take the place of that training or experience. A project's development plan will identify the life cycle data which is required to be peer reviewed. At a minimum, a peer review must be performed on all initial implementations of, and subsequent baselines of, that life cycle data. This may include requirements documents or modules, process documents, design, schematic and assembly drawings, implementation, verification documents, etc.

The PREP (Peer Review Eclipse Plug-in) tool is the Rockwell Collins enterprise peer review tool. PREP will be used to conduct all peer reviews on life cycle data. A project's planning documents should specify the PREP database to be used as the database will vary from project to project.

3 Roles and Responsibilities

This section describes the roles for participants in a peer review. The Producer is responsible for assignment of roles at the time of peer review creation and must ensure adequate independence and diversity of Reviewers based on the artifacts under review. In addition, there must be adequate technical expertise among the participants. Participants shall be selected based on their technical expertise and disciplines in order to complete a comprehensive review of the artifacts.

3.1 Default Roles

The Producer of the artifact(s) under review is responsible for facilitating the completion of the peer review activities. A Reviewer is responsible for reviewing the artifact(s), identifying defects, ensuring the review process has been followed, and participating in a Meeting Review (if scheduled). Individuals are selected to participate in the peer review in one or more of the following roles:

- **Producer:** Creates the artifact under review and prepares the material to be reviewed. Completes the Producer Checklist, answers questions during the review meeting, and is the main implementer of the findings.
- **Recorder:** This role is reserved for a member of the engineering support staff. The Recorder is not a Reviewer of the artifact under review. However, the Recorder can be assigned as the implementer for non-technical findings, such as spelling, grammar, and formatting.
- **Leader:** This may be an Engineering Manager, Project Engineer or Technical Lead who is tasked with technical and process management of the project. The Leader ensures the peer review is completed in a timely manner, all applicable processes have been followed, and fills out the Leader Checklist. The Leader may also fill out the Producer Checklist, if needed.
- **Systems Reviewer:** This is a Reviewer of the artifacts for defects from a system perspective. This will include addressing system concerns and needs which potentially can drive lower level changes.
- **Software Reviewer:** This is a Reviewer of the artifacts for defects from a software perspective. This will include addressing concerns involving potential software requirement, design, implementation, or verification changes. Some teams may choose to further distinguish between team members by classifying those in a verification role as a Verification Reviewer and those in a development role as a Software Reviewer. We will use the term Software Reviewer throughout this document to cover an individual in either of these roles.
- **Quality:** This is a Reviewer who ensures compliance to the project’s processes and plans. An individual listed in the role of Quality must be a member of the Rockwell Collins Quality organization, which is independent from the project’s engineering organization.
- **Safety:** This is a Reviewer of the artifacts for safety impacts to the system.

3.2 Specialty Roles

The following are additional roles which will further clarify a participant’s responsibility in the review:

- **Main Reviewer:** This is a <u>mandatory</u> (i.e. required) role for all peer reviews. At least one participant must be identified as the Main Reviewer. A participant marked as a Main Reviewer will also be classified with one of the Reviewer roles above. A Main Reviewer will also be responsible for completing the Reviewer Checklist. If there are multiple Main Reviewers in a peer review, the Main Reviewers will mutually decide who will complete the Reviewer Checklist. This role shall not be a dual role with the Producer role.

- **XXX Domain:** This is an <u>optional</u> role which identifies the technical domain the Reviewer is representing. When used, ‘XXX’ should be replaced with the domain name. This role will only be used when participation external to the project team is required for the artifact(s) under review.

  Domain roles will only be added as necessary. The Producer of a review requesting an individual be added to the PREP database with a “XXX Domain” role will coordinate with the Leader and the engineering support staff to create the appropriate role and set it as the default role for the intended participant.

3.3 Participant Selection

The Producer is responsible for selecting appropriate participants for the peer review. At a minimum, each review will have one participating Main Reviewer. The peer review should be focused on a quality examination of the artifacts and not on a specific number of participants. Refer to the tables below for the list of participants who should be involved in the peer review, according to the type of artifact under review. A project's planning documents should specify 1) any additions to these tables and 2) any requirements stricter than those listed here (e.g. this document states a participant is to be Invited, but the project desires the participant to be Required).

The listed items are the common life cycle artifacts for a project. Some project teams may include additional artifacts; any additional artifacts should be identified in their respective planning documents.

Table Key:

R – Indicates participation is **required**; the review cannot be conducted without the individual's participation.

I – Indicates an **invitation** to participate is required; participation is not required.

O – Indicates an invitation and participation are **optional**; discretion of the Producer or Leader will determine if these Reviewers are to be involved.

Table 1: Software Teams

Reviewers / Type of Artifact Reviews	Producer	Leader	Systems Reviewer	Software Reviewer	Quality	Safety	Recorder
Process Document	R	R	R	R	R	I	O
Software Development Plan (SDP), Software Verification Plan (SVP), & Plan for Software Aspects of Certification (PSAC)	R	R	I	R	R	I	O
Software Requirements	R	I	R[1]	R	I	I[2]	O
Design	R	I	I	R	I	I[2]	O
Code	R	I	O	R	I	O	O
Software Verification Test Cases, Software Test Procedures, & Software Test Results	R	I	O	R	I	O	O
Software Configuration Index Drawing (SCID) & Computer Program Configuration Index (CPCI)	R	I	O	R	R	O	O
Interface Definition Document (IDD) or any documents which expose S/W interfaces to external users	R	I	I	R	R	I	O
Software Verification Procedures & Results (SVPR) (i.e. verification summary for formal release), Software Validation Summary, & Software Accomplishment Summary (SAS)	R	R	O	R	R	R	O
Users Guide	R	R	O	R	I	O	O

[1]The domain systems engineers are sufficient to participate in Software Requirements reviews. Except for the Low Level Requirements for the RIU-4XXX SigP Options Parameter Block, in which an additional program level systems engineer is required to be invited to all reviews, and required to participate in the baseline and the release reviews.

[2] If there will be numerous iterative peer reviews on a given requirements document, it may be more practical to hold a separate review for the Safety team when the document is considered complete. In that case, Safety would be Optional on the iterative reviews and required on the separate safety review.

3.3.1 Release Reviews

A Release Review is a final peer review prior to submitting an artifact to the Software Control Library (SCL). The intent of a Release Review is to review the artifact for formatting, and not necessarily for technical content (unless the Producer has clearly described the scope of review as for both technical and release purposes). Release Reviews shall be conducted in PREP.

The minimum set of required participants for a Release Review is the individuals on the approval block of the artifact (e.g. Quality for all artifacts, Safety for certain artifacts). If the Producer is the only engineer of the project team on the approval block, a peer must be a required participant in the peer review and act as Main Reviewer. Additionally, the Recorder is an invited participant on a Release Review.

The checklists required in a typical Release Review differ from a Release Review covering technical content, as well. A typical Release Review requires the Focal Point checklist and the Producer General questions (as described further into this document). The other checklists discussed in this document are required when technical content is being reviewed.

4 Peer Review Process

A peer review moves through several stages during its lifetime. Each stage has certain entry criteria, associated actions, and exit criteria. Generally, peer reviews are created, conducted, and then completed. The PREP tool defines several states associated with these stages as follows:

Table 2: Peer Review States

<table>
<tr><th>Peer Review Stage</th><th>PREP State</th><th>Associated Activities</th></tr>
<tr><td>Create</td><td>DRAFT</td><td>Data population, role assignment, artifact and reference collection, and completion of Producer Checklist.</td></tr>
<tr><td rowspan="2">Conduct</td><td>PENDING</td><td rowspan="2">Examination of artifacts and creation of findings.
Peer review meeting is conducted (if applicable).
Completion of Reviewer Checklist.</td></tr>
<tr><td>ACTIVE</td></tr>
<tr><td rowspan="2">Complete</td><td>COMPLETED</td><td>All findings implemented and verified and completion of Leader Checklist.</td></tr>
<tr><td>CLOSED</td><td>PREP data archived.</td></tr>
</table>

The sections below provide the specific details for each stage of the peer review, including actions, entry and exit criteria, and corresponding PREP tool states and actions.

4.1 Create the Review – Draft State

Prior to creating a peer review, the Producer determines the number of artifacts to be covered in a single review and whether a Desk Review is appropriate or a Meeting Review is required. A Desk Review is appropriate for limited and localized changes and is also allowed for all Release Reviews. A Meeting Review is appropriate when one or more of the following criteria is true:

1. An artifact is new (i.e. an artifact that has no previously-released baseline).
2. It is requested by the Leader, Technical Project Manager, or Engineering Manager.

If any participant requests a Meeting Review when a Desk Review was planned, a Meeting Review shall be scheduled and conducted.

The Producer ensures all artifacts being reviewed are under project configuration control and ensures the review package is complete. The review package includes the specific artifacts being reviewed and associated reference material (see Section 4.1.4 for References to be included).

The Producer identifies the review participants per Section 3 and determines the review date/time. The review package size and the review participants' workload should be considered when determining the amount of review time needed. For example, if the package is large, more preparation time prior to the Meeting Review or Desk Review completion date may be needed. If any participant does not believe an adequate review time has been allotted, the Producer should be consulted about moving the review date/time to allow for a thorough, quality review of the artifacts. A meeting review can be conducted with all of the participants after they all have marked participation, entered any findings, and agreed to a meeting time (see section 4.2.2 for meeting review process).

Peer reviews are typically created by the Producer. Peer reviews can also be created by the engineering support staff on behalf of the Producer, but it is preferred the Producer of the artifacts creates the review. The Producer Checklist shall only be completed by the Producer or Leader.

A new peer review is created by utilizing the “Create New Peer Review” selection in the PREP tool. PREP will then create a new peer review record, assign a unique identification number known as a Peer Review ID, and allow the creator to complete the input of relevant data.

When a peer review is created, it exists in the Draft state. The following fields are required to be completed in order to transition from the Draft state to the Pending state:

- ‘Properties’ Tab:
    - Summary
    - Description
    - Review Type
- ‘Participants’ Tab:
    - Review Date/Time
    - Participants
- ‘Artifacts’ Tab:
    - Artifact Type
    - Artifacts
- ‘References’ Tab:
    - Change Requests
    - Focal Point Checklist (Release Review only)
- ‘Checklists’ Tab:
    - Completed Producer Checklist(s)
    - Incomplete Reviewer Checklist(s)
    - Incomplete Leader Checklist

4.1.1 Properties Tab

Summary: The summary field can be considered the “title” of the peer review. Where possible, the summary of the peer review should be similar to the title of the review’s associated CR; however, any summary that is descriptive enough to identify the purpose and type of the review is sufficient. If the review is a final review prior to formal release, indicate “RELEASE REVIEW:” at the beginning of this field.

Description: This should be a detailed write-up of the change that is being reviewed. At a minimum, the following information should be considered for inclusion in the Description field:

- What types of artifacts are under review? Subsystem Reqs, Software Reqs, Design, Code, Test Cases or Procedures (List all that apply)
- Are there any related reviews that the Reviewer should be aware of?
    - This would include requirements, design, and code reviews that would help the Reviewer when looking at the material.
- What is the Change Task this review is for?
    - A particular Change Request may have multiple Change Tasks (CTs) for the same artifact, so it is advised the specific CT is listed here for reference.
- If a DOORS artifact is under review, what view/filter should be used for reviewing changes to the artifact?
- Who should be contacted to gain access to repository artifacts in this review? (It is suggested the Producer checks each participant has access prior to sending out the review, especially if participants are outside of the normal project team.)

- Who is the PE that should be contacted to gain NWA access, if not already available? (It is suggested the Producer checks each participant has access prior to sending out the review, especially if participants are outside of the normal project team.)

Review Type: There are two options here, "Desk Review" and "Meeting Review." A Meeting Review will have a location and/or remote connectivity information, where the participants will gather to discuss findings against the artifacts being reviewed. Refer to Section 4.1, above, for further definition of Meeting and Desk Reviews.

4.1.2 Participants Tab

Review Date/Time: If the review is a Desk Review, the Producer will select a review due date/time. If the review is a Meeting Review, the Producer will select the date and time for the meeting. The review notice will contain the scheduled time and location of the review, and any network meeting information required (call in numbers, passwords, etc.).

Participants: See Section 3 for a list of invitees. Reviewers will be selected based on their skill set. It is possible an invited participant may become unavailable when the peer review has been advanced out of the Draft state. In this case, the Producer or Leader will be allowed to add a replacement participant and remove the initial participant. This is allowed when 1) the new participant can fulfill the same Role as the initial participant and 2) the peer review is not in the Completed or Closed state. Regardless of additions/deletions to the participant list, the participant guidelines in Section 3 must be followed.

4.1.3 Artifacts Tab

Artifact Type: The artifact types available in the PREP tool are defined as follows. Additional artifact types may be used; any variations to this list should be specified in the project's planning documents.

- **Planning:** Artifacts containing planning information (e.g. Software Development Plan, Plan for Software Aspects of Certification)
- **Requirements:** Artifacts containing technical requirements (e.g. Software Requirements Specification, System Specification)
- **Test:** Artifacts containing test information, including test cases, test procedures, test scripts, test reports, analyses, and logs.
- **Drawing:** Hardware drawings, including part specifications and schematics.
- **Code:** Artifacts comprised of software code.
- **Design Description:** Artifacts containing design (e.g. Software Design Document, Interface Control Document, Enterprise Architect model, etc.).
- **Other:** Artifacts that do not fit into any of the other Artifact Types.

Artifacts: The Producer should have all appropriate artifacts for review added to this field by dragging and dropping from the appropriate PREP explorer review. After an artifact is added, the review author is required to select Previous and Current versions for the artifact. The Current version shall be the version of the artifact which contains *all* of the changes under review, but no *later* changes. The Previous version shall be the version of the artifact which contains *none* of the changes under review. A Previous version of (none) shall be selected if the artifact is new or if no previous review credit is being taken for a prior version of the artifact (i.e. a full review of the artifact is to be completed by the Reviewers). All versions since the previous baseline (last formal release or initial baseline) should be covered by a review at the time the artifact is released.

See Section 4.6 for guidance on adding and peer reviewing DOORS artifacts.

4.1.4 References Tab

The References Tab is where the peer review author includes any additional information relevant to the review, which may be of benefit to the Reviewers.

Change Requests: the Change Control Board (CCB)-approved CR(s) which authorized the changes to the artifacts under review. If the peer review is a Release Review for a new part number (i.e. Rev -) or the artifact does not require change management, then “No CR Required” should be entered as a Generic CR in this field.

Documents: Documents may also be included as references to the peer review, but the documents must first be under configuration control. The configuration-controlled documents can then be added to the peer review by dragging and dropping from the appropriate PREP explorer view.

Documents required as reference material for proper examination of the artifacts under review must be included as References, along with version information. An example of a required reference document would be a requirements document when a test case is being reviewed. Because a test case is written based on the requirements document, the requirements document and its appropriate version number must be looked at for a proper review of the test case. See Section 4.6 for guidance on adding DOORS artifacts as References.

Focal Point Checklist: For a Release Review, a member of the engineering support staff (the Recorder) must fill out a focal point checklist for each artifact. While filling out the checklist, the Recorder may need to modify the artifact(s) under review. All changes made to the artifact(s) must be peer reviewed. The focal point checklist should be placed under configuration control and then attached to the References tab of the peer review.

4.1.5 Checklists Tab

The Producer is responsible for adding the appropriate checklists to the peer review. See Section 5 for the minimum questions to be included in the checklists. The project’s development plan should reference the exact checklists to be used.

4.1.5.1 Producer Checklist

The Producer will complete the Producer Checklist while the peer review is in the Draft state. The intent of the checklist is to ensure the qualifications for the artifact(s) to enter into a peer review have been met. An additional intent of the checklist is to ensure easy-to-check items are completed prior to review, so that Reviewers’ attention can be focused on a critical analysis of the material.

4.1.5.2 Reviewer Checklist

When the Producer selects an artifact type during the Draft state, PREP will automatically add the Reviewer Checklist required for that artifact type, where possible. The intent of the Reviewer Checklist is to ensure the reviewers are conducting the review per the proper criteria, such that an effective review of the material is performed. This checklist will not be completed by the Producer. It shall be completed by the Main Reviewer only after all required participants have completed their review, documented any and all findings, and those findings have been assigned or closed/cancelled (i.e. moved out of Draft). Additional findings are allowed to be added by the Main Reviewer during and/or after the filling of the Reviewer Checklist.

