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Revision No	Date	Main content	Reason	Revised by
H5	2025-04-27	1, replace 'principle' with 'principal' 2, category F2 is changed from 'yes' to 'no' 3,	comments from CFIHOS	yi sun

Software submission identifier: PIMCenter 4.X (current version)

Company name(s): DMS Co., Ltd

Overview：

- The DMS plant lifecycle software series includes a platform called PIMCenter and a series of software installed on the platform
  - PIMCenter PPM (Project Performance Management)
  - PIMCenter MDC (Model & Document Collaboration)
  - PIMCenter Handover
  - PIMCenter APM
  - PIMCenter Insight
  - PIMCenter Data Integration
  - PIMCenter IDC
  - Etc.

  These software solutions are designed to work together, providing a comprehensive platform for managing the entire lifecycle of industrial assets, from project planning and execution to operations and maintenance, with a strong emphasis on data integrity and digital transformation. The PIMCenter 4.X series leverages advanced technologies such as 3D visualization, cloud collaboration, and data analytics to support efficient and effective asset management in various industrial sectors.

- The key features of platform PIMCenter
  - Cross-Platform Visualization: With eZWalker, it offers a visualization engine compatible with Web and mobile, enhancing immersive VR experiences.
  - Data Management: Tools for ETL processes align with engineering project data governance requirements.
  - Collaboration and Document Control: Fosters real-time collaboration on documents and models, keeping project info current.
  - Cloud Collaboration: PIMCenter MDC provides a centralized cloud platform for efficient document sharing and model review among project teams.
  - Digital Handover: Supports global and local standards for asset transition, ensuring data and documents are integrated.
  - 3D Dashboard: PIMCenter Insight offers a dashboard for operational insights by integrating various data streams.
  - AI-Powered Validation: PIMCenter IDC uses AI to recognize and analyze P&ID data, automating instrument index creation and minimizing errors.

Conformance:

No.	Support or not	Note
A1	Yes	
A2	Yes	
A3	Yes	
A4	Yes	
B1	Yes	
B2	Yes	
B3	Yes	
C1	Yes	
C2	Yes	
D1	Yes	
D2	Yes	
D3	Yes	
D4	Yes	
E1	Not	Although our software family supports relevant information transmission, this is in the owner's management scopes. Our project regulations do not include this part, and it is difficult to collect relevant instances from the owner.
E2	Partial	The same with E1
F1	Not	The same with E1
F2	Not	The same with E1

Instructions for Preparation

Basis of preparation

1. DMS Project implementation specifications

The DMS-SZXM series documents serve as the foundational guidelines for the execution of all domestic projects within DMS Company. These digital handover specifications are tailored for specific projects through consultations with the principal and relevant stakeholders, establishing regulations for project implementation. It's important to note that while this set of specifications is project-implementation-based and not directly derived from CFIHOS, a compliance check against CFIHOS has revealed that most of its requirements are mirrored in the corresponding sections of DMS regulations. This alignment with CFIHOS will be further refined to fully adhere to the CFIHOS V2.0 data model, templates, and associated guidance documents. The goal is to integrate the latest advancements and technologies from the CFIHOS Association, such as ontology, to enhance DMS users' experience. This integration aims to support principal in achieving optimal information interpretability, sustainable development strategies, and economic benefits.

DMS-SZHXM-01Project Digital Handover Strategy
DMS-SZHXM-02Project Digital Handover Breakdown Structure and class Library Definiti...
DMS-SZHXM-03Project Engineering Digital Handover Coding Regulations
DMS-SZHXM-04Project Engineering Digital Handover Data Dictionary
DMS-SZHXM-05Project Engineering Digital Handover Content Regulations
DMS-SZHXM-06Project Procurement Digital Handover Content Regulations
DMS-SZHXM-07Project Material Supplier Digital Handover Content Regulations
DMS-SZHXM-08Project Construction Digital Handover Content Regulations
DMS-SZHXM-09Project commission and Completion Digital Handover Content Regulat...
DMS-SZHXM-10Project Digital Handover Management Regulations
DMS-SZHXM-11Project Digital Handover Implementation Plan
DMS-SZHXM-12Project Digital Handover Quality Management Plan
DMS-SZHXM-13Project Digital Handover Acceptance Plan
DMS-SZHXM-14Project digital handover Document Control Procedure Description
DMS-SZHXM-153D model and intelligent PID conversion execution instructions
02#Appendix 1 Classification and Attribute Table of Plant Objects
06#Attachment 1 Detailed List of Digital Handover Status of XX Material Suppliers
10#Attachment 1 Organizational Structure Information Table
14#Attachment 1 Revision Opinion Form for Regulations on Digital Handover of XX Pro...
14#Attachment 2 List of Modifications to the Regulations for Digital Handover of XX Pr...

Figure-29 DMS Project implementation specifications

2.   Attachment 1 - TOC - Final Documents EPCC

Final deliverable list for an XXX project

3.   XXX Principal brown & green field digital handover specification
4.   Statement of Software Conformance to CFIHOS 1.5.1 RevD

Others

1.   The parts expressed in italics in the text are the parts quoted in the original text from DMS-SZXM series documents.
2.   Abbreviations
     a)   IPMC (Information Project Management Contracting): This term designates the contractor who is responsible for developing, advising on, or implementing digital Handover regulations within the project management framework.

1. Phase A – Project Standard Preparation

1.1. 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, DMS stores various versions of software in PIMCenter, including previous versions of CFIHOS and some industry standards in China. Project managers can choose different standards according to the contract provisions, and thus select different standard data models and RDL.
- Software: PIMCenter 4.X
- Evidence:

1.1.1. URL

URL: http://192.168.10.122/login
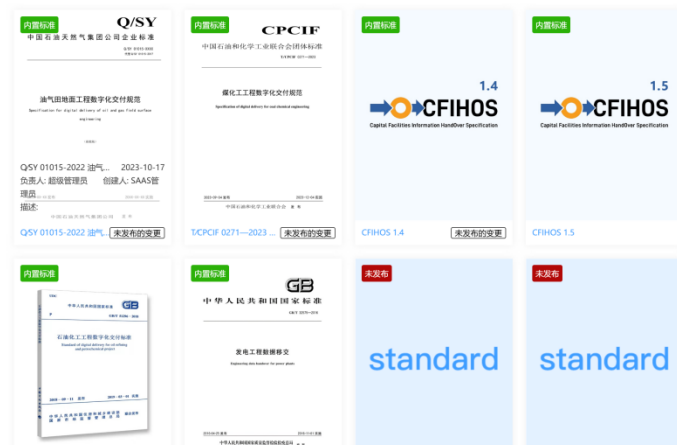
Figure-01 Standards storage

1.1.1.1. Standard before CFIHOS V.1.5.1 is not applied in pratical.

1.1.2. Show how the current release of the CFIHOS standard can be imported into the software.

DMS Utilizes RDL in PIMCenter 4.X, Please refer the following videos.

1.1.2.1. 20241128_CFIHOS A1 (ENTITY)

1.1.2.2. 20241128_CFIHOS A1 (Tag class attributes)

1.1.2.3. Data model please refer to itself.

1.1.3. Show how the imported CFIHOS standard is represented and managed.

All versions of CFIHOS standards and their corresponding RDL are stored in PIMCenter. Our ideal is that when you select a version of CFIHOS, you select the RDL and related files carried by the version.

The purpose is to meet the needs of the principals and use the CFIHOS version required by the principals as the basis for project execution.

After the version upgrade, the process of migrating data model instances to DMS is also being explored, and the latest results will be introduced in another article.

Refer to Figure-01 for details

1.1.4. Show how data in the CFIHOS standard can be grouped into contract scenario templates.

Taking the PBS structure of an EPC project as an example, the presentation in the database of DMS is shown in Figure-02, and the project execution regulations of DMS are shown in Figure-03, Figure-04 shows the data model from CFIHOS about PBS.

Figure-02 PBS in DMS PIMCenter

Figure-03 PBS in DMS-SZHXM-02Project Digital Handover Breakdown Structure and class Library Definition
(project implement plan)
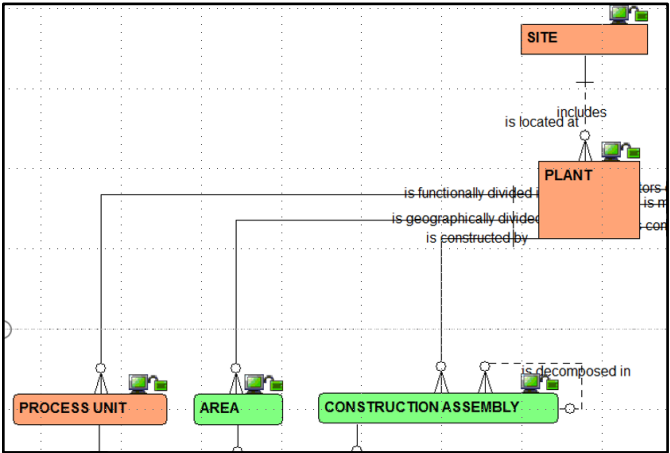
Figure-04 PBS

1.1.5. Show how future releases of the CFIHOS standard might be imported, assuming the same data formats but potentially with additional detail (e.g. tag / equipment classes or properties) or entities (e.g. flexible support for new concepts).

1.1.2.4. DMS is currently using CFIHOS V1.5.1 to establish the company's software platform PIMCenter, and the content involved in the V2.0 upgrade will be explained one by one.

1.1.2.5. Addition of Entities

According to FR 73, the following entities have been added

CFIHOS unique ID	section	name
CFIHOS-00000149	A.3.15	equipment model part
CFIHOS-00000150	A.3.16	spare part
CFIHOS-00000151	A.3.17	kit
CFIHOS-00000152	A.3.19	special tool
CFIHOS-00000153	A.3.20	consumable
CFIHOS-00000154	A.3.21	kit component
CFIHOS-00000155	A.8.24	model part type
CFIHOS-00000156	A.9.1	spare part interchangeability record
CFIHOS-00000157	A.9.2	spare part interchangeability record
CFIHOS-00000158	A.9.3	spare part interchangeability record
CFIHOS-00000159	A.9.4	spare part interchangeability record

1.1.2.6. Figure-05 new added entities in V2.0

1.1.6. Show how multiple releases of the CFIHOS standard can be stored.

Please refer Figure-01

1.1.7. Show how the differences between different releases of the CFIHOS standard can be understood.

1.1.2.7. DMS Company's Internal CFIHOS version updating Guide

- Summary after annual meeting

    After each new version of CFIHOS is released, DMS company will promptly summarize and promote it internally to system administrators and developers. Detail, please refers

    - ✓ CFIHOS 2024 annual summary-1.ppt
    - ✓ CFIHOS V1.5.1 updating explanation.doc
- Version with RDL

    Each version provides its corresponding RDL, details please refer the following video: 20241202_CFIHOS A1 (Version with RDL).mp4

1.2. Category-A2 Define Project Standard from CFIHOS Template

Supported: Yes

Software: PIMCenter 4.X

Evidence:

1.2.1. Show how organization standards can be defined based on a release of the CFIHOS standard (potentially with different ones for different kinds of projects).

