

CEng 492 CMP

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pix'r'us

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1 Introduction

1.1 Introduction and Purpose of CMP

To change one thing, you must change another. Then the new change will make other changes. Change is continuous and repetitive, the side effects or consequences are inevitable. Change one thing and you change another for better or worse [1]. Good change is the (occasionally) skillful redirecting, renewing, and reconnecting of stuff into something better for us, for someone, even for everyone [1], and for the better good change tracking and controlling changes in the software is a key fact in software development.

In software development, reproducing is an expensive solution for problems encountered. Often the solution is to do controlled, incremental changes; and since there are multiple developers working on the same software, CMP focuses on controlling multiple developers working on the same code at the same time, targeting multiple platforms, supporting multiple versions, and controlling the status of code.

Purpose of this document is to describe how identifying, controlling, documenting the changes, and auditing each team member with the changes and the status of the product will be carried on.

1.2 Scope and Overview of Document

Pix'r'us CMP report consists of six sections which are determined according to IEEE standards. These are;

1 – Introduction, Overview and Scope of CMP

2 – The Organizations Configuration Management Framework

Explanation for organization of Pix'r'us to accomplish CM, roles and responsibilities of each Pix'r'us member will be among the concerns of this part. Also the tools and infrastructure of CM are explained in this section.

3 – The CM Process:

In this section identification of configuration tools are concerned. Also configuration of status accounting and auditing are explained.

4 – Project Schedule;

Pix'r'us Photogrammetry Suite's schedule and the CM Milestones are explained.

5 – Project Resources

6 – Project Optimization Strategies

1.3 Definitions, Acronyms and Abbreviations

CM	Configuration Management
CMP	Configuration Management Plan
CI	Configuration Item
GUI	Graphical User Interface
DEM	Digital Elevation Map
PPS	Pix'r'us Photogrammetry Suite
CCB	Configuration Control Board
TT	Testing Team
DT	Development Team
PD	Program Director
SRC	System Change Request
FCA	Functional Configuration Audit
PCA	Physical Configuration Audit

1.4 Document References

- 1) <http://en.wikiquote.org/>
- 2) Pressman, Roger S. (2001). Software Engineering: A Practitioner's Approach, Fifth Edition. New York, NY: McGraw-Hill
- 3) IEEE Standard for Software Configuration Management Plans (IEEE Std 828-1998)

- 4) "Software Configuration Management", presentation prepared in METU CEng Department '08.
- 5) ISO Configuration Management for Software (ISO/IEC TR 15846)
- 6) http://en.wikipedia.org/wiki/Concurrent_Versions_System
- 7) http://en.wikipedia.org/wiki/Change_request

2 The Organizations CM Framework

2.1 Organization

Pix'r'us is a small team of four, where every member of the team knows each other well enough to perform a team work where everyone can replace each other in the organization of Pix'r'us. With the help of this harmony, organization of Pix'r'us is a simple one compared to bigger companies. There are four main departments in Pix'r'us,

- a- Configuration Control Board: Everyone in the team Pix'r'us is a member of CCB.
- b- Developer Team: Pix'r'us Developer team consist of three talented coders; Ebru Aydin, Ender Erel, Ozan Kabak, which can work in harmony with maximum efficiency.
- c- Testing Team: A testing team must consist of very patient and careful people. So Pix'r'us assigned Berk Demir for this position, who carries these qualities.
- d- Program Director: With her leadership qualities and dedication Ebru Aydin is on the top of Pix'r'us organization.

Responsibilities of every organization are explained in detail in the section 2.2.

2.2 Responsibilities

- a- Configuration Control Board
 - Deciding SCR's
 - Examining the pros and cons of a SCR
 - Coordination of SCR's among team members
 - Documentation, maintain and control of software baselines
 - Auditing

- b- Developer Team:
 - Creating the baselines and releases
 - Documenting releases

- c- Testing Team:
 - Testing releases with black box and white box methods
 - Documenting user guides.

- d- Program Director:
 - Distribution of the workflow and its control
 - Controlling the process of every change
 - Giving final decisions about changes
 - Conform the CM schedule.

2.3 Tools & Infrastructure

PPS will use CVS; software that keeps track of all work and all changes in a set of files, and allows several (potentially widely-separated) developers to collaborate, as the main configuration management tool.

CVS uses client-server architecture: a server stores the current version(s) of the project and its history, and clients connect to the server in order to check out a complete copy of the project, work on this copy and then later check in their changes. Typically, the client and server connect over a LAN or over the Internet, but client and server may both run on the same machine if CVS has the task of keeping track of the version history of a project with only local developers. The server software normally runs on UNIX (although at least the CVSNT server supports various flavors of Windows and Linux), while CVS clients may run on any major operating-system platform. [6] Since CVS allows you to see any previous releases of the project and it runs on many major operating-system platforms, and it is easier to use compared to other CM tools, CVS is the choice of Pix'r'us as a CM tool.

