PRODUCT CERTIFICATION SCHEME

By

CSIR - NAL

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Record of Issue / Revisions Amendments

Revision No.	Page number	Details of change	Date
-	-	Initial version	18-03-2026

1. Introduction

The CSIR-National Aerospace Laboratories (CSIR-NAL) organization operates as an Independent Safety Assessor (ISA), performing certification and assessment activities for signalling systems in accordance with CENELEC standards (EN 50126, EN 50128, EN 50129). The role involves conducting independent evaluations of system safety, reliability, and compliance across the complete lifecycle, ensuring that all safety-critical functions meet applicable regulatory and technical requirements.

Certification activities are executed in alignment with the ISO/IEC 17065 product certification framework, following a structured process that includes scope definition, documentation review and End-To-End field testing. Responsibilities include review of safety cases, verification of design and implementation evidence, identification of non-conformities, and supporting certification decisions through objective and impartial assessments.

The organization also undertakes audit planning, stakeholder coordination, and surveillance activities to ensure continued compliance of generic signalling systems throughout their operational lifecycle, maintaining high standards of safety assurance and certification integrity.

2. Scheme Owner

The Product Certification Scheme is owned and managed by the CSIR-National Aerospace Laboratories (CSIR-NAL), a premier research and development (R&D) institution located in Bengaluru, Karnataka, India. The organization plays a pivotal role in overseeing, implementing, and maintaining the certification scheme.

About CSIR-NAL

- **Full Name**:
  Council of Scientific and Industrial Research - National Aerospace Laboratories (CSIR-NAL).
- **Location**:
  HAL Old Airport Road, Kodihalli, Bengaluru, Karnataka 560017, India.
- **Type of Institution**:
  A constituent laboratory of CSIR, dedicated to cutting-edge R&D in the field of aerospace engineering and allied technologies.
- **Reputation and Expertise**:
  - Recognized globally for its contributions to aerospace engineering and certification frameworks.
  - Known for developing standards and protocols for safety-critical industries like aerospace, railways, and defence.

3. Reference Standards and Documents

Norm/Standard	Description
EN 50126	Railway Applications – RAMS (Reliability, Availability, Maintainability, Safety) lifecycle specification
EN 50128	Railway Applications – Software for Railway Control and Protection Systems
EN 50129	Railway Applications – Safety-related Electronic Systems for Signalling (Safety Case & Approval)
ISO/IEC 17065	Conformity Assessment – Requirements for Product, Process and Service Certification Bodies

Table 1: Reference Documents

3.1 CENELEC Standards (EN 50126-1&2, EN 50128, EN 50129)

- Provide a comprehensive framework for **RAMS (Reliability, Availability, Maintainability, Safety)** in railway systems.
- Define lifecycle-based safety processes for signalling and control systems.
- Support:
  - Hazard identification and risk assessment
  - Safety case development and approval
  - Verification and validation of safety-critical software and systems
- Ensure that signalling systems meet stringent safety integrity requirements.

4. Assessment Program and procedures

Activity/phase	Independent Safety Assessment
Application for ISA	Mail by client (mail id listed in RDSO empanelment list).
Certification (Assessment) acceptance	Generated project proposal.
Agreement	Formal agreement established between Certification body and client defining terms and conditions, scope, roles, and responsibilities.
Assessment Plan	A plan for assessment with time frame of assessment is prepared (Objectives of the assessment, scope and applicable standards, document checklist, schedule and timeline).
Opening meeting	Kick off meeting with client
Review & Evaluation:	1. Documentation review

	2. End-to-End field testing
Decision	1. Decision on certification with validation of conformity and non-conformities. 2. Closing meetings. 3. Release Evaluation Report 4. Independent checking of the Evaluation Report by the Report Evaluator
Certification	Issue of certificate
Surveillance	N/A

Table 2: Assessment Process

5. Certification Scheme Type

Type 5 product certification scheme, as defined in ISO/IEC 17067 and implemented under ISO/IEC 17065, is a comprehensive conformity assessment approach in which certification is granted based on initial product testing and an assessment of the manufacturer's production process.

This scheme ensures that the product not only meets the specified requirements at the time of certification but also maintains consistent quality and compliance throughout its lifecycle, thereby providing a high level of confidence in the certified product.

6. ISA Activities

6.1 Application

The client approaches the ISA through the ISA mail ID listed in RDSO empanelment list. Upon confirmation by the ISA, the applicant must fill the client request form and submit to the ISA by mail. The application from client is received by ISA who acknowledges for the application

6.2 Application review

After receiving the application, ISA head reviews the application and determine whether it meets the defined eligibility criteria. Only applications that are fully completed and include all necessary supporting documents will be considered. If the criteria are met, ISA head will prepare and send a proposal to the stakeholder for the requested certification.

If the criteria are not fulfilled, or if ISA lacks prior experience with the stakeholder's specific requirements, the stakeholder will be informed, and the request will be declined for further evaluation.

The proposal will be formulated based on the information provided by the stakeholder, in accordance with ISA procedures and applicable regulations.
ISA reserves the right to modify the proposal if discrepancies are found between the submitted and actual information. The proposal will be accompanied by the applicable terms and conditions and a draft contract. Upon acceptance of the proposal, a formal agreement shall be signed by both parties—CSIR-NAL and the stakeholder.

