GeoDocs Guidance Note

Version 1

Document Control

Version History

Version Number	Version Date	Summary of Changes	Author
1.0	20/08/2021	Initial publish for project use	A Lyon / N Carey
1.1	13/05/2022	Included reference to new Digital Design Management Guidance Note	N Wagner

Reviewers' Name

Reviewer Name	Date	Signature	Position
D Jannings	13/05/2022		Digital Engineering Programme Manager

Signed off by Approvers

Approver Name	Date	Signature	Position
A Lyon	13/05/2022		Programme Director – Digital Engineering

Final Distribution

Name	Position
File	-

Contents

Tables

Figures

1 Introduction

1.1 OVERVIEW

To support their digital objectives KiwiRail have implemented a Common Data Environment (CDE).

The CDE is a structured data environment that holds KiwiRail's project and asset information which has historically been unstructured, and in some cases, stored on externally owned file repositories. It is provided as a web-based platform where all design models, survey data, project documentation and other project information containers can be hosted and visualised.

The CDE is used to control the production and sharing of project information throughout the project lifecycle and hosts both iterative/preliminary information and final/contractual information (e.g. Issue for Construction). The platform also provides a contract management and correspondence functionality to support project delivery.

Finally, the platform acts as an ongoing repository of capital project information and will provide inputs to organisational Asset Management systems.

1.2 CDE DESIGN PRINCIPLES

The Common Data Environment (CDE) is defined in ISO 19650-1:2018 as the agreed single source of information for a given project or asset, for collecting, managing, and disseminating information through a managed process. During the delivery phase of a project, the CDE workflow and the CDE solution supports the management of information including activities for the production, control, and exchange of information.

Figure 1 below represents the organisation roles and relationships as defined by ISO 19650-1:2018. The KiwiRail CDE currently provides the inner circle of the defined ISO 19650-1:2018 CDE with the additional Delivery Team layer currently under development with a release date in early Q4-2021. The current state is illustrated in Figure 2.

Figure 2: ISO 19650 CDE Team Structure Future State Q4-2021

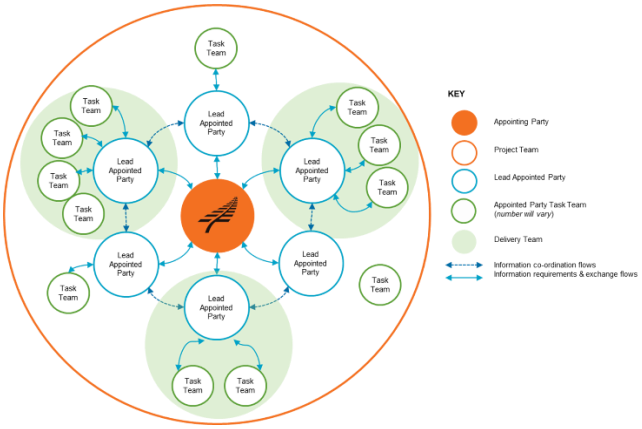
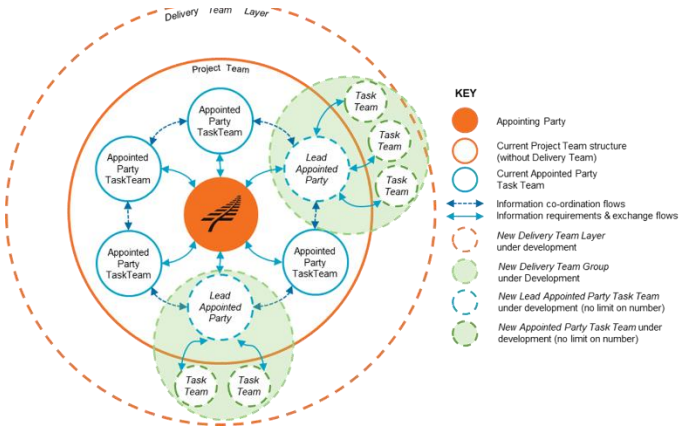


Figure 1: KiwiRail CDE Team Structure Current State



KiwiRail are both the appointing party and the owner of the CDE, and the solution is designed to support multiple programmes and projects that may have different compositions of suppliers.

The CDE is an "ecosystem" of connected components that combines various digital technology solutions to support different methods of information production and information authoring tools.

The CDE implements the ISO relationship structure by enabling both the lead appointed party, and appointed parties to leverage their own internal CDE solutions to produce information if required. However,

all parties are required to submit and transmit all formal project documentation and share content across the delivery and projects teams within the KiwiRail CDE.

The following table further defines the roles and relationships implemented by 19650-1:2018.

Table 1: ISO 19650 Role Definitions

Types of parties		Types of teams	
Appointing party	The organisation leading the project or asset management. For a project this is typically the client, who may also be the asset owner.	**Project Team**	Everyone involved in the project, regardless of appointment / contract arrangement.
Lead appointed party	The party who is responsible for co-ordinating information exchange between task teams or between a delivery team and the appointing party.	**Delivery Team**	A lead appointed party and their associated task teams - IE a contractor and its sub-contractors and suppliers, or internal groups from an organisation contributing to the one deliverable.
Appointed party	Anyone generating information about the project – IE a contractor, consultant, sub-contractor	**Task Team**	A person or group of people performing a specific task – IE the architecture team or the sub-contractor. Often the Task Team is aligned to an Organisation.

The high-level design principles for the CDE are as follows:

- The common data environment should support the information management processes relating to production, control, and exchange of information as established in this standard.
- The common data environment should support the development of a Project Information model during the delivery of a project.
- The common data environment should support the management of an Asset Information model during the lifecycle of an asset.
- The common data environment should support the transfer of information containers (files) from the Project information model to the Asset information model as required.
- The complete information model is not always held on one digital platform, the CDE workflow should support the distribution of information containers (files) across multiple platforms that as a collection provides the CDE solution.

The CDE is the key to the collaborative production of an information model, as it allows graphical models, asset data and documentation to be coordinated and managed effectively throughout the life of the asset.

