

Configuration Management

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Software Engineering
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Outline

- **Definitions**
- **Major Functions of SCM**
- **SCM Process recommendations**
- **Applying SCM Process recommendations**



Definitions

Configuration of a Software

- The organization of the components of a software system so that they fit together in a working order, never out of synch with each other.
- The functional and physical characteristics of software as set forth in technical documentation and realized in the product



Definitions (Cont'd)

Software Configuration Includes the Following:

- Requirement Specification Document
- Design Document
- Test Plan
- Test Cases
- Source Code
-



Definitions (Cont'd)

Configuration of a Software

- **Is the complete technical descriptions required to:**
 - **Build**
 - **Test**
 - **Install**
 - **Operate**
 - **Maintain**

And Support Software

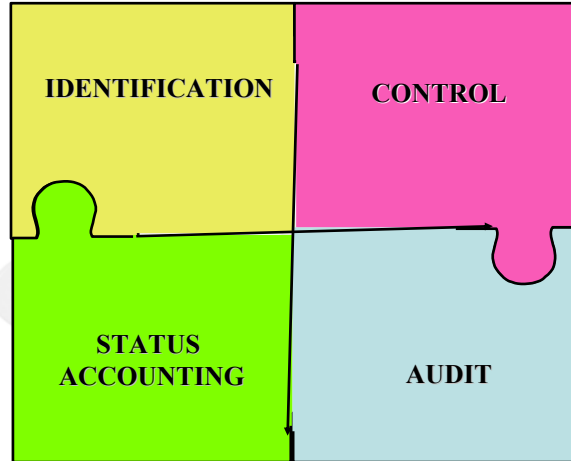


Outline

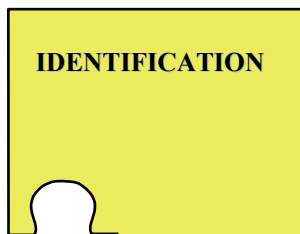
- 1. Definitions**
- 2. Major Functions of SCM**
- 3. SCM Process recommendations**
- 4. Applying SCM Process recommendations**



The major functions of Configuration Management



Configuration Identification



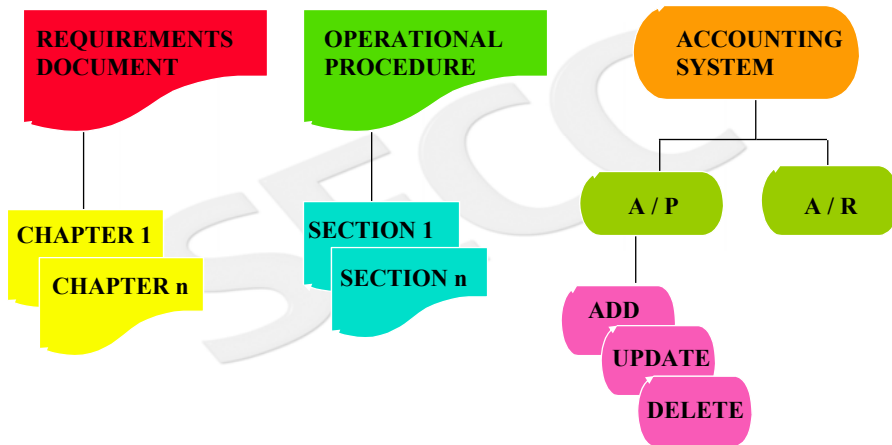
The first function of CM:

- **Identify Configuration Items (CIs) for a software**
- **Document Functional and Physical Characteristics**



Configuration Identification (Cont'd)

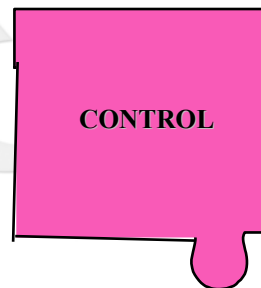
Decomposition Example



Configuration Control

The Second Function of CM:

- **Configuration Control consists of:**
 - Change Request
 - Change Evaluation
 - Change Approval or disapproval
 - Change Implementation





Configuration Status Accounting

The Third Function of CM:

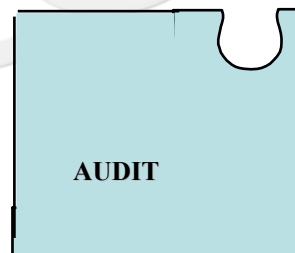
- **Tracks SCR Status to include:**
 - Proposed changes (Formal SCRs)
 - Implementation of approved changes



Configuration Audit

The Fourth Function of CM:

- **Verifies SCR**
- **Verifies each CI conforms to required specifications**
- **Types of Audit**
 - Configuration
 - Functional Configuration
 - Physical Configuration
 - Internal





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SCM Process Recommendations

- Merge policies of the chosen Processes into a single software development policy
- Consolidate SCM Plan into SDP
- Consolidate SCM procedures whenever possible and drop the non important ones
- Document the SCM Process and the selected procedures
- Define who will be in charge for the SCM roles



Outline

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Applying SCM Recommendations

To Establish SCM Process for SME

- **Approach**
- **SCM Roles**
- **SCM Policy**
- **SCM Goals**
- **SCM Process**
- **SCM Procedures**
- **SCM Plan Template**



Applying SCM Recommendations (Cont'd)

- **First Approach**
 - Full Capabilities
- **Second Approach**
 - Restrict the process to:
 - Version & Release Management (during product life cycle)
 - Change Management (during product maintenance)
- **Third Approach**
 - Merge
 - Change request and problem report s control procedure
 - Baseline change control procedure
 - Drop
 - Configuration items/ unit status recording and reporting



Applying SCM Recommendations (Cont'd)

SCM Roles

Roles	Role in Charge
SCCB	A Manager
SCM Group	A Manager or <i>group of individuals</i>
SCM manager	A Manager
SCM Librarian	Individual
Software Product version control	Individual from Software Engineers
Software Product Release	A Manager



Applying SCM Recommendations (Cont'd)

SCM Policy For SME

- The purpose of Software Configuration Management is to establish and maintain the integrity of the products of the software project throughout the project's software life cycle
- SME Should:
 - Appoint *a Manager* or *group of individuals* to be responsible for coordinating and implementing SCM activities for the project
 - Establish a board having the authority for managing the project's software baselines (SCCB) or *delegate aspects of control* for managing the project's software baselines to *a Manager* or *group of individuals (role in charge)*
 - ...



Applying SCM Recommendations (Cont'd)

SCM Goals For SME

- To Plan and Document SCM activities
- To select and identify Software Work Products to be Placed Under SCC
- To control changes to the selected Software Work Products



Applying SCM Recommendations (Cont'd)

SCM Procedures For SME

- SCM Planning Procedure
- Change Control Procedure
- Baseline Control Procedure
- Baseline Audit Procedure
- Software Build and Release Procedure



Applying SCM Recommendations (Cont'd)

SCM Plan Template Section of the Consolidated SDP

- **Organization of the SCM team**
- **Software Configuration Management phasing and milestones**
- **Software Configuration Management activities**
- **Software Configuration Management resources**
- **Software Configuration Management metrics**



Thank You