Note: Reviewer Checklists are not required for every peer review, with some examples being Release Reviews (unless technical content is being reviewed) and reviews of process documents. It is the Producer’s responsibility to ensure any required Reviewer Checklists are added to PREP, per the project’s development plan.

4.1.5.3 Leader Checklist

The Producer will also add the Leader Checklist. This checklist will be completed by the Leader during the Completed state of the peer review.

4.1.6 State Transition to Pending

Once the peer review has met all requirements to transition from the Draft state, the review is advanced to Pending. PREP will send a review notice to all participants, which contains the peer review identification number (PRID), and the scheduled time and location of the Meeting Review or the Due Date/Time of the Desk Review. For reviews that include customer participants, all applicable artifacts and review information (i.e. date, time, location, phone number, etc.) should be supplied in the review notice. For a Desk Review, the Producer could optionally send a calendar reminder to all participants of the Desk Review due date/time.

4.2 Conduct the Review – Pending & Active States

Once the peer review exists in the Pending state, Reviewers are expected to examine the artifacts under review and create Draft findings, as necessary. The Reviewers need to read all information provided in the peer review and in the Change Request to understand the context of the modifications under review. The artifacts need to be examined for technical correctness and for compliance with the questions in the Reviewer Checklist. If issues are identified, the Reviewers must create findings, using the guidelines for writing findings in Section 4.5.

Note: If the artifact under review is a Word document and Change Tracking was turned on, it is the responsibility of the Reviewer to ensure all of the changes to the artifact since the Previous version are reviewed. Change Tracking is an aid for review, but a Reviewer cannot trust that all changes were tracked in this manner.

4.2.1 Desk Review

For a Desk Review, the Reviewers should conduct their review and enter any findings prior to the Desk Review due date/time.

The Producer will monitor the peer review for findings while the participants are conducting a Desk Review. If the Producer agrees a finding is to be Assigned, an Implementer and Verifier are identified for the finding. Typically, the Implementer is the Producer and the Verifier is the Originator of the finding. If the Producer believes a Finding should not be Assigned, the Producer should collaborate with the Originator of the Finding to reach consensus prior to choosing the Non-Issue selection in the Finding. For teams that are not co-located, this collaboration can be difficult, but effort should be made to include the Originator in the discussion. In absence of a consensus, the Leader should be consulted.

Note: at any point during a Desk Review, a participant may request a Meeting Review instead. This is useful in the case above where consensus on a Finding is difficult to achieve. This is a likely indication of an issue worth discussing among all participants of the review.

The following fields are required to be completed in order to transition from the Pending state to the Active state:

- ‘Participants’ Tab:
    - Participated checked for all Required Participants

The review may be advanced from Active to Completed when all of the following are true:

- all required participants have completed their review,
- the required fields have been completed, and
- the review due date/time has passed, or if before the review due date/time, the Producer has confirmation from optional participants they do not intend to participate.

The following fields are required to be completed in order to transition from the Active state to the Completed state:

- ‘Checklists’ Tab:
    - Completed Reviewer Checklist(s)
- ‘Participants’ Tab:

- Participated checked for all required participants in the review except for the leader
- 'Findings' Tab:
  - Existing Findings must be advanced out of the Draft state
- 'Artifacts' Tab:
  - Status for each Artifact

4.2.2 Meeting Review

For a Meeting Review, the Reviewers should conduct their review and enter any findings prior to the Meeting Review date/time.

The Producer will monitor the peer review for findings while the participants are preparing for a Meeting Review. If the findings are straight-forward and non-controversial, the Producer may choose to begin working findings at this time. If the Producer believes a Finding should not be Assigned, the Producer should wait for the Meeting to determine consensus of the reviewing team.

The following fields are required to be completed in order to transition from the Pending state to the Active state:

- 'Participants' Tab:
  - Participated checked for all Required Participants

Typically, the peer review would be advanced from the Pending state to the Active state at the beginning of the Meeting Review. **The actual Meeting Review is a review of existing findings; it is not intended to be a complete walkthrough of all changes to the artifacts under review. It is expected that Reviewers will arrive at a Meeting Review prepared to discuss the findings they have created for the peer review.** If all of the required participants for a Meeting Review have not completed their review activities, the meeting should be rescheduled until such time as all required participants have participated.

During a Meeting Review, all of the findings are reviewed. The participants ensure the findings are clear, concise, and follow the guidelines for writing findings as described in Section 4.5. If the participants agree a finding is to be Assigned, an Implementer and Verifier are identified for the finding. Typically, the Implementer is the Producer and the Verifier is the Originator of the finding. Additional findings are allowed to be entered during the Meeting Review if new issues are identified through the Meeting Review discussions.

The following is a list of additional items to consider when conducting a meeting review:

- The Producer should be prepared for the meeting to commence on time, with the required tools and artifacts open at the start of the meeting.
- If time allows, the Producer should review the findings prior to the meeting and prepare a position on each.
- If meeting consensus determines a resolution different than what was documented in the Finding Description, the agreed-upon solution should be documented in the finding's Proposed Solution field.

The following fields are required to be completed in order to transition from the Active state to the Completed state:

- 'Checklists' Tab:
  - Completed Reviewer Checklist(s)
- 'Participants' Tab:
  - Participated checked for all individuals who participated in the review
- 'Findings' Tab:
  - Existing Findings must be advanced out of the Draft state
- 'Artifacts' Tab:
  - Status for each Artifact

4.2.3 Checklists Tab

There will be a checklist specific to the artifact type under review (planning, requirement, description, test, drawing, code, and other). This checklist must be completed by the Main Reviewer after all required reviewers have conducted their review and all findings have been advanced out of Draft. The Main Reviewer fills out the checklist as a summary for all reviewers, taking into account any non-compliance documented within those findings. When an item is marked "N/A" in a checklist, the Main Reviewer must indicate the reason the item is not applicable in the comments field. If an item is marked "No" in a checklist, the Main Reviewer must write a Finding or Change Request to address the deficiency (or ensure a Finding or Change Request already exists). The Finding # or Change Request # must be indicated in the comments field for that checklist item. If there are multiple CR #'s applicable to the deficiency, it is acceptable for the comment to point to the applicable verification results spreadsheet (e.g. Test Case Summary) instead of listing each CR.

4.2.4 Participants Tab

Participated: All required and any invited or optional participants who participated in the peer review must indicate their participation by selecting the Participated checkbox. The individual participants must be responsible for selecting this box.

4.2.5 Findings Tab

See Section 4.5 for full guidance on authoring, implementing and closing Findings.

4.2.6 Artifacts Tab

Once any/all findings against the artifacts under review have been entered, the artifact Status must be determined. The Producer and Reviewers must determine, together, the status of the artifact. The Status choices are as follows:

- Revise without Review: This is defined when there are valid findings in a peer review that are easily understood and will not dramatically change the content of the artifact under review. These findings will be verified and another review will not need to take place.
- Revise with Review: This is defined when there are significant changes needed to the artifact. To ensure the correct intent is captured, a second review will be held after all the changes are made. Note: PREP will create this new review upon closure of the original review. The Producer should not manually create another review for this artifact.
- Accept: An Accept status will occur when a peer review is held in which no findings were recorded against the artifact. The artifact is accepted as written and will not be changed.
- Cancelled: This status is used when an artifact has major issues. The issues are so severe that the artifact needs to be almost completely reworked or it is determined during the course of the review that this artifact should not be reviewed at this time. The findings and the peer review for the artifact will be cancelled.

4.2.7 State Transition to Completed

Once the peer review has met all requirements to transition from the Active state, the review should be advanced to the Completed state.

4.3 Complete the Review – Completed and Closed States

The Completed state indicates all necessary participants have completed their review and all findings against the artifacts under review have been written.

The following fields are required to be completed in order to transition from the Completed state to the Closed state:

- ‘Checklists’ Tab:
  - Completed Leader Checklist
- ‘Findings’ Tab:
  - All Findings must be Closed (or Cancelled, if appropriate)
- ‘Artifacts’ Tab:
  - Resulting Version for each Artifact

4.3.1 Checklists Tab

Once all findings have been Closed or Cancelled, the Leader Checklist will be filled out by the Leader of the peer review (Engineering Manager, Project Engineer, or Technical Lead, as identified in the Draft state of the peer review). The intent of the checklist is to provide a gate to ensure the Leader, who oversees the peer review process, has looked at the review and determined the artifacts were dispositioned correctly (i.e. version numbers and artifact status are accurate), the appropriate people were invited and/or participated, and the checklists were filled out correctly (i.e. any “No” or “N/A” responses have the appropriate commentary).

4.3.2 Findings Tab

All findings must be Closed or Cancelled prior to transition from the peer review Completed state. See Section 4.5 for additional details on Findings.

4.3.3 Artifacts Tab

The final (Resulting) version of each artifact must be identified once all findings are Closed or Cancelled.

4.3.4 State Transition to Closed

Once the peer review has met all requirements to transition out of the Completed state, the review is advanced to Closed. Once Closed, no changes will be allowed, so care should be taken to ensure that all review activities have been completed successfully and correctly prior to closing the review. Typically, the Leader or Producer of the peer review completes this action.

After a Release Review is Closed, the peer reviewed artifact(s) can be submitted to the SCL.

4.4 Reverting the State of a Peer Review

A peer review can be reverted back to a previous state by the producer or the recorder if both of the following are true:

1. No finding against an artifact under review exists.
2. No Reviewer has marked their participation.

Otherwise, the leader of the review must revert the review back to any state if the review is not in Closed state. Once the review is in Closed state, only the Engineering Manager or Technical Project Manager cognizant over the project has the authority to approve the state reversion. If the reason for the reversion is to affect the review's artifact(s), (i.e. artifact is changed or new artifact is added) after a state reversion, all participation checks must be cleared to ensure all participates reviews the changed/new artifacts. If a revision occurs, it is recommended that the producer to notified all the review participants of the reversion and the reason for it being required.

4.5 Findings

4.5.1 Lifecycle of a Finding

4.5.1.1 States of a Finding

4.5.1.1.1 Draft

This is the initial state of a finding. The finding exists in this state upon creation.

4.5.1.1.2 Assigned

This state indicates the finding has been assigned to the designated implementer and verifier and will be worked by the implementer.

4.5.1.1.3 Implemented

This state indicates the finding has been implemented, which includes supplying the Resulting Version of the artifact. A Resolution has also been entered, describing in detail what updates were made as a result of this finding.

4.5.1.1.4 Closed

This state indicates the finding is now Closed. It is an end state. This state is reached either as a result of a finding being implemented and verified, or it is reached as a result of the finding being declared a non-issue.

A Closed finding should never be reverted back to a previous state. If an issue is later discovered where something is wrong with the resolution of the finding, then a new finding should be created. Example: A change is made to the software as a result of the finding. The verifier agrees with the change and verifies it, but later, the verifier realizes there was a mistake with the implementation and that it should have been rejected. In this case, a new finding should be opened, referring back to this one and the error that was discovered. An exception to this would be if the data in the finding was tracked incorrectly, such as the wrong Work Version was used. In that case, the Engineering Manager or Technical Project Manager should be involved in the decision to revert the finding.

For any issues with the validity of a finding, where it is desired that no work should be done to one or more artifacts of this review (such as if a finding is opened by mistake, if a finding resulted in discussion that eventually resulted in the finding requiring no work, or if the finding is made against something other than an artifact attached to this review), the issue should be flagged as non-issue which will Close the issue. A proper description should be supplied indicating the reason for moving the finding to a non-issue. The Implementer should collaborate with the Originator of the finding and reach consensus prior to setting the finding to a non-issue. Related to the supplied examples:

- For a finding opened by mistake: Simply have no artifacts marked, and indicate finding opened as a mistake.
- For a finding that was written that after discussion now has no work to be done: Have no artifacts marked, and summarize the discussion that resulted in this finding not requiring any work.
- For a finding written against an artifact not part of this review: Have no artifacts marked, and reference a CR that this issue will be worked under. The finding Originator should concur that a CR is now in place for the defined issue prior to agreeing the finding is a non-issue. The CR should reference the peer review and finding number, as well.

4.5.1.1.5 Cancelled

This state indicates the finding was determined to be a duplicate of another existing finding. Agreement should be reached at least between the Originator of the finding and the implementer prior to marking a finding as a duplicate.

A finding could also be moved to Cancelled if it was determined to be a non-issue, as described in the previous section. The preferred method is to select Non-Issue, but it is acceptable for the Cancel Finding option to be used instead.

4.5.1.2 Transitions

The following diagram shows the PREP States where a finding may exist and introduces terms used to describe when a finding can transition between various States.

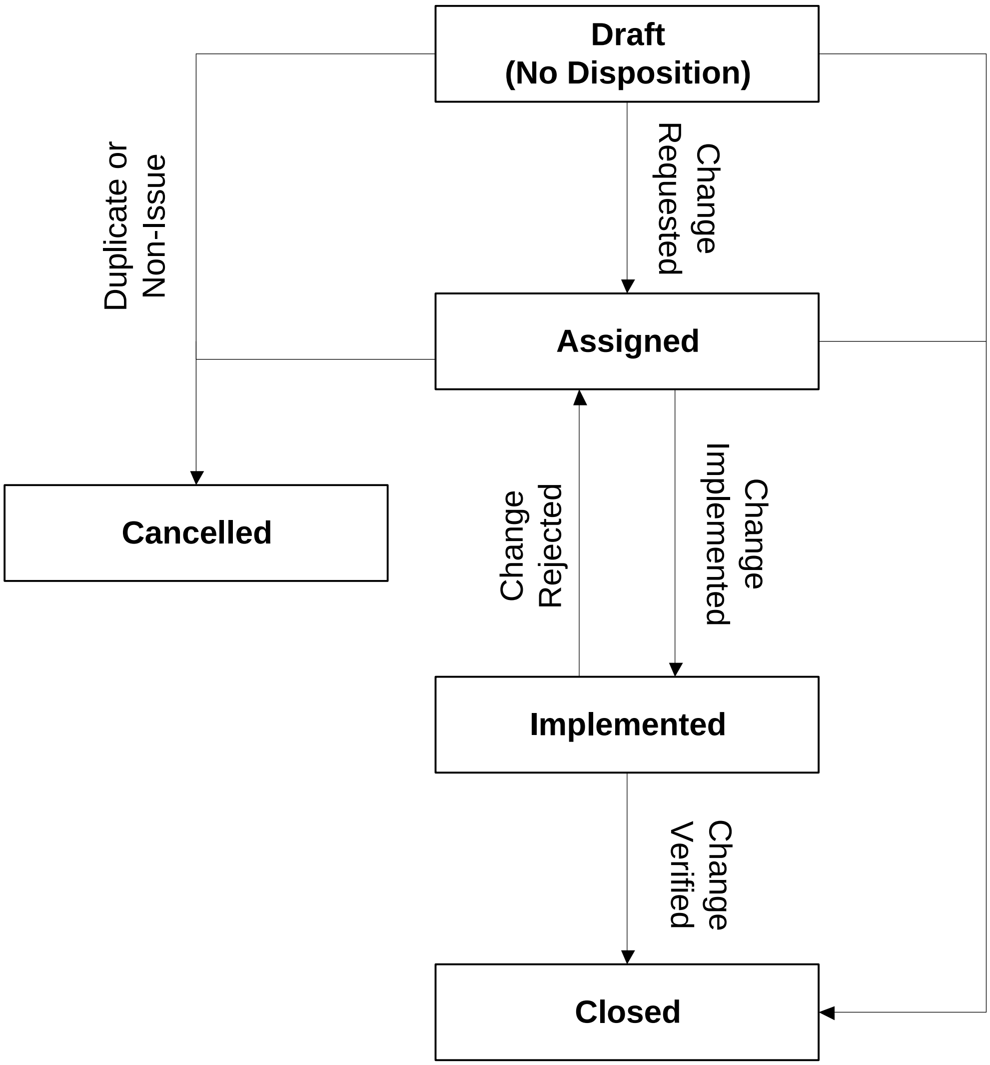


Figure 1: Finding State Transitions

4.5.1.2.1 Change Requested

The finding is advanced from Draft to Assigned. The Producer may choose to discuss the finding with the Originator, the leader, or any member or members of the review team. If someone other than the individual advancing the finding to Assigned has been identified as Implementer of the finding, the PREP-generated email should be sent to the Implementer.

