National Defence Défense nationale

Electronic Information Environment (EIE) Project

Master Data Initialization for Industry/ISSC Service Operational Model

The information being provided is to illustrate the model that exists for business processes and information exchange within the Performance Based Contracting (PBC) solution for the Department of National Defence. The information is provided to facilitate an understanding of the business architecture and the solution architecture that exist for the PBC program. The content is not intended to reflect the end state specifications for all of the PBC EIE related services.

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1 Overview

In the context of In-Service Support Contracting Framework (ISSCF) or Performance Based Contracting (PBC) Canada performs first line maintenance, as well as applicable second line maintenance as per the specific platform requirement. As such Canada will use Canada Maintenance Management System (CMMS) to record the maintenance activities.

In the ISSCF/PBC model, industry is responsible for defining and providing all of the required information that needs to be populated within CMMS. Industry is also measured on the effectiveness of the maintenance regime and thus is interested in data collected that will enable industry to monitor and report serviceability of a fleet based on the maintenance data that is captured within CMMS.

The master data operational information exchange model has been designed and implemented with awareness as to the various validation phases that will occur on the data. Thus the model will support receiving data as a collection of datasets from industry, after which it can be processed and validated within CMMS with all of the relationship across the set of master data being preserved during the entire processing phase.

For certain platforms Canada will acquire the Master data from the specific platform builder and then process it internally within Canada. Subsequently Canada will make the Master data available to In-Service-Support Contractor (ISSC) using the model described in this document.

1.1 Intended Audience

The intended audience for this service operational model includes:

- Industry partners who require detail of their business service-level interactions, benefits, and obligations under ISSCF/PBC.
- All Canada personnel implementing ISSCF/PBC.
- Solution Architects who will define a Business Service Model for the business service(s) described here.
- Functional Testers who will define test scenarios for Integration testing.
- Designers who will perform detailed design and unit test.

1.2 References

[Ref. 1]   Electronic Data Exchange (EDE) Service Interaction Model: In the Context of In-Service Support Contracting Framework (ISSCF)/Performance Based Contracting (PBC)

[Ref. 2]   Annex O - Navy Configuration Management Process Model

[Ref. 3]   Annex P - Navy CMMS Data Initialization Process Model

Note1: Only applicable references will be made available to Industry partner based on the adoption by the platform authority within Canada – DND. Hence not all references are applicable to all platforms/fleet.

Note2: In order to determine the specific version of references included in here, the reader is advised to read the accompanying 'Release Notes" for the Master Data business domain that accompanied the release of this document.

2 Principles of data transfer and subsequent exchange

The driving principles of master data for exchange with Canada are established based on the need for the data to support broadly the following categories of the Weapon System Program in the In-Service-Support (ISS) phase namely:

- Reliability and Maintainability of the Platform
- Configuration Management Requirements for the As-Maintained Configuration
- Performance Based Accountability (PBA).

Each of the above categories warrants data to be defined with various characteristics as part of industry's responsibility of defining the maintenance program in support of the maintenance of the weapon system. Industry will assemble the required data from its respective sources such as engineering, logistical support analysis, materiel management and configuration management systems. The data that is collected will be constructed as per the defined interfaces and associated data structures that Canada has defined and disseminated to industry.

For platforms where the ISSC is not the builder of the platform, Canada will provide the as-designed, as-delivered and as-maintained master data for the ISSC to initialize the respective support systems with the applicable master data that Canada will provide prior to ISSC taking responsibility for the Master Data in an In-Service-Support capacity.

3 Constraints/Behaviours of the Data Exchange

1. Canada's Maintenance Management System will store the Master Data received from the builder of the platform and make it available to Industry once the ISS phase has begun.

2. Canada will provide the master data per platform instance (per aircraft, per ship, per armoured patrol vehicle) as applicable prior to Industry taking responsibility for data associated with the platform.

3. Canada may conduct first and second level maintenance as applicable based on the defined model as provided by industry partner who has assumed the responsibility for the ISSCF/PBC phase of the platform.

4. Canada's Maintenance Management System is used to conduct the maintenance and will store the master data that Industry has provided. Canada will use the master data and execute maintenance and other transaction within CMMS using the master data provided by Industry.

5. A predetermined release model will be defined between Industry and the respective in-service support Class Program Management office for release of master data to Industry.

6. Master data that is received from Canada will need to be technically validated for technical compliance by ISSC/Industry systems.

7. Master data received from Canada will always be business validated by the respective data owners for the specific weapon system prior to being considered for subsequent use by Industry.

