

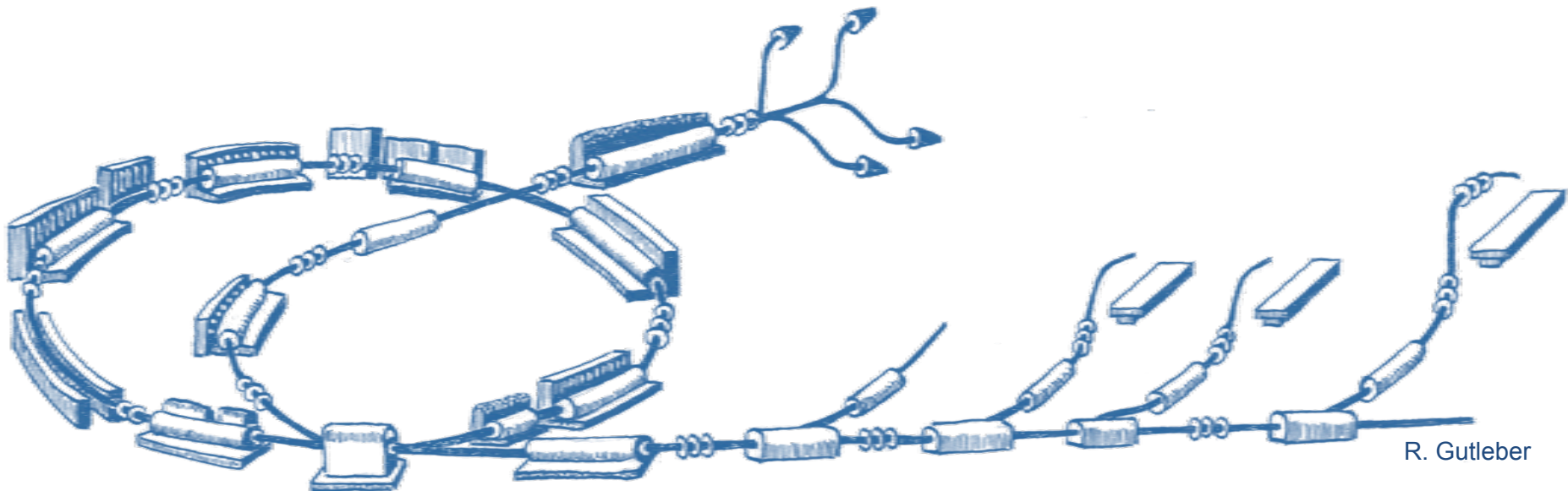
# Configuration Management

Process and Environment

MACS Review 1

February 5th, 2010

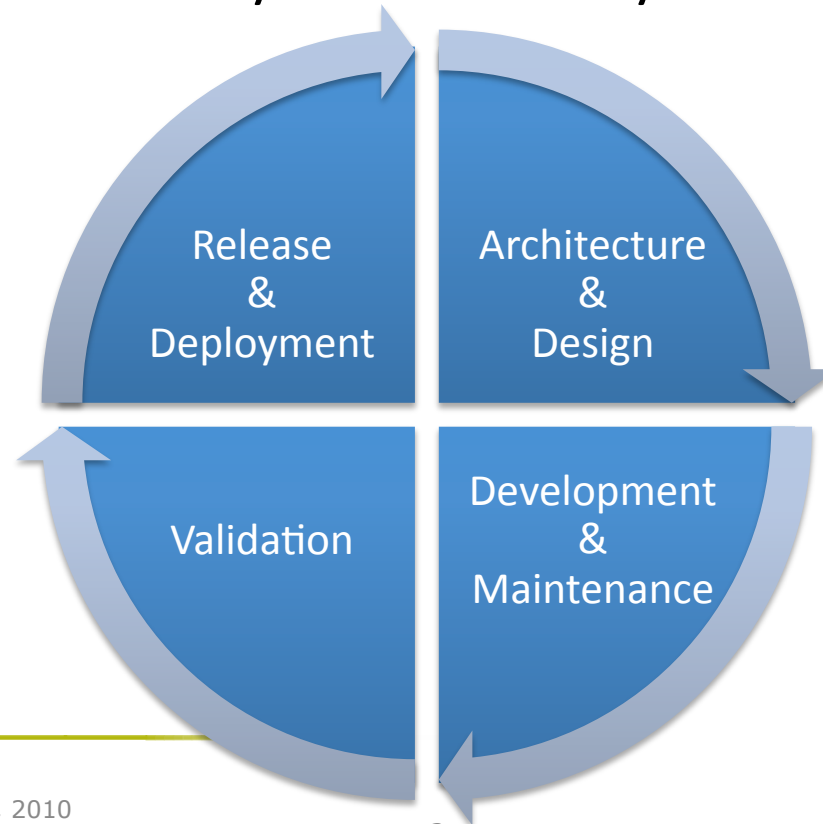
Roland Moser



R. Gutleber

# Goals

- **Configuration Management (CM)** is the implementation and the execution of **processes** and **procedures** that ensure the **systematic** and orderly **control** of a system throughout its **life cycle**



# Why Configuration Management?

- Only allow changes when needed
- **Record** of who changed what, when and how
- **Linking** request -> performed change -> deployed product
  - Knowledge about what we release, deploy and run
  - Simplify validation and maintenance
    - Avoid speculation on bugs
- Structured way to
  - define work to be done
  - report deviations from the design found during validation
- Knowledge about the project **progress**
  - Continuous feedback for sub-contractors about current state of a CWO

# Tasks

- **Identification** of all software and document elements
- **Planning** of development and maintenance by
  - Defining milestones
  - Assigning people
  - Assigning priorities
- **Tracking** of planned work through the whole product lifecycle
  - Change history
  - Progress
- **Releasing** of software and documentation for
  - Validation
  - Operation

# Requirements

- **Development lifecycle** according industry best practices
  - Rational **Unified Process** (RUP) with extension to operation (EUP)
  - **IEC 61508** for safety-relevant parts
- Part of **ISO 9001** and **ISO 13485** (medical devices QM systems)
- Configuration Management according to **ISO 10007:2003**
  - Is a guideline for implementing configuration management
  - We are not certified

# CM Process

- Change Control Board (CCB)
  - Group of persons participating in the project with different profiles