When the finding is advanced from Draft to Assigned, a Finding Status needs to be determined. Finding Status choices for advancing to Assigned are Issue and Trivial Issue:

- Issue - a finding that if left uncorrected, would prevent the artifact from fully meeting its purpose.
- Trivial Issue - a finding that does not constitute a flaw that causes the artifact to not meet its intended purpose and/or requirement(s), but is desired to be corrected and tracked to closure. Ideally, these types of issues have already been purged by the artifact Producer (it is acceptable for reviewers to communicate such concerns to the Producer to avoid the PREP overhead of processing this type of issue).

4.5.1.2.2 Change Implemented

The Implementer advances a finding from Assigned to Implemented when the Implementer has completed the finding. The Implementer should allow PREP to send an email to the Verifier with notification of the finding being Implemented.

4.5.1.2.3 Change Rejected

The Verifier of the finding rejects the change, sending it back to Assigned. Likewise, the Implementer of the finding may also revert the finding back to Assigned, thereby rejecting the previous change. The Verifier should allow PREP to send an email to the Implementer with notification of the finding being Rejected.

4.5.1.2.4 Duplicate

If it is agreed the finding is a duplicate of another finding, this transition is taken. This transition should not be done without the concurrence of the Originator or the Leader. The individual marking the finding as Duplicate should allow PREP to send an email to the Originator with notification of the finding being marked as Duplicate.

4.5.1.2.5 Non-Issue

This transition is taken under a few circumstances listed below. The individual marking the finding as Non-Issue should allow PREP to send an email to the Originator with notification of the finding being marked as Non-Issue.

4.5.1.2.5.1 Question Resulting in No Action

If the finding was written as a question for clarification, and if the Producer answers the question to the satisfaction of the Originator, then if no update is required, this transition is taken. The answer to the question is to be documented in the Comment field for the reason that the transition to Non-Issue was taken.

4.5.1.2.5.2 Issue Found Not to Exist

Another reason this transition is taken is if an issue was found, but after discussion it is found that either no issue was found, or that no change is needed. Take this transition, and indicate in the Comment field the rationale for it. The Originator (or Leader) should agree.

4.5.1.2.5.3 Finding Opened by Mistake

Another reason this transition is taken is if a finding was created by accident and is no longer needed.

4.5.1.2.6 Change Verified

The Verifier agrees the change that was implemented both matches the intended update and that the implementation was correct. The Verifier should also confirm that the versions listed in the finding (the Review, Working, and Resulting versions) are listed as correct. As a note, the following guidance should be used in setting those versions:

- Review version: Should match the version listed as Review Version for the artifact. Generally is automatically filled. Note: the Review Version may be modified as a later version.

- Working version: Should be the latest version of the artifact just before the change was implemented. In a simple case, if only one finding exists against an artifact, the Working version would be the same as the Review version. If two findings were worked against the same artifact, it may be that the first finding was worked, using the Review version as the Working version; that first finding was then Implemented, creating a Resulting version of Review +1. When the second finding is worked, the Working version would be the Review +1 version; when the second finding was Implemented, the Resulting version would be the Review +2 version. It would also be acceptable for both findings to be implemented in the same version, such that both findings would list the Review version as the Working version and the Resulting version as Review +1.
- Resulting version: Should be the first version that this finding was fully implemented in. It should be at least +1 from the Working version.

4.5.2 What should go into a Finding?

Begin with the location of issue. This needs to be focused on a specific area, or clearly described if it is a global change. If not obvious from the finding description, a proposed solution should also be provided. For DOORS, if feasible, list the object ID(s). An acceptable instance of not listing object ID(s) would be if a global search needs to take place: “There are over 20 instances of the typo “thta" instead of “that”. Correct all instances.” If a change applies to a section, list the object ID of the section header, as well as the section header. This is because DOORS will change section numbers as sections are added/deleted, therefore specifying ONLY “Section 7.5” may lead the implementer to the wrong section (though looking at the Review Version of the artifact should clarify this).

Findings may have multiple actions in them, however these should be related activities and generally determined to be “atomic” actions (meaning, to do one of them, but not the other, would not make sense). An example would be a finding written like, “The system shouldn’t transition from State X to State Z without going through State Y. Therefore, object 1234 should be changed to say “Transition to State Y”, and then a new object should be added below this that indicates State Y will transition to State Z”.

If multiple, atomic actions are lumped together in a finding, a rule of thumb is to limit the actions to no more than 10 per finding.

A finding should generally be aimed at one implementer. If it will take two different implementers to make the update, it’s likely two separate findings should be written instead.

Typographical and/or trivial changes may all be bundled into a single finding. Refer to Section 4.5.4 for guidance in this area.

When the finding can be tied back to a checklist violation, as best practice the checklist item(s) should be referenced as part of the finding description and the finding identification number (FID) should be listed in the applicable checklist item(s).

If the Originator of the finding violates any of these guidelines, the Producer should request the Originator to modify the finding to align with the guidelines.

4.5.2.1 Good Examples

“2568: The requirement should limit the value to 4, not 3, because there are only three options available to the user.” --- Object ID was listed, assumes only one artifact tagged in the finding.

“Global: Change the term “The security software” to “The cryptographic software”.” -- A common term needs to be changed and the action requested is easy to understand.

4.5.2.2 Bad Examples

“This is not verifiable” --- no object(s) listed.

“I don’t think this software should be architected like this.” -- generic… however, could exist as a flag to start a discussion in the peer review meeting, in which case this would then be non-issued with a summary of the discussion or advanced to an Assigned finding with a description of what needs to change.

"Object 1234: The state listed here should be "X", not "Y". Also, object 2345 has some misspellings. While in there, why not add a new section that explains what State W is all about." – bad, because three independent issues are listed in just one finding. These are not considered atomic, as they are all fairly independent of each other.

4.5.3 Typographical/Trivial Change Findings

Typographical or Trivial changes generally should be contained to just one finding. These changes are considered meaningless to the overall content of the artifact and serve to improve the professional appearance and presentation of the artifact. However, in general, given the nature of these changes, no one will specifically go and verify that each instance of "hte" was changed to "the", or that tabs were replaced with spaces, or extra linefeeds were removed.

A recommended method of flagging these errors would be to export a DOORS artifact to Word, and flag the changes in a Word document using change tracking. Remember to export the object ID, as well, so that it is easy for the implementer to know where to go in the DOORS document. This Word document should be attached as a Reference in the peer review, and a finding should be created with a pointer to the Reference document. Use of a Word document to mark changes is far more preferable than a long, drawn out explanation of where the error is. For example, trying to state, "In object 1234, in the third paragraph, second sentence, near the end, the second to last 'an' should be 'a'." is a bad idea.

Typographical/Trivial updates must ONLY be changes that make no changes to the meaning or intent of the document. This determination must be "beyond reasonable doubt". If unsure at all, a finding should be written in place of that. An important note is that sometimes a typo is made, however that typo changes the meaning. In this case, the typo must have a finding to make the change. A simple example of this would be if the following three requirements existed:

- If the software receives a one, it shall display a blu circle.
- If the software receives a one, it shall display a green circle.
- If the software receives a three, it shall display a yellow circle.

In this case, it's quite obvious a copy-and-paste error was made in the second line, and it should have said "two" instead of "one". However, since changing it to a "two" would change the meaning of the requirement, a finding must be used to make the change. On the other hand, in the first requirement, changing "blu" to "blue" is a typographical issue, as it's obvious what the intent is.

4.5.4 Peer Review Process Findings

If an issue was discovered against the process followed, a finding is added with no artifact attached.

Examples of issues existing with the peer review (not limited to just this list):

- Description of the peer review is not complete or needs improvement or correction
- Producer checklist has an issue
- CR wasn't attached (or wrong CR was attached) to the peer review
- CR disposition was not filled out properly
- Wrong artifact or missing artifact attached to the peer review. Note: Depending on the nature of this, more actions may need to be taken. By definition, by not having the artifact in the review, Reviewers may not have reviewed it. The Leader should be involved in deciding what actions to take to ensure that the missing, or incorrectly marked artifacts, do undergo proper review. See Section 4.4 for guidance on reverting the state of a peer review.

4.5.5 What should go into a Resolution?

When a finding is Implemented, a Resolution should be entered, describing in detail the changes which were made as a result of the finding.

4.5.5.1 Good Examples

“Moved the test case 4.1.19 into section “4.2 – Code Inspection Verification Cases” in the VC&P document. Now the test case number is 4.2.9.” -- The resolution provided both the old section number and the new section number, making it easy to verify the change.

“In section 3.3.2.8, entry criteria, added the following sentence "The software under test must also be under engineering developmental configuration control prior to starting this activity."” -- The resolution identifies the location and the specific change made.

“In section 4.7, changed the text to "No source code will be developed at the module level. Any assumptions about the compiler will be described in the individual software application software plans." A reference was not added to the tools section for the tools used to load and configure the system, because this section is specific to the compiler.” -- The resolution provides the location of the change. In the last sentence, it also provides the reason a requested change was not made.

4.5.5.2 Bad Examples

“The code was updated.” -- The resolution does not provide the location of the change, nor a description of the changes made.

Finding text stated: “Object 2840 says “shall log a fault and when a single bit”. Remove “and”. Also, what type of fault should be logged: module fatal, VM fatal, or warning? This should be specified in the requirement. Resolution stated: “Removed “and””. – The finding resolution did not address the second half of the finding. The resolution should explain why this was not added to the requirement.

“2374: Install entry point function flow chart modified accordingly.” -- It is good the object ID was included in the resolution, but the use of “accordingly” is too vague. The verifier has to search through the entire flowchart to figure out what changed. If this finding is audited, then the engineer supporting the audit has to perform a live review with the auditors to determine what changed.

“2942: requirement modified.” -- The object ID is included, but the resolution does not describe what the modification was.

4.6 DOORS Documents in a Peer Review

Due to tool restrictions, it is not preferred to perform DOORS minor baselines for every peer review, except for artifacts which rarely change. Therefore, the following peer review process shall be followed when the DOORS baseline feature is not utilized.

4.6.1 Adding DOORS Modules to Review

4.6.1.1 Artifacts

When the artifact under review is a DOORS document, both the affected DOORS module and a .pdf export of the changes shall be artifacts under review. For a requirements document, the .pdf shall be generated with at least the attributes defined in the Peer Review View, as described in the project’s DOORS documentation method (see the project’s development plan for specific reference to this method), and filtering on the CR number(s) referenced in the peer review. Each project's Subversion or ClearCase repository will store the .pdf's for review. It is recommended that the pdf be named according to the CR number, peer review number, and artifact title like this: CR#_PeerReview#_ArtifactTitle.pdf (e.g. FUSN000123456_LINK0002040_SRSforAPM.pdf).

The following shows how a DOORS document and .pdf would be added as artifacts to the peer review:

Filename	Path	Previous Version	Current Version
FUSN000123456_LINK0002040_SRSforAPM.pdf	https://asvn/csdlnkver-dlnkx1/documents/FUSN000123...	(none)	14679
00042302	Collins1 Database/DLNKX1/Common/SW Reqs/SRS for APM	6.3.	Feb 8, 2012 1:25:00 PM

Figure 2: Adding DOORS Artifacts for Review

Note that the Previous Version of the .pdf is (none) and the Current Version is the Subversion revision number. The Previous Version of the DOORS document is the latest formal (minor or major) baseline and the Current Version is the current date/timestamp of the document. The intent of the .pdf is to provide a record of the modified/added/deleted object ID(s) prior to the DOORS document entering peer review and then again after all peer review findings have been implemented in the DOORS document.

4.6.1.2 References

When a DOORS document is a required reference into a peer review, several scenarios must be considered to ensure proper versioning of the reference materials can be provided.

1. Reference material is contained in a minor or major DOORS baseline:

- include the DOORS document and the associated baseline as a Reference.

2. Some of the reference material is contained in a minor or major DOORS baseline and some is not contained in a baseline:

- include the DOORS document and the associated baseline as a Reference, and
- include the Resulting Version of the peer reviewed .pdf export for the unbaselined material as a Reference.

3. None of the reference material is contained in a minor or major DOORS baseline:

- include the Resulting Version of the peer reviewed .pdf export for the unbaselined material as a Reference.

4.6.2 Findings Against a DOORS Document

If a Reviewer discovers an issue with the DOORS document under review, the Reviewer creates a finding against the DOORS document as the affected artifact. The finding is expected to be implemented and resolved in DOORS without the need to create new .pdf, unless the implementer of the finding sees a value of creating new .pdf. If the .pdf export of the DOORS module was generated incorrectly, it is acceptable for a finding to be created against the .pdf only.. A finding will be created and verified that all proposed changes in the DOORS document for the CR(s) under review have been incorporated in the final pdf. This finding must not be implemented until all other findings in the review have been closed or cancelled, as it is meant to be the final change against the DOORS document and .pdf for this review. As part of this finding, a new .pdf will be generated that demonstrates all of the changes from the peer review have been implemented into the DOORS document. Note: if the creation of PDFs did not occur for DOORs modules that function as proxy for linking (i.e. Common CSU), then a minor baseline need to be created for the module (see section 4.6.3).

A DOORS baseline will, generally, not be completed for an individual peer review or Change Request. Therefore, during the Completed state of the peer review, the Resulting Version of the DOORS document under review is anticipated to be selected as a date/timestamp. The date/timestamp should be selected as that from the final finding implemented against the DOORS document under review.

Note: When a Recorder is utilized, it should not be assumed the Recorder will monitor the review to know when this finding can be implemented. The responsibility lies with the Producer to ensure the Recorder knows when the action can take place.

4.6.3 DOORS Process Exception

At the discretion of the cognizant Engineering Manager, DOORS minor baselining may be used in lieu of generating .pdf exports. This should only be allowed for DOORS documents which are peer reviewed infrequently or are small in size. In this case, the document should be minor baselined once all findings are implemented to capture all changes which took place during a peer review.

4.6.4 OLE Objects

OLE objects are often used to include information that sources from an external file, such as a Word document, an Excel spreadsheet, or a Visio drawing. When an OLE object is created or modified, the external file shall be placed under configuration control. Each project using OLE objects should specify a location in their Subversion repository to store these external files. If an OLE object is being reviewed, the location of the OLE object shall be included in the review description.

5 Checklists

The following sections will list the minimum questions to be asked in the Producer, Reviewer, and Leader Checklists. When an item is marked “N/A” in a checklist, the individual must indicate the reason the item is not applicable in the comments field. If an item is marked “No” in a checklist, a Finding or Change Request must be written to address the deficiency. The Finding # or Change Request # must be indicated in the comments field for that checklist item. If there are multiple CR #’s applicable to the deficiency, it is acceptable for the comment to point to the applicable verification results spreadsheet (e.g. Test Case Summary) instead of listing each CR. It is not expected a question in the Producer Checklist would result in an answer of “No”, as the response would indicate the review is taking place prematurely. Allowable exception: If an answer of “No” without a documented Finding or Change Request is believed to be necessary in a Producer or Reviewer checklist, the Engineering Manager or Technical Project Manager cognizant over the project must have agreed. This agreement must be indicated in the comments field for that checklist item.

The project’s development plan will document the exact checklists to be used.