4 Master Data Operational Model

Master data that is required by Industry and furnished by Canada will adhere to the following process model shown in the figures and as described below. This model is only applicable for ISSC partners who did not provide the Initial Master Data for the specific platform.

4.1 Master Data Transfer to Industry Using Secure File Transfer Model

The model depicted below in Figure 1 is for Industry partners/ISSC who have not yet established the entire information exchange infrastructure as per the defined specifications. The typical use of this model is during the initial establishment of an ISSC program.
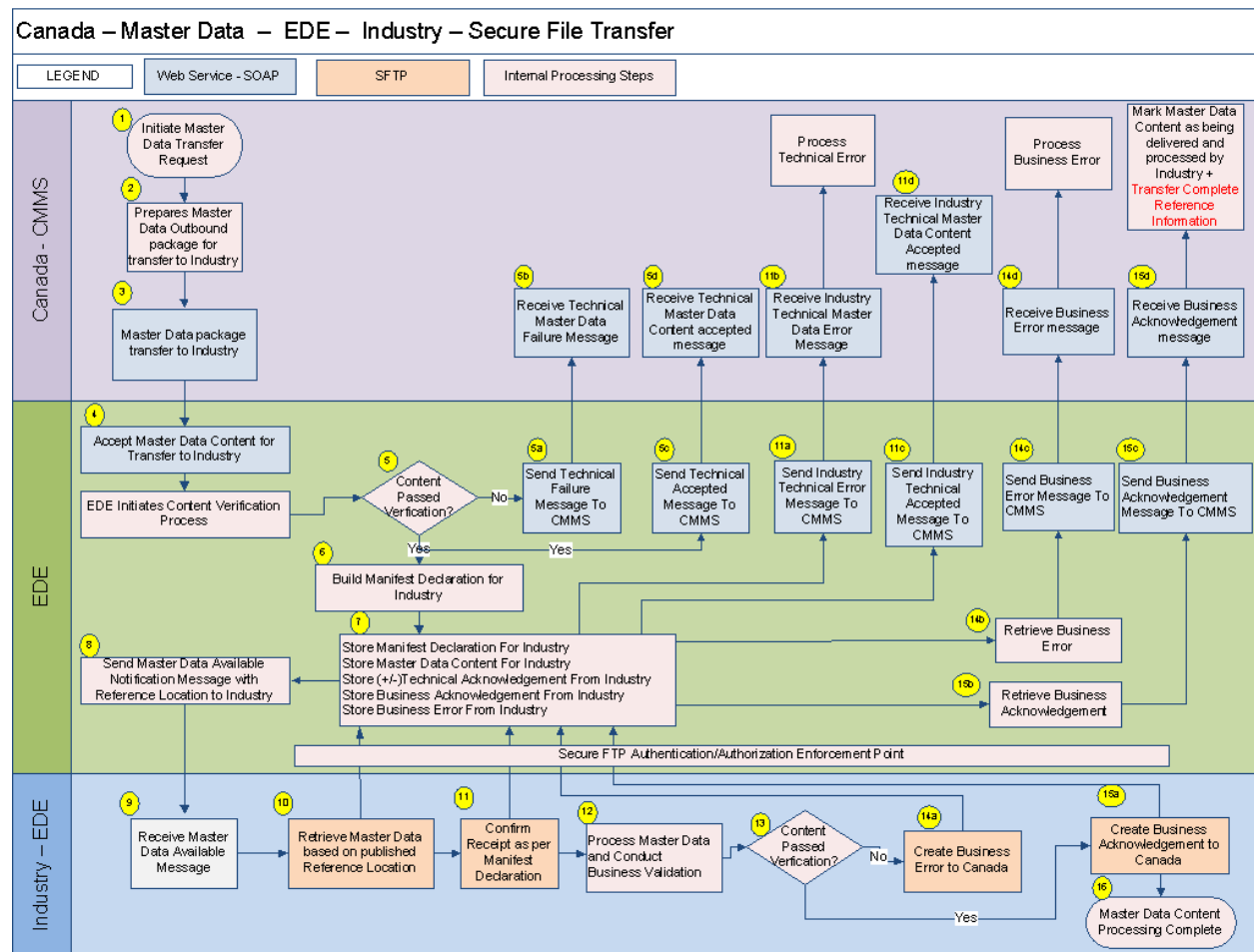

Figure 1 Master Data Process Model – Secure File Transfer

Pre-Condition: The operational model for master data commences with industry requesting from Canada through an external communication that ISSC/industry requires the master data for a specific instance of a platform.

