Electronic Information Environment (EIE)

EIE Project

Service Specification Document/Interface Control Document

Master Data

Navy Industry Maintenance Plan Service– External

External – In the above context is intended to reflect that this content is for Industry partners who have been contracted to participate in an In-Service-Support phase of a Weapon System or Platform that the Department of National Defence has acquired.

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1   Introduction

This document establishes an interface between Canada Electronic Data Exchange (EDE) system and the ISS Contractor responsible for maintenance of a ship class subject to Performance Based Contracting (PBC). This interface will be used by Canada to send Maintenance Plan (MP) messages to the ISS Contractor. To support the MP transfer between Canada EDE and the ISS Contractor, both systems need to support specific Web Service operations as well as request and response Extensible Markup Language (XML) schemas as described in this document. The Maintenance Plan service includes an operation for the ISS Contractor to report acknowledgement messages back to Canada EDE.

1.1   Intended Audience

- ISS Contractor Partner System Designers

- Canada EDE Designers

- ISS Contractor Testers

- Canada EDE Testers

1.2   References

All references are to the baseline version of the reference at the time of publication of this document.

[Ref. 1]   Business Process Catalogue Annex P: Navy Canada Maintenance Management System Data Initialization In Support of Performance Based Contracting (PBC);

[Ref. 2]   Electronic Information Exchange Service Interaction Model;

[Ref. 3]   DRMIS Master Data Business Guidelines Air Force ISSCF fleets;

[Ref. 4]   Navy Materiel Master Record Service Specification;

[Ref. 5]   Industry Data Package Service Specification;

[Ref. 6]   EIE Business Use Case BUC 2.1 Exchange Master Data – Outbound.

2 Business Information

Business Information is based on the EIE Business Process model for Data Initialization [Ref. 1P] and the Defense Resource Management Information System (DRMIS) Master Data Business Guidelines Air Force PBC fleets [Ref. 3].

A Material Master Record (MMR) identifies all items required to support the weapon system maintenance and supply processes in DND. MMRs include all materiel (spares, consumables, serialized or not, tools, test equipment, etc.) subject to materiel management processes.

The serialized parts[1] which make up a WS are tracked with an Equipment Master Record (EMR). Every EMR references an MMR to define the EMR type and its location relative to the Weapon System (WS) "As-Designed" structure.

Another view of the WS used in maintenance is the *Functional Location* (FLOC) hierarchy. A functional location refers to a physical part of a WS which is intrinsic to the body of the WS and with no part number or serial number.

Every EMR must have a maintenance plan which defines the recurring preventative maintenance tasks to be performed on the EMR. Similarly, FLOCs may have maintenance plans. Recurring tasks may be triggered by measurements or counters (e.g., number of landings), durations (e.g., annual) or combined strategies.

The goal of the MP service is to provide a means for Canada to send to Industry[2] the MPs for a ship class and for Industry to acknowledge receipt of the MP data or report errors in the data or transmission.

Within Canada, maintenance business processes are supported by two types of information systems, known generically as:

- Canada Maintenance Management System (CMMS)
- Canada Supply System (CSS)

Currently both functions are supported within Canada by the Defense Resource Management Information System (DRMIS).

2.1 Business Processes

For some PBC contracts, the WS supplier is responsible to produce a complete set of master data for each ship class. The initial LSAR data set for the ship is provided to Canada by the shipbuilder and will be the basis for the initial data load into CMMS. Canada will provide CMMS master data associated with platform, including MDOC data, to the ISS Contractor through the EDE.

See [Ref. 1] for further details.

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[1] In other words, parts with serial numbers.

[2] Within this document, Industry and ISS Contractor are synonymous and are used interchangeably

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2.2   Business Triggers

As per the Data Initialization Business Process [Ref. 1], the following business events may result in MP data being sent from Industry to Canada EDE:

- The ISS Contractor initiates a Master Data demand request for a ship

For Master Data a direct[3] communication will take place between Industry and Canada DND to advise Canada DND of the availability of new Master Data. Canada's designated official will, through CMMS, initiate the transfer of the Master Data to Industry.

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[3] Phone, fax, email, but not through Canada EDE services.

2.3   Unit of Work

According to PBC, Industry assumes the responsibility for Configuration Management (CM) of every WS in a ship class. With this responsibility the ISS Contractor must be certain of the consistency of Master Data between their source system and CMMS. This is particularly difficult for Master Data as Master Data packages may be very large (i.e., on new WS delivery) and there is a high degree of inter-dependence between Master Data business objects.

To achieve consistency, Master Data business objects are always sent from Canada EDE to Industry in a single *unit of work.* The unit of work is a logical "package" of Master Data business objects (possibly of more than one type) with a unique identifier. Every individual Master Data message has a reference to its containing unit of work. A unit of work will have a *manifest* which explicitly defines the exchange types and number of **business objects**[4] per exchange type, in the unit of work.

