

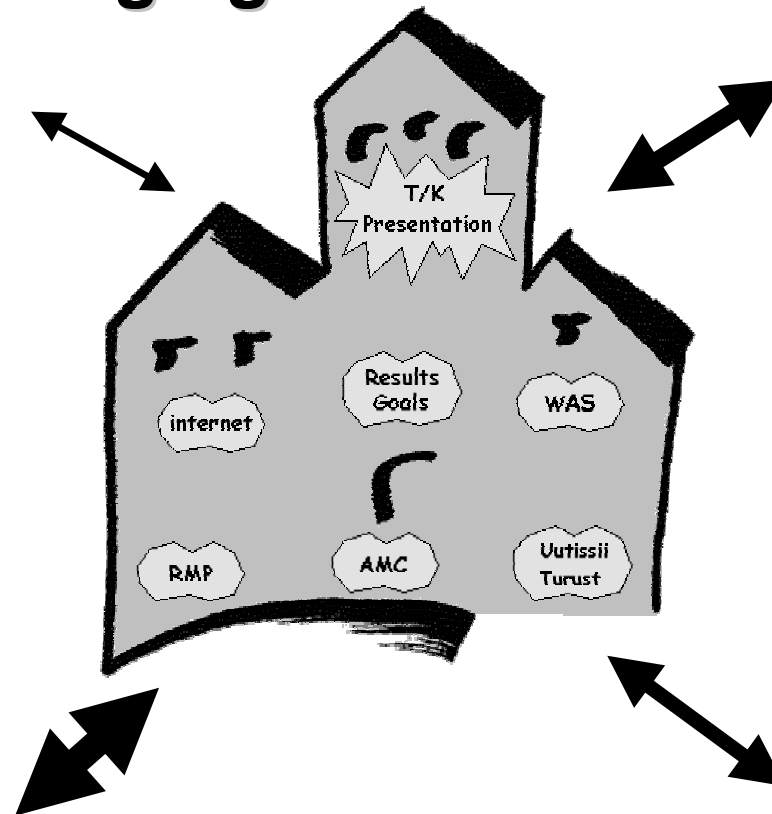
# ***CONFIGURATION MANAGEMENT***

by

**Matti Kuikka, Unit Manager, Ericsson, Turku, Telecom  
R&D, Wireless Charging and Access Systems**

## **Wireless Charging**

and Billing  
(common charging  
products) for digital  
mobile systems:  
GSM, PDC,  
D-AMPS,  
UMTS, ...



## **Wireless Access Systems**

Speech processing  
products,  
Products for Radio  
Network Core to  
3rd generation  
mobile systems  
(UMTS, ...)

# CM Configuration Management

- **Introduction, Motivation**
  - Purpose of CM
- **Revisions, Baselines, Deliveries**
- **Definition**
  - What is CM
  - CM overview & Concepts
- **How to handle CM**
  - Roles in design projects in case of CM
  - Process Flow
- **CM in a project in practice**

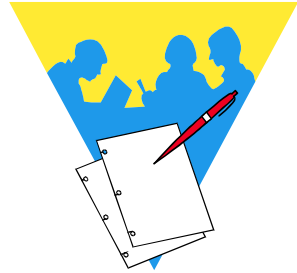
# *How to prevent unwanted things to happen during product development ?*

- Bad or non-existent information about the latest changes to your product ?
- Corrected faults that turn up again uncorrected ?
- Implemented changes that conflict with each other ?
- Unauthorized changes to functions or functions that have not been asked for ?
- Difficult or impossible to recreate the latest version of the product ?



 **Configuration Management**

# Purpose of CM



- We know and keep track of

- what we are **supposed to build**
- how we **are building**
- what we **have built** and **will verify**
- what we have **verified - and delivered**

**Requirements**  
**Projects**  
**Deliveries**  
**Products**

- Examples

- Product and document numbering
- Formal handling of requested changes and releases of new versions of products, systems, subsystems, etc
- Trouble report handling in maintenance

But what if we would **NOT** use CM...?