The platform implements three core principles, as follows:

1. Collaborative

To create consistency across current and future programmes and projects, the CDE leverages international standards that guide the collaborative production and management of engineering information. As a minimum the CDE will ensure the projects are able to create, compile, verify, store, present and exploit BIM Level 2 information (structured data, 3D models and other content) in a standard aligned to the ISO19650 principles.

Information management and quality assurance according to these principles is prescribed using built-in workflows that manage and automate the collaborative production of information, and that define the ways in which project teams must work to comply with KiwiRail's Digital Objectives.

The collaborative production of information requires the adherence to the following principles:

- The information requirements are provided as the detail level by the appointing party

- Authors produce information, subject to intellectual property agreements, which they control and check, only sourcing approved information from others where required through reference, federation, or direct information exchange
- Information produced is managed and stored in the agreed common data environment, with appropriate and secure availability to all individuals and parties who are required to produce, use, and maintain the information.
- Information models should be developed using technologies that can conform to the requirements of the appointing party
- Processes are put in place to secure the information during its entire lifetime, this should address issues such as unauthorised access, information loss or corruption, degradation and where practicable, obsolesces.

2. Transparent

By leveraging geospatial technologies, the CDE provides a visual interface to project data - enabling greater design collaboration and amalgamated, appropriate access to design and survey information. To support this principle the CDE platform intuitively manages the storage of big datasets (specifically point clouds and laser scans) and automates the visualisation of incoming model data.

3. Centralised

The CDE contains automated functionality for submitting and transmitting digital content. Projects are expected to utilise these functions to manage formal project correspondence, replacing the pervasive use of email as an information and document exchange mechanism.

Projects shall also use the automated notification functions within the CDE to notify people that the CDE has been updated. In this regard, the CDE provides a robust repository of all information transactions that have taken place during the project lifecycle.

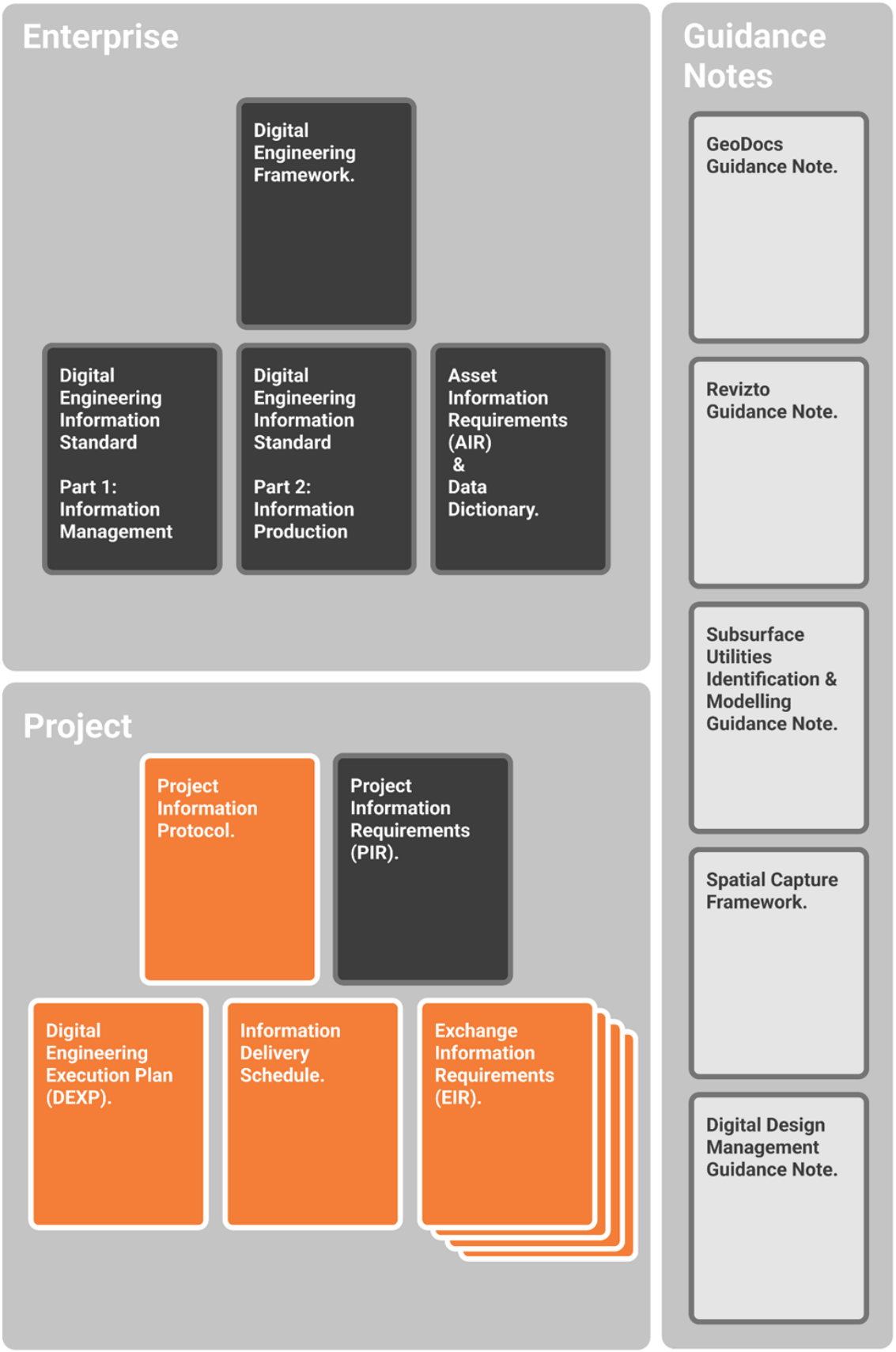
4. Automated

The CDE leverages digital workflows to automate key collaboration, quality assurance and exchange functions. These workflows are driven by the initial capture of content metadata, according to ISO19650 principles, and enable successive reviews and approvals to take place across task and delivery teams.

2 Framework Documents

Version 4 of the DE Framework is segmented into a suite of documents. This enables specific technical information to be covered in a specific document, for the right audience.

The following diagram and table convey the suite of the framework documentation.