For further discussion on units of work, including retry and error scenarios, please see the EIE Service Interaction Model [Ref. 2] and Master Data Operational Model [Ref. 7] .

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[4] When multiple business objects are combined in a single message, the manifest count always applies to the number of business objects irrespective of the number of messages.

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3   Business Constraints

Terminology

The input to the service is an *MP message* which consists of one or more *MP business objects* and metadata (e.g., message header) required for correct message processing between Canada and Industry. [5]

Constraints on Usage of the Service

1) The Industry MDOC service shall only be invoked by the Canada EDE System.

2) Canada DND systems shall ensure the MDOC data for a WS is sent only to the Industry system which is properly authenticated and authorized to see maintenance and materiel data for that ship class.

3) Canada must define a unit of work with a unique identifier prior to sending Master Data; each Master Data message must reference its containing unit of work.

4) The unit of work for Master Data always contains an explicit manifest.

5) Master Data messages will be signed using digital certificates between Canada EDE and Industry. Please see Service Interaction Model [Ref. 2] for details.

Constraints on Behaviour of the Service

6) Canada EDE **does** expect that within a single message there can be more than one Master Data business object - all business objects must be of the same exchange type as defined by the interface and declared in the message header.

7) Industry will authorize invocations of operations of the MP service.

8) Canada EDE may attempt to re-send Master Data messages (i.e., repeat operation invocations) in response to technical errors. This behaviour is controlled by parameters for each operation. Please see Service Interaction Model [Ref. 2] for details.

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[5] MP messages are defined in section 7. MP business objects are defined in section 6. The message / business subject distinction is used throughout the document.

4 Service Use Case

The requirements for the MP service are defined by one use case with several scenarios.

4.1 Service Context

When used in the context of a Master Data business process the service context is the same as the Material Master Record Service. Please see the Material Master Record Service Specification [Ref. 4].

4.2 Successful Request and Technical Response

This is the main or "Happy Day" scenario. This scenario describes the interaction between Canada EDE and Industry for the MP Service. Some validation steps and technical responses are not shown in the following sequence diagram (Figure 4-1) – full details are in the Service Interaction Model [Ref. 2].

A "technical response" refers to either (*i*) confirmation a party in the exchange has accepted a message for further processing, or (*ii*) a fault message. A technical acceptance does not preclude subsequent "business" errors. Error scenarios are described below.
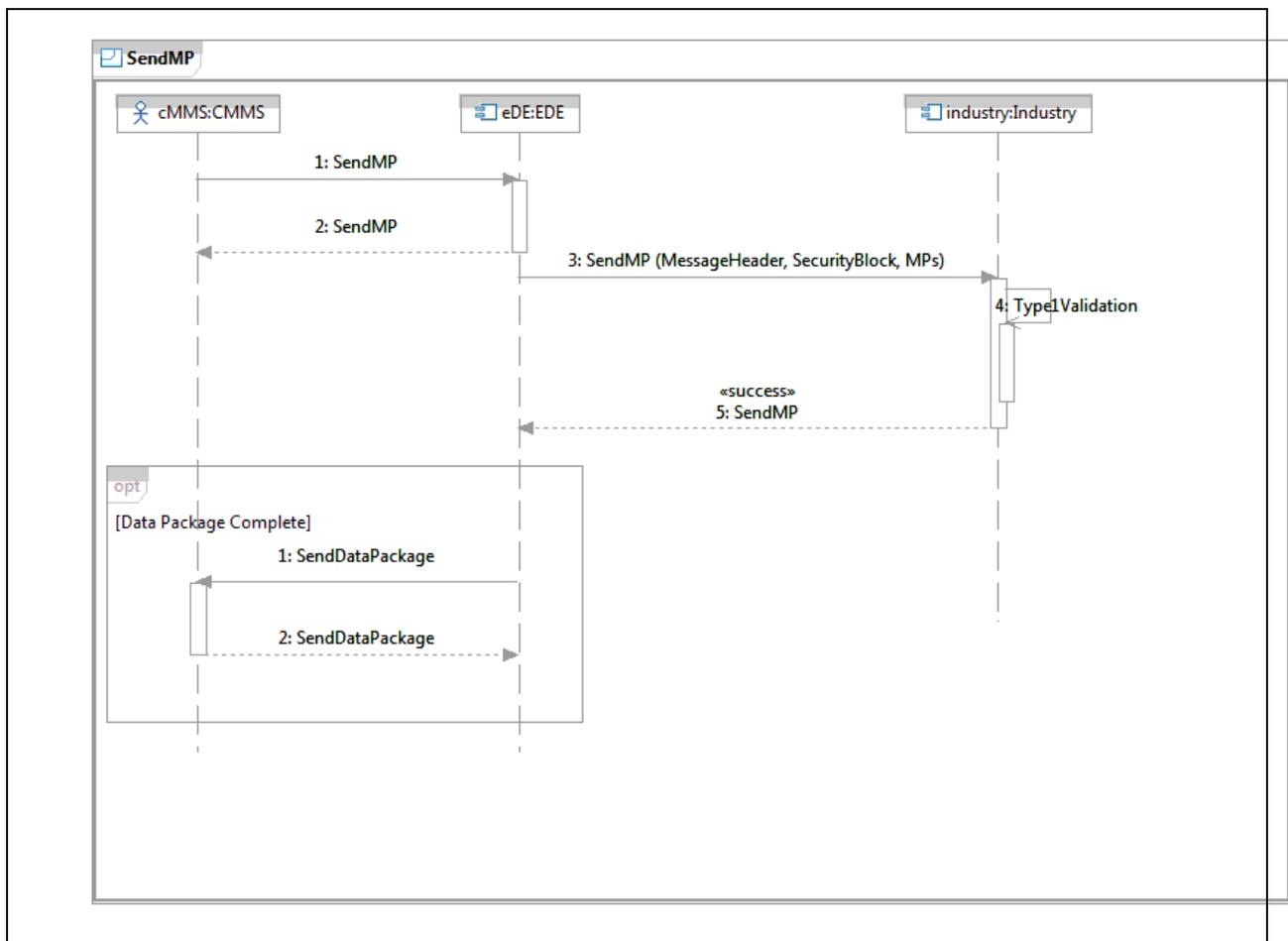
Figure 4-1 MP Message Flow

