

Configuration Management

Software Engineering
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Problems

- Ambiguity as to what thing is meant
- Inconsistent combinations
- Lost files, lost changes
- Undocumented, unapproved changes
- Not knowing the composition of released sw
- Not being able to go back to previous version

Sw Configuration Management Goals

- Identifying and defining the **configuration items** in a system
- Controlling the **release** and **change** of these items throughout the system life cycle
- Recording and reporting the **status** of configuration items and **change requests**
- Verifying the **completeness** and **correctness**

SCM

- Both managerial and technical
- Software quality control
- Requires planning

Configuration Items

- Treated as single entity: atomic or composite
 - Source code file, test input file
 - Document: Requirements, test plan, agenda, minutes, progress report, ...
 - Tool
- Versions, variants, relationships

Baseline

- A '**baseline**' is a document or a product that has been formally reviewed and agreed upon, and is a basis for further development.
- A baseline is an **assembly of configuration items**.
- Formal **change control** procedures are required to modify a baseline.

Sw Libraries Repository, Workspace

- Development Library (dynamic)
- Master Library (controlled)
- Archive Library (static)
- How to structure/store, how to manage
- Who can change it, under what conditions

Change Control

- Applies to approved items (baselines)
- Problem report, comment, decision, change request, approval, modification record

Status Accounting

- What items, which versions, which baselines
- What is the quality:
 - How complete is the item
 - What problems exist where, in what state of handling

Tools

- Version control: CVS, Subversion, ...
- Defect tracking

How to use tools

- Tools by themselves are not enough
- Need to use them well
- Train users
- Set rules: e.g. only check in tested code

CVS, Subversion: Concepts, Terminology

- Create repository, connect, working copy
- Check out, update, add, check in (commit),
- Versions, numbering, status, diff
- Conflicts
- Tags, branches, merging
- Metadata, log files

Repository Organization

- **Trunk**: src, doc, db, data, util, vendor
- **Branches**: release, bug fix, experiment
- **Tags**: release, pre-bugfix, post-bugfix
- How to deal with **builds**