

Software support of CFIHOS business process

Standard version – 2.0 (Conformance template revision B)

Software Statement.....	1
Phase A – Project Standard Preparation.....	5
Category A1 – Store CFIHOS Standard.....	5
Category A2 – Define Project Standard from CFIHOS Template	6
Category A3 – Support ITT & Contract.....	7
Category A4 – Communicate Project Standard	8
Phase B – Contractor System Setup.....	9
Category B1 – Implement Project Standard in Creation Tools	9
Category B2 – Implement Project Standard in Gathering and Aggregation Tools	10
Category B3 – Implement Project Standard in Validation Tools.....	11
Phase C - Information Supply Chain Setup	12
Category C1 – Communicate Project Standard	12
Category C2 – Support Information Collection and Aggregation	13
Phase D - Contractor Information Delivery.....	14
Category D1 – Create Information.....	14
Category D2 – Gather and Integrate Information	15
Category D3 – Check Information Quality	16
Category D4 – Transfer Information	17
Phase E - Principal Information Review	18
Category E1 – Review and Validate	18
Category E2 – Report Review Outcome.....	19
Phase F - Principal Handover to Business Systems.....	20
Category F1 – Deliver to Business Systems.....	20
Category F2 – Track and Update.....	21

Conformance Coversheet

Software submission identifier: Rihal RDX/RDR Build 2026-07-09

Company name(s): Rihal (Data Migration and Services LLC)

Overview

Rihal provides engineering information management, information transformation and interoperability solutions that help organisations transition from document-centric to data-centric engineering information workflows.

This submission demonstrates configurable information extraction, refinement, validation and transformation workflows aligned to CFIHOS v1.5 and CFIHOS v2.0 reference data structures across engineering document metadata, document-to-tag relationships and equipment data.

The solution consists of two complementary applications that are intended to work alongside the project information management system, such as an EDMS or Engineering Information Management platform, rather than replace it:

- **Rihal Data eXtract (RDX)** uses AI and OCR as core technologies to extract and validate metadata from engineering drawings and documents, including Principal RDL conformance assessment
- **Rihal Data Refine (RDR)** supports configurable validation, transformation, staging and Principal template generation, supported by rules-based mappings, confidence-scored property suggestions and automated data refinement workflows

RDX and RDR are used to prepare, check and improve engineering information before it is transferred to, or managed within, the relevant authoritative system of record. Long-term document control, formal review workflow, submission tracking and operational system-of-record responsibilities remain with the relevant project information management or business systems unless explicitly demonstrated within this submission.

Conformance

Categories supported:

- A1 - Store CFIHOS Standard
- A2 - Define Project Standard from CFIHOS Template
- B2 - Implement Project Standard in Gathering and Aggregation Tools
- B3 - Implement Project Standard in Validation Tools
- D2 - Gather and Integrate Information
- D3 - Check Information Quality
- E1 - Review and Validate

Data Model

RDX and RDR support a structured engineering information data model incorporating key CFIHOS concepts including:

- properties, classes and units of measure

Unrestricted

- document disciplines and document types
- document revision-to-tag and document revision-to-equipment relationships

Reference Data Library (RDL)

RDX and RDR utilise reference data, including CFIHOS, to support:

- import and export of reference data
- configurable classes, properties and value lists
- property and value mappings
- validation and transformation against Principal reference data

Information Transmission

RDX and RDR support configurable import and export of structured engineering information for Contractor-to-Principal information exchange and handover.

Roadmap

Planned roadmap areas across RDX and RDR include:

- RDX/RDR: enhanced AI-assisted classification and metadata extraction, including RDX/RDR workflow integration, to improve the preparation and checking of information (D2, D3)
- RDX/RDR: API support for improved information gathering (D2)
- RDR: enhanced relationship transformation and normalisation, including tag-to-document dataset generation to support the preparation of information registers (D2)
- RDR: plant breakdown structure definition and management to further support project-specific adaptation of the CFIHOS standard (A2)

Notes

RDX and RDR are browser-based web applications tested using modern Chromium-based web browsers.

