UNIVERSITÉ BISHOP'S UNIVERSITY

CS 560: Software Engineering

Configuration Management

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Configuration management tasks

- identification and definition of configuration items, such as source code modules, test cases, requirements specification
- managing changes and making configuration items available during the software life cycle, usually through a Configuration Control Board (CCB)
- keeping track of the status of all items (including the change requests)

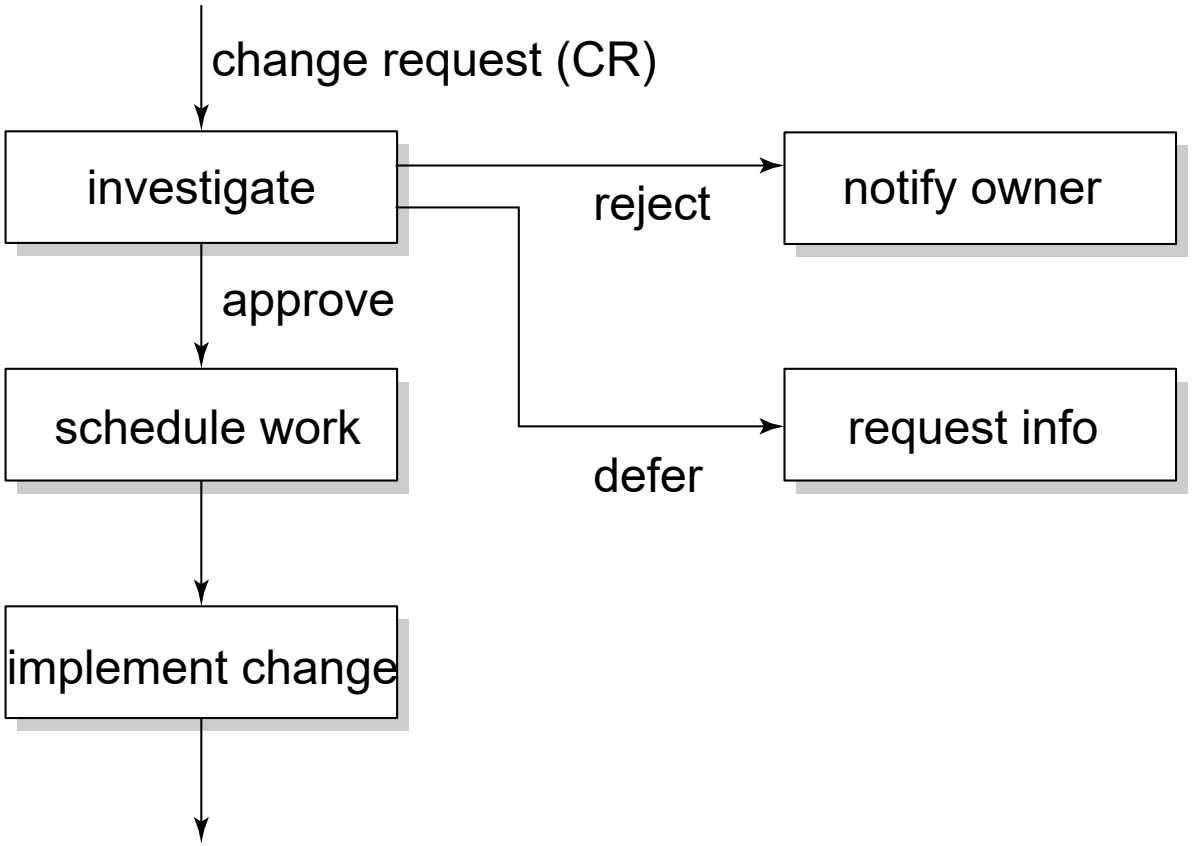
- crucial for large projects

Configuration Control Board

- ensures that every change to the baseline (change request - CR) is properly authorized and executed
- CCB needs certain information for every CR, such as who submits it, how much it will cost, urgency, etc
- CCB assesses the CR. If it is approved, it results in a work package which has to be scheduled.

- so, configuration management is not only about keeping track of changes, but also about workflow management

Workflow of a change request



Tool support for configuration management

- if an item has to be changed, one person gets a copy thereof, and meanwhile it is locked to all others
- new items can only be added to the baseline after thorough testing
- changes in the status of an item (e.g. code finished) trigger further activities (e.g. start unit testing)
- old versions of a component are kept as well, resulting in versions, like X.1, X.2, …
- we may even create different branches of revisions: X.2.1, X.2.2, … and X.3.1, X.3.2

Functionalities of SCM tools

- Components (storing, retrieving, accessing, …)
- Structure (representation of system structure)
- Construction (build an executable)
- Auditing (follow trails, e.g. of changes)
- Accounting (gather statistics)
- Controlling (trace defects, impact analysis)
- Process (assign tasks)
- Team (support for collaboration)

Models of configurations

- version-oriented: physical change results in a new version, so versions are characterized by their difference, i.e. delta
- change-oriented: basic unit in configuration management is a logical change

- identification of configuration becomes different: “baseline X plus fix table bug” instead of “X3.2.1 + Y2.7 + Z3.5 + …”

Evolution of SCM tools

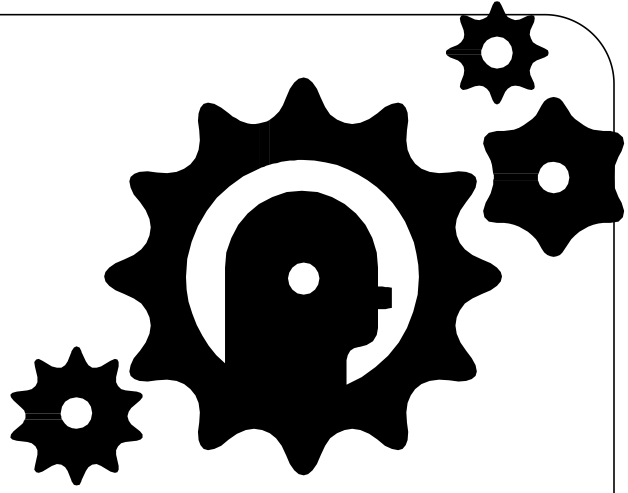
- Early tools: emphasis on product-oriented tasks
- Nowadays: support for other functionalities too. They have become a (THE) major tool in large, multi-site projects
- Agile projects: emphasis on running system: *daily builds*

Configuration Management Plan

- Management section: organization, responsibilities, standards to use, etc

- Activities: identification of items, keeping status, handling CRs

Summary



- CM is about managing all kinds of artifacts during software development
- Crucial for large projects
- Supported by powerful tools