Main Flow	
Scenario	"Happy Day:" Canada EDE successfully sends MP business objects to Industry.
Pre-Conditions	Canada has prepared a data package containing one or more MP business objects. If a unit of work is required, Canada EDE has initiated creation of the unit of work and Industry has confirmed creation.
Post-Condition	MP business objects successfully received by Industry.

Steps	1) CMMS sends MP message to Canada EDE.
	
	2) Canada EDE returns a "success" response to Canada CMMS.
	
	3) Canada EDE invokes 'SendMP()' operation passing UOW ID and one or more MP business objects. (See Input Body definition.) Canada EDE waits for technical response.
	
	4) Industry initiates "Type 1" validation. In this scenario there is no error. Industry accepts "custody" of the MP business objects in the message.
	
	5) Industry returns to Canada EDE a "success" technical response for the SendMP() operation (see Output Body definition).
	
	    a. Industry begins internal processing of the message. In this scenario there is no error.
	
	    b. Industry saves MP business objects to send to Industry systems once unit of work is complete.
	
	Once Industry has received a complete data package from Canada EDE, Industry will process the received data. The details of this process are out of scope of this specification.

Please see Data Package Service Specification [Ref. 5] for the scenario of confirmation from Industry Master Data has been deployed to operations.

4.3 Alternate Scenarios

The MP Message Flow with Type 1 Error sequence diagram is shown in Figure 4-2. The following scenarios apply to all uses of the MP service.