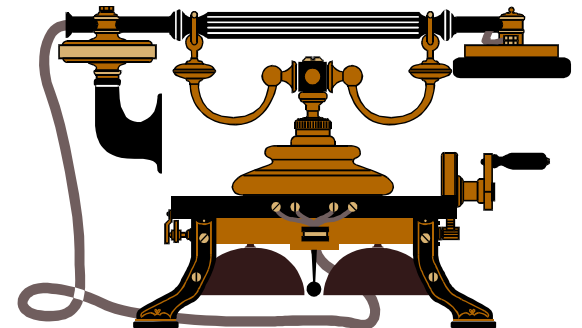
The customer wants



So we build...



... and deliver



# Revision Handling

- The Rev-state is a part of the document's complete identification, which is composed of a document number, rev-state and language code.
- The general rule is that a new document version is obtained, when the subject contents of a document is changed, e.g. PA1 to PA2



# Revision and Status Handling, Documentation

1st Delivery

Document 121	PA1	PRELIMINARY
121	PA2	CHECKED
121	PA3	TAPPROVED

2nd Delivery

Document 121	PB1	PRELIMINARY
121	PB2	CHECKED
121	PB3	TAPPROVED

Release

Document 121

B

READY

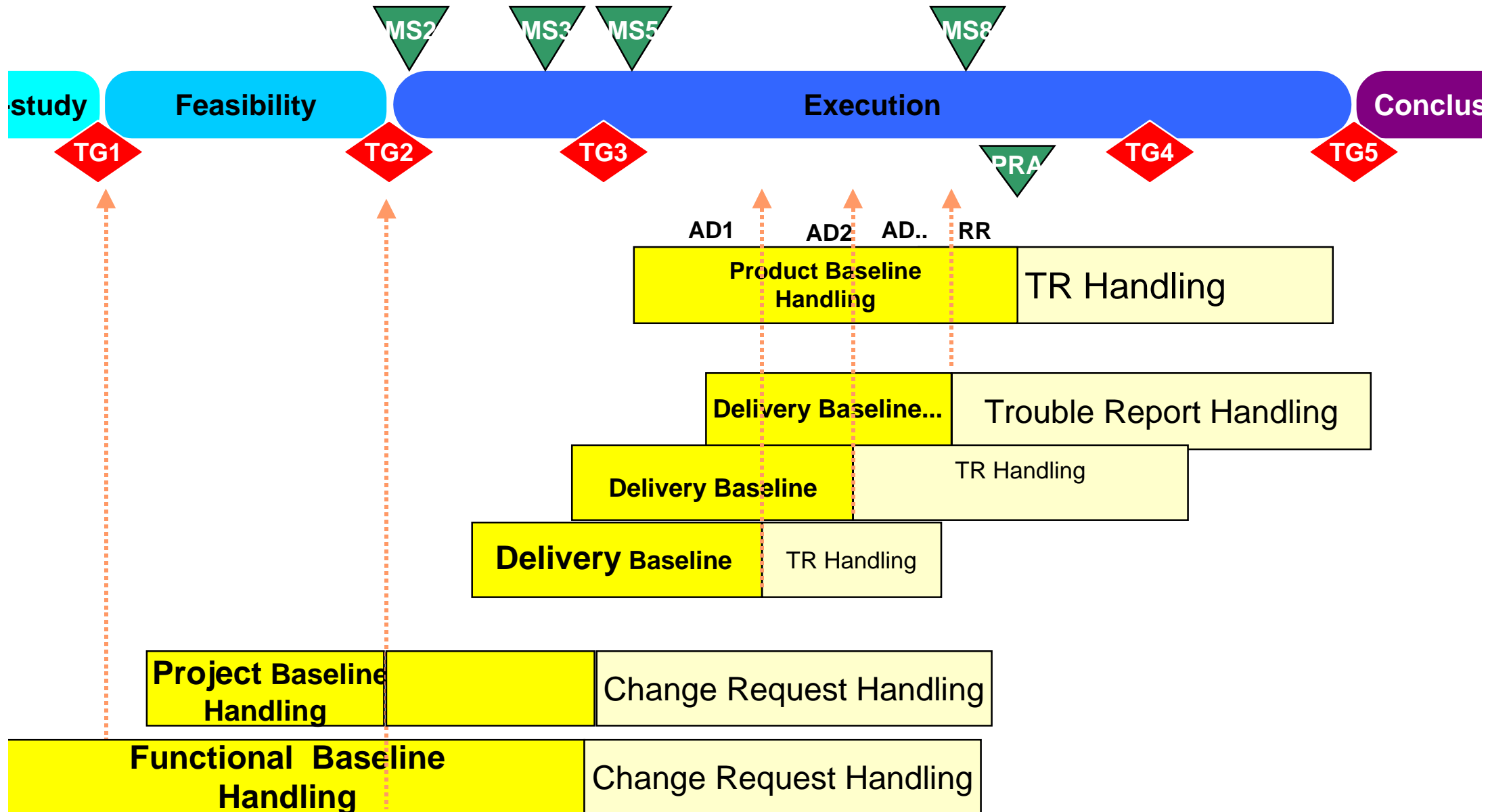
LOCKED

# Baselines

- **A baseline is a set of items put under change control**
  - **It serves as a base for the further activities and can be changed only through a formal configuration control procedure.**
  - **All baselines and baselined items are listed in a document called Master Configuration Index**
  - **The decision to establish a baseline is taken by Change Control Board and Steering Group for the project.**
  - **Project Manager or Release Criteria Meeting depending on which baseline is in question.**
-



# Baselines - PROPS view



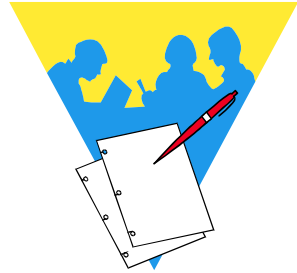
# Baselines

- **Functional Baseline - what we are going to build**
    - established by the Main Project
  - **Project Baseline - how we will build it**
    - established by Project's Steering Group
  - **Design Baseline and Deliveries - what we have built and will verify**
    - established at each Delivery meetings
  - **Product Baseline at TG3 and at PRA (Release) - what we have verified and delivered**
    - established in Release Decision Meeting
-

# Configuration Management Definition

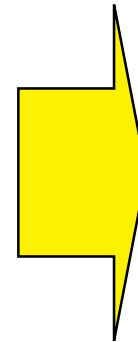
***CM is the discipline of identifying the components of an evolving system for the purpose of controlling changes to these components and for maintaining traceability throughout the system's life cycle.***

# What is CM?



- We know and keep track of

- what we are supposed to build
- how we are building
- what we have built and will verify
- what we have verified - and delivered



