

Design Assurance Center

RCCAC-ENG-P-020

Rev. 1.2

Rockwell Collins CETC Avionics Co., Ltd.

Approval

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Revision History

Revision	Originator	Description	Date
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1.1	James Zhang	Added the Signature column in the Approval page	10/12/2015
1.2	Di Zhang	Updated few sections per RCCAC's situation and peer review results (PRI_0085)	05/26/2017

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1 Introduction

1.1 Purpose

Defines the Rockwell Collins CETC Avionics Co., Ltd. (hereafter referred to as "RCCAC") Design Assurance Center processes to ensure conformity to the RCCAC Quality Manual (QM) as specified by RCCAC-QMS-P-000 and comply with regulatory and customer requirements.

1.2 Applicability

Location: RCCAC, Chengdu, Sichuan, China

1.3 Requirements Implementation

This procedure meets the requirements for Design Assurance 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-ENG-P-000	Design and Development
RCCAC-BCP-M-002	Risk and Opportunity Management
RCCAC-QMS-P-000	Quality Manual
RCCAC-QMS-P-901	Quality Documented Information

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
DAC	Design Assurance Center
DQP	DAC Quality Plan
QM	Quality Manual
SOW	Statement of Work
TCP	Technical Consistent Process

1.6.2 Definitions

- **Artifact** - A tangible result of the Design and Development of a product, including the product itself (system, subsystem, component) and any supporting product item (business documentation, requirements document, design description, analyses, drawings, source code, log file, results summary document, etc.); an item produced by a process that provides value to the organization.
- **Corrective Action** - Action taken to eliminate the root cause of nonconformities. Corrective action reduces the probability of the same problems recurring under similar conditions or circumstances.
- **Methods** - Describe how to perform tasks and activities if it is necessary to provide consistency in a process or task. Methods do not generally prescribe a specific tool for completion.
- **Project** - Any effort where a project, program or product line produces engineering artifacts.
- **Work Instructions** - Describe the detailed how-to activities and tasks related to specific tools, locations, etc.
- **Work Product** - An output from executing a process. Example outputs are documents, files, and quality documented information.

2 General

2.1

In accordance with RCCAC-ENG-P-000 Design and Development, the Design Assurance Center (DAC) has the responsibility and authority to make quality judgments on all aspects of product design, verification/validation, and qualification including the authority to stop delivery of non-conforming products and documentation. The DAC is the Quality Engineer (SQE, HQE or Systems QE).

2.2

DAC is positioned organizationally in the Engineering organization, independent up to the Chief Technology Officer level from both Product Line and Systems engineering. The escalation process is in place to ensure that quality findings are resolved in a timely fashion.

2.3

DAC personnel are prohibited from approving or auditing artifacts which he/she was either directly, partially, or fully responsible for producing.

2.4

The DAC is responsible for bidding and planning the oversight activities that will be performed for a given project or product. The oversight activities apply to all development integral to the planning, specification, design, implementation, and testing of a product.

2.5

The DAC assesses and approves the project's TCP tailoring, Design and Development plans, and processes for compliance to business, regulatory, and customer requirements.

The DAC assesses the development activities for compliance with Design and Development plans and processes. The DAC assesses and approves artifacts produced by engineering to assure requirements are satisfied, non-conformances are prevented, and any errors are corrected as early in the life cycle as possible.

The DAC approval (either electronic or mechanical) represents acceptance of the quality of the product development activities, processes, and products.

2.6

DAC shall utilize RCCAC policies, procedures, and methods to ensure standard work.

