ebg MedAustron

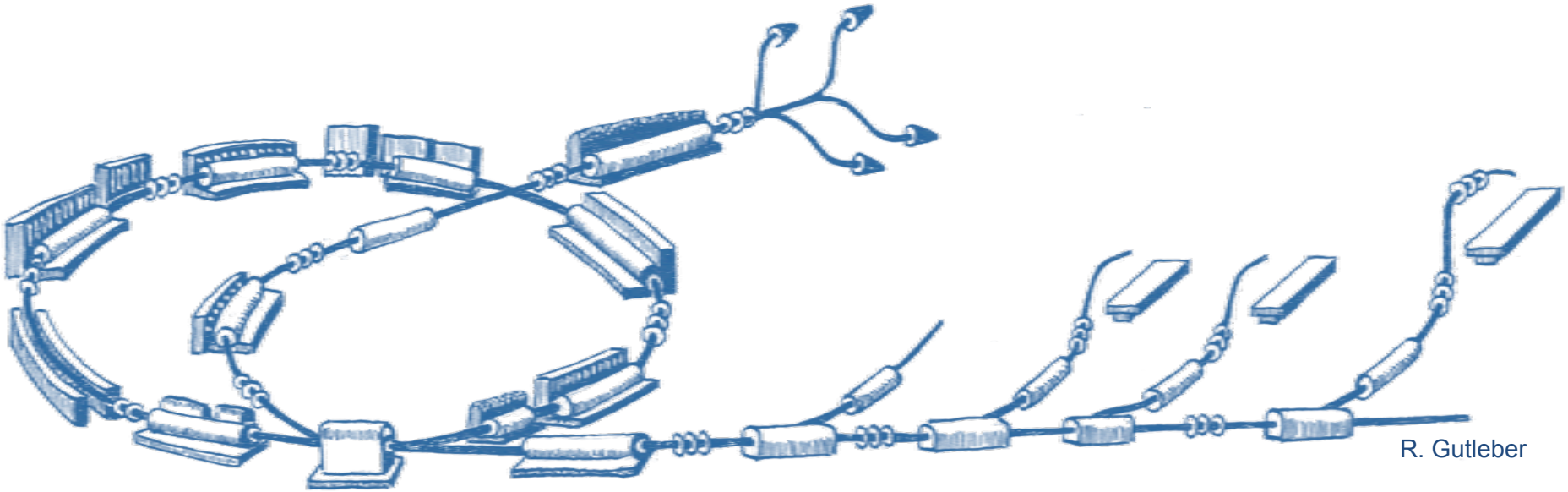
Configuration Management

Process and Environment

MACS Review 1

February 5th, 2010

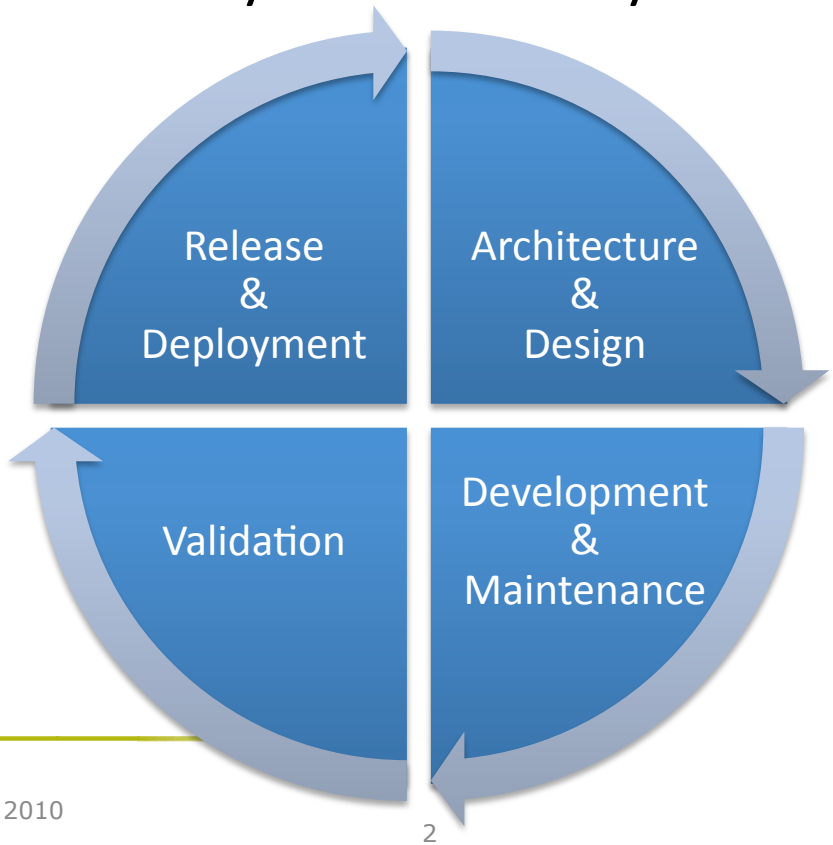
Roland Moser



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
  - **R**ational **U**nified **P**rocess (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

