Developmental Change Control
By JIRA

RCCAC-ENG-G-603

Rev. 1.0

Rockwell Collins CETC Avionics Co., Ltd.

Approval

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Revision History

Revision	Originator	Description	Date
1.0	Di Zhang	New Release	09/18/2017

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1 Introduction

1.1 Purpose

Atlassian JIRA has been chosen to facilitate RCCAC engineering developmental change request and tracking. JIRA is a customizable, commercial off the shelf (COTS) defect and change tracking system. RCCAC engineering team will use JIRA to manage all change activities throughout the development life cycle.

The objective of this document is to provide guidance for RCCAC engineering team on how to use JIRA to manage developmental change requests.

1.2 Applicability

Location: Rockwell Collins CETC Avionics Co., Ltd. (hereafter referred to as "RCCAC"), Chengdu, Sichuan, China

1.3 Requirements Implementation

This guidance meets the requirements for Change Control as defined in AS9100: 2016 and ISO 9001: 2015.

1.4 Industrial Standards

Table 1-1 Referenced Industrial Standards

Standard	Description
AS9100: 2016	Quality Management System – Requirements for Aviation, Space and Defense Organizations
ISO9001: 2015	Quality Management Systems – Requirements

1.5 Company Documentation

Table 1-2 Referenced Company Documentation

Document #	Description
RCCAC-QMS-P-000	Quality Manual
RCCAC-ENG-G-600	Developmental Change Control

1.6 Definitions and Acronyms & Terms

1.6.1 Acronyms

Table 1-3 Acronyms

Acronym	Definition
RCCAC	Rockwell Collins CETC Avionics Co. Ltd.
CCB	Change Control Board
COTS	Commercial off the Shelf
ECO	Engineering Change Order
CR	Change Request

CT	Change Task
EPA	Engineering Project Assistant
HLR	High Level Requirement
HW	Hardware
LLR	Low Level Requirement
N/A	Not Applicable
PE	Project Engineer
RCPN	Rockwell Collins Part Number

2 Change Control Activities

Per Developmental Change Control RCCAC-ENG-G-600**Error! Reference source not found.Error! ference source not found.**, change request (CR) is a documented request to investigate, evaluate, and apply a change against an identified artifact (product or process). CRs can be written for tracking problem reports, defects, anomalies, enhancements, clarifications, specification changes, standards violations, customer concerns, etc.

Change control shall be performed on artifacts which have been formally baselined. Initial development change control prior to a formal baseline may also be required to provide traceability and management of updates associated with newly developed products and/or artifacts. Changes to a product and/or artifact specified in a CR shall be performed only after the CR has been reviewed and accepted by the Change Control Board (CCB).

All CRs will be managed via JIRA. The CCB is responsible for reviewing CRs, assessing relevant impacts on the system, hardware, software and/or artifacts. The CCB review includes, but is not limited to, safety related assessment, approval or disapproval, and assurance of approved changes have been met cost and schedule requests.

Baseline control is the primary objective of the CCB to ensure that product development has been well managed and controlled. For detailed CCB roles and responsibilities, please reference the Section 3.2.1 of Developmental Change Control RCCAC-ENG-G-600. The minimum attendance is defined in Table 2-2 CCB Invitee and Minimum Attendee List, and consists of the CTO (or delegate), the corresponding PE/Technical Lead (or delegate) and CCB Facilitator (EPA).

Table 2-2: CCB Invitee and Minimum Attendee List

Acting Role	Invited to CCB as necessary	Quorum
Program Manager	Yes	
CTO	Yes	X
Architect	Yes	
Dev. Team Mgr(s)	Yes	
PE/Technical Lead(s)	Yes	X
System Engineer	Yes	
Quality Engineer	Yes	

Safety Engineer	Yes	
CCB Facilitator (EPA)	Yes	X
Rockwell Collins Interface	Yes	

When disposition a CR, CCB attendees shall arrive at a consensus regarding the action on the CR during the CCB injection point as shown in Figure 1 Process Flow Diagram for Developmental Change Control of Developmental Change Control RCCAC-ENG-G-600.

