

Course: Software Configuration Management

Week 5: SCM Plan and Tools

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October, 2025

Contents



SOFTWARE CONFIGURATION MANAGEMENT

- Introduction to SCMP
- Purpose and Importance of SCM Plan (SCMP)
- IEEE 828-2012 Standard Components
- Roles, Responsibilities & Scope
- Tools and Improvement
- Summary

Figure 1: Concepts of SCM
(Source: OpenAI, 2025)

Learning Outcomes

After completing this lesson, you will be able to:

- Define the purpose and structure of a SCM Plan (SCMP).
- Identify and explain the IEEE 828-2012 components of an SCMP.
- Describe the roles and responsibilities involved in SCM planning.
- Explain how SCMP integrates with tools, quality standards, and project lifecycle.
- Evaluate the importance of traceability, surveillance, and continuous improvement in SCMP.
- Develop a SCMP for a software project.

Introduction

What is SCM Plan (SCMP)?

- The project's rulebook
 - The formal documentation of the SCM system.
- Clarifies roles & processes
 - Defines who does what and how.
- Ensures universal transparency
 - Aligns the core team, subcontractors, and stakeholders.
- A single source of truth
 - The primary reference for all SCM activities

Purpose of SCM Plan

- Defines approach and procedures
- Sets responsibilities and roles
- Guides configuration control
- Ensures traceability and order
- Aligns with development lifecycle

Components of SCM Plan

According to (IEEE, 2012), the SCM should have the following sections:

- **Introduction:**
 - Purpose, scope, organizational relationships, references
- **Criteria for Identification:**
 - Configuration Items (CIs) covered by CM
- **Limitations & Assumptions:**
 - Factors affecting the plan
- **CM Responsibilities & Authorities:**
 - Roles, responsibilities, authority lines

Components of SCM Plan ... (2)

According to (IEEE, 2012), the SCM should have the following sections:

- **Project Organization:**
 - Structure and CM interfaces
- **Applicable Policies & Procedures:**
 - Standards, directives, methods
- **Planned Activities:**
 - Schedules, resources, milestones
- **CMP Maintenance:**
 - Update and review mechanisms

Roles and Responsibilities in the Plan

- The SCM Plan must define who is responsible for oversight and documentation of configuration activities.
 - SCM coordinator oversight
 - Team accountability
 - Stakeholder involvement
 - Documentation ownership
 - Reporting obligations

Scope and Applicability

- The scope section of the SCM Plan explains where and how configuration management applies within a project or organization.
 - Defines coverage of SCM
 - Identifies affected teams
 - Includes CI categories
 - Aligns with lifecycle model

Configuration Identification

- Within an SCM Plan, configuration identification refers to how items are selected and organized for control.
 - Select and organize items
 - Defines categories and naming conventions
 - Sets storage rules
 - Assigns ownership

Scheduling and Milestones

- The SCM Plan includes scheduling references to align configuration activities with overall project timelines.
 - Aligns SCM with project phases
 - Identifies review points
 - Supports baseline planning
 - Coordinates documentation updates

Change management in SCMP

- Change management is a core function within the SCM Plan.
 - Controls modifications to items
 - Prevents unauthorized changes
 - Tracks requests and decisions
 - Requires review and approval
 - Improves quality and traceability

Documentation in the SCM Plan

- Documentation is a central part of any SCM Plan
 - Specifies required records
 - Defines update responsibilities
 - Sets revision practices
 - Clarifies reference location

Distinguishing SCM Plan from Organizational Planning

- Project-level focus
- Operational details, not strategy
- Actionable procedures
- No repetition of governance rules
- Bridges policy to execution

Surveillance and Oversight

- Monitoring whether planned configuration activities are being followed
 - Ongoing process monitoring
 - Ensures plan compliance
 - Detects deviations early
 - Supports continuous improvement
 - Different from formal audits

Surveillance Activities

- Surveillance includes a variety of practical activities:
 - Review of repositories and baselines
 - Monitoring change request logs
 - Checking adherence to workflow
 - Identifying recurring issues
 - Reporting to responsible roles

Baseline Planning

- In SCM Plan, baseline planning explains how and when a product or document becomes formally recorded as a controlled reference point.
 - Defines baseline purpose
 - Identifies baseline moments
 - Clarifies documentation links
 - Assigns responsibility

Resources and Interfaces in the Plan

- The SCMP specifies the resources required to implement configuration management.
 - Identifies personnel needs
 - Document requirements
 - Tool references
 - Interface with QA, PM, stakeholders

Plan Review and Updates

- An SCM Plan is not static; it requires periodic review to remain accurate and relevant.
 - Defines review frequency
 - Assigns responsibility
 - Tracks plan revisions
 - Ensures alignment with project

Integration with Quality Objectives

- The SCM Plan often connects with quality objectives to ensure configuration activities align with broader organizational standards.
 - Aligns SCM planning with standards
 - Supports traceability goals
 - Reinforces documentation practices
 - Links with audits indirectly
 - Avoids procedural overlap

Communication and Reporting Structure

- Communication and reporting within the SCM Plan ensure information reaches the appropriate stakeholders in a timely manner.
 - Defines communication paths
 - Identifies reporting roles
 - Schedules information flow
 - Supports plan visibility

Tailoring the SCM Plan

Tailoring allows the SCM Plan to fit the unique needs of each project.

