OETCS/WP1/D1.3.1

openETCS

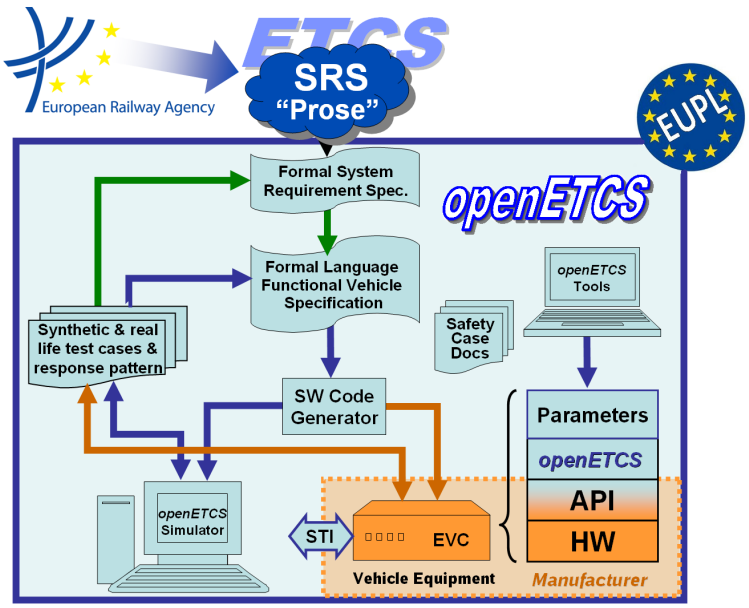
ITEA2 Project
Call 6 11025
2012 – 2015

Work-Package 1: “Management”

Project Quality Assurance Plan - Change/Problem Management Process

Izaskun de la Torre

July 19, 2013



Funded by:

Federal Ministry of Education and Research

Région de Bruxelles-Capitale

GOBIERNO DE ESPAÑA
MINISTERIO DE INDUSTRIA, ENERGÍA Y TURISMO

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Project Quality Assurance Plan - Change/Problem Management Process

Izaskun de la Torre

Avda. Zugazarte 8,6
48930 Getxo
Vizcaya, España

Description of work

Prepared for openETCS@ITEA2 Project

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Figures and Tables

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Document History

Table 1. Documentation History

Version	Date	Chapters modified	Reason	Name
0.1.0	11.06.2013	All	First version	Izaskun de la Torre (SQS)

1 Introduction

1.1 Purpose of the document

This document describes the whole process to be followed for assessing a Change/Problem and determining the level of priority based on definitions of impact and urgency. Once priority is determined, the appropriate route for managing the Change/Problem resolution process is followed. The roles involved in the process are clearly identified as well as their responsibilities and tasks. And finally, the mechanisms needed to achieve the proposed objectives are also included, so the process can be carried out successfully.

The main focus area of the document is the Change Request/Problem handling process which involves the detection and registration of Changes/Problems, followed by triage (classifying, prioritising and assigning incidents), change/problem resolution, closing and post-analysis. Each step in the process is important into itself as well as being a necessary part of the entire process.

The Change/Problem Management process aims to evaluate and plan the change/problem process to ensure that, if a change is made, it is done in the most efficient way possible, following the established procedures and ensuring the quality and continuity of the OpenETCS project and products at all times.

Change/Problem Management will ensure standardized methods, processes, and procedures facilitate efficient and prompt handling of all changes, and maintain the proper balance between the need for change and the potential detrimental impact of changes/problems, thus contributing to maintain service level objectives.

1.2 Intended Audience

This document applies to the whole development life-cycle of the project and it addresses all the author(s), product owners, commiters and users involved. This document should be available to all of them in read access mode and it provides guidance about the Change Request/Problem Management process whenever it is needed.

1.3 Supporting documents

Name	Path	Contents
QA Plan	governance/QA Plan	It defines the processes, methods and tools that will be used to develop the OpenETCS project

Table 2. Supporting documents

1.4 Definitions and acronyms

Table 3. Definitions and acronyms

Abbreviation	Meaning
Backout plan	Detailed procedure for reversing a change and restore the system to its original state, in the event of failed or aborted implementation.
CCB	Configuration Control Board

Table 3 – continued from previous page

Abbreviation	Meaning
Change	the addition, modification, or removal of a configuration item (CI), product, or product component, and/or its associated elements
CI	Configuration Items
IA	Impact Assessment

2 Tools

Tools	
To be defined	Web-based project management and bug-tracking tool. It provides integrated project management features, issue tracking, and support for various version control systems It can be integrated with Git.