5.1 Producer Checklist

- Is there a CCB-approved Change Request for the artifacts under review, and is the CR listed in the References tab of the review? Note: If this is a Release Review for a new part number (i.e. Rev -) or the artifact under review does not require change management, choose N/A and enter “No CR Required” as a Generic CR in the References tab.
- Does the peer review’s Summary line follow the guidance in the Peer Review Process?
- Does the peer review’s Description follow the guidance in the Peer Review Process, including a description of the changes to be reviewed, instructions for reviewing the material, and tasks to be performed by the Reviewers?
- If there is a DOORS document under review, has the .pdf export been generated, stored, and attached to the Artifacts tab per the Peer Review Process?
- Has the document been proofread, checked for misspellings, proper use of punctuation, correct grammar, and consistent use of terms, and have terms, acronyms, and abbreviations been defined? Note: it is often easier to detect these types of errors if the document is exported to Microsoft Word.
- Have the Reviewer Checklist(s) for the artifact type(s) under review been attached to the Checklists tab and left incomplete?
- Has the Leader Checklist been attached to the Checklists tab and left incomplete?
- Has the guidance in the Peer Review Process been followed in making the determination between Desk or Meeting Review?
- Have the questions listed in the Reviewer Checklist(s) for this review been considered and accounted for by the Producer?
    - *Note: a project may choose to duplicate questions from the Reviewer Checklist(s) into the Producer Checklist, thereby removing the requirement for this question to be asked. The intent is to ensure any required entrance criteria and certification questions have been taken into account before the Producer enters the peer review.*

5.2 Reviewer Checklist

- If a DOORS document is under review, create a Draft finding and advance to Assigned with the following attributes: 1) Implementer = Producer or Recorder of the review, 2) Verifier = Main Reviewer, 3) Artifacts = DOORS document and related .pdf, and 4) Description = “Once all other findings against the DOORS document have been Closed or Cancelled, incorporate all changes listed in _Proposed Change. Then, regenerate the .pdf for the DOORS document under review.” Has the final DOORS document finding been created and assigned, as requested here?
- *Additional questions should be added for any entrance criteria specified in the project’s development plan.*

- *All certification (e.g. DO-178, DO-254, ARP-4754) checklist questions, related to the artifact type under review, must also be included in the Reviewer Checklist. The exact verbiage on these checklist items will be documented in the project's development plan.*

5.3 Leader Checklist

- Does the Leader concur with the results of the peer review?

6 PREP Entry Fields

The following tables describe, in one location, the fields to be filled out in PREP, throughout the peer review process.

Table 3: Peer Review Form Entry Guide

Peer Review Form Entry	Mandatory?	PREP Tab	Definition
PRID	Automatic		PREP automatically assigns a Peer Review ID.
Author	Automatic	Properties	Person entering data into the Peer Review record. PREP will default to the username that opened the new peer review record.
Requestor	Automatic	Properties	Person that requested the review be created. PREP will default to the username that opened the new peer review record but may be modified if the requestor is not the same as the author. Note: When an EPA creates a peer review at the request of an engineer, the engineer should be listed as the Requestor.
Target Close Date	Optional	Properties	This is a planned date for the peer review to be closed.
Summary	Required	Properties	A short summary of the Peer Review. Note that this Summary field is treated in most cases as a title, so it should be appropriately brief, descriptive, and include the most important aspect of the summary first.
Description	Required	Properties	A detailed description of the Peer Review. The description provides sufficient detail about the Peer Review so that anyone can understand what the Peer Review encompasses and why the Peer Review is needed. If necessary, this should also include any special review instructions (e.g. “This review covers only sections 2-7 of the module.” or “This is the safety review of allocated safety requirements and derived requirements. Safety is to review those requirements and determine the correctness of the Safety attribute.”
Review Type Button	Required	Properties	A selection for the Desk Review or Meeting Review.
Detection Activity	Optional	Properties	The current RC TCP development activity for the work group conducting the peer review.
SAP Network Activity	Optional	Properties	The producer will choose from the existing list of Network Activity (NWA) or add the appropriate NWA.
Other Information	Optional	Properties	To add supplemental information if desired.
Meeting Date/Time	Required for Meeting Review	Participants	Date and Time the Peer Review Meeting will be held.
Meeting Location	Optional	Participants	Location where the Peer Review Meeting will be held.
Duration	Optional	Participants	Used to record how long a formal Peer Review meeting lasts. Initially this field would be populated before the review to document how long the meeting is expected to last. This field would then be updated, as needed, after the Peer Review takes place.
Desk Review Date/Time	Required for Desk Review	Participants	Date and Time the Desk Review should be complete. All findings should be entered prior to this date/time.
Participants	Required	Participants	List of team members invited to Peer Review the listed artifacts.

Peer Review Form Entry	Mandatory?	PREP Tab	Definition
Artifact Type	Required	Artifacts	Drop down menu selection of the different artifact types.
Artifact(s)	Required	Artifacts	A list of all modules, files, materials, etc. being reviewed. The author may choose from artifacts currently available in the project configuration management tool. The previous version, current version, and resulting version are required fields within the artifact.
Change Requests	Required	References	Listing of CRs/WPs associated with a specific Peer Review. Choose from the CRs available in the project's ClearQuest database, the JIRA database or enter "No CR Required", where allowable by this document.
Documents	Optional	References	Any additional configuration management-controlled reference material that will either aid a Reviewer during the Peer Review or is a required reference for proper review of the artifacts under review.
Findings	Optional	Findings	Listing of findings associated with a specific review. Findings are created as the result of the Peer Review.
Peer Review Checklists	Required	Checklists	The Producer, Reviewer, and Leader Checklists to be completed during the Peer Review.

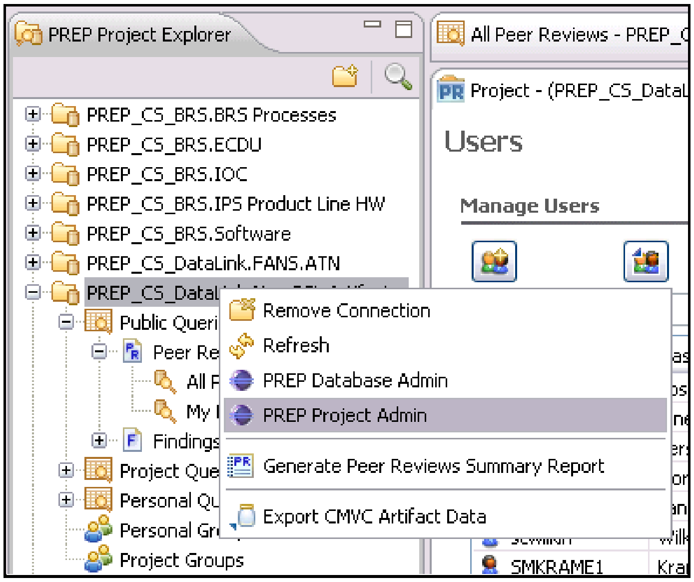
Table 4: Findings Form Entry Guide

Finding Form Entry	Mandatory?	PREP Tab	Definition
FID	Automatic		PREP automatically assigns the Finding ID.
Originator	Automatic	Properties	The login id of the person(s) requesting the action that resulted in a finding. The login id of the person that creates the finding will be automatically populated but may be modified.
Finding Description	Required	Properties	This field provides sufficient detail about the finding so that the implementer can understand what the finding is and why the finding is requested/needed.
Proposed Solution	Optional	Properties	This field allows possible solution to be defined.
Page Number	Optional	Properties	If the artifact has page numbers, the Originator has the option to fill in this field to make it easier for the implementer of the finding to locate the error.
Artifact	Optional	Properties	The Originator will select from the list of artifacts that are part of the peer review that the specific error was identified in. This may be left blank for a finding against the process.
Status	Required	Properties	In a desk review, the Originator of the finding will decide what the status of the finding is. In a meeting review, the review team will decide what the status of the finding is. • Issue - a finding that if left uncorrected, would prevent the artifact from fully meeting its purpose. • Trivial Issue - a finding that does not constitute a flaw that causes the artifact to not meet its intended purpose and/or requirement(s), but is desired to be corrected and tracked to closure. Ideally, these types of issues have already been purged by the artifact Producer (it is acceptable for reviewers to communicate such concerns to the Producer to avoid the PREP overhead of processing this type of issue). • Non-Issue - a finding that is determined to not be an Issue or Trivial Issue and no change to the artifact is required or desired.
Implementer	Required	Properties	The login id of the person(s) responsible for implementing the change and for recording a description of the changes made.
Verifier	Required	Properties	The login id of the person responsible for verifying the finding is completed satisfactorily. The verifier must be a different person than the implementer(s).
Implementation Due Date	Optional	Properties	The recommended date at which the implementation effort for the finding should be complete.
Verification Due Date	Optional	Properties	The recommended date at which the verification effort for the finding should be complete.
Working Version and Resulting Version	Required	Verification	The working version of the artifact is the version that the implementer started to make the correction for the findings. The resulting version is the final version of the artifact once the finding is completed.
Resolution	Required	Verification	A complete summary of the change/update made to implement the finding.
Implemented Box	Required	Verification	The implemented box must be filled in when the implementers believes that their resolution is completed for their part of the finding's correction.
Verification Box	Required	Verification	The verifier will check this box after the verifier has confirmed the resolution does correct the finding.
Other Info	Optional	Verification	Supplemental information may be added in the area, if desired.

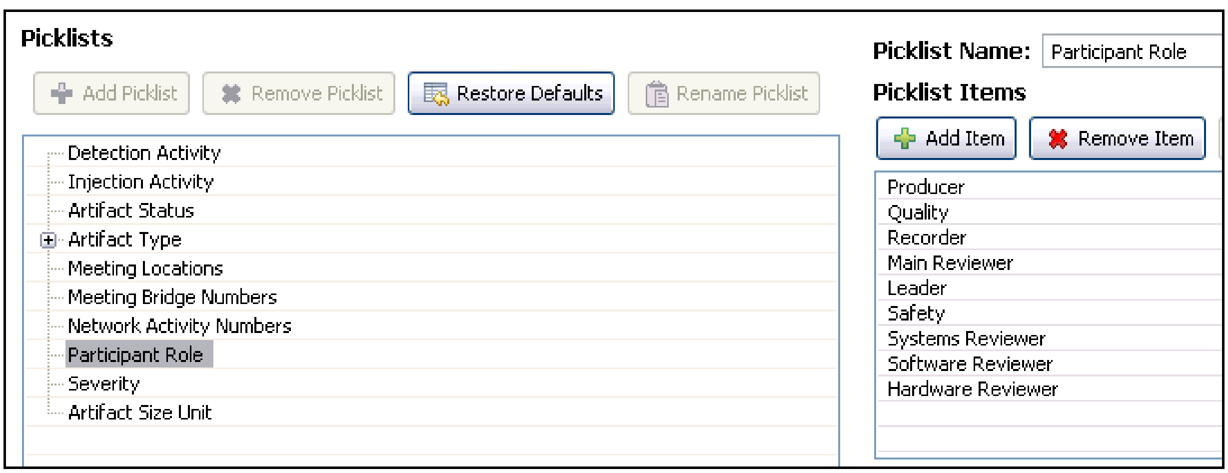
7 PREP Project Rules

This section should be used as step by step instructions for a PREP Process Admin to set up rules in the project's PREP database (i.e. PREP Project). By establishing these rules, the PREP tool will enforce as much of this Peer Review Process as possible.

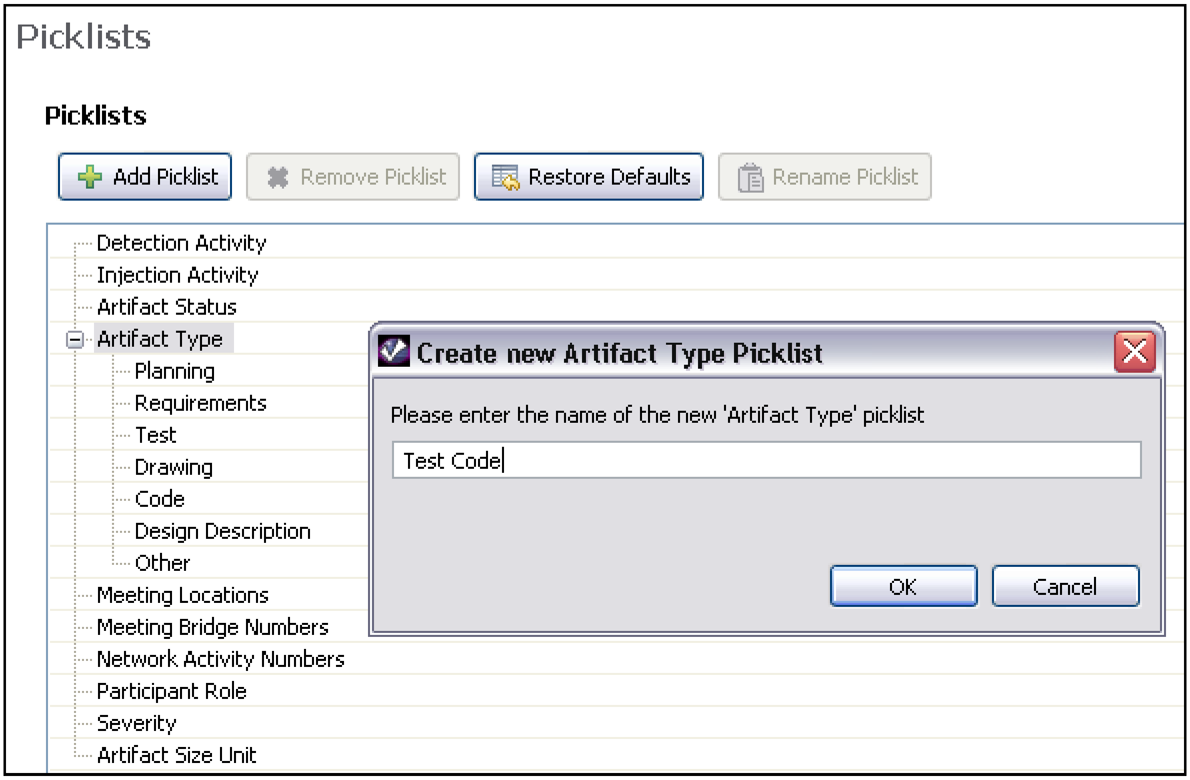
Step 1: Select the Project Database, and open the PREP Project Admin page.



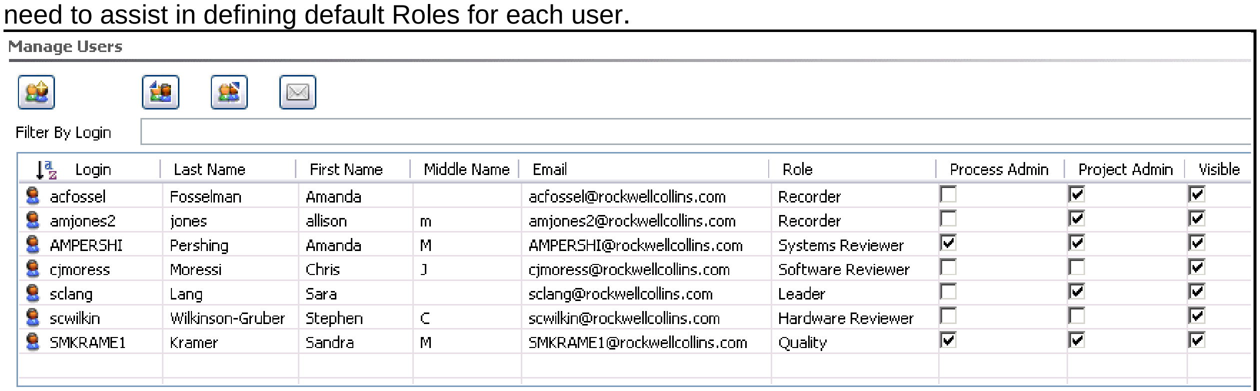
Step 2: Once on the Project Admin page, select the "Picklists" tab and choose Participant Role. Add the default and specialty roles shown below.



Step 3: Continuing on the "Picklists" tab, choose the Artifact Type picklist. Update the Artifact Types to reflect the specific artifact types defined by the project team.



