WHAT IS CHANGE MANAGEMENT

- It is a set of activity designed to manage change by identifying the work products that are likely to change, reestablishing relationships among them; defining mechanisms for managing different version of these work products controlling the changes imposed, and auditing and reporting on the changes made.

- When you build computer software change happens and because it happens you need to manage it effectively.

- Change management more commonly called software configuration management (SCM).
WHAT IS BASELINE

- A baseline is a software configuration management concept that helps us to control change without seriously impeding justifiable change.
- Before a software configuration item becomes a baseline, change may be made quickly and informally.
- In the context of software engineering, a baseline is a milestone in the development of software.
- A baseline is marked by the delivery of one or more software configuration items that have been approved as a consequence of a formal technical review.
It’s very easy for a stream of uncontrolled changes to turn as well run software project into chaos. For that reason change management is an essential part of good project management and solid software engineering practice.
GOALS AND ACTIVITY OF CM

The goals of the configuration manager are to ensure that procedures and policies for creating, changing, and testing of code are followed, as well as to make information about the project accessible. To implement techniques for maintaining control over code changes, this manager introduces mechanisms for making official requests for changes, for evaluating them and the manager collects statistics about components in the software system, such as information determining which components in the system are problematic.

For the software engineers, the goal is to work effectively. This means engineers do not unnecessarily interfere with each other in the creation and testing of code and in the production of supporting documents.
ELEMENTS OF CONFIGURATION MANAGEMENT

- **Component elements**: A set of tools coupled within a file management system that enable access to and management of each software configuration item.

- **Process elements**: A collection of procedures and tasks that define an effective approach to change management, engineering and use of computer software.

- **Construction elements**: A set of tools that automate the construction of software by ensuring that the proper set of validated components.

- **Human elements**: To implement effective SCM the software team uses a set of tools and process features.
The repository is a “thing”- a database that acts as the center for both accumulation and storage of software engineering information.

The role of the person (The software Engineer) is to interact with the repository using tools that are integrated with it.
FUNCTIONS IMPLEMENTED BY SCM REPOSITORY

- **Data Integrity:** It includes functions to validate entries to the repository, ensure consistency among related objects and automatically perform “cascading” modifications when a change to one object demands some change to objects related to it.

- **Information sharing:** provides a mechanism for sharing information among multiple developers and between multiple tools, manages and controls multiuser access to data, and locks or unlocks objects so that changes are not inadvertently overlaid on one another.

- **Tool Integration:** Establishes a data model that can be accessed by many software engineering tools, controls access to the data, and performs appropriate configuration management functions.

- **Data Integration:** provides database functions that allow various SCM tasks to be performed on one or more SCIs.
FUNCTIONS IMPLEMENTED BY SCM REPOSITORY

- **Methodology Enforcement:** It defines an entity-relationship model stored in the repository that implies a specific process model for software engineering; at a minimum, the relationships and objects define a set of steps that must be conducted to build the contents of the repository.

- **Document Standardization:** It is the definition of objects in the database that leads directly to a standard approach for the creation of software engineering documents.
CONTENTS OF SCM

- BUSINESS CONTENT
- CONSTRUCTION CONTENT
- MODEL CONTENT
- V & V CONTENT
- PROJECT MANAGEMENT CONTENT
- DOCUMENTS CONTENT
CONTENTS OF SCM

❖ Business content:-
  Business rule
  Business functions
  Organization structure
  Information architecture

❖ Model content:-
  Use-cases
  Analysis model
  scenario-based diagrams
  flow-oriented diagrams
  class-based diagrams
  Behavioral diagrams
  Design model
  Architectural diagrams
  Interface diagrams
  Component-level diagrams
  Technical metrics
CONTENTS OF SCM

- Construction content:
  - Source code
  - Object code
  - System build instructions

- V & V content:
  - Test cases
  - Test scripts
  - Test results
  - Quality metrics
FEATURES OF SCM

- **Versioning**: As a project progresses, many versions of individual work products will be created. The repository must be able to save all of these versions to enable effective management of products releases and to permit developers to go back to previous versions during testing and debugging.

- **Dependency tracking and change management**: The repository manages a wide variety of relationships among the configuration objects stored in it. These include relationships between enterprise entities and processes, among the parts of an application design, between design components and the enterprise information architecture, between design elements and other work products, and so on.

- **Requirements tracing**: This special function provides the ability to track all the design and construction components and deliverables that result from a specific requirements specification.

- **Configuration management**: A configuration management facility keeps track of a series of configurations representing specific project milestones of production releases.

- **Audit trails**: An audit trail establishes additional information about when, why, and by whom changes are made. Information about the source of changes can be entered as attributes of specific objects in the repository.
The software configuration management process defines a series of tasks that have four primary objectives:

- To identify all items that collectively define the software
- To manage changes to one or more of these items
- To facilitate the construction of different versions of an application
- To ensure that software quality is maintained as the configuration evolves over time
WHAT IS CONFIGURATION AUDIT

- The software configuration audit complements the formal technical review by addressing the following questions:
  - Have all related SCIs been properly updated?
  - Has a formal technical review been conducted to access technical correctness?
  - Have SCM procedure for nothing the change, recording it and reporting it been followed?
  - Has the change been highlighted in the SCI?
  - Have the change date and change author been specified?
WHAT IS VERSION CONTROL

Version control combines procedures and tools to manage different versions of configuration objects that are created during software process.