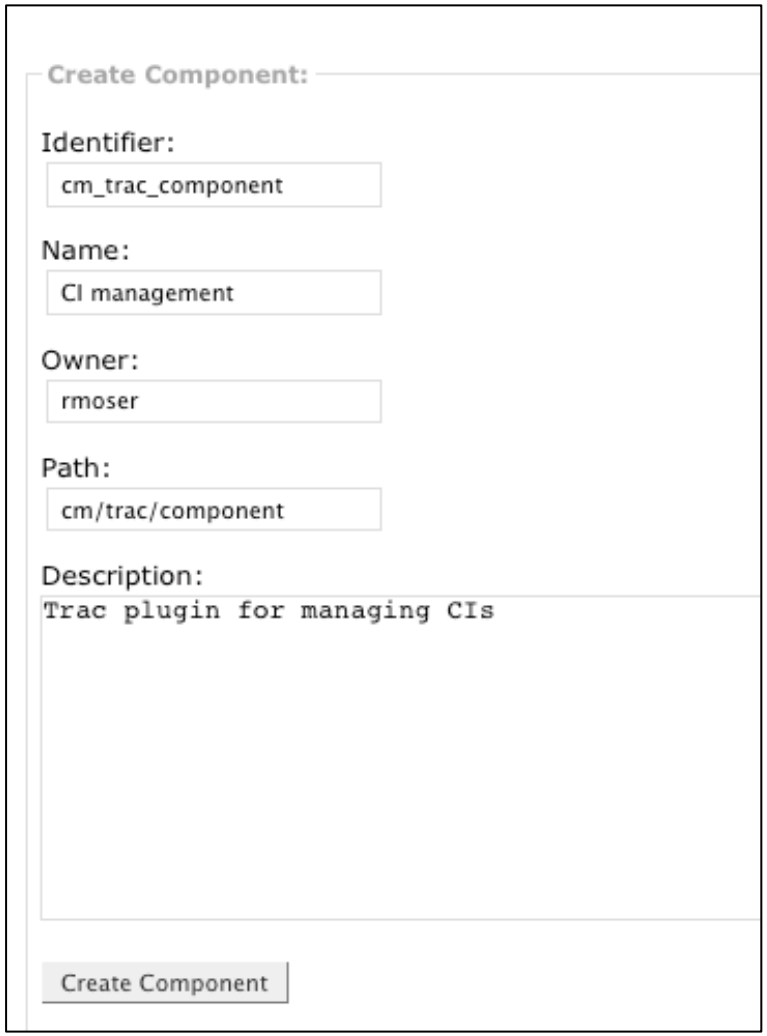
Trac

- 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

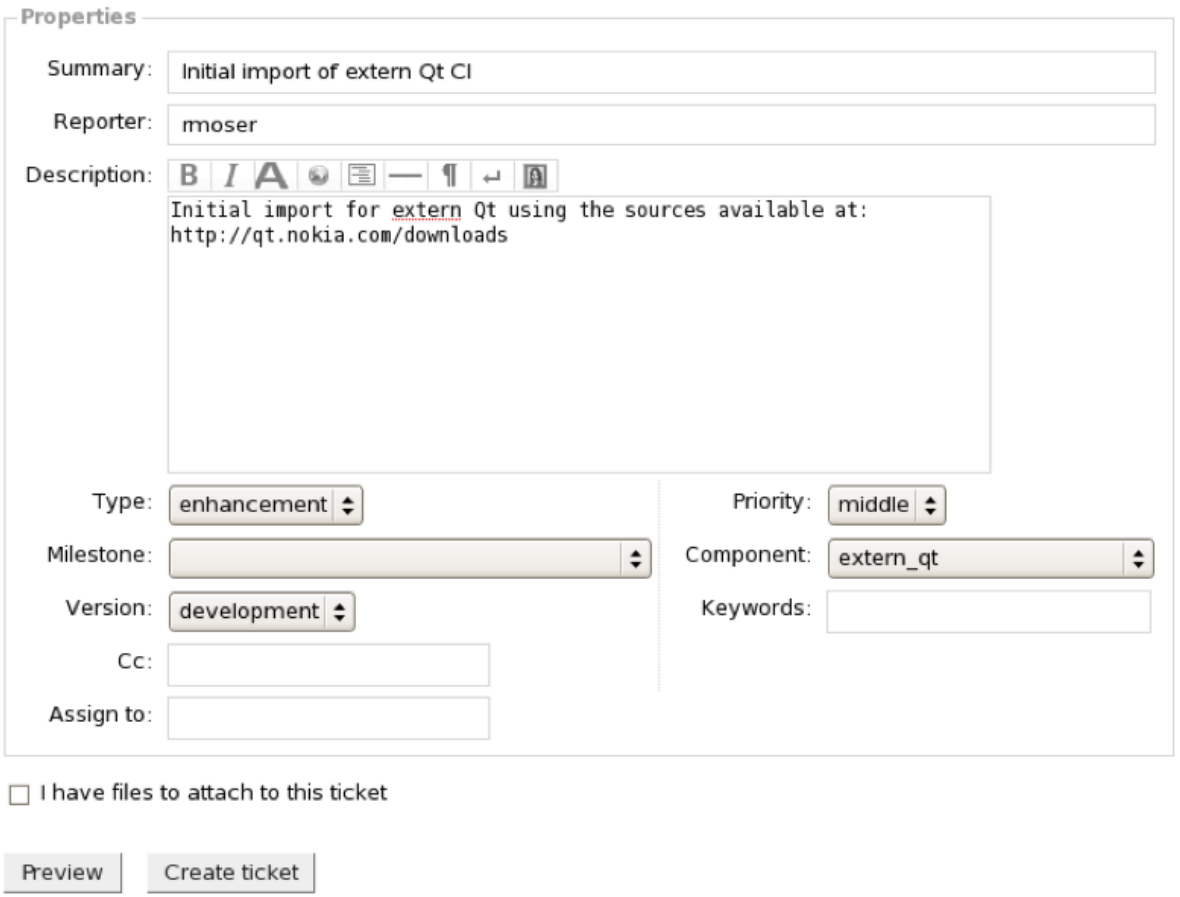
Components

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



Tickets

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



Ticket Information

Ticket #44 (resolved enhancement)

Review DFG requirements by Sandro Toncelli

Opened 8 weeks ago
Last modified 2 weeks ago

Reported by:	gutleber	Owned by:	gutleber
Priority:	high	Milestone:	Lifecycle Objectives Review Milestone V1.0.0
Component:	sdp_documents_Requirements_DigitalFunctionGenerator	Version:	development
Keywords:	review, DFG, requirements	Cc:	