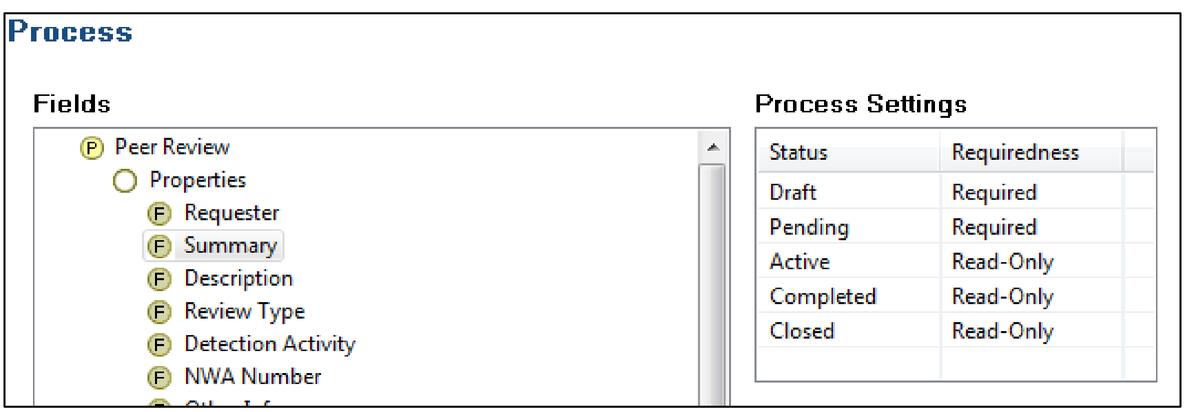
Step 4: Select the “Users” tab and assign default Roles to all users. Note: the Engineering Manager will need to assist in defining default Roles for each user.


Manage Users

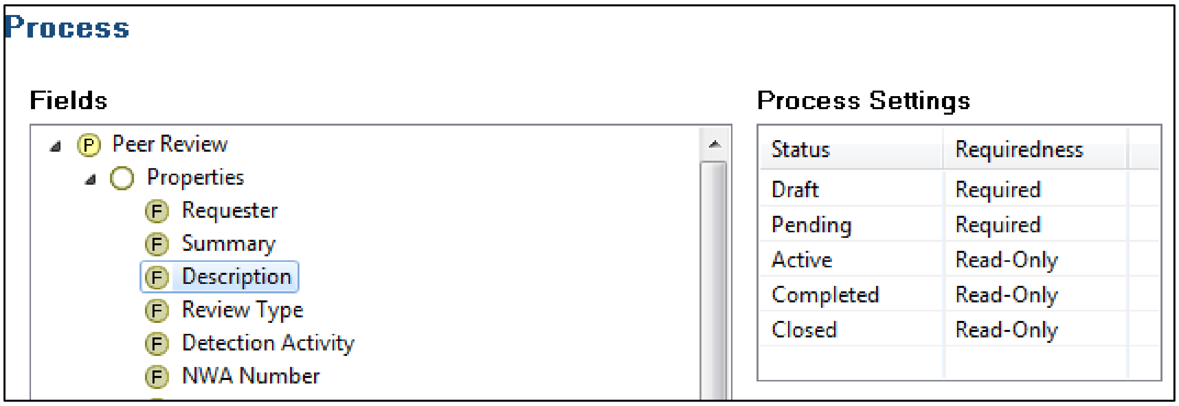
Filter By Login

Login	Last Name	First Name	Middle Name	Email	Role	Process Admin	Project Admin	Visible
acfossel	Fosselman	Amanda		acfossel@rockwellcollins.com	Recorder	☐	☑	☑
amjones2	jones	allison	m	amjones2@rockwellcollins.com	Recorder	☐	☑	☑
AMPERSHI	Pershing	Amanda	M	AMPERSHI@rockwellcollins.com	Systems Reviewer	☑	☑	☑
cjmoress	Moressi	Chris	J	cjmoress@rockwellcollins.com	Software Reviewer	☐	☐	☑
sclang	Lang	Sara		sclang@rockwellcollins.com	Leader	☐	☑	☑
scwilkin	Wilkinson-Gruber	Stephen	C	scwilkin@rockwellcollins.com	Hardware Reviewer	☐	☐	☑
SMKRAME1	Kramer	Sandra	M	SMKRAME1@rockwellcollins.com	Quality	☑	☑	☑

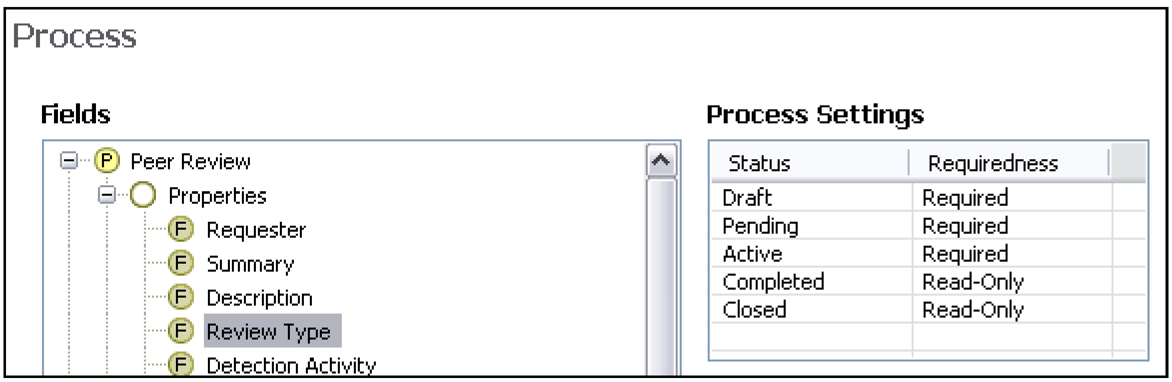
Step 5: Select the “Process” tab. Select Summary and choose the settings shown below.



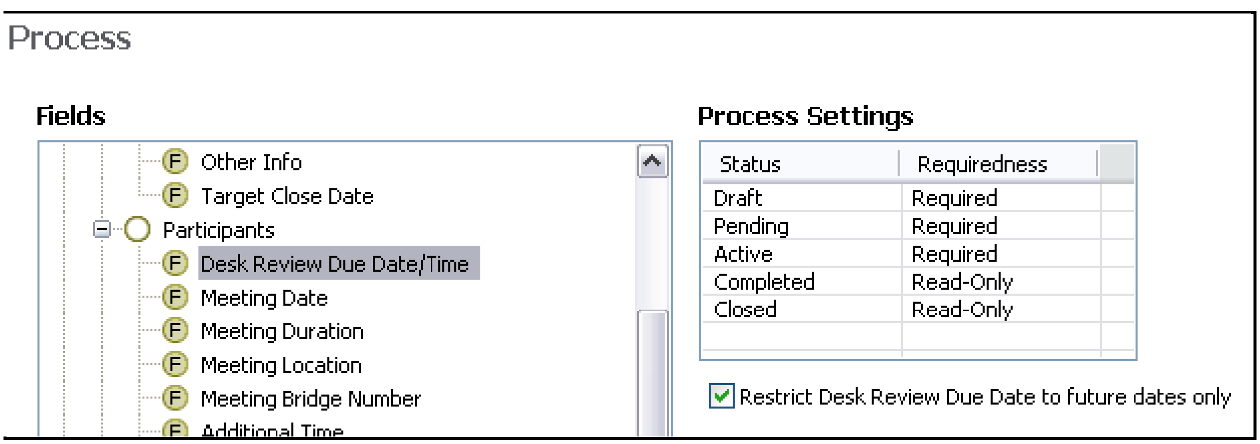
Step 6: Select Description and choose the settings shown below.



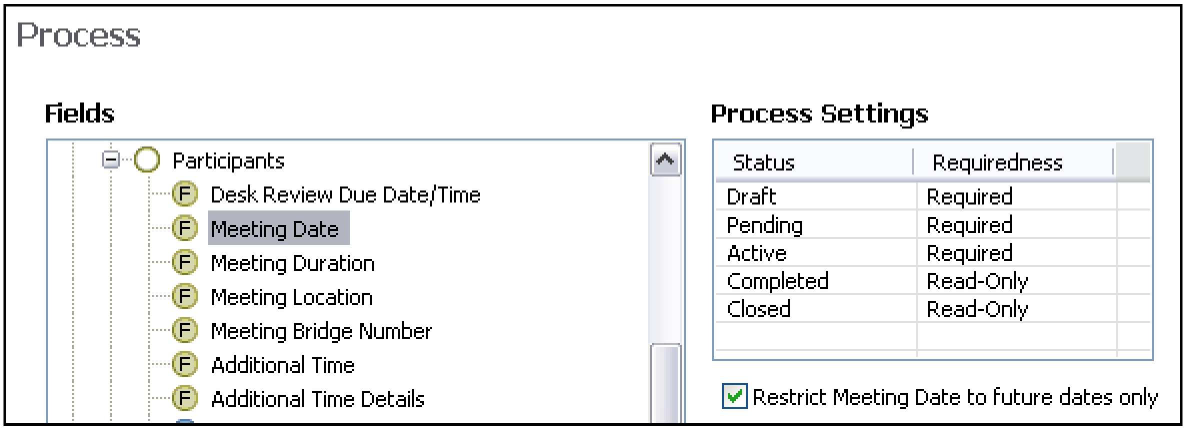
Step 7: Select Review Type and choose the settings shown below.



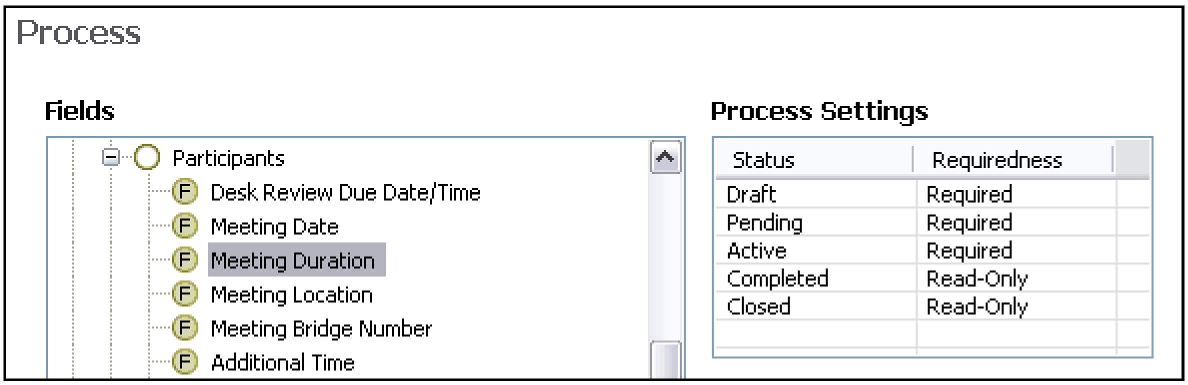
Step 8: Select Desk Review Due Date/Time and choose the settings shown below.



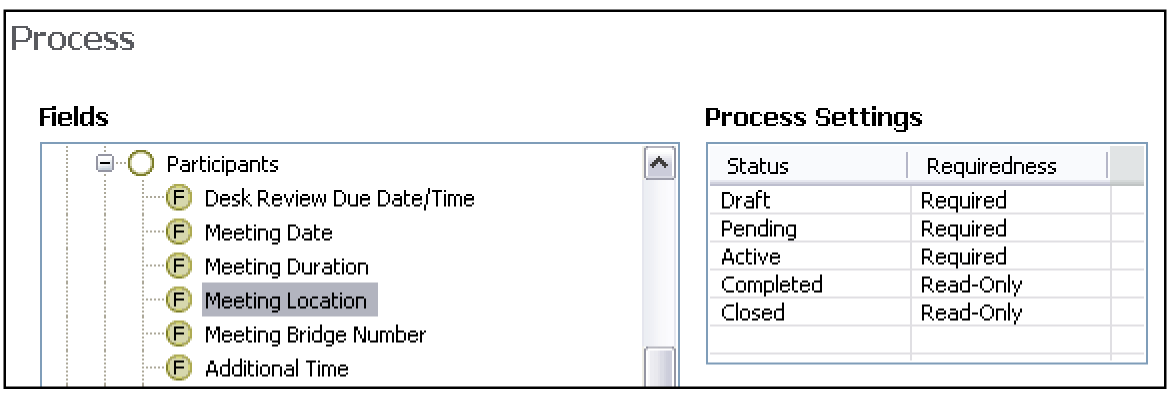
Step 9: Select Meeting Date and choose the settings shown below.



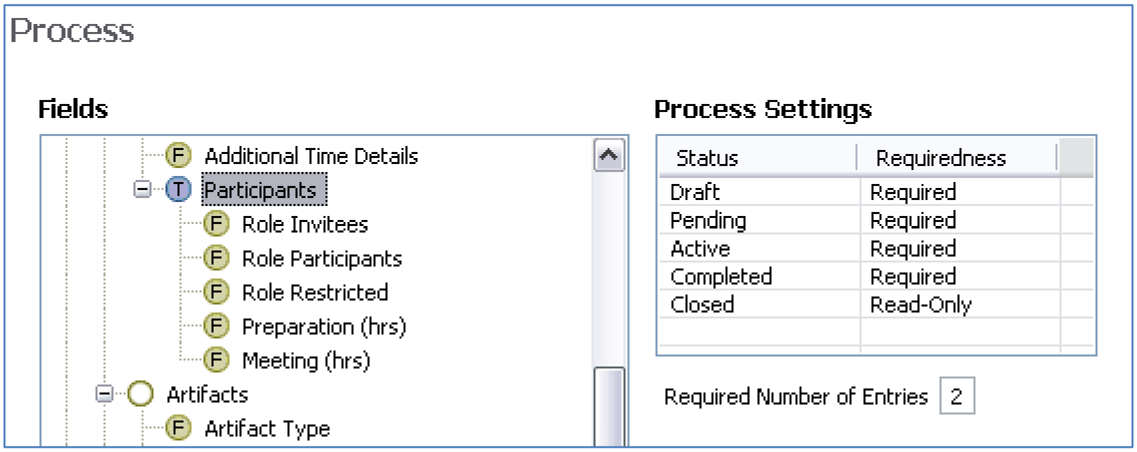
Step 10: Select Meeting Duration and choose the settings shown below.



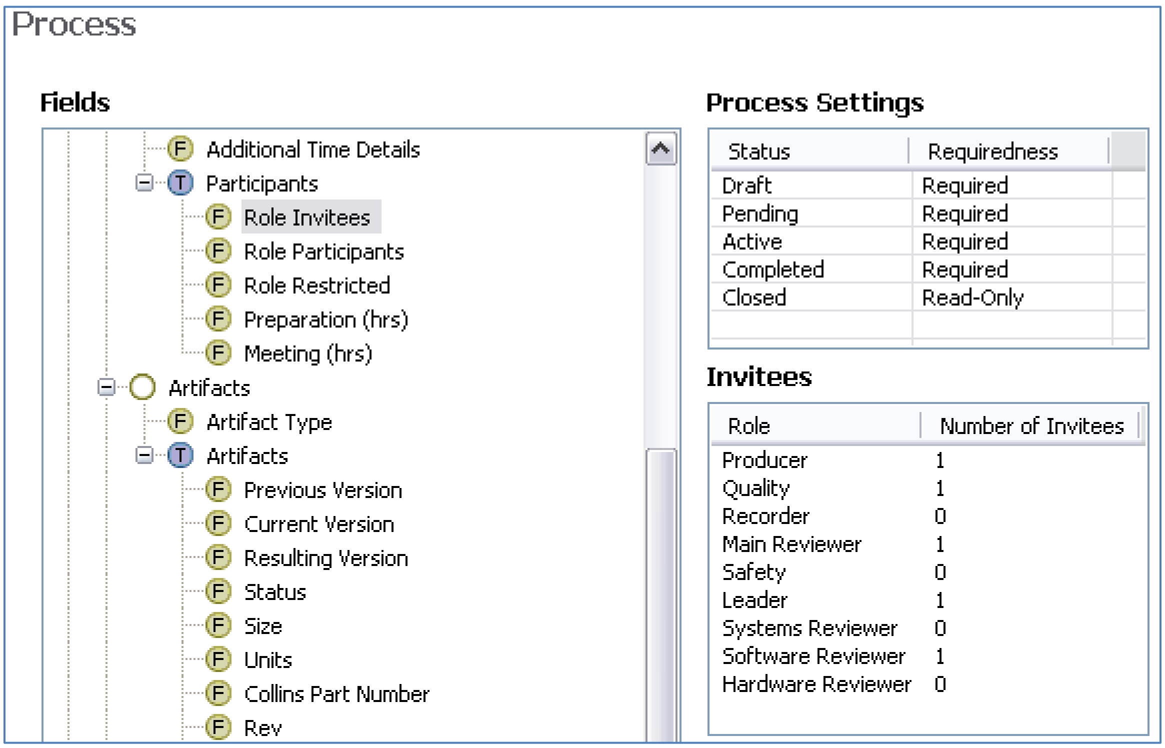
Step 11: Select Meeting Location and choose the settings shown below.