3 DAC Member Roles & Responsibilities

3.1

The DAC Engineer performs the duties of software, hardware, or systems design quality assurance on a program. There may be multiple DAC Engineers on a program, and a DAC Engineer may be assigned to multiple programs. The DAC Engineer performs the following duties:

- Analyze technical information and determine appropriate actions
- Mentor junior DAC engineers
- Mentor engineering community on process and technical topics
- Ensure process and product compliance with program plans
- Approve work products prior to formal delivery

3.2

The DAC Focal is the Quality Project Engineer (PE) for a project. In addition to the DAC Engineer responsibilities, the DAC Focal performs the following:

- Lead Quality bid estimation
- Conduct technical analysis of Statement of Work (SOW) and/or contracts to determine quality oversight requirements
- Create and maintain the DAC Quality Plan (DQP) for a given project
- Lead quality efforts and coordinate activities with other DAC Engineers
- Report overall quality performance (e.g. compliance) to plan, understanding both technical and programmatic impacts
- Create quality dashboard view (e.g. stoplight chart) for engineering team
- Provide customer point-of-contact for all quality activities

3.3

The DAC auditing activities to be performed are the following:

- Objectively evaluating performed processes against applicable (required) processes
- Identifying and documenting noncompliance issues
- Providing feedback and results of quality activities to project staff, managers, and DAC Focal

4 Plans

4.1

The DQP is a collection of artifact(s) that document the quality oversight activities for a project during design and development activities which are defined in RCCAC-ENG-P-000.

4.2

Each design and development project shall have a DQP.

4.3

DAC shall execute the activities and tasks described by the DQP.

4.4

The DQP shall comply with RCCAC, regulatory, and customer objectives.

5 Subcontractor Oversight

5.1

As appropriate, DAC shall team with Supply Chain Quality Assurance and/or Engineering to select the appropriate subcontractor that will meet project technical and quality requirements.

5.2

As appropriate, DAC shall evaluate subcontractor work products identified by the supplier agreement (e.g. deliverables, quality documented information).

5.3

As appropriate, DAC shall select, monitor, and analyze processes used by the subcontractor as defined by the supplier agreement.

5.4

As appropriate, DAC shall assist engineering with adherence to RCCAC-BCP-M-002, Risk and Opportunity Management.

6 Audits

6.1

A process audit is performed to confirm the adherence to established processes and project plans.

6.2

A product audit examines work products to confirm the adherence to established RCCAC and industry standards.

6.3

Nonconformance issues identified during an audit shall result in corrective actions. Some corrective actions may require a root cause analysis.

6.4

Overdue corrective actions shall be escalated to the next appropriate level of management.

7 Root Cause Analyses

When appropriate, root cause analyses shall be performed to determine the cause of defects and systemic issues, and to verify that any associated corrective/preventive actions are appropriate and effective.

8 Quality Documented Information

8.1

Quality documented information (e.g. corrective actions, audit data) are retained in accordance with RCCAC-QMS-P-901, Quality Documented Information.

8.2

In addition to quality documented information stated in RCCAC-QMS-P-901, a quality dashboard view (stoplight chart) is created and maintained. This stoplight chart provides an overall quality assessment for engineering team from system to domain level. Yellow, Red, Green ratings are utilized in the chart. Justification for Yellow and Red ratings is required. DAC focal is responsible for mentoring engineering team to take actions to achieve Green rating.

8.2.1

Transition criteria for rating improvement:

- Red to Yellow – The owner of the Red status shall create an action plan to resolve the non-compliance. This plan must be created and agreed to by DAC. If the scheduled resolution date is not met, the rating remains Red.
- Yellow to Green – Action plans have been incorporated and no action items remain or sufficient improvement from the previous month indicates that there are no outstanding issues or concerns.

9 Change Management

9.1

Changes to DAC process artifacts (e.g. work instructions) and tools shall be tracked by change requests.

9.2

Change requests for DAC process artifacts shall be managed by the DAC CCB.

9.3

The DAC CCB membership shall be appointed by Chief Technology Officer.

9.4

The DAC CCB evaluates change requests, and shall approve, reject, or request additional investigation of the change request.

9.5

Assignees of change requests perform the work and schedule a peer review of the changed work. The participants shall be individuals selected from the DAC with appropriate knowledge of the change.

10 Configuration Management

10.1

DAC process artifacts shall be maintained in a controlled repository.

10.2

The controlled repository ensures each version of a DAC process artifact is stored and available for retrieval at any time.

10.3

The controlled repository ensures each DAC process artifact can be retrieved or reverted to a previous state or version.

