Software Configuration Management

By

Purvi D. Sankhe

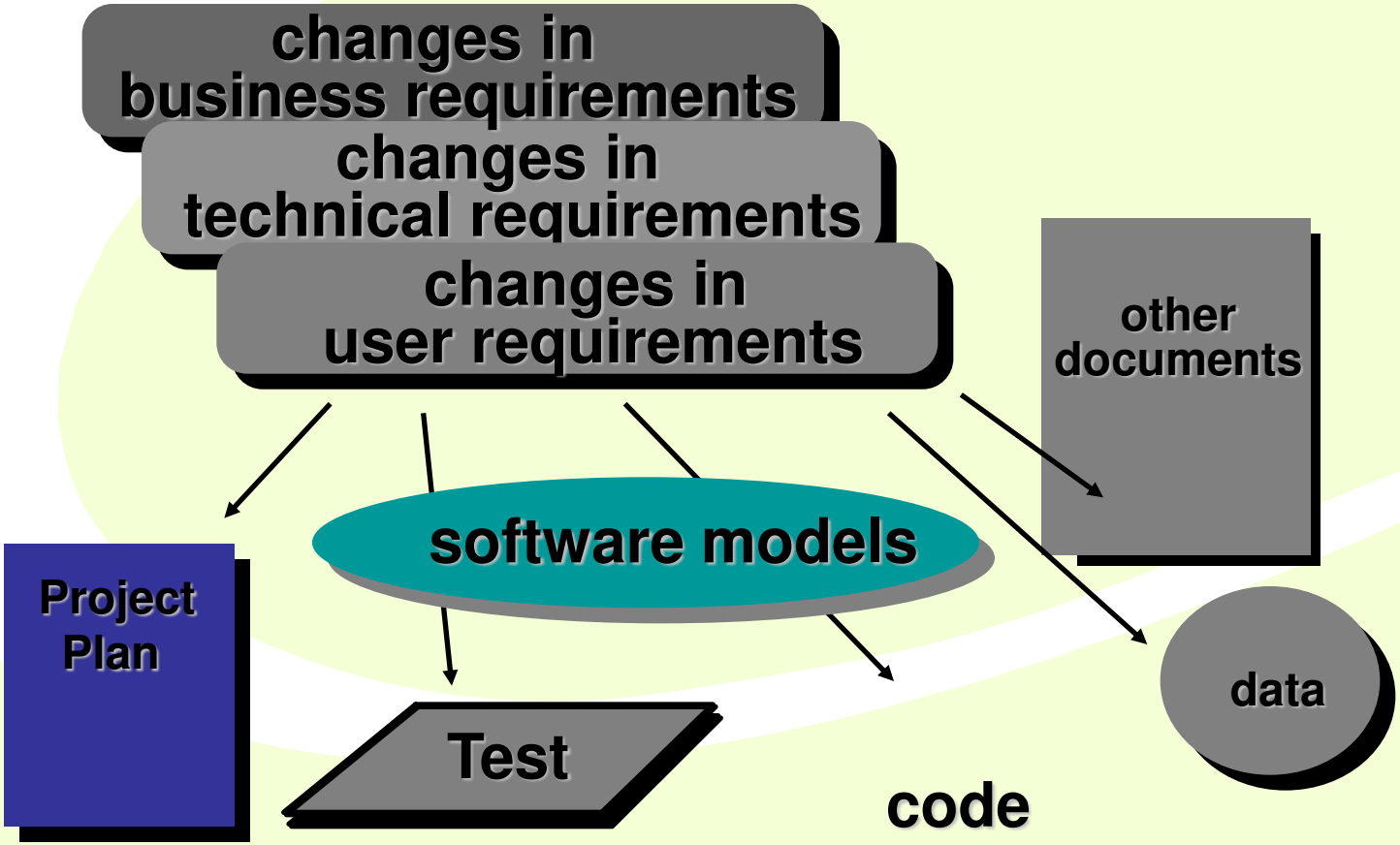
Software Configuration Management

- **SCM is an umbrella activity i.e. applied throughout the software process, because change can occur at any time.**
- **SCM activities are developed to,**
  1. **Identify change.**
  2. **Control change**
  3. **Ensure that change is being properly implemented, and**
  4. **Report to others who may have an interest.**

Fundamental Source of change

- New business or market conditions dictate changes to product requirements or business rules
- New customer needs demand modification of data, functionality, or services
- software engineering team structure
- Budgetary or scheduling constraints cause system to be redefined

What Are These Changes?