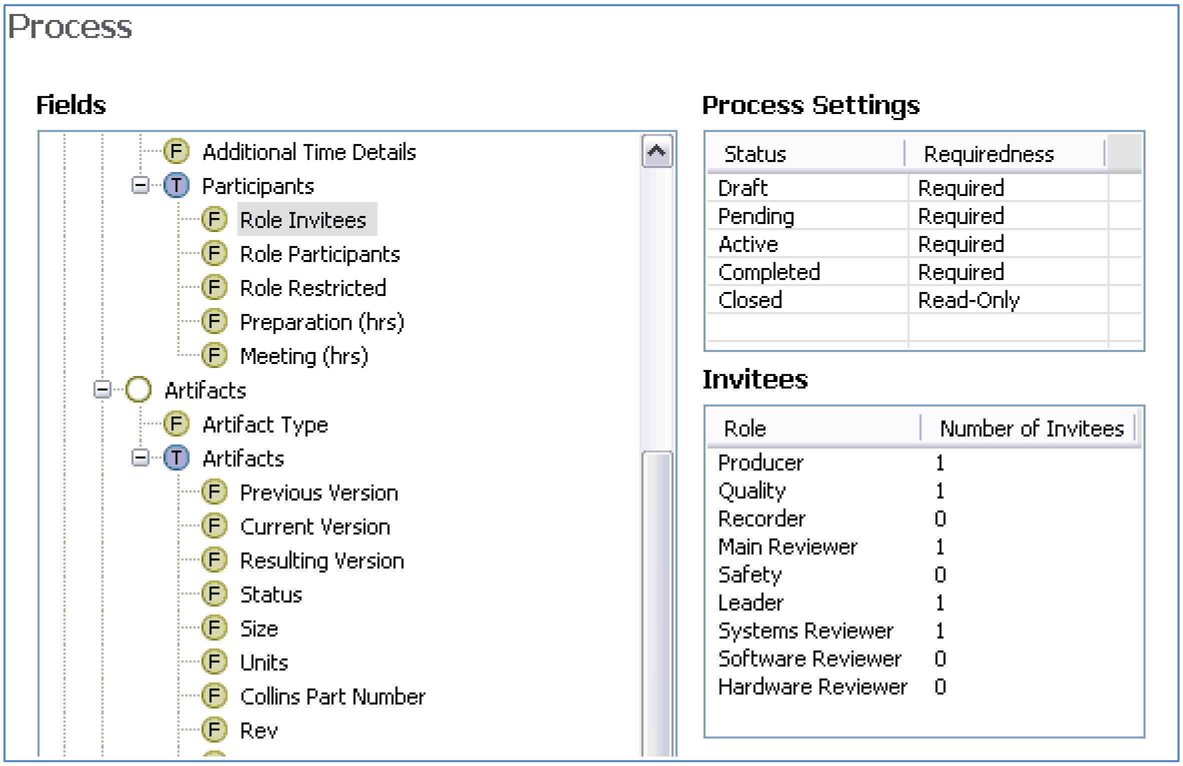
Step 12: Select Participants and choose the settings shown below.



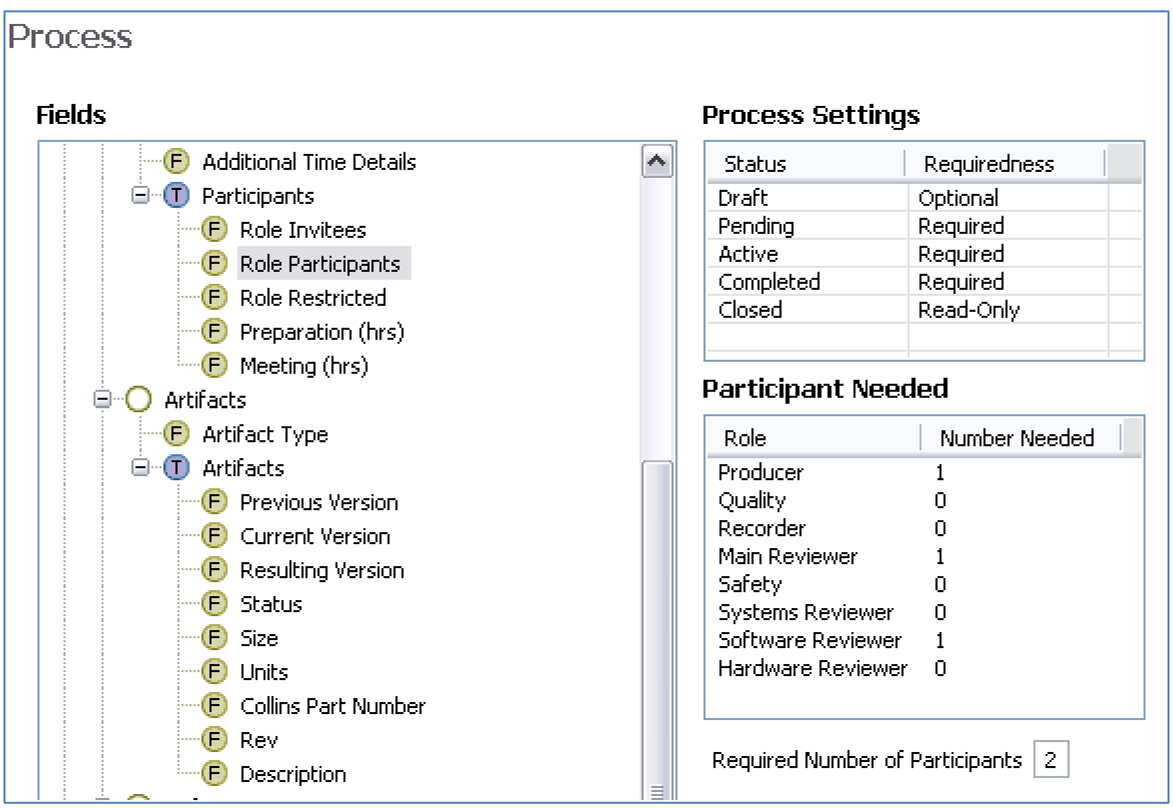
Step 13a: (Software Teams Only) Select Role Invitees and choose the settings shown below.



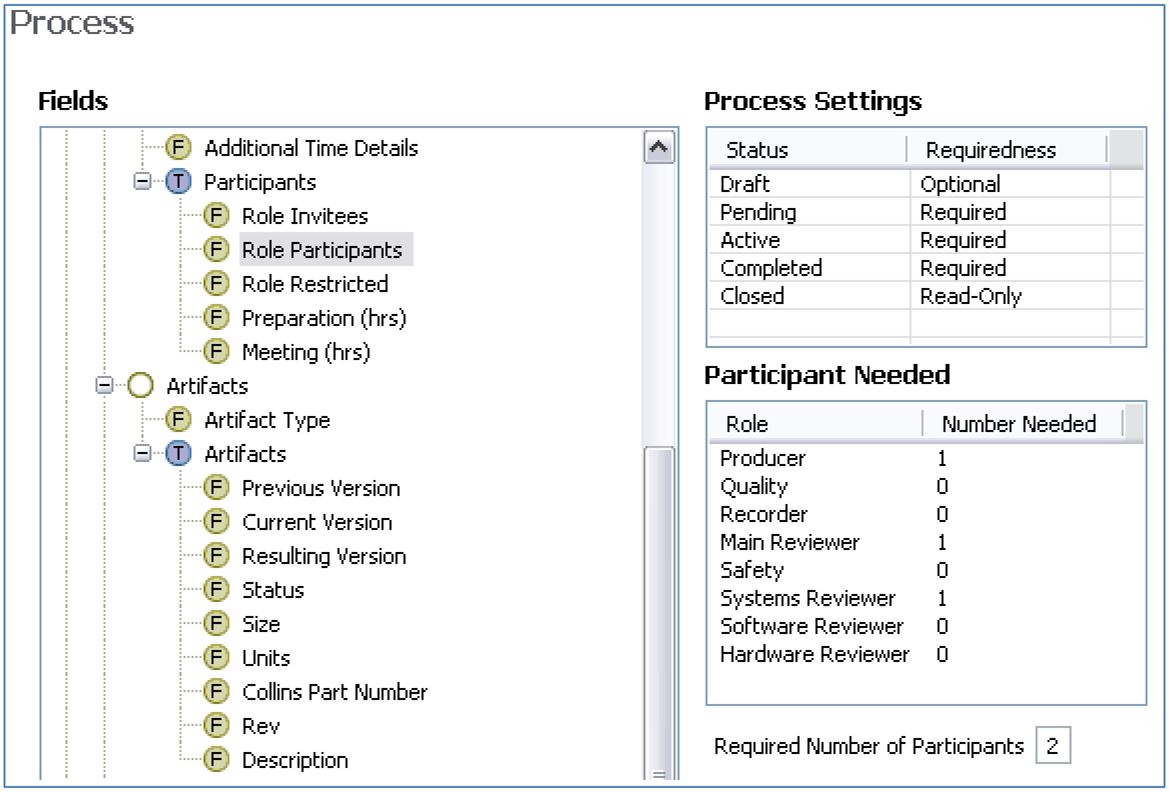
Step 13b: (System Teams Only) Select Role Invitees and choose the settings shown below.



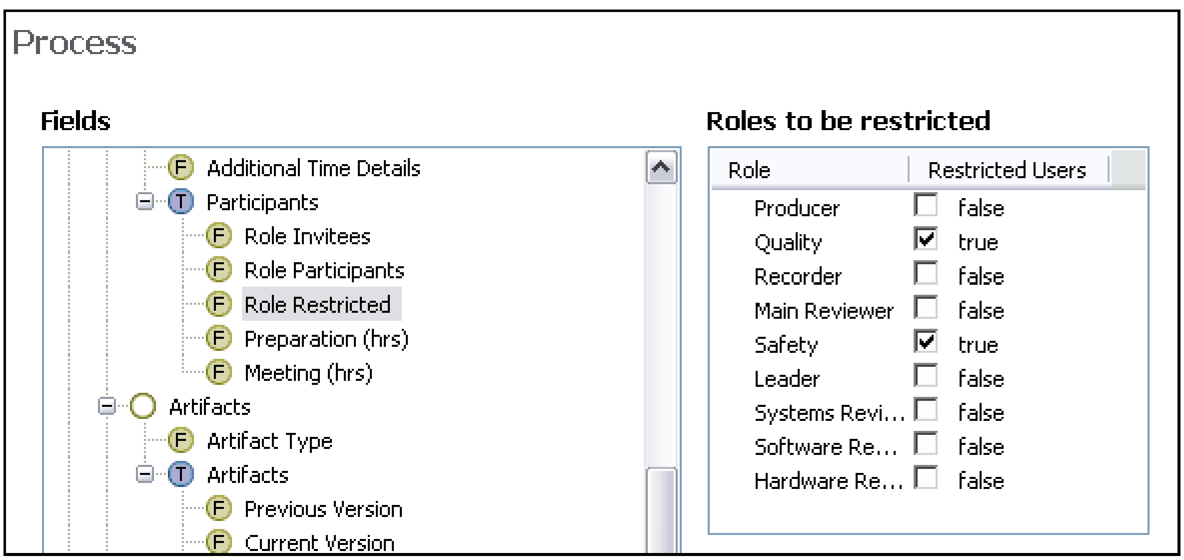
Step 14a: (Software Teams Only) Select Role Participants and choose the settings shown below.



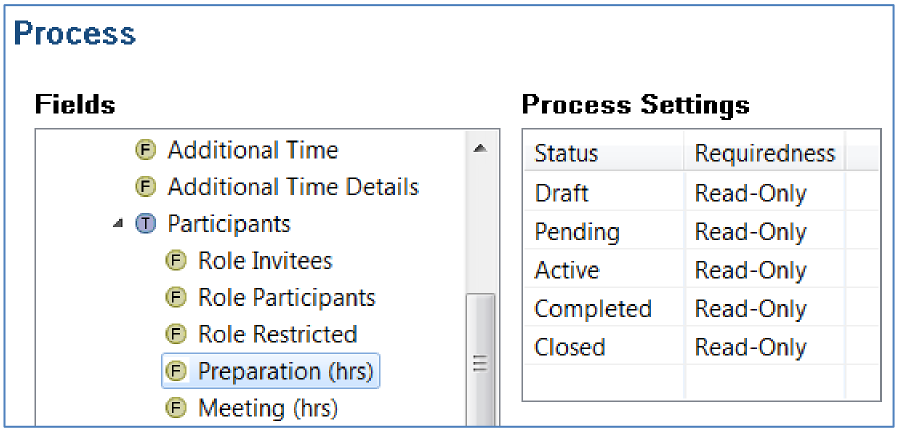
Step 14b: (System Teams Only) Select Role Participants and choose the settings shown below.



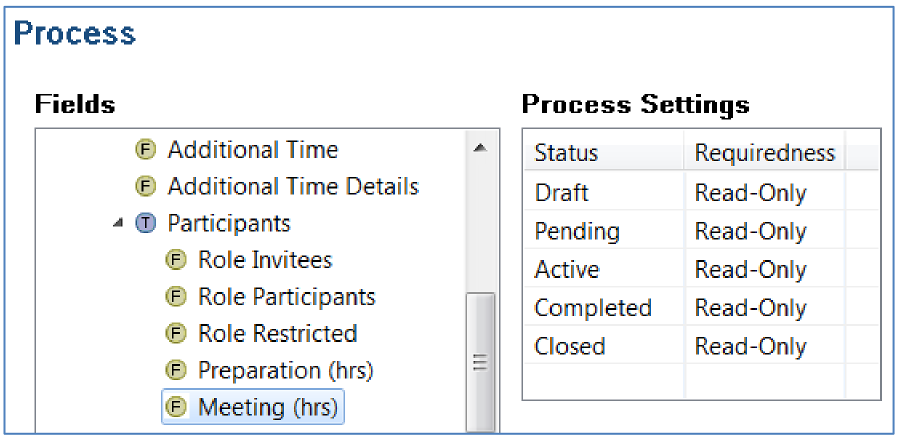
Step 15: Select Role Restricted and choose the settings shown below.



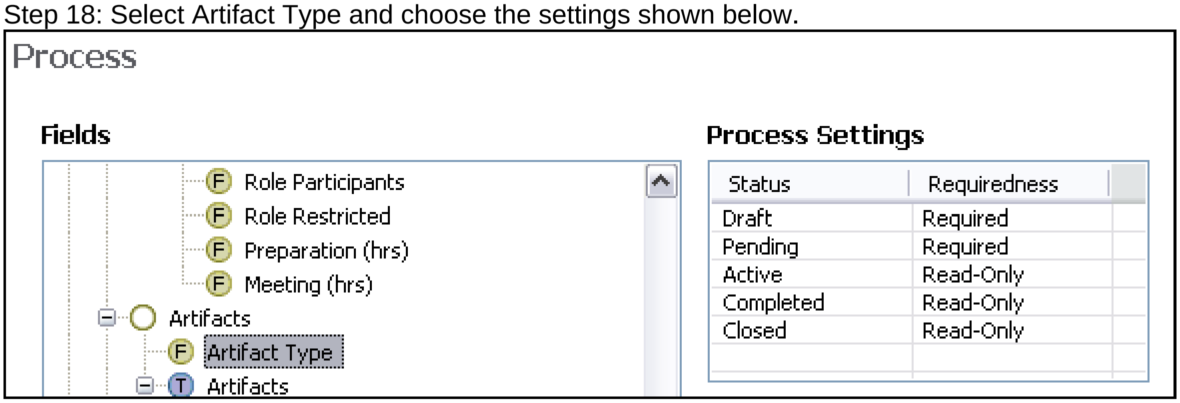
Step 16: Select Preparation (hrs) and choose the settings shown below.