CCB meeting will be held on either a regular basis or as needed to keep from inhibiting the completion of developmental work in a timely manner. At the discretion of the CTO, CCB may also address CRs electronically (e.g. via email), if it is deemed a meeting is not necessary or the urgency of action on the CR is in high priority. Electronic CCBs shall follow the same process as normal CCB meetings. In this case, CCB facilitator (EPA) shall collect all email conversations and attach them into the corresponding CR record.

If mandatory CCB members cannot join the CCB meeting, he/she shall delegate his/her role to someone else. During the CCB meeting, the CCB facilitator (EPA) shall record all attendees' names. In situations where there are separate CCBs for each functional area, for example hardware or software, a member representing the other functional area should be invited and involved in the CR approval process. This is recommended to reduce times when a CR is created against one functional area, but affects another area without understanding the potential impacts.

For each CCB meeting, the CCB facilitator (EPA) shall capture the following information through the CR record:
- The date and attendance of CCB review meeting
- CCB members consensus for the disposition of the change request

3 Project defined in JIRA

At the time creating this document, the following projects have been set up in JIRA for change requests management, and these projects shall be used purely for the change requests management. At the beginning of each project, a corresponding JIRA project shall be created to manage the project specific change requests, and at the end of each project, the project shall dispose of any open CR.
- RCCAC_ADF_Change_Requests
- RCCAC_MA700_Change_Requests

4 Change Request Type in JIRA

JIRA can be used to track many different type of issues. The following change request types have been defined for engineering projects. If there is project specific change request type needed, Project Engineer (PE) shall contact JIRA administrator for advice.

Table 4-1: Change Request Type in JIRA

Symbol	Type	Description
⊡	Bug	A problem which impairs or prevents the functions of the product; Flaw in a system, a system component, or a document that causes the system, system component, or document to fail to meet its requirements; An unwanted and unintended property of software or hardware.
↗	Improvement	An improvement or enhancement to an existing feature or task. Request to change implementation without changing requirements or functionality (e.g. code optimization).
⊞	New Requirement	A new feature of the product, which has yet to be developed.
☑	Clarification	Clarify an existing requirement, data, or information without changing functionality or definition. Also includes document editing and formatting changes.
⧉	Revised Requirement	Change to existing requirements.

5 Change Request Priority in JIRA

A change request has a priority level which indicates its importance. The following priorities have been defined for engineering change request. If there is project specific priority level needed, PE shall contact JIRA administrator for advice. The term "Priority" used in JIRA is equivalent of the term "Severity", and a CR has high priority means it has high severity.

Table 5-1: Change Request Priority in JIRA

Symbol	Priority	Description
⊘	Blocker	Blocks development and/or testing work, production could not run.
↑	Critical	Crashes, loss of data, severe memory leak; A large reduction in safety or flight deck operation; Loss of all or a significant portion of required functionality; Significant degradation of required performance; Adversely affects a mission-critical function, no alternative work-around is known.
↑	Major	Major loss of function; Significant effect on flight deck operation, significant effect on safety; Corruption of required functionality and/or performance; Adversely affects a mission-critical function, an alternative work-around is known.

↓	Minor	Minor loss of function, or other problem where easy workaround is present; No significant effect on flight deck operation, no significant effect on safety; Moderate impact to system functionality; Little impact to required functionality and/or performance; Inconvenience or annoyance (may not be resolved).
↓	Trivial	Cosmetic problem like misspelled words or misaligned text; No effect on flight deck operation, no effect on safety; No impact to required functionality and/or performance.