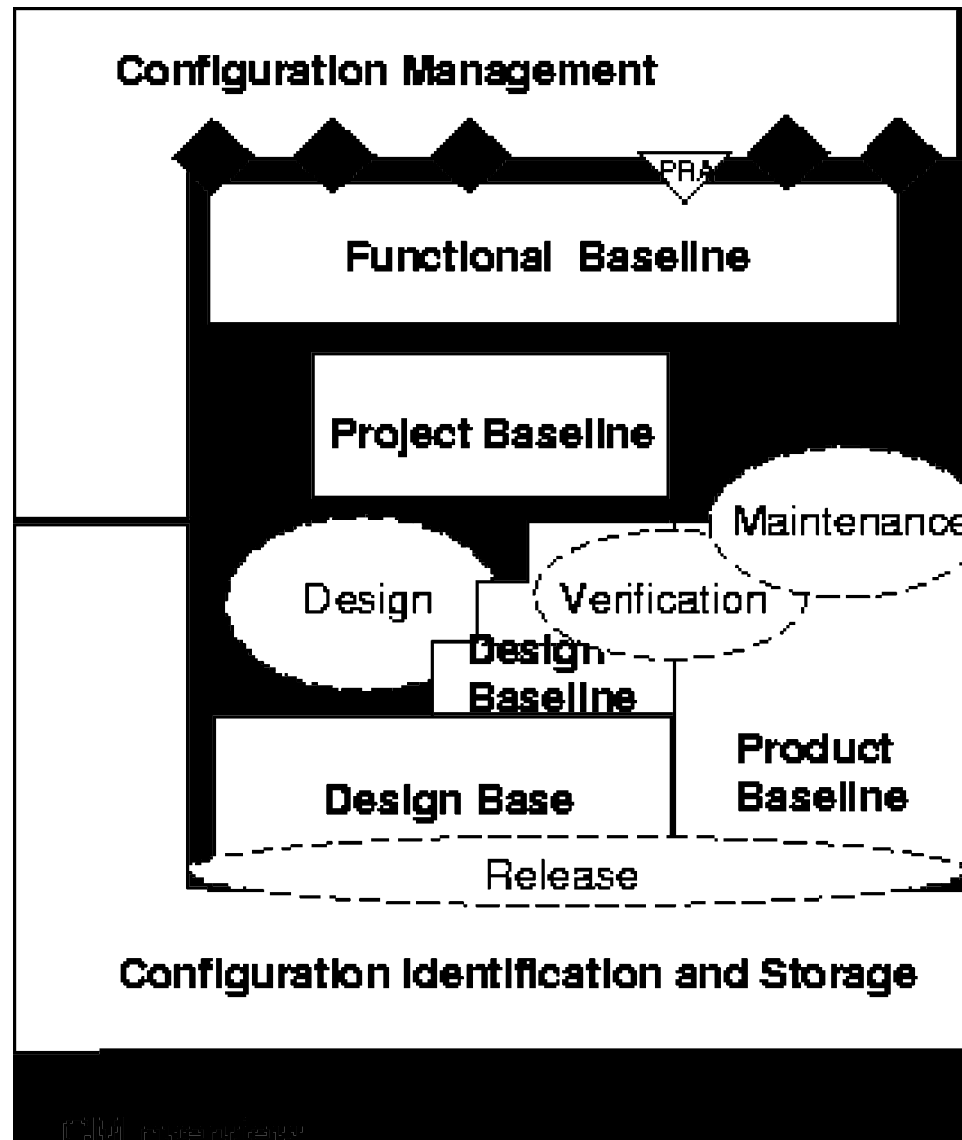
Functional Baseline  
Project Baseline  
Delivery Baseline  
Product Baseline

- Includes also the control of

- methods & tools (Tool Baseline)



# Configuration Management Overview



# CM concepts (1/2)

## ● Configuration Item (CI)

- A software product, document or development tool designated for configuration management and treated as a single entity in the configuration management process
- A CI can also consist of other CIs and in that way form a structure
- E.g. Requirement Specification, Charging subsystem, software product

## ● Managed and Controlled Item

- Configuration Items that are not part of a baseline but must be controlled for the project to proceed in a disciplined manner
  - Changes of the Managed and Controlled Items are handled without a CR but must be communicated to all impacted parties
  - E.g. Quality Assurance Plan, Methods List
-

# CM concepts (2/2)

## ● Baseline

- A configuration at a certain point of reference
- All modifications suggested for a system between one reference point and the next should be handled according to the formal CM procedures
- E.g. Functional Baseline containing the approved Requirement Specifications

## ● Configuration Control Board (CCB)

- A group responsible for evaluating and approving or disapproving baselines and proposed changes to configuration items and for ensuring implementation of approved changes

# CM Records (1/2)

- **Master Configuration Index (MCI)**

- A document which lists and uniquely defines all CIs and from which it is at any time possible to identify the current configuration and related documentation
- Contains the document title, number, revision, status and date of all CIs

- **Change Request (CR)**

- A document which describes a requested change or correction to the baselined documentation or software in a formalized manner
  - A CR defines the nature of the change and the reason for the change, identifies involved CIs and proposed new CIs, identifies the effects of the change on other CIs and system performance, and evaluates the merits of the change
-



## **CM Records (2/2)**

- **Change Request Analysis (CRA)**

- An analysis for a change request
- A CRA identifies technical solution for the proposed change, identifies involved CIs and proposed new CIs, identifies the effects of the change on other CIs and system performance, identifies possible risks, defines resource information and a time plan for implementing the proposed change

