



HNDIT 2312- Principles of Software Engineering

Week 11: Software Configuration Management

Topics Covered

- Change management
- Version management
- System building
- Release management

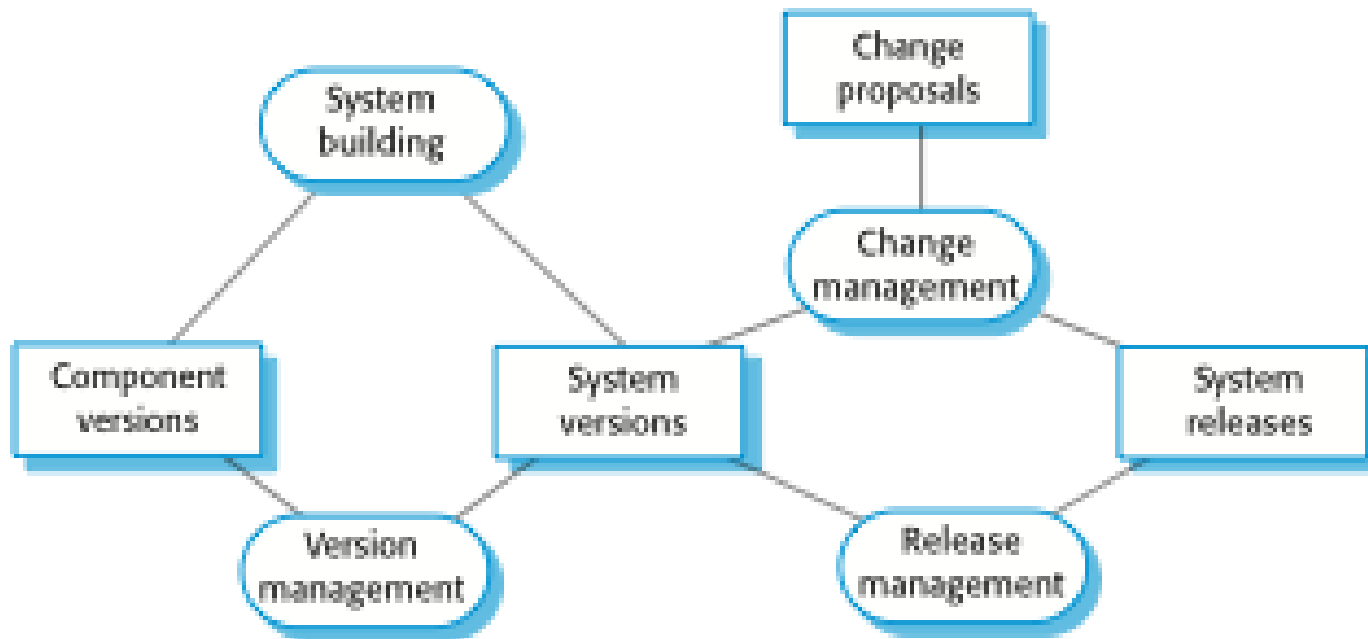
Configuration management

- Configuration management (CM) is concerned with the policies, processes and tools for managing changing software systems.
- Because software changes frequently, systems, can be thought of as a set of versions, each of which has to be maintained and managed.

CM activities

- Change management
- Version management
- System building
- Release management

Configuration management activities



Change management

- Keeping track of requests for changes to the software from customers and developers, working out the costs and impact of changes, and deciding the changes should be implemented.

Change request form

Change Request Form

Project: SICSA/AppProcessing

Number: 23/02

Change requester: I. Sommerville

Date: 20/01/09

Requested change: The status of applicants (rejected, accepted, etc.) should be shown visually in the displayed list of applicants.

Change analyzer: R. Looek

Analysis date: 25/01/09

Components affected: ApplicantListDisplay, StatusUpdater

Associated components: StudentDatabase

Version management

- Keeping track of the multiple versions of system components and ensuring that changes made to components by different developers do not interfere with each other

Codelines and baselines

- A codeline is a sequence of versions of source code with later versions in the sequence derived from earlier versions.
- A baseline is a definition of a specific system.
- The baseline therefore specifies the component versions that are included in the system plus a specification of the libraries used, configuration files, etc.

