IDM UID
U344WG
VERSION CREATED ON / VERSION / STATUS
03 Jul 2019 / 2.2 / Approved
EXTERNAL REFERENCE / VERSION

MQP Level 2

Procedure for Identification and Controls of Items

This MQP Level-2 procedure describes general procedure for identification and item control. General purpose of identification and item control are:
• To ensure the traceability from early design to dismantling of items
• To provide under operation constraint fast retrieval to item related information
• Full traceability, maintenance, etc.
The contents of this procedure are 1) control items and attributes, 2) identifiers, 3) labelling / tagging, 4) item control throughout the project lifecycle, 5) item lists, e.g. Bill Of Materials, BOM's and 6) item control mechanism relying on material management database system. Responsibility assignment regarding item control is also described. Since there are several procedures and instructions for labelling for different scopes already, this document provides harmonization of those existing documents related to physical identification,... (Please see complete abstract on document metadata.)

Approval Process			
	Name	*Action*	*Affiliation*
Author	**Seo K.**	**03 Jul 2019:signed**	**IO/DG/COO/CIO/CMD/DCC**
Co-Authors			
Reviewers	**Brown R.** **Casella F.** **Elbez-Uzan J.** **He K.** **Kirnev G.** **Lee H. G.** **Merola M.** **Miele P.** **Mokaria P.** **Nakajima H.** **Neagu S. *** **Okayama K.** **Orlandi S.** **Salamon B.** **Serra G.**	**17 Jul 2019:recommended** **05 Jul 2019:reviewed** **17 Jul 2019:recommended** **16 Jul 2019:recommended** **11 Jul 2019:recommended** **11 Jul 2019:recommended** **17 Jul 2019:recommended** **17 Jul 2019:recommended** **17 Jul 2019:recommended** **12 Jul 2019:recommended** **17 Jul 2019:recommended** **18 Jul 2019:recommended** **03 Jul 2019:recommended** **15 Jul 2019:recommended** **11 Jul 2019:recommended**	**IO/DG/COO/SCOD/OPD** **ORNL - Oak Ridge National Laborator...** **IO/DG/RCO/SD/EPNS** **Chinese Domestic Agency (CN)** **Russian Research Centre "Kurchatov ...** **NFRI - National Fusion Research Ins...** **IO/DG/COO/TED/INC** **IO/DG/RCO/PCO/CDPC** **IN DA (Supplier & DA) (IN)** **IO/DG/COO/CIO/CMD/DCC** **IO/DG/QMD** **IO/DG/COO/CST** **IO/DG/COO/PED** **IO/DG/COO/CIO/CMD/DCC** **F4E (EU)**
Approver	**Tada E.**	**18 Jul 2019:approved**	**IO/DG/RCO**
Document Security: Internal Use *RO: Fabre Nadine*			
Read Access	**LG: Quality Control Group, AD: ITER, AD: External Collaborators, AD: IO_Director-General, AD: EMAB, AD: OBS - Quality Management Division (QMD) - EXT, AD: OBS - Quality Management Division (QMD), AD: Auditors, AD: ITER Management Assessor, project administrator, RO, LG: DO Support Team, LG: DO Suppo...**		

Change Log			
Procedure for Identification and Controls of Items (U344WG)			
Version	***Latest Status***	***Issue Date***	***Description of Change***
v0.0	In Work	26 Oct 2016	
v1.0	Signed	03 Aug 2017	first version as per approved MQP doc request URMJ6X
v1.1	Signed	18 Sep 2017	Considered the reviewer's comments on v1.0, and revised. Definition of terminologies and relationship to CM process are enriched, in particular.
v1.2	Approved	25 Sep 2017	As commented by CIO/CMD head, rev. nums. of the latest approved versions of the applicable documents are added.
v1.3	Signed	11 May 2018	As per MQP doc Request - WK7ES6 Includes Module H needs
v1.4	Revision Required	05 Jun 2018	Update of Table of content Change reference number 3 from 28WP2P superseded by UXM79P As per MQP doc Request - WK7ES6 Author is changed to includes Module H needs Consistency with other MQP documents regarding definition of terminologies, control gates, the MQP-tree, to be done in future major revision
v2.0	In Work	03 Jul 2019	As per approved MQP doc Request - XYC6CF, the list of main changes are: Change 1: PE/NPE requirement is added (integration of comments from v1.4); Change 2: DA applicable requirements are added; Change 3: • Definitions of terminologies are aligned and centralized (especially kinds of Item-ID-Codes); • Transfer of Bill of materials to construction is described as a critical activity of ID Process; • Listed requirements for each type of PA, Check List and recovery actions are added in the appendixes, as requested by users. For further details, the document had been pre-reviewed (Y8W4F9) and author provided a summary table including the answer per comment.
v2.1	In Work	03 Jul 2019	Fixed some broken formats
v2.2	Approved	03 Jul 2019	Fixed some broken format

Table of Contents

1 Purpose

This MQP Level-2 procedure describes the general procedure for Identification and Control of Items (ID) Process in accordance with QAP [1], Sec. 3. 6. Purposes of ID Process are:

- To avoid confusion between different items and/or items in different statuses, e.g. pass/fail at certain Control Gate, verification test;
- To record, monitor and to enable traceability for all controlled items and their attribute data, e.g. status, location (installed or stored), responsible entity/person, and related documentation;
- To provide fast retrieval of item-related information, e.g. as-built record, under operation constraint, damaged equipment; and
- To comply with the requirements of nuclear and other regulations.

The ID-Process aims at ensuring "Full Traceability" for the item itself and the related data/documents. During the project lifecycle, the state of an item evolves, e.g. as-designed, as-built, etc. Item-related data/documents are generated in each phase of the lifecycle, and validated at each Control Gate or Control Point, in terms of completeness, consistency, conformance, etc. To realize the Full Traceability, all status and the related data/documents are recorded in the dedicated IT databases.

Applicability of this MQP-L2 for PA :

- Applicable for PA's to be signed;
- Regarding the signed PA's, appropriate level of authority to decide through formal process.

Responsibility assignments within ID-Process are also described regarding five individual types of PA's. Responsibilities of DA in each type of PA are summarized in Sections 6 and 7[1]. Short guidance is described in Appendix-C.

2 Scope

The scope of this document and the related sections/paragraphs are as follows:

i.	Controlled items and their attribute data;	
ii.	The three types of key Item-ID-Codes respecting "Three Ball Model," and other Item-ID-Codes;	(5.1)
iii.	Labelling and tagging to physical item;	(5.2 and Appendix-A)
iv.	Tagging to data/documents and/or to the described items in them, with Item-ID-Codes;	(5.3 and Appendix-B)
v.	Means for check of implementation and track, e.g. Control Gates[2], IT database system.	(5.4, 6 and Appendix-D)
vi.	Handover of material management and cataloguing related data to the IO construction entity (SmartPlant)	(5.4)

[1] As necessary, read other portions in the main content and the appendixes. Regarding in-cash contract, IO-Eng-RO to describe the ID-Process requirements in the contractual document, in compliance with this MQP document and the applicable MQP-L3's.

[2] Control Gate definition to be documented by Design Control and Configuration Management Processes.

Where the Controlled Items are items belonging to one or more of the following categories:

a) Items constituting the ITER System[3], e.g. Components, Parts, (Sub)Assemblies;
b) Temporary items, e.g. tooling, jigs, inspection equipment;
c) Consumables, e.g. welding filler material, chemicals;
d) Transportation package, e.g. crate;
e) Spare parts

Within the Controlled items, "Items constituting the ITER System" or groups thereof, are specifically called ITER Individually Distinguishable Items, IDI's. IDI is any item, or a group thereof, of interest to IO-CT's, in particular for logistics <As-Delivered>; warehouse, construction and future operation and maintenance <As-Handled on the ITER site>.

2.1 Out of Scope

- ITER Buildings (civil structures), System and Sub-System[4] are out of the scope;
- Definition of the required data and documents management according to the type of item in Engineering Phase, i.e. Design and Manufacture.
  Note: the data structures and minimal requirements for the item lists (standard names for attributes of items[10]) are parts of the ID Process.

This MQP document provides the overview of the ID Process and associate requirements. The details for the implementation are described the level-3 MQP documents, specific Work Instructions (WI's) and/or individual Technical Specifications of PAs and contracts, which will be generated by technical disciplines.

Fig. 1 shows the MQP document structure which details Section 3.6 of the QAP, the "Identification and Control of Items" process. Below MQP-L2 [U344WG] (this procedure), there are six MQP L-3 documents:

1) ITER Numbering System, e.g. ID-Code schema [3];
2) TTT-Codes to classify ITER Components [4];
3) Creation of Part Number of ITER, PNI and cataloguing [9];
4) Physical labelling and tagging [8];
5) Templates for BOM, Equipment List, etc., and standard attributes [10], and
6) Generation of ITER Bill of Materials (BOM) for Smart Plant Data Loading [36].

[3] In other documents, this is named "ITER Plant"
[4] The higher levels of the ITER PBS.

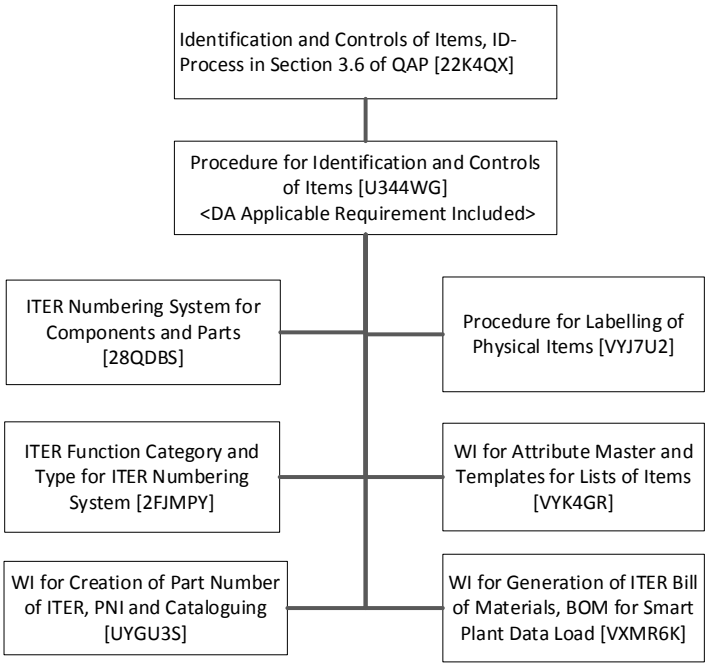


Fig. 1 MQP Document Tree Structure

3 Definitions and Acronyms

3.1 Definitions

1	3-Ball Model, 3BM	A data model aiming at identification and traceability of an item based on three key Item-ID-Codes and their relationship, namely Functional Reference Number (FR), Item-Type-Reference Num. (PNI) and Physical Item Ref. Num.(SN).
2	As-Built	Includes <as-manufactured>, <as-site-assembled>, <as-constructed>, <as-installed>. As-Built Item and the associated data/documents are tagged with the SN's and /or the Lot/Batch Numbers. *Note: As-Built Drawings differs from the original Design, Construction and Assembly Drawing." As-Built drawings describe the real physical items after manufacturing, site-assembly, installation, construction, etc., and include all changes, accepted non-conformities, etc.*
3	CAD-Ticket System	Used to generate or to change PNI's and TTT-Codes, and for cataloguing. Link: IO CAD Ticket System
4	Controlled Items	Items in the scope of the ID Process belonging to one or more of the following categories: 1. Items constituting the ITER System, e.g. Components, Parts, (Sub)Assemblies; 2. Temporary items, e.g. tooling, jigs, inspection equipment; 3. Consumables, e.g. welding filler material, chemicals; 4. Transportation package, e.g. crate, and 5. Spares of the above, as required.