1.2.1.1. Project Standards

All digital projects of DMS are executed according to the project execution outline, and the details of each project are not exactly the same according to the contract requirements, but they all comply with the series of regulations on the content of the event

- ✓ *DMS-SZHXM-01Project Digital Handover Strategy.docx*
- ✓ *DMS-SZHXM-02Project Digital Handover Breakdown Structure and class Library Definition.docx*
- ✓ *DMS-SZHXM-03Project Engineering Digital Handover Coding Regulations.docx*
- ✓ *DMS-SZHXM-04Project Engineering Digital Handover Data Dictionary.docx*
- ✓ *DMS-SZHXM-05Project Engineering Digital Handover Content Regulations.docx*
- ✓ *DMS-SZHXM-06Project Procurement Digital Handover Content Regulations.docx*
- ✓ *DMS-SZHXM-07Project Material Supplier Digital Handover Content Regulations.docx*
- ✓ *DMS-SZHXM-08Project Construction Digital Handover Content Regulations.docx*
- ✓ *DMS-SZHXM-09Project commission and Completion Digital Handover Content Regulations.docx*
- ✓ *DMS-SZHXM-10Project Digital Handover Management Regulations.docx*
- ✓ *DMS-SZHXM-11Project Digital Handover Implementation Plan.docx*
- ✓ *DMS-SZHXM-12Project Digital Handover Quality Management Plan.docx*
- ✓ *DMS-SZHXM-13Project Digital Handover Acceptance Plan.docx*
- ✓ *DMS-SZHXM-14Project digital handover Document Control Procedure Description.docx*

1.2.1.2. Some details

DMS regulation for digital handover	Related chapters	Details
DMS-SZHXM-01 Project Digital handover Strategy	Section 7: Handover Content	This section outlines the content of digital handover, which includes plant objects, engineering data, engineering documents, engineering models, and associations. These elements can be tailored to different project types based on the CFIHOS standard, ensuring that the Handover content is aligned with the specific requirements of each project type.
DMS-SZHXM-02 Project Digital handover Breakdown Structure and Library Definition	Section 3: Plant Breakdown Structure (PBS) Definition	The PBS definition provides a hierarchical structure for organizing and managing various aspects of a capital facility project. This structure can be adapted to different project types by defining specific breakdowns that align with the CFIHOS standard, thus creating a consistent framework for managing and delivering project data.
DMS-SZHXM-03 Project Engineering Digital Handover Coding Regulations	Section 4: Coding Scope	This section establishes unique identifiers for various elements within the project, which is crucial for information classification and retrieval in contract scenario templates. The coding regulations can be defined based on the CFIHOS standard to ensure consistency across different project types.
DMS-SZHXM-04 Project Engineering Digital Handover Data Dictionary	Section 3: Data Dictionary	The data dictionary includes terms and definitions used for coding and defining project data. By aligning the data dictionary with the CFIHOS standard, organizations can ensure that data is consistently defined and categorized, which is essential for different project types.
DMS-SZHXM-05 Project Design Digital handover Content Regulations	Appendix E (Informative) Construction Drawing Design Document Handover Content	This section details the document Handover requirements for the construction drawing design phase. By referencing the CFIHOS standard, organizations can define specific document Handover standards for different project types, ensuring that deliverables meet contractual requirements.
DMS-SZHXM-06 Project Procurement Digital Handover Content Regulations	Appendix A (Informative Appendix) Procurement Document Handover List	This provides a list of document deliveries for the procurement phase. By adhering to the CFIHOS standard, organizations can create or update contract scenario templates to reflect the specific requirements of different project types during the procurement phase.
DMS-SZHXM-07 Material Supplier Digital Handover Content Regulations	Appendix A (Informative Appendix) Supplier Handover Content List	This lists the content that suppliers need to deliver, which can be integrated into contract scenario templates to ensure compliance with the CFIHOS standard for different project types.

DMS-SZHXM-08 Project Construction Digital Handover Content Regulations	Appendix A (Informative Appendix) Construction Phase Document Handover List	This provides a list of document deliveries for the construction phase. By following the CFIHOS standard, organizations can create or update contract scenario templates to reflect the specific requirements of different project types during the construction phase.
DMS-SZHXM-09 Project commission and Completion Digital handover Content Regulations	Appendix A (Informative Appendix) Trial Operation and Completion Document Handover List	This provides the document Handover requirements for the commission and completion phases. By integrating the CFIHOS standard, organizations can ensure that deliverables in these phases meet contractual requirements for different project types.
DMS-SZHXM-10 Project Digital handover Management Regulations	Section 7: Management Content	This section describes the processes for collecting and uploading project digital information. By aligning these processes with the CFIHOS standard, organizations can construct management processes in contract scenario templates that are suitable for different project types.

Table-01 Evidences

1.2.2. Show how a project configuration can be based on a release of the CFIHOS standard or an existing organizational standard.

After determining the standards to be used for the project based on the project contract, such as the corresponding CFIHOS standards or principal standards, the system will select practical entities, entity attributes, and entity relationships based on the data model of the corresponding standards.

Details, please refer 20241203_CFIHOS A2 (Project configure)

1.2.3. Show how the plant breakdown structure can be defined.

There are two ways to establish the PBS structure of the project. In the previous video, we demonstrated manually creating a Plant under SITE. In this video, we demonstrate how to batch create process units under Plant using import and export functions. Please refer to the video for details:

20241203_CFIHOS A2 (PBS)

1.2.4. Show how RDL items can be added for the project (e.g. new tag classes, additional properties for equipment).

Because the V1.5.1 version of CFIHOS has already established all relevant content in the PIMCenter of DMS, such as entities, entity attributes, and relationships between entities, in order to avoid contaminating the content of this version, DMS needs to create a new CFIHOS V2.0 project, migrate the already built content of V1.5.1, and make modifications based on it. This part of the work has just begun, so relevant evidence cannot be provided.

Figure-06 new environment for CFIHOS V2.0

1.2.5. Show how RDL items can be removed for the project (e.g. remove subsurface tag classes for chemical plants to avoid EPC confusion).

Hold for the same reason above

1.2.6. Show how the project standard can specify local terminology for standard items.

From Figures 7 and 8, it can be seen that DMS's equipment classification system uses standard terminology related to pumps based on Chinese expressions. For the convenience of project execution, this section is expressed in both languages.

泵送设备 Pumping equipment	泵装置 Pumping unit
	离心泵（液下泵） Centrifugal pump
	旋转容积式泵 Rotating displacement pumps
	计量、加药泵 Metering, dosing pump
	螺旋泵 Screw pump
	Rod pump 杆式泵
	往复泵（柱塞泵） Reciprocating pump
	电动潜水泵 Electrical Submersible pump
	真空泵 Vacuum pump

Figure-07 Classification of pumps in the regulations of the DMS project

parent tag class name	tag class name	tag class definition
pump	eductor	A form of suction pump; a device using a high pressure jet of water to create partial vacuum at an intake opening to draw liquid from a sump.
pump	centrifugal pump	A dynamic pump that contains impellers provided with vanes to generate centrifugal force to achieve the required pressure head.
pump	reciprocating pump	A positive displacement pump which contains a displacing element intended to be moved in a reciprocating movement to exert pressure on a fluid, typically moving within a cylindrical space.
pump	rotary pump	A positive displacement pump that consists of a chamber containing gears, cams, screws, vanes, plungers or similar elements actuated by relative rotation of the drive shaft or casing and which has no separate inlet and outlet valves.

Figure-08 CFIHOS tag classification in V1.5.1

1.3. Category A3 – Support ITT & Contract

- Supported: Yes,
  - ✓ DMS mentions this alignment in the DMS-SZHXM-11Project Digital Handover Implementation Plan, paragraph 2.2.1.2.2. General procedure

    "During the project execution, the principal departments, engineering company, procurement, construction, supervision, testing, and material suppliers shall continuously summarize the problems and supplementary contents of the unified regulations for digital handover built into the management platform during the implementation of digital handover, and guide the revision and improvement of standards"

  - ✓ In the DMS-SZHXM-10Project Digital Handover Management Regulations, paragraph 6 Coordination mechanism
  - ✓

    Simplified process for project digital handover coordination, led by the IPMC authorized by the principal:

    a) Negotiation: IPMC assists in clarifying digital requirements during contract talks.
    b) Post-Contract: IPMC briefs contractors on digital regulations for compliance.
    c) Implementation: Platform vendor reviews contractor files and coordinates software use.
    d) Handover: Contractors address feedback on uploaded documents from the principal and data unit.
    e) Queries: Formal submissions via project email led to written responses from the data unit.
    f) Communication: Meetings or correspondence determine communication methods, with minutes signed for action tracking.

- Software: PIMCenter 4.X
- Evidence:

1.3.1. Show how a work context is prepared for managing the contract (e.g. storing tender documents in a document management system, adding an entry in a deliverables-tracking application).

From Figure-09, in the final document list of this project, we can see the location of the contract and the contract award documents, and display the status of document tracking.

Figure-09 XXX project final document list

1.3.2. Show how the information requirements for the contract are specified (e.g. method of communication, frequency of handovers, timing for different sets of expected deliverables).

1.3.2.1. Method of communication

DMS-SZHXM-10Project Digital Handover Management Regulations, paragraph 6 Coordination mechanism:

The overall coordination of digital handover work for this project is entrusted to the IPMC authorized by the principal. All parties involved in the digital handover work must submit information, documents, and correspondence to the principal and the IPMC for review before forwarding to the relevant parties.

The main communication nodes for the digital handover work in this project are as follows:

- Contract Negotiation Phase: During the contract negotiation phase between the principal and the contractor, the IPMC will assist the principal in clarifying and explaining the digital handover requirements to all contractors.

- Post-Contract Signing: After the contract is signed, the IPMC will conduct training sessions to communicate the standardized digital handover regulations to all contractors. This ensures that contractors accurately understand and smoothly execute the relevant digital handover requirements.

- Implementation Phase: During the implementation phase, the digital handover platform provider will review the test documents submitted by the contractors and provide feedback. They will also facilitate communication and coordination regarding the various software and output files used in the contractors' digital handover work.