The submission is based on the following use cases:

- **Contractor Bulk File Submission Validation** – validating Contractor bulk file submissions and aligning extracted document metadata with structured Master Document Register (MDR) information
- **Document-to-Tag Relationship Validation** – extracting document-to-tag relationships from engineering drawings and aligning them with structured tag register information
- **Equipment Data Validation** – extracting equipment attributes from manufacturer datasheets and aligning them with structured equipment tag register (physical attributes) information

A supporting evidence slide deck accompanies this submission. Evidence tables include references to the corresponding evidence slides, providing end-to-end traceability.

The submission is also supported by the following user guides:

1. CFIHOS Use Case 1 – Contractor Bulk File Submission Validation User Guide
2. CFIHOS Use Case 2 – Document-to-Tag Relationship Validation User Guide

3. CFIHOS Use Case 3 – Equipment Data Validation User Guide

Phase A – Project Standard Preparation

Category A1 – Store CFIHOS Standard

Demonstrate how the principal can use a release of the CFIHOS standard as a baseline for one or more projects and manage any impact from subsequent releases of the standard (e.g. different projects based on different releases).

Supported: Yes

Evidence demonstrates import, storage, representation and management of CFIHOS taxonomies, properties and reference data, including the ability to store and compare multiple releases.

Software: Rihal Data eXtract (RDX) and Rihal Data Refine (RDR)

Evidence:

Evidence	Slide
Import and Configure CFIHOS Tag Taxonomy Pack	A1-01-RDX
Import and Configure CFIHOS Document Taxonomy Pack	A1-02-RDX
Store Multiple CFIHOS Releases	A1-03-RDX
Import and Configure CFIHOS Document Picklists	A1-01-RDR
CFIHOS Properties Management	A1-02-RDR
Database Explorer	A1-03-RDR
Configure Cross-property Validation Rules	A1-04-RDR
Configure Class Property Requirements	A1-05-RDR
Import and Configure CFIHOS Equipment Property Picklist Values	A1-06-RDR
Comparing Imported CFIHOS Releases	A1-07-RDR

References:

- CFIHOS Scope and Procedure, sections 9.1, 9.2
- CFIHOS Guide for Principal, section 3.1.1
- CFIHOS Guide for Contractor, section 2.1.2

Category A2 – Define Project Standard from CFIHOS Template

Demonstrate how the organization or project can adapt the CFIHOS standard to their specific context.

Supported: Yes

Organisation and project-specific reference data can be adapted from the CFIHOS standard through customisable taxonomy packs, properties and picklists, including the addition, modification and removal of project-specific values and terminology.

Software: Rihal Data eXtract (RDX) and Rihal Data Refine (RDR)

Evidence:

Evidence	Slide
Configure Project Property Picklist Values	A2-01-RDX
Configure Project Property Picklist Values	A2-01-RDR
Configure Project Numbering Validation	A2-02-RDR
Import and Configure CFIHOS Tag Taxonomy Pack	A1-01-RDX
Import and Configure CFIHOS Document Taxonomy Pack	A1-02-RDX
Import and Configure CFIHOS Document Picklists	A1-01-RDR
CFIHOS Properties Management	A1-02-RDR
Import and Configure CFIHOS Equipment Property Picklist Values	A1-06-RDR

References:

- CFIHOS Scope and Procedure, sections 9.1, 9.2
- CFIHOS Guide for Principal, sections 3.1.2 to 3.1.5
- CFIHOS Guide for Contractor, sections 2.1.2, 2.1.3

Category A3 – Support ITT & Contract

Demonstrate how the tender and contract award process is supported, including processing of any requests for information (RFIs) allowing the potential contractors to clarify requirements and so provide a better-informed bid.

Supported: No

Support for ITT, contract or information exchange requirement specification and management has not been demonstrated.

Software:

Evidence: None

References:

- CFIHOS Scope and Procedure, sections 9.1 to 9.3
- CFIHOS Guide for Principal, sections 3.1.6 to 3.1.8

Category A4 – Communicate Project Standard

Demonstrate how the principal shares the project standard with the selected contractor so that they can deliver the expected information on time.