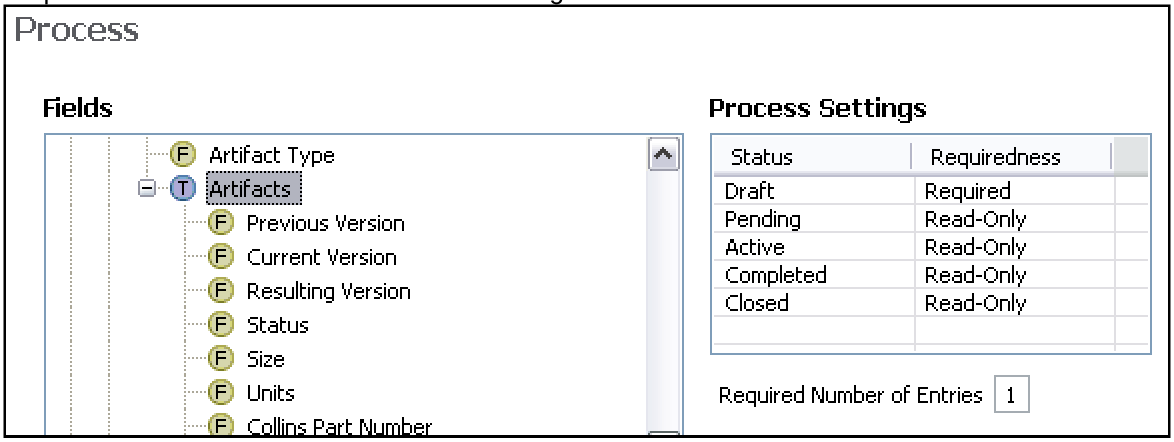
Step 17: Select Meeting (hrs) and choose the settings shown below.



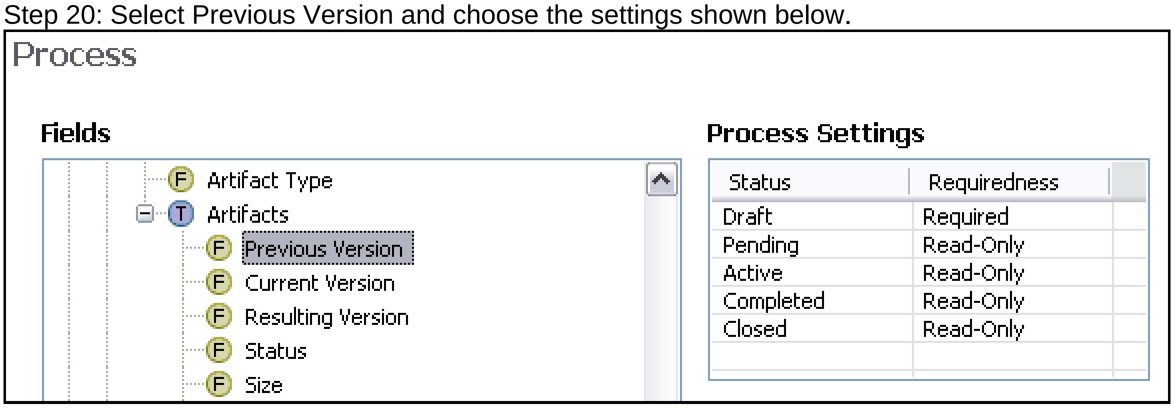
Step 18: Select Artifact Type and choose the settings shown below.



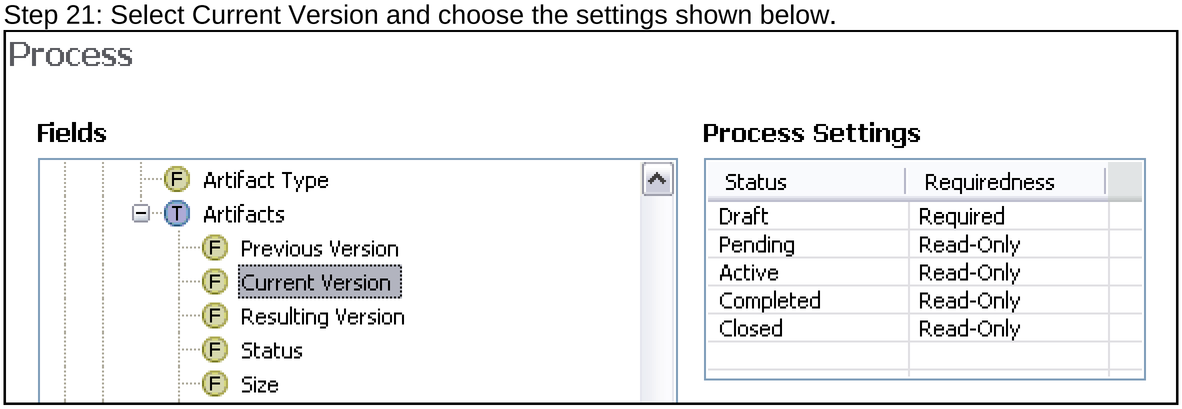
Step 19: Select Artifacts and choose the settings shown below.



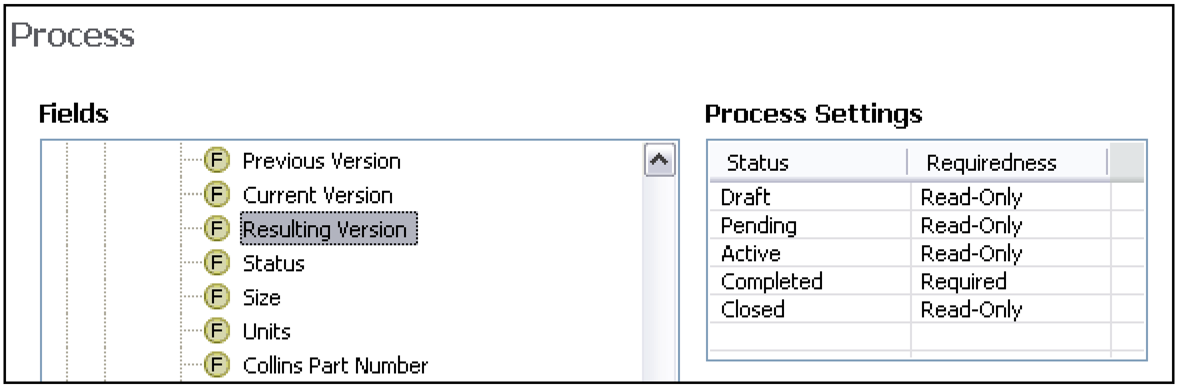
Step 20: Select Previous Version and choose the settings shown below.



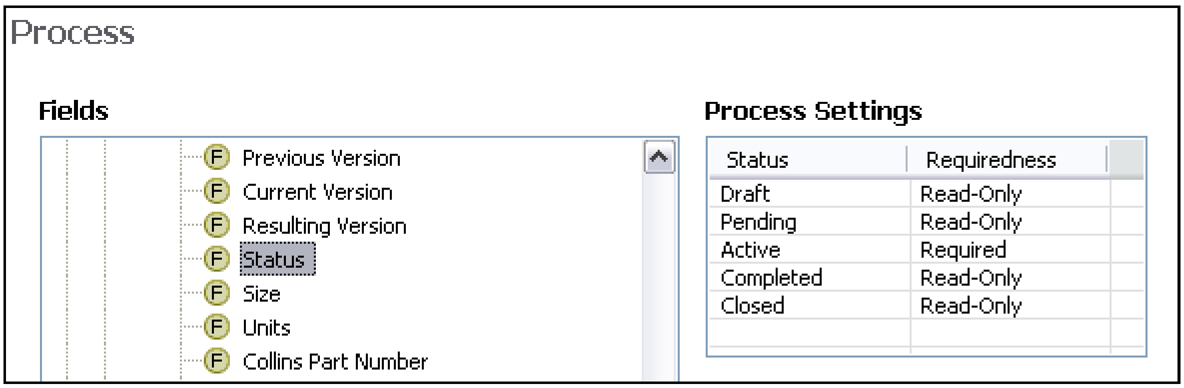
Step 21: Select Current Version and choose the settings shown below.



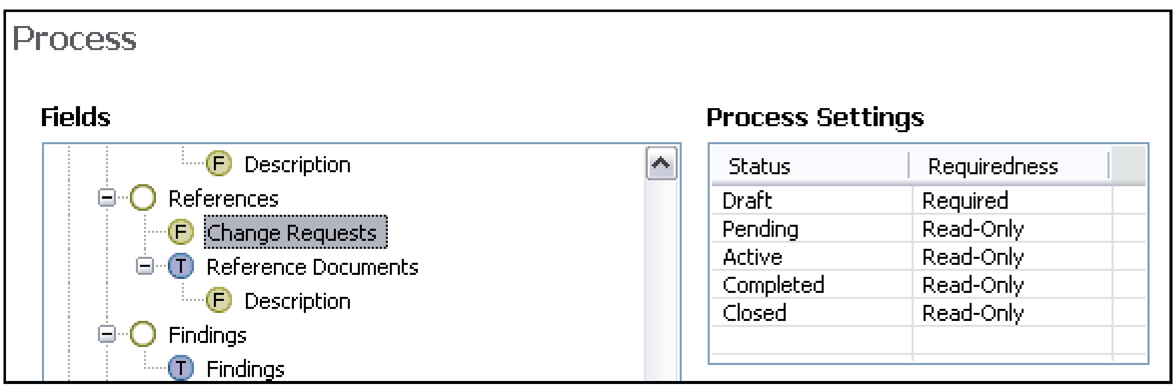
Step 22: Select Resulting Version and choose the settings shown below.



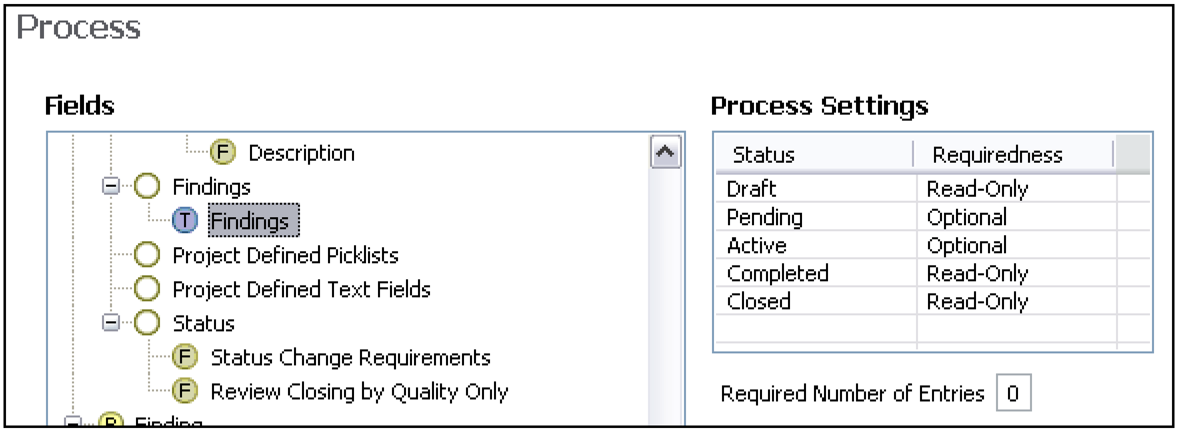
Step 23: Select Status and choose the settings shown below.



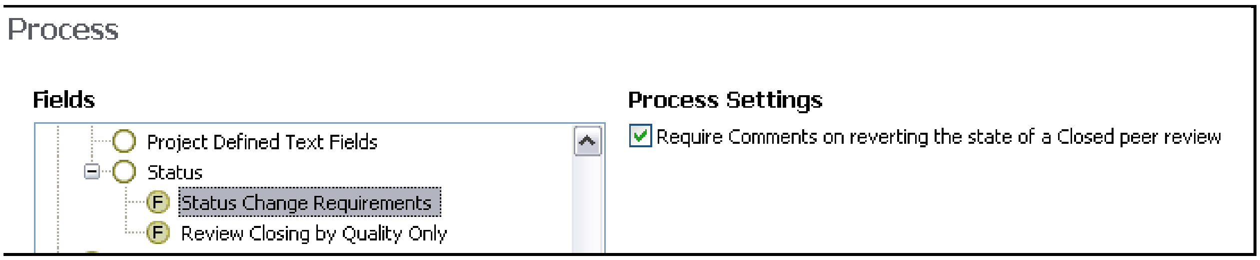
Step 24: Select Change Requests and choose the settings shown below.



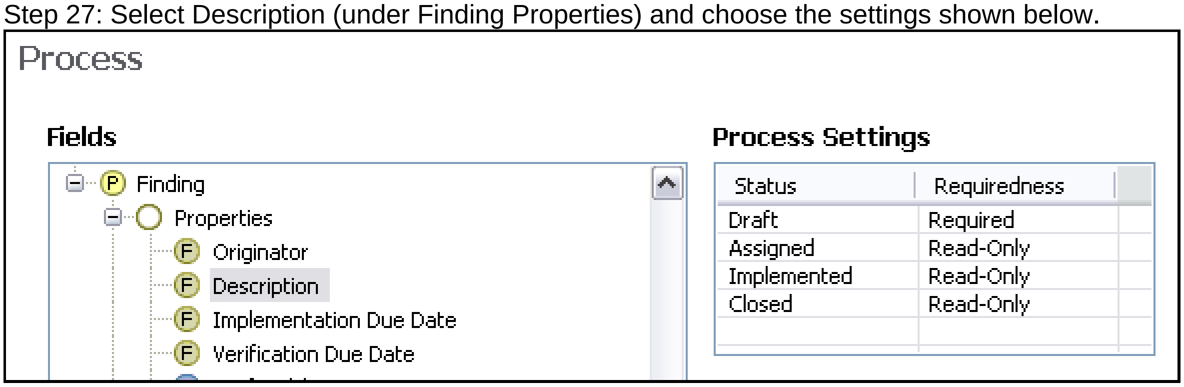
Step 25: Select Findings and choose the settings shown below.



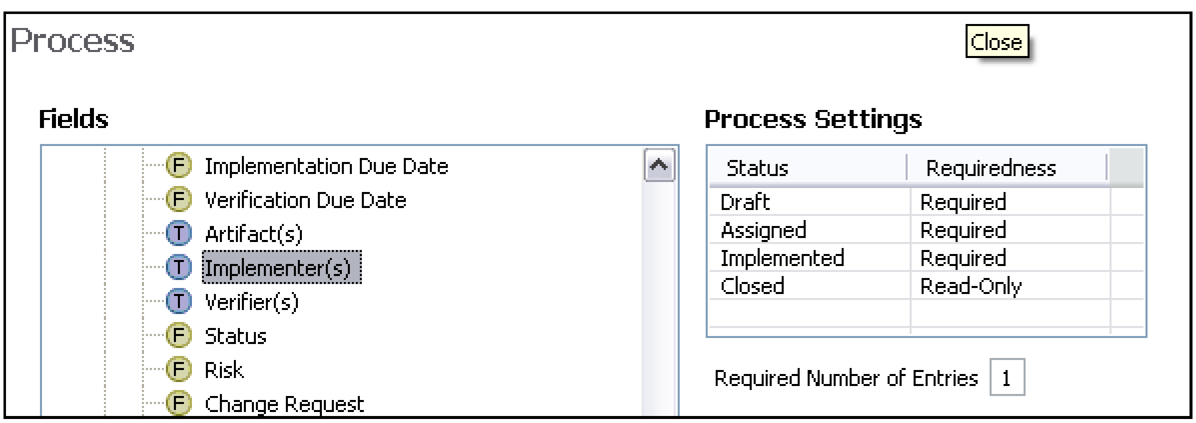
Step 26: Select Status Change Requirements and choose the settings shown below.



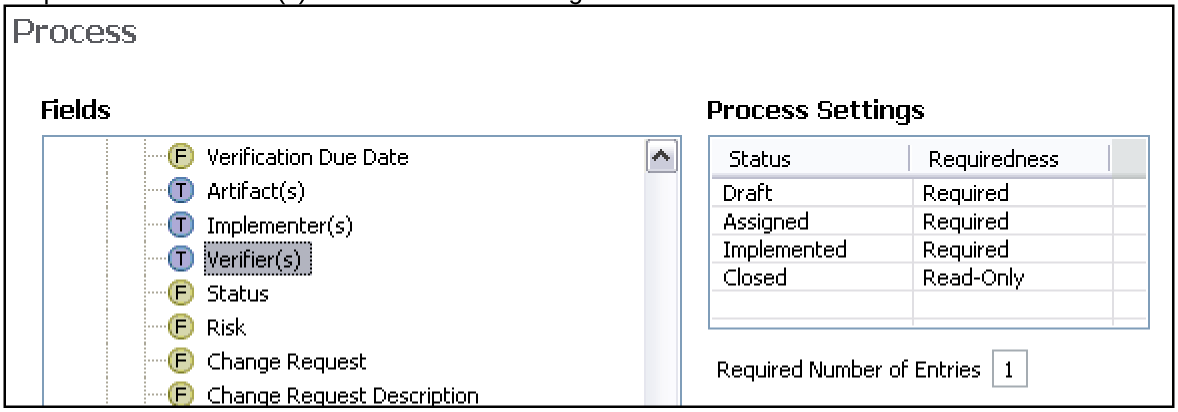
Step 27: Select Description (under Finding Properties) and choose the settings shown below.