		Those Controlled Items are in various states, such as "As-In the ITER System," "As-Designed" and "As-Built." As-Built Item is called "Physical Item," as well.
5	Data/Documents	In this procedure, "Data/Documents" means, for example, Technical Specification, List of Items, Drawings, Diagrams, 3D Models, individual physical or functional data. Those Data/Documents can be the source data for SP Data Load.
6	Engineering Dossier	The engineering dossier is a container of technical information for a given scope and purpose, that forms the building-blocks of the ITER configurations and baselines. See CM Process MQP [2]
7	Functional Reference Number, FR	The unique code identifying an ITER Component within the ITER PBS, as detailed in [3]. FR is one of the 3 types of key Item-ID-Codes of the 3-Ball Model, identifying an item "As-In the ITER System."
8	Handover Package (HOP) for Engineering Work Package (EWP)	See [7].
9	Item Type Descriptor	Item-Type-Descriptor is an optional descriptive code representing Item-Type tagged as well as PNI and/or MN. It can tag to an item accompanying with PNI. Item-Type-Descriptor is requested by IO Engineers to distinguish items without relying on any relational database, e.g. in a work field. The guideline and the format to be provided, later.
10	ITER Catalogue	Project-wide list of Standard Controlled Item-Types tagged with PNI's, the relevant attribute data and the reference documents. See [9] for detail. Since the ITER Catalogue is not a tool for tracking design features of an Item-Type, only general properties to distinguish and to classify Item-Types are listed. Design information of each Item-Type and change on it are controlled with the design documents and/or the Engineering Dossier on PLM/Matrix. *Note that the 3D-Catalogue (or Library) is a different catalogue listing 3D-Models associated with CAD-oriented data*.
11	ITER Component	ITER Components are the lower nodes of the ITER-PBS. An ITER Component is a major piece of equipment uniquely located within the ITER System, such as a pump or a tank, which is tagged with a FR. *Note: FR's do not exhaustively tag to items constituting the ITER system, but only tag to selected items, i.e. ITER Components, e.g. pumps, cables, supports, sensors. While PBS L1 to L3 Codes tag to items exhaustively within a same level. In other word, summation of items in each PBS level always becomes equal to the ITER System. For ITER Component tagged with FR's, not.* TTT-Code as a part of a FR is used for the classification of ITER Components [4].

12	IO-CT Engineering Responsible Officer, IO-Eng-RO	IO-Eng-RO means TRO for PA, PBS-RO, Transverse Function RO, etc., who is responsible for a certain system, sub-system, equipment, component, etc., on the engineering side (not on the construction side) For EWP-HOP preparation, "EWP-Leader" corresponds to the IO-Eng-RO.
13	ITER Individually Distinguishable Item, IDI	IDI is an item or a group of items of interest to IO-CT's, which constitutes the ITER System as a part/component. More specifically: • Item of as-delivered situation to the site (or to another manufacturer's premises, as necessary); • Group of items to be site-assembled , e.g. kit of interface components; • Items to be dismantled and re-assembled on site; • Items subject to maintenance; Non-IDI: • Items shop-assembled together as part of the product before shipping, e.g. interior of IDI; *Note 1: Depending on purpose:* • *Items assembled as a part of the product before shipping, and to be physically integrated at the site, e.g. Programmable Logic Controller (PLC), signal conditioner, etc. are not IDI's for logistics or warehouse, but are IDI's from construction and maintenance point of view, since they need to be uniquely identified for installing the connections/cables with other equipment during the site-assembly activities;* • *On-site sub-assembly can be recognized as IDI.* *Note 2: All IDI's or groups of IDI's shall be tagged with PNI's, and registered in SPMAT. Finally, relying on SPMAT, IDI's are controlled in logistics, warehouse and construction.* *Note 3: Systematic grouping of items, "kitting" is recommended taking into account the site-assembly process, so that quantity of IDI's to be managed is decreased.*
14	Item-Type	Design solution of item (independent of its instantiations), e.g. part, component, equipment represented with the Product Technical Specification, the Component Drawing, etc. *Note 1: IDI-Type is tagged with the Part Number of ITER, PNI, associated the Item-Type-Descriptor (optional) and/or the MN, as necessary. Any Item-Type should be identified and tagged with MN respecting the Quality Plan, QP [16].* *Note 2: All Standard Item-Types used in ITER are listed in the ITER Catalogue distinguish different Item-Types produced by a manufacturer catalogue.*
15	Manufacturer Model/Part Number, MN	The MN performs the same function of the PNI. MN's are used by manufacturers within their catalogues to distinguish different Item-Types produced by the manufacturer. PNI's are used in the ITER

		Catalogue to identify the same Item-Types, but accordingly to the ITER numbering conventions. *Note: MN is affixed to any item managed by the manufacturer respecting the contractual document and the Quality Plan (QP) thus establishing a link between PNI's and corresponding MN's and achieving full traceability down to the manufacture's data/documents.*
16	Packing List	See TDFC [15].
17	Part Number of ITER, PNI	The number identifying a given IDI-Type "As-Designed." PNI is one of the three key Item-ID-Codes of the 3-Ball Model. IDI, or groups thereof, shall be tagged with PNI. See ref [3].
18	Quality Control Records	Specified by Manufacturing Assembly and Installation, MA process. For DRR and CCR, all as-built data/documents are compiled as Manufacturing and Construction Quality Control Records, respectively. Tagging to physical items, to items in the data/documents and to the data/documents shall be ensured with these Quality Control Records.
19	Serial Number, SN	Key Item-ID-Code used to tag to physical item, "As-Built." SN's are used to distinguish different instances of the same Item Type. It can be Serial Number (SN), batch number, or lot number: • SN's are used for individual products; • Lot or batch number on multiple items of the same design, the same material, in the same contract/production, etc. *Note-1: In this document SN represents all Item-ID-Codes, e.g. Lot/Batch Num., tagging to As-Built item.* *Note-2: Only with SN, sometimes items are not uniquely identified. However, Item-Type-Code, e.g. PNI, MN, followed by SN is always the unique identifier.*
20	Standard/Non-Standard IDI-Types	Items are separated between Standard/Non-Standard IDI-Types in the material management system. "Standard IDI-Types" are created for use of 1) Bulk procurement by IO for construction, 2) Procurement and stock of spare equipment and parts, etc. • The Standard IDI-Types are typically: o Industrial standard parts, e.g. EN or ASME Pipes; o Parts or equipment of COTS items (catalogue by suppliers); o Some custom design items controlled by IO, for instance with the technical specification/dossier and/or in 3D Library; • "Non-Standard IDI-Types" are normally associated with custom components that have been designed and manufactured explicitly for ITER.
21	Tag	Tag means an ID-Code attached to an item, a data/document, etc., or

		an action to affix an ID-Code. Usually, in plant construction, the word “Tag” is used with the same meaning as “FR” affixed to a functional component. Consequently, “a tagged item” means an item designated with FR.”

3.2 Acronyms

Abbreviation	Description
BOM	Bill of Material
CCR	Construction Completion Review
CM	Configuration Management
COTS	Commercial Off-The-Shelf
CRR	Construction Readiness Review
CWP	Construction Work Package
DA	Domestic Agency
DRR	Delivery Readiness Review
EWP	Engineering Work Package
FR	Functional Reference Number
GA	General Arrangement (Drawing)
HOP	Hand-Over Package
IWP	Installation Work Package
MN	Manufacturer Model/Part Number
MRR	Manufacturing Readiness Review
NPE	Nuclear Pressure Equipment
P&ID	Process and Instrumentation Diagram
PA	Procurement Arrangement
PE	Pressure Equipment
PFD	Process Flow Diagram
PIC	Protection Important Component
PNI	Part Number of ITER
QP	Quality Plan
RASCI	R: Responsible, A: Accountable, S: Support, C: Consulted and I: Informed
SIC	Safety Important Component
SMDD	System for the Management of Diagrams and Drawings
SN	Serial Number
SP	SmartPlant
SPMAT	SmartPlant Materials
SPRD	SmartPlant Reference Data
UID	Unique Identifier
UOM	Unit of Measure
WI	Work Instruction
WP	Work Package

For other abbreviations, see; https://portal.iter.org/Pages/abbreviations.aspx

4 Reference Documents

Title of Document	UID
[1] Quality Assurance Program, QAP	22K4QX

[2]	Procedure for Configuration Identification and Status Accounting	TZV743
[3]	ITER Numbering System for Components and Parts	28QDBS
[4]	ITER Function Category and Type for ITER Numbering System	2FJMPY
[5]	Specification for Labelling of Equipment on ITER Project	TL25DK
[6]	ITER Site Signage & Graphics Standards	4ALJEU
[7]	WI for Construction Preparation (EWP/CWP/IWP)	UYGEDA
[8]	Procedure for Labelling of Physical Items	VYJ7U2
[9]	Procedure for Part Number of ITER, PNI and Cataloguing	UYGU3S
[10]	WI for Attribute Master and Templates for Lists of Items	VYK4GR
[11]	Instructions for CAD Documents Used for Tokamak Assembly Contracts	UC6CU3
[12]	TDFC_Bill_Of_Material_T4.0_S1	W9ZCNP
[13]	TDFC_Equipment_Component_List_T4.0_S1	WBXM7R
[14]	TDFC_Deliverable_List_T5.5_S3	WA93DF
[15]	TDFC_Shipping_or_Logistics_Record_T5.1_S3	WCGGUH
[16]	Requirements for Producing a Quality Plan	22MFMW
[17]	Procedure for the Preparation, Review, Approval and Award of Procurement Arrangements	2W4F7A
[18]	Sign-Off Authority (SOA) for Project Documents	2EXFXU
[19]	ITER System Design Process (SDP) Working Instruction	4CK4MT
[20]	Annex B Template Technical Functional Specification	28B3SF
[21]	Working Instruction for Manufacturing Readiness Review	44SZYP
[22]	Working Instruction for Construction Readiness Review	QXW4KQ
[23]	Working Instruction for the Delivery Readiness Review (DRR)	X3NEGB
[24]	Procedure for Transportation of Components to ITER Site	RY5C6Q
[25]	Procedure for Reception of Components at the ITER Site	RXCTBZ
[26]	Procedure for the Storage and Preservation of ITER Components at the ITER Site	RWYED5
[27]	Quality Classification Determination	24VQES
[28]	Safety Important Functions and Components Classification Criteria and Methodology	347SF3
[29]	List of the ITER Nuclear Pressure Equipment	34MZKE
[30]	List of Protection Important Components (PIC list) (EN)	JDS5K7
[31]	Procedure for the Management of Diagrams and Drawings in pdf Format Using the SMDD Application	KFMK2B
[32]	Pressure Equipment Directive 2014/68/UE	-
[33]	French ESPN Order dated 30 December 2015	-
[34]	Implementation for Design and Manufacture of PE/NPE	VE2DSP
[35]	Procedure for the Preservation of Equipment	WML9CF
[36]	Work Instruction for Generation of ITER Bill of Materials, BOM for SmartPlant Data Load	VXMR6K