Table 4. Tools

3 Change/Problem Management Process overview

The Change/problem Management process begins as a result of:

- bug detection during Validation & Verification activities
- new requirement, goal or scope definition
- major/critical comments identification in the review process

In all cases:

- In case of conflicts, it is the Change/Problem Owner who will be responsible for their resolution
- In case of Change Requests with a clear cross-institutional scope and impact, the Change Request shall be approved by the CCB.
- The Change/Problem Review Team is composed of 1 representative per WP: Requirements; Modeling & Code; Testing, V&V and Safety Team
- The launching, control and clarification processes are managed through the Change/problem Management tool

In case of the detected bugs apply to ERA requirements, a change/problem request will be launch to UNISIG.

3.1 Roles

This section describes the roles of the participants in the Change Request/Problem management process:

Roles	
Role	Competencies
Change/Problem Owner	Management of Change Requests/Problem Report procedures Leads and coordinates the risk/impact assessment process. Communicates with the change review team for the purpose of validating and conducting the impact analyses and risk assessments on changes Assists in the monitoring the progress of changes. Ensure proper trazability Approval of minor changes or bugs Coordinate the change development Validate Categorization and Timing of the change based on information provided on the Change Request/Problem Report. Assesses the proposed impact and risk and urgency Ascertain whether the change is of a high enough complexity to require authorization from CCB
Change Review Team	As requested by the Change Owner, contribute to the impact assessment(Identifies, assess risks -technical, economical, planning . . .) and implementation of change requests Review and Random Checks
Change Requester/ Problem reporter	Initiate the change/problem report. Follow processes for submitting a Request for Change/Problem report
CCB	Approval of cross-institutional changes
Implementer	The person/assignee or group of individuals who perform implementation of a change/problem resolution activity.
Tester	The person/assignee or group of individuals who execute the test cases related to a change/problem resolution activity.

Table 5. Roles

3.2 Description of the Change/Problem Management Process

The next figure shows the different stages of the Change/Problem Management Process. Right after the activities to be performed in each Stage are provided.

