SNS COLLEGE OF ENGINEERING

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Accredited by NAAC-UGC with 'A' Grade
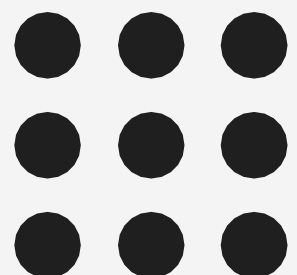**Approved by AICTE, Recognized by UGC & Affiliated to Anna University, Chennai**

Department of Information Technology

Course Name – IT8075 Software Project Management

IV Year / VII Semester

Unit 4 – Project Management and Control

Topic 7 – Software Configuration Management

Software Configuration Management

Software configuration management (SCM)
- SCM is concerned with tracking and controlling changes to the software
- Many softwares or work product would be modified by several members
- In this case proper configuration system must be deployed.

Context of configuration management
Changes to software occurs,
- During development phase
- Maintenance phase

- SCM deals with tracking and controlling the configuration of a software product during its life cycle.

- Configuration management includes version control, revision control, variant and baseline.

Software Configuration Management

Basic Terminologies
- Configuration - It is state of various work products that are under configuration control
- Version - version is a configuration that existed at certain point in time.
- Revision - it is numbering scheme that is used to identify the state of configuration item at any time.
- Baseline – Software configuration that has been formally reviewed and agreed upon and serves as basis for further development
- Variant : versions that are intended to coexist.

Software Configuration Management

Purpose of software configuration management

- Problems arise if a proper configuration management system is not in use.

Some important problems are

- Problems associated with concurrent access - control the access to the different deliverable object.

- Undoing changes – rollback development to a certain version

- System accounting – Keeping track of who made particular change to a configuration item, what changes was made, and when the change was made.

- Knowing what, who and when of changes will help in understanding why changes were made.

Software Configuration Management

- Handling variants – without configuration management system keeping track of all variants their versions and revision is a nontrivial task.

- Existence of variants creates peculiar problems

- Accurate determination of project status – Configuration management tool keep tracks of various deliverable object and determine the current state of the project.

- Prevent unauthorized access to the work product – configuration management helps implement controlled change process.

- It therefore becomes possible to prevent unauthorized changes to the work products

Software Configuration Management

Configuration Management process

- Configuration identification – Deciding which parts of the system should be kept under configuration management

- Configuration control – Used to ensure that changes to a system occurs smoothly

Configuration Identification
Work products are classified into
- Controlled: that are under configuration control & use formal procedures to make changes.

- Pre-controlled :not yet under configuration control but will be under configuration control

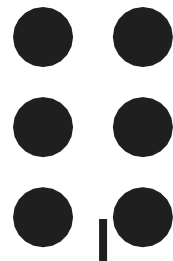- Uncontrolled : not subject to configuration control