  - Project manager (PM), core team engineers, contractor engineers, users
  - CCB meets regularly (bi-weekly) to decide on developments
- PM **plans milestones** in accordance with CCB
  - Dates and contents in terms of functionalities and assignments
- Change Control Manager (CCM) **creates** CIs and **tickets**
- Engineers **develop** and check in software and documents
  - **Continuous** integration and **testing**
- Release manager prepares **release** upon successful validation
- CCM **closes** tickets and milestones in agreement with CCB



# ARCHITECTURE

# Infrastructure

- **Integration** of open technologies
  - provided by CERN/IT and EBG MedAustron
- **Centrally** managed and maintained
  - Accessible through single account (CERN/NICE)
- Long term **experience** in LHC experiment (CMS)
  - 1.5 person years worth of work
  - Tested and in production for 3 years
- Straightforward to move to EBG Austria



# Tools

- Project management and bug tracking
- Versioned file repository
- Document release repository
- Software release repository



PIMS



# Trac

- Web based Interface
  - **Components** identify software and document elements
  - **Tickets** for tracking changes
    - defects, enhancements
  - **Milestones** for planning
    - e.g. Contract Work Order (CWO)

<https://svnweb.cern.ch/trac/macs>



IT Department

 Search

logged in as rmoser | [Logout](#) | [Preferences](#) | [Help/Guide](#) | [About Trac](#)

	<b>Wiki</b>	Timeline	Roadmap	Browse Source	View Tickets	New Ticket	Search	Admin	Component	Milestone		
									<a href="#">Start Page</a>	<a href="#">Index</a>	<a href="#">History</a>	<a href="#">Last Change</a>

## Welcome to Trac

Trac is a **minimalistic** approach to **web-based** management of **software projects**. Its goal is to simplify effective tracking and handling of software issues, enhancements and overall progress.