6.3 Evaluation

An assessment plan document is prepared, where it contains the timeline and required documents to proceed for evaluation.
ISA head ensures all the necessary information and documents are made available before assessment

The assessment follows steps below:

- Step 1: Early Design Assessment ISA team shall review the safety-related elements within the planning documents at the onset of the design phase to ensure foundational safety requirements are being addressed from the beginning.
- Step 2: Design Assessment ISA team shall evaluate the safety analyses and methodologies adopted during the design phase to verify compliance with applicable standards and best practices.
- Step 3: Manufacturing & Installation Assessment ISA team shall assess the implementation of the system and subsystems through a review of test plans, test specifications, and other relevant documentation to ensure alignment with safety objectives.
- Step 4: Integration, Testing & Commissioning ISA team shall conduct a Safety Validation to confirm, through examination and objective evidence, that all functional requirements related to safe system performance—including the successful implementation of hazard mitigation strategies identified during earlier phases—have been satisfied.
- Step 5: Operation & Maintenance Assessment ISA team shall validate the preparedness for operations and maintenance by reviewing the operation manual, maintenance manual, and maintenance management system. This ensures the procedures adequately safeguard personnel, passengers, and third parties throughout the system's operational lifecycle.
- Step 6: Field testing assessment, ISA team does on-site inspection of manufacturing facilities and production processes to confirm compliance with quality management standards. Laboratory tests to validate performance, durability, and safety under simulated conditions.

  Field tests under real-world conditions to ensure operational reliability of the system.

An evaluation report is generated after end-to-end field testing.

6.4 Review

A report evaluator independently reviews the final evaluation report prepared after end-to-end field-testing by field assessors, making recommendations for a certification decision based on the review.

6.5 Certification decision

ISA head will provide a formal judgement on whether the product meets the certification requirements. ISA certificate is issued if it complies. If the product does not meet the requirements the decision is made not to grant certificate and reasons are documented.

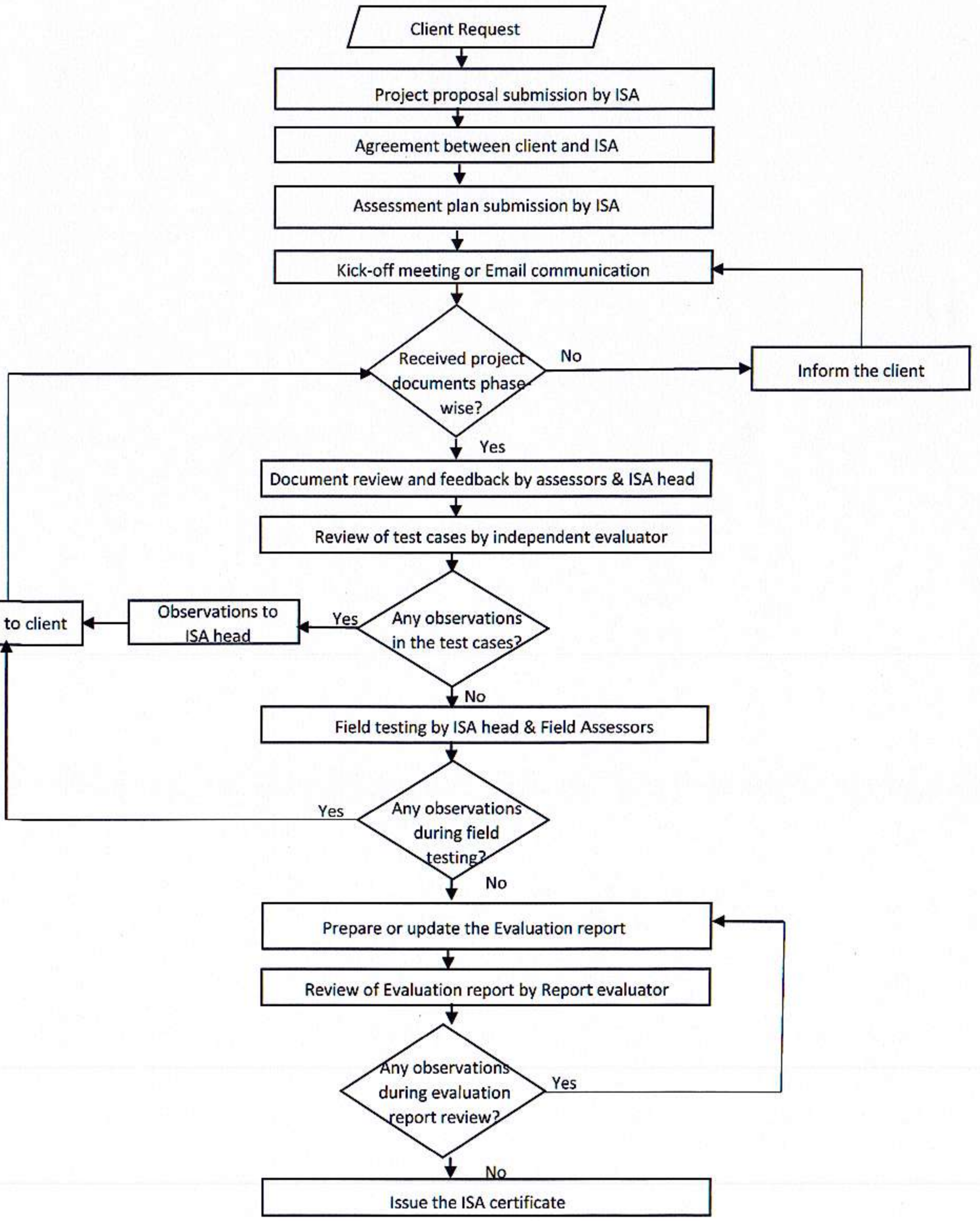

Figure 1: ISA Activity flowchart