Software Configuration Items

- It is information i.e. created as part of software engineering process.
- It may be,
  - Computer programs (both source and executable).
  - Documentation (both technical and user).
  - Data (contained within the program or external to it).

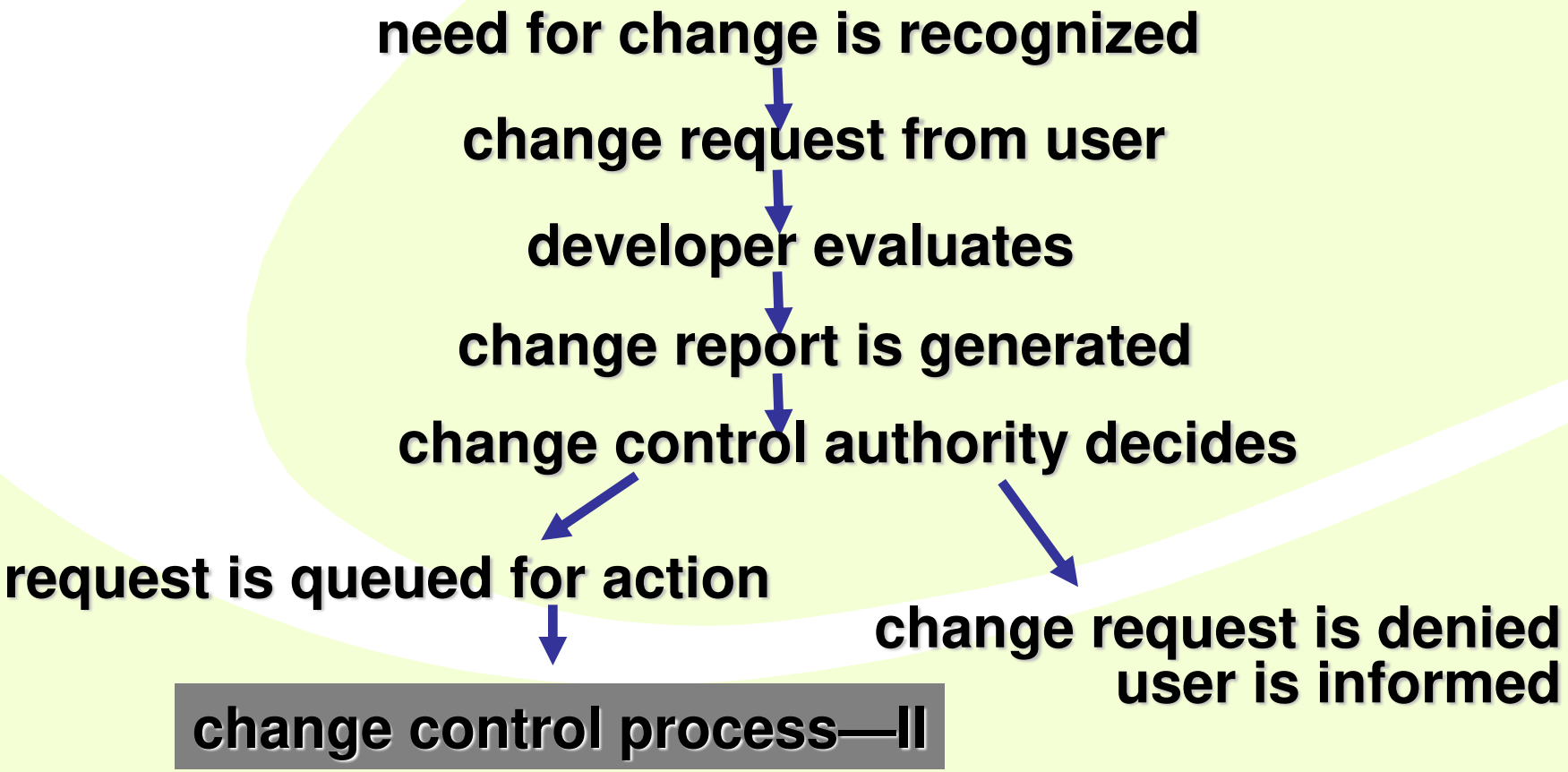
Software Configuration Management

- It is an important element of software quality assurance.
- Its primary responsibility is
  - Identification (tracking multiple versions to enable efficient changes)
  - Version control (control changes before and after release to customer)
  - Change control (authority to approve and prioritize changes)
  - Configuration auditing (ensure changes made properly)
  - Reporting (tell others about changes made)