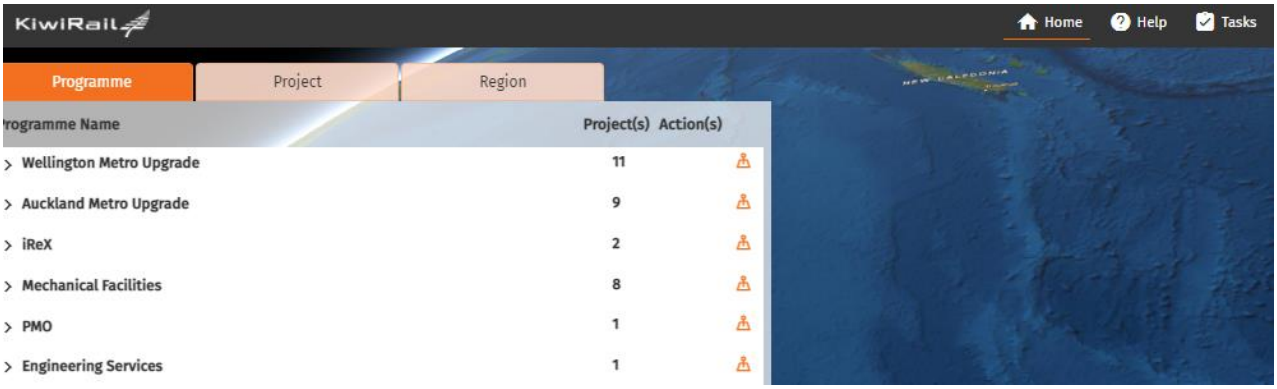
Document	Purpose
Enterprise	
Digital Engineering Framework	To outline KiwiRail's DE vision and overarching objectives. To provide guidance as to where specific detail can be found in other documentation.
Digital Engineering Information Standard – Part 1 (Management)	Outlines the process of how information is managed and consumed within the context of a project.
Digital Engineering Information Standard – Part 2 (Technical)	Outlines the details of how information should be produced by an author to meet KiwiRail's information requirements.
Subsurface Utilities Identification and Modelling Guidance Note	How to identify, model and transmit subsurface utility information to KiwiRail within a project.
3d Spatial Data Capture Framework	Outlines how spatial information is to be captured, created, reference, and controlled.
Asset Data Dictionary	Outlines all the possible asset types, and their associated attribution requirements.
GeoDocs Guidance Note	Supplementary document which covers off the correct usage of the CDE, including details of the background processes for those wanting additional detail.
Revizto Guidance Note	How KiwiRail standardise the use of Revizto across the KiwiRail projects portfolio.
Digital Design Management Guidance Note	Outlines how the DE tools & processes of KiwiRail's DE Framework can be embedded within the design phase of a capital project to support & enable design management fundamentals.
Project	
Digital Engineering Execution Plan (DEXP)	Outlines how Digital Engineering will be completed throughout the scope of the engagement, responding to the requirements outlined in the EIR. Outlines the roles and responsibilities within the supplier's organisation and can be used as a form of assessment for the tender submission process. Pre-contract is to be prepared by the supplier, and the post-contract is collaboratively developed between KiwiRail, its partners and the supplier.
Project Information Protocol	Provides additional clauses which enable the scope of Digital Engineering to be amended to the contract.
Information Delivery Schedule	Details the level of information need, required against asset data dictionary classifications, throughout the project lifecycle. Specifies the types of asset classifications expected throughout the scope of the project.
Project Information Requirements (PIR)	Includes general project information, including scope, stakeholders and high-level delivery milestones. Outline the overarching project specific digital initiatives for implementation on the project. PIR explain the information needed to answer or inform high-level strategic objectives within the appointing party in relation to a particular built asset project. PIR are identified from both the project management process and the asset management process. (extract from ISO)
Exchange Information Requirements (EIR)	Breaks down the overarching project objectives in the Project Information Requirements into the requirements of each engagement within a project at a detailed level. Details the expectations of information delivery against the project milestones. EIR set out managerial, commercial, and technical aspects of producing project information. The managerial and commercial aspects should include the information standard and the production methods and procedures to be implemented by the delivery team. (extract from ISO)

3 General Configuration

The following sections outline the general configuration and operation of the CDE.

3.1 CDE STRUCTURE

The CDE's landing page, as shown below, houses all KiwiRail Programmes and their respective projects and are visible on the home screen for easy access. The home screen also allows the user quick access to the workflow tasks, in addition to a link through to the Help Page.



3.1.1 Programme & Project Views

Users can access a project by the selecting either the Programme or Project tabs.

The default Programme tab, as shown above, lists all the KiwiRail Programmes and their respective projects. Alternatively, if the user is unsure of which Programme the project falls under, a list of all projects on the platform is available by selecting the Project tab.

Providing the user has been granted access, clicking on the following icon will open the project landing page in either the Programme or Project tabs. The landing page gives the user access to the following screens.

3.1.2 Visualisation & GIS

The project visualisation tab is designed to provide access to aggregated geospatial information relating to the project. This is delivered through an ArcGIS Online webscene. The viewer is capable of hosting a wide range of 3d spatial data including point clouds, 360 panoramic images, models, surfaces, and other geometric data. The viewer also contains simple tools to interrogate data including measurement and cross-sectioning.

3.1.3 Content Browser

The default page for the Content Browser is the Add content page (upload tool).

3.1.3.1 Add Content (upload) Tool

The upload tool allows users to upload files from their device, drag and drop from another file repository, or begin a new MS Office document.

Every file uploaded requires Metadata to be assigned before being uploaded into the Work in Progress Content State.

Upon upload a progress bar will pop up and a confirmation of upload will appear on completion.

Metadata

Metadata allows for the filtering and sorting of files within the CDE Content State.

The CDE provides KiwiRail standard mandatory metadata fields and Project configurable metadata. The more classifications a project defines the more granular the level of filtering can occur. The metadata elements are outlined in the following table.

Note: this data is assigned at the time of upload to the KiwiRail CDE, and some fields shall be automatically populated.