Basic Information Exchange Flow

1) Canada creates a request for transferring Master Data for a specific platform instance (ship, aircraft, vehicle) with a Canada defined identifier for the specific request for the following reason:

   a) Initial Weapon System initialization for each instance of the Weapon System/ platform in Industry's systems

   b) Reconciliation/alignment of master data if required

   NOTE: This model will have to be accepted by the specific platform owner in Canada and will only be invoked in exceptional circumstances. It will not be considered a normal mode of operations for master data transfer.

2) CMMS will accumulate the master data transfer as per the specific instance of the platform that will include the as-maintained configuration and will be based on the request initiated by the Industry to the respective platform authority in Canada.

3) CMMS initiates the transfer of the master data objects and manifest declaration via the established interfaces to EDE.

4) EDE accepts the manifest declaration and master data object messages from CMMS.

5) EDE confirms the master data is valid and complies with the manifest declaration.

   If invalid:

   a) A technical failure message is sent to CMMS.

   b) CMMS processes the error reported and initiates the appropriate corrections.

   If valid:

   c) A technical acceptance message is sent to CMMS.

   d) CMMS processes the acceptance message.

6) Canada EDE will create the Industry manifest master data declaration message that will contain the information identified below in a designated location that will be accessible to Industry via the secure file transfer protocol (SFTP).

   a) An Authorization Identifier.

   b) The Business Object Type and the associated count.

   c) The purpose of the Unit of Work.

   d) Core message identifying elements such as: Message Identifier and a Unique Unit of work identifier.

e) All other elements required as per the [Ref.1] and UOW Service Specification.

7) Canada will create the containers for the Master data objects as per the declaration that has been provided by CMMS. The master data messages are persisted in containers for each specific master data object and are made available for industry retrieval.

8) EDE will notify Industry with regards to the availability of the master data as per the UOW declaration via the established channel for communication.

   a) For SFTP based model - an email will be sent with a reference to the location of the Master Data Manifest Declaration which defines the related master data objects.

   b) For SFTP based model - an email will be sent with a reference to the location where the Master Data object could be retrieved from.

9) Industry receives the master data notification.

10) Industry retrieves and processes the master data manifest declaration using Unit of Work (UOW) message as per the Unit of Work interface, and the associated Master Data objects.

11) On validation of the master data manifest declaration by industry, Industry will report a Technical Acknowledgement indicating acceptance of provided data or an error.

   In the event the master data manifest declaration fails validation industry will generate an error and create the negative (-ve) technical acknowledgement message in the designated location.

   a) EDE will retrieve the technical acknowledgement error message delivered by Industry.

   b) EDE will send business error message to CMMS. Canada will receive and process the error internal to Canada as per the error handling procedures in place.

   If the master data manifest declaration passes validation, Industry will acknowledge with a technical acknowledgment indicating acceptance of the manifest declaration and master data objects in the designated location.

   c) EDE will retrieve the technical acknowledgement acceptance message delivered by Industry.

   d) EDE will send technical acknowledgement message to CMMS. CMMS processes the technical acknowledgement.

12) The retrieved master data objects will be processed and go through a business validation phase conducted by industry.

13) Industry determines whether master data passes business validation.

   If successful, proceed to step 15.

   If unsuccessful, proceed to step 14.

14) If unsuccessful,

    a)   An error message will be written by Industry in the designated location as per the defined interface in the respective location designated by Canada.

    b)   EDE will retrieve the business error message delivered by Industry.

    c)   EDE will send business error message to CMMS.

    d)   CMMS will receive error message and process as per its error handling procedures.

15) If successful,

    a)   Industry will create the business acknowledgement message in the designated location as per the defined interface.

    b)   EDE will retrieve the business acknowledgement message delivered by Industry.

    c)   EDE will send business acknowledgement message to CMMS.

    d)   CMMS will receive business acknowledgement message and associates the successful acceptance by Industry based on the original master data request from industry.

16) Industry marks the data content requested as being fulfilled by Canada and accepted by industry, thus ensuring the data could be transacted against for subsequent needs as per the program.