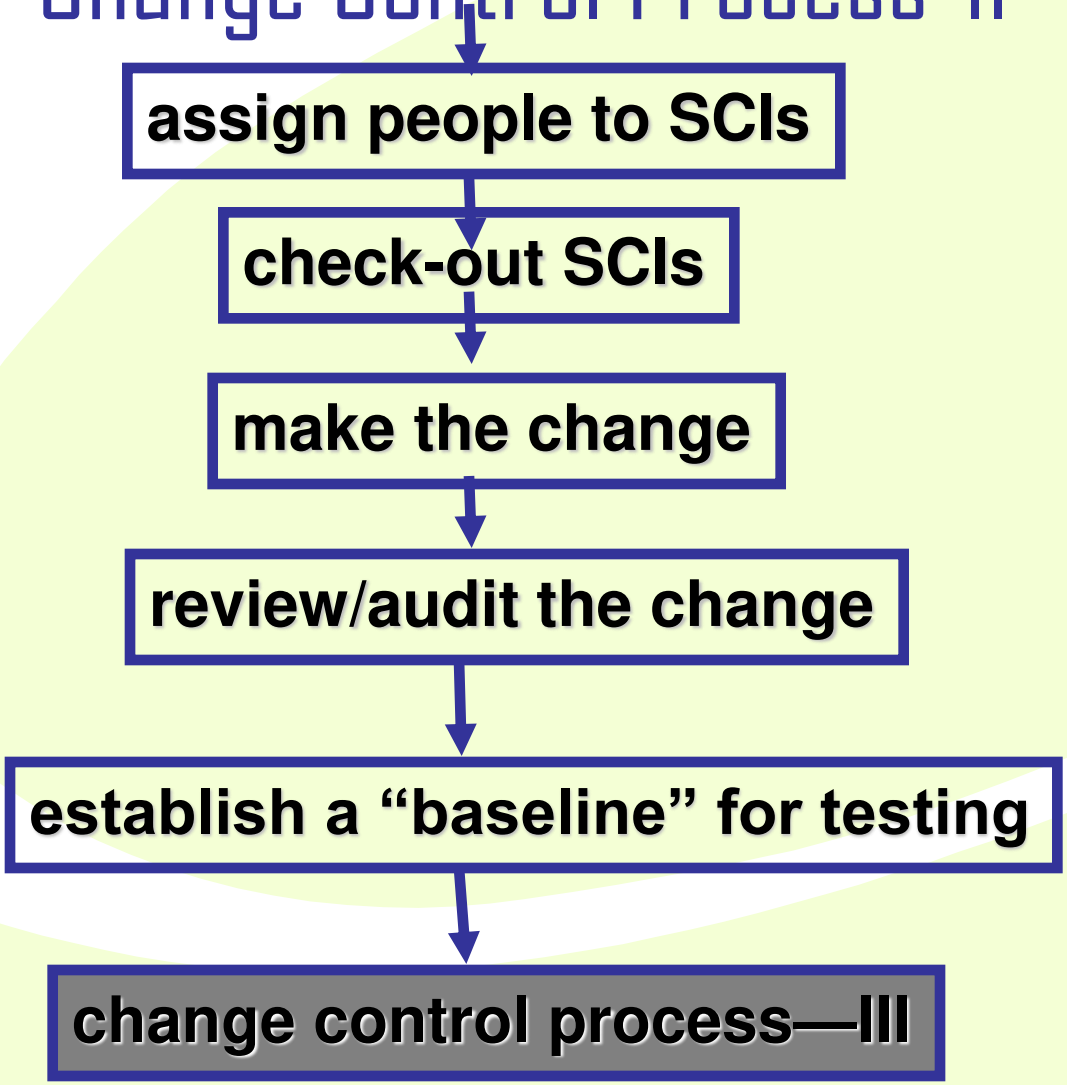
Version Control

- Combines procedures and tools to manage the different versions of configuration objects created during the software process.
- Configuration management allows a user to specify alternative configuration of the software system through the selection of appropriate versions.
- The evolution graph can be used to describe different versions of a system.
- Each version of the software is a collection of SCIs.

