

Configuration Management

Avoiding
Costly
Confusion

Question:



Which is more important

- Stability or
- Progress

Another Question:

Why is change potentially dangerous?



Purpose of CM

- Identify Change
- Control Change
- Ensure Change is Properly Implemented
- Report Changes to All the people who need to Know

What Changes?

- **Software Code**
- **Data**
 - test data
 - database files
- **Documents**
 - SRS
 - designs
 - project schedules
 - test plans, test results
 - ...

**Standard Term:
"Configuration Item"**

Baseline - definition

"A specification or product that has been formally reviewed and agreed upon, that thereafter serves as the basis for further development, and that can be changed only through formal change control procedures."

IEEE Std 729

Standard Glossary of Software Engineering Terminology

Baseline - purpose

- Creation of a baseline is usually a milestone in the schedule.
- The baseline is then centrally controlled.
- **Everyone uses the same current baselines.**
- To change the baseline requires a formal process.



Baseline - Basic Change Process

1. Change Request is made
2. Request is Approved or Denied
3. "Check Out" the item(s)
4. Make Changes
5. Testing or Reviews
 - formal review of design changes,
 - regression testing of modules, etc
6. Review the Change Order
7. Notify all Dependencies
 - when baseline change will occur
 - what changes were made to baseline
8. "Check In" the new baseline

Template for Baseline Change Requests

- Name, Date, yadda yadda
- Type of change
- Goal of making the change
- Priority / Urgency
- Detailed description of the changes
- Expected Effects
- Timetable for making changes, testing, release,
- Estimated Costs

CM Audits

- % of unapproved changes
- % of Change Orders completed on schedule
- % of affected Configuration Items that were not checked
- % of properly documented Configuration Items
- number of CM Process Failures

Question



- How do we keep track of all these versions, dependencies among components, approval records, etc. etc. etc., and still assure quality?
- Have a Sound CM **Procedure**
- Use Good CM **Tools**

CM Plan - Format

According to
IEEE Standard 828 - standard for
Software Configuration Management Plans

1. Introduction

a) purpose b) scope c) definitions and acronyms d) references

2. Management

a) organization

b) SCM responsibilities

c) interface control

d) SCMP implementation

e) policies, directives, procedures (naming conventions, version designations, problem report process)

3. SCM Activities

a) configuration identification

b) configuration control (change history, review authority, read/write control, member identification)

c) configuration status accounting (status of requests, status of approved changes, ...)

d) audits and reviews

4. Tools, Techniques, and Methodologies

5. Supplier Control

6. Records Collection and Retention

IEEE 1042

Guide to Software Configuration Management

- Defines **terms**, such as baseline and version
- Discusses configuration management as a management discipline and its **role** in the engineering process
- Includes **checklists** of issues for sections of the SCMP (IEEE Std 828)
- Includes four complete **examples** of SCMPs

CM Tools - Necessary Features

- Dependency Tracking!!!
- Audit Trails!!!
- Reporting of Changes
- Supports the Change Rules
- Versioning
- Requirements Tracing
- Repository arranged as "basic objects" and "aggregate objects"
- Supports both Linear evolution and Trees



Closely Related Topic

- **Controlled Document** - a document that is currently vital or may become vital for development and maintenance.

Galin page 389

- Hence, its preparation and storage is an SQA issue.

Controlled Document QA Procedure

- Definition of the list of Controlled Documents
- Document preparation requirements
- Document approval requirements
- Document storage, retrieval, and versioning