# Software Configuration Auditing

This section explains the two types of auditing that will be taking place in the SCM.  The importance of auditing is that it provides a mechanism for determining the degree to which the current state of the system is consistent with the latest baseline and documentation [1]. At the same time configuration audits provide greater visibility into the status of a project by evaluating the status of the configuration items. Finally, they also determine the traceability from requirements, and change requests to the implementation by investigating the baselines and changes to the baselines [2][3].

The two types of auditing are defined as follows:

* **Functional Configuration Audit** (FCA), which verifies that a configuration item is in accordance with its software requirements.
* **Physical Configuration Audit** (PCA), which ensures that items in the baseline are of the right version.

Each type of auditing procedure will be explained in greater detail in the tables bellow.

**Functional Configuration Audit (FCA)**

A FCA is performed in a group of three people assigned by the lead of the project, which includes the V & V Lead. Typically the process is performed no more than 1 day after a new configuration item has been identified and named.  The FCA team will look over the configuration item and answer the questions in [Table 1](#table1) along with any other question they feel should be addressed in evaluating the item. The FCA members will list major issues, and inconsistencies in the Audit Report included in Appendix B. At the same time the members may write comments, questions and concerns regarding the issues found on the configuration items. As for small issues found, the members will solve the issues immediately as they go through the checklist on [Table 1](#table1).

**Table 1** Functional Configuration Audit

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| --- | --- |
| **Checklist Item** | **Suggestions for addressing checklist item** |
| List all the behavioral requirements from the SRS that are met. | * This checklist item specifically asks if there are any requirements from the SRS that **have** been met in the configuration items. |
| List all behavioral requirements from the SRS that are addressed | * This checklist item specifically asks if there are any requirements that **can** be met by referencing this configuration item. |
| List all the non-behavioral requirements from the SRS that are met. | * This checklist item specifically asks if there are any non-behavioral requirements in the SRS that **have** been met in the configuration items. |
| List all non-behavioral requirements from the SRS that are addressed | * This checklist item specifically asks if there are any requirements that **can** be met by referencing this configuration item. |
| Have all change requests been resolved? | * For un-resolved change requests, the change request may simply need to be closed, or it may need further testing, or deferred to a later baseline. |
| Is the Configuration Item complete? | * Does the item explain everything it is trying to explain, or does it need to be used with another configuration item.  If so, list the configuration items in the Audit Report. * Was there anything you felt was missing from the report? If so lost anything missing from the report, in the Audit Report. * Were there any inconsistencies regarding the software requirements? If so list inconsistencies in the Audit Report. |
| List any questions or concerns. | * List any questions or concerns you may have of the item or the requirements in the Audit Report. * FCA team will identify and list all issues for which action is required in the Audit Report. |
| Were all questions and concerns addressed | * Was there a follow up for the audit? * Did the team members addressed the issues found in the FCA process? * Team members must resolve all issues found in the FCA process. |

Additionally, in order to ensure all requirements have been met in the implementation, a traceability matrix will be used, and a copy of the traceability matrix will be added as an appendix to the SRS. This method will allow the teams ensure that all requirements are met in the implementation. As well as allow us to review requirements that still need to be implemented.

The traceability matrix will be updated a week after new features have been added to the implementation. The V&V Lead will be in charge of managing these updates. The updates will be completed in the traceability matrix using Excel Spreadsheet from Microsoft as shown in Appendix C. Only the functional requirements that process information are expected to have test cases.

**Physical Configuration Audit (PCA)**

A PCA is performed in a group of two people not assigned to do the FCA; this is because it’s important to have all the team members work on different parts of the audit processes. Doing this will also allow the PCA group to be objective in their assessment of the FCA process. The PCA process typically takes place no more than 2 days after a new configuration item has been identified and named. The PCA team will look over the configuration item and answer the questions in [Table 2](#table2), which states a checklist that should be addressed when conducting a PCA. The PCA members will list major issues, and inconsistencies in the Audit Report included in Appendix B. At the same time the members may write comments, questions and concerns regarding the issues found on the configuration items. As for small issues found, the members will solve the issues immediately as they go through the checklist on [Table 2](#table2).

**Table 2** Physical Configuration Audit

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| **Checklist item** | **Suggestions for addressing checklist item** |
| All configuration items have been updated to the correct version | * This checklist item specifically asks if each configuration item is named accordingly to the **correct** version as specified in the software configuration identification. * **Example**: the SCM report has been updated to the correct version, after major changes made by the analyst. * List any inconsistencies in the Audit Report. |
| All configuration items are named correctly according to the naming convention | * This checklist item specifically asks if each configuration item **named correctly** according the naming convention. * **Example**: Documents use the following format: *documentTitle\_leadPosition* * List any inconsistencies in the Audit Report. |
| All configuration items are properly placed in the correct physical location | * This checklist item specifically asks if each configuration item **has been placed** in the correct physical location in the repository. * **Example:** all document configuration items are only placed in the documents, not with source code. * List any inconsistencies in the Audit Report. |
| List any questions or concerns. | * List any questions or concerns you may have of the item or the requirements in the Audit Report. * FCA team will identify and list all issues for which action is required in the Audit Report. |
| Were all questions and concerns addressed | * Was there a follow up for the audit? * Were issues resolved? * Team members must resolve all issues found in the PCA process. |