- Handover Phase: In the Handover phase, contractors will upload the digital handover documents to the digital handover management platform. They will communicate and coordinate based on their self-inspection results or feedback from the principal and the IPMC.

- Ongoing Communication: In addition to the above key nodes, if any party involved in the digital handover work has questions or comments during execution, they can submit them at any time through formal channels. This should be done in writing (signed scanned copies; if editable documents are attached, they must be included in the signed scanned version) via the project email by the authorized project representative or liaison. After the principal's review, the IPMC will formally notify or respond to all parties. Upon receiving the written notification, all parties should respond promptly or return the acknowledgment documents.

Communication Formats: The communication methods for the above interactions can be determined through discussions among the relevantstakeholders, including face-to-face meetings, conference calls, or email correspondence. If meetings are held, all participants must sign formal meeting minutes. All minutes should include the responsiblestakeholders and execution timelines in the follow-up records. Each responsible party must diligently implement the resolutions or topics discussed during the meeting, with follow-up conducted by the project engineers (or equivalent positions) of each responsible party, while the IPMC monitors the implementation.:

1.3.2.2. Frequency of handovers

DMS-SZHXM-10Project Digital Handover Management Regulations, paragraph 8.1.2 Frequency of Information handover

a. Pre-Submission

In accordance with the design progress requirements for each unit, a pre-submission of all data for that unit will occur when the progress reaches 30%. Upon receiving the pre-submitted data, the IPMC will conduct checks and reviews to assess the compliance, completeness, accuracy, consistency, and relevance of the data. The IPMC will then provide feedback on the review findings to allstakeholders involved for necessary corrections, requesting that they resubmit the rectified results. The data received during the pre-submission phase will only be used for testing and verification purposes and will not be stored or managed as officially delivered data.

b. Official Handover

Following the design plan (or procurement plan, construction plan) for each unit, all technical documentation reflecting the final technical status of the unit must be uploaded once the progress reaches 100%. After receiving the officially delivered data, the IPMC will perform a comprehensive inspection and review, returning the review findings to allstakeholders for corrections and requesting that they resubmit the rectified results. Once the data passes inspection, it will be archived and officially delivered to the principal.

1.3.2.3. Timing for different sets of expected deliverables

DMS-SZHXM-06Project Procurement Digital Handover Content Regulations, paragraph 7 handover time (here refer the vendor document):

7.1. Electronic Documents

Vendors must upload documents and lists to the digital platform within 2 weeks of procurement completion. Any non-compliant documents must be re-uploaded within 3 days of receiving a rectification notice. Once verified by the IPMC, compliant parts are to be handed over and sealed within one week, or within 2 days for re-verification parts.

7.2. Related Relationships (Tag vs vendor document)

Vendors must upload the document association sheet (Tag vs vendor document) to the digital platform and re-upload any non-compliant parts within 2 days of receiving a rectification notice from the IPMC.

1.3.3. Show a list of companies (CFIHOS entity) that are potential bidders for this contract.
Hold

1.3.4. Show how the ITT is communicated with the potential bidders.
Hold

1.3.5. Show how bidders can get clarification on tender details (e.g. using a Request for Information process).
Hold

We have not saved the process documents for technical clarification as bidders and principals for digital handover, but as the project information management contractor for the project, we have specific provisions in the project execution regulations.

1.3.6. Show how bids can be submitted or stored.

Hold

1.4. Category A 4 – Communicate Project Standard

- Supported: Yes,
- Software: PIMCenter 4.X
- Evidence:

1.4.1. Show how a contract is assigned to the successful contractor.
Hold

1.4.2. Show how the final set of contractual information (e.g. project RDL, design information) is shared with the successful contractor.
Hold

1.4.3. Show how dates are recorded for tracking the expected deliverables (by principal / contractor).

A. DMS-SZHXM-08Project Construction Digital Handover Content Regulations，paragraph 7 - Information handover timeline

During the construction phase, all participants' document controllers must enter the data from construction documents, supervision documents, and testing documents into the project comprehensive management system within one week of completing the construction activities, in accordance with the current project progress. For any data that does not meet the input requirements of the project management system, rectification must be completed within three days after the digital supervision issues a correction notice. Additionally, the online filing of the project must be finalized one week prior to acceptance.

B. The evidence in project

2. Contractor System Setup

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.

2.1. Category B1 – Implement Project Standard in Creation Tools

- Supported: Yes,
- Software: PIMCenter 4.X
- Evidence:

2.1.1. Show how the contractor can use relevant parts of the project standard (e.g. discipline-document type combinations) to configure how documents are authored.

In the CFIHOS data model, the attributes of disciplines document types are shown in the figure

DISCIPLINE DOCUMENT TYPE	
🖳 Discipline code (FK)	NOT NULL
🖳 Document type short code (FK)	NOT NULL
◇ Discipline document type short code	NOT NULL
🖳 Asset type reference (FK)	NOT NULL
🖳 Representation type (FK)	NOT NULL
🖳 Review type (FK)	NULL
◇ Discipline document type comment	NULL
🖳 Native document format (FK)	NULL
🖳 Native file delivery timing (FK)	NOT NULL
🖳 Authenticated record format (FK)	NULL
◇ Hardcopy document required	NULL
◇ Translated document required	NULL
◇ CFIHOS unique code	NOT NULL

Discipline document type short code is a "calculated" attribute, resulting from the concatenation of the discipline code and the document type short code. It is used as an alternate identifier of the discipline document type entity, the one that cascade in other entities like the document master.

Figure-10 CFIHOS data model about discipline document type

In the DMS digital handover regulation, discipline document code consists of the following 7 parts, including discipline code and document type short code, which is completely consistent with CFIHOS regulations

XJCQQLCC20011	-	CP	-	GPP1	-	1581	-	PR02	-	DWG	-	08	R0
Project No.		Stage		Area		Plant / Unit		Discipline code		Document code		Sequences No.	version
①		②		③		④		⑤		⑥		⑦	

Figure-11 Document code

2.1.2. Show how the contractor can use relevant parts of the project standard (e.g. tag classes) to configure how data are authored.

In the CFIHOS data model, taking TAG class as an example, data authored integrates data from various sources through the attribute definitions of TAG class.
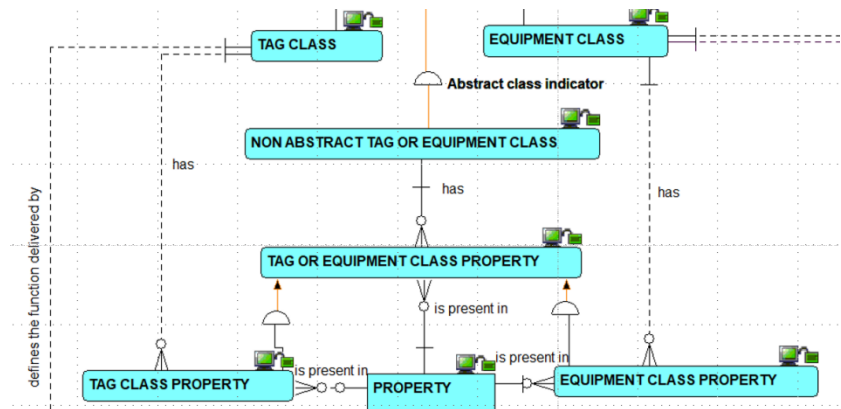
Figure-12 CFIHOS tag class vs tag class property data model

Taking the centrifugal pump in CFIHOS as an example, we have defined the following properties (incomplete) in the tag class properties to meet the needs of engineering, procurement, manufacturing, and later operation and maintenance

tag class name	tag property name
centrifugal pump	chloride concentration
centrifugal pump	corrosive liquid
centrifugal pump	density
centrifugal pump	design specification
centrifugal pump	driver type
centrifugal pump	erosive liquid
centrifugal pump	explosion protection gas group
centrifugal pump	explosion protection temperature class
centrifugal pump	explosion protection zone
centrifugal pump	explosion rated item
centrifugal pump	fluid name
centrifugal pump	H2S concentration
centrifugal pump	immersed
centrifugal pump	insulation class
centrifugal pump	liquid hazardous category
centrifugal pump	liquid name
centrifugal pump	lower limit ambient operating temperature
centrifugal pump	lower limit design temperature
centrifugal pump	lower limit operating inlet pressure
centrifugal pump	lower limit operating outlet pressure
centrifugal pump	lower limit operating temperature
centrifugal pump	lower limit operating volume flow rate
centrifugal pump	net positive suction head available
centrifugal pump	normal operating differential pressure
centrifugal pump	normal operating dynamic viscosity
centrifugal pump	normal operating inlet pressure
centrifugal pump	normal operating inlet temperature
centrifugal pump	normal operating outlet pressure
centrifugal pump	normal operating specific gravity
centrifugal pump	normal operating temperature
centrifugal pump	normal operating vapour pressure
centrifugal pump	normal operating volume flow rate
centrifugal pump	normal volume flow rate
centrifugal pump	operation continuous intermittent
centrifugal pump	operation single/parallel

Figure-13 CFIHOS centrifugal pump property (Partial Content)

In the project regulations of DMS China, the equipment classification is not completely consistent with CFIHOS

Tag Class and Attribute Table						
Hierarchical level			Tag class	Properties table name	Description	Remarks
1st	2nd	3rd				
C01			Equipement			with sub-class
	C01-08		Pump			
		C01-08-01	power-driven pump	C01-08-01动力泵	Mainly including: centrifugal pump, axial flow pump, vortex pump	
		C01-08-02	Positive displacement pump	C01-08-02容积泵	Mainly including: reciprocating pump, rotary pump	

Figure-14 DMS equipment classification and centrifugal pump property

In the project regulations of DMS China, most of the centrifugal pump's properties is belong to the CFIHOS properties set.

centrifugal pump	type
centrifugal pump	model
centrifugal pump	Transport medium
centrifugal pump	Solid content
centrifugal pump	Shell material
centrifugal pump	Impeller material
centrifugal pump	Pump shaft material
centrifugal pump	Mechanical seal form of pump
centrifugal pump	Pump mechanical seal manufacturer
centrifugal pump	Radial bearing type
centrifugal pump	Number of radial bearings
centrifugal pump	Type of thrust bearing
centrifugal pump	Number of thrust bearings
centrifugal pump	Lubrication method
centrifugal pump	Drive mode
centrifugal pump	Design unit
centrifugal pump	Factory number
centrifugal pump	Medium density
centrifugal pump	Density of the medium under inlet conditions
centrifugal pump	Viscosity of the medium under inlet conditions
centrifugal pump	Inlet temperature
centrifugal pump	Vaporization pressure of the medium under inlet conditions
centrifugal pump	Inlet pressure
centrifugal pump	Export pressure
centrifugal pump	lift
centrifugal pump	Normal traffic
centrifugal pump	Effective power
centrifugal pump	Rated power
centrifugal pump	efficiency
centrifugal pump	Inhalation specific speed
centrifugal pump	Maximum allowable noise
centrifugal pump	Motor power
centrifugal pump	motor speed
centrifugal pump	Motor voltage
centrifugal pump	Cavitation allowance

Figure-15 DMS centrifugal pump property

2.2. Category B2 – Implement Project Standard in Gathering and Aggregation Tools

- Supported: Yes,
- Software: PIMCenter 4.X
- Evidence:

2.2.1. Show how the contractor can configure features for processing information collected from other internal systems to make it conform to the project standard.

