

Software Configuration Management (SCM)

- * The four core aspects of SCM are -
 - a) Configuration identification
 - b) configuration control and change Mgmt.
 - c) configuration auditing.
 - d) status accounting.

a) configuration identification — is the process of establishing a baseline from which system changes are made — allows for control.

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

* Software Evolution — slow evolves over a period of time —

- * Many different items are produced over the duration of the project
- * Different versions are produced.
- * Teams work in parallel to deliver the final product.
- * slow evolution implies a constantly changing system.

- * The four aspects of slow evolution are
 - Corrective change
 - Adaptive change
 - Perfective changes
 - Preventive changes

* Corrective changes → requires to maintain control over the system's day to day ^{functions.} changes. These changes are made as faults (or) bugs are found during the development time.

Adaptive changes → Essentially maintaining control over system modifications. As one part of the system changes, other impacted areas will need to be updated.

Perfective changes → Perfecting existing acceptable functions. The domain of Refactoring design falls into this category. Perfective changes are done to increase the long term maintainability or elegance of the solution. Involves changes to design or data structure for better efficiency.

Preventive changes → Preventing the system performance from degrading to unacceptable level. Involves alterations made to ensure that the system has a defense against potential failure.

- * The typical ^{distribution of} changes are - Perfective (50%), Adaptive (25%), corrective (21%), Preventive (4%).

* Configuration Management allows a team to support many versions. It also allows changes in sequential versions to be propagated. CM allows developers to track changes and reverse any total changes to take a slow system back to its last known safe state.

- * Version - An initial release or re-release of a configuration item (ideally different versions should have different functionality).
- * Revision - minor changes to a version that correct errors in the design / code.
- * Release - The formal distribution of a baseline.
- * change control board (CCB) consists of - customers, Developers, Designers and architects, Management, Business strategies and financiers.
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- * Trend Analysis is performed based on modules and change requests.