- **CR log**

- A file in which all CRs and CRAs of a specific project are recorded

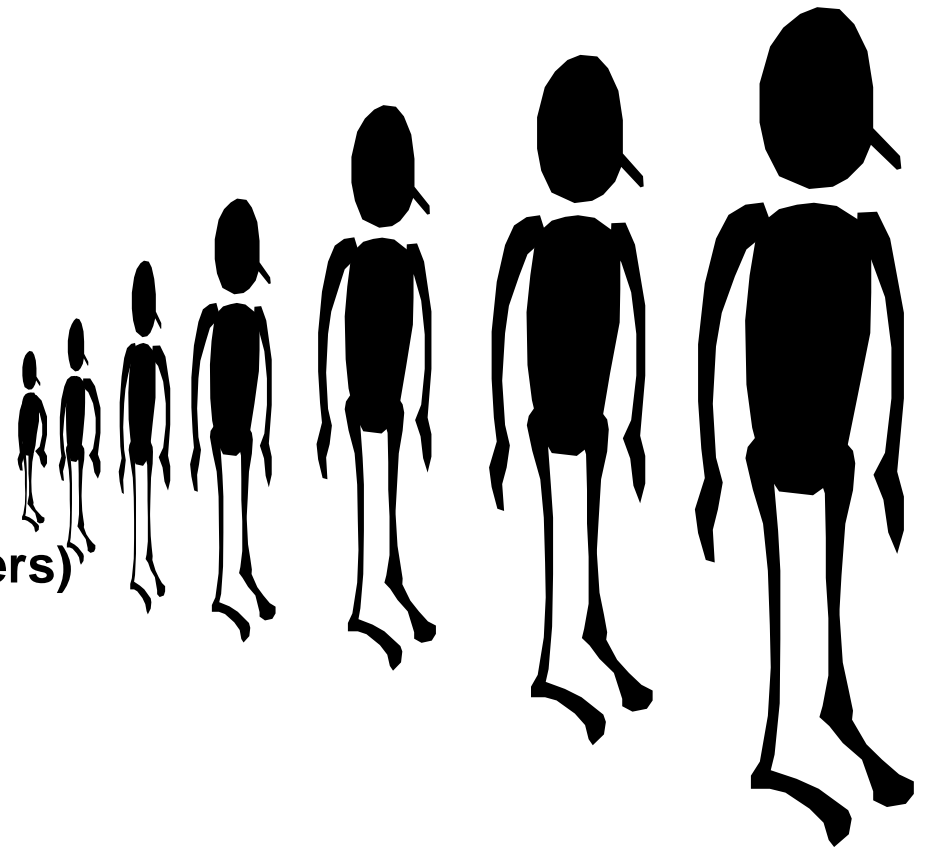
# CM Roles in a project

- **Main roles**

- Configuration Manager
- Project Manager
- Test Project Manager
- Technical Coordinator
- Change Request author
- Change Request analyst
- Configuration Control Board

- **Also involved**

- Quality Coordinator
- Design Organization (designers and testers)



# Configuration Control Boards (CCB)

- **Main Project CCB**
  - to manage the changes
- **Subproject CCB**
  - to manage the change analyses

