CEng 492
Senior Project Design and Seminar II
Configuration Management Report

Project Title: Virtual Classroom Tool
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1.INTRODUCTION

This document describes all Configuration Management activities for *KLAS*, the Virtual Classroom Tool designed by 4DsmarTech. This Configuration Management Plan defines the schedules, functions and responsibilities for controlling the system configuration during the development, testing and deployment of the *KLAS*. The intended audience of this report is:

- Project Managers
- Developers
- Configuration Management Board Staff
- Any party to involve in the development or configuration activity of the project

1.1.Purpose

The purpose of this document is to identify and describe the overall policies and methods for Configuration Management to be used during the development of our software. It is applied throughout the software development process and will help us to keep track of changes and also help us go through and make changes. Software Configuration Management procedures will give us a good map out of the software so that if we need to make more changes it will be relatively easy to do. Software Configuration Management will maximize productivity by minimizing mistakes. The main goal of this plan is to provide information on the Configuration Management policy and methods to be adopted and implemented for the project.

1.2.Scope

The scope of this document is identification of Software Configuration Items, management of change control, auditing the changes and reporting the changes in order to inform the involved people into the project. By this way the changes in the project will be made without any confliction.

Next section of the document covers the organizational units which participate in any Software Configuration Management activity, roles of these organizational units and relationships between these organizational units. The third section covers configuration management process such as identification of configuration items, configuration control, configuration status accounting and configuration audits and reviews. Section four covers the configuration management milestones. Fifth section is about project resources which are tools, techniques, equipment needed to implement the SCM activities specified in the SCM plan. Section six covers plan optimization.

1.3.Definitions, Acronyms and Abbreviations

ACRONYMS	DEFINITIONS
CM	Configuration Management
CMP	Configuration Management Plan

CMB	Configuration Management Board
CMBS	Configuration Management Board Staff
SCM	Software Configuration Management
SCMP	Software Configuration Management Plan
CVS	Concurrent Versions System, the dominant open-source network-transparent version control system
SCI	Software Configuration Item
CR	Change Request
IMC	Implement Change
VCT	Virtual Classroom Tool
CA	Configuration Audit
FCA	Functional Configuration Audit
PCA	Physical Configuration Audit

1.4.Document References

1) Buckley, Fletcher J., *Implementing Configuration Management.* IEEE Computer Society Press, New York, 1996.
2) http://www.mhhe.com/pressman/
3) Pressman, Roger D., *Software Engineering, A Practitioners Approach,* McGraw Hill, Boston, 2001.
4) http://www.cvshome.org

2.THE ORGANIZATIONS CM FRAMEWORK

2.1.Organization

Since we have rather small software development team, each member of the team will accept responsibility for software configuration management. This is necessary since there are only four members in the team. If one of the member reports changes remaining members have to take up a job of authorizing change and to ensure that change is properly implemented. This will reduce or eliminate confusion between the team members regarding changes with the software. Since all the members participate in the SCM, the need to interact change with other software engineering teams is eliminated. The changes will also be included in our new part of our web page.

2.2.Responsibilities

In this section we will try to detail all important SCM tasks and will assign responsibilities for each. All of the SCM tasks will be performed by all members of the software development team. All changes in source codes will be changed in CVS server. So that all members will be informed about the change. Important changes will be discussed in team during regular team meetings and the team will consult to the supervisor of the project. The change will be applied after this procedure.

2.3.Tools and Infrastructure

We are going to use CVS server in order to keep track of project related materials (source codes, web site files etc…). It will help us in version control of project sources.

3. SOFTWARE CONFIGURATION MANAGEMENT TASKS

Configuration management tasks includes all functional and managerial activities for a healthy development progress of the Virtual Classroom Tool (VCT).Therefore, in this section we will give some details about these technical and administrative activites. Achieving this purpose shall be through identification and implementation of followed Configuration Management Processes:

- Identification
- Configuration Management and Control
- Configuration Status Accounting
- Configuration Auditing

3.1. Identification

Identification process forms a cornerstone for developing processes which all configuration activites are based on. So, all activites during, writing source and documentation should be handled and kept carefully to maintain the integrity of developed products. Achieving this depends on selecting proper configuration items (**CI**) for the products. So we decieded our configuration items as:

- Source
- Documentation

3.1.1.Source

Since we decided develop the virtual classroom tool in the Visual Studio .NET platform using C#, we will strictly apply C# coding convention.All class,methods,global and local variables and declarations will be according to this.When a team member start to write source code ,he will give some specific information about writer and implementation date at the the begginning of source file.Also, it is decided that each source file starts with capital letter and the name of file will be related with the developed module.Each source file will include comment about which part requires this file and written source code blocks will be commented.Since we will use CVS as project's control version, the history of the source files will be kept and we will update project directory with new files.