Codelines, baselines and mainlines

Codeline (A)



Codeline (B)



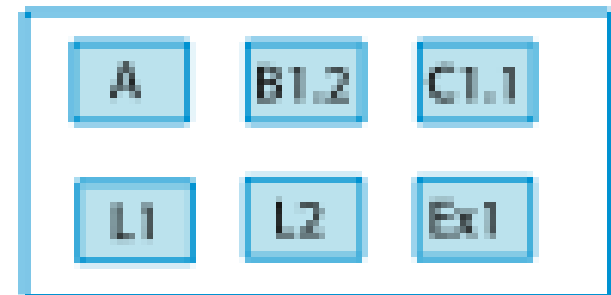
Codeline (C)



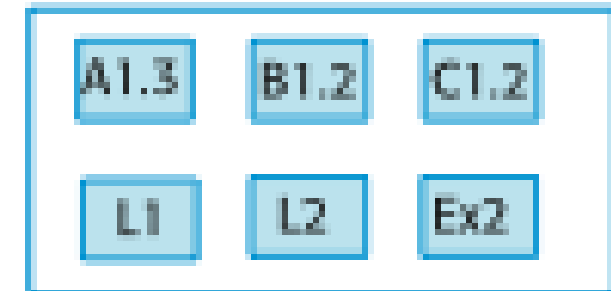
Libraries and external components



Baseline - V1



Baseline - V2

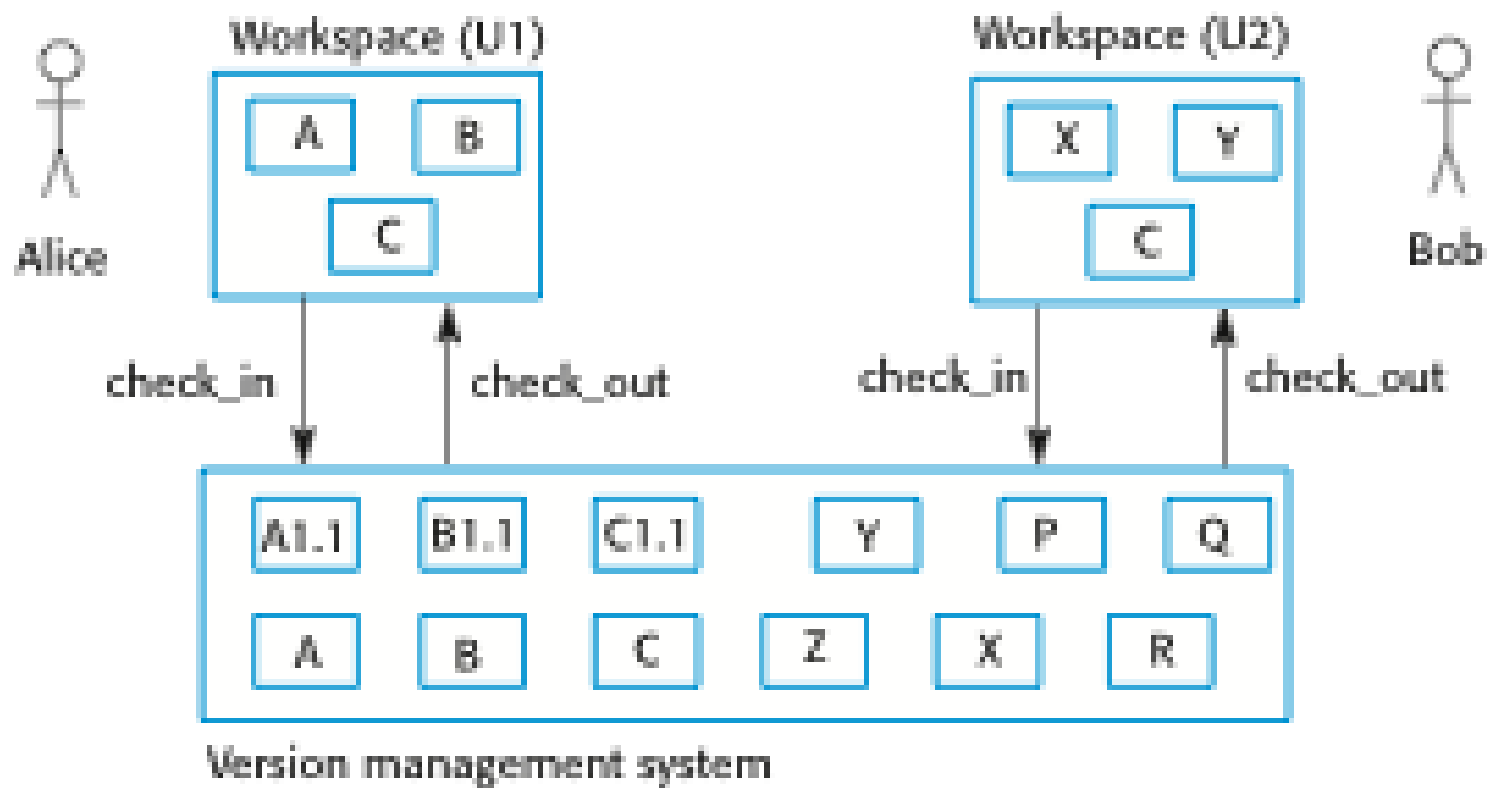


Mainline

Version management systems

- Version and release identification
- Storage management
- Change history recording