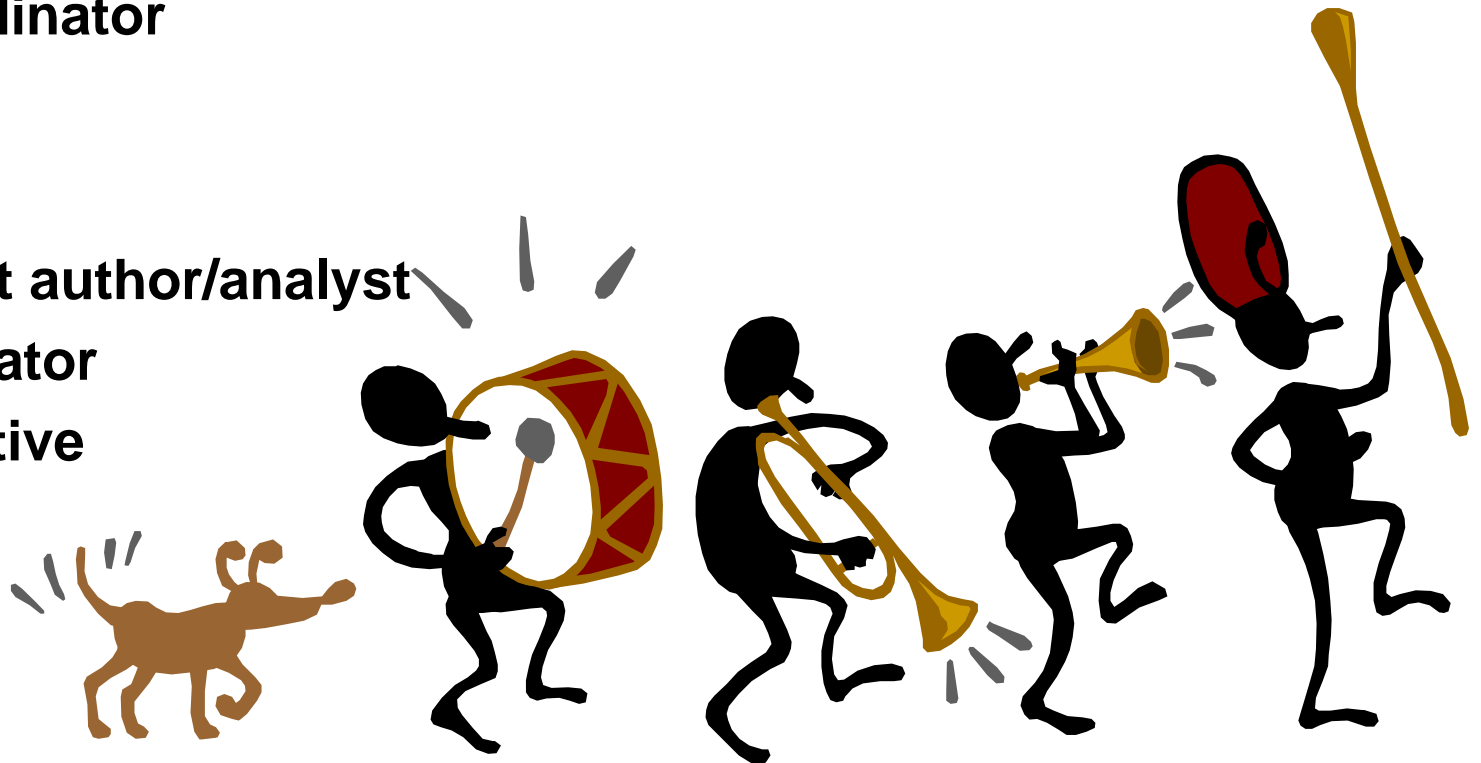
# Subproject CCB Members

## ● Principal members