5 Basic Principles

Objectives of Identification and Control of Items (ID) Process are:

- To avoid confusing items of different grades, etc.;
- To enable traceability of the concerned items:
  - To retrieve all related information efficiently in order to meet operational incident resolution needs;
  - To ensure proper execution of preventive inspection and maintenance;
  - To find compatible product for replacement;
- To obtain the status of items associated with Control Gate/Point, etc.:
  - Inspection results (by Pass/Fail/Hold);
  - Current location;
  - Responsible person/entity;
  - Reception date, etc.
- To control spares and items subject to maintenance;
- Full traceability: To enable linking any relevant data/document for the concerned item;
- To perform continuous process control & monitoring (status accounting).
  - At each Control Gate/Point, to ensure completeness, consistency and conformance within all the items and the item-related data/documents, i.e. the source data.
- To comply with the nuclear safety and other regulatory requirements;
  Note: ID-Process is a cross-cutting process over multiple MQP Processes (See Sec. 8).

In Sections 5.1 to 5.4, as an outline the ID-Process, the following are described; 1) Three Ball Model and the Item-ID-Codes, 2) Physical Label, 3) Item-Related Data/Documents, and 4) Cataloguing and material management in the ITER Construction Management System.

5.1 Three Ball Model and Item Identification

The principle of Three Ball Model (3BM) is applied to the ID-Process. As shown in Fig. 2, in 3BM, there are three states of the same item. Each state of item is tagged with a dedicated key Item-ID-Code [3], as follows:

i. **Functional Reference, FR** tags to an item <As in the ITER System>, called "ITER Component";

ii. **Part Number of ITER , PNI** tags to specified design solution of item, <As-Designed>, called "ITER Item-Type";

iii. **Serial Number, SN** tags to an item <As-Built>, called "Physical Item."

Where "As-Built" stands for As-Manufactured, As-Site-Assembled, As-Constructed, or As-Installed.

Note: Within this document, SN often represents all Physical Item ID Codes including Lot/Batch Num., Heat Number for metallic raw material, etc., for simplification.

Those key Item-ID-Codes are used to identify the different states the same item throughout the project lifecycle.

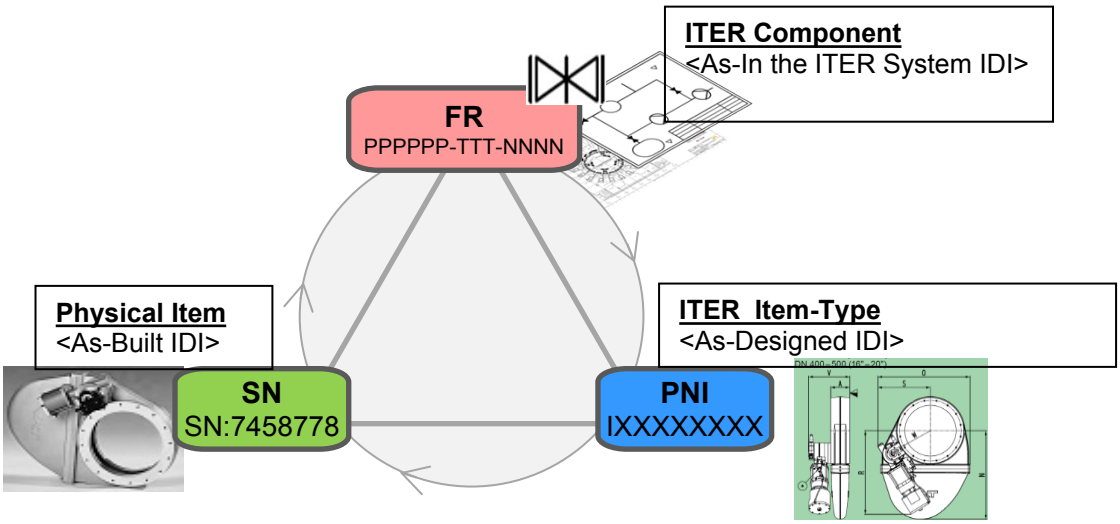


Fig. 2 Three Ball Model [3]

Among Controlled Items, Individually Distinguishable Items(IDI's) are controlled by IO-CT according to the 3-Ball Model.

Note that a mechanical ITER Component tagged with FR can be physically constituted with several IDI's tagged with individual PNI's, which are site-assembled together. The assembled item is recognized as the Parent IDI. While the constituting items are the Children IDI's.

Fig. 3 shows the tagging with Item-ID-Codes, i.e. FR, PNI and SN, throughout the project lifecycle including the Control Gates. This figure is explained in paragraphs 5.1.1 to 5.1.4.

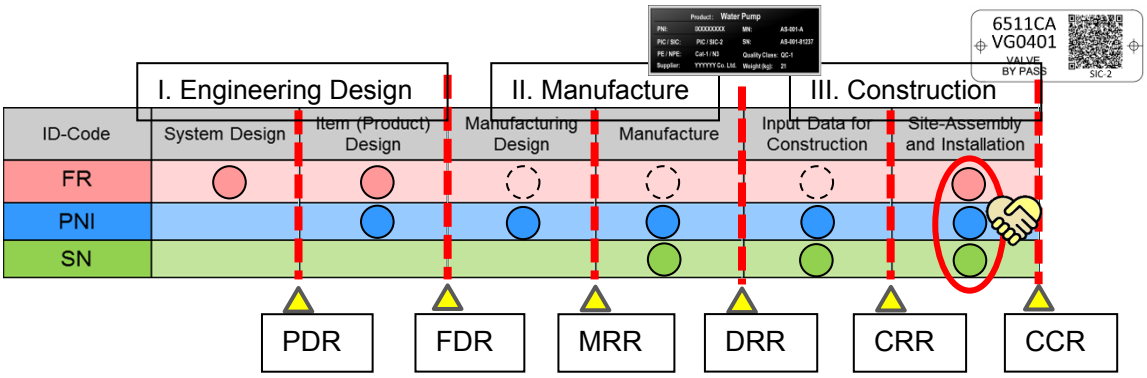


Fig. 3 Lifecycle of an IDI tagged with key Item-ID-Codes. At installation, all three types of key Item-ID-Codes are connected together [3]. Physical labelling occurs accordingly.

5.1.1 FR Creation and Tagging

- During the system design, all ITER Components shall be identified within diagrams, e.g. P&ID, Cabling Diagram, and/or in the Drawings/3D-Models, e.g. GA, Layout Drawing, CMMs, and tagged with FR's [3];
- Since FR's tag to only ITER Components, which have certain functions in the ITER System, e.g. water pumps, mechanical supports, not all IDI's used for the site-assembly are tagged with FR's;
- FR is generated by the IO-Eng-RO, then approved with the diagram and the Equipment List, Line List, etc.;

- All necessary FR's shall be generated no later than at FDR;
  Note: FR is not relevant during the Manufacture Phase (See the circles with dashed lines[5] in Fig. 3).

5.1.2 PNI Creation and Tagging

- Following the system design, the system is decomposed into assembly-level, then into individual item (or IDI)-level. After the decomposition, items are grouped by technical requirement[6], then designed as the identical design solution, i.e. IDI-Type tagged with PNI [3], [9];
- IDI's or groups of IDI's shall be tagged with PNI's, exhaustively. This implies that any item or group of items in Product or Assembly Drawing, shall be tagged with a PNI.
  Note: Exhaustive means tagging all small items individually, e.g. bolts, nuts; but also includes items which have been kitted (items grouped together). By kitting, quantity of necessary PNI's can be decreased.
- Only IO-Eng-RO can request new PNI's via CAD-Ticket System.
  If DA/Manufacturer requires additional new PNI's, they shall be request via the IO TRO;
- Newly generated IDI-Types tagged with PNI's are registered in the ITER material management system, SPMAT, associated with the attribute data. New Standard IDI-Types not included above yet are also included in the ITER Catalogue;
- Tagging with PNI may be required any time, including after the item design has finished;
- The format of PNI is specified in [9];
- All necessary PNI's shall be generated no later than MRR.
- PNI's on a physical item, on the 3D model, on those in data/documents and tagging to the related documents shall be the same. Even if a new format of PNI is requested via update of the approved MQP document [9] in the meantime, keep the original format of PNI.

5.1.3 SN Creation and Tagging

- All manufactured and/or procured items shall have SN and/or Lot/Batch Num.
  Note: Physical tagging with SN and/or Lot/Batch Num. shall be done, as necessary, so as to enabling tracing back the as-built records, e.g. the mill certificate, the inspection report, the calibration report;
- Manufacturer can decide the format of the SN, and whether or not to tag a physical item with a SN, if it is not specifically required;
- Physical items are tagged with SN's and/or Lot/Batch Nums., no later than DRR;
- As-Built PIC/SIC items shall be tagged with SN and/or Lot/Batch Num., physically and/or in the list of As-Built IDI's, so as that the related data/documents, e.g. Non-Conformity Reports are fully traceable.

[5] Major equipment with designated installation point in the ITER System can be tagged with the FR at the manufacturer's premises before shipment. Unique IDI's in the ITER System like pre-fabricated pipe spools are also tagged with FR's.
[6] This process is called as "Decomposition and Abstraction," or "Standardization." Consequent Item-Type-List is called "Catalogue."

5.1.4 Link between FR, PNI and SN

- When the delivered Physical Item is installed in the plant as an ITER Component, then it shall be tagged with the FR. At this final stage, a one-to-one relationship between SN and FR is established, and the three key Item-ID-Codes are consolidated;
- All items installed in the ITER System shall be tagged with the three Item-ID-Codes no later than CCR.

In Fig. 3, physical labels, i.e. Product Label and ITER Component Label, which include the Item-ID-Code(s), shall be affixed to the item no later than DRR and CCR, respectively.

During the project lifecycle, the related data/documents of these IDI's are also tagged with these key Item-ID-Codes. Finally, in the operation phase, any data/documents related to an ITER Component is retrievable with the "FR" linked together with other two, namely "PNI" and "SN." If replacement of an ITER Component becomes necessary, the PNI is found by referring to the FR. The cause of the failure of the ITER Component is to be investigated with the As-Built Quality Control Records tagged with the SN.