Here, I take the data flow between the Engineering Information Center and the Intelligent P&ID system as an example to illustrate how Intelligent P&ID complies with project standards.

In the XXX brown and green field project digital handover regulation, the client used the smart P&ID as a discipline design software and plant information center as an integrated platform. Here in below are the details:

Following the XXX Project Centrifugal Pump Attribute Table, the information resource marked with E should be the necessary properties from the Smart P&ID related plant object.

Property Group	NO.	Property	UOM	information resource	Source standard /Basis of Documents
principal parameters	1	Flow regulation form	-	E	Extended properties
	2	Flow regulation range	-	E	Extended properties
	3	Shaft power	kW	P	Extended properties
	4	Mechanical efficiency	-	P	Extended properties
	5	Speed range	r/min	P	Extended properties
	6	Design pressure	MPa	E	Q/SY 01015_sheet_C.52
	7	Design displacement	Nm3/d	E	Extended properties
	8	Inlet pressure	MPa	E	Q/SY 01015_sheet_C.52
	9	Outlet pressure	MPa	E	Q/SY 01015_sheet_C.52
	10	Impeller diameter	mm	P	Extended properties
	11	Compression level	-	P	Extended properties
	12	Inlet and outlet pipe diameter	mm	E	Extended properties
	13	Unit external dimensions	m	P	Extended properties
	14	Unit weight	t	P	Extended properties
	15	transmission ratio	-	P	Extended properties
	16	Gearbox power level	kW	P	Extended properties
	17	Motor model	-	P	Extended properties
	18	Motor type	-	P	Extended properties
	19	Rated power (kW)	kW	P	Q/SY 01015_sheet_C.52
	20	Rated voltage	kV	P	Extended properties
	21	Rated current	A	P	Q/SY 01015_sheet_C.52
	22	speed	-	P	Q/SY 01015_sheet_C.52
	23	Motor efficiency	-	P	Extended properties
	24	frequency	Hz	P	Q/SY 01015_sheet_C.52
	25	Motor weight	t	P	Extended properties
	26	Cable specifications and models	-	P	Extended properties
	27	Motor manufacturer	-	P	Extended properties
	28	Motor manufacturing date	-	P	Extended properties
	29	Motor level	-	P	Q/SY 01015_sheet_C.52
	30	Explosion proof grade	-	E	Q/SY 01015_sheet_C.52
	31	Explosion proof certificate	-	P	Q/SY 01015_sheet_C.52
	32	Protection level	-	E	Q/SY 01015_sheet_C.52

Figure-16 XXX Project Centrifugal Pump Attribute Table

In Appendix F of the same regulations, which is the handover requirement of the Piping and Instrument Diagram (P&ID), there is a dedicated paragraph about the attribute input requirements for equipment in P&ID

F.5.2.2 Equipment property

The property, property group, and unit of measurement (UOM) that pipelines, equipment, and instruments in P&ID should possess are specified in the "XXX brown and green field project digital handover regulation", where mandatory fields indicate the attributes that must be entered in SPP&ID.

2.2.2. Show how the contractor can configure features for processing information collected from external information suppliers (e.g. subcontractors, vendors) to make it conform to the project standard.

According to the regulations for digital handover of DMS projects, vendors or manufacturers should provide structured and unstructured information, including equipment properties sheets and other related documents.

2.2.2.1. Property

Please refer to document Figure-16 XXX Project Centrifugal Pump Attribute Table, which indicates that the attribute source with "P" are provided by the manufacturer.

2.2.2.2. Vendor Document

According to DMS-SZHXM-06 Project Procurement Digital Handover Content Regulations, vendors should provide vendor documents as specified in the table below (partial)

No.	Document name	Format	Remarks
1	Equipment and material factory release form	PDF	Option
2	Delivery notice	PDF	Mandatory
3	Final assembly packing list	PDF	Option
4	Packing list	PDF	Mandatory
5	Cover of Product Quality Certificate	PDF	Option
6	Catalog of Product Quality Certificates	PDF	
7	Product Qualification Certificate	PDF	Mandatory
8	Pump Performance Test Record	PDF	Mandatory
9	Pump body hydrostatic test report	PDF	Mandatory
10	Dynamic/Static Balance Test Report	PDF	Mandatory
11	Appearance Inspection Record	PDF	Option
12	Operation test record	PDF	Option
13	Pump cavitation test record	PDF	Option
14	Measurement Report on Vibration and Noise of Pump Products	PDF	Option
15	Main Material Composition Inspection Report	PDF	Option
16	Axis Composition Report	PDF	Option
17	Mechanical Performance Test Report	PDF	Option
18	Pump foundation diagram	PDF	Mandatory
19	Pump section diagram	PDF	Mandatory
20	performance curve	PDF	Mandatory
21	Sealing certificate	PDF	Mandatory
22	Sealing profile diagram	PDF	Option
23	Motor certificate of conformity	PDF	Mandatory
24	Motor outline drawing	PDF	Mandatory
25	Pump User Manual	PDF	Mandatory
26	Sealed user manual	PDF	Option
27	Explosion diagram (compressor)	PDF	Option

Figure-17 DMS-SZHXM-07Project Material Supplier Digital Handover Content Regulations -Centrifugal Pump vendor document list

2.2.3. Show how the contractor can configure features for bringing together information collected from different sources.

Taking the attributes of equipment as an example, the digital handover regulations of DMS define different sources of data, （E-engineering，P-procurement（vendor）and C-Construction）.

Details, please refer Figure-16 XXX Project Centrifugal Pump Attribute Table

To summarize, during the project execution, DMS will provide different requirements to different stakeholders based on project regulations around the plant object, and the corresponding organization will input the information generated according to the requirements.

2.3. Category B3 – Implement Project Standard in Validation Tools

- Supported: Yes,
- Software: PIMCenter 4.X
- Evidence:

2.3.1. Show how the contractor can configure features for doing a quality check on the processed information (including tags, equipment, documents and relationships) before it is transferred to the principal.

Before delivering to principal, DMS company ensures the quality of project information Handover through the following 5 key quality control steps.

2.3.1.1. Quality Planning:

Develop detailed quality management objectives and processes in accordance with the "Project Digital Handover Quality Management Plan" (DMS-SZHXM-12), ensuring all stakeholders involved are clear about the quality standards and requirements.

2.3.1.2. Internal Quality Control:

Contractors/suppliers conduct internal reviews of the delivered data, documents, and models based on the "Project Digital Handover Content Regulations" (DMS-SZHXM-01) and related quality management plans to ensure the completeness, consistency, and accuracy of the information.

2.3.1.3. Data and Document Verification:

Utilize the "Project Engineering Digital Handover Data Dictionary" (DMS-SZHXM-04) and "Project Digital Handover Breakdown Structure and Class Library Definition" (DMS-SZHXM-02) to verify attribute data, documents, and association relationships, ensuring compliance and accuracy of the data.

2.3.1.4. Generation of Quality Inspection Reports:

Based on the results of the quality inspection, generate quality inspection reports, as described in the "Project Document Quality Inspection Report Template" (DMS-SZHXM-12), documenting identified issues and recommended corrective actions.

2.3.1.5. Quality Audit and Feedback:

Review the quality inspection reports and make necessary revisions and updates based on feedback through the process described in the "Document Control Procedure Description" (DMS-SZHXM-14), ensuring all issues are promptly rectified and meet the final requirements of the principal.

2.4. Category B3 – Implement Project Standard in Validation Tools

- Supported: Yes,
- Software: PIMCenter 4.X
- Evidence:

2.4.1. Show how the contractor can communicate the relevant parts of the project standard to third parties.

DMS has established requirements for promoting and communicating digital handover requirement of projects to third parties in the DMS-SZHXM-10Project Digital Handover Management Regulations, paragraph 6 Coordination mechanism:

(1) the contract negotiation stage between the principal and the contractor, the IPMC (information project management contractor) cooperates with the principal to clarify and explain the digital handover requirements to each sub-contractor.

(2) After the contract is signed, the IPMC shall promote the unified regulations on digital handover to all sub-contractors, so that sub-contractors can accurately understand the relevant regulations and requirements of digital handover and smoothly implement them.

(3) During the implementation phase, the digital handover platform provider reviews and provides feedback on the testing documents provided by each sub-contractor, and communicates and coordinates the various software and output files used by the sub-contractors in their digital handover work

2.4.2. Show how the contractor can give information suppliers access to a shared working environment that has been previously prepared with the project standard.

By following these following steps, the contractor can ensure that information suppliers are granted access to a shared working environment that is aligned with the project standards, promoting efficiency, collaboration, and adherence to project specifications.

2.4.2.1. Project Organization and Access Control (DMS-SZHXM-10)

Project Organization Members (Section 4): The contractor should identify the members of the project organization who are authorized to access the shared working environment. This includes details such as the authorized representatives, liaison persons, and other key personnel from each party involved in the project.

2.4.2.2. Coordination Mechanism (DMS-SZHXM-10)

Communication Protocols (Section 5): Establish clear communication protocols for sharing information and granting access to the shared working environment. This includes the use of formal channels (project email) for requesting and approving access.

2.4.2.3. Platform Deployment (DMS-SZHXM-11)

Platform Deployment (Section 2.2): The contractor is responsible for the deployment of the necessary software platforms (shared working environment) that will serve as the shared working environment. This may include project management systems, document control systems, and collaboration tools that align with the project standards.

2.4.2.4. Project Initialization (DMS-SZHXM-11)

Account Creation and Permission Allocation (Section 2.2.3): The contractor must create accounts for information suppliers and allocate appropriate permissions based on their roles and responsibilities. This ensures that each supplier has access to the necessary resources and information within the shared environment.

2.4.2.5. Technical Services Training (DMS-SZHXM-11)

Training for Information Suppliers (Section 2.2.4): Provide training to information suppliers on how to use the shared working environment, including the navigation of platforms, data entry, and compliance with project standards.