Description

Incorporate feedback from Sandro Toncelli

Reply

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

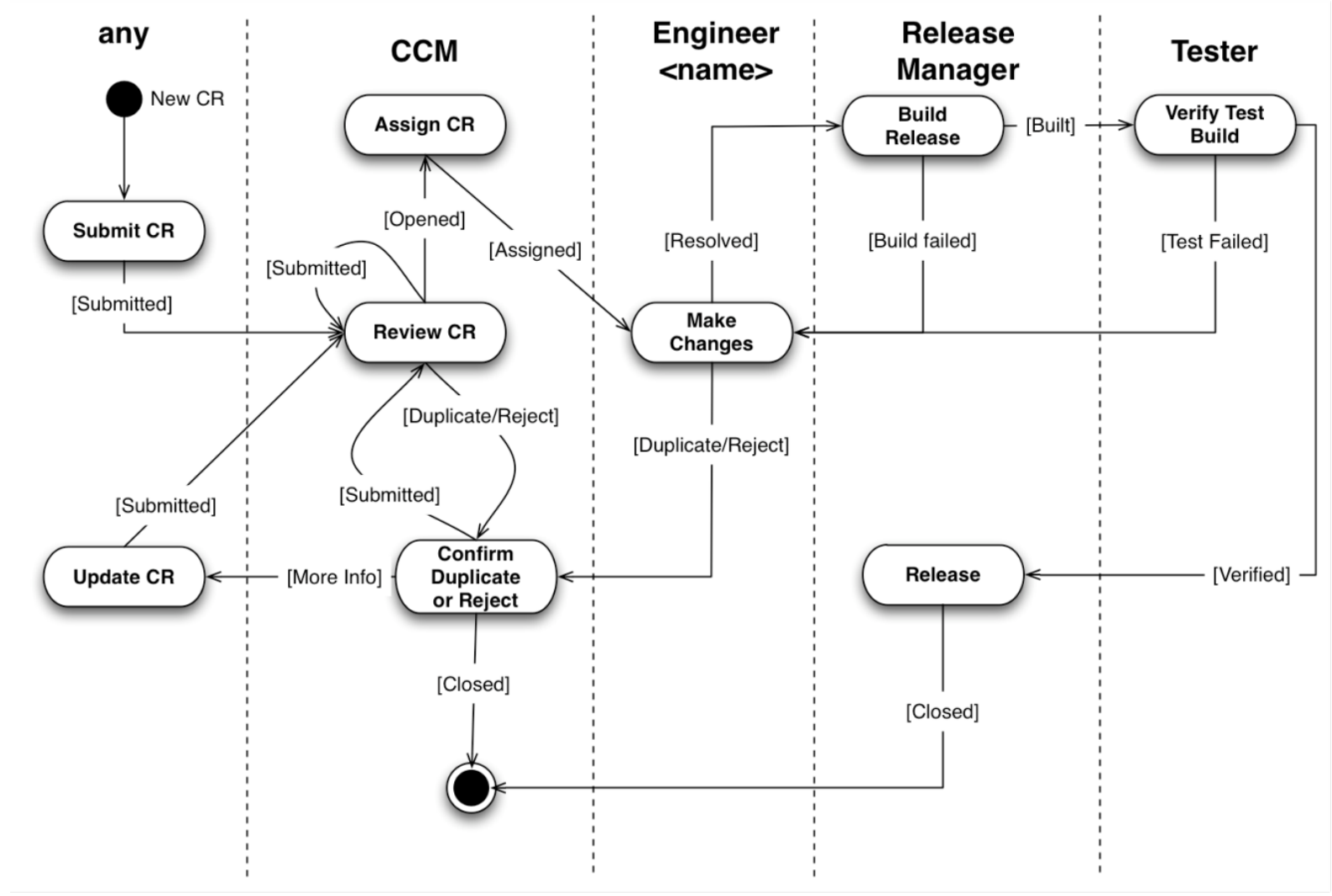
Changed 2 weeks ago by gutleber