6 Change Request Workflow in JIRA

A JIRA workflow is a set of statuses and transitions that a change request goes through during its lifecycle. The following workflow has been defined in JIRA for engineering change request. If there is any project specific change request workflow needed, Project Engineer (PE) shall contact JIRA administrator for advice. In JIRA by default the status is categorized by different colors: Green color represents anything for which work has been completed; Blue color represents anything new; Yellow color represents anything in the process of being worked on.
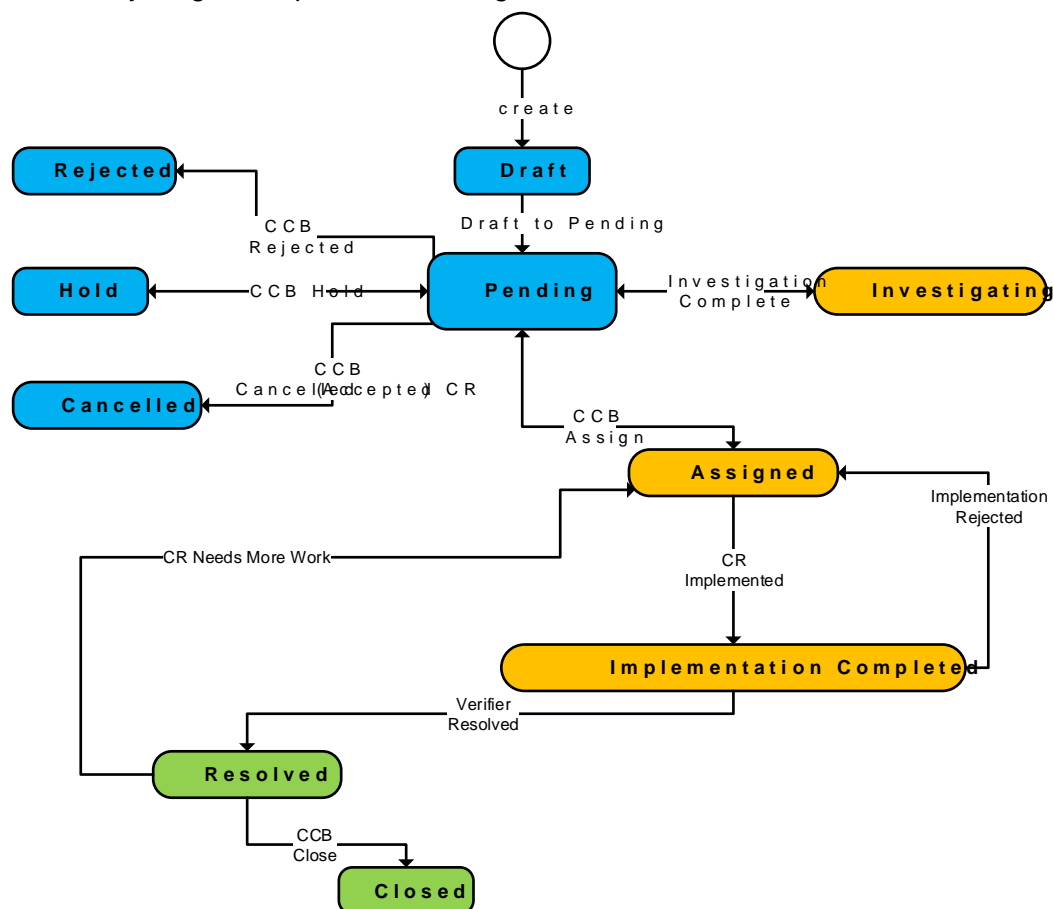

Figure 1: Change Request Workflow in JIRA

Each CR has a state, which indicates the stage of the CR. The CR originator will transition the CR from the *Draft* state to the *Pending* state before CCB can review the CR. In the *Pending* state, the CCB will review the CR and assess its impacts on the system including safety related assessment. The CCB will confirm the CR has been properly populated before transiting it to the next state.

CCB will transition the CR to one of the following states:
- Assigned
- Investigating
- Rejected
- Hold
- Cancelled

The CR can be set to *Investigating* state if CCB needs more information about the CR, once the CCB has been provided enough information, the CR can be set to *Pending* state.

When CCB accepts and approves the CR, the CCB facilitator (EPA) will transition the CR to *Assigned* state and populate/update the following information:
- Assignee – Person to implement the CR.
- Priority - The priority of the CR, see the Section 5 of this document.
- Issue type – update if necessary.
- Affects version(s) - Identify all artifacts that this issue affects.
- Verifier – Person to verify the CR.
- It is recommended CCB record the funding source for efforts associated to resolve the CR.

In the *Assigned* state, as delegated by the CCB, the CCB Facilitator (EPA) will be responsible for creating Change Task(s) and assigning an implementer and verifier to each Change Task and populating the affected artifacts field of each Change Task. PE or Primary Implementer will be responsible for supporting the CCB Facilitator (EPA) to create Change Task(s).

CR implementer will transition CR state from *Assigned* to *Implementation Complete* once the CR is implemented. When a CR is at *Implementation Complete* state, the CR verifier(s) shall verify the CR implementation against the CR issue itself, and shall check that all peer reviews have been Closed for each impact artifact as a result of the Change Request**.** If so, the CR verifier can transition the CR to the *Resolved* state. If the work has not been fully completed, the CR verifier should transition the CR state back to the *Assigned* state with a note added to describe why. The CR verifier(s) shall provide clear verification notes to describe what has been verified.