3.1.2. Documentation

One of the most essential parts of software development process is to keep the track of states. Traceability of development progress base on the documentation. So, we will regularly produce the necessary documents. The documents produced so far: System Requirement Analysis Report and Detailed Design Report will.All document materail will be kept both in the CVS server and web page.In advance ,if

there is a major change at the development progress, document version will be easily created and available in CVS.

3.2.Configuration Management and Control

Configuration handling and control are important in view of change request to developed product. The change request to specification of a configuration item is systematically proposed, evaluated, approved or disapproved, and implemented. Configuration control and handling is an important process for rearrange the configuration of system baselines and configuration items. Activities around this process guarantees that only approved changes are implemented and decreased side effects from changes. Configuration control ensures that system baselines are accurate and known throughout the life cycle of the system.

3.2.1.Change Control

Change control activities deal with flow procedure of change requests' from developer. As 4DSmartech team, we described our change request procedure so as to maintain the integrity and effectiveness of the Virtual Classroom Tool. Moreover, this will help decreasing the problems when integrating the modules.

3.2.1.1.Change Request

A change request come from teammates or supervisor. When a request comes,e will apply following procedures.

- All coming requests will kept in a specific directory "ChangeRequest" in the CVS server.Some specific information will be recorded.

  Date of the change request
  Why the change is needed.
  Description of the requested change
  Proposed alternative for the change
  How it is urgent.(priority etc.)

3.2.1.2.Approve or Reject Change

The evaluation of a change is an important activity of the change request process to validate justification for the change and to evaluate the effect of the proposed change. So the team leader will organize a meeting to discuss the necessity of changes with other team members. While evaluating a change all team members will consider four rule:

- Applicability
- Maintenance of integrity
- Efficiency
- Side effects

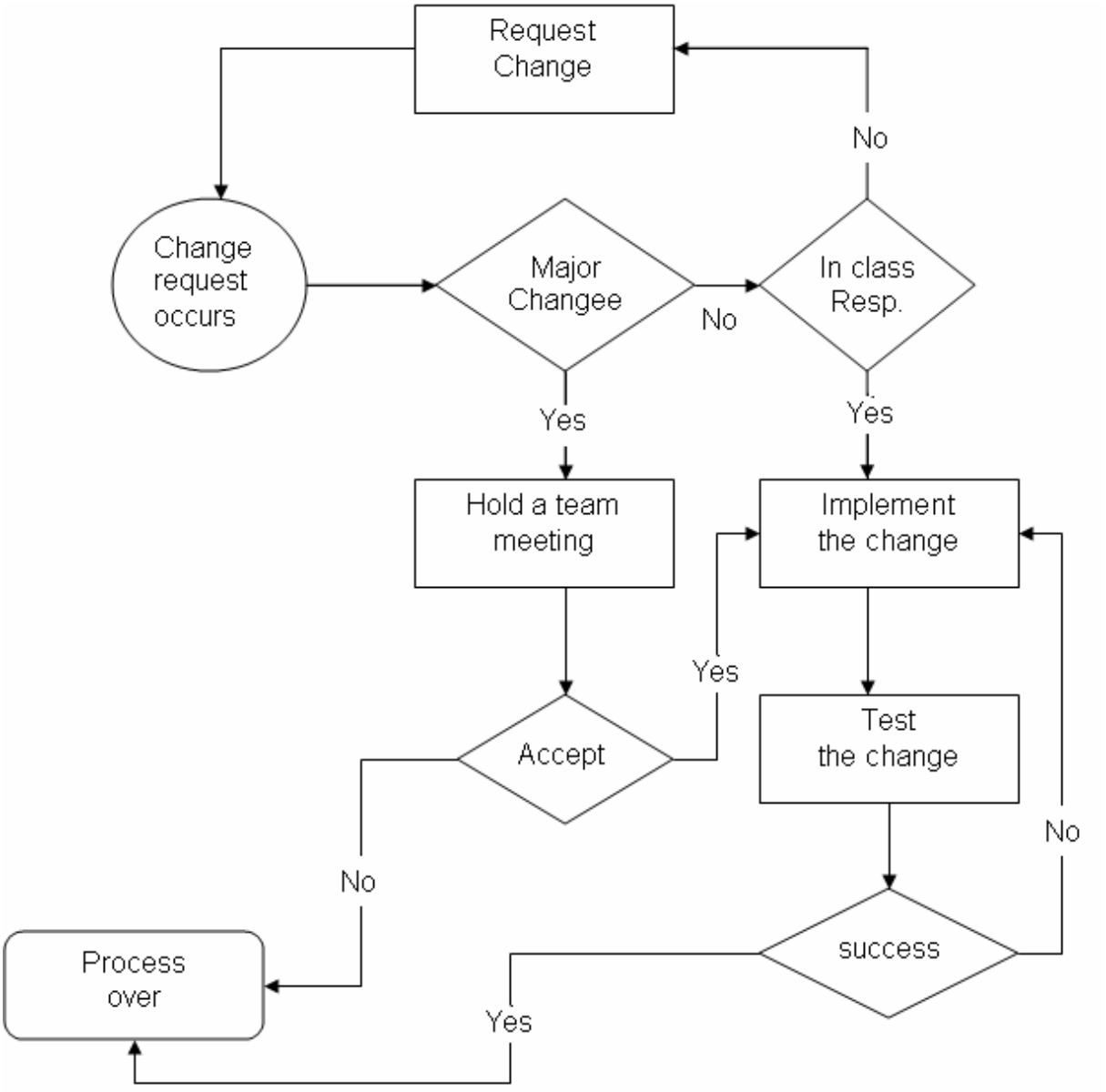
Considering these rules team members confirm or disapprove the change request. At this stage, without taking confirmation from team members to apply some changes to configuration items result in challenging problems. Even if believed that It will cause no problem.