Alternate Scenarios distinguish between "*Type 1*" and "*Type 2*" errors. Type 1 errors are those errors detected prior to the service provider accepting custody of a message. Type 2 errors are those errors detected during internal processing prior to business validation by the target systems. Please see Service Interaction Model [Ref. 2] for details on these groupings.
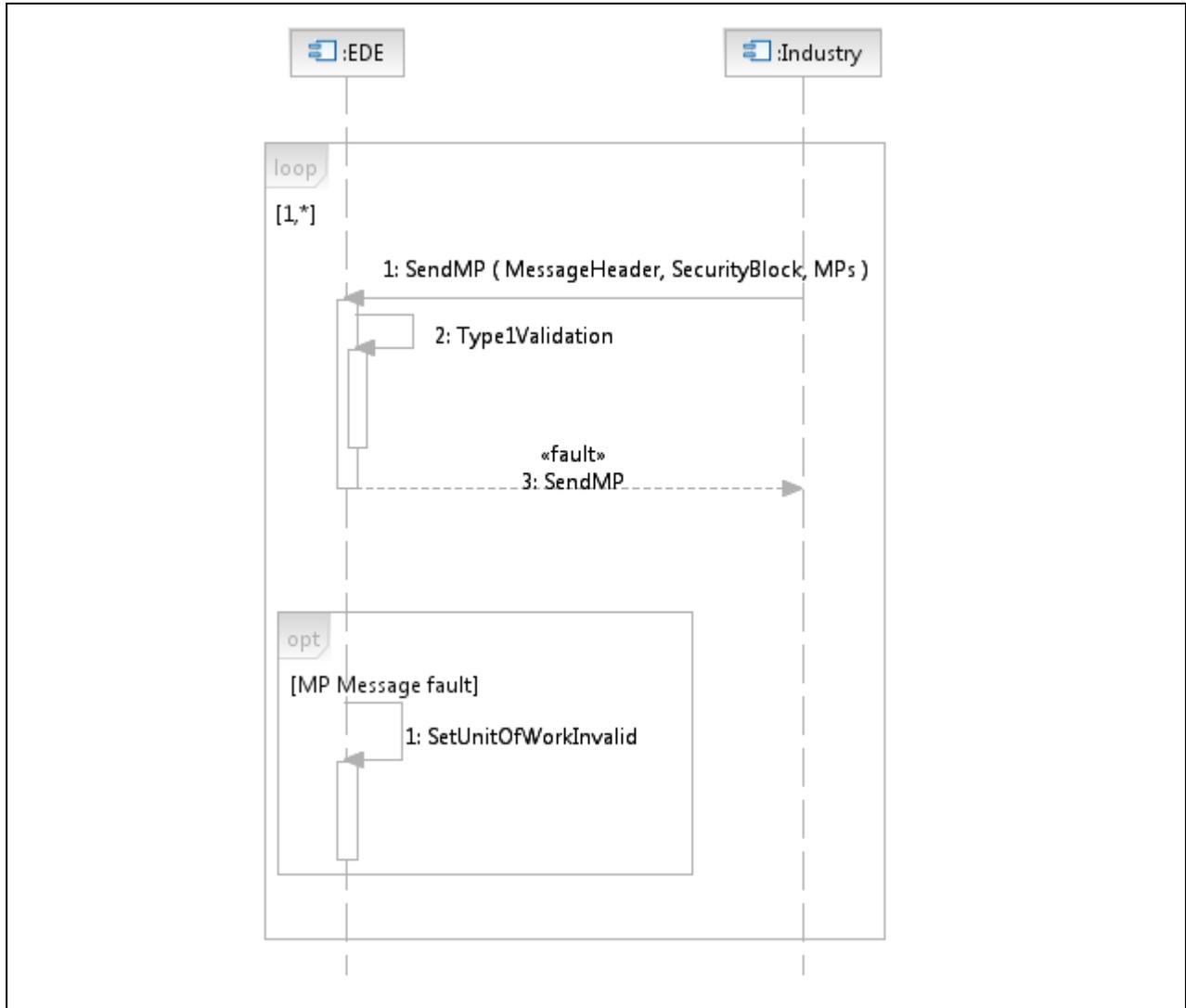

Figure 4-2 MP Message Flow with Type 1 Error

Alternate Flow 1	
Scenario	Type 1 Errors detected by Industry prior to accepting custody of the message. Detailed specification of Type 1 errors are in Service Interaction Model [Ref. 2].
Pre-Condition	Same as Main Flow.

Post-Condition	Industry sends technical response containing a fault message to Canada EDE.
	Canada EDE ceases sending Master Data (of **any** exchange type) for this unit of work.
Steps	1) Canada EDE invokes 'SendMP()' operation containing one or more MPs.
	2) Industry checks for Type 1 errors – an error is found;
	3) Industry constructs the fault message and sends the fault message to Canada EDE in the technical response to the original SendMP() operation invocation. (See Fault Body definition.)
	In the same iteration through the loop where a MP Message fault was found:
	1) Industry updates unit of work status to Invalid and deletes the Master Data received so far in the invalid unit of work.

Note that in this scenario (depending on timing factors) Canada EDE may receive additional fault technical responses for other Master Data operations which were invoked for an invalid unit of work.

Figure 4-3 MP Message Flow with Type 2 Error

Alternate Flow 2 (Industry Service unresponsive)	
Scenario	Canada EDE does not receive technical response within ACK_TIME_INTERVAL.
Pre-Condition	Canada EDE has invoked the operation but does not receive the technical response within the time specified for the MP service.
Post-Condition	Canada EDE marks the message as Dead Message.
Steps	1) Canada EDE does not receive any response from Industry within the allowed ACK_TIME_INTERVAL.
	2) Canada EDE will retry sending the message up to the defined maximum retry count and/or Time to Live interval.
	3) If there is no response, then Canada EDE marks the request message as Dead and handles it via the Dead Message protocol (See Service Interaction Model [Ref. 2].
Alternate Flow 3 (Industry Business Error)	

Scenario	Industry reports a business error when attempting to load one or more Master Data business objects.
Pre-Condition	All business objects have been received by Industry, and Industry starts its data load process.
Post-Condition	Industry sends technical problem through TPMS interface to Canada EDE.
Steps	1) Industry invokes Canada EDE TPMS operation and receives a positive technical response.