Table 2: Information Container Metadata

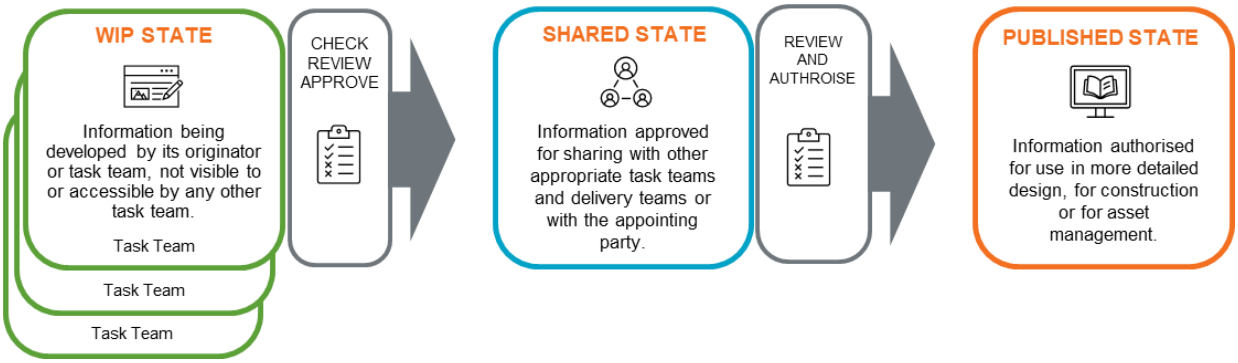
Metadata Element	Definition	Format	Programme or Project Definition	User defined	Optional	Included in CDE Naming
Discipline	The discipline that the content is representing	2 digits, alpha (e.g. AA..)	Programme	Yes	No	Yes
Project phase	Current project phase that the content belongs to	3 digits, alpha (e.g. PRE..)	Programme	No – set by project admin	No – set by default	No
Document type	The type of content	2 digits alpha (e.g. RE)	Programme	Yes	No	Yes
Document subtype	Content subtype (only available for certain types of content)	2 digits alpha (e.g. PC)	Programme	Yes	Yes	No
Suitability code	Reflecting the current purpose of the content. This will automatically be applied on upload to WIP.	2 digits alphanumeric	Programme	Yes, on creation, updated by workflow post-creation	No – created by workflow	No
Zone (generally geographic but can be customised for a project)	A means of breaking up the delivery of a project scope – Zone is the highest-level breakdown.	Alpha	Project	Yes	Yes	No
Area (as per note above)	As above – Area is the second level breakdown and can be linked as a subset of specific Zones.	Alpha	Project	Yes	Yes	No
Asset	Refers to the asset(s) that are referenced by the created content	Alpha	Project	Yes	Yes	No
Workstream	User configured field used to package information deliverables	Alpha	Project	Yes	Yes	No
Revision	Auto-assigned revision code.	3 digits alphanumeric (e.g. [P01])	Programme	No	No – created by workflow	Yes

Metadata Element	Definition	Format	Programme or Project Definition	User defined	Optional	Included in CDE Naming
Filename	Automatically assigned from the original file name when uploaded.	n/a	Project	No	No – auto populated	No
Description	Free text for the user to populate file description.	n/a	Project	Yes	Yes	No
	The CDE code also sits above the Description and is auto populated from the mandatory metadata				No – auto populated	n/a

Note: The Zone | Area | Asset combination have been adapted from the BS EN ISO Metadata items defined for each element are recorded in the Appendices sections.

All files that sit within the CDE have a status attributed to them. This status is indicated by which of the three information states that the files sit in. The structure is based on the status of the development of the information container. The ISO19650 information container content status follows the structure below:

Figure 3: Common Data Environment Status Concept.



3.1.3.2 WIP

The work in progress (WIP) state is where all information is uploaded to in the first instance. It consists of multiple task teams that are defined by process or party/organisation.

All information within the task team is secure and only visible to the members of that particular task team. This is the state that is used to develop information to a level where it is ready to be shared with other task teams. As previously outlined, it is accepted that most content in this state is able to be held within the supplier's own CDE.

3.1.3.3 Shared

The purpose of the shared state is to enable constructive and collaborative development of the information model within a delivery team.

Content in the shared state should be used by all appropriate parties (including those in other delivery teams) for the purpose of coordination with their own information. This content should be visible and accessible but should not be editable. If editing is required, content should be returned to the WIP state for amendment and resubmission by its author.

The shared state is also used for content that has been approved for sharing with the appointing party and are ready for authorisation. This use of the shared state can be termed the client shared state.

3.1.3.4 Published

The published state is used for information that has been authorised for use and is generally but not always a contractual deliverable. It is envisaged that this content shall be included in the Azure Blockchain ledger to provide a secure and transparent record of information throughout the project lifecycle.

Only content in the published state will be used for milestone deliverables such as consent applications, tendering, and construction etc.

3.1.4 Tasks

The task tab contains access to all workflow tasks that have been created through the movement of information containers between the WIP, Shared, and Published states. Tasks appear in the following views and grouped for ease of use.