All aspects of Trac have been designed with the single goal to **help developers write great software** while **staying out of the way** and

# Components

- **Identify** all product elements
  - Software
  - Document
- **Description**
  - Human readable description
- Subversion **Location**
  - where the component is stored

**Create Component:**

Identifier:

Name:

Owner:

Path:

Description:


# Tickets

- **Organize work**
  - into pieces
- **Progress tracking**
  - States
  - Change history
- **Attached to**
  - single Component
  - single Milestone

**Properties**

Summary:

Reporter:

Description: **B I A** 

Initial import for extern Qt using the sources available at:  
<http://qt.nokia.com/downloads>

Type:  Priority:

Milestone:

Version:  Component:

Keywords:

Cc:

Assign to:

I have files to attach to this ticket

Preview

Create ticket

# Ticket Information

## Ticket #44 (resolved enhancement)

<b>Review DFG requirements by Sandro Toncelli</b>		Opened <b>8 weeks</b> ago Last modified <b>2 weeks</b> ago	
Reported by:	gutleber	Owned by:	gutleber
Priority:	high	Milestone:	<a href="#">Lifecycle Objectives Review Milestone V1.0.0</a>
Component:	sdp_documents_Requirements_DigitalFunctionGenerator		development
Keywords:	review, DFG, requirements	Cc:	
<b>Description</b>			
Incorporate feedback from Sandro Toncelli			<a href="#">Reply</a>

# Ticket Change History

Changed 8 weeks ago by gutleber

---

- **status** changed from *new* to *opened*

[Reply](#)

Changed 8 weeks ago by gutleber

---

- **status** changed from *opened* to *assigned*

[Reply](#)

Changed 8 weeks ago by gutleber

---

(In [\[49\]](#)) references [#44](#): work in requirement comments from Sandro Toncelli

[Reply](#)

Changed 8 weeks ago by gutleber

---

(In [\[51\]](#)) references [#44](#): work in requirement comments from Sandro Toncelli

[Reply](#)

Changed 2 weeks ago by gutleber

---

(In [\[79\]](#)) references [#44](#)

[Reply](#)