- Independent development
- Project support

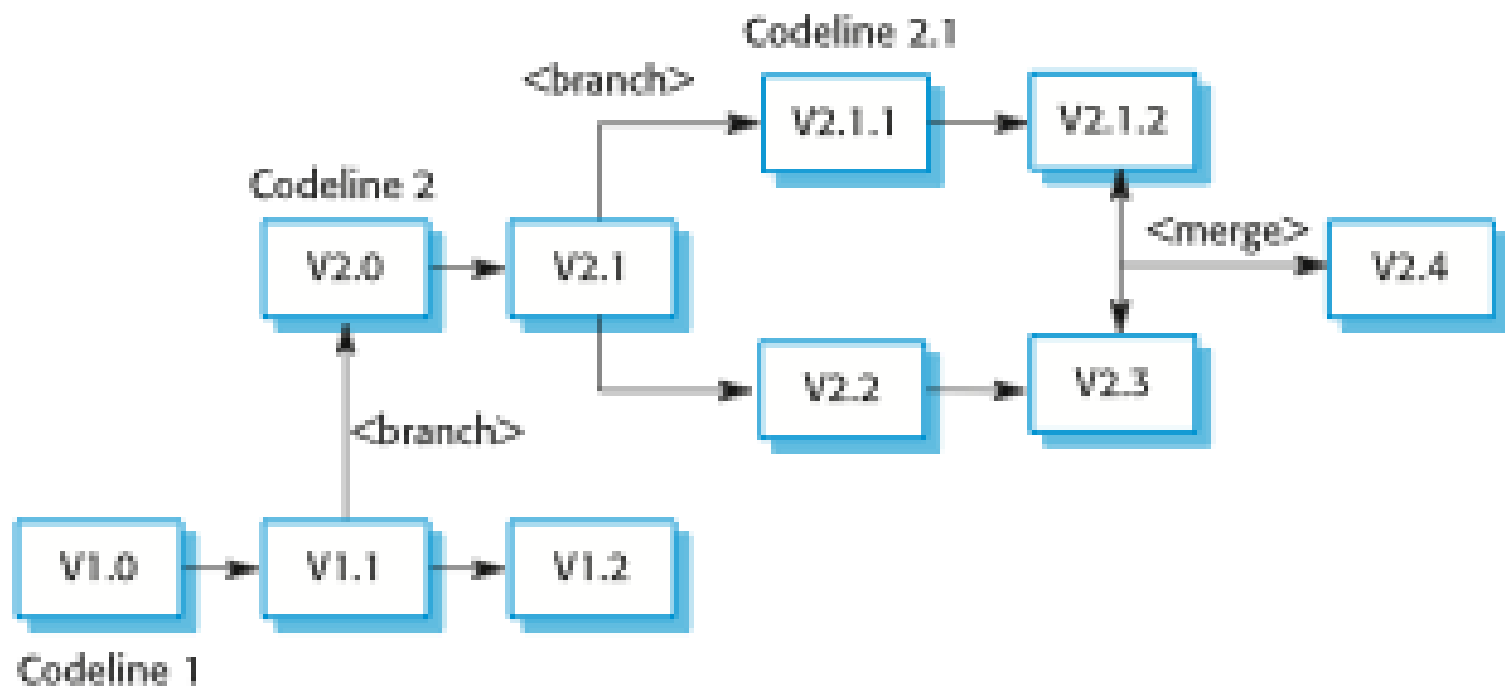
Version management systems



Branching and merging

- Branching
 - A branch allows you to create a copy (or snapshot) of the repository that you can modify in parallel without altering the main set.
- Merging
 - Once you're comfortable with the experimental code, you will want to make it part of the trunk or master again.