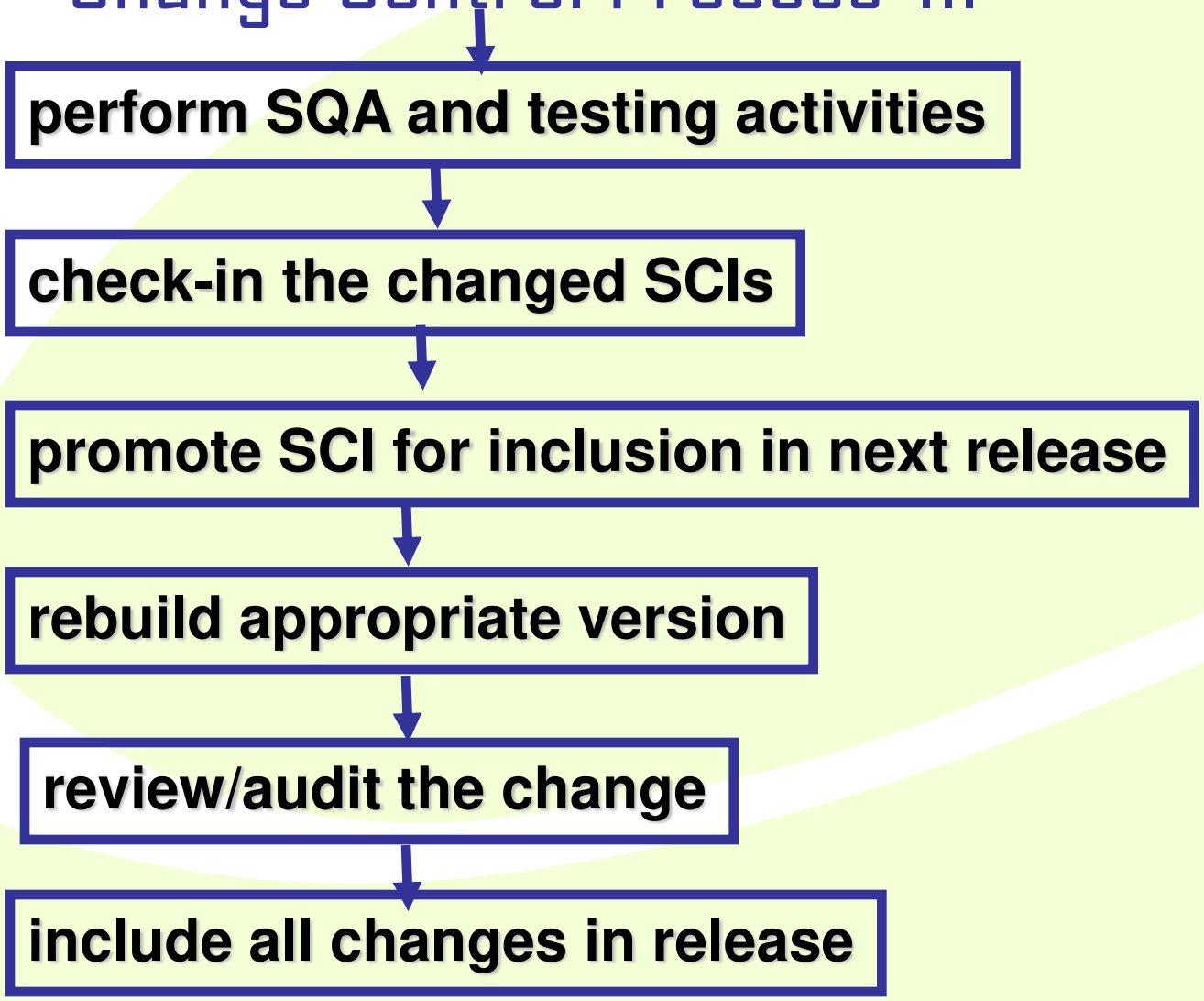
Change Control Process—I



Change Control Process-II



Change Control Process-III



Configuration audit

- **How to ensure change has been properly implemented.**
  - **Formal Technical review**
  - **Software Configuration audit.**

• The FTR focuses on the technical correctness of the configuration object has been modified.

• In FTR, the reviewers assess the SCI to determine consistency with other SCIs, omissions, or potential side effects.

Configuration audit (Continue)

- The audit asks and answers the following questions:
  - **Has the change specified by the ECO (Engineering change order) been made without modifications?**
  - **Has an FTR been conducted to assess technical correctness?**
  - **Was the software process followed and software engineering standards applied?**
  - **Have the SCM standards for recording and reporting the change been followed?**
  - **Were all related SCI's properly updated?**

Configuration Status Reporting

Configuration status reporting (or status accounting) is an SCM task that answers following questions:

- What happened?
- Who did it?
- When did it happen?
- What else will be affected by the change?

Configuration Status Reporting contd..

- each time SCI is assigned a new or updated identification , A CSR entry is made.
- After CA. results are reported as a part of the CSR task.