5.1.5 Manufacturer Model/Part Number, MN

- The MN has the same function for the manufacturer as the PNI has for ITER. They both identify Item-Types;
- Manufacturer shall tag to all the items and the item-related data/documents with MN's, respecting their Quality Plan (QP) [16].
  If the PNI is affixed to an item and referred to in the data/documents, the MN is not always necessary;
- Manufacturing Quality Control Records shall be tagged with MN (and PNI), and SN/Lot Num.;
- COTS items are already tagged with MN's in the manufacturer or supplier commercial catalogue. PNI's shall tag either to individual COTS items or to a group of them, in addition to those MN's;
- The link between PNI and MN is critical, since the link allows IO-CT to trace any ITER Item to the detailed manufacturing data/documents, and in so doing enables the Full Traceability of all item-relevant data;
- For IDI's, the MN will be recorded with the PNI in item lists in Manufacturing Dossier and Quality Control Records, e.g. As-Built IDI List;
- DA/Manufacturer should provide to IO-CT for information the MN-Code Scheme used for a group of IDI's before the MRR.

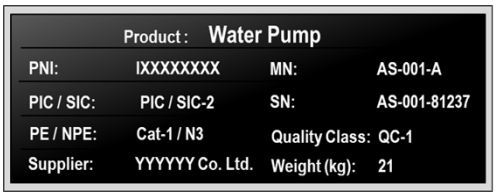
5.1.6 Others

- Consumables, General Tooling, etc. shall be tagged with PNI and SN and/or Lot/Batch Num.;
- CAD-Model Items are also tagged with FR's and/or PNI's, so that 3D models and Assembly Drawings related to an IDI can be easily identified.

5.2 Physical Labels and Marks

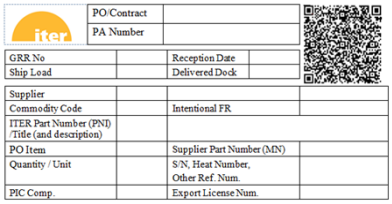
Physical labelling to each actual item is required. Fig. 4 shows an example of some typical labelling and marking. The mandatory contents are specified in ref [8] and Appendix-A. When ITER acts as manufacturer of PE and NPE, SN's and/or Lot Nums. shall tag to the

concerned items physically according to the requirements of IO implementation plan for the manufacturer of PE/NPE [33], [34], [35].



1) Product Label

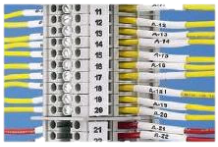
2) Shipping Label



3) Warehouse Label

4) ITER Component Label

5) Sign for Operation and Maintenance



6) Index Number

Fig. 4 Physical Identification Labels/Tags

1) Product Label

In Fig. 4-1), the Product Label includes a) the Part Number of ITER (PNI), b) the Manufacturer Model/Part Number (MN), and c) the SN. The Manufacturer shall attach the Product Labels or Tags physically to each item. Other marking, e.g. "CE" should accompany the Product Label, as necessary.

Note: For instance, if the area is limited, at least one Item-ID-Number to enable tracing back the data/ documents. For small items, e.g. bolts, nuts, tagging/labelling may not be required.

2) Shipping Label

See in Fig. 4-2) and ref [8]. (Scope of HS Process)

3) Warehouse Label

See in Fig. 4-3) and ref [8]. (Scope of HS Process)

4) ITER Component Label

In Fig. 4-4), FR is written on the label. The QR code can facilitate the access to the IT Database [5].

5) Signs

Fig. 4-5) shows a general sign on a pipeline, with the fluid-type name and the pipeline ID-Code [6].

6) Index Numbers

Fig. 4-6) shows an example for Index Number. The indexing rules, e.g. counting in clockwise or counter-clockwise direction shall be documented prior to the implementation.

Extended FR's for this purpose is explained in [3]

5.3 Item-Related Data/Documents

Fig. 5 shows the relationship between key Item-ID-Codes, a) attribute data of the item, b) data/documents tagged with the Item-ID-Codes, and c) data/documents in which the item tagged with the Item-ID-Code(s) is included. In other word, b) and c) are data/documents defining the item (or the report/record) and those describing (sub)system or an assembly including the item, respectively. Depending on key Item-ID-Code(s), the related data/documents are different. Similarly, types of Item-ID-Codes used as primary key code in various item lists are different.

If data/documents are related to items in the ITER System, i.e. to "ITER Components," the primary key Item-ID-Code is the FR. The maintenance report for the ITER Component is tagged with the FR. An operating temperature rating for certain ITER Components, is associated with that FR. Items tagged with FR's are included in the Equipment List, diagrams, etc.

Key Item-ID-Code	a) Attribute Data	b) Data/Documents tagged with Item-ID-Code	c) Data/Documents describing items tagged with Item-ID-Codes
FR ITER Component < As-in the ITER System>	System Physical / Functional Properties, e.g. GBS, max flow	Installation Procedure / Records, Operation Manual/ Records, Maintenance Records	System Design Definition Dossier including GA, PFD, P&ID, etc.
		(Site-Assembly) Design Definition Dossier, etc.	
PNI ITER Item-Type <As-Designed>	Item Physical / Functional Properties, e.g. Output Power	Product Design Definition, e.g. Product Tech Spec, Component Drawing, Data Sheet, Deviation Request*, etc.	Assembly Drawing, BOM, Construction Process Description (CPD), etc.
		Manufacturing Dossier, etc.	
SN Physical Item (As-Built>	Item As-Built Physical Properties, e.g. As-Built Tolerance	Mill Certificate, Inspection Report, Non-Conformity Report, etc.	List of As-Built Items, As-Built Drawing, etc.
		Quality Control Records, etc.	

*) A Deviation Request can also be related to a specific physical item tagged with SN.

Fig. 5 Correlation between key Item-ID-Codes, a) attribute data, b) tagged data/documents and c) data/documents describing items tagged with Item-ID-Codes

Similarly, data/documents related to Item-Type <As-Designed>, like product technical specification, are tagged with PNI's. Items tagged with PNI's appear in Assembly Drawings, BOMs, etc.

Finally, data/documents related to Physical Items <As-Built>, like Product Inspection Reports, Sensor Calibration Report, Non-Conformity Reports, etc. are tagged with SN. As-built data, like as-built dimensions, are also associated with SN.

5.3.1 Data/Documents Tagged with Item-ID-Codes

Data/ Documents related to IDIs shall be tagged with Item-ID-Codes, so that those data/ documents can be searched, filtered and/or sorted by Item-ID-Code, over the project lifecycle. Data/Documents tagged with various types of key ID-Codes are explained in more detail below.

Data/Documents Tagged with FR

- Installation records, calibration and/or maintenance reports of ITER Components are tagged with the FR;
- These documents are issued during installation or in subsequent phases of the project. *Note: After the system design is finished, the need for documents tagged with the FR is rare until the beginning of the Construction Phase.*

Data/Documents Tagged with PNI (and MN)

- Documents describing product design definitions are tagged with PNI's and/or MN's. Examples include product technical specifications, requirement specifications, drawings, etc.;
- Optionally, PNI can be followed by Item-Type-Descriptor (in parentheses, in order to avoid confusion), for instance "I12345678 (XXX-XXXXXX-XXXXX)". *Note: Item-Type-Descriptor is a descriptive code to be developed by IO-Eng-RO, as necessary. If applicable, the MN may be used as the Item-Type-Descriptor;*
- Respecting the Quality Plan, QP, all manufacturing documents shall be tagged with MN's, which are partly linked with PNI(s). This link is critical to achieve full traceability down to the specific manufacturer's data/document.

Data/Documents Tagged with SN

- As-built reports, e.g. mill certificates, as-built drawings, inspection reports are tagged with SN or Lot Num. ;
- One Lot, Batch or Heat Number can be associated to multiple Physical Items. This means that one mill certificate tagged with a Batch/Lot Num. refers to those multiple Physical Items.

Data/Document for Consumables, Tools, etc.

- Consumables and tools may not be IDI's, but these items and their related documents are tagged with PNI's;
- Related documents to these items are, for example:
  - Regular inspection and/or maintenance reports for tooling;
  - Calibration reports for inspection equipment;
  - Material Safety Data Sheet (MSDS) for chemicals, etc.

5.3.2 Data/Documents Describing IDI's Tagged with Item-ID-Codes

Items are controlled with various kinds of specific item lists. For instance, items are listed in a) Equipment List, b) BOM and c) List of As-Built IDI's generated in a) System Design, b) Site-Assembly/Item Design, and c) Manufacture, respectively. These item lists are associated with the Diagrams/Drawings, in which the items are described. Table B-1 shows the relevant types of specific item lists and the typical contents within ID Process.

Finally, ITER-BOM for SmartPlant Data Load is generated from the data/documents mentioned above, as the "source data."

5.4 Cataloguing and Material Management in the ITER Construction Management System

The ID-Process relies on the IT database system, namely SmartPlant (SP).

SP Data Loading with ITER-BOM consists of two parts:

SP Data Load-1:	Identification of IDI-Types, PNI Generation and Cataloguing [9]
SP Data Load-2:	Completion of all attribute data of IDI's on SPMAT [36]

Fig. 6 shows the two parts of the SP Data Loads during the project lifecycle. The ITER-BOM [36] is a specially prepared spreadsheet, which is different from traditional engineering item lists, e.g. Equipment List, BOM, for the data loading on SmartPlant at SP Data Load 1&2. After loaded on SPMAT/SPRD, the loaded data can be managed in an intelligent manner.

Note that the source data, e.g. traditional item lists, e.g. Equipment List, Line List, BOM for Design or Manufacture, shall be generated and controlled by the IO-Eng-RO, since the contents of the ITER-BOM are relevant only to logistics, warehouse management, construction and additional procurement, and following phases.

Additionally new data/documents for the warehouse control, the construction design and the as-built, etc. shall be added during the construction phase. More detailed steps of the process are described in the following section.