Approved and rejected changes will be held in directories called ApprovedChange and RejectedChange, respectively, in the CVS server with some information states that:

- Approval or reject date
- The actions to implement the change

3.2.1.3.Implement Change

When a change has been approved, a series of steps are required to implement, test and accept. A change is assigned to the one who created the part in which the change will be done. Then implementation step starts.After completion,one of team members, except from the team member implement the change, test just alone the module in which the change occurred. If there is no error or unexpected situation, change is finalized. If there is ,deficiencies are detected and they will be fixed. Following diagram will make followed procedures for CR-IMC process clearer for 4DSmartech team members.



Flow diagram for CR-IMC procedure

According to that change version number of the module will be increased, and the CVS server give higher version number to rebuilt system.

3.3.Configuration Status Accounting

Configuration status accounting is one of essential activity of CM that is related with recording and gathering information to manage the configuration of our product.

In our project we will use activities under CSA to inform our supervisor and other people about our project progress. Especially, as mentioned previous section, information about all CR activities and collected data kept in the CVS server and web page and will be used to assess about effectiveness and completeness of our product VCT. In addition we will keep backup of the CVS server not to encounter a

disaster when a major change occurs or to avoid corruptions and physical storage errors.

Communication between 4DSmartech is generally through e-mail and weekly meetings between group members.

3.4.Configuration Audit

Configuration audits are performed to determine if the configuration item accurately reflects the physical and functional characteristics as defined. Reviews are performed to ensure that configuration items have been correctly identified and produced.

4DSmartech will hold CAs to verify that each item in the detailed design report and system requirement analyze report matches the corresponding item in the system process cycle. According to these audits team members will give information about differences between defined baseline configurations and current configurations.

3.4.1.Functional Configuration Audit

Since we are rather small company each team member will be responsible with conducting FCAs to verify that each configuration item has achieved the performance and functional characteristics as specified in the established baselines. The FCAs will generally be performed towards the end of module development. Due to high modularity of VCT each member test his module under the assistance of established standarts in the produced document materials. The results are expected to kept in the appropriate directory in the CVS server.

3.4.2.Physical Configuration Audit

Physical configuration audits will be conducted prior to final release of the product. It is responsibility of all team members to ensure that all software is correctly identified and produced.

4. PROJECT SCHEDULES

Each week on Thursday, team members will conduct a meeting with the supervisor of the VCT to discuss current state of the project. In addition to this,4DSmartech team members come together at least once in a week to discuss the current situation of development cycle and to ensure everything going as it should.

5.PROJECT RESOURCES

Every team member will be responsible for configuration management. Resources establish the sequence and coordination for all the software configuration management activities and all the events affecting the Plan's implementation. As it is described in the “tools and infrastructure” section, we will use CVS System to manage old and new code. Also, every member will keep a log to mention about last

changes on the last version of the code. By CVS system, automatic backup system is kept, and if a member needs old version, he/she can download necessary part(s).

6.PLAN OPTIMIZATION

We will do critical reviews of configuration management plan at every key milestones. This will prevent the plan becoming redundant and outdated. We will make clarifications, additions or reductions in CMP.