2.4.2.6. Quality Control (DMS-SZHXM-12)

Quality Audits and Model Reviews (Section 7): Ensure that information suppliers are aware of the quality control processes, including audits and model reviews, which will be conducted within the shared working environment to maintain standards.

2.4.2.7. Document Control Procedure (DMS-SZHXM-14)

Feedback and Revision Process (Section 4): Establish a process for information suppliers to provide feedback on the project standards and suggest revisions. This process should be transparent and integrated into the shared working environment.

2.4.2.8. Electronic Submission & Project Download (DMS-SZHXM-11)

Secure File Transfer (Section 11): Set up secure methods for information suppliers to submit and download project files, ensuring that all transfers are tracked and fit for project standard

2.4.2.9. Data Handover (DMS-SZHXM-13)

Data Handover Process (Section 9): Define the process for information suppliers to hand over data and documents to the principal, ensuring that all materials are submitted through the shared working environment and meet project standards.

2.4.2.10. Communication with Third Parties (DMS-SZHXM-01)

Confidentiality and Data Protection (Various Sections): Ensure that all communication with third parties, including information suppliers, complies with confidentiality agreements and data protection regulations as outlined in the project standards.

3. Phase C - Information Supply Chain Setup

3.1. Category C1 – Communicate Project Standards

- Supported: Yes,
- Software: PIMCenter 4.X
- Evidence:

3.1.1. Show how the contractor can communicate the relevant parts of the project standard to third parties.

By following these steps, the contractor can ensure that the communication of relevant parts of the project standards to third parties is safe, compliant, and within the framework of DMS company's management regulations.

3.1.1.1. Confirm Authorization and Confidentiality Level (Document 1: DMS-SZHXM-01)

The contractor must first confirm the confidentiality level and classification of the documents. In Document 1, it is noted that "The copyright of this document is owned by DMS, and no part of this document may be copied or disclosed to any other individuals or groups without the written authorization from DMS, nor used for other purposes." Therefore, any communication with third parties must be based on obtaining written authorization from DMS.

3.1.1.2. Clarify the Scope of Communication (Document 1: DMS-SZHXM-01)

Based on the "Scope of Application" and "Normative Reference Documents" in the document, the contractor can determine which parts of the project standards are applicable and can be shared with third parties. For example, if certain standard documents are marked as public (Security Code: 5 – Public), they can be communicated with third parties after obtaining authorization.

3.1.1.3. Use Secure Communication Channels (Document 10: DMS-SZHXM-10)

According to the "Coordination Mechanism" section, all information, documents, and correspondence related to the digital handover work must be reviewed and forwarded by the principal and data supervision unit to all relevant parties. The contractor should send information to the principal and data supervision unit through formal channels (such as project email) in written form for forwarding to third parties.

3.1.1.4. Information Redaction (Document 1: DMS-SZHXM-01)

Before sharing project standards with third parties, the contractor must redact sensitive information to protect DMS's intellectual property and trade secrets.

3.1.1.5. Quality Control and Feedback (Document 12: DMS-SZHXM-12)

The contractor should ensure that the deliverables submitted by third parties meet the quality standards and provide feedback when necessary. Quality inspection reports should be shared through formal channels to ensure that all communications are under the supervision and control of DMS.

3.1.1.6. Electronic Document Submission and Project Download (Document 11: DMS-SZHXM-11)

The contractor should ensure that all electronic documents communicated with third parties are submitted and downloaded through secure electronic submission and project download processes to protect the integrity and security of the information.

3.1.1.7. Document Modification and Control Procedures (Document 14: DMS-SZHXM-14)

For any modifications to project standards that need to be communicated to third parties, the contractor should follow the document modification procedures, including feedback, revision and version control, submission, and approval, to ensure that all changes are properly documented and approved.

3.1.2. Show how the contractor can give information suppliers access to a shared working environment that has been previously prepared with the project standard.

The detailed situation has been explained in a chapter 1.9.1

3.2. Category C2 – Support Information Collection and Aggregation

- Supported: Yes,
- Software: PIMCenter 4.X
- Evidence:

3.2.1. Show how the contractor can specify to third parties what information deliverables they are expected to provide (e.g. allocating document numbers or ranges, lists of expected document types for tags).

3.2.1.1. Referencing Standards and Specifications:

Contractors should refer to documents like "Project Digital Handover Content Regulations" (DMS-SZHXM-01) and the "Project Engineering Digital Handover Coding Regulations" (DMS-SZHXM-03) to allocate document numbers or ranges and to provide lists of expected document types for tags. These documents outline the specific deliverables required at various project stages and coding rules for document identification.

3.2.1.2. Scope and Technical Requirements:

The "Scope of Activities" section in SOW documents like DMS-SZHXM-01 and the "Technical requirement" section detail the exact deliverables expected from third parties, including preliminary studies, data collection reports, and technical specifications that must be adhered to.

3.2.1.3. Quality Control and Submission Guidelines:

The "Quality Control" section in DMS-SZHXM-12 and the "Electronic Submission & Project Download" section in DMS-SZHXM-11 specify the quality standards and electronic submission guidelines for deliverables. This includes file formats, data structures, and the processes for submitting documents and data electronically.

3.2.1.4. Communication and Training:

Utilizing the "Coordination mechanism" from DMS-SZHXM-10 and training programs outlined in DMS-SZHXM-11, contractors can establish communication protocols for deliverable submissions and ensure third parties are trained on the specific requirements for providing information deliverables in line with project standards.

3.2.2. Show how dates can be assigned to planned deliverables so the contractor can track progress across the supply chain.

By following these regulations and incorporating scheduled dates for each planned deliverable into the project schedule, contractors can effectively track progress across the supply chain, ensuring that all components of the project are completed on time and in accordance with DMS's standards.

3.2.2.1 DMS-SZHXM-10: Project Digital Handover Management Regulations

Section 6: Progress Management

(1) The specific digital handover work schedule should be prepared by each contractor based on the digital handover-related contracts signed with the principal. After review by the principal, the schedule will be issued, and all contractors must comply with it. If there are special circumstances that require adjustments to the digital handover work schedule, each contractor must submit a written request as required. Adjustments can only be made after the principal's review and confirmation.

(2) The digital handover work schedule must align with the project overall schedule, and there should be no instances where the former lags behind the latter.

(3) Each contractor shall execute the digital handover work schedule and submit handover items on time, with the principal and the data supervision unit overseeing the execution.

3.2.2.2   Section 4: Project Detailed Implementation Plan

Key milestones within the project lifecycle are identified, each with an associated target date. These checkpoints help track the progress of deliverables at various stages, from design and procurement to construction and commissioning.DMS-SZHXM-11: Project Digital Handover Implementation Plan

Based on the plans formulated by all information providers, DMS, as the manager of digital project Handover, we will develop a complete project execution plan that covers the entire process from training to receiving, inspecting, and preserving typical deliverables at each stage.

WBS	Task name	Duration	Start time	Finish time
1.4	Training work			
1.4.1	Digital handover training			
1.4.1.1	Training for principal			
1.4.1.2	Training for design institute			
1.4.1.3	Training for construction contractor			
1.4.1.4	Training for testing contractor			
1.4.1.5	Training for Supervision contractor			
1.4.1.7	Training for vendor in short list			
1.6	Digital handover during engineering			
1.6.1	3D model publishment			
1.6.2	Engineering document uploading			
1.6.3	P&ID publishment			
1.6.4	data verification during the engineering phase			
1.8	vender document uploading			

Figure-17 DMS typical Project Implementation Plan

3.2.3. Show how third parties can transfer their information deliverables to the contractor (e.g. uploading documents to a shared working environment).

3.2.3.1.   Training

After the shared working environment is established, DMS will provide corresponding training to various contractors. This includes how to upload files and data in a shared working environment.

Please also refer Figure-17 DMS typical Project Implementation Plan, item 1.4.1

3.2.3.2.   Transferring

Once all information providers have completed their training, they will execute the process in alignment with project digital handover standards and the predefined master document list. Below is an outline of the information handover process during the design phase, focusing on the Handover of design documents.

Details, please refer the related section of DMS-SZHXM-11: Project Digital Handover Implementation Plan. Taking Engineering document handover as an example, the way of uploading other types of information is similar.

2.3   Engineering stage
> *2.3.1   Engineering document handover*

To ensure seamless digital transfer of design document, the entire process of handling engineering documentation, data collection, and uploading should be conducted according to unified project digital handover specifications and master document list.

The primary engineering documents to be handed over include kinds of tables (such as equipment/pipeline lists, equipment data sheets, instrument data sheets, and various professional material lists), drawings (such as equipment layout diagrams, pipeline single-line diagrams, pipeline plans, instrument installation diagrams, and instrument layout diagrams), as well as technical specifications, instructions, and calculation sheets.

The engineering company's document control team is responsible for organizing and uploading this information to the company's documents in the visualized cloud collaboration system (shared working environment). Following review and approval by the principal's document control team, the documents become part of the project records. The correctness of these documents is checked by the engineering management team within the quality supervision team, and engineers from the IPMC's quality control team assess their completeness, consistency, and compliance, subsequently generating a quality inspection report for feedback.

Upon addressing any identified issues, the engineering company 's professional engineers perform the necessary rectifications. Once the document control team upgrades the documents, and both the engineering management team and the quality control team confirm their accuracy and integrity, the documents are transferred to the digital plant handover system by the platform implementation team engineer of IPMC.

2.3.2   3D model handover (database)
2.3.3   P&ID handover (database)
2.3.4   Plant Object attribute /association relationship handover
2.3.5   Data governance verification
2.3.6   Further calibrate the 3D model through as built 3D model

3.2.4. Show how the contractor can organize the received deliverables, so they are ready to be processed for later Handover to the principal.

DMS company organizes information handover to the principal through the following steps

Organization Process:

3.2.4.1. Categorization:

Sort the deliverables into predefined categories as specified in the DMS management regulations. The contractor must categorize the received deliverables into plant objects (master tag list), engineering data, engineering documents (master document list), engineering models, and associated relationships as outlined in this section. Proper categorization is crucial for organized processing and Handover.

3.2.4.2. Documentation

Maintain a comprehensive list of all received documents, including their revision history and status.

3.2.4.3. Quality Check

Perform quality checks to ensure compliance with DMS standards and project requirements.

3.2.4.4. Integration:

Integrate the deliverables with other project elements, ensuring consistency and coherence.

3.2.4.5. Storage:

Store the deliverables in a secure and organized manner, using a centralized digital repository for easy access and retrieval.

3.2.4.6. Preparation for Handover

Prepare the deliverables for final submission to the principal,

3.2.4.7. Acceptance

Organize the deliverables according to the acceptance criteria outlined in project specification. This includes ensuring that all documents are complete, accurate, and consistent with the actual completion status.