Supported: No

Communication or publication of project standards to project participants has not been demonstrated.

Software:

Evidence: None

References:

- CFIHOS Scope and Procedure, sections 9.1, 9.4, Annex B
- CFIHOS Guide for Principal, section 3.1.9

Phase B – Contractor System Setup

Category B1 – Implement Project Standard in Creation Tools

Demonstrate how the contractor can configure any information authoring features (e.g. design tools) based on the project standard, so that the principal's requirements can be honored from the outset.

This is a preparation step for Category D1.

Supported: No

RDX and RDR do not implement project standards within engineering creation tools or configure external engineering authoring applications. RDR can support structured information register authoring using configured project taxonomies, metadata schemas and reference data.

Software:

Evidence: None

References:

- CFIHOS Scope and Procedure, sections 9.1, 9.5
- CFIHOS Guide for Contractor, section 2.2.5

Category B2 – Implement Project Standard in Gathering and Aggregation Tools

Demonstrate how the contractor can configure the project standard into any features that are used to collate information from separate systems or from further down the information supply chain, so that this information can be mapped or transformed to what is needed.

This is a preparation step for Category D2.

Supported: Yes

RDX and RDR configure extraction, mapping, transformation, aggregation and validation workflows for information collected from internal and external sources. Extracted metadata and register data can be aligned with Principal reference data, taxonomies and structured information deliverables, including Master Document Registers (MDRs) and tag registers.

Software: Rihal Data eXtract (RDX) and Rihal Data Refine (RDR)

Evidence:

Evidence	Slide
Configure Extraction Instructions	B2-01-RDX
Project Standard Document Taxonomy	B2-02-RDX
Project Standard Tag Taxonomy	B2-03-RDX
Configure Source-to-Project Property Mappings	B2-01-RDR
Configure Project Standard Validation Lookups	B2-02-RDR
Configure Project Standard Value Mappings	B2-03-RDR
Configure Cross-property Validation Rules	B2-04-RDR
Configure Class Property Requirements	B2-05-RDR
Value Mining Rules	B2-06-RDR
Transformation Workflow	B2-07-RDR
Project Standard Properties Management	B2-08-RDR
Project Standard Equipment Property Mapping	B2-09-RDR

References:

- CFIHOS Scope and Procedure, sections 9.1, 9.5
- CFIHOS Guide for Contractor, section 2.2.5

Category B3 – Implement Project Standard in Validation Tools

Demonstrate how the contractor can configure any validation features based on the project standard, so that they can make sure the authored information conforms to the principal's requirements.

This is a preparation step for Category D3.

Supported: Yes

RDX and RDR provide configurable taxonomy-based metadata validation, attribute and value rules, reference data, mappings and transformation workflows. These capabilities identify mismatches and validate document metadata and document or tag register information against Principal reference data and project-specific requirements prior to information quality assessment and transfer.

Software: Rihai Data eXtract (RDX) and Rihai Data Refine (RDR)

Evidence:

Evidence	Slide
Configure Project Numbering Validation	B3-01-RDR
Configure Project Standard Validation Lookups	B2-02-RDR
Configure Project Standard Value Mappings	B2-03-RDR
Configure Cross-property Validation Rules	B2-04-RDR
Configure Class Property Requirements	B2-05-RDR
Value Mining Rules	B2-06-RDR
Transformation Workflow	B2-07-RDR
Project Standard Properties Management	B2-08-RDR
Project Standard Equipment Property Mapping	B2-09-RDR
Project Standard Document Taxonomy	B2-02-RDX
Project Standard Tag Taxonomy	B2-03-RDX

References:

- CFIHOS Scope and Procedure, sections 9.1, 9.5
- CFIHOS Guide for Contractor, section 2.2.5

Phase C - Information Supply Chain Setup

Category C1 – Communicate Project Standard

Demonstrate how the contractor can share the project standard with any other information suppliers (e.g. subcontractors, vendors).

Supported: No

Sharing project standards with external information suppliers has not been demonstrated.