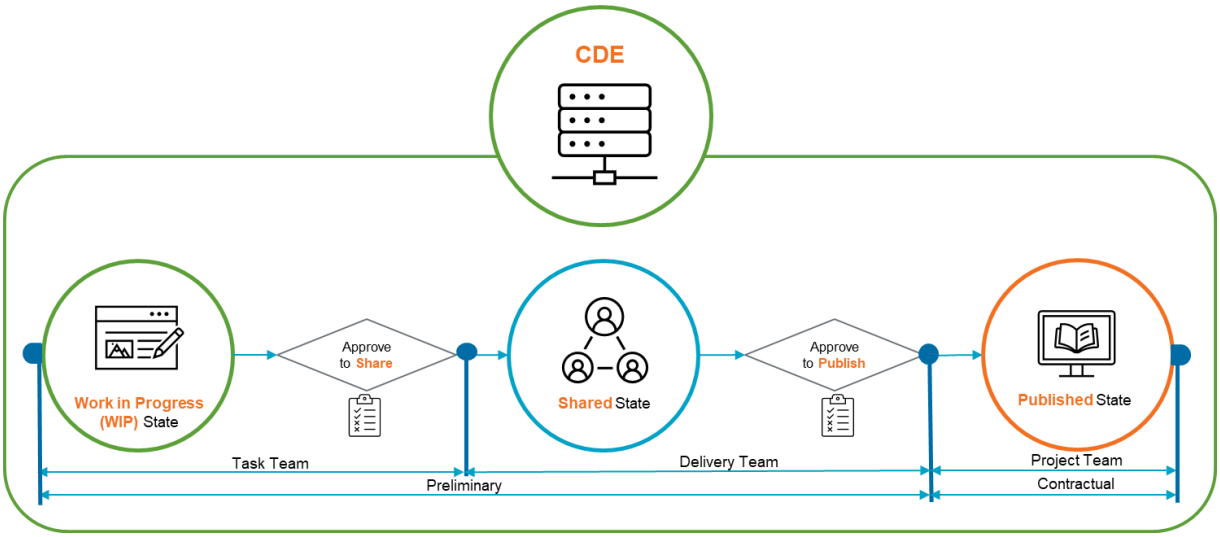
- Tasks awaiting the user's action;
- Tasks initiated by the user for others to action;
- All pending tasks across the project (task team relevant); and
- All tasks across the project, pending and rejected or approved (task team relevant).

3.1.5 Exchange

The CDE contains an Exchange module that has been provisioned to enable an auditable trail of correspondence relating to all appointments / information exchanges over the project lifecycle. It is structured in alignment to the task teams configured in the CDE. The tool can be configured on a project basis for specific correspondence types however every project is deployed with the following templates; Requests for Information, Contract Advice Notices, General Correspondence, Non-conformance reports, and Document Transmittals.

3.2 CDE WORKFLOWS

The implementation of CDE workflows are aligned to ISO 19650-1:2018. There are three main lifecycle states: WIP, Shared and Published. In order for content to progress through these lifecycle states, and to be shared and consumed across delivery and project teams, approvals are required. This section details the individual workflows that are implemented and automated and explains how these are related to the quality assurance process.



3.2.1 Suitability Codes

The following suitability codes are applied to information containers as they pass through the CDE workflows

Table 3: Suitability Code Application

Status	Description
Work in Progress	
S0	Initial status or WIP – Automatically applied on upload Master document index of file identifiers uploaded into the extranet.
Shared (Non-Contractual)	
S1	Suitable for Co-ordination The file is available to be 'shared' and used by other disciplines as a background for their information.
S2	Suitable for Information
S3	Suitable for Review & Comment
S4	Suitable for Stage Approval
Published Documentation (Contractual)	
A1, A2, A3, A*n* etc	Approved and accepted as stage complete (C= Contractual/Complete)
Published for AIM Acceptance	
CR	As Construction Record documentation, PDF, Models etc

3.2.2 Workflow and lifecycle stages

At each stage of the lifecycle content is assigned a state. Workflows are used to trigger a state change, and to automate the processes of quality assurance that are required for each state change. At each stage content is automatically assigned a revision code that is related to both its state and version. A comprehensive workflow diagram is an appendix to this document and provides an overview of the process.

3.2.3 Work in Progress Workflows

Workflow	Purpose	Status
Collaborate	Notify the task team that content is available, and their input is requested/required.	Optional
Task team review	Formal review of content amongst the task team. Review is created for a specific purpose. Outcome of the review will update the status of the content. Content is locked while review takes place. If the review is approved, the content is available to Share. If rejected, any open issues must be resolved, and content sent back for review.	Compulsory if content is to be shared outside the originating task team.

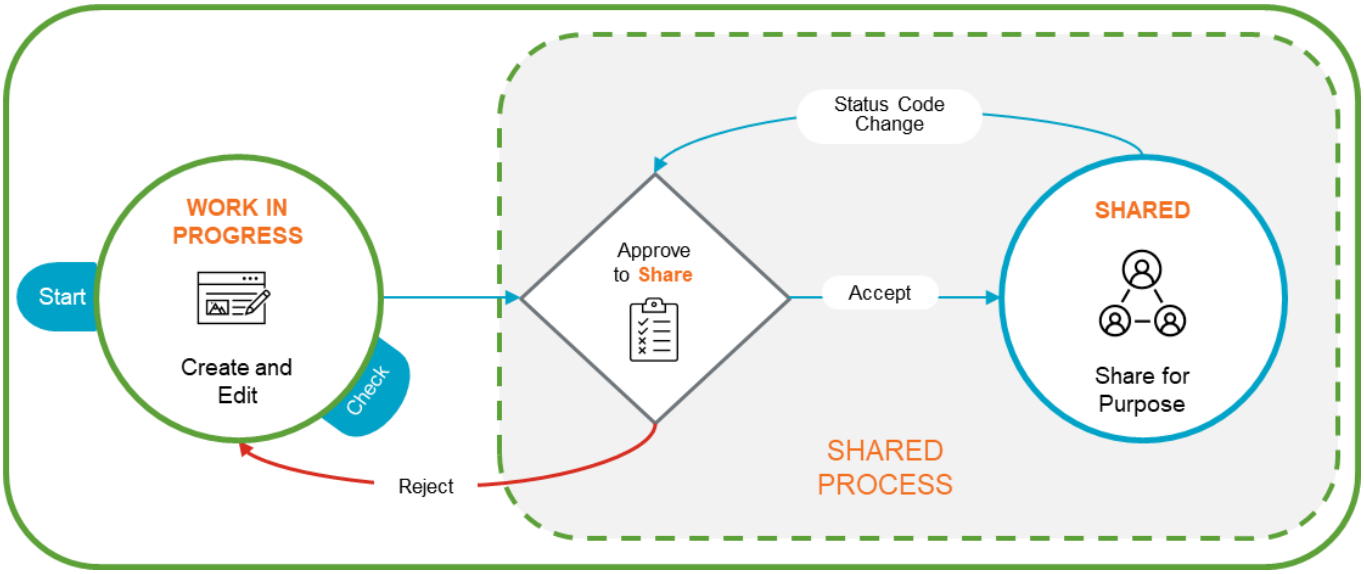
Share	Follows Task Team Review Content is sent to a Task Team member with Approvers Role. All review content is attached for the Approver to see. The approver may either approve or reject the task, with comments. Content is locked while the approval takes place. Once approved, a copy of the content is moved to the Shared library for consumption by the project team.	Compulsory

3.2.4 Approval Gate 1: Shared workflow

The Shared workflow is there to:

- Control the state transition from Work in progress to Shared.
- Confirm the allowed use of the information container by setting the status codes
- Depending on implementation, copy the information container to the Shared library as read only revision
- Set the information container as non-editable
- Set the information containers revision
- Where required, create a non-editable rendition of the information container for consumption by other design applications
- Depending on implementation, move any previous revision to the Archive library as audit copy, set the State of the revision to Archived.