3.3. Category C2 – Support Information Collection and Aggregation

- Supported: Yes,
- Software: PIMCenter 4.X
- Evidence:

3.3.1. Show how as-built information can be delivered.

3.3.1.1. Role & Responsibility

In Chapter 4, Section K of the DMS-SZHXM-08 Project Construction Digital Handover Content Regulation, each construction contractor is tasked with managing the construction process, including the handling of data, 3D models (incorporating actual welds), documents, drawings, data updates and modifications, embedding, and establishing relationships during the completion and acceptance phase.

3.3.1.2. 3D models as-built requirement

In Chapter 5, Section 5.2.6.2 of the DMS-SZHXM-05Project Engineering Digital Handover Content Regulations, engineering contractor should provide a comparative deviation analysis report between the 3D model and its as built status. (most of client will ask EPC contractor to do laser scanning of the installed plant and correct the 3D model accordingly)

3.3.1.3. Engineering document information with as-built status

When the project reaches the completion stage, some related documents should also be modified according to the completion status, such as the P&ID in the design documents, to ensure the consistency of relevant information throughout the project execution process and improve the quality of documents delivered to the principal.

In Chapter 2, Section 2.7.2.3 of DMS-SZHXM-11Project Digital Handover Implementation Plan.

2.7.2.3. Digital handover and acceptance during the construction phase

After the construction phase is completed, the project management team and IPMC will inspect and accept the documents, actual weld point (on 3D model), data, and related relationships related to the construction phase. The main inspection contents include four aspects:

1) The completeness, consistency, and accuracy of design documents, construction documents, supervision documents, testing documents, and other related documents;

3.3.2. Show how handover of information can be phased (e.g. based on criticality or priority).

According to DMS-SZHXM-11: Project Digital Handover Implementation Plan, the handover of information can be systematically managed, ensuring that the most critical information is delivered on time and in a manner that supports the project's overall success.

For example, when applying the AWP (Advanced Work Package) module, some design documents or material supply chain information will be optimized according to the construction schedule and completed ahead of schedule to meet the overall project requirements.

Section 2.3: Design Stage

During the design phase, the handover of information such as design documents, 3D models, and intelligent P&IDs is prioritized. This phased approach ensures that the foundational information required for project execution is handed over initially.

Section 2.4: Procurement Stage

The procurement phase focuses on the handover of procurement documents (such as BOM) and vendor information, which is critical for material management and procurement planning.

Section 2.5: Construction Stage

In the construction phase, the handover of construction documents, as-built records, and quality assurance documents is prioritized to ensure construction activities can proceed without delays.

3.3.3. Show how Handover and handover of information can be tracked to make sure that scheduled dates are met.

The deliverables of each stage are delivered according to the project's specified content and Handover time. IPMC uses internationally recognized progress management tools to track relevant information, such as Primavera P6, to track specific documents based on the master document list.

It should be pointed out here that the tracking of Handover and handover of information is for the purpose of information integrity and consistency, and cannot replace the management of overall project progress, such as construction progress management, etc.

3.3.4. Show how concurrent engineering issues are addressed.

By following these structured approaches as outlined in DMS's management regulations, concurrent engineering issues can be effectively addressed, ensuring that projects are completed efficiently and to the highest standards.

3.3.4.1. Hierarchy set up

Create Hierarch for different systems according to the needs of different departments, thus reserving corresponding positions in the database for data from different sources, achieving the effect of parallel work. For example, the PBS structure in 3D model
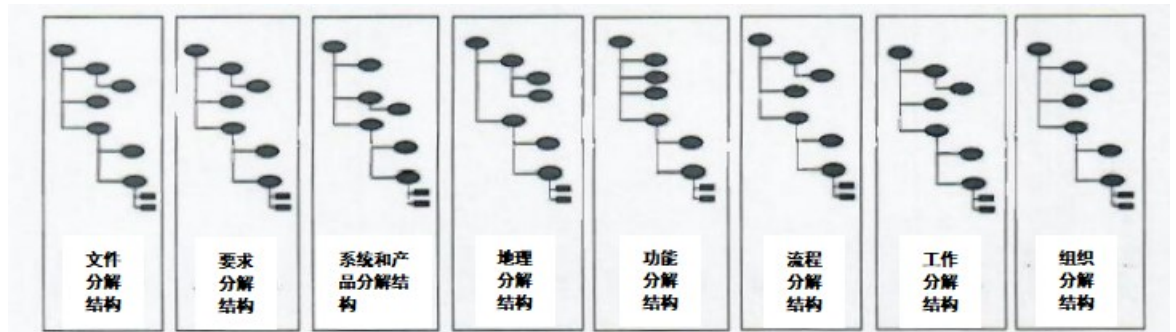
Figure-18 typical Project Hierarch (from iso 15926-11)

3.3.4.2. Integrated Project Teams

Establish integrated teams with representatives from different disciplines to work concurrently on the project, facilitating better communication and coordination.

3.3.4.3. Shared Digital Platform

Use a shared digital platform where all teams can access and contribute to the project's digital information, ensuring that everyone is working with the most up-to-date data.

3.3.4.4. Regular Coordination Meetings

Hold regular meetings to discuss progress, address conflicts, and align efforts, ensuring that concurrent work is synchronized and moving towards the project's objectives.

3.3.4.5. Real-Time Data Integration

Integrate real-time data from various stages of the project to identify and resolve issues promptly, reducing the impact of changes on concurrent engineering activities.

4. Phase D - Contractor Information Handover

4.1. Category D1 – Create Information

- Supported: Yes,
- Software: PIMCenter 4.X
- Evidence:

4.1.1. Show how documents are authored in compliance with the project standard.

By following these structured steps and adhering to DMS's management regulations, documents are authored in a manner that ensures compliance with the project's standards, facilitating a streamlined and standardized approach to project documentation.

4.1.1.1. Standardization

Authors must adhere to the standardized templates, formats, and naming conventions as defined in the project standards and data dictionary.

4.1.1.2. Scope and content

Section 7.3 of DMS-SZHXM-01 Project Digital Handover Strategy defines the typical file types and scopes generated in each stage,

Taking the project management documents prepared by the principal for the EPC contractor as an example, the project management documents of the construction party should include feasibility studies, task statements, land acquisition and resettlement documents, project approval documents, plans, investment reports, statistical data, management files, special applications, approval documents, QHSE (Quality, Health, Safety, and Environment) documents, and audiovisual materials. For detailed content requirements, please refer to the project document Handover specifications outlined in the "Digital handover Requirements for Project Design."

4.1.1.3. Quality Assurance

Documents are subject to quality checks and reviews to ensure they meet the project's quality requirements before finalization. (Does the information provider have a quality inspection procedure that complies with project regulations)

4.1.1.4. Version Control

Document authors use version control systems to manage changes and maintain a clear audit trail, ensuring that the most current and compliant versions of documents are accessible.

4.1.1.5. Review and Approval

Before final submission, documents undergo a review and approval process that includes checks for compliance with project standards and regulatory requirements. (This part of the work is usually completed jointly by IPMC and the principal)

4.1.2. Show how data is authored in compliance with the project standard.

1.1.1.1. Data Integrity

Authors ensure that the information in the documents is accurate, consistent, and complies with the data integrity rules set forth in the project's digital handover strategy. (the platform, or the shared working environment, should provide the data governance function)

4.1.3. Show how relationships are specified between authored documents and data.

From the two chapters cited below, it can be seen that information providers are required to provide the relationship between TAG (data) and documents, from the overall project regulations to the specific deliverables for each stage of EPC (the table below is an example of deliverables in the design phase).

The relationship between other files and data, such as the relationship between document and document metadata, is also described in the regulations, but this article will not further describe it.

4.1.3.1. Overall requirements

- DMS-SZHXM-01: Project Digital Handover Strategy

Section 7: Information handover

The Information handover of project includes plant objects, engineering data, engineering documents, engineering models, and associated relationships.

7.5. Associated relationships

Establish the relationships among engineering data, engineering documents, and engineering models, with the plant object as the central focus.

4.1.3.2. Project deliverable requirement

- DMS-SZHXM-11Project Digital Handover Implementation Plan

2.3.7, engineering final deliverable list

Table 11 engineering final deliverable type (original table No.)

Document (including drawing)	A set of all discipline's drawings/document (the same with master document list)
P&ID	Freely switch between the P&ID and the 3D model for the same plant object within platform.
3D Model	A complete 3D model (with accurate appearance, coordinate dimensions) that is consistent with as built status and P&ID, especially the underground pipeline network.
Attributes	All engineering attribute are interrelated with the 3D model and intelligent P&ID
Association relationship	The complete association relationship between the project object tag and the document or drawing

Figure-19 engineering final deliverable type

4.1.4. Show how review comments from the principal are resolved for documents and data.

4.1.4.1. Content management

DMS-SZHXM-10: Project Digital Handover Management Regulations

Section 8: Management Content

This section addresses the management processes for handling project information, including the steps for addressing review comments from the principal. It emphasizes the importance of an organized approach to reviewing and resolving comments on both documents and data.

4.1.4.2. The principal comments in Engineering stage

DMS-SZHXM-11: Project Digital Handover Implementation Plan

Section 2.3: Design Stage (the same with procurement and construction stage)

During the design stage, review comments from the principal are collected, and a systematic approach is taken to resolve them. This may involve coordinating with various stakeholders, including designers, engineers, and project managers, to address the comments and make necessary revisions to the documents and data.

4.1.4.3. QA/QC in the final handover

After each contractor submits the documents, IPMC will conduct a format (naming rule) and correlation check of the documents. Upon passing the inspection, the principal's various disciplines will perform further content checks, and the inspection feedback will create a closed-loop management system.
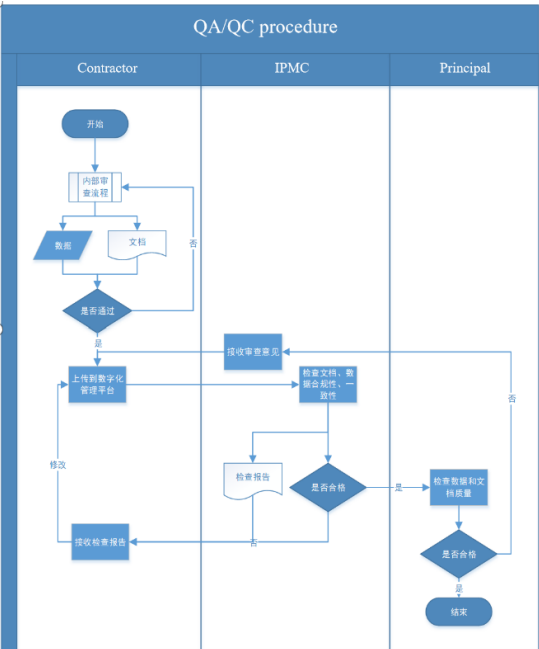
Figure 1 Quality Audit Process (original No.)

