Software Configuration Management

An Introduction

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Talk Outline

- Brainstorming
- What is Configuration Management?
- What can I do?
Brainstorming

- What are the problems?
- What are the causes of the problems?
- What should be done to avoid them?
Role Game Time Line
What Is Needed?

- Change Control
- Access Control and Security
- Problem Tracking for any Item
- Release Note Generation
- Release Management
- Metrics Collection
- Roles and Responsibilities
- Coherence
- Version Control
- Manage Relationships
- Distribution/Deployment Management
- Build Management
- Defect Life Cycle
- Report Generation
- Logging
- Problem Relation
- Support for Rules
- Comparison and Merge
- Unique Identification
- Any Type of Item
Why Configuration Management?

- We know what we have to produce
- We know where it is and which state it is in
- Only the right people can use or change it
- We understand the impact of the changes
- Needed information is available
- Agreed procedures are followed
4 Configuration Management
Functions

- Configuration Identification
- Configuration Control
- Status Accounting
- Configuration Auditing
Configuration Item

- Anything that needs to be controlled
- Hierarchy
- too many vs. too few
class vs. instance
What Do We Have?
1 - Configuration Identification

- Type of configuration items
- Organize the structure
- Naming convention
- Version numbering scheme
- Baseline planning
How to Control It?
2 - Configuration Control

- Setup library
- All versions of all CIs
- Guaranty integrity
How to Control It?
2 - Configuration Control

Proposed

Assessed
- importance
- relation
- impact

Rejected

Accepted

Problem Report
Change Request

Planned

Implemented

Archived
Configuration Control vs. Quick Fixes

- Only occurrence?
- Best fix?
- Side effects?
- Already identified?
- Supposed to be fixed!
- IS NOT LOST.
Did Everything Go Well?

3 - Configuration Auditing

- Functional Audit
- Physical Audit
- Generate problem report
What Is Happening?
4 - Status Accounting

- Collect data
- Provide visibility
- Generate improvements
- Notification
- Right data & right format
Where Do I Start?

1. Why start configuration management?
2. Who will be in charge?
3. What do we really need?
4. When do we need it?
5. How to do it?
Example of CM Activities Evolution Per Project Phase

Adapted from Configuration Management, M. Heflin.
CM Implementation

Planning
Defining procedures
Migrate
Dealing with people
Automating support
Making decisions
Why Tools (Alone) Can Not Help?

Configuration Management


Plan Procedure People Decision Automate Migrate

Tool
What Is Done in HEP?

- CVS
- SRTs (BaBar, D0, CDF, ATLAS)
- CMT (LAL, Virgo, LHCb, NEMO, AUGER)
- SCRAM (CMS)
- SCaM project (SL, ST, LHC, PS)

More information can be found on the respective project / tools at the URLs below:

- **ATLAS SRT:**
- **BaBar SRT:**
- **FERMILAB SRT:**
  - http://ods.fnal.gov/~amundson/
- **CMT:**
- **SCRAM:**
- **SCaM:**
  - http://venice.cern.ch/~slaps/hot/SCAM_II/
Software Configuration Management
An Introduction

To Go Further

- **URLs**
  - http://spider.cern.ch/Processes/ConfigurationManagement

- **Books**

- **Email**
  - spider@cern.ch