(In [79]) references #44 Reply

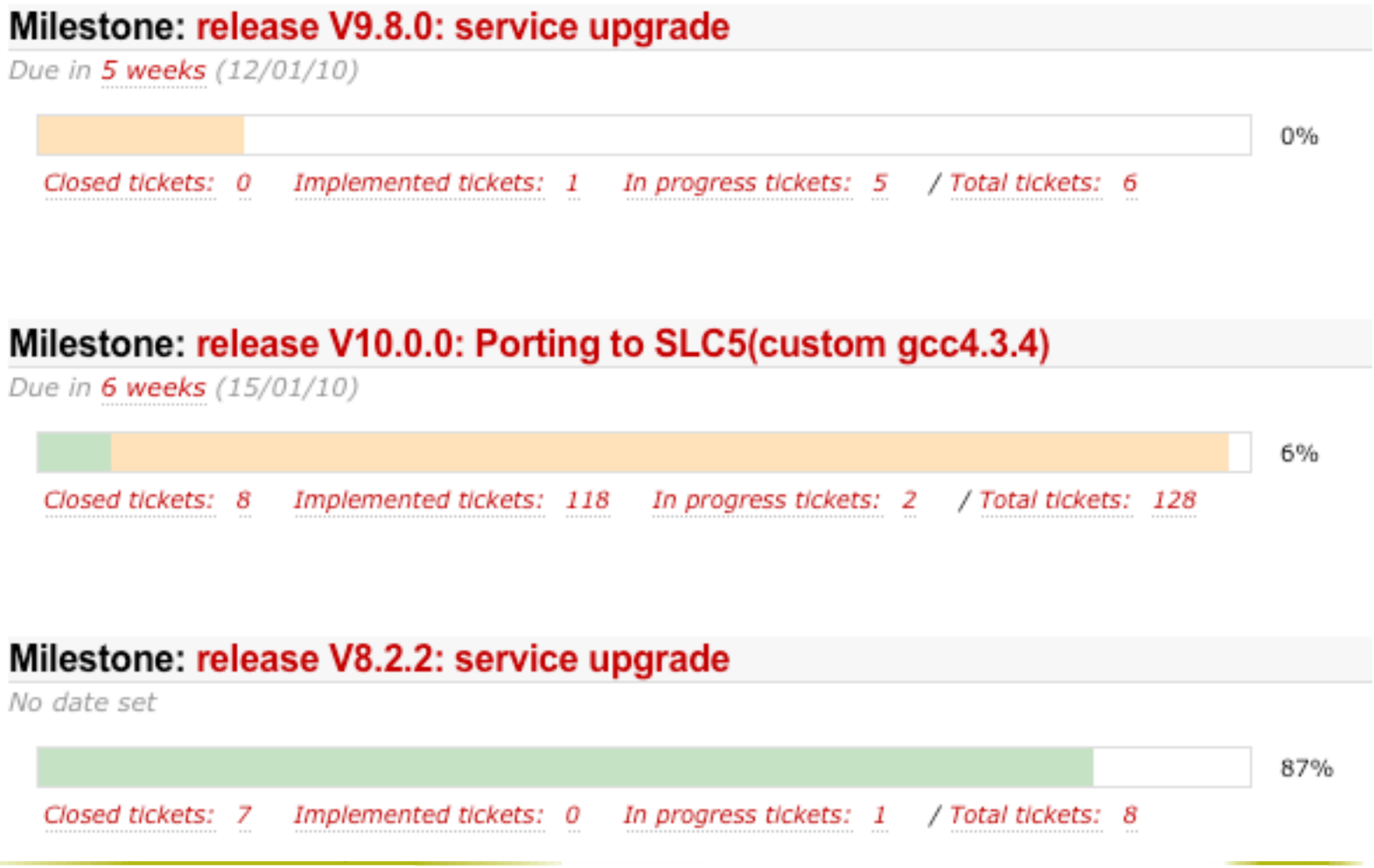
Changed 2 weeks ago by gutleber

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

Ticket Workflow