Pix'r'us will develop PPS on a UNIX environment without any specific IDE. There is some development tools used in GUI design such as – WX Designer, but they will not have any direct affect on CM.

3 The CM Process

3.1 Identification

In this section identification of current states of PPS is covered. Pix'r'us Photogrammetry Suite has many configuration items which are also covered in this section in detail. CI's can be grouped into four main sections which are algorithmic modules, managers, documentation and graphical user interface.

Algorithmic modules, which are isolated from other modules, consists of calculations and image processing parts of PPS. They deal with uniform and simple data, and do not store them. By this way any change in the other parts of the project will not affect these modules.

Managers are like bridges between other parts of the project. When a change needed, which is unavoidable, related manager and subsystem changes will handle. Also subsystems are isolated from each other to manage these.

Documentation is an essential part of a project. While taking the project to the next level user and developer documentations will be provided.

Graphical user interface will also be improved during the development of the project. With the development of other parts extra features will be added to GUI.

Sub items can be seen from the table;

Items	Sub items	Descriptions
Algorithmic Modules	Registration	Register images according to each other and world
	Mosaic	Creates mosaics of images
	Ortophoto	Orthorectifies images
	DEM	Creates Digital Elevation Maps
Managers	Data Manager	Incorporates with all types of data, uses subsystems to isolate them from each other
	Project Manager	It is a bridge between all other components
Documentation	Developer Documentation	Docx will be used
	User Manual	
	CMP	
GUI	Dialogs	
	Panels	
	Windows	

3.2 Management and Control

3.2.1. Change Request

A change request is a document containing a call for an adjustment of a system; it is of great importance in the change management process. [7] Change requests typically originate from one of five sources:

- Problem reports that identify [bugs](#) that must be fixed, which forms the most common source,
- System enhancement requests from [users](#),
- Events in the development of other systems,
- Changes in underlying structure and or standard
- Demands from program director, or from the supervisor team including Murat Yukselen and members of Milsoft.

CCB is responsible for a CR's flow in the team. For a better workflow there are strict rules which must be followed for a CR;

- Before discussion of a CR, a member must consult to the PD
- If a CR is requested by a member of Milsoft or the supervisor team, request is put into the request line with priority
- If PD gives approve for a discussion, every member will be informed about the CR, and CR is put into the request line
- After a discussion, a vote of confidence for the CR must be gathered for it to be processed by DT – a vote of confidence stands for 3 out of 4.
- Any approved or rejected CR will be documented by the PD.

3.2.2. Defect Tracking, Release Control

TT is responsible for routine testing of PPS, and version testing of every release of PPS. Any defect in the PPS must be documented, and reported to PD for a CR.

3.2.3. Change Development

Development process is followed from the web page of PPS. Developments completed according to the schedule are uploaded to CVS for testing and documenting. PD is responsible for keeping track of every member's schedule and deadlines.

3.3 Configuration Status Accounting

As the project develops number of CI's will increase exponentially. For the sake of PPS every CI with a specific baseline must be processed for recording, monitoring and information reporting. This process is called CSA – Configuration Status Accounting. Via CSA, every Pix'r'us member, and supervisor of the project will be informed about status of PPS. Status Reports, Change Request Reports, Defect Reports will be delivered via e-mail to the members of Pix'r'us and supervisors. Addition to these implementation details and configuration identifications will also be delivered.

3.4 Auditing

Auditing is one of the key points of configuration management plan and it helps to ensure that whether the changes are implemented properly. Pix'r'us TT is responsible for auditing through the project. There are two methods which will be used by the TT – white box, black box. After every applied change TT will test the PPS for any defects, and report these if there exists one. Also changes applied to PPS must reflect to the documentation of PPS. PD must ensure documentation is up-to-date after necessary changes are made. Also consistency between baseline and final release must be accomplished. Pix'r'us gives importance to audit reports to track the progress of PPS and its development history. Every audit will be documented and published on PPS' web site for supervisors to keep track. The report will include an action item list, with due dates to handle deficiencies. Pix'r'us will handle the auditing process in two steps.

- Functional Configuration Audit – FCA: FCA is carried out to confirm all functionalities reported in design documentations processes with success.
- Physical Configuration Audit – PCA: PCA is carried out to confirm all documentation needed is completed. PD and TT are responsible for PCA. Every CI is checked for conforming its specification.

4 Project Schedules - CM Milestones

<u>Date</u>	<u>Milestone</u>	<u>Description</u>
09.03.2008	CM Delivery	First CM
09.04.2008	CM Update	Update of changes according to first release
03.06.2008	CM Final	Final CM according to final state of the PPS

5 Project Resources

- CVS
- Web Server
- SFTP

6 Plan Optimization

Plan optimization will be carried out according to updates in CM plan. However Pix'r'us holds one or more meetings weekly, plan optimization does not emerge a high priority for the team. PD helps the team to avoid miscommunication via e-mails, or holding extra meetings about CI's to find out whether an optimization in the CM plan is needed or not.