Figure 4: Shared Workflow



3.2.5 Delivery Team Review

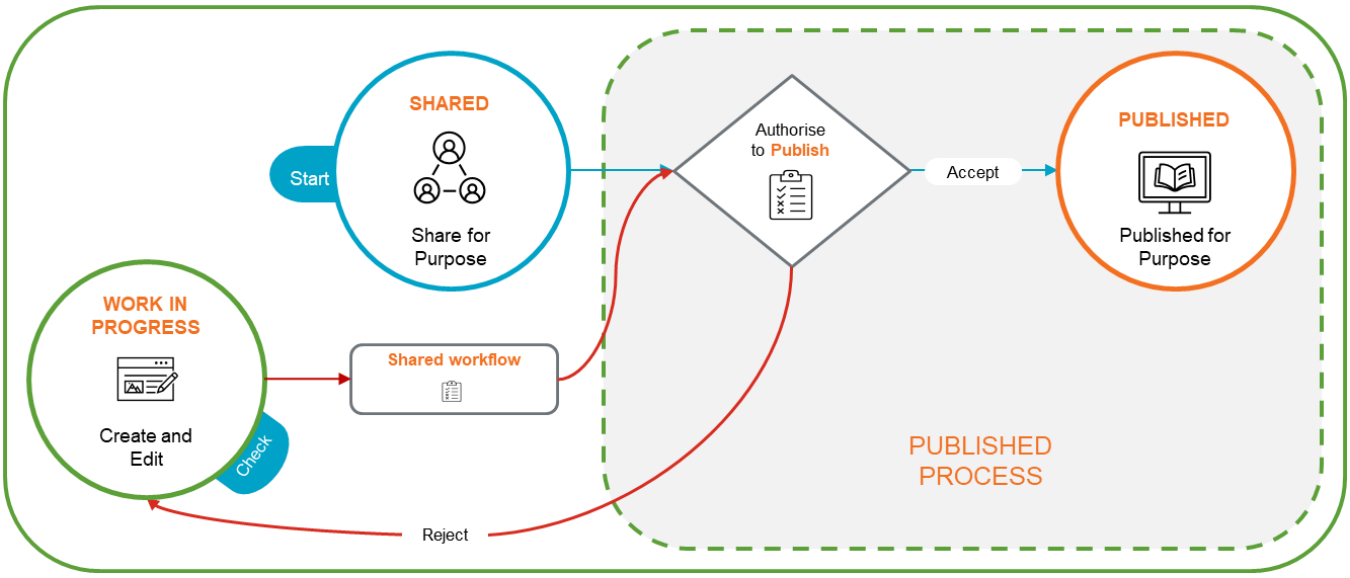
The Design Team Review is a formal review of content in the Shared state prior to the Publish workflow. Review is created for a specific purpose. Outcome of the review will update the status of the content. Content is locked while review takes place. If the review is approved, the content is available for Publish. If rejected, any open issues must be resolved, and content sent back for review.

3.2.6 Approval Gate 2: Published Workflow

The Published workflow is there to:

- Control the state transition from Shared to Published.
- Confirm the allowed use of the information container by setting the status codes
- Depending on implementation, copy the information container to the Published library as read only revision
- Set the information container as non-editable
- Set the information containers revision
- Where required, create a non-editable rendition of the information container for consumption by other applications
- Depending on implementation, move any previous revision to the Archive library as audit copy, set the State of the revision to Archived.
- Where allowed, digitally sign, and lock the information container with the digital signature of the Authority.

Figure 5: Published Workflow



3.3 CONTENT TYPES

The CDE is the central platform that houses ALL project documentation, including the following:

- **Graphical Data** (models, drawings, IFC, photographs, video, etc)
- **Non-graphical Data** (schedules, databases, registers etc)
- **Documents** (reports, specifications, contracts, minutes, RFI's, briefs, inspection plans, commissioning certificates, product data sheets, user manuals, etc)

Collectively the above suite of information is called the Project Information Model (PIM) during design and construction phase. Once this information has been handed over, it then becomes the Asset Information Model (AIM). The word "model" in these terms should not be confused with only the 3D model, it is ALL information listed above. The PIM is progressively developed and delivered to KiwiRail through a series of information exchanges at different stages of the project and these exchanges will contain contributions from all parties.

The following points give an overview of the functionality of the CDE with regards to the data to be contained within it:

3.3.1 **Documents**

The CDE is founded on a Microsoft SharePoint environment that will be used to store all project files/data. This element of the CDE includes:

- Document repository with associated libraries relating to the key elements of the project lifecycle and governance being:
    - Management
    - Design
    - Implementation (Construction)
    - Close out / Commissioning
    - Exchange
- Revisioning and document naming
- Metadata including provisioning for document Uniclass classification
- Workflow functionality for review and approval processes to enable promotion of content through the stage gates of WIP, Shared, and Published. This process includes nominated reviewer and approver groups.