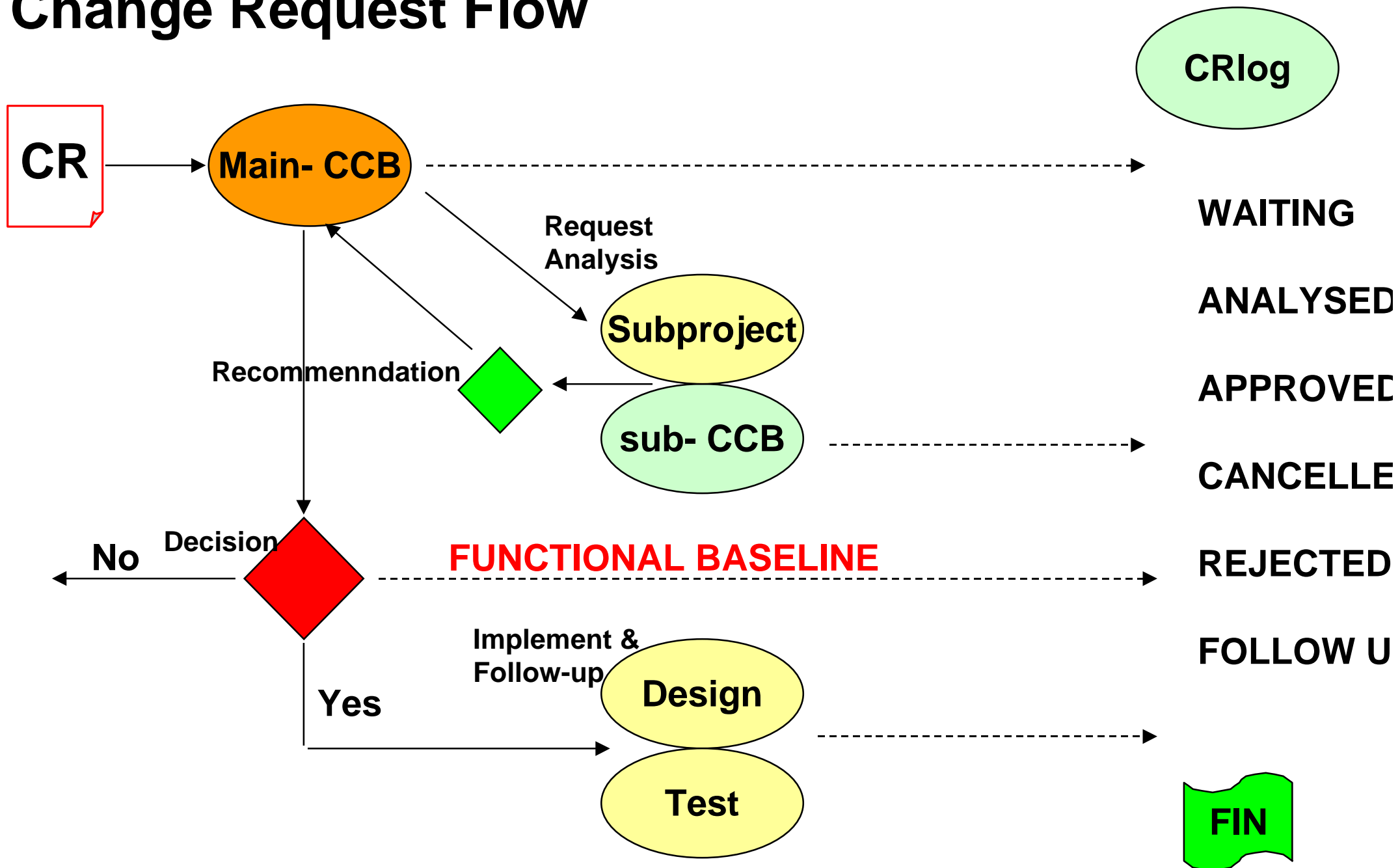
- Configuration Manager
- Project Manager
- Test Project Manager
- Technical Coordinator

