PATH USA
Premier IT Services

Configuration Management Guidelines

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Revision History

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1.0	May 03, 2017	Sridhar	First Draft Made	Anitha T G	May 18, 2017

Table of Contents

1. Introduction

Configuration Management (CM) includes identifying, accounting and controlling of changes in work products that are used to construct software. It enables the management of artifacts throughout the life cycle (i.e. from concept through design, coding, building, testing, release, implementation and maintenance).

If the project is using any tools for configuration management like version management and change tracking, the same can be updated in the Project Management Plan. However it shall be ensured that the tool based system is compatible with manual formats.

Configuration Management involves the following activities.

- Identification of Configurable Items
- Baselines
- Change Management
- Audits and Reporting

Configuration Management Plan (as part of Project Management Plan) is prepared during the project planning phase. The plan includes the configurable items, approach to configuration management, Baselines and Release approach.

Components adopted from customer or other projects should be explicitly identified in Configuration Management.

The Configuration Management Plan section of PMP shall define the folder structure, artifact names, file naming conventions, versioning, change management process, baselining standards including CI labeling conventions, re-baseline criteria and the folder rights to be followed in the project.

2. Configurable Item Identification

A **Configurable Item** is a unit of work product or documentation or a collection of such units that is identified and treated as a single entity for change control. The hierarchy of collections may be extended to any depth depending on the complexity of the project.

A Configuration Item (CI) is an entity designated for configuration management, which may consist of multiple related work products that together form a configuration component with a baseline.

- While preparing the Configuration Management Plan, selected items that are used / generated in a project shall be identified as Configuration Items.
- Items that are placed under configuration management include products that are delivered to customer, moved to production, internal work products, acquired products, tools, etc.
- As part of Configuration Management Plan, the items that are to be placed under configuration control can include:
    - Planning documents for which changes are to be tracked

- Engineering outputs like Product Backlog, Sprint Backlog, Design, Code and Test Plan / Cases, etc.
- Re-used Components
- Development, Test and Production Builds
- Project-specific Standards, Customized Templates or Checklist(s)
- Customer-supplied items
- Any hardware, tools, test facilities used to validate the software
- Test Data
- Training Material

3. Identification of Baselines

Baseline: A specification or a product that has been formally reviewed and agreed by the required stakeholder and thereafter serves as the basis for future development and can be changed only through formal change control procedures.

- A baseline can have one or more configuration items and approvals for these items are obtained through formal reviews.

Although baselines can be identified at any level of detail, the most common work product baselines are listed below.

- Initial Baseline
- Requirement Baseline
- Intermediate Baseline
  - Design Baseline
  - Development Baseline
  - Acceptance Baseline
- Delivery Baseline

3.1. Initial Baseline

- This is the baseline that is created at the start of project. This baseline defines the configuration items that form as the basis for the project. Typically, this baseline will contain the following configurable items:
  - Documents supplied by client
  - Proposals / SOW / Contract
  - Project Management Plan

3.2. Intermediate Baseline

- These are baselines that the Scrum Master decides to open in the midst of project. All the CI's along with their latest versions are entered into the intermediate baselines. Creating the intermediate baselines is entirely the scrum masters call.
  - Design Baseline
  - Development Baseline
  - Test Baseline
  - Production Baseline

3.3. Delivery Baseline

- This is the baseline that is created at the end of project. This lists all the configuration items that are in sync at the end of project. This typically includes following configuration items:
  - Customer-supplied Documents
  - Project Documents like
    - Product Backlog, Sprint Backlog
    - Design Document
    - Test Plan
    - Source Code
    - User Manual etc.

3.4. Criteria for Baseline

The criteria of baseline can be completion of formal review and acceptance of the work product

- Revision of Baseline criteria can be through any internal / external change request
- Baselines can be identified with version labeling or some predefined tags as planned in the Project Management Plan.