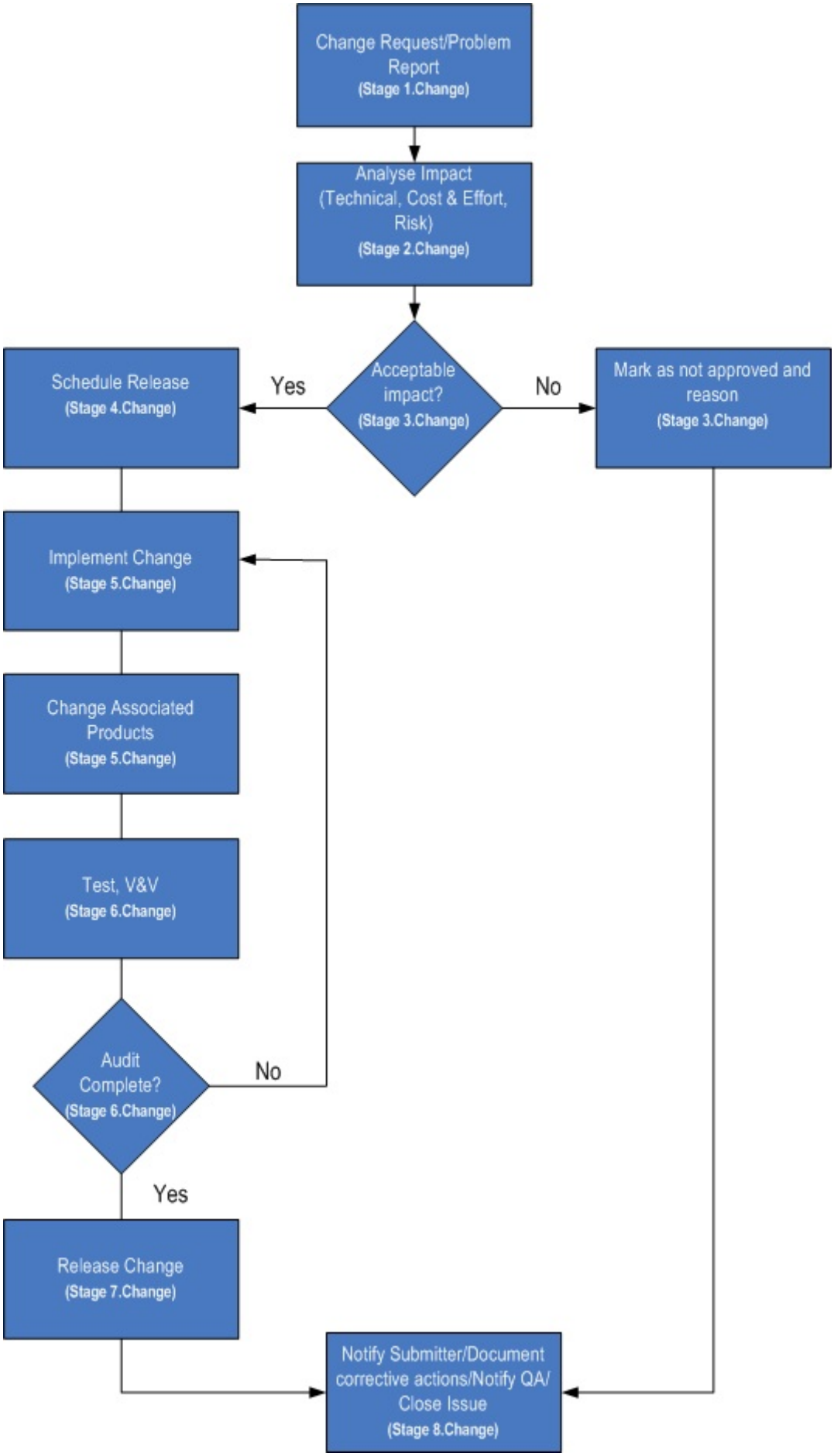

Figure 1. Change/Problem Management Process flow

3.2.1 Stage One: Change Request/Problem Report

- The Change Requester/Problem Reporter has the responsibility of documenting and submitting the Change Request/Problem Report.
- Problem and Change requests notified to Change/Problem Owner
- The Change Request shall contain the following items:
  - definition of the scope:
    - *stand alone*: The bug or change request mainly affects one phase of the life-cycle (e.g erroneous development of the activities of a phase)
    - *cross-institutional*: The bug or the change request has an impact on different phases of the development life-cycle (e.g missing or erroneous specification).
  - identification of the products impacted:
    - software
    - formal specification
    - model
    - documentation
    - others
  - priority:
    - *immediate*: The bug or the change request should be resolved immediately
    - *high*: This bug or the change request should be resolved as soon as possible in the normal course of development activity, before the software is released.
    - *medium*: This bug or the change request should be repaired after serious bugs or emergency change requests have been fixed.
    - *low*: It can be resolved in a future major system revision or not be resolved at all.
  - classification:
    - bug
    - enhancement
    - new requirements
    - change
  - severity:
    - *critical*: The bug causes a failure of the complete software system, subsystem or a program within the system
    - *high*: The bug does not cause a failure, but causes the system to produce incorrect, incomplete, inconsistent results or impairs the system usability.
    - *medium*: The bug does not cause a failure, does not impair usability, and does not interfere in the fluent work of the system and programs.
    - *low*: The bug is an aesthetic, is an enhancement or is a result of non-conformance to a standard.
  - Any additional information that is vital to understand the change/problem must be included when defining it.
- The Problem/Change Request will be assigned a unique Id. Code, and will be assigned the status of “Open”

- The Change/Problem Owner will perform a first review (completeness, accuracy, scope, severity, priority, classification) of the information provided.
- All comments will be made and answered using the Change/Problem Management Tool
- The Change/Problem Owner will be redirect the request to the relevant parties within the Change/Problem Review Team for further analysis. If needed, additional information will be requested.