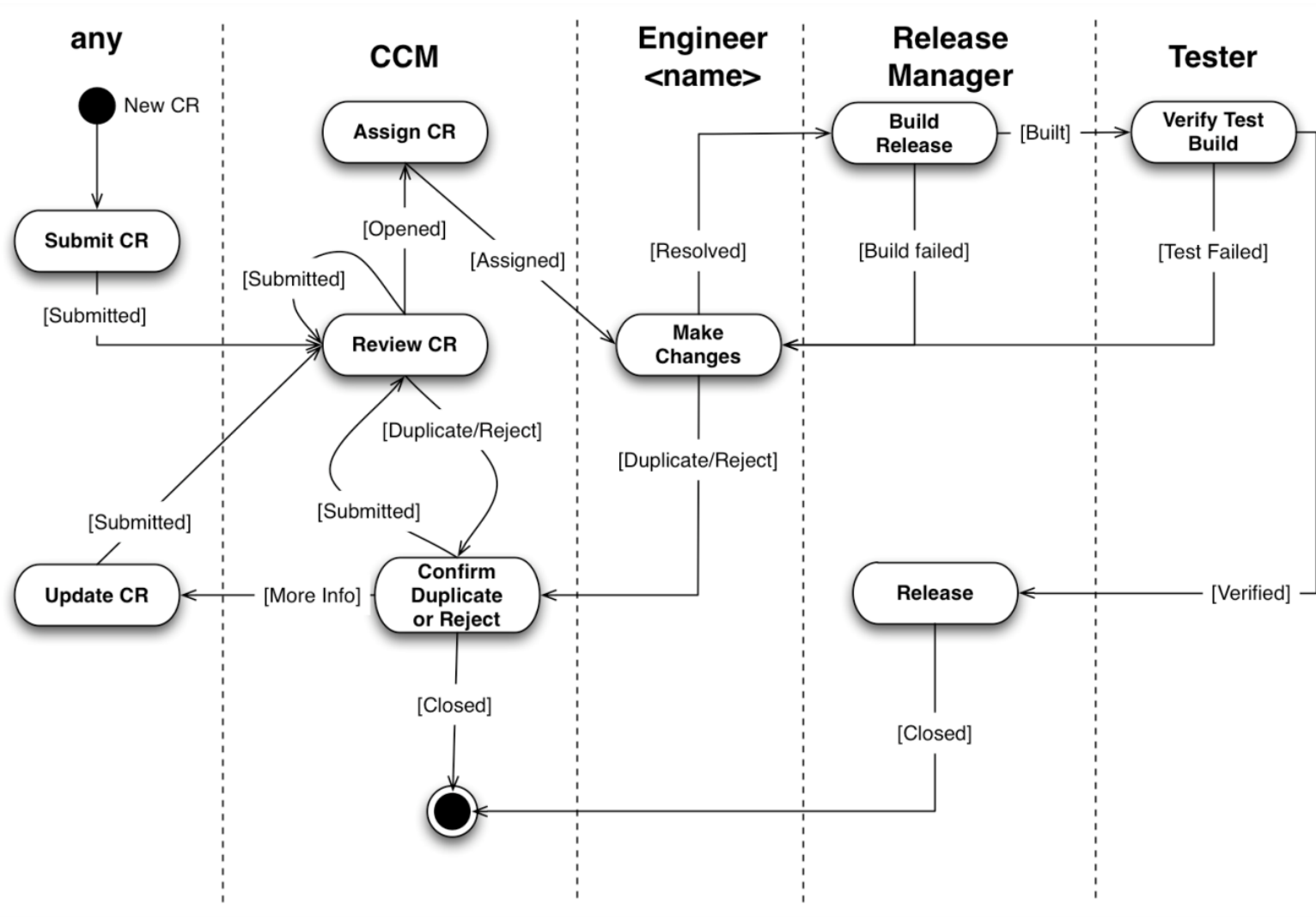
Changed 2 weeks ago by gutleber

---

- **status** changed from *assigned* to *resolved*

[Reply](#)

# Ticket Workflow



# Milestones Progress Report

## Milestone: release V9.8.0: service upgrade

Due in 5 weeks (12/01/10)



Closed tickets: 0   Implemented tickets: 1   In progress tickets: 5 / Total tickets: 6

## Milestone: release V10.0.0: Porting to SLC5(custom gcc4.3.4)

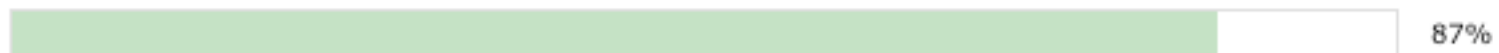
Due in 6 weeks (15/01/10)



Closed tickets: 8   Implemented tickets: 118   In progress tickets: 2 / Total tickets: 128

## Milestone: release V8.2.2: service upgrade

No date set



Closed tickets: 7   Implemented tickets: 0   In progress tickets: 1 / Total tickets: 8



# Subversion

- **Version control** system
  - Stores all software sources and documents
- **Stores full change history**
  - From implementation to releasing
- **Integrated** with Trac
  - To enforce/check procedures defined in the Configuration Management Plan
- **Supports**
  - Parallel branches for maintenance vs. development
  - Procedures for compatible maintenance upgrades

# Subversion Repository Organisation

logged in as gutleber | [Logout](#) | [Preferences](#) | [Help/Guide](#) | [About](#)