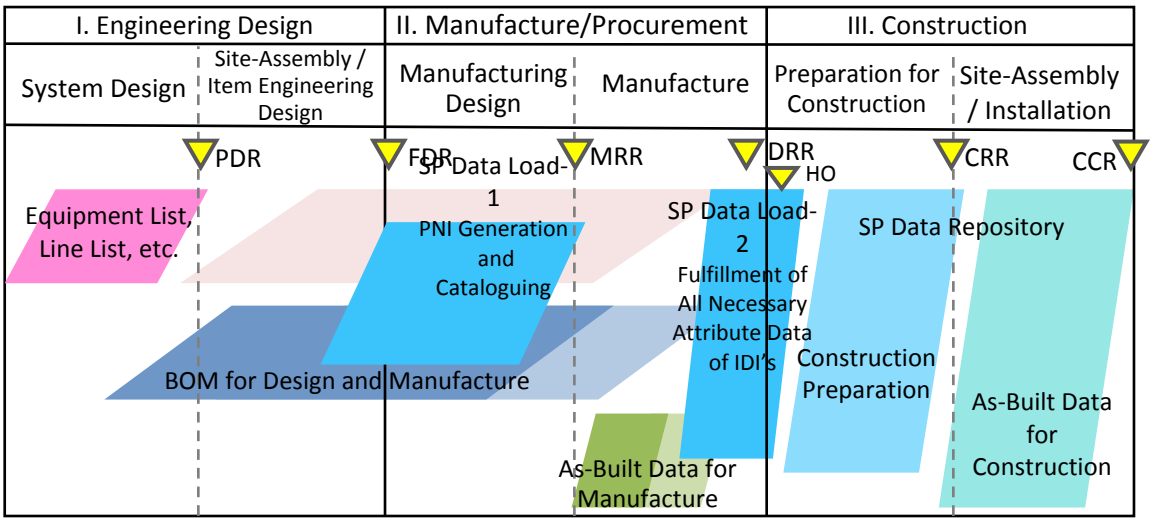


Fig. 6 Summary of the item-centric data/documents management

The SP Data Loads 1&2 are only summarized here. The detailed steps are described in MQP-L3 documents and the specific WI's [9], [36].

5.4.1 SP Data Load-1: Identification of IDI's, PNI Generation and Cataloguing

- ITER Individually Distinguishable Item, IDI shall be tagged with PNI;
- The IO-Eng-RO shall request the necessary PNI's via the CAD-Ticket System [9];
- The uniqueness of the PNI is verified with SPMAT/SPRD, then the proposed PNI is validated;
- After the validation, the IDI's tagged with the PNI's are registered in SPMAT associated with other attribute data;
- If the IDI is recognized as a Standard IDI, Tag & Item-Data Admin provides a dedicated format of PNI, which is then registered in the ITER Catalogue on SPRD.

5.4.2 SP Data Load -2: Completion of All Attribute Data of IDI's on SPMAT

- The data to be loaded at the SP Data Load-2 shall be validated in consistency with the official contents in the EWP-HOP [36].
- SPMAT data loading with the designated template of ITER-BOM to be completed before CRR;
- All listed IDIs, except for spares, are correlated with Contract, EWP/CWP, Assembly Requirement Drawing [11], etc. within the ITER-BOM to be loaded.

6 Workflow

Fig. 7 shows the flowchart of the ID-Process. There are three phases, i.e. I) Engineering Design, II) Manufacture/Procurement, and III) Construction. Six Control Gates and two Control Points, i.e. PA-Signed (an example of B-t-P PA) and Handover, HO, where data transfer occurs from one entity to another, are described. At each Control Gate/Point, status of each item is verified with the data/documents in the Engineering Dossier.

The two steps of SP Data Loads 1&2 are shown on the right of the workflow.

General rules:

- All items and the data/documents shall be tagged with FR, PNI and/or SN, as necessary;
- In Fig. 7, only general responsibilities are specified. Specificities of five individual types of PA's are explained later, according to this flowchart;
- This flowchart shall be respected in order to generate a technical specification for a direct contract by IO-CT as well;
- Execute Steps I-1 to III-6, sequentially. The order may be parallel or switched, but required process steps shall be completed before the designated Control Gate (See the Check List in Appendix-D) ;
- At each Control Gate, the completeness, consistency and conformance of various item lists including the ITER-BOM and the source data/documents shall be ensured;
- SP Data Load-1, i.e. PNI generation, registration on SPMAT, and cataloguing [9], shall be completed at the latest before MRR;
- SP Data Load-2 shall be completed after the HO, no later than CRR on the basis of the information provided for the EWP.

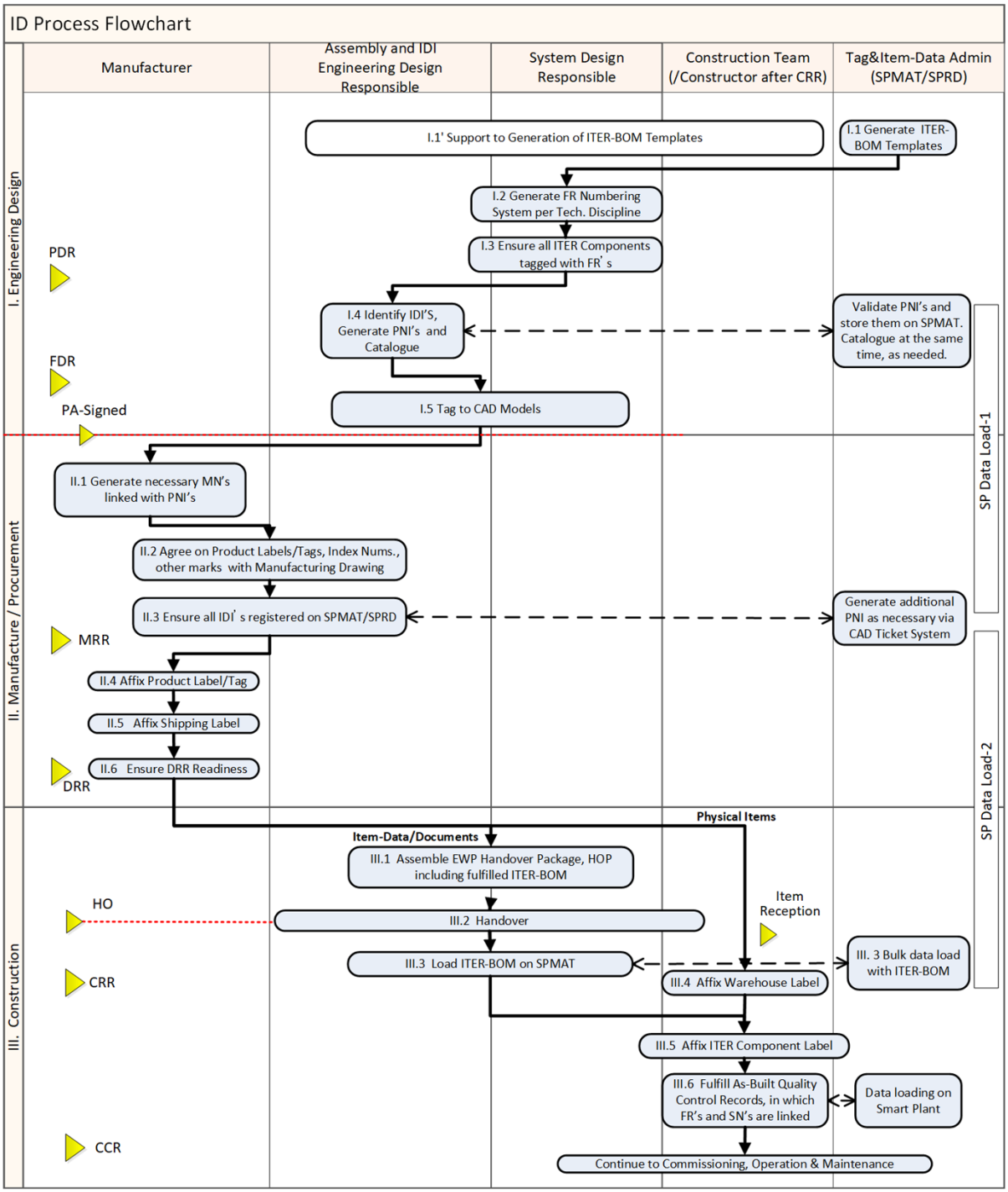


Fig. 7 Flowchart. This flowchart is valid for B-t-P PA as it is. Responsibility assignments for each type of PA are described in Section 7.

6.1 Process Steps

6.1.1 I. Engineering Design

I. a) System Design (Control Gate: PDR)

I. 1 Generation of ITER-BOM Templates

- Tag & Item-Data Admin shall generate ITER-BOM Template for each technical discipline, e.g. piping, mechanical, supported by IO-Eng-RO's and Construction Team.

I. 2 Generate FR Numbering System per Discipline

- System Design Responsible shall generate FR Numbering System per Technical Discipline;
- The document for the FR schema shall be approved before the implementation.

I.3 Ensure all ITER Components identified and tagged with FR's

- System Design Responsible shall tag to designed (major) ITER Components with the FR's, in the data/documents, e.g. diagrams, Equipment Lists, Line Lists;
- FR's are validated at the approval of the related data/ documents, e.g. Equipment List, Line List, diagrams.

I. b) Site-Assembly and Item Engineering Design (Control Gate: FDR)

I. 4 Identify IDI'S, Generate PNI's and Catalogue – SP Data Load-1 [9]-

- Assembly & IDI Engineering Design Responsible shall:
  - Identify all IDI's to be tagged with the PNI's;
  - Request the PNI's via IO-Eng-RO, who will issue a CAD-Ticket to obtain the necessary PNI's;
- Once the PNI's are validated, those IDI's are registered in SPMAT;
- Among them, Standard IDI's are catalogued in the ITER Catalogue on the dedicated IT database, SPRD (See the criteria in 3.1 Definition).

I. 5 Tag to CAD-Data, i.e. CAD-UID with FR and PNI

- System and Assembly & IDI Engineering Design Responsible with CAD-Designers shall tag to CAD Data with the FR's and/or the PNI's, so as that the CAD-UID's and the FR's and/or PNI's are correlated.
  Note that the CAD-Data is one of the critical source of data for the ITER-BOM related to the site-assembly work, namely the "Site-Assembly Drawing[7]."

All ITER Components shall be identified and tagged with FR's no later than FDR.

6.1.2 II. Manufacture/Procurement

II. a) Manufacturing Design (Control Gate: MRR)

II. 1 Manufacturer to generate all necessary MN's (linked with PNI's) [3]
The Manufacturer shall:

[7] Those to be controlled on PLM. At present, those are stored in SMDD[31].

- Generate Manufacturer Model/Part Numbers, MN's tagging to all concerned items, including Non-IDI's, under control of the Manufacturer;
- Generate a list of IDI's to correlate the PNI's, the MN's and the SN's.
  Note: Make reasonable groups of items in order to facilitate tagging with PNI's.

II. 2 Agree on Product Labels/Tags, Index Nums., other marks with Manufacturing Drawing

Manufacturer and IO-Eng-RO shall agree on Product Labels/Tags, Index Nums., other marks with Manufacturing Drawing, before the MRR.

II. 3 Ensure all IDI's are planned and registered on SPMAT

- The Manufacturer shall generate a list of planned IDI's to deliver;
- The IO-Eng-RO shall ensure all IDI's are planned and registered on SPMAT (SP Data Load-1)
  Note: Necessary quantities including spares shall be ensured.

II. b) Manufacture (Control Gate: DRR)

II. 4 Affix Product Label/Tag

- The Manufacturer shall affix the product labels/tags including the necessary data.

II. 5 Affix Shipping Label

- Manufacturer or transporter shall affix the shipping labels including the necessary data.