3.2.2 Stage Two: Perform Impact Analysis

- The receiving parties will assess the impact of the Problem/Change Request. Depending on the scope of the request, the Change/Problem Owner will engage all or only some of the members of the Change/Problem Review Team.
- Each Product Owner must have predetermined individuals responsible for reviewing all Change Requests/Problems Report that have specified their group as member of Change/Problem Review Team. This resource is responsible for reviewing all changes affecting their group. The resource will assess the impact on their group and notify all members of the Change/Problem Review Team.
- The integration of the Configuration Management Tool and the Change/Problem Management Tool will help the Team in performing a proper impact assessment
- The individual impact assessments (IA) will be registered in the Change/Problem Management Tool, compiled and analysed by the Change Owner
- A Change Request should be evaluated in terms of required corrective action or system enhancement, technical design, risk and impact analysis, and business case.
- The impact analysis of the change/problem report should cover the following:
  - *technical impact*: The Change/Problem Review Team should estimate the effort of implementing the changes or problem resolution.
  - *economic impact*: The Change/Problem Review Team estimates the effort needed and the cost of both implementation and not implementation of the change/problem
  - *scope impact*:
  - *planning impact*: The Change/Problem Owner with support of Change/problem reviewers should estimate how the implementation of the change or problem resolution affects to the schedule and propose the best option or release to implement it.

3.2.3 Stage Three: Accepts/Rejects Change

- In case of change requests with a clear cross-institutional impact, the impact assessment (IA) will be submitted to the CCB for approval.
- The CCB will be responsible for approving or rejecting these types of changes and assisting in the assessment and prioritization of changes
- The CCB should balance the need for change with the need to minimize inherent risks.

- In the case of bugs or minor change requests, the impact assessment IA will be assessed by the Change/Problem owner
- In case the Problem/Change request is not accepted, the Change Owner will include the reason in the Change/Problem Management Tool and the issue will be closed.
- The CCB members should selectively be chosen to ensure that the requested changes are thoroughly checked and assessed from both a technical and business perspective
- The Change Requester will be informed about the decision taken

3.2.4 Stage Four: Schedule Release

- The Change/Problem Owner schedules the development of the authorized change based on impact analysis results.
- The Change/Problem Owner will allocate the appropriate resources to the implementation of the change/problem incorporating the new necessities detected during the impact assessment of the specific change/problem (resources, effort/time, equipment, tools, training, tasks/products dependences and/or task additions/deletions) into the existing schedule to produce a new project schedule.

3.2.5 Stage Five: Change Implementation

- In case of major changes, prior to the implementation, the implementer should prepare a backout plan to include:
  - A detailed step-by-step procedure for reversing the change
  - Time needed to perform the back out
  - Back out risk
  - A plan to mitigate the severity of any potential negative impact resulting from implementation reversal
  - Detailed testing plans
- The Implementer should follow the implementation action items detailed in the Change Request/Problem Report. Any deviation from the approved implementation plan must be approved by the CCB or Change/Problem Owner depending of the type of the change (See *Stage Three: Accepts/Rejects Change)*
- As the implementation is performed,
  - the identification code of the problem/change request will be referenced in the configuration items as they are modified,
  - the Change/Problem Management Tool will register the details (CI, scope) of the problem resolutions activities performed
- As soon as the implementation plan is finalised, the status of the Problem/Change Request will be “Fixed” and therefore ready for auditing

3.2.6 Stage Six: Test Change/problem

- The implementation will be audited by the tester and the issue will become either resolved or re-open
- The tester must determine the success of the change/problem based on execution of the post implementation test plan and success criteria identified in the Change Request/Problem Report. If the change was not completed successfully as planned or is incomplete, the tester should re-open the issue and all parties impacted by the unsuccessful completion of the change must be notified.
- The information regarding the success/failure of tests should be included in the Change Request/Problem Report.
- The Change Review Team will perform periodical audits and quality assessments of the bugs and change requests received.
  - Audits to verify the process itself.
  - Quality Assessments to verify the evolution of the product quality.

3.2.7 Stage Seven: Release Change

- The Change Owner will publish/launch the new release

3.2.8 Stage Eight: Close Issue

- The Change/Problem Owner closes the Change Request/Problem Report
- The Change Requester, Change Review Team and CCB will be notified

4 ANNEXES - Technical Instructions for using the Change/Problem Management tool