4.2 Master Data Transfer Process Model from Canada to Industry

The model depicted below in Figure 2 is for Industry/ISSC partner who have established the information exchange infrastructure as per the Canada provided specifications. After which the model described in section above is not required to be used.
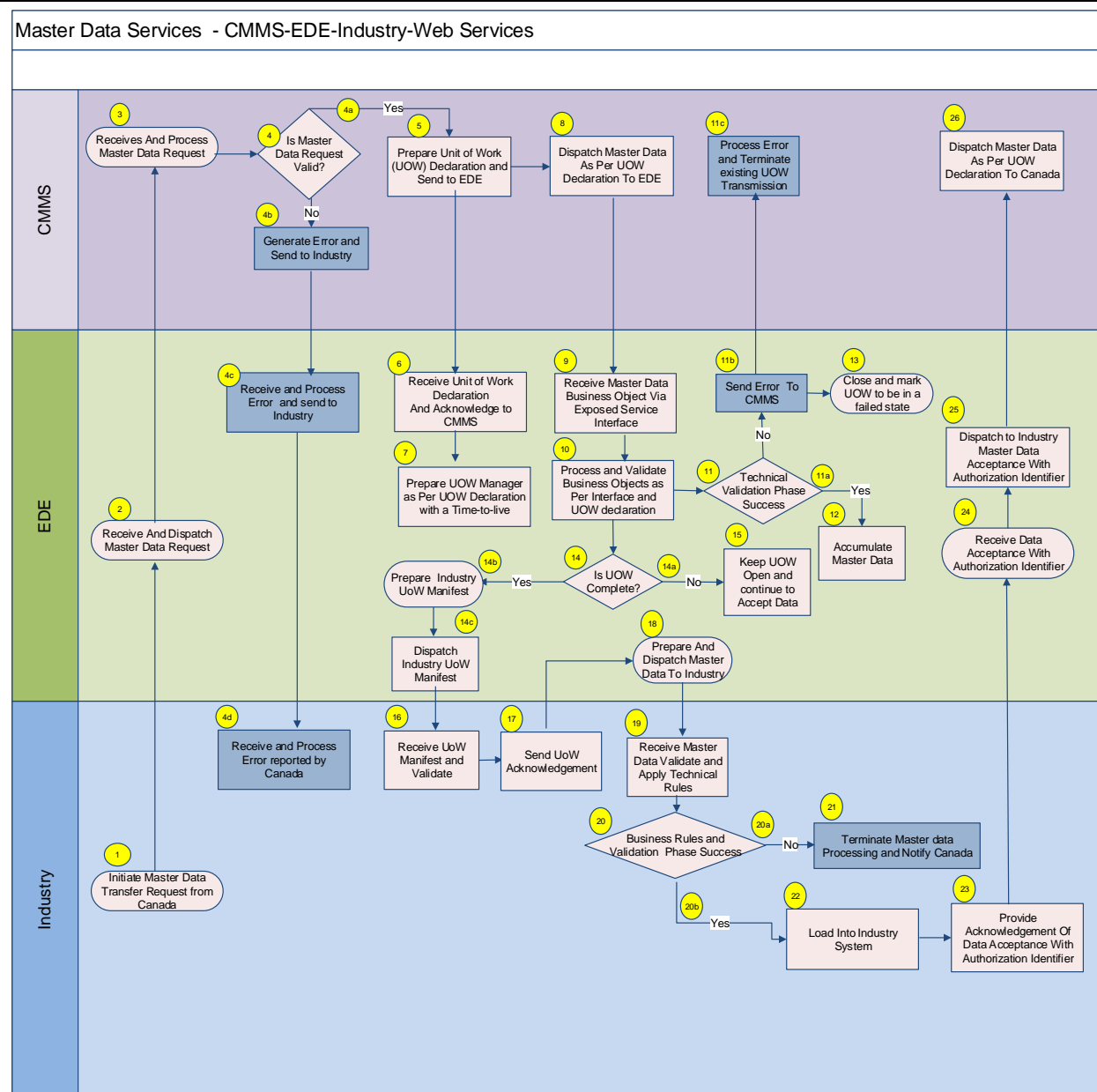
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Figure 2 Master Data Operational Model - Web Services - Canada to Industry

PreCondition: The operational model for master data commences with industry requesting from Canada through an external communication that ISSC/industry require the master data for a specific instance of a platform.

Basic Information Exchange Flow

1. Industry creates a request for transferring Master Data for a specific platform instance (ship, aircraft, vehicle) with a Canada defined identifier for the specific request for within CMMS for one of the following reasons:

a. Initial Weapon System initialization for each instance of the Weapon System in the ISSC' system

b. Reconciliation/alignment of master data if required

i. Note: This model will have to be accepted by the specific platform owner in Canada and will only be invoked in exceptional circumstances. It will not be considered a normal mode of operations

2. Canada EDE will dispatch the request to CMMS.

3. CMMS accepts the data package request and dispatches it for validation.

4. On validation of the data package request by CMMS:

a. If the data package request passes validation, continue with step 5.

b. In the event the data package request fails validation CMMS will generate an error and forward it to Canada EDE.

c. EDE will receive data package error and forward it to Industry.

d. Industry will receive and process the error internal to Industry as per the error handling procedures in place.