Software:

Evidence: None

References:

- CFIHOS Scope and Procedure, sections 5.3.1, 5.3.2, 9.1, 9.5, Annex B
- CFIHOS Guide for Contractor, sections 2.2.3, 2.2.4

Category C2 – Support Information Collection and Aggregation

Demonstrate how other information suppliers (e.g. subcontractors, vendors) can communicate their information deliverables to the contractor, and how the contractor can store these deliverables so they can later be prepared for handover to the principal.

Supported: No

RDX and RDR do not provide supplier information collection, delivery planning, responsibility assignment or submission tracking. Information packages pass through RDX and RDR temporarily for extraction, refinement, validation and transformation before being transferred to the relevant authoritative system of record.

Software:

Evidence: None

References:

- CFIHOS Scope and Procedure, sections 9.1, 9.5, Annex B
- CFIHOS Guide for Contractor, section 2.2.5, 2.2.6

Phase D - Contractor Information Delivery

Category D1 – Create Information

Demonstrate how the contractor authors information as documents and data, and later corrects that information in response to comments from the principal.

Supported: No

RDX and RDR do not provide native engineering document, tag or model authoring capabilities. RDR can refine, enrich, validate and support correction of structured registers derived from submitted documents and extracted metadata prior to transfer to the relevant authoritative system of record.

Software:

Evidence: None

References:

- CFIHOS Scope and Procedure, sections 9.1, 9.5
- CFIHOS Guide for Principal, section 3.2.4
- CFIHOS Guide for Contractor, section 2.2.6

Category D2 – Gather and Integrate Information

Demonstrate how the contractor prepares information deliverables for handover to the principal, integrating information they have authored or revised with information from elsewhere in the supply chain, so that a set of deliverables is ready to be quality checked.

Supported: Yes

RDX and RDR gather and integrate Master Document Register (MDR) and tag register datasets, submitted document files and extracted metadata from multiple sources. Configurable mapping, transformation and staging workflows consolidate submitted and extracted information into Principal-aligned templates ready for information quality assessment and transfer.

Software: Rihai Data eXtract (RDX) and Rihai Data Refine (RDR)

Evidence:

Evidence	Slide
Upload Files and Start Extraction	D2-01-RDX
Review Extraction Results	D2-02-RDX
Principal-aligned Conformance Report	D2-03-RDX
Attribute and Value Mapping Export	D2-04-RDX
Quality Check in Document Viewer	D2-05-RDX
Export Extracted Metadata Staging Dataset	D2-06-RDX
Review Extracted Document-to-Tag Relationships	D2-07-RDX
Review Extracted Equipment Data	D2-08-RDX
Import Extracted Metadata and MDR Datasets	D2-01-RDR
Compare Extracted Metadata and MDR Dataset	D2-02-RDR
Transformation Workflow	D2-03-RDR
Review Post-transformation Staging Dataset	D2-04-RDR
Populate MDR Template from Staging Dataset	D2-05-RDR
Generated Principal-aligned MDR Output	D2-06-RDR
Compare Extracted Tag Relationships and Document-to-Tag Relationship Register	D2-07-RDR
Generated Principal-aligned Document-to-Tag Relationship Register	D2-08-RDR
Compare Extracted Datasheet Attributes to Tag Register (Physical)	D2-09-RDR
Generated Principal-aligned Tag Register (Physical)	D2-10-RDR

References:

- CFIHOS Scope and Procedure, sections 9.1, 9.5
- CFIHOS Guide for Contractor, section 2.2.6

Unrestricted

Category D3 – Check Information Quality

Demonstrate how the contractor assesses the completeness, accuracy and contractual compliance of the information deliverables before handover.

Supported: Yes

RDX and RDR assess information completeness, accuracy and contractual compliance by extracting metadata, comparing extracted metadata with Contractor Master Document Register (MDR) and tag register data, identifying mismatches, and validating information against Principal reference data and project-specific requirements. Quality dashboards, staging datasets and validated outputs support assessment of information readiness for handover.

