

Unit: III
Lecture: 3
Change Control & Configuration Audit

Change Control:

For a large system development project, uncontrolled change rapidly leads to confusion and inconsistencies. **Change control includes human procedures and automated tools to control the reasons for change.**

The following processes take place when a situation of change occurs:

- i. **Change request** – A change request is first submitted and then it is evaluated to assess its –
 - a. Technical merit,
 - b. Potential side effects, subsystems and the cost for implementing the change.

- ii. **Change report** – After the evaluation is done, a change report is created that is submitted to the Change Control Authority/Board (CCA or CCB). CCA or CCB is a group who are responsible for evaluating the change report and makes the final decision on the status and priority of the change. This **group generates an Engineering Change Order (ECO) for each approved change.**

- iii. **ECO (Engineering Change Order)** – It consists of
 - a. The description of the change to be made,
 - b. Constraints that has to be taken care of and
 - c. Criteria for review and audit.

- iv. **Check out & check in** – The **object to be changed is “checked out” of the project database, the decided changes are made and appropriate SQA (Software Quality Assurance) activities are performed.** The object is then “checked in” the project database and appropriate version control mechanisms are used to create the next version of the software

Formal Technical Reviews (FTR) & Configuration Audit:

These two activities are required to ensure that the change made to the software is properly implemented.

- a) **Formal Technical Reviews (FTR):** It is a part of Software Quality Assurance(SQA) procedures. The objectives of FTR are:
- To uncover errors in functions, logic or implementation,
 - To verify that the software under review should meet its requirement,
 - To ensure that the representation of the software is according to the standards,
 - To make the project more manageable.
 - It consists of walkthroughs, inspections and round-robin reviews.
- b) **Software Configuration Audit:** It consists of the following auditing procedures:
- To check whether the changes specified in the ECO (Engineering Change Order) has been properly made and to check if any additional modules are added,
 - To check whether formal technical reviews are conducted for assessment of technical correctness,
 - To check whether SE standards are properly followed.
 - To check whether change is highlighted in the SCI (Software Configuration Items) documentation and also the attributes of the configuration object should reflect the change,
 - To check whether SCM (Software Configuration Management) procedures like noting change, recording it and reporting it has been properly done.
 - To check whether all the related SCIs are properly updated.

Configuration Status Reporting:

It's an SCM task **which summarizes the activities done so far** which includes the following:

- a) The report of all the activities done,
- b) The report on the persons involved in the above reported activities,
- c) The report on the time and date when the reported activities were accomplished,
- d) The report on various other factors or objects that will be affected due to the reported activity.

Following are the situations where the CSR needs updating:

- a) Each time when a SCI is assigned a new or updated identification,
- b) Each time ECO is issued i.e a when a change is approved by the CCA/CCB,
- c) Each time a configuration audit is conducted.

The CSR is made available online and is updated occasionally in order to keep the management and concerned individuals updated on the changes. It improves the communication among all the people