5 Service Description – Maintenance Plan Service

5.1 Service Overview

Maintenance Plan service requires interacting web services exposed by Canada EDE System and Industry. Industry will implement and expose a service and operation which Canada EDE will use to send the MP input message (see Section 7 for message definition). After receipt of the input message, Industry will return a technical response back to Canada EDE.

As part of the Maintenance Plan service Canada EDE will implement and expose two operations:

- An error reporting operation used by Industry to report technical errors (Section 4, Alternate Flow 2) and business errors (Section 4, Alternate Flow 4);

- An acknowledgement service optionally[6] used by Industry to report successful delivery of MP business objects to Industry systems.

Message interaction is further described in Service Interaction Model [Ref. 2].

5.2 Service Properties

Service Property	Description
Enterprise Service Name (Business)	Maintenance Plan Service
Enterprise Service Name (Technical)	MaintenancePlanService_Industry (Abbreviated in this document to MP service.)
Purpose	This service supports the Canada EDE Master Data and Supply business processes. On the occurrence of business triggers, Canada EDE uses this service to send MP messages to Industry.
Business Response Time Interval	Will be determined between Canada and Industry on a per-ship class basis.
Service Domains	Master Data, Maintenance History and Supply Materiel
Business Owner	ADM (IM)
Service Grouping	Master Data
Source Provider	SendMP() - Industry SendMPAck() – Canada EDE SendMPError() - Canada EDE

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[6] Use of this positive acknowledgement is determined between Canada and Industry on a per-ship class basis.

Service Property	Description
Target Service Consumers	SendMP() - Canada EDE
	SendMPAck() – Industry
	SendMPError() – Industry
Business Process Supported (now)	Master Data processes:
	• Send Platform Data to ISS Contractor;
Business Process Supported (future)	None currently identified.
Business Objective Supported	See Section 2: Business Information.
Expected life time	The full lifecycle of the subject weapons system.

5.3 'SendMP()' Operation

This operation is used by Canada EDE to send an MP input message to Industry. Industry's implementation of this operation will perform Type 1 validation on the MP message. Industry will return a status or fault information to Canada EDE in a technical response. If the status is SUCCESS, Industry accepts custody of the message for further processing. Any returned fault implies Industry does NOT accept the message and error processing (as per Section 4.3 Alternate Flow 1) is performed.

5.4 'SendMPAck()' Operation

This operation is used by Industry to report back to Canada EDE that a set of MP business objects have been accepted into backend systems. The specific MP business objects which were accepted are identified by a list of business identifiers (see Section 7). Canada EDE's implementation of this operation will perform Type 1 validation on the acknowledgement message. Canada EDE will return a technical response to Industry.

This operation may be optionally used with an Industry which does not operate on an optimistic model as defined in the Service Interaction Model [Ref. 2].

5.5 'SendMPError()' Operation

This operation is used by Industry to send an error message to Canada EDE after internal message processing detects a Type 2 error condition (see Service Interaction Model [Ref. 2]). The specific MP business objects which are in error are identified by a list of business identifiers (see Section 7). Canada EDE's implementation of this operation will perform Type 1 validation on the error message. Canada EDE will return a technical response to Industry.

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6   Information Model

This section describes the **business objects** which are used in the MP service. The Unified Modeling Language (UML) notation is used. A <u>functional view</u>[7] of the information model is provided in the Master Data Business Guidelines [Ref. 3].

The purpose of this section is to provide a bridge between the functional view of the information model and the concrete details of the design as ultimately expressed in an XML Schema.

Note that all date or time values must be in **Coordinated Universal Time (UTC).** If an explicit time zone offset is not provided, it is assumed to be zero.

The XML Schema is the authoritative source for purpose of the information exchange.

6.1   MP

Figure 6-1shows the Information Model used in the Maintenance Plan service. This section primarily discusses the structure of the information model, details of attributes may be found in the EIE Business Process model for Data Initialization [Ref. 1P]. In the following _underlined italic_ text refers to specific classes in Figure 6-1.

The class _MaintenancePlan_ represents the overall plan. The primary components are classes _MaintenancePlanType_, (exactly one) which represents the conditions **when** the maintenance plan is to be executed and _MPItem_ (zero or more) which represents **what** specific task lists are to be performed for the maintenance plan. A maintenance plan also has a link to code table _MPCategory_

MPItem references a _MaintenaceTaskList_ and an EMR or FLOC (with class _EMR_FLOC_REF_) for the specifics of the task(s) to be executed. _MPItem_ has a link to code table _MaintenanceActivityType_ which helps classify task lists for planning purposes.

At least one _MPItem_ is required, with the following exception. In the scenario where an existing _MaintenancePlan_ is being updated and only a field directly in the _MaintenancePlan_ is modified then Canada EDE may send a _MaintenancePlan_ business object with no _MPItem_ business object and all pre-existing _MPItem_ business objects in the _MaintenancePlan_ business object are unaffected.