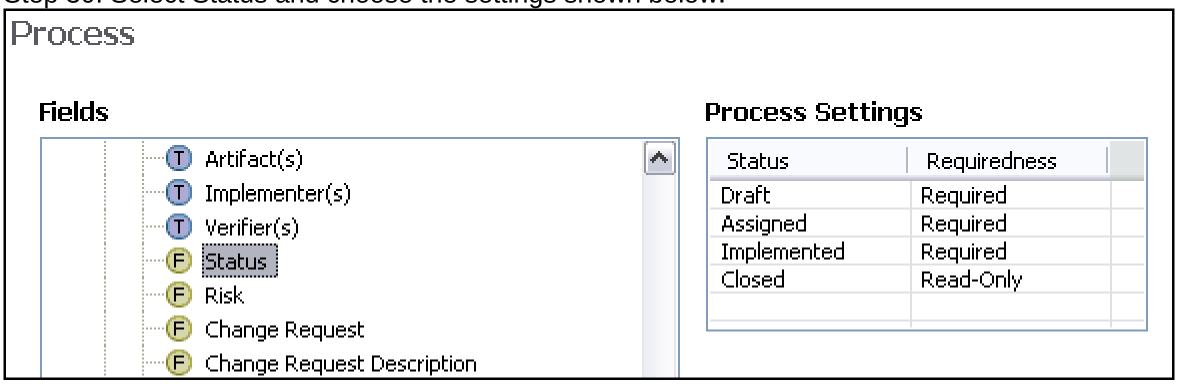
Step 28: Select Implementer(s) and choose the settings shown below.



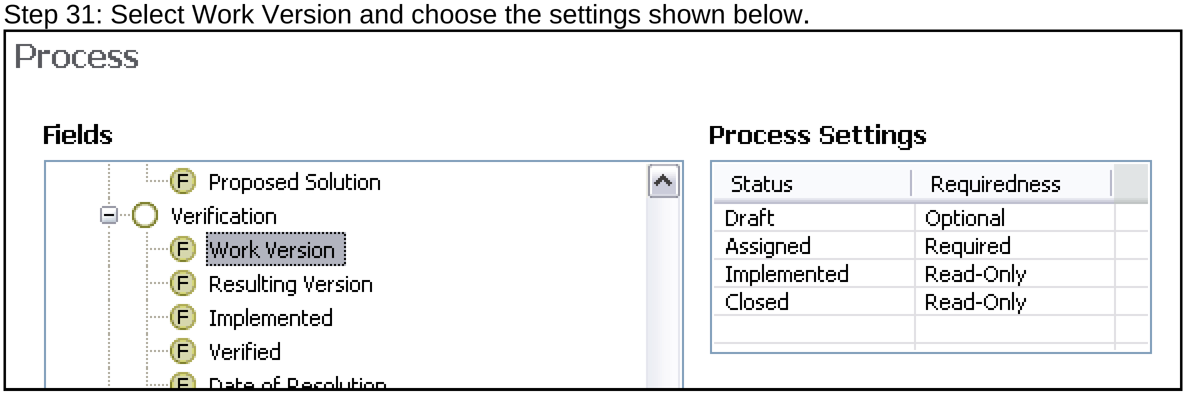
Step 29: Select Verifier(s) and choose the settings shown below.



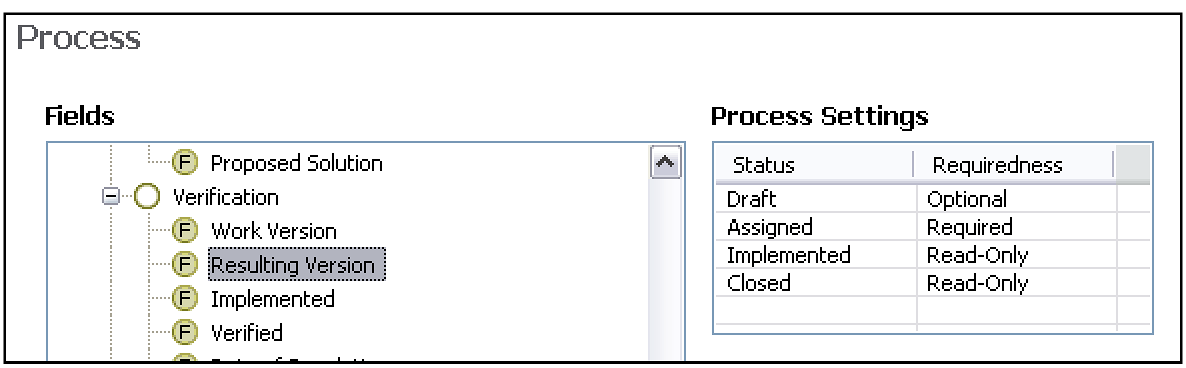
Step 30: Select Status and choose the settings shown below.



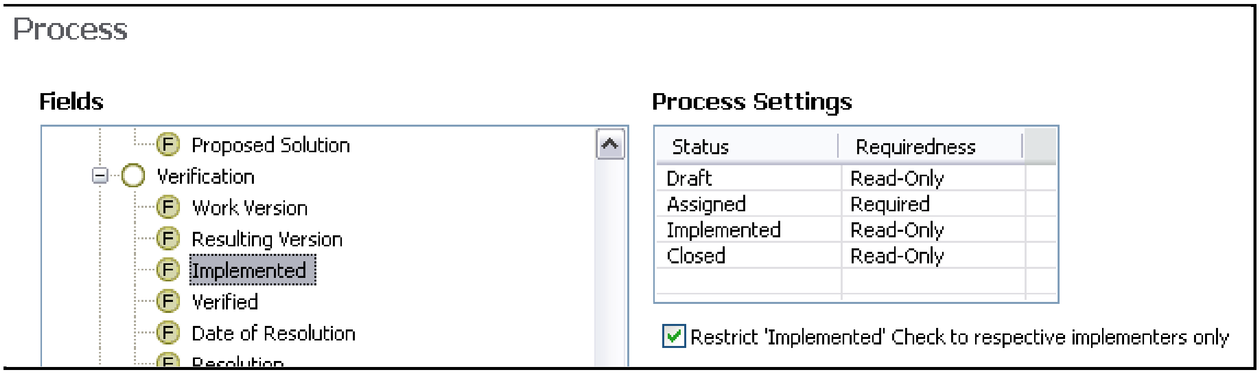
Step 31: Select Work Version and choose the settings shown below.



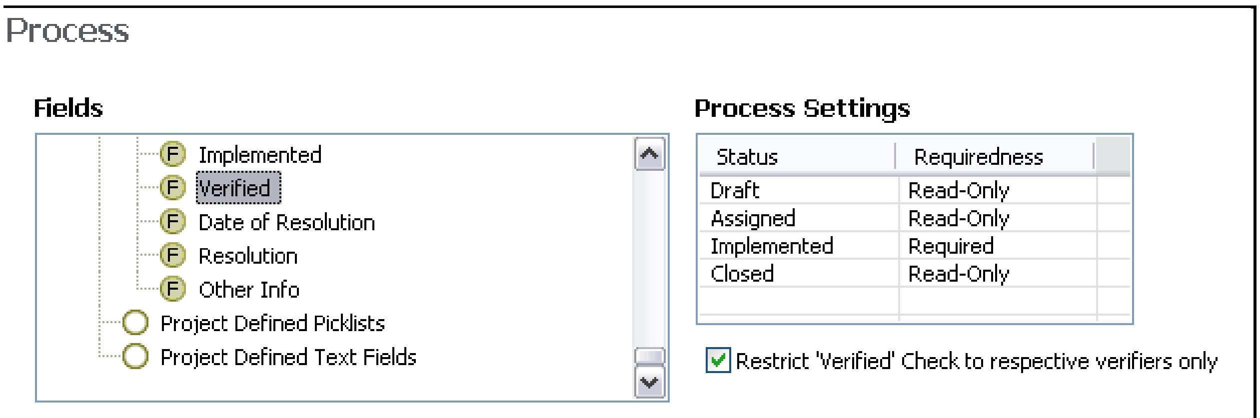
Step 32: Select Resulting Version and choose the settings shown below.



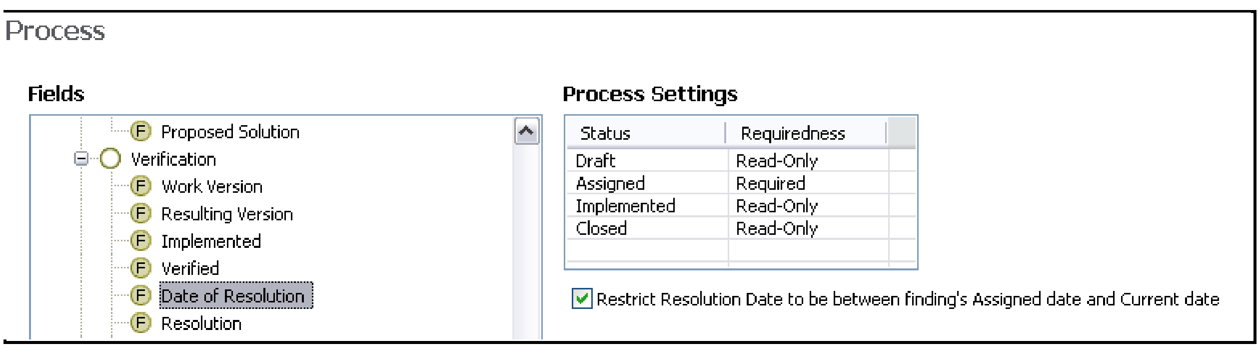
Step 33: Select Implemented and choose the settings shown below.



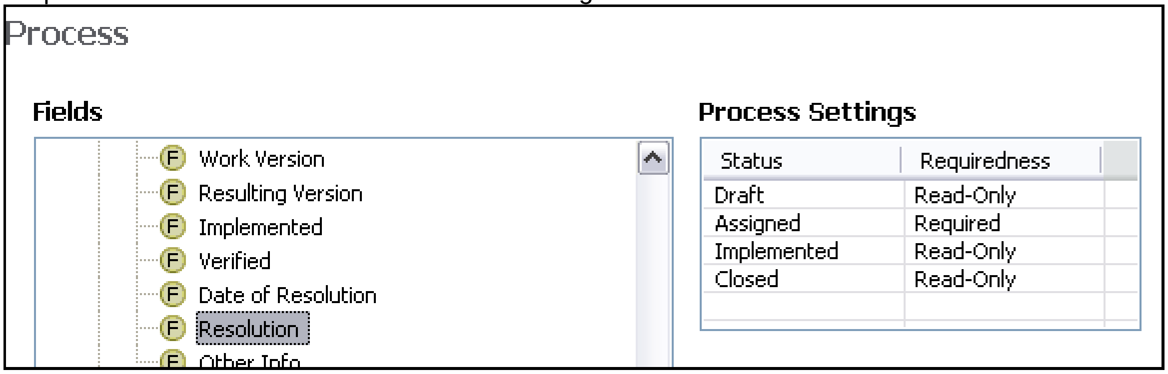
Step 34: Select Verified and choose the settings shown below.



Step 35: Select Date of Resolution and choose the settings shown below.



Step 36: Select Resolution and choose the settings shown below.



Process

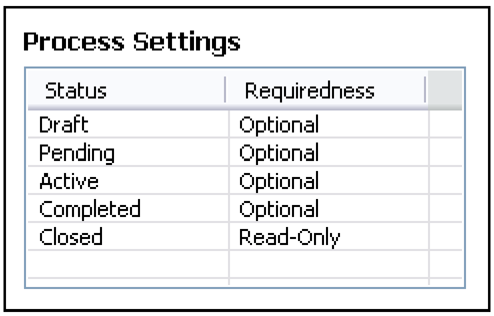
Fields

- Work Version
- Resulting Version
- Implemented
- Verified
- Date of Resolution
- Resolution
- Other Info

Process Settings

Status	Requiredness
Draft	Read-Only
Assigned	Required
Implemented	Read-Only
Closed	Read-Only

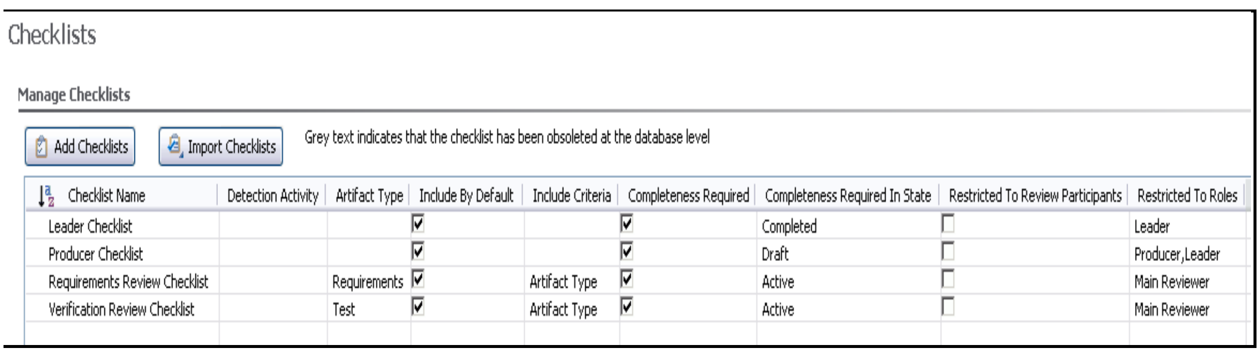
Step 37: For all items in the Process Tab not identified in Steps 5-36 choose the settings shown below, unless specified differently in the project team's development plan.



Process Settings

Status	Requiredness
Draft	Optional
Pending	Optional
Active	Optional
Completed	Optional
Closed	Read-Only

Step 38: Select the "Checklists" tab. According to the project's development plan, add the Producer, Reviewer, and Leader Checklists. Click on each checklist and choose the settings shown below. Note: in the screenshots provided, the Checklists with "Review" in the name are merely examples of Reviewer Checklists.



Checklists

Manage Checklists

Add Checklists | Import Checklists | Grey text indicates that the checklist has been obsoleted at the database level

Checklist Name	Detection Activity	Artifact Type	Include By Default	Include Criteria	Completeness Required	Completeness Required In State	Restricted To Review Participants	Restricted To Roles
Leader Checklist			☑		☑	Completed	☐	Leader
Producer Checklist			☑		☑	Draft	☐	Producer,Leader
Requirements Review Checklist		Requirements	☑	Artifact Type	☑	Active	☐	Main Reviewer
Verification Review Checklist		Test	☑	Artifact Type	☑	Active	☐	Main Reviewer

8 Acronyms and Abbreviations

Admin	Administrator
CAGE	Commercial and Government Entity
CCB	Change Control Board
CPCI	Computer Program Configuration Index
CR	Change Request
CT	Change Task
DAC	Design Assurance Center
DOORS	Dynamic Object Oriented Requirements System
EPA	Engineering Project Assistant
FCID	Firmware Configuration Index Drawing
Hrs	Hours
ID	Identification
N/A	Not Applicable
NWA	Network Activity
OLE	Object Linking and Embedding
PE	Project Engineer
PREP	Peer Review Eclipse Plug-in
PRID	Peer Review Identification Number
PSAC	Plan for Software Aspects of Certification
RC	Rockwell Collins
REV	Revision
SAS	Software Accomplishment Summary
SCID	Software Configuration Index Drawing
SCL	Software Control Library
SDP	Software Development Plan
SVP	Software Verification Plan
SVPR	Software Verification Procedures & Results
SysDP	System Development Plan
SysVP	System Verification Plan
TCP	Technical Consistent Process
VER	Version