II. 6 Ensure DRR Readiness

- HS Process to specify in detail[23];
- Respecting the HS Process; verify the controlled item and that the identification provided on the labelling/tagging matches what is stated on the DRR documentation (Manufacturing Dossier, Release Note, Delivery Report, Packing List) per the DRR Working Instruction [23])

6.1.3 III. Construction

III. a) Preparation for Construction, e.g. Handover (Control Gate: CRR)

III. 1 Completion of ITER-BOM

- The IO-Eng-RO, in this case the "EWP Leader[8]," shall complete EWP-HOP including the completed ITER-BOM.
  Note: All attribute data required with the template shall be consistent with the source data

III. 2 Handover, HO

- Handover from IO-Eng-RO to Construction Team [7];
- If the ITER-BOM is loaded on SPMAT(/SPRD) before HO, a) reloading on SPMAT or b) re-verification on SPMAT with respect to the accepted HOP is needed.

[8] Construction Team is using this terminology, "EWP Leader."

III. 3 Load ITER-BOM on SPMAT

- Tag & Item-Data Admin shall load the fulfilled ITER-BOM on SPMAT (SP Data Load-2).

III. b) Construction (Control Gate: CCR)

III. 4 Affix Warehouse Label

- Once IDI's are received, the Construction Team shall affix Warehouse Labels for the site material control.

III. 5 Affix ITER Component Label

- At completion, e.g. installation of an ITER Component, the Construction Team or DA in charge of the construction shall affix the ITER Component Label.

III. 6 Fulfil As-Built Quality Control Records, in which FR's and SN's are linked

- Tag & Item-Data Admin shall load the as-built data on SmartPlant, in order to create the link between the FR, the PNI(s) and the SN(s).

Once Commissioning, Operation & Maintenance, and subsequent phases are specified in official MQP documents, this MQP-L2 should be revised. At minimum, any controlled items and data/documents used or generated in those phases shall be tagged with the Item-ID-Codes properly for full traceability purposes.

7 Responsibility

In this section, the general responsibility of each role is described first, then the specific responsibility assignments for all five types of PA's are explained in Paragraph 7.2 (Tables 1 to 5).

7.1 General Responsibilities

7.1.1 IO-Eng-RO (and Supervisor)

- Generate contractual documents and/or technical specifications, e.g. PA-Annexes A and B in compliance with this procedure and the associated MQP-L3 procedures
  Note: This MQP-L2 will be listed in the DA Applicable Documents in PA-Annex-A;
- Generate and validate specific templates of item lists, e.g. Equipment List, necessary for Engineering Design;
- Generate FR Code Schema per technical discipline;
- Generate ID-Code Schema for Item-Type-Descriptors (optional, see ref [3]);
- Determine and validate FR's with the diagram, the Equipment List, etc.[9];
- Request for PNI [9] and/or TTT [4] via the CAD-Ticket, then obtain and distribute to DA/Manufacturer;
- Generate specific Item Lists, e.g. Equipment List, BOM for Site-Assembly, then maintain them as source data of the ITER-BOM;
- Control all IDI's under his or her responsibility with item lists. For instance:

[9] Verification to be supported by CAD-Designers.

  - Record Non-Conformity during the transportation, etc. associated with the As-Built IDI;
  - Check if all physical labelling/tagging are done before the shipment;
  - Control status of the IDI's, e.g. Pass/Fail/Hold at a verification test; etc.
- IO-Eng-RO's and Document Controllers to check if documents tagged with key Item-ID-Code(s).

7.1.2 Construction Team

- Generate requirements, contractual documents and/or technical specifications for logistics, warehouse and/or construction, in compliance with this procedure and the associated MQP-L3 procedures;
- Generate and approve templates for ITER-BOM's and for other specific item lists necessary for Shipping, Warehouse and Construction, e.g. Packing List;
- Accept completed ITER-BOM's at EWP-HO.

7.1.3 DA/Manufacturer

- Respecting the Quality Plan [16] and the contractual documents, e.g. PA-Annex-B, implement item identification and full traceability;
- Any item-related documents shall be tagged with the concerned Item-ID-Code;
- Send the required item lists (in PDF format), and the original Excel file (Digital) to IO-CT. If it is requested by the IO-TRO then mutually agreed with the DA, it becomes a responsibility for DA/Manufacturer to provide it;
- Generate Manufacturer Model/Part Num., MN Code Schema, and submit it to IO-CT, as necessary;
- Generate and attach MN's, SN's, Lot/Batch Nums., etc. to items and the related data/ documents as necessary, respecting their procedure;
- Generate Item Lists, e.g. Packing List, BOM issue for manufacturing, List of As-Built IDI's;
- Receive PNI's from IO-CT, and attach to items for delivery and/or list them in the Item Lists, e.g. List of As-Built IDI's, Packing List, as necessary;
- MN and PNI shall be linked, e.g. described together, on a physical label and in data/documents, e.g. item list, regarding each IDI;
- For physical labelling, attach Product Label/Tag, engraving, laser marking, etc. (See Appendix-A and ref [8]);
- After delivery, provide support to IO-Eng-RO for the creation of the Handover Package (HOP), especially the ITER-BOM, if the IO-Eng-RO and the DA mutually agreed;
- Support to IO-CT in case of problems. For instance, find internal documents regarding a concerned item, as necessary.

7.1.4 Project Tagging and Item-Data Administrator (Tag & Item-Data Admin)

- Create and provide new PNI responding to a CAD-Ticket by IO-Eng-RO;
- Register and maintain PNI and the attribute data in SPMAT and ITER-Catalogue;
- Generate and control TTT-Codes [4] answering to the request by IO-Eng-RO;

- Regarding FR, support IO-Eng-RO to generate diagrams and the associated Equipment Lists, Line Lists, etc., in which ITER Components are tagged with FR's;
- Define general numbering system and Item-ID-Code schema for FR, PNI and TTT-Code, as MQP-L3 documents;
- Generate ITER-BOM template for data loading on SPMAT/SPRD, supported by IO-Engineers;
- Load data on SPMAT/SPRD, or support users to load data on the database;
- Maintain item-data on SPMAT/SPRD allowing access by users;
- Organize training for ID Process;
- Consultation and/or support for users;

Note: For example, ID-Process Owner to delegate part of his or her authority to:

- *Tag & Item-Data-Admin: Responsible and Accountable for the roles above;*
- *Status Accounting: Configuration Management Team to ensure the item-data and the process complying with MQP-Documents and other specific rules for ID Process;*

7.2 Responsibility Assignment for Five Types of PA's

Responsibility assignments for five types of PA's [17] are explained.
Regardless of the type of PA, the IO-TRO shall specify all necessary works to be carried out by the DA, with the PA-Annex-B in compliance with the MQP-L3 documents, [3] , [4], [8], [9], [10] and the one for SP Data Load-2 Process [36].

General responsibilities of DA's are described in Table 1.

Table 1 General Responsibility of DA per PA-Type

Activity	BtP-PA /Supply-PA	DD-PA	FS-PA
I-a. System Design	-	-	X
I-b. Assembly & IDI Engineering Design	-	X	X
II. Manufacturing Design and Manufacture	X (Only procurement for Supply-PA)	X	X
III-a. Preparation for Construction	As required, e.g. Integration PA		
III-b. Construction	As required, e.g. Integration PA		
IV. Commission and onward	As required		

7.2.1 B-t-P PA

Table 2 shows the responsibility assignment for B-t-P PA.

Table 2 Responsibility Assignment, RASCI Matrix regarding B-t-P PA

Phase	Step #	Work to be done	IO-Eng-RO	DA / Manufacturer	Construction Team
I. Engineering Desi	I.1	Generation of ITER-BOM Templates*	S	-	S, A
	I.2	Generate FR Numbering Schema for Discipline	R,A	-	-
	I.3	Ensure all ITER Components identified and tagged with FR's	R,A	I	C
	I.4	Identify IDI'S, Generate PNI's and Catalogue	R,A	-	C

	I.5	Tag to CAD-Data, i.e. CAD-UID with FR and PNI	R,A	C	I
II. Manufacture / Procurement	II.1	Generate all necessary MN's (linked with PNI's) [3]	A	R	-
	II.2	Agree on Product Labels/Tags, Index Nums., other marks with Manufacturing Drawing	A	R	I
	II.3	Ensure all IDI's are planned and tagged with PNI's	A	R	-
	II.4	Affix Product Label/Tag	A	R	-
	II.5	Affix Shipping Label	-	R, A	-
	II.6	Ensure DRR Readiness	A	R	C
III. Construction		N/A			
IV. Commission		N/A			

R: Responsible, A: Accountable, S: Support, C: Consulted and I: Informed

*) Tag & Item-Data Admin to generate ITER-BOM Templates. They also support IO-Eng-RO, DA, and Construction Team throughout the process steps.

7.2.2 Supply PA

- DA shall perform the same work steps and documentation as for B-t-P PA shown in Table 2, except for manufacturing related works and the document deliverables.

7.2.3 Detailed Design, DD-PA

Table 3 shows the responsibility assignment for DD-PA.
DA/Manufacturer shall:

- Complete the assembly design and the detailed IDI design, in addition to the contents for B-t-P PA (Table 2);
- Generate BOM for Site-Assembly and Preliminary Delivery List, etc., which will be reviewed at FDR.

Table 3 Responsibility Assignment, RASCI Matrix regarding DD PA

Phase	Step #	Work to be done	IO-Eng-RO	DA / Manufacturer	Construction Team
I. Engineering Design	I.1	Generation of ITER-BOM Templates	S	-	S, A
	I.2	Generate FR Numbering Schema for Discipline	R,A	-	-
	I.3	Ensure all ITER Components identified and tagged with FR's	R,A	C	C
	I.4	Identify IDI'S, Generate PNI's and Catalogue	(R,)A	R	C
	I.5	Tag to CAD-Data, i.e. CAD-UID with FR and PNI	(R,)A	R	I
II. Manufacture / Procurement		All the same as for B-t-P PA			
III. Construction		N/A			
IV. Commission		N/A			

(R) represents Co-Executor.

7.2.4 Functional Specification, FS-PA

Table 4 shows the responsibility assignment for FS-PA.

In addition to the works specified for DD-PA, DA/Manufacturer shall:

- Complete the system design and the deliverables, e.g. Equipment List, Line List;
- Request for necessary FR's, TTT-Codes [4], and PNI's to IO-Eng-RO.

Table 4 Responsibility Assignment, RASCI Matrix regarding FS-PA

Phase	Step #	Work to be done	IO-Eng-RO	DA / Manufacturer	Construction Team
I. Engineering Design	I.1	Generation of ITER-BOM Templates	S	S	S, A
	I.2	Generate FR Numbering Schema for Discipline	(R,)A	R	-
	I.3	Ensure all ITER Components identified and tagged with FR's	(R,)A	R	C
	I.4	Identify IDI'S, Generate PNI's and Catalogue	(R,)A	R	C
	I.5	Tag to CAD-Data, i.e. CAD-UID with FR and PNI	(R,)A	R	I
II. Manufacture / Procurement		All the same as for B-t-P PA			
III. Construction		N/A			
IV. Commission		N/A			

(R) represents Co-Executor.