[View Tickets](#) | [New Ticket](#) | [Search](#) | [Component](#) | [Milestones](#) | [Last Change](#) | [Revisions](#)

root

Tree with backups

Auditing Change control workflows

Revisions Last modification

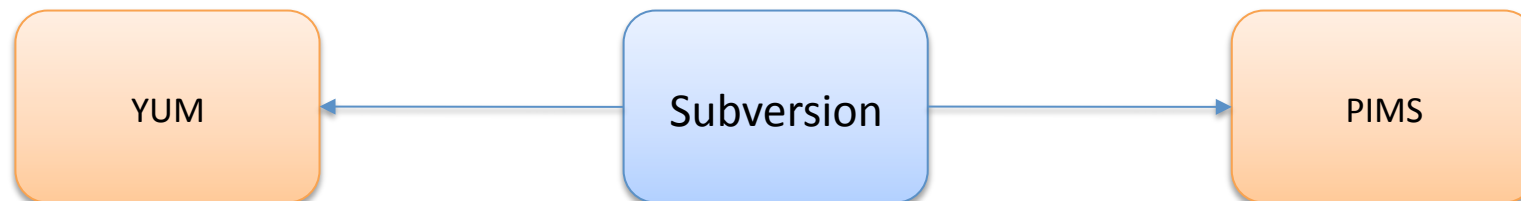
Name ▲	Size	Rev	Age	Last Change
▶ milestones		1	2 months	rmoser: references #1: Create repository layout
▶ tags		1	2 months	rmoser: references #1: Create repository layout
▼ trunk		46	106 minutes	asteinba: references #40: Change Request Ticket 002: Move File
▶ build		29	2 months	rmoser: references #29: Remove /opt/ma/configure in RPMs
▶ cm		45	108 minutes	asteinba: references #40: Change Request Ticket 002: Move File
▶ examples		33	2 weeks	asteinba: references #33: version file incremented
▶ extern		30	2 months	rmoser: references #30: Remove /opt/ma/configure from RPMs
▼ sdp		46	107 minutes	asteinba: references #40: Change Request Ticket 002: Move File
▼ documents		46	107 minutes	asteinba: references #40: Change Request Ticket 002: Move File
▶ cm		36	6 days	asteinba: references #35: created new CI cm
▶ MainTimingSystem		42	3 hours	asteinba: references #39: Change Request Ticket 001: Correct fi
▼ Requirements		41	43 hours	gutleber: references #38: Incorporated feedback
▼ DigitalFunctionGenerator		41	43 hours	gutleber: references #38: Incorporated feedback
▼ doc		41	43 hours	gutleber: references #38: Incorporated feedback
ES-091111-a-JGU_DigitalFunctionGenerator.doc	493.5 KB	41	43 hours	gutleber: references #38: Incorporated feedback
▶ img		41	43 hours	gutleber: references #38: Incorporated feedback

Visit:  View revision:

[View File](#)

# Release Management

- **Software** release repository (**YUM**)
  - Multiple platforms
  - Multiple parallel releases and upgrades
  - Release of test software for validation
  - Release of **certified software** for operation
  - <http://macs-repo.web.cern.ch/macs-repo/repo>
- **Document** release repository (**PIMS**)
  - Released as PDFs
  - <http://cern.ch/medaustron>



# Documentation and Training

- Configuration Management **Plan** (PL-090825-a-RMO)
- Configuration Management **Manual** (MG-090907-a-RMO)
- All work package control experts follow the procedures
  - Training required – to be planned according to need

# CM Roles and Resources

- **Configuration Manager** required (Role not a person)
  - **Maintenance** of in-house developed scripts and applications
  - **Administration** of users and databases
  - Improvements of functionalities according to needs
- **Change Control Manager** required (Role not a person)
  - Enters data into the system and ensures data consistency
  - **Supervises** and checks CM activities
  - **Verify** and **enforce** compliance to **procedures**



# OUTLOOK AND SUMMARY

# Outlook

- Documentation and software **extension** necessary for
  - **Platforms** (Windows, NI Labview-RT)
  - **Software element types** (C#, LV, LV-FPGA)
- Enhancements for PIMS
  - To deal with additional requirements imposed by the CM

# Summary

- CM Process defined
- Manual with detailed instructions available
- CM Infrastructure installed and tested
- In operation since November 2009



# Additional slides