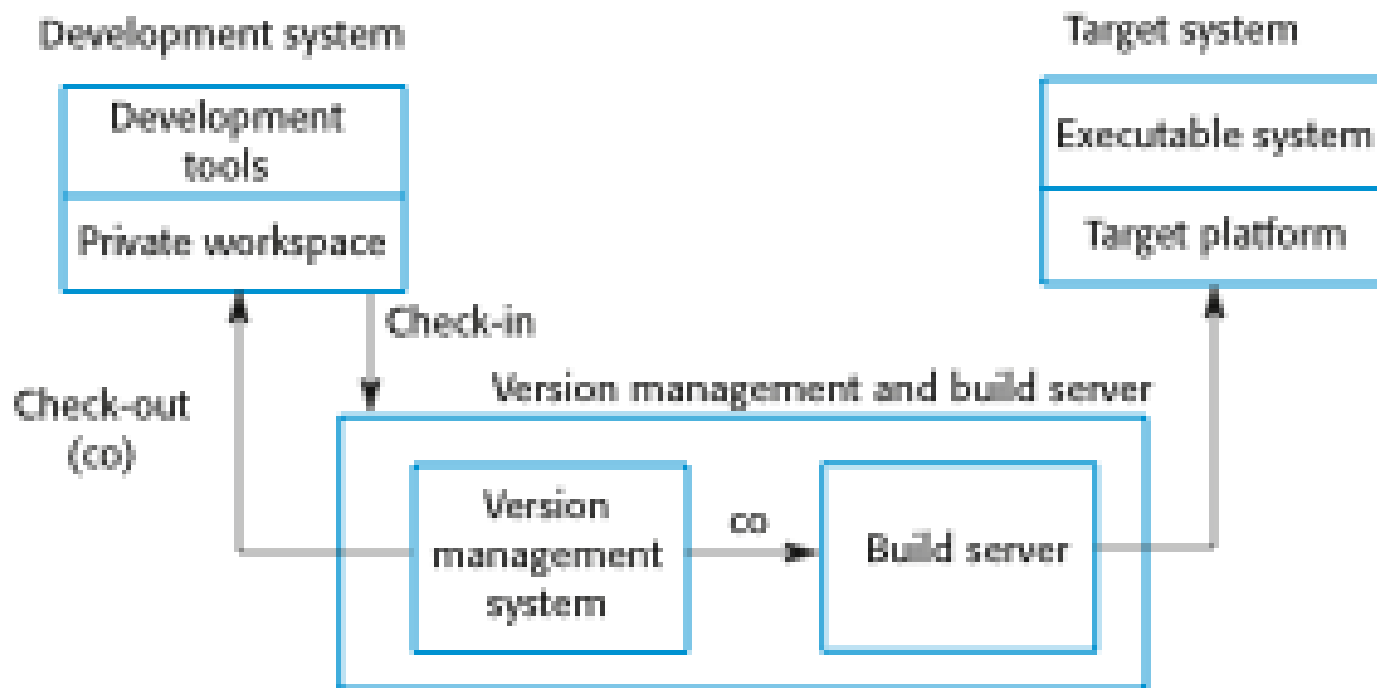
Branching and merging



System building

- The process of assembling program components, data and libraries, then compiling these to create an executable system.
- System building tools and version management tools must communicate as the build process involves checking out component versions from the repository managed by the version management system.

Development, build, and target platforms



Release management

- Preparing software for external release and keeping track of the system versions that have been released for customer use.
- Major releases which deliver significant new functionality.
- Minor releases, which repair bugs and fix customer problems that have been reported.

Release planning

- As well as the technical work involved in creating a release distribution, advertising and publicity material have to be prepared and marketing strategies put in place to convince customers to buy the new release of the system.

Factors influencing system release planning

- Technical quality of the system
- Platform changes
- Lehman's fifth law
- Competition
- Marketing requirements
- Customer change proposals

Software configuration management tools

- VSS – Visual source safe
- CVS- Concurrent version system
- Rational Clear Case
- SVN- Subversion
- Github
- TortoiseSVN
- IBM Rational team concert
- IBM Configuration management version management

Key points

- Configuration management is the management of an evolving software system.
- The main configuration management processes are change management, version management, system building and release management.
- Version management involves keeping track of the different versions of software components as changes are made to them.