7.2.5 Site-Assembly, e.g. Integration PA

Table 5 shows the responsibility assignments in the construction phase, regarding two cases, a) no requirement in PA Annex-B, and b) required in PA Annex-B, such as Integration PA. If required, DA/Manufacturer shall:

- Prepare HOP, then achieve the successful HO with IO-TRO (Steps III.1 and III.2);
- Control items and generate necessary documentation until the completion of the site-assembly/installation, i.e. CCR;
- At installation of the concerned items, as required, affix ITER Component Labels (Step III.5);
- Generate As-Built documentation, e.g. As-Built Equipment List filled up with SN's (Step III. 6).

Table 5 Responsibility Assignment, RASCI Matrix in Construction

a) No construction included

Phase	Step #	Work to be done	IO-Eng-RO	DA / Manufacturer	Construction Team
III. Construction	III.1	Assemble EWP Handover Package, HOP including completed ITER-BOM	R, A	S	C
	III.2	Handover	R	-	A
	III.3	Load ITER-BOM on SPMAT	C	-	R, A
	III.4	Affix Warehouse Label	-	-	R
	III.5	Affix ITER Component Label	-	-	R, A
	III.6	Fulfil As-Built Quality Control Records including completed Equipment Lists, etc., in which FR's and SN's are linked	I	-	R, A

b) With construction, e.g. Integration PA

Phase	Step #	Work to be done	IO-Eng-RO	DA / Manufacturer	Construction Team
III. Construction	III.1	Assemble EWP Handover Package, HOP including completed ITER-BOM	(R,) A	R*	C
	III.2	Handover	R	R*	A
	III.3	Load ITER-BOM on SPMAT	C	C	R, A
	III.4	Affix Warehouse Label	-	-	R
	III.5	Affix ITER Component Label	-	R	A
	III.6	Fulfil As-Built Quality Control Records including completed Equipment Lists, etc., in which FR's and SN's are linked	I	R	A

*) If required with the contractual document, i.e. PA-Annex-B.

7.2.6 Commission Onwards

To be defined later, once the process is developed by the Operation and Maintenance (OM) Process.

8 Link with Other Processes

The ID Process is a cross-cutting process linked with other MQP-Processes. The link with the Operation and Maintenance (OM) Process[10] to be specified in the future, as the process is defined.

Interactions with Configuration Management, CM Process

- Definition of "Controlled Items", which include temporary tools, consumables, etc., shall be consistent with the definition in [2];
- Relationship between an item and related technical documents are the common concern [2]. Methodology of document tagging to be consistent;
- PBS-Codes as parts of FR's and GBS-Codes as attribute data shall be provided by CM Process;
- EWP-Handover is under CM Process [7].

Interactions with Design Control, DC Processes

- Implement the requirement of ID Process in technical specifications, procedures, etc. in the Design Phase;
- Part of the source data for ITER-BOM's to be generated in this process.

Engineering Data/Document Management and Gate Reviews (CM and DC Processes)

References: Configuration Management: [2] and Design Control: [23], [19]

- Implement the requirement of ID Process in each gate (See Appendix-D);
- Ensure that Item Lists including the ITER-BOM have reached the appropriate level of maturity before processing to the next level/phase of the project;
- Generation of specific Item Lists shall be planned and executed according to the Document Production Plan, DPP [DPP Procedure (TBD)];
- PLM/Matrix to control Engineering data/documents, which is the source data of the ITER-BOM, is in the scope of CM Process.

[10] Necessary item-related data/documents on SP are transferred or linked to SAP Plant Maintenance (PM) for commissioning and the later.

Interactions with Quality Control, QC Process

- QC process, e.g. site inspection test, is closely related to this process, since the status of the items can be changed according to the results of tests, e.g. Factory Acceptance Test (FAT), for example "Pass," "Fail" or "Hold";
- Verify whether resultant reports, e.g. site inspection reports, are properly tagged with the key Item-ID-Codes.

Interactions with Software Control and Model Development, SW Process

References: CAD Manuals in the folder[11]

- CAD-Model is also tagged with Item-ID-Codes, i.e. FR and/or PNI. Ultimately, CAD-UID's, FR's and PNI's are linked together;
- Provide CAD-UID's to be included in format of PNI tagging to some IDI's;
- Part of the data in ITER-BOM's to be exported from the CAD-Systems.

Interactions with Documents and Records, DR Process

- The ID Process requests DR Process to add some IDM and/or PLM Document Metadata, i.e. key Item-ID-Codes, FR, PNI and SN, as "tags to document."

Manufacturing, Assembly and Installation, MA Process

References:[21] [22]

- Implement the requirement of ID Process in technical specification, procedure, etc.;
- Define the contents of the EWP-HOP [7];
- ITER-BOM is to be handed over by IO-Eng-RO, i.e. EWP-Leader ;
- Specify and request necessary attribute data included in ITER-BOM templates;
- Part of the source data for ITER-BOM's to be generated in this process.

Handling, Storage and Transportation of Materials (HS-Process)

References: [24], [25], and [26]. For DRR, [23].

- Implement the requirement of ID Process in technical specification, procedure, etc.;
- Responsible for tagging and item control, regarding logistics, warehouse and construction;
- Provide the definition of DRR and the necessary documentation [23].

Cross-Cutting Process (QA, PK and NS Process)

References: Quality Assurance: [1], [27]. Nuclear Safety: [28], [29], [30], [34] and Procurement in Kind (In-kind, i.e. PA) [17], [20]

- Define attribute data, i.e. important classification codes, e.g. PIC/SIC, PE/NPE, QC, including the selectable Code Masters, e.g. "QC-1, QC-2, QC-3";
- Requirements for 5 types of PAs shall be consistent with this MQP-L2.

[11] https://user.iter.org/default.aspx?uid=2FQDLM (to be updated consistent with this MQP-L2)

9 Outputs (Records, Deliverables, Implementation Plans..)

Any item-related data/documents and data set in the databases shall be tagged with key Item-ID-Codes, i.e. a) Item-Type-Ref-Num, e.g. PNI, MN, b) SN and/or c) FR as necessary. Respecting this source data, the ITER-BOM is generated and loaded on SmartPlant. Output documents within ID Process are as follows.

Type of output	Format (Template, form, checklist)	Location of output	Document type	Instructions for identification of the output	Responsible for managing the output	Retention period
Completed ITER-BOM	To be provided for each technical discipline by Tag&Item-Data Admin.	PLM/Matrix	List	Tagged with EWP Code, etc.	IO-Eng-RO	Over the project lifecycle
ITER Catalogue on SPRD	N/A	SPRD	Digital Data	N/A	Tag & Item-Data Admin	Over the project lifecycle
Item Data on SPMAT	N/A	SPMAT	Digital Data	N/A	Tag & Item-Data Admin	Over the project lifecycle

Appendix-A Contents of Physical Labels

Table A-1 Minimum contents of the label

Label	By whom	When	Mandatory contents	Additional information
Product Label	Manufacturer	Before DRR	1) Title of Product, 2) Manufacture Model/Part Number, MN, 3) PNI*3, 4) SN/Lot Number*4,, 5) Safety Classification*5, e.g. PIC/SIC, PE/NPE, 6) Quality Class.	1) Other Ref. Num., 2) Dimensions, 3) Weight, 4) Supplier, 5) Production Date (DD/MM/YY), 6) CE marking, as required.
Shipping Label*1	Manufacturer	Before DRR	1) Title of crate, 2) Purchase Order, PO, Contract Number, PA Code, etc., 3) Shipping/Crate Num., 4) Supplier Ref. Num., 5) MN, 6) PNI*3, 7) SN/Lot Number*4, 8) Safety Classification, e.g. PIC/SIC, PE/NPE, 9) From (Sender)/To (Receiver), 10) Net/gross weight, 11) Responsibility, 12) Packing Date (DD/MM/YY), 13) Shipping Date (DD/MM/YY).	1) Dimensions, 2) Other Ref. Num., 3) Quantity in the crate
Warehouse Label	IO/CST	At reception	See ref [8] (To be generated by Handling, Storage and Transportation (HS) Process)	Always generated and affixed to an item by IO-CT
ITER Component Label*4	Construction Team and Contractor	Before CCR	1) Title of ITER Component, 2) FR, 3) Safety Classification, e.g. PIC/SIC, PE/NPE, 4) QR Code implying relevant attribute data.	See the successful implementation by PBS-65 ref [5]

*1) Accompanying signs, e.g. sign of handling precaution during transportation.
*2) PNI can be accompanied by Item-Type-Descriptor (in parentheses).
*3) If fully traceable, SN/Lot Number is not always required to be included in a label.
*4) Dedicated PE/NPE label to be provided with [A1] in addition to the ITER Component Label. If the contents complying both the requirements, the physical labels can be merged.
*5) If over qualified component is installed as an ITER Component of the lower classification, then delete this from the Product Label at the installation, because the correct classification code is presented in the ITER Component Label. For example, a valve qualified as SIC-1 to be installed as a SIC-2 ITER Component.
[A1] Template for PE/NPE Name Plate [Y3AZ83]

Appendix-B Contents of Specific Item Lists

Table B-1 Contents in Specific Item List for Engineering Purpose

	1) Equipment List, Line List, etc. [13]	2) BOM for Site-Assembly [12]	3) List of As-Built IDI's in Quality Control Record	4) List of Deliverables [14]	5) Packing List[14], [15]
Contents in the list of items	• Title of ITER Component; • Functional Reference, FR; • PNI, if identified; • Importance Classification, e.g. PIC/SIC, PE/NPE, Quality Class; • Interface/Layout, e.g. GBS; • System/Plant Functional Property, such as Operation Pressure; • Reference Documents, Drawing, Diagram, e.g. GA, PFD. Additional fields, as required.	• Title of Item; • Part Number of ITER, PNI; • FR*, if already decided; • Quantity and the Units Of Measure, UOMs; • Physical properties, e.g. dimensions, weight and the UOMs; • Importance Classification, e.g. PIC/SIC, PE/NPE, Quality Class; • IDI functional properties, e.g. design pressure; • Reference documents, e.g. Technical Specification, Drawing. Additional fields, as required * FR shall be in the drawing.	• Title of Item ; • PNI ; • SN ; • Manufacturer Model/Part Number, MN, if any; • Quantity and the UOM; • IDI Physical Properties, e.g. dimensions, weight and the UOMs ; • Importance Classification, e.g. PIC/SIC, PE/NPE, Quality Class; • Reference documents, e.g. relevant NCR (as necessary). Additional fields, as required.	• Title of item; • PNI; • Quantity and the UOM; • Physical properties, e.g. dimensions, weight and the UOMs; • Importance Classification, e.g. PIC/SIC, PE/NPE, Quality Class; • Reference documents. Additional fields, as required	• Title of Item; • PNI ; • SN ; • Manufacturer Model/Part Number, MN , if any; • Quantity and the UOM ; • IDI Physical Properties, e.g. weight and the UOM's; • Importance Classification, e.g. PIC/SIC, PE/NPE, Quality Class; • Reference documents, e.g. relevant NCR (as necessary). Additional fields, as required
General data in the title block	(Sub-)System Name, PBS-Code, GBS-Code, RO, etc.	PBS-Code, GBS-Code, FR, PA / Contract-Code, RO, etc.	PBS-Code, PA/Contract-Code, RO, etc.	PBS-Code, PA/Contract-Code, RO, IPL, etc.	PBS-Code, PA/Contract-Code, RO, Inter-Project Links (IPL's), etc.
Note		Sub-set of a BOM for certain Construction Work Packages (CWP) is sometimes required. This BOM shall list all IDI's described in the Assembly Requirement Drawing(s) and (Multi-) Component Drawing(s) [11].	SN as necessary.	The contents of the Planned Delivery List at MRR can be different from the ones in the Preliminary Delivery List. For instance, items can be split for transportation reason. Planned Delivery List shall describe both PNI's and the corresponding MN's.	SN as necessary.