11 Training

The DAC leadership shall ensure all DAC members are trained to perform their respective roles and responsibilities.

Exhibit A: DAC Document Map

DAC Document Map

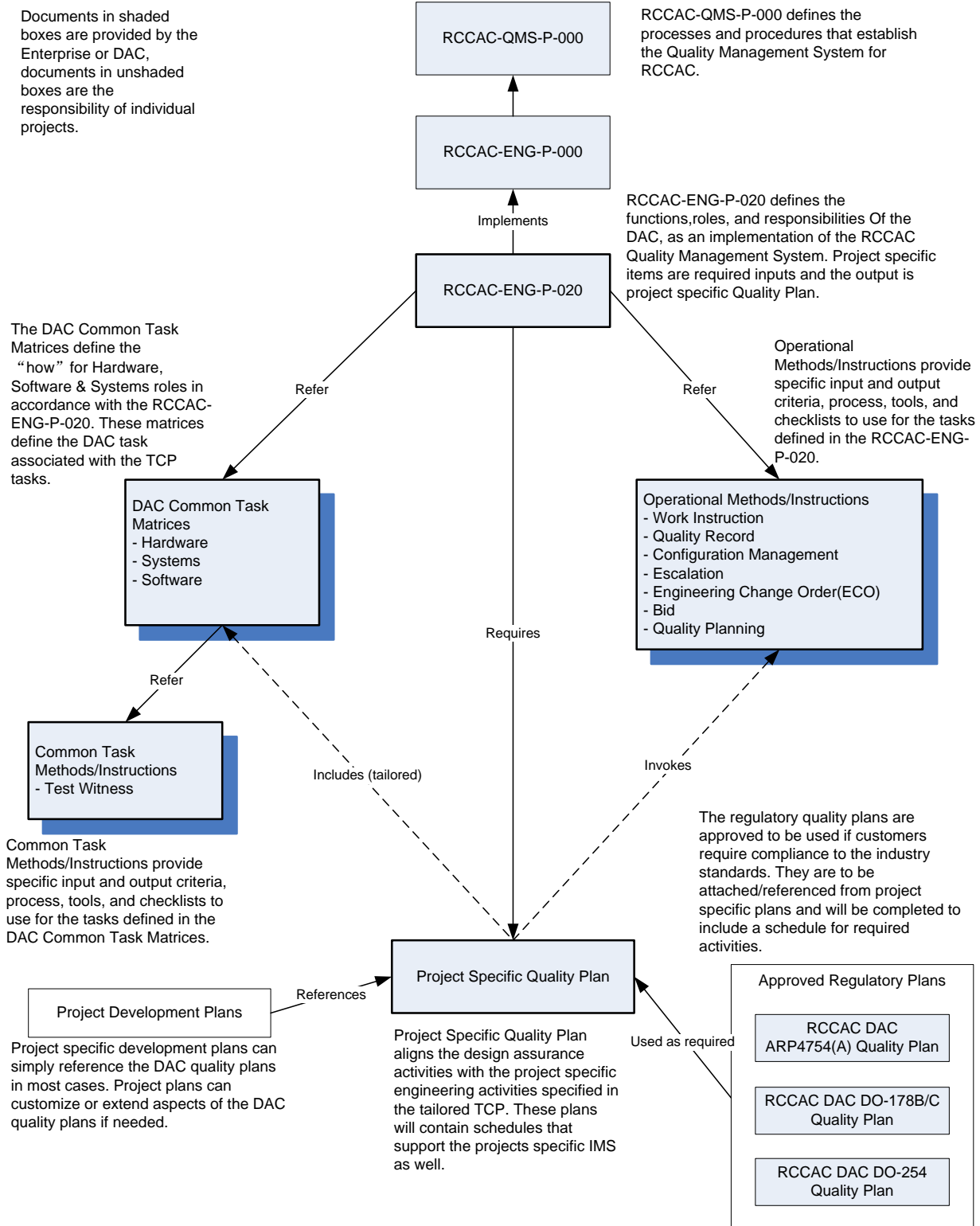