## ● Others

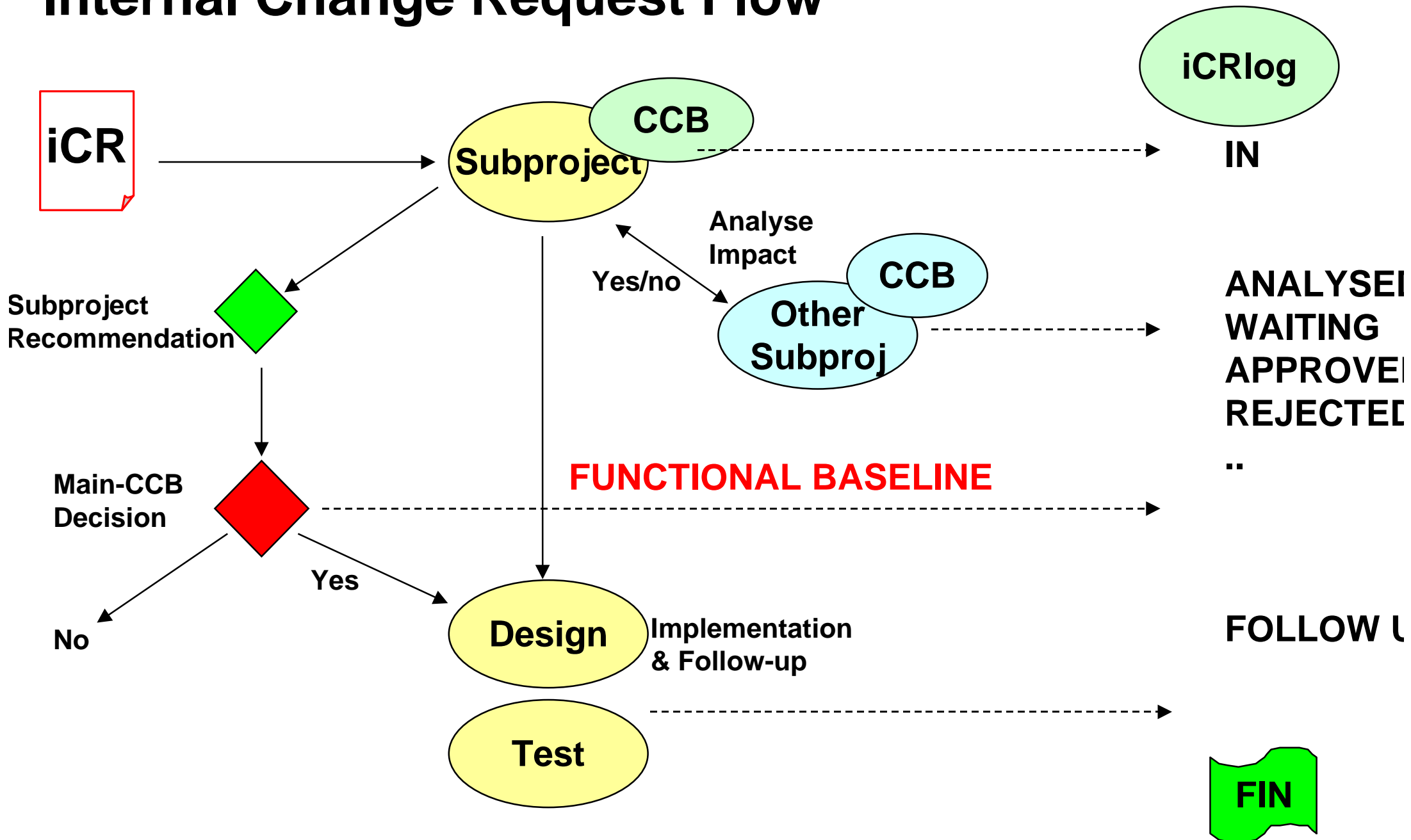
- Change Request author/analyst
- Quality Coordinator
- Line representative



# Change Request Flow



# Internal Change Request Flow

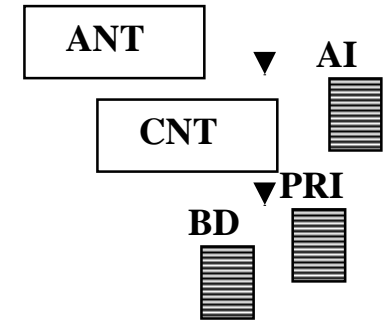


# Configuration Identification and Storage

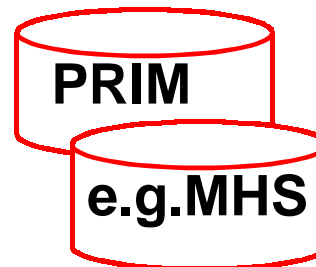
Configuration Items  
-identified and controlled



Tools  
Methods..



Databases  
and Responsibilities



Identified according to  
Ericsson Standards

Controlled in Doc Surveys,  
CRLog, iCRLog, TCM Plan...

Status Indication

DELTA, MHS, PRIM, CRlog, SigmaTool...

Revision Handling

# CM Configuration

- **CM in projects in practice**
  - **Mobile Charging subproject**
    - **Example about MCI**
    - **Example about CR log**
    - **Tools**



# Configuration Management tools

- **ClearCase**

- Version Control
- Workspace Management
- Build Management
- Process Control

- **CMtool**

- User & tool interface
  - Delta interface
-

# **CM Tools: Clear Case benefits**

- **Version handling**
  - **Enables browsing of any version of document**
- **Multisite**
  - **Design centers able to share databases**
- **Parallel Design**
- **Parallel Projects**