3.3.2 **Graphical Data**

The CDE makes use of ESRI's ArcGIS Online platform to provide a 3D geospatial viewer. Models uploaded to Shared, Published, and Archived libraries will be translated (where required) and federated in the ArcGIS viewer. The viewer will provide the following functionality:

- Visualisation of federated models to enable simple walkthrough clash detection (it is expected that more detailed clash detection shall be undertaken using software such as Autodesk Navisworks and Revizto)
- Ability to pull data down to allow collaboration and sharing of information (eg downloading point cloud data for use with design software)
- Viewing of model attribution information
- Basic measurement and sectioning tools
- Hosting of 360º panoramic images

3.3.3 **Non-graphical Data**

In addition to providing functionality to support the delivery of graphical information, the CDE will also provide control for the sharing and publishing of documents, specifications, calculations, and other non-graphical information. Project teams shall be responsible for ensuring up to date information is stored within the CDE.

3.4 CDE LIMITATIONS

While the CDE has been developed to provide sufficient functionality to support the original pilot it is acknowledged that this results in limitations. The use of SharePoint and ArcGIS Online was determined based on the familiarity to the wider KiwiRail business and the cost of licensing.

As the CDE is further developed the limitations will be more clearly defined and where necessary an appropriate workflow will be developed to address the limitation.

3.4.1 Constraints / Size of Models

The purpose of this section is to communicate constraints in the CDE system and any specific IT requirements which will need to be considered during development of the BEP.

- **Model size**

  Individual model sizes shall not exceed 15GB. Where larger file sizes are required these shall be either broken down or tiled. In the case of point cloud data or large files the Azure Blob Storage service will be utilized.

- **Software Types**

  Where practical suppliers shall use interoperability standards, such as IFC, to provide model content however the CDE is capable of consuming content in a wide range if formats.

3.4.2 Information Assurance

It is acknowledged that the integrity of model information that forms part of a contractual transaction represents an area of concern for suppliers. Specifically, "*how do we ensure model data that has been issued for a purpose is not modified/altered thus creating ambiguity over liability*"? To address this issue KiwiRail is investigating the use of the Azure Blockchain Service within the CDE to provide a secure ledger for transactions. It is intended that this will be achieved through a "Published for Transaction" content status.

3.5 REVISIONS

This section outlines the revisioning process as described by the UK annex to ISO19650 (known as BS1192).

Revisions distinguish changes or amendments to a document and are a very common part of information control on projects. Revisions on the CDE are named in accordance with BS1192:2007+A2:2016 using the prescribed fields.

Revision are added by the CDE only (i.e. it is an automated process triggered by workflows and actions in the CDE).

3.5.1 ISO 19650 revision labels

ISO 19650 revision labels are aligned to information container state as follows:

Work in progress (preliminary "P")

A revision number "**P01**" is allocated once a workflow (eg. task team review) is activated within the WIP state. This will remain the revision number if all workflows are approved.

Example P01

The number of workflow revisions are denoted by the 2-digit version number that follow the revision number eg. "P01.**02"**.

Example First workflow version: P01.01, Second workflow version P01.02

If an information container returns to the work in progress state the revision number is incremented eg. "P**02**" and the version number is reset to "**01**".

Example P02.01 etc.

Shared (preliminary “P”)

At the shared state, the version number is dropped from the work in progress revision, leaving only the preliminary prefix and current, zero padded number.

Examples P01.01 → P01 - P01.02 → P01 - P04.05 → P04 etc.

If an information container is rejected in the shared state it will return to the work in progress state and the revision number will increment from the previous work in progress number.

Examples P04 → P05.01

Published (contractual “C”)

For the published state, only padded numbers prefixed with “C” (starting at C01) are applied to published contractual information.

Examples C01, C02, C03, etc.

3.5.2 ISO 19650 revision sequence

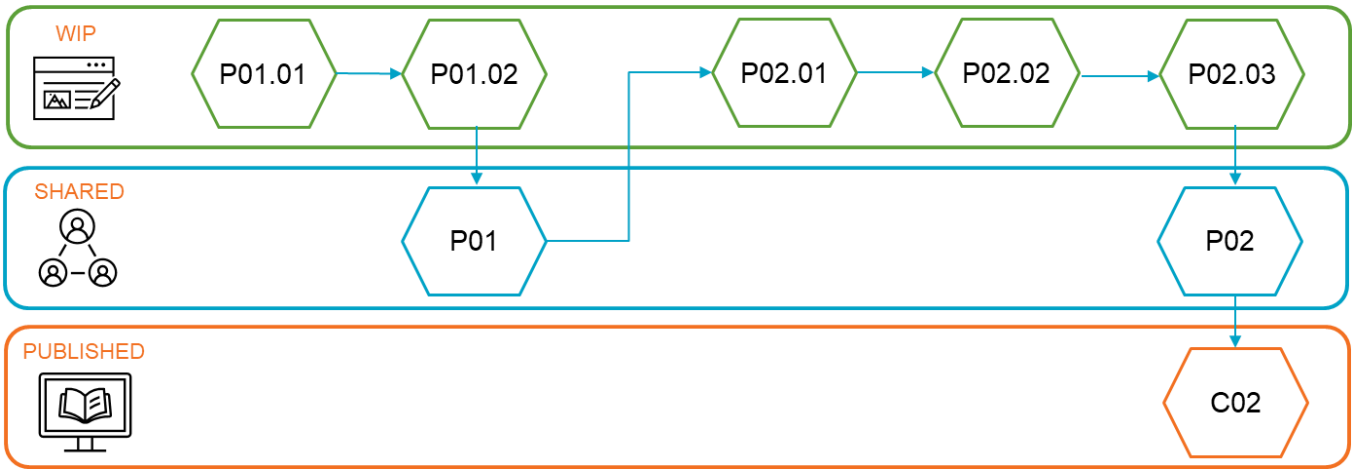
The revision sequence applied to the lifecycles states are defined below:

Table 4: ISO 19650 Revision Sequence

Life cycle state	Work in progress	Shared	Published	Archived
Revision examples	P01.01, P01.02, P02.01..	P01, P02, P03 …	C01, C02, C03 …	No change

The diagram below defines how the revision changes as the information container moves between life cycle states.

Figure 6: ISO 19650 Revision Sequence



4 Project Specific Configuration

Tools are available that allow projects to configure their specific requirements within the broader framework of the CDE structure.