Software: Rihal Data eXtract (RDX) and Rihal Data Refine (RDR)

Evidence:

Evidence	Slide
Information Set Quality Dashboard	D3-01-RDR
Project Numbering Standard Validation	D3-02-RDR
Project Property Value Validation	D3-03-RDR
Principal-aligned Conformance Report	D2-03-RDX
Review Extracted Document-to-Tag Relationships	D2-07-RDX
Review Extracted Equipment Data	D2-08-RDX
Compare Extracted Metadata and MDR Dataset	D2-02-RDR
Review Post-transformation Staging Dataset	D2-04-RDR
Generated Principal-aligned MDR Output	D2-06-RDR
Compare Extracted Tag Relationships and Document-to-Tag Relationship Register	D2-07-RDR
Compare Extracted Datasheet Attributes to Tag Register (Physical)	D2-09-RDR

References:

- CFIHOS Scope and Procedure, sections 8.3, 9.1, 9.5
- CFIHOS Guide for Contractor, section 2.2.6

Category D4 – Transfer Information

Demonstrate how the information deliverables are transferred from the contractor to the principal.

Supported: No

RDX and RDR do not orchestrate or track the transfer of information between Contractors and Principals. RDR can generate and regenerate Principal-aligned Master Document Register (MDR) and tag register deliverables for subsequent transfer through the relevant project or system-of-record processes.

Software:

Evidence: None

References:

- CFIHOS Scope and Procedure, sections 9.1, 9.5, Annex B
- CFIHOS Guide for Contractor, section 2.2.7

Phase E - Principal Information Review

Category E1 – Review and Validate

Demonstrate how the principal reviews the information deliverables that have been provided by the contractor to make sure they comply with the contractual requirements.

Supported: Yes

RDX and RDR support Principal-side review and validation through consistency checking between engineering documents, extracted metadata and structured register data, including mismatch identification and property value compliance checking. For audit purposes, a Contractor instance of RDR can be made accessible to the Principal, or the Principal can establish their own RDR instance using the relevant project configuration.

Software: Rihal Data eXtract (RDX) and Rihal Data Refine (RDR)

Evidence:

Evidence	Slide
Principal-aligned Conformance Report	E1-01-RDX
Quality Check in Document Viewer	E1-02-RDX
Information Set Quality Dashboard	E1-01-RDR
Compare Extracted Metadata and MDR Dataset	E1-02-RDR
Review Submitted Staging Dataset	E1-03-RDR
Review Submitted Property Value Compliance	E1-04-RDR
Regenerated Principal-aligned MDR Output	E1-05-RDR

References:

- CFIHOS Scope and Procedure, sections 8.4.1, 9.1, 9.5.3
- CFIHOS Guide for Principal section 3.2.2

Category E2 – Report Review Outcome

Demonstrate how the principal communicates the outcome of their review of the information deliverables to the contractor, including details of any corrections required.

Supported: No

Communication of review outcomes, correction requests, acceptance decisions and correction due dates between the Principal and Contractor has not been demonstrated.

Software:

Evidence: None

References:

- CFIHOS Scope and Procedure, sections 8.3, 8.4, 9.1, 9.5.3, Annex B
- CFIHOS Guide for Principal, section 3.2.2, 3.2.3

Phase F - Principal Handover to Business Systems

Category F1 – Deliver to Business Systems

Demonstrate how the principal's project team can prepare the project information for delivery to business systems that support ongoing activities (e.g. operations and maintenance teams).

Supported: No

RDX and RDR do not provide direct integration with, or manage delivery into, operational business systems. RDR can, where appropriate, validate, transform and prepare structured data for subsequent delivery to business systems outside the project system of record.

Software:

Evidence: None

References:

- CFIHOS Scope and Procedure, sections 9.1, 9.6
- CFIHOS Guide for Principal, section 3.3

Category F2 – Track and Update

Demonstrate how all deliverables are tracked and updated (including final deliverables).

Supported: No

Tracking deliverable schedules, phased handover activities, concurrent engineering and progress against planned handover milestones has not been demonstrated.

Software:

Evidence: None

References:

- CFIHOS Scope and Procedure, sections 9.1, 9.6
- CFIHOS Guide for Principal, section 3.3