Figure-20 Quality Audit Process

4.1.4.4. Acceptance

After quality inspection, the principal has another opportunity to review the final deliverables according to the requirements of plant operation and maintenance during the acceptance process, and officially receive project information.
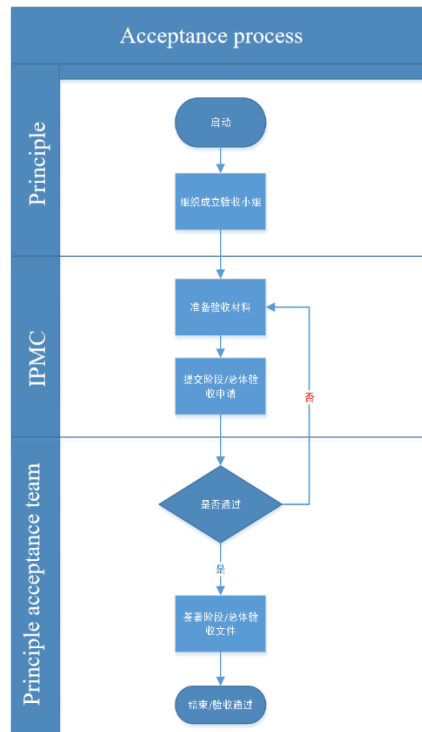
Figure-21 Acceptance process

4.2. Category D2 – Gather and Integrate Information

- Supported: Yes,
- Software: PIMCenter 4.X
- Evidence:

4.2.1. Show how the contractor prepares a context for assembling a set of information that will be handed over together to the principal (e.g. by assigning a status to information, by linking to a staging area in an existing system or by transferring to a separate staging system).

4.2.1.1. Document coding system and meta data

From Figure 11, we can see that the Document naming convention includes the version of the Document.

In the metadata of the Document shown in the figure below, we can see that it contains the reversion of the Document, it is a kind of assigning a status to information.

Table 8 master document list

No.	Documents name	Document code	Reversion	Date of issue	Document type	Discipline	Area	Unit	Company

Figure-22 Master document list

4.2.1.2. Procedure in transferring

From Figure-20 Quality Audit Process and other parts, contractors can effectively prepare a context for assembling and handing over a set of information to the principal, ensuring a smooth and organized transition.

- Status Assignment:

Information is assigned a status indicating its readiness for handover, such as "Reviewed," "Approved," or "Ready for Handover." This status is tracked within the project management system to manage the handover process efficiently.

- Linking to Staging Area:

Contractors link the prepared information to a staging area within the existing system. This area serves as a temporary holding place where documents and data are organized and readied for transfer.

- Transfer to Separate Staging System:

If a separate staging system is used, contractors transfer the information to this system, ensuring that it is isolated from the live project data but is fully prepared and can be accessed by the principal upon handover.

- Integration and Consistency Checks:

Before the handover, contractors perform checks to ensure that all linked documents and data are consistent and integrated correctly, reflecting any changes made during the project lifecycle.

- Documentation and Reporting:

Contractors compile documentation that outlines the context of the information being handed over, including any relevant history, changes, and the current state of the information.

- Communication and Coordination:

Contractors maintain communication with the principal to coordinate the handover process, ensuring that the principal is aware of the status of the information and any actions required on their part.

4.2.2. Show how internally authored information can be included in the set of information.

By adhering to these processes and regulations, DMS ensures that internally authored information is properly included in the set of information that will be handed over to the principal, maintaining the integrity and consistency of the project's digital assets.

4.2.2.1. The same data model

Internally authored information must use the same data model as external information, including format, structure, and metadata tagging, to ensure consistency.

4.2.2.2. Metadata Tagging:

Internal documents and data are tagged with metadata that includes information about their relationship to the project, phase, and role, aligning with the data dictionary's requirements.

4.2.2.3. Quality Assurance:

Internal information undergoes quality checks to ensure it meets the project's standards before being included in the handover set.

4.2.2.4. Version Control:

Internal information is managed using version control systems to track changes and maintain a clear history, ensuring that the most current and accurate versions are included in the handover.

4.2.2.5. Integration with External Information:

Internal information is integrated with externally provided information, ensuring that all data and documents, regardless of origin, are consistent and comply with the project's digital handover requirements.

4.2.2.6. Review and Approval:

Internal information is reviewed and approved following the same processes as external information, ensuring that it is ready for inclusion in the final handover package.

4.2.3. Show how information from other information suppliers (e.g. subcontractors, vendors) can be included in the set of information.

Taking vendor files as an example, vendor files are gradually absorbed into the project's comprehensive information set through the following steps.

4.2.3.1. Documentation Standards:

Vendors must submit documents in specified formats to ensure consistency with the project's digital systems.

4.2.3.2. Tagging and Metadata:

Documents are tagged with metadata for organization and easy retrieval within the project's information system.

4.2.3.3. Quality Assurance:

Vendor documents are reviewed for quality, accuracy, and compliance with project standards before inclusion.

4.2.3.4. Document Integration:

Approved vendor documents are integrated into the project's documentation system, linked to relevant project elements.

4.2.3.5. Version Control:

A version control system tracks changes to vendor documents, ensuring the latest version is always included.

4.2.3.6. Electronic Submission:

Vendors electronically submit documents through a secure system, aligning with the project's digital handover strategy.

4.2.3.7. Audits and Compliance:

Regular audits ensure vendor documents meet DMS regulations and project standards, maintaining information integrity.

4.2.4. Show how the information from different origins is structured or classified consistently.

4.2.4.1. Property

From Figure-16 XXX Project Centrifugal Pump Attribute Table, all properties from different origins are defined based on tag classification. After the project is completed, these properties will gradually be collected and formed into a complete set of information (attributes) according to preset requirements

4.2.4.2. Document

The files collected from different sources are also collected and constructed into a structured file system in a similar way, such as Figure-17 DMS-SZHXM-07Project Material Supplier Digital Handover Content Regulations - Centrifugal Pump vendor document list

4.2.5. Show how relationships are defined between information from different origins (e.g. linking tags to documents).

4.2.5.1. TAG serves as a bond in relationships

DMS-SZHXM-04: Project Engineering Digital Handover Data Dictionary

Section 3: Data Dictionary

The data dictionary establishes a framework for defining metadata attributes, which include relationships between different data elements. This ensures that tags, which are a form of metadata, can be systematically linked to corresponding documents and other data sources.

4.2.5.2. Class Library as Management methods

DMS-SZHXM-02: Project Digital Handover Breakdown Structure and Class Library Definition

Section 4: Class Library

The class library defines the hierarchical relationships and Classification information, allowing for the organization of tags and documents in a structured manner. This facilitates the linking of specific tags to related documents based on their classification.

4.2.6. Show how it is determined whether this set of information is ready for a quality check.

4.2.6.1. Quality management system

According to the provisions of Figure-20 Quality Audit Process, each contractor must complete internal quality review in accordance with project regulations and their own quality control system, and submit an upload application after internal qualification.

The scope of quality audit includes but is not limited to:

a) Accuracy, completeness, and consistency of 3D models.

b) Accuracy, completeness, and consistency of P&ID diagrams.

c) Accuracy, completeness, and consistency of drawings and documents.

d) Accuracy, completeness, compliance, and consistency of property data.

e) Accuracy and consistency of tag encoding.

f) Compliance and correctness of document encoding.

g) Accuracy, completeness, and consistency of document property.

h) The deliverables comply with the library and plant break down structure.

i) The plant entity object is not missing, and the object number, document naming, and numbering comply with regulations.

j) The measurement unit of the property is correct, and the data type of the property value is correct

4.3. Category D3 – Check Information Quality

Supported: Yes,

Software: PIMCenter 4.X

Evidence:

4.3.1. Show how the contractor assesses the completeness of the set of information that is being considered for handover (e.g. availability of expected document types for each tag class, values defined for required tag properties, installed equipment matches expectations).

4.3.1.1. expected document types for each tag class
/

4.3.1.2. values defined for required tag properties
please refer Figure-16 XXX Project Centrifugal Pump Attribute Table. More real case from project is needed here.

Property name	Data type	Data
Tag number	Character	V-1001
category	Character	II
type	Character	
Cylinder material	Character	Q245
Test medium	Character	水
Media name	Character	甲醇
Medium phase state	Character	液态
Medium toxicity	Character	低毒
Medium explosion hazard		易爆
Fire hazard of medium		易燃
design company	Character	XXX
expected life	Character	30
Factory number	Character	YYY
Design temperature	value	80
	UOM	°C
Design pressure	value	0.05
	UOM	mbara
Operating temperature	value	20
	UOM	°C
Operating pressure	value	0.02
	UOM	MPa
Test pressure	value	0.02
	UOM	MPa

Figure-24 A project instance

4.3.1.3. installed equipment matches expectations
Quality Certificates' and the 'Product Qualification Certificate.' This implies that the equipment has been designed and fabricated in line with the requisite standards and has been inspected prior to Handover.

Secondly, in accordance with the DMS-SZHXM-09 Project Commission and Completion Digital Handover Content Regulations, following installation, testing, commissioning, and startup, all the performance aspects of an equipment will be recorded and archived. The results will be used to demonstrate that the installed equipment aligns with the expectations established during the engineering design phase.

4.3.2. Show how the contractor assesses the accuracy of the set of information that is being considered for handover (e.g. tags within document content matches lists of tag-to-document relationships).

4.3.2.1. Internal Quality Checks by Information Providers:

Ensure that all information providers, including contractors and suppliers, conduct rigorous internal quality assessments to verify the accuracy and completeness of the information before submission.

Implement a standardized checklist for internal reviews to ensure consistency and thoroughness in the quality assessment process.

4.3.2.2. External Quality Checks by IPMC:

Establish a comprehensive external review protocol conducted by the IPMC, which includes:

File and Tag Form Checks: Verify the correctness of file formats and tag structures against specified standards.

Tag and Attribute Checks: Ensure that tags are correctly assigned and that all associated attributes are accurately populated and consistent with the project's metadata requirements.

File Association Checks: Confirm that files are correctly associated with their respective tags and that the relationships are logically sound and compliant with the project's information architecture.

4.3.2.3. principal-Organized Quality Checks:

The principal should organize quality checks that involve multi-disciplinary teams to assess the information from various professional perspectives and its readiness for future operation and maintenance.