5. CMMS prepares a Unit of Work declaration for master data to be sent, and forwards to Canada EDE.

6. Canada EDE will receive and process the UOW declaration message.

7. Canada will create a UOW context in order to receive the data from CMMS as declared per the UOW message.

8. CMMS will initiate the master data transfer as per the specific instance of the platform that will include the as-maintained configuration; as per the request initiated by the ISSC to the respective platform authority in Canada.

9. Canada EDE receives the specific master data objects from CMMS via the associated interface.

10. Canada will validate the received business objects and ensures that it is based on the UOW declaration.

11. The received message will go through a technical validation phase:

a. If successful, proceed to step 12 – Accumulate Data.

b. If unsuccessful, an error message will be sent to CMMS and proceed to step 13.

c. CMMS will process the received error message and process as per its error handling procedures.

12. Canada EDE will accumulate the received data.

13. Canada EDE will close the UOW and mark it to be in a failed state.

14. With every Master Data message received, Canada EDE will validate if the UOW declaration is complete:

    a. If the UOW is incomplete and not in failure state, proceed to step 15.

15. If the UOW is complete, prepare a UoW Manifest for Industry. The UOW declaration message that will contain the information identified below :

    a. An Authorization Identifier.

    b. The Business Object Type and the associated count.

    c. The purpose of the Unit of Work.

    d. Core message identifying elements such as: Message Identifier and a Unique Unit of Work identifier.

    e. As well as other elements required as per the [Ref.1] and UOW Service Specification and then proceed to step 16.

16. Industry accepts the master data manifest declaration Unit of Work (UOW) declaration message as per the Unit of Work Service interface hosted industry/ISSC and dispatches it for validation.

17. Upon successful validation, Industry sends UoW Acknowledgement to Canada as per UOW Service Specification.

18. Canada will send the declared master data objects via the specific interface. These master data objects are exposed by Industry and include the UOW identifier in every master data object message that it dispatches.

19. Industry receives the specific master data object via the published master data interface.

20. On conclusion of the master data transfer as per the declared master data manifest, Industry will validate the received business objects and ensure that data is based on the UOW based declaration.

    a. If unsuccessful, proceed to step 21.

    b. If the data passes all of the business rules validation processes, proceed to step 22.

21. Industry will terminate Master Data processing and notify Canada of the error. Canada will process the received error message and process as per its error handling procedures.

22. The entire data package that has passed validation will be loaded into Industry systems and made available for conducting transactions.

23. Industry will provide acceptance event signal with the authorization identifier that accompanied the data to indicate that the data has been accepted by Industry using the Data Package's – Deployed service operation.

24. EDE will accept the acceptance event with the authorization identifier.

25. EDE will dispatch the acceptance event to CMMS with the authorization identifier.

26. CMMS will receive the acknowledgement of the acceptance of the data package associated with the authorization identifier.

4.3 Benefits

Based on the model described above, a summary of benefits is listed below:

a. A complete and accurate picture of the data being provided is clearly established prior to the commencement of dispatching the data to industry.

b. Canada is in control of the data that is being sent and will be able to determine the relationship integrity is maintained across the data sets.

c. Industry will initiate processing when all of the declared data is delivered and the integrity of the data is preserved during transmission to industry from CMMS and EDE.

d. Industry will have the entire dataset and can validate the data against the respective business rules for the data.

4.4 Responsibilities

Based on the model described above, associated responsibilities that both Canada and Industry have to accept are listed below:

a. Industry is responsible for initiating data requests.

b. Canada is responsible for transferring the requested master data to industry

c. Industry will notify Canada on acceptance of the transferred master data.

d. Canada is responsible to define and transfer data as per the scope of the authorization identifier (aka, the specific instance of the platform being requested by Industry).

e. Canada is responsible for assembling the data and ensuring integrity across the various business objects that make up the dataset.

5 Definitions, Acronyms, Abbreviations

Term	Description
CMMS	Canada Maintenance Management System
DND	Department of National Defence
EDE	Electronic Data Exchange
ISS	In Service Support
ISSC	In Service Support Contractor
ISSCF	In Service Support Contracting Framework
PBA	Performance Based Accountability
PBC	Performance Based Contracting
UOW	Unit of Work

6 Document History

Revision Number	Description	Date
1.0	Baselined for release to Industry	30 September 2015