4. Naming Conventions

Identify the file naming conventions to be used in the project. Suggested/ Recommended Naming Convention is:

- Common / General naming convention of the files is –
  - <Project_Name>_<Subsystem_Name>_filename
    - Sub System – can be module / sub-module name / Sprint ID, ignore this if not required.
- Routine Documents like status reports or MOMs
  - <Project_Name>_ <Topic>_ <Type of Artifact>_date
    - Type of Artifact could be like MOM, Status Report, Management Review etc.,

    - The date is to be in DDMMYY format.
- Source Code
    - Syntax: Topic.extension
    - Topic: Word that describes the content
    - Extension: Type of document, such as "c" for C-code, "cc" for C++-code

The version number of CI's is maintained in following format:

- 0.1, 0.2 …. - Draft
- 1.0, 2.0 - Baseline version
- 1.1, 1.2 - Minor Changes Baseline

4.1. Folder Structure

The recommended directory structure is given below. This can be planned in the Configuration Management section of PMP. Additional items can also be added in case of any specific project requirements.

All project records are expected to be maintained in similar pattern in case the project is using any configuration management tool like SVN, etc.

- There could be two levels of folders that are to be created considering the document confidentiality and the availability with the team
    - Controlled
    - Managed
- Controlled folders will contain all the items that are baselined and can be only updated through change management procedure only.
    - Examples
        - Project Plan
        - SOW
        - Project Schedule
        - Product Backlog
        - Design
- Managed folder can have all the working documents or routine documents (Records) that does not need to go for a change management procedure for the changes.
    - Examples
        - Review Records
        - Checklists
        - Test Cases
        - Status Reports
        - MOMs

- Management Review Reports
- Audit Report
- Retrospection Report
- Test Execution Report
- Important e-mails etc.,

4.2. Access Rights

The below access rights are assigned to the Project Teams based on their roles, scrum master will provided the access as applicable and will be planned in the project management plan:

- R – Read Only
- RW – Read Write Only
- RWD – Full Access, Read Write and Delete

5. Change Management

5.1. User Story Changes

- The changes to the user stories are not encouraged for those that are already planned in the sprint. Any other changes suggested by the team/product owner will be discussed and updated in the product backlog either as new user stories or update the existing user story if not started.
- The modified user stories will be reprioritized by the product owner on which sprint they are going to be deployed.

5.2. Any Other Configuration Item Changes

- The changes that need to be incorporated in individual CI's are assigned to the team members by Scrum Master and the details are recorded in Change Request Form.
- All the accepted changes are implemented and reviewed as per Change Request Plan.

5.3. Check-Out

A CI can be checked out from CM Tool/folder for incorporation of changes without losing the integrity. The checking-out procedure is activated either manually or using a tool when:

- Defects in the work products are logged in Defect Management Tool
- Change is Accepted and approved by the stakeholders

5.4. Check-In

A CI can be checked into CM Tool after ensuring that changes have not caused any unintended effects on the baselines. The check-in procedure is activated either manually or using a tool when:

- The work on CI is completed
- The defects are addressed
- The Change request is implemented

The team can update the comments with the reason for checkout and also the changes that were made. Provide the reference to the defect, sprint, and change Request ID for traceability.

6. Configuration Audits

It is mandatory for all the projects to have Configuration Audits planned and conducted periodically to ensure the adherence to the CM plan of the project.

It is highly recommended that the Configuration Audit get carried out before the work product is released for delivery or baselined.

The focus is on validating both the functional and physical integrity of the baseline / work product. Generally audits are conducted on CI to assess the following:

- Has the change specified in change request been made?
- Have any additional modifications been made?
- Has a formal technical review been conducted to assess technical correctness?
- Have engineering standards been followed properly?
- Have the Configuration management procedures for change is been followed?
- Have all related configuration items been properly updated?

Refer to the configuration audit checklist for detailed criteria.

Unresolved issues arising out of these configuration audits have to be brought into the notice of scrum master and addressed with appropriate action items.