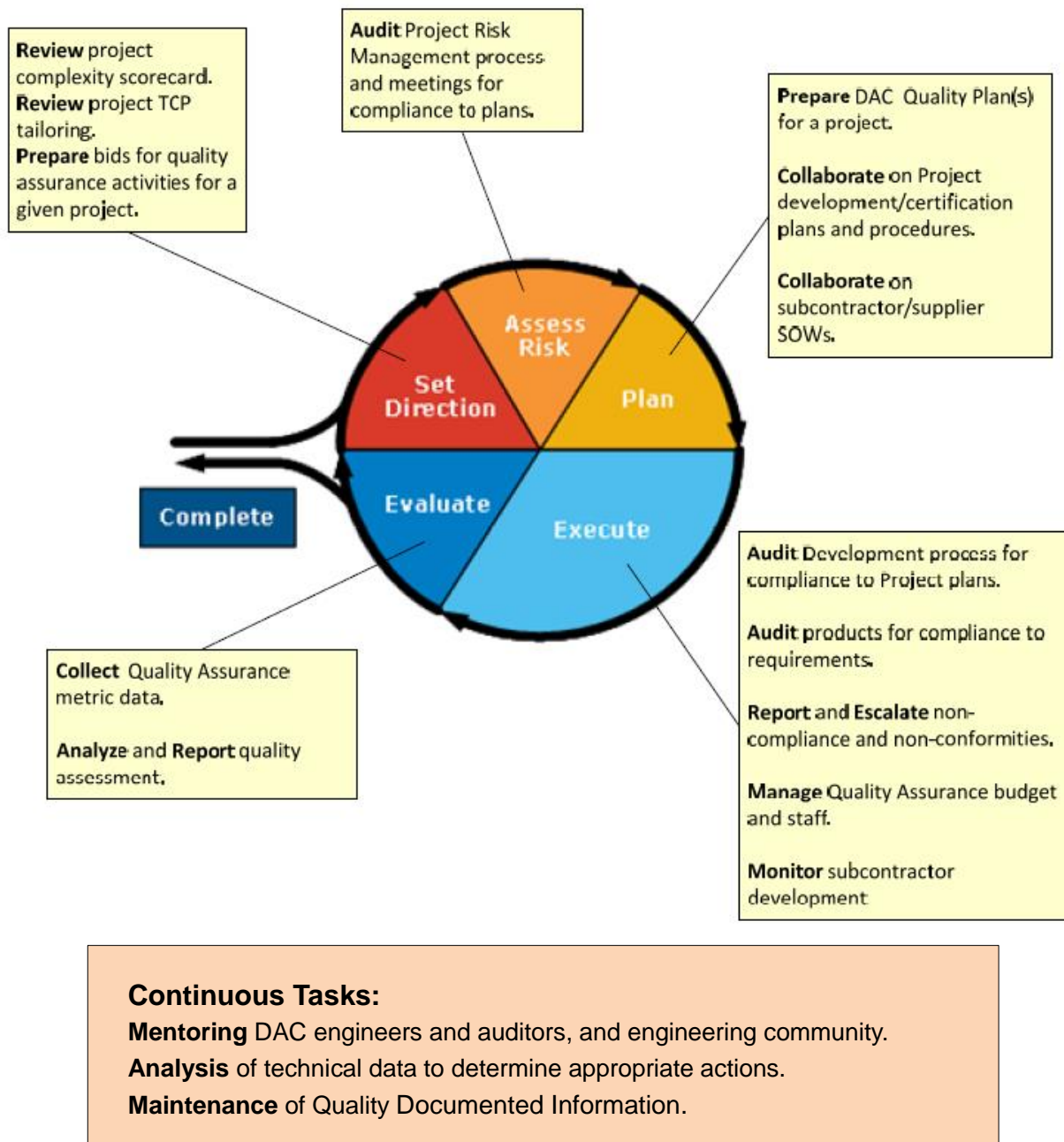
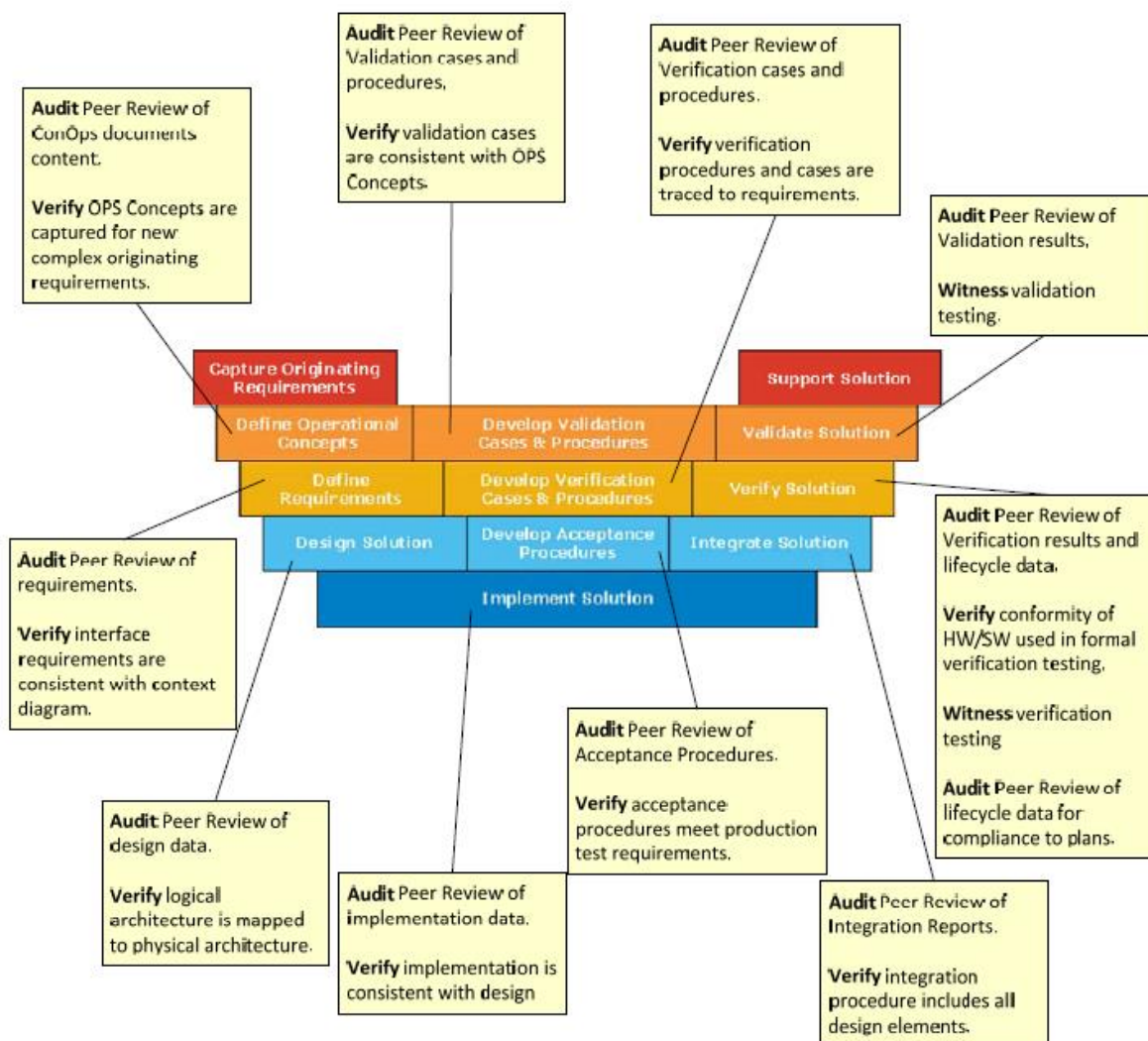


Exhibit B: Process Flow Diagrams

Process Flow Diagram – TCP Technical Management Activities



Process Flow Diagram – TCP Technical Development Activities



Continuous Tasks:

Analysis of technical data to determine appropriate actions.

Maintenance of Quality Documented Information.

Collection of metric data for later analysis.