MIDDLE EAST TECHNICAL

UNIVERSITY

COMPUTER ENGINEERING

DEPARTMENT

CENG 492

CONFIGURATION MANAGEMENT PLAN

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1 Introduction

1.1 Purpose of Configuration Management Plan

Development of software is a complicated process because many changes are made by the project developers during the development process. Therefore changes must be managed carefully in order to prevent the conflicts and difficulties that can be caused by different versions. Because of this, a mechanism must be provided and this mechanism is the configuration management plan.

The aim of this document is to give a guideline to project members throughout the configuration management process. This plan will help us to manage the changes made during the project.

1.2 Scope of Document

The scope of this document is to describe overview of the organization of the overall tasks, roles, objectives, version management and version tracking. This document explains the configuration management units of the configuration identification, change control, status accounting and audit and reviews. During the development of the project, in order to prevent any conflicts about the current status, we will follow some steps.

1.3 Definitions, Acronyms and Abbreviations

- CCG: Configuration Control Board
- CI: Configuration Item
- CMG: Configuration Management Group
- QMG: Quality Management Group
- CM: Configuration Management
- CMP: Configuration Management Plan
- CVS: Concurrent Versioning System
- CSA: Configuration Status Accounting
- SCR: System Change Request
- DG: Developer Group
- TG: Test Group

1.4   Document References

While preparing this plan, we used the following documents as a reference:

- IEEE Standard for Software Configuration Management Plans (IEEE Std 828 - 1998)
- Software Configuration Management Plan, Presentation prepared by METU, Computer Engineering Department for the course Ceng492
- 2006 – 2007 METU CENG Senior Project Groups Documents, http://senior.ceng.metu.edu.tr/2007
- The related documents to this CMP are "Requirement Analysis Report", "Initial Design Report" and "Detailed Design Report" of HSBS WSN.

1.5   Document Overview

In this document the CMP is outlined in six parts. The first part introduces the document, its purpose and scope of this text. Second part describes the Organizational structure of the CMP, responsibilities of the management groups and tools that will be used to execute the CM. Third chapter is about the CM processes, which consists of CIs, management and control options, CSA and auditing. The fourth part points the milestones of the living schedule and general CM. Fifth part lists the software development tools, auxiliary software programs and communication resources. Lastly the sixth part is the plan optimization which describes briefly how the CM plan will be applied and refined.

2   Organizations of CM Framework

2.1   Organization

The HSBS WSN project is made up of multiple modules and the HSBS Smart team is a small group consists of four senior students. Therefore Development Group (DG) and Testing Group (TG) are composed of two people for each module accordingly. Since the HSBS group is a crack unit, the organizational groups as Change Control Group (CCG), Configuration Management Group (CMG), and Quality Management Group (QMG) are composed of all members.

2.2   Responsibilities

Since the organizational structure assigns all positions to all group members, responsibilities are equally spread over each peer. These tasks can be listed as follows;

- Defining the CIs as CMG and deciding DG for each CI,
- Originate SCRs and responding these requests as a part of CCG,
- Participate in QMG meetings for auditing work done and assign TGs,
- Use the CVS server properly,
- Working in parallel with CMP,
- Obeying the deadlines of the assigned tasks as DG and TG,

The group undertakes organizational roles with all members; therefore group meetings become more important and will be conducted regularly every week with a meeting plan.

2.3   Tools and Infrastructure

2.3.1   CVS

Concurrent Versioning System (CVS) is software to record changes in a source and documentation files of a project, which allows many developers to work concurrently. A version track for each file is supported so that any version of a file is reachable at any phase. The latest version of the whole project can be checked out anytime allowing members to update their workspaces and continue to develop over the up-to-date versions.

2.3.2   WinCVS / gCVS

The graphical user interface front-ends for CVS clients WinCVS and gCVS are Windows and Linux distributions of the CvsGui Project. The purpose of using these programs rather than command line CVS tools is to improve the group members' usage of CVS server and ease the work.

2.3.3   Eclipse

The well known open source IDE which will be used to develop the GUI of the project provides built-in CVS support which comes handy with the easy commit, check out operations.

3 The CM Process

3.1 Identification

The HSBS Smart wireless sensor network project has following configuration items (CI);

3.1.1 Software Part

Software modules of the project are recorded here and concurrent development and any changes made by the team members kept by the CVS system under the CVS root of the department. All changes can be requested by all team members and this process can monitor by our project assistant. Besides of the software modules if we need and make another change on kernel image of the AP-400 device it can be tractable.