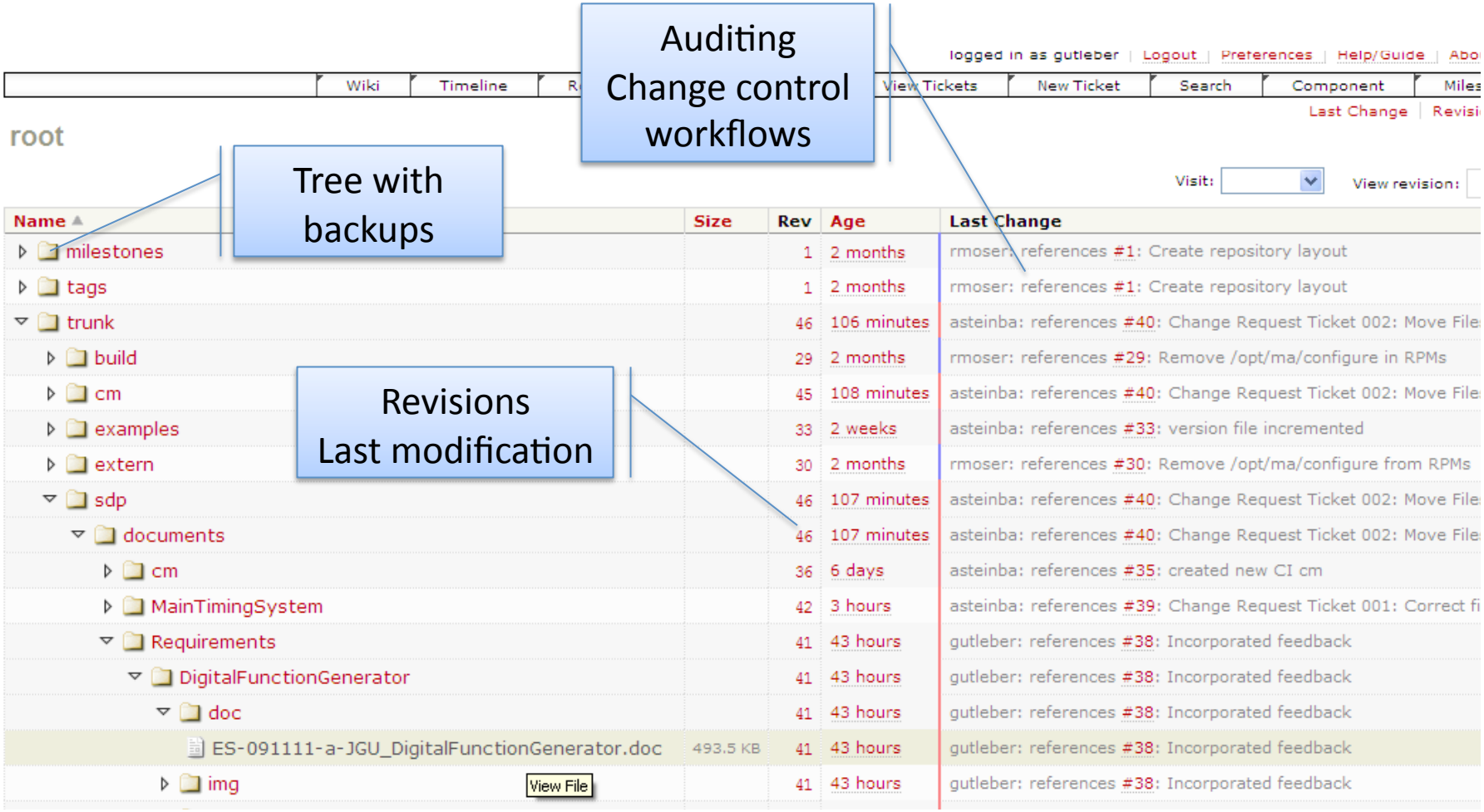
Milestones Progress Report



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



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