Software Configuration Management
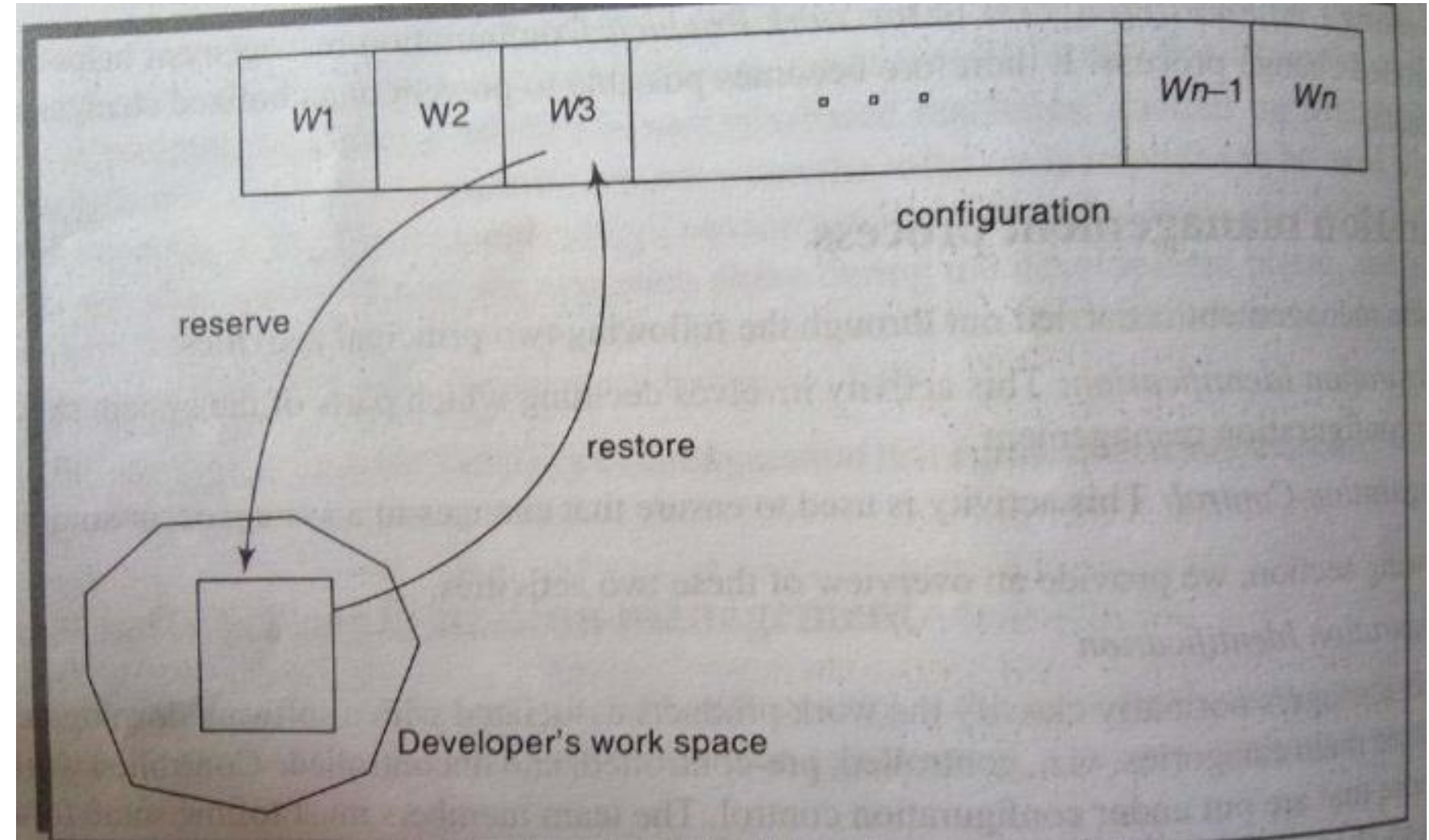
Control work products include

- Requirement specification document

- Design document

- Tools used to build system such as compilers, linkers, lexical analysers, parsers etc.

- Source code for the each module

- Test cases

- Problem reports

Configuration control

- Focus on day-to-day operations of developers

- Allows only authorized changes

- Developer can get private copy of module through reserve operation and can make changes

- Only one developer can make reservation to avoid concurrent access problems

Software Configuration Management

Modifications to work product under configuration control

- First make a reserve request

- Only approved if its gets authorization from project manager for specific work product

- If reserve request is successful, private copy of the work product is created in their local directory.

- Changes completed to satisfaction , the changes are need to be restored in configuration management repository.

- Restoring the changed work product to system configuration requires permission from Change control board (CCB).

Software Configuration Management

CCB reviews and certifies certain aspects about the change such as

- Change is well-motivated

- Developer has considered and documented the effects of the change

- Changes interact well with the changes made by other developers

- Appropriate people have validated the change

CCB is seldom a group of people

Functions of CCB managed by project manager or senior members

Software Configuration Management

Open source configuration management tools
- SCCS

- RCS

- Both used for controlling and managing different versions of text files.

- Do not handle binary files (i.e executables, documents etc)

- Ability to incorporate restrictions on who can control what.

THANK YOU