Adapts to project size

Considers regulatory needs

Adjusts scope and roles

Maintains core principles

Risk Considerations in SCM Planning

- Focus on issues that could affect the structure and execution of planning activities
 - Identifies potential planning gaps
 - Assesses documentation risks
 - Considers coordination issues
 - Plans mitigation steps

Alignment with Organizational Policies

- An effective SCM Plan aligns with broader organizational policies and any relevant regulatory requirements
 - Supports company standards
 - References regulatory needs
 - Ensures documentation compliance
 - Aligns responsibilities

Governance Structure in the Plan

- Governance within the SCM Plan deals with how oversight and decision authority are structured at the planning level.
 - Defines oversight roles
 - Establishes accountability lines
 - Sets decision boundaries
 - Coordinates SCM responsibilities

Stakeholder Roles and Involvement

- Stakeholder involvement in the SCM Plan outlines how different participants contribute at the planning level.
 - Internal stakeholders (teams)
 - External stakeholders (clients, regulators)
 - Defines involvement scope
 - Clarifies communication channels

Maintaining Traceability in the Plan

- Traceability in the SCMP refers to ensuring configuration items are recorded and tracked through defined documentation structures.
 - Ensures item trace coverage
 - Links items to baselines
 - Supports documentation clarity
 - Guides record structure

Coordination with Project Lifecycle

- The SCM Plan must fit within the broader project lifecycle
 - Aligns SCM timing with phases
 - Supports documentation milestones
 - Ensures baseline readiness
 - Reflects lifecycle model

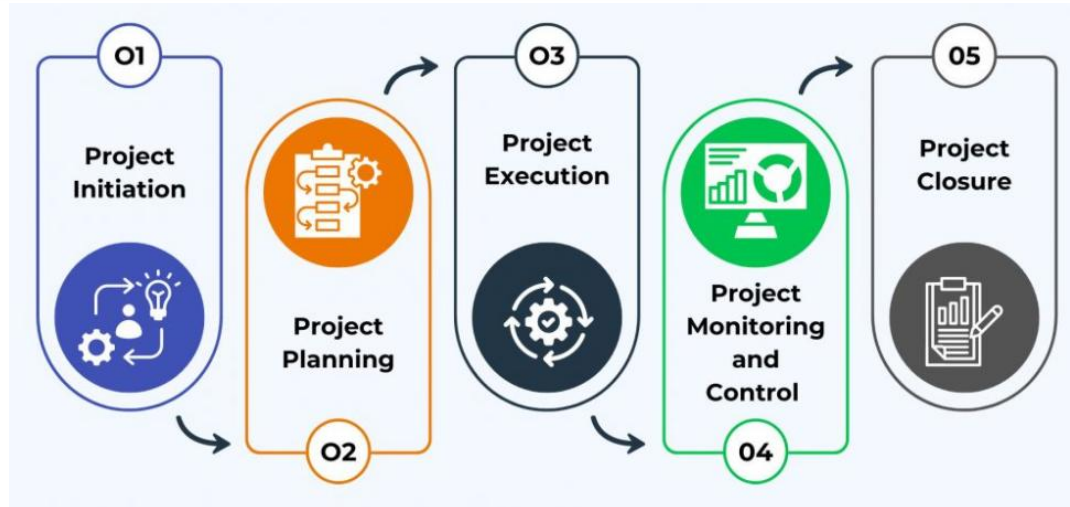
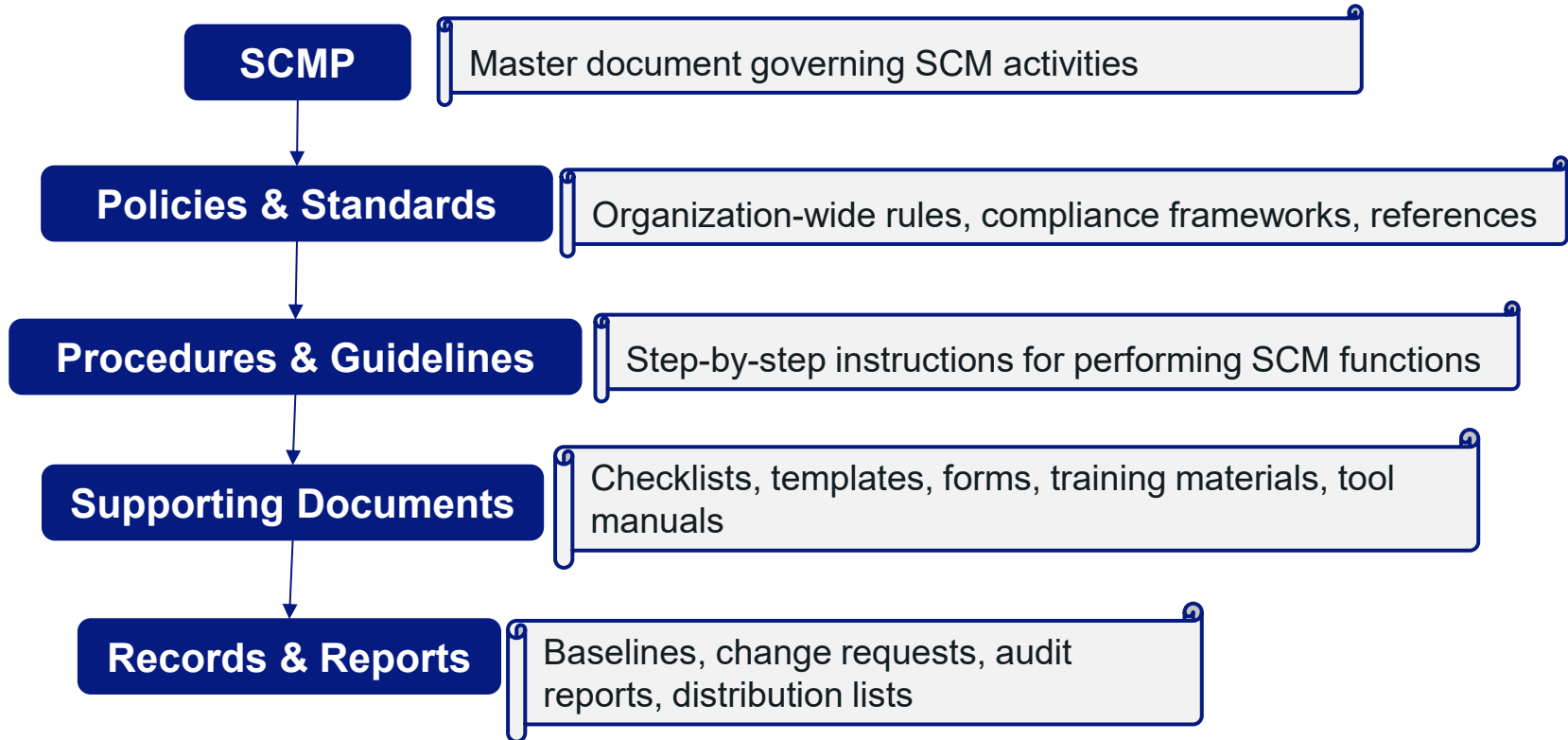


