

# Software Configuration Management

# Change happens...

- As a project unfolds
  - code changes
  - documents and models change
  - requirements change
  - releases take place incrementally
- If change is not handled in a disciplined way, there are problems...confusion, errors, lost time....

# What is SCM?

“Configuration management (CM) refers to a discipline for identifying, accounting and controlling of changes in work products that are used to construct and maintain work products. It enables the management of artifacts throughout the project life cycle (ie from initial concept through design, coding, building, testing, release, implementation and maintenance)..”

-- CM Guideline Version No. 4.0.3

OMS - Generic --> Project Support--> PSP--> Configuration Management

# The SCM process

- Configuration identification
- Change management
- Configuration status accounting
- Configuration audit

# Scope of SCM process

“Scope of the process covers planning and execution of configuration management related activities including version control, change management and release management. This process is followed in all Phases of the Project life cycle as identified in the Project Management Plan.

- It includes control of configuration of all external deliverable Work products, designated internal work products and designated support tools during their initial and subsequent releases. It also includes Change Control.
- This process applies to all configuration baseline items; documents, software and hardware. When required by Development Agreement/Proposal, the proposal may also apply after delivery of the product.”

-- Configuration Management Process

OMS - Generic --> Project Support--> PSP--> Configuration Management

# Configuration identification

- Identification of items that are to be placed under configuration control.
  - The various planning documents for which changes are to be tracked
  - Engineering outputs like SRS, Design documents, Engineering drawings, source/object code files, test plans...
  - COTS, previously developed components
  - Development, deployment and test environments
  - Project specific checklists and templates
  - All customer supplied items
  - Hardware, tools...

# Baseline

“ A specification or product that has been formally reviewed and agreed to by responsible stakeholder, and thereafter serves as the basis for further development and can be changed only through formal change control procedures.”

# Configuration Item (CI)

- The basic unit or component in an SCM system
  - typically identified with a unique version number and for which revision history is maintained



# Access rights

- Project Library
  - contains project baselines
- Levels of access rights to the Project Library are maintained
  - Read
  - Write
  - Read Write
  - Read Write Delete

# Change management

- Evaluate, approve (or reject), implement and verify changes to managed configuration in a controlled manner
- Configuration Control Board (CCB)
  - Defined for each project
  - Typically include Project Manager, project team member, customer representative, configuration controller...
  - Responsible to analyze change requests and approve/reject

# Check-out and Check-in

- Check-out
  - The process by which a CI is taken out from the repository for incorporation of changes
- Check-in
  - The process by which a CI is put back into the repository after completion of work on the CI

# Configuration status accounting

- Provide configuration information
- Tasks
  - Record the current approved configuration documentation
  - Record and report the results of configuration audits to include the status and final disposition of identified discrepancies and action items.
  - Record and report implementation status of authorized changes
  - Provide the traceability of all changes from the original released configuration documentation of each System/CI(s).
  - Report the status of configuration changes to all system/CI(s) at all locations including design, production and maintenance changes.

# Configuration audit

- Review of the configuration management process for a project
- Validating functional and physical integrity of baselined items
- Generally done periodically and also before delivery of work products to the customer