These checks should include, but not be limited to, validation against operational requirements, maintenance schedules, safety standards, and regulatory compliance.

By clarifying and streamlining these criteria, the project information can be more efficiently and effectively assessed for accuracy and readiness for Handover, ensuring a smooth handover process and minimizing the risk of errors or omissions. Details, please refer DMS-SZHXM-12Project Digital Handover Quality Management Plan.

4.3.3. Show how the contractor assesses the compliance of the set of information that is being considered for handover (e.g. assigned location in plant breakdown structure is available in project standard, tag / document numbering matches project standard and within allocated ranges).

4.3.4. PBS

According to the regulations of digital handover, relevant information providers are required to provide MASTER TAG LIST, which contains PBS information in its metadata, please refer DMS-SZHXM-05, chapter 5.1

Table 1 Plant Object list

No.	Tag No.	Tag name	Unit (PBS)	Tag classification	Remarks
1	P-4101A	Water pump	Utility unit	Centrifugal pump	

Figure-25 Master tag list

4.3.4.1. Tag / document numbering

From the following chapters, we can see that Tag/document numbering is an important part of quality audit, and DMS' PIMCenter platform also provides automatic verification function based on Regex.

DMS-SZHXM-12Project Digital Handover Quality Management Plan

Chapter 4.1 the scope of quality audit

a) Accuracy, completeness, and consistency of 3D models.

b) Accuracy, completeness, and consistency of P&ID diagrams.

c) Accuracy, completeness, and consistency of drawings and documents.

d) Accuracy, completeness, compliance, and consistency of attribute data.

e) Accuracy and consistency of tag encoding.

f) Compliance and correctness of document encoding.

g) Accuracy, completeness, and consistency of document attributes.

h) The deliverable complies with the library and PBS.

i) The plant entity object is not missing, and the object number, document naming, and numbering comply with regulations.

j) The measurement unit of the attribute is correct, and the data type of the attribute value is correct.

4.4. Category D4 – Transfer Information

Supported: Yes,

Software: PIMCenter 4.X

Evidence:

4.4.1. Show how the contractor transfers information deliverables to the principal.

DMS-SZHXM-11 "Project Digital Handover Implementation Plan," Section 2.6 "Commissioning and Completion Phase，taking this document generated during commission and start up as an example, the procedure of the contractor transfers information deliverables to the principal is like below:
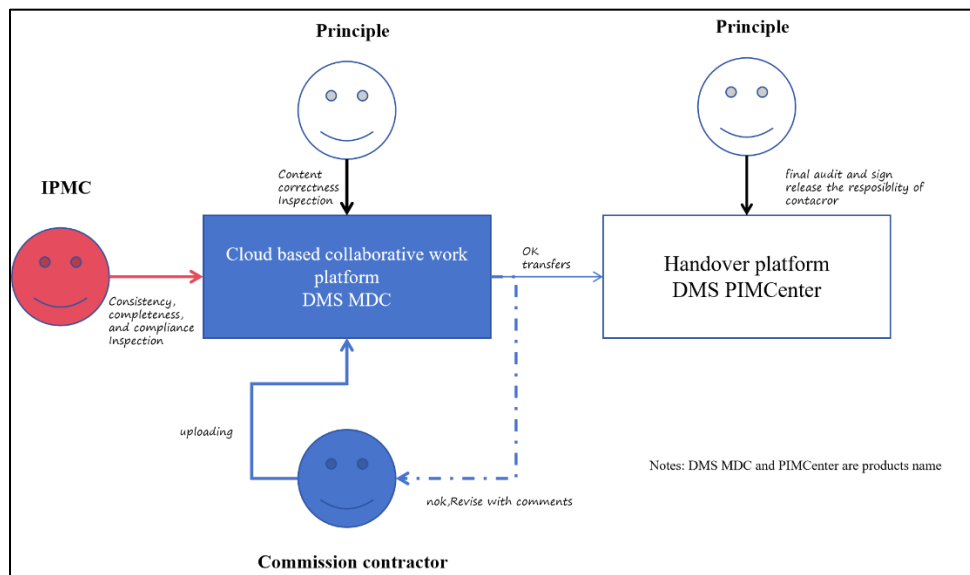

Figure-26 information transferring procedure

4.4.2. Show how the deliverables are linked to the appropriate project or contract.

Each project has a unique identifier, and all deliverables (document list and tag list) must be clearly marked with this identifier to ensure they are linked to the correct project.

Reference Document: DMS-SZHXM-05 "Project Engineering Digital Handover Content Regulations," Section 5.1 "plant Object List."

4.4.3. Show how the contractor can confirm that the information has been transferred successfully.

Figure 26 illustrates that to facilitate the principal's successful acceptance of the project information deliverables, IMPC and the principal's discipline engineers will perform a comprehensive review of the deliverables from multiple perspectives and submit a review report separately. The principal's representative manager will then conduct a final quality audit based on these reports and issue an acknowledgment or receipt confirming that all information has been uploaded, is accessible, and meets acceptance criteria.

The information provider will make revisions according to the feedback and resubmit (with a rectification report).

4.4.4. Show how the principal knows that they have received new information.

Based on DMS-SZHXM-10Project Digital Handover Management Regulations, chapter 6, Coordination mechanism

In addition to the key milestones outlined, should any participants in the digital handover process encounter inquiries or wish to express their views, they may submit these in written form (as signed scans, with editable versions incorporated if necessary) to the project email addresses of both the principal and the IPMC via official channels (by the project's authorized representative or external contact via the project email). The principal will review these submissions, and subsequently, the IPMC will issue notifications or replies in writing through official channels.

It means the principal will get notification at each key milestone and any existed problems.

4.4.5. Show how previously transferred deliverables can be updated with additional or fixed information.

Using the example of the engineering company addressing review comments from the principal and IPMC by modifying the relevant design documents:

According to Chapter 2.3.1 of the DMS-SZHXM-11 Project Digital Handover Implementation Plan, the engineering company engineers will rectify the identified issues and update the documents following the engineering company's document control procedures. Once the principal team, along with the quality control engineers from the IPMC, confirm that there are no outstanding issues, the platform implementation team engineers of the IPMC will then submit these documents to the digital plant handover system again.

5. Phase E - Principal Information Review

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

5.1. E1 – Review and Validate

- Supported: No,
- Software: PIMCenter 4.X
- Evidence:

5.1.1. Show how documents are reviewed.

Not applicable to DMS company

5.1.2. Show how data are reviewed.

Not applicable to DMS company

5.1.3. Show how consistency between documents and data is checked.

Not applicable to DMS company

5.1.4. Show how reviews can be prioritized based on the criticality or priority of the information deliverables.

Not applicable to DMS company

5.1.5. Show how review outcomes are recorded, including details of any corrections required.

Not applicable to DMS company

5.1.6. Show how progress is tracked for schedule visibility.

Not applicable to DMS company

5.2. 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: Not fully supported, there are areas for improvement according CFIHOS check list
- Software: PIMCenter 4.X
- Evidence:

5.2.1. Show how the review outcome is shared with the contractor.

By following these steps, the principal ensures that the review outcomes are effectively communicated to the contractor and that any necessary actions are taken to ensure the deliverables meet the required standards. Details, please refer the Reference Document: DMS-SZHXM-12 "Project Digital Handover Quality Management Plan," chapter 4 Quality management assurance

5.2.1.1. Procedure

From Figure-20 Quality Audit Process, we can see the review outcome is required to share with contractor in the information supply chain.

5.2.1.2. Organization

In order to ensure that the opinions of the owners are shared with the contractors in a timely manner, a corresponding organizational structure will be established around the information supply and feedback chain at the beginning of the project, and personnel will be designated to be responsible.

5.2.1.3. Split of work

In the organizational mentioned above, the principal is assigned with working scope such as content correctness and Adaptability to the requirements of the operation and maintenance phase

5.2.1.4. Milestone

In order to ensure the quality of the final project, according to DMS regulations, the owner and IPMC will regularly organize reviews of project Handover information in accordance with the following provisions.

Periods	Responsible stakeholders	Remarks
Daily review	All contractors and IPMC	
Milestone review	All contractors, IPMC and principal	
Final audit and accept	All contractors, IPMC and principal	

Figure-27 milestone review

5.2.1.5. Methods

    A. Automatic verification by platform
    B. manual review of computer programs

5.2.1.6. Report

All stages of review must submit corresponding result reports, which must be completed in accordance with the format established by IPMC and the owner

5.2.2. Show how any required corrections are shared with the contractor.

Please refer above chapter 5.2.1

5.2.3. Show how the principal acknowledges that information was delivered according to the contractual requirements.

By following these steps, the principal formally acknowledges that the information was delivered according to the contractual requirements, providing a clear and documented trail of compliance with project specifications and DMS Company's management regulations (Tool related)

5.2.3.1. principal conduct acceptance inspection by stages

Reference Document: DMS-SZHXM-13 "Project Digital Handover Acceptance Plan," Section 7 "Acceptance Content." A checklist has been developed for each stage of acceptance by the principal and IPMC, the principal first confirms the receipt of the information deliverables, ensuring all items are in line with the terms outlined in the contract.

- Engineering stage
- Procurement stage (focus on vendor document and SCM information)
- Construction stage
- Commission and start up (as built information needed depend on contract)

5.2.3.2. Method

- Check the content (including association relationship) based on the check list mentioned above.
- Check the electrical document based on master document list in the different stages
- Check the 3D model with the plant physical status.

5.2.3.3. Procedure

Please refer Figure-21 Acceptance process

5.2.4. Show how dates can be specified for correcting information.

From Figure-28 Project document quality checklist, it can be seen that the opinions of the owners will be truthfully recorded and modified, but there is indeed no specified time for returning the modified documents

Figure-28 Project document quality check list

6. Phase F - Principal Handover to Business Systems

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

6.1. Category F1 – Deliver to Business Systems

- Supported: , no
- Software:
- Evidence:

6.1.1. Show how the principal can structure a capital project so that multiple contractors can deliver the required information.

Not applicable to DMS company

6.1.2. Show how information can be validated for handover.

Not applicable to DMS company

6.1.3. Show how information can be handed over to operations or other non-project business systems

Not applicable to DMS company

6.2. Category F2 – Track and Update

- Supported: no,
- Software: PIMCenter 4.X
- Evidence:

6.2.1. 1.Show how as-built information can be delivered.

Not applicable to DMS company

6.2.2. 2.Show how handover of information can be phased (e.g. based on criticality or priority).

Not applicable to DMS company

6.2.3. 3.Show how Handover and handover of information can be tracked to make sure that scheduled dates are met.

Not applicable to DMS company

6.2.4. 4.Show how concurrent engineering issues are addressed.

Not applicable to DMS company