Figure 2: 5 Phases of Project Management Life Cycle (Brown, 2025)

Documentation Hierarchy in the SCM Plan



Continuous Improvement of the Plan

Focuses on how the planning framework can evolve as the project progresses.

- Encourages feedback
- Supports iterative updates
- Reflects project lessons
- Preserves core objectives
- Avoids process rework details

Audit of SCMP

According to (Leo, 2015),

- SCMP is a Controlled Document & CI
- Controlled Distribution & Access
- Change Management
- Auditing

Tool Support and Automation

- Tool support is an essential part of executing the SCM Plan.
 - Replaces manual tracking
 - Ensures consistency and accuracy
 - Supports change control workflows
 - Enables collaboration
 - Integrates with development processes

SCMPs Vs SCM Tools

Is SCMP necessary if companies are already using the SCM tools?

Yes

- The SCMP and the SCM tool are complementary.
- The Tool provides the Automation and Capability → How
- The Plan provides the Strategy, Process, and Governance →
 - What, When, Who
- Together, they create a mature, efficient, and predictable engineering environment.

SCMPs Vs SCM Tools ... (2)



SCMP



Plan guides
effective use
of tools



SCM Tools

- **SCMP = Blueprint**
 - Defines how SCM functions will be performed
- **Precedes Tool Selection**
 - Processes, automation needs, organizational specifics
- **Includes Resources**
- **Foundation for Training & Auditing**
- **Gives Meaning to Tool Use**

Metrics and Measurement in the Plan

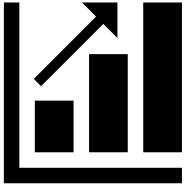
- Metrics in the SCM Plan serve as planning tools to assess whether configuration activities are carried out as intended.
 - Establishes tracking criteria
 - Supports monitoring progress
 - Guides improvement actions
 - Aligns with plan goals

Summary

- SCM Plan provides a structured framework for configuration management
 - Clarifies roles, responsibilities, and accountability
 - Defines documentation, traceability, and baseline management
 - Aligns configuration activities with
 - project milestones
 - governance
 - continuous improvement

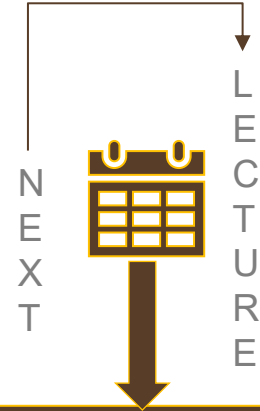
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Thank You!

SOFTWARE CONFIGURATION MANAGEMENT



**Software Configuration
Identification**