4.1 PROJECT PROVISIONING

The information required for by the Project to provision a site within the CDE are as follows:

- The Programme and Project names
- The Project number (6 digit)
- The Project Phase
- The Project Start and Finish date
- A Project Description
- A relevant photo for the project landing page (2MB limit)
- The Location for GIS data

4.2 PROJECT LEVEL SECURITY AND ROLES

Within each project there are roles that must be defined in order to administer content across its lifecycle. These roles are to be defined by the Programme or Project Manager and are established when provisioning the project site.

4.2.1 Project Owner

The project owner is usually the client Project Director or Project Manager

4.2.2 Content Controller

The content controller roles are able to view all project content and usually consist of the DE Specialists and the Project Document Controller. They have the authority to view information across WIP spaces to help teams resolve issues and can delete and supersede content within various states.

4.2.3 Content Approvers

The content approver roles are those within the project who approve the change of state information workflows and usually consist of the Project Manager, Document Controller and DE Specialists. However, the user can only select one Content Approver for a change of content state workflow.

4.3 PROJECT LEVEL GROUPS

Project sites are structured according to ISO 19650 principles that guide the creation of task teams.

Project members are allocated to a task team. This is a group of individuals that are performing a project task, and are often defined by process or organisation, eg. Design, or the Designer (professional services organisation).

In the current state, a member can only be in one Task Team in the KiwiRail CDE.

4.4 PROJECT LEVEL METADATA

There are four Metadata streams that are customisable in each project, and these are as follows:

- Zone

- Area (there is the option to link a set of areas to a specific zone)
- Asset
- Workstream

We acknowledge that Zone and Area are geographical terms and are not always relevant to all projects. However, the classifications that sit within these can be redefined for project best use.

5 Contract Management & Correspondence

The CDE contains an Exchange module that has been provisioned to enable an auditable trail of correspondence relating to all appointments / information exchanges over the project lifecycle. It is structured in alignment to the task teams configured in the CDE.

There are two tabs within the Exchange Module, the Mail tab and the Documents tab.

5.1.1 Mail Tab

The Mails tab consists of an Inbox and Sent Items, and contain standard email functionality, including New, Reply, Forward etc. There is the functionality to attach documents from the CDE or supporting attachments from outside the CDE.

Audience

A new mail gives parties three audience options to select from, depending on what is relevant to their transmittal:

- Me (a record is only visible to the person sending and the person receiving the exchange)
- Task Team (a record will be visible to the targeted audience and their task teams)
- Project Team (a record is visible to all members on the project)

Type

There are five standard correspondence types available are:

- **General Correspondence** – intended for non-contractual correspondence that needs to be retained against the project.
- **Request for Information** – intended as a formal request under a contract issued to the Principal or Engineer to Contract
- **Contract Advice Notice** – intended as a contractual notification generally issued by the Principal or Engineer to Contract
- **Document Issue** – intended as a transmittal function to simplify the exchange of information.
- **Non-conformance Report** – intended as a format notification relating to non-conforming work.

Filtering

The CDE allows parties to filter on Audience, Type or by Results.

5.1.2 Documents Tab

This is a list of all documents that have been attached to any transmittals and allows for basic filtering by Type, Sent by and Issued on.

5.2 TRANSMITTALS AND SUBMITTALS

5.2.1 Information Output

The primary purpose of the CDE is to support the controlled collation and assurance of project and asset information so it can be relied on by stakeholders and re-used by other systems, it is therefore important the CDE has sufficient functionality to exploit the stored assured data and linked files.

Published project and asset information stored in the CDE shall be available for use by permitted stakeholders for a range of different purposes, subject to security and access permissions.

The CDE shall enable exposure of data for use in other systems eg. asset management systems or facility management systems. This can be through a reliable data integration service or application program interface (API).

Files and Data Download

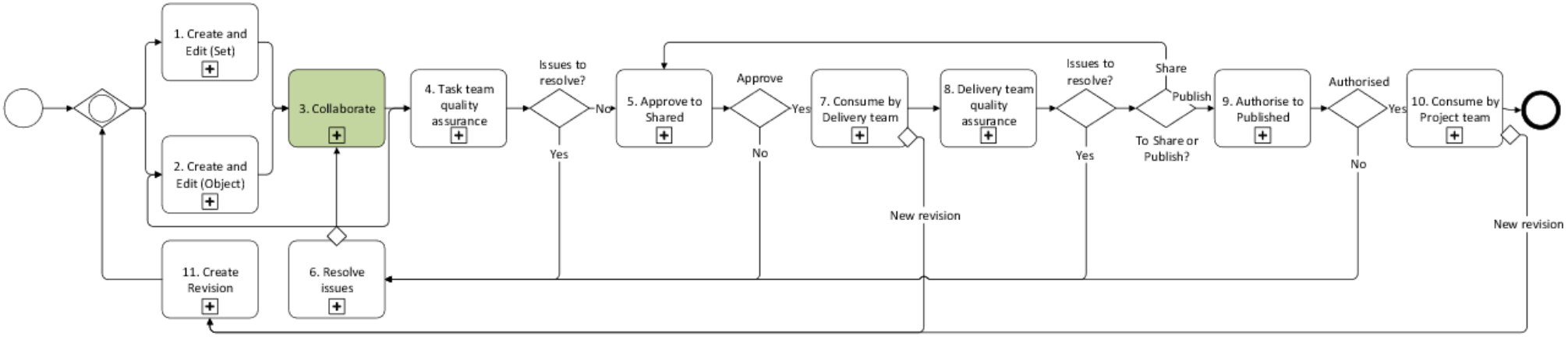
The CDE shall provide suppliers and KiwiRail teams with access to documents, models, and data files to download, subject to full security files and disclosure rules and document marking. Files shall be available to download in bulk. The export/download of files shall be available with applied renaming rules derived from metadata to meet employer naming policies.

Application Program Interfaces

The integration interface shall enable secure web services API connectivity to provide query-able data and linked files from the CDE to appropriate connected authorised employer enterprise systems.

The queries shall be created and named in the CDE by an appropriate level user, and separately called by name only from the external party or system.

6 Appendix 1 – CDE Detailed Information Flow




KiwiRail