When a CR is in *Assigned* state, it can be set to *Pending* state by the CR implementer. In this case, the CR implementer should provide detail rationale why the CR cannot be implemented, then CCB will transition the CR from *Pending* to *Cancelled* state. In this case, some work may have been implemented, and it is CCB's responsibility to assure that the cancellation of a CR is communicated to all affected parties and that all work has been "backed out".

A CR transition to the **Rejected** state if the change will never be made because it is either incorrectly described, inaccurate, not really an issue or the estimated impact is not acceptable. The CCB will provide rationales for setting the CR to **Rejected** state. The state **Rejected** cannot be used for a CR which violates requirements or details abnormal behavior. If a CR is in CCB Rejected state, at the end of the project it will be counted as a Closed CR.

If CCB needs more information to make a decision, the CCB will provide a description of the information requested and transition the CR to the **Hold** state, or a CR is set to the **Hold** state if the CCB has determined that there is not enough information to determine how to fix this issue or there is not enough data to reproduce the problem. If a CR is in CCB Hold state, at the end of the project it is CCB's discretion to count it as a Closed CR or a CR to be implemented at a later time.

In the **Resolved** state, the CCB facilitator (EPA) reviews the CR to ensure that the CR and the corresponding Change Tasks have been implemented completely and correctly. If the CCB facilitator (EPA) is satisfied with the resolution, he/she will transition the CR to **Closed** state. If not, the CR state will be moved back to **Assigned** state, so it can be re-addressed. In this case, the CCB facilitator (EPA) will notify the CCB if any CRs do not meet the minimum set of closure criteria listed below:

- Ensure all the issue areas are all filled in.
- Verify that the corresponding peer review(s) are closed.
- Verify that the comments log contains information regarding implementation notes and verification notes.

A CR is set to **Closed** after all tasks have been implemented completely and correctly, all artifacts have been identified and verified, and the CR verifier and CCB facilitator (EPA) are satisfied with the resolution.

7 Change Request Attributes in JIRA

Attributes shown in Table   are configured in JIRA for change request.

Table 7-1: JIRA Change Request Attributes

Attributes	Description
Project	Which project the CR is belong to, see projects defined in Section 3.
Issue Type	See change request types defined in Table .
Summary	This is the CR title and should begin with a prefix indicating the area of focus, followed by a short description of the change requested. e.g. T3, T4, HLR, LLR HW, SW prefix etc.
Priority	See change request priority defined in Table .
Due Date	The target CR resolved date.
Component(s)	Identify all components that this issue affects.

Affects Version(s)	Identify all artifacts that this issue affects. May include multiple versions the issue was identified in Components.
Fix Version(s)	Build/version by which the request changes must be completed by and incorporated for delivery; To support cross-program searches and identification, versions identifiers will follow defined format; CCB may assign multiple versions to this attribute, e.g. assigned to a customer's delivery version, and an internal build number; List of available versions is controllable by project since each project has its own unique list of deliverables. Will be the same enumerated list used for the Affects Version(s).
Assignee	Person overseeing the CR through its life cycle, or person to implement the CR. CCB is responsible for appointing the person.
Environment	List environment in which the issue occurs, e.g. operation system, software platform and/or hardware specifications, etc.
Description	Full at-length description of the change being requested and the rationale for it including failed requirements and operational changes or side effects of implementing the CR. The description of the issue should be in clear, plain English and capture known circumstances and environment associated with the issue.
Original Estimate	Time tracking attribute, the original estimate of how much work is involved in resolving this issue.
Remaining Estimate	Time tracking attribute, an estimate of how much work remains until this issue will be resolved.
Attachment	The maximum file upload size is 10.00 MB. If applicable, add all the things that could help CCB and/or other person to better understand this issue.
Labels	Allow you to categorize an issue(s) in a more informal way than assigning it to a version or component. You can search for issues that have been given a particular label.
Verifier	Person who is responsible for verifying the CR implementation against the CR issue itself, and who is responsible for checking that all peer reviews have been Closed for each impact artifact as a result of the change request.