MaintenancePlanType is an abstract class, with three actual types of Maintenance Plan. A _StrategyPlan_ refers to a plan which is executed under conditions which cannot be represented with cycles (See Business Guidelines [Ref. 3]). The two other types of _MaintenancePlan_ are Single-Cycle or Multi-Counter.

[7] The Functional View details the collection of fields which make up MP business.
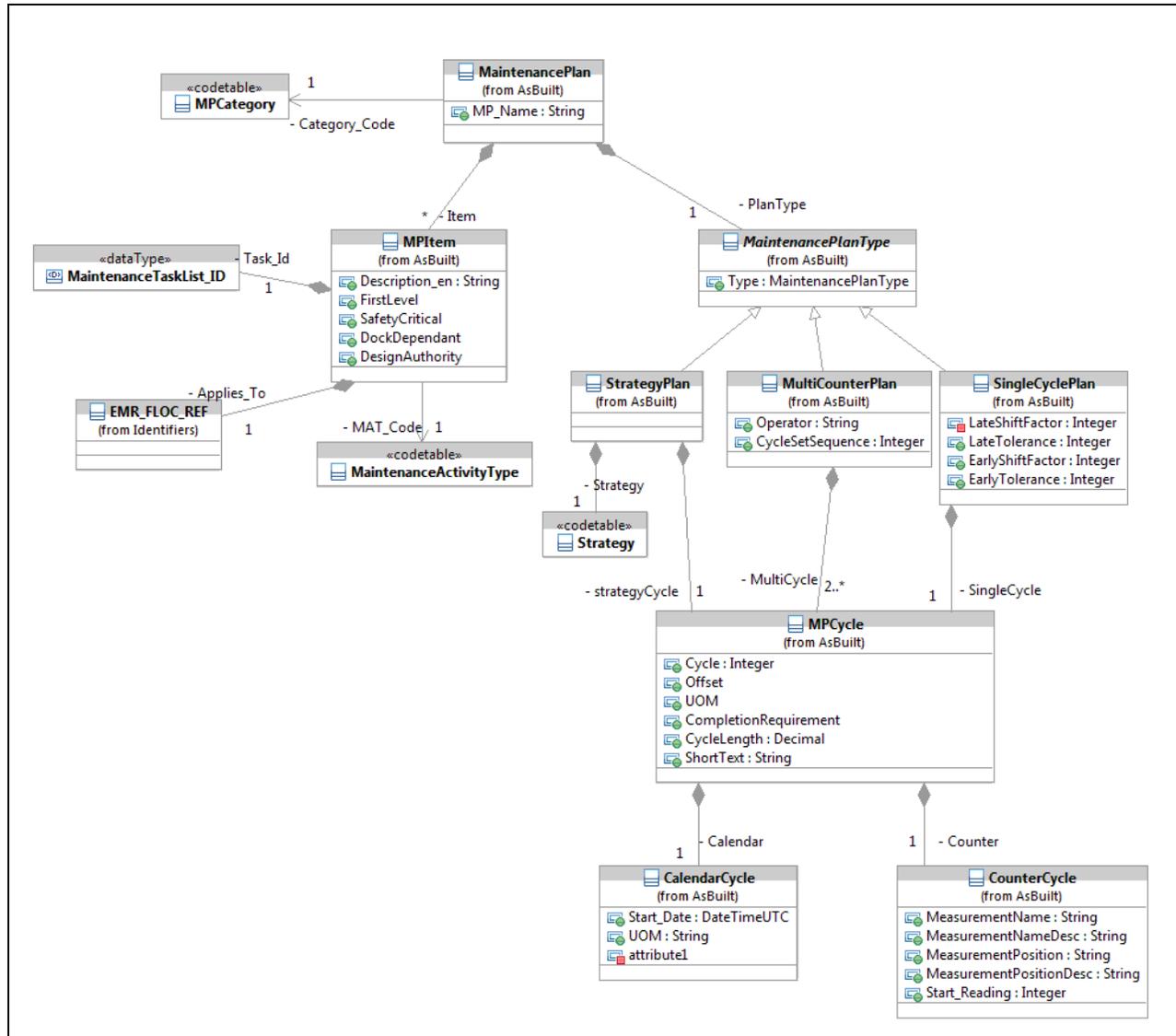
Figure 6-1 Information Model – Maintenance Plan

A Strategy Maintenance Plan contains a single Cycle to determine which measurement it applies to. A Single-Cycle Maintenance Plan contains a single Cycle to determine when it is executed. The Cycle may be calendar-based (e.g., every six months) or counter-based (e.g., every 200 hours usage). A Multi-Counter plan contains two or more Cycles[8] (e.g. every six months OR 200 hours). The Multi-Counter plan includes an Operator (which may be AND or OR) to instruct CMMS how to logically combine the two or more cycles. A *CounterCycle* refers to a Measurement Point using the same combination of MeasurementName and MeasurementPosition which uniquely identify Measurement Points.