Appendix-C Summary of Requirements for DAs within the ID-Process

C-1 General Requirements common to all PA Types

#	General Requirement for DA	Remarks	At latest
RG1	Items and the related data/document shall be fully traceable respecting PA-Annex-B and the Quality Plan, QP.	At minimum, any document by DA/Manufacturer shall be tagged with MN (and SN). Tagging with PNI in addition to MN is preferred.	MRR (for Manufacturing Design) DRR (for As-Built)
RG2	Tag all the deliverables, e.g. hardware, software, data/documents, in MRR or DRR, as specified within this procedure and other PA documents.	All deliverables shall be properly tagged with Item-ID-Code,. BOM for Shop-Assembly to be generated. However, these are out of scope of ID-Process.	MRR(for Manufacturing Design) DRR (for As-Built)
RG3	Regarding any type of Item List as PA Deliverable, agree on the contents and the format with IO-TRO.	IO-CT should provide the templates to specify the requirement.	PA Signed
RG4	Submit MN Code Schema as FYI (optional)		MRR
RG5	Submit original Excel files of Item Lists in addition to the official deliverables, as necessary (as mutually agreed).	The Excel files are exception from responsibility	Any Time
RG6	Support IO-TRO in order to prepare EWP-HOP for construction. Consulted with IO-TRO, as the responsible for Manufacturing Design and the Manufacture.	As necessary	Any time

C-2 Specific requirement for B-t-P PA

#	Requirement for DA within ID Process	Remarks	At latest
RM1	Agree with IO-TRO on Product Labels/Tags regarding the locations, the materials, the methods of affixation, etc., on the Manufacturing Drawings.		MRR
RM2	Agree with IO-TRO on tagging to interface with index number, etc., on the Manufacturing Drawing		MRR
RM3	Submit Planned Delivery List in compliance with the items and the quantities specified in PA-Annex-B	To each item, i.e. IDI, both PNI and Manufacturer Model/Part Number (MN) should be tagged to. The quantity and other attribute data, e.g. PIC/SIC, PE/NPE, QC shall be described.	MRR
RM4	Acquire additional PNI from IO-TRO, if new IDI is identified in the Manufacturing Design, etc.	Request for PNI and Cataloguing via CAD-Ticket System is only entitled to IO-TRO [9].	MRR
RM5	Product Label: Physical labelling/tagging on each as-built (As-Manufactured) IDI.		DRR
RM6	Affix necessary marks/signs, e.g. CE Marking, lifting/handling, Centre of Gravity, to the product, as required.		DRR
RM7	Submit a list of As-Built IDI's as a part of As-Built Quality Control Records.	To each listed item, PNI, MN and SN/ Lot Num. shall be tagged and linked with. Other as-built data, e.g. Ref. Num. of relevant NCR, check for	DRR

		physical labelling, should be included.	
RM8	Submit Packing List.	PNI, MN and SN/Lot Num. and quantities and attribute data, e.g. Shipment, Crate shall be documented.	DRR
RM9	At the time of packaging, cooperate with IO-TRO for "kitting" taking into account of the material handling on site and the construction process.	For instance, instead of tagging small items, e.g. bolts, nuts, with the PNI's, affix one PNI to the Kit made up with all the necessary items.	DRR
RM10	Affix Shipping Labels to shipping crates.	Include all necessary information, e.g. PIC/SIC, PE/NPE	DRR

C-3 Specific requirement for Supply PA

Basically, the requirement is the same as for B-t-P PA. Manufacturer Model/Part Number (MN) is already determined at the Purchase Order (PO), DA to use PNI's in the physical labels, the documentation, etc., associated with the MN's.

C-4 Specific requirement for DD PA

In addition to the As-Built PA requirements, the following is required.

#	Requirement for DA within ID Process	Remarks	At latest
RD1	Identify all IDI's to deliver, and tag them with PNI's	Request PNI to the IO-TRO	FDR
RD2	Tag all the engineering data/documents with PNI and/or FR.		FDR
RD3	Tag to CAD-Data, i.e. CAD-UID with FR's and/or PNI's, as necessary.		FDR

C-5 Specific requirement for FS PA

In addition to the DD PA requirement, the following is required.

#	Requirement for DA within ID Process	Remarks	At latest
RF1	Generate FR Numbering Schema within the scope of the PA.		PDR
RF2	Identify all ITER Components and tag them with the FR's.	Request necessary TTT-Code to IO-TRO	FDR
RF3	Generate data/documents, e.g. diagrams, Equipment List, to validate the FR's upon their approvals.	Sign-off authorities are in [18]	FDR

C-6 Specific requirement for PA Including Site-Assembly, e.g. Integration PA

If site-assembly/installation by DA is included in the PA scope, the following is required.

#	Requirement for DA within ID Process	Remarks	At latest
RC1	Assemble EWP Handover Package (HOP) including completed ITER-BOM*.		HO
RC2	Handover*		HO
RC3	Support to load ITER-BOM on SPMAT.	[36]	HO (at latest CRR)
RC4	Affix ITER Component Label.	[8]	CCR
RC5	Fulfil As-Built Quality Control Records including completed Equipment Lists, etc., in which FR's and SN's are linked.		CCR

*) If required with the contractual document.

Commissioning onwards: TBD

Appendix-D Checklist at Each Control Gate/Point

Table D-1 shows a checklist associated with Control Gates/Points, where completeness, consistency and conformance of the tagged items and the data/documents are ensured.

Table D-1 Check List

	Gate	Questions	Check	Reference		
	General (at each Control Gate/ Point)	Are all item related data/documents tagged with Item-ID-Code and fully traceable? (Including items described in the data/documents, e.g. Drawing, Diagram, 3D Model)				
		Are all the deliverables of ID Process consistent with other data/documents, i.e. “the source data”?				
Before SP Data-Load-1	PDR	Are major ITER Components tagged with FR’s in Diagram, GA, Equipment List, etc., respecting the developed discipline ID-Code Schema?		[19]		
	FDR	Are all ITER Component tagged with FR’s?				
		Are all IDI’s identified and tagged with PNI’s?				
		Are IDI’s in CAD-Data tagged with FR and/or PNI?				
	B-t-P PA signed	Are all IDI’s to be delivered identified within PA-Documents (as the Preliminary Deliverable List)?				
	MRR	Are all items tagged with MN’s, then IDI’s, which are selected among the items, tagged with PNI’s in item lists, e.g. BOM, enclosed in the Manufacturing Dossier?		[21]	Quality Plan, QP [16]	
		Are necessary IDI-Types tagged with PNI’s loaded on SPMAT/SPRD? < SP Data Load-1 >				
Before SP Data-Load-2	DRR	Are all IDI’s identified and physically labelled/tagged?		[23]		Preservation Procedure [35]
		Are the check record of the physical labelling/tagging in the As-Built Quality Control Records?				
		Are all IDI’s to deliver identified in the Packing List?				
		Are physical labels affixed on all crates/packages?				
		Are all IDI’s to be delivered are registered on SPMAT?				
	Reception	Are physical labels/tags affixed properly?		[25]		
		Are actual crate/package, the Packing List and other the documentation consistent?				
	HO	Are all IDI’s and the related data/documents consistent?		[7]		
		Are all necessary IDI’s identified in ITER-BOM and other item lists?				
	CRR	Are all IDI’s tagged with the PNI’s loaded on SPMAT with ITER-BOM Template? < SP Data Load-2 >		[22]		
		Are all the items identified and tagged properly in the data/documents, regarding each CWP?				
	CCR	Are ITER Components physically tagged with the FR’s? Is the check record stored in the Quality Control Record?		[5], [8]	QP[16]	
		Are as-built data/documents including links between FR’s and SN’s loaded on SmartPlant properly?				

Appendix-E Instructions for Recovery from Contingency Cases

The basic principle of recovery is:

- Recovery action is under the responsibility of the IO-Eng-RO, namely the TRO for the PA deliverables. As necessary, DA is requested to support;
- When there is a non-conformity to the PA-Annex-B and/or the Quality Plan, e.g. missing identification, the DA is subjected to raise an NCR, and to respect the subsequent decision;
- If a problem is due to the insufficient requirement in the contractual document, e.g. PA-Annex-B, the IO-Eng-RO shall take all the responsibility to recover;
- Non-Conforming Items arriving on site are immediately isolated in "Quarantine" (a designated area in the warehouse).
  Note: This does not mean an accepted non-conformity, but newly detected one.
- Technical recovery work shall not be requested of the warehouse staff;
- IO-Eng-RO shall recover Item-Data problems supported by Tag & Item-Data Admin;
- Together with the recovery actions below, the related data/documents should be updated, so as that the consistency is maintained.

Four contingency cases are described below.

E1 Delivery without PNI

- Obtain PNI(s) via CAD-Ticket System respecting [9], then register the IDI in SPMAT;
  Note: The MN and the newly obtained PNI shall be correlated in SPMAT and/or in the list of As-Built-IDI's, in order to make the item-data/documents fully traceable;
- Recover Physical Labels/Tags as described in E2, below.

E2 Missing Physical Label/Tag or Missing Data on Label/Tag

- Produce Physical Labels including the PNI's, then affix them in the adequate positions in an appropriate manner;
- If mutually agreed between IO-Eng-RO and Construction Team, recovery with ITER Component Label including the information of the product, can take place at a later date, in which case a temporary label/tag is required.

E3 Inconsistency between Enclosed IDI's and Packing List

- To be decided by HS process;
- DA/Manufacturer shall recover the data/documents including ITER-BOM (if already loaded on SPMAT);
- If needed, the Product Label/Tag to be corrected respecting the decision of the NCR;
- Tag & Item-Data Admin to correct the data on SPMAT, as necessary.

E4 Imperfection of ITER-BOM for PNI Request and/or SmartPlant Data Load

- Submit the missing data via CAD Ticket system, then communication with Tag & Item-Data Admin, as necessary;
- Respect an instruction given by Tag & Item-Data Admin.
  Note: If discrepancies happen between ITER-BOM and the source data, they shall be promptly controlled and recovered by the IO-Eng-RO.