- PIC module
- Ap-400 module
- Server module
- GUI module
- Kernel image of the ap-400

3.1.2 Hardware Part

We develop and manage an embedded project so we have not only software part, also hardware design of the system. Minor changes can be made on the schematics of the SP07 board, because schematic representations of the board are important CI for an embedded project.

- Schematic of the SP07 board
- PCB design of SP07 board

3.1.3 Documentation

General layout of the design, and detailed UML diagrams are in report. Any further changes in the modules, diagrams, project plans and development tools can be updated after module configuration. Installing and Setup issues, any photographs of system, video tutorials and user help files should contained the project specification and can handle the changes in modules

because of friendly user responses of the system.

- Design reports of the project
    - o Project Proposal
    - o Requirement Analysis Report
    - o Initial Design Report
    - o Detailed Design Report
    - o Configuration Management Plan (CMP)
- Web Documents
    - o Web Page sources
    - o Multimedia resources
- User Manuals
    - o Help files
    - o Installation and Setup instructions

3.2 Management and Control

3.2.1 Development

All team members participate in the development process of our project in two people groups for each module. Since all members do not differ much at abilities, knowledge and experience for designing an embedded project the workload and tasks are shared among the team equally. As in the first semester's studies, the forthcoming development tasks will be accomplished by the team in two groups which can be adjusted according to vitality and difficulty of the tasks.

The sub tasks which are defined in the Living Schedule on the web site are going to be done in the time limits stated. As the goals of the sub tasks are achieved the complete project will be built from bottom to top. Living schedule of the project consist of sub tasks, their dead lines, and resources (builder) of the task. Each task are assigned member or shared among team members and all team members must meet the deadlines of the tasks. Each member is responsible of his assigned task. Therefore we want to finish the project on time by faithful to living schedule.

3.2.2 System Change Requests

SCRs can come from two sources. Firstly, major change request come from our advisor

assistant and second one comes from the team members. After deciding version.1 and version.2 of system we do not expect big changes in modules of the system, since milestones of the project are mostly determined by the advisor assistant and the team. When, one of the team members requests a change in a module, the SRC is evaluated by CCG which is the whole team. In the case that the SRC is accepted a DG is assigned for the change and a TG is assigned for testing the change before committing.

3.2.3 Defect Tracking

Since the development of the project based on V-model which assures strict testing for each component we are not expecting high number of defects, but in the case a bug in the completed components encountered the QMG will discuss the problem, assign the TG for better examination of the component, locate the issue and assign DG for repairing the defect.

3.3 Configuration Status Accounting (CSA)

The track of modifications and related updates of the project is kept by team members by commenting the CVS commits clearly.

3.4 Auditing

Since each development task is coupled with a testing task basic auditing is accomplished before changes are committed. On the other hand, version releases will make project open for audition of advisor assistant, supporter company, instructor and other CENGAP groups.

4 Project Schedules - CM Milestones

We have prepared a living-schedule and it is put on our web site. This schedule shows the tasks of project members as well as the deadlines and milestones.

We will have a meeting each week among group members. We will examine the situation and progress of our project development during these meetings. Moreover, there will be meetings with our assistant every week and there will be meetings with our supervisor every two weeks.

The main milestones of the project are as follows:

	CM Milestones	Date
1	CM Plan and Web Page Ready	09.03.2007
2	First Dev. Snapshot Demo	16.03.2007
3	First Release and test spec.(V1)	30.03.2007
4	Second Release and test spec.(V2)	27.04.2007
5	Final package + Final demo	13.06.2007

5 Project Resources

Software Development Tools

- CVS
- Eclipse
- Eclipse Visual Editor
- WinCVS / gCVS

Auxiliary Programs

- MPLab
- CCS C Compiler
- Proteus
- CuteCOM
- TFTP Server

Communication Resources

- Gmail Group – "cengap" E-mail group

6 Plan Optimization

CMP will be a roadmap for our team in the development of "HSBS WSN". However, as a result of changes made during the development process, we will update our CMP. Hence, not only will our CMP be reliable, manageable and mature, but also it will not be redundant and outdated. Besides, we will make critical reviews after each milestone accomplishment and modify CMP accordingly. In addition, all group members will be in contact during the development process, hence there will be no loss of contact among the team. On that account, we will conform to our CMP unremittingly.