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[8] The name "Multi-Counter is retained for historical reasons.

6.2 As Built Structure

The Maintenance Plan is part of the WS "As Built" structure. An overview of "As Built" structure is shown in Figure 6- below; each business object is described in one of the Service Specification documents.
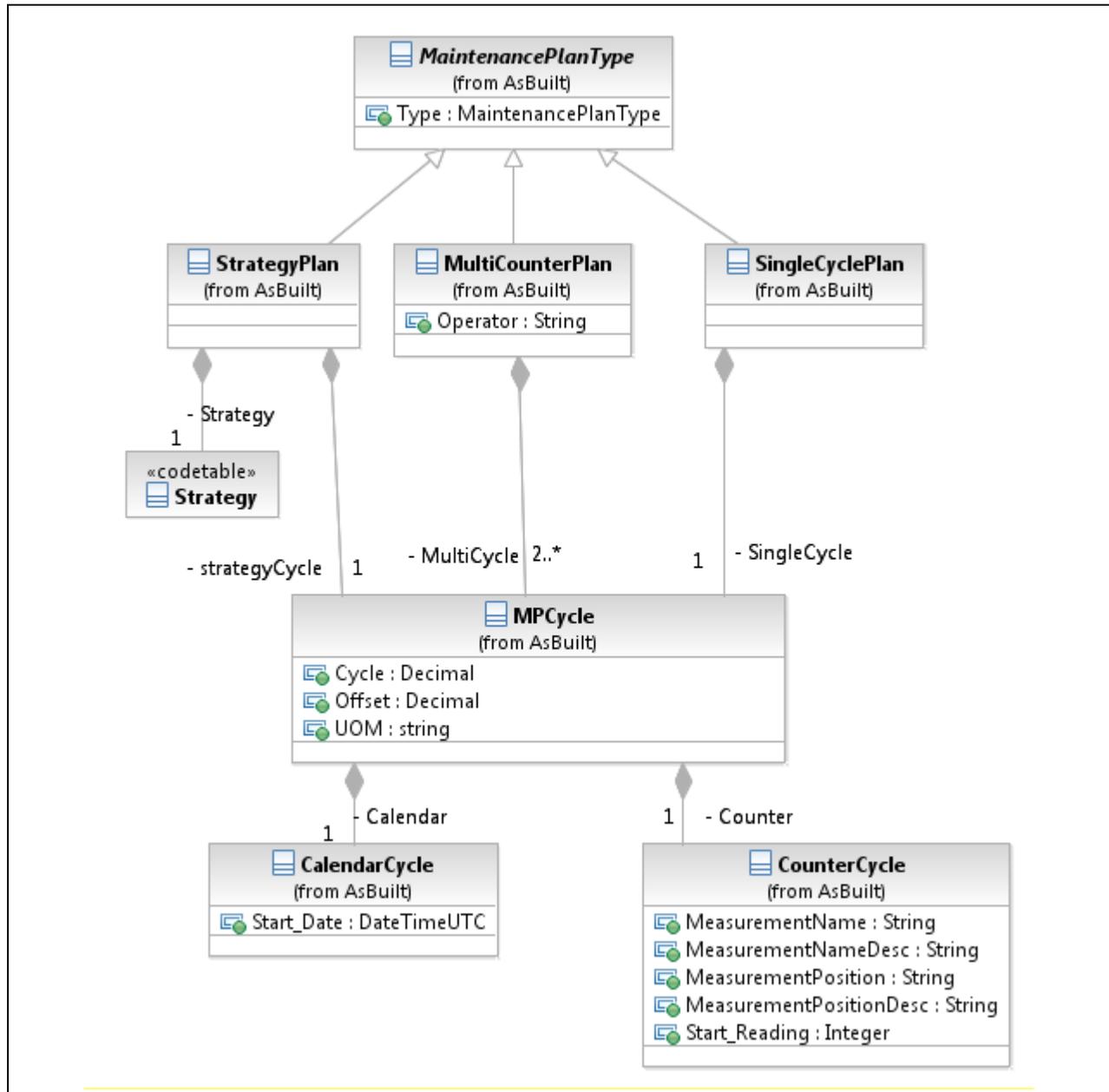

Figure 6-2 Information Model – Single Cycle and Multi Counter Plans
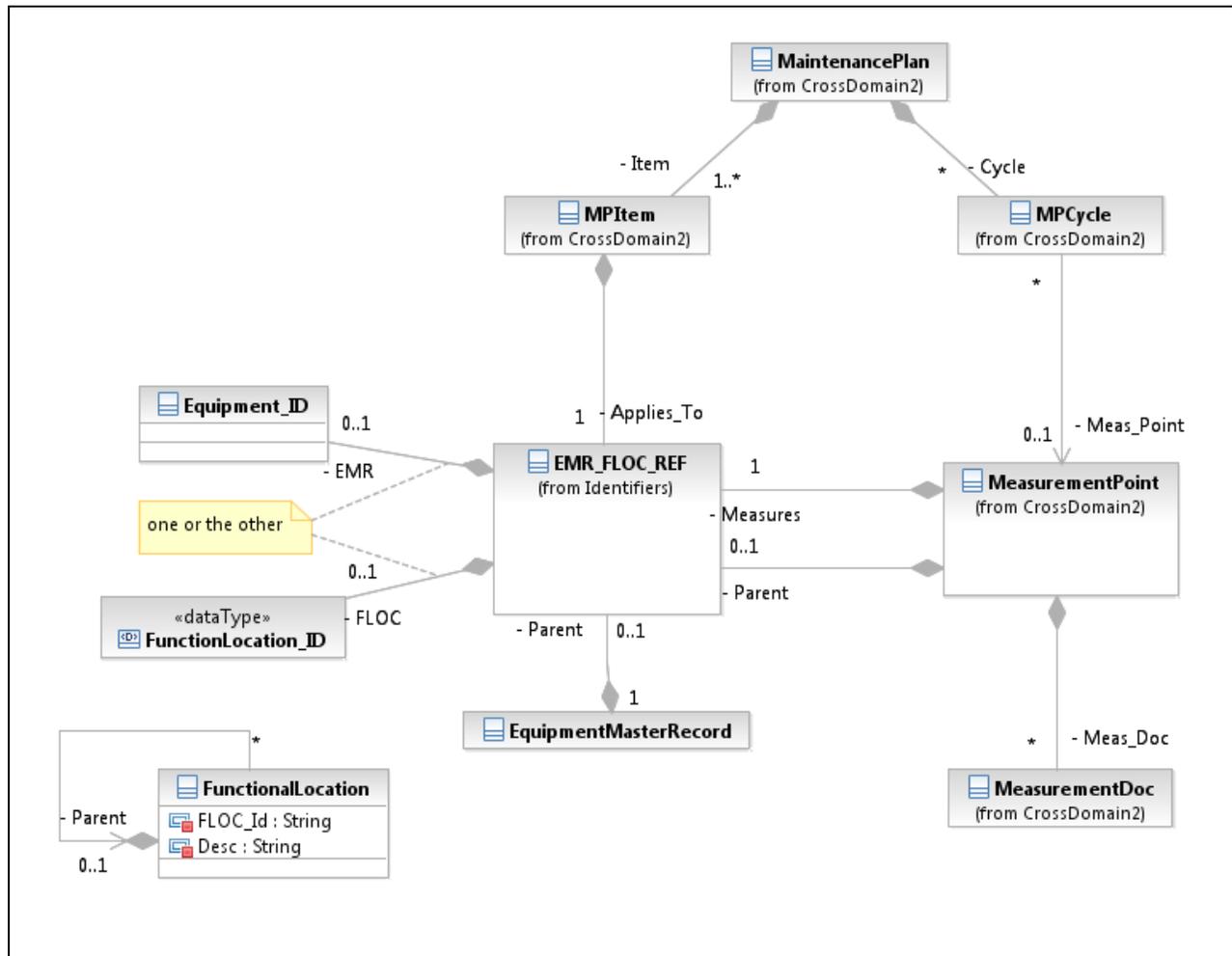
Figure 6-3 Information Model – As Built Structure

7 Operation Message Model

This section describes how the business objects described above (Section 6 Information Model) are aggregated for the purpose of PBC information exchange.

All Master Data services follow the request/response model and each operation definition includes a distinct input, output and fault message. See Service Interaction Model [Ref. 2] for definition of the common MessageHeader and SecurityClassification elements. BusinessContext allows Canada EDE to include contextual information with an input message. The 'Purpose' field is a value agreed between Canada EDE and Industry and may affect handling of the message. The remaining fields are populated by Canada EDE and may be replayed in error messages[9].

Several message constructs (i.e., Fault Body, Acknowledgement Input Body and Error Input Body) include one or more **Business Identifiers** (BizIDs). The BizID consists of a set of key fields in the MP Input Body sufficient to uniquely identify a business object and its context. The fields which make up the BizID are explicitly identified in the XML Schema file MaintenancePlan.xsd.

Note that all date or time values must be in **Coordinated Universal Time (UTC).** If an explicit time zone offset is not provided it is assumed to be zero.

7.1 MP Input Body

As shown in Figure 7-1, an MP input body consists of:

- A Message Header;
- A Security Block;
- A Business Context;
- One or more MP business objects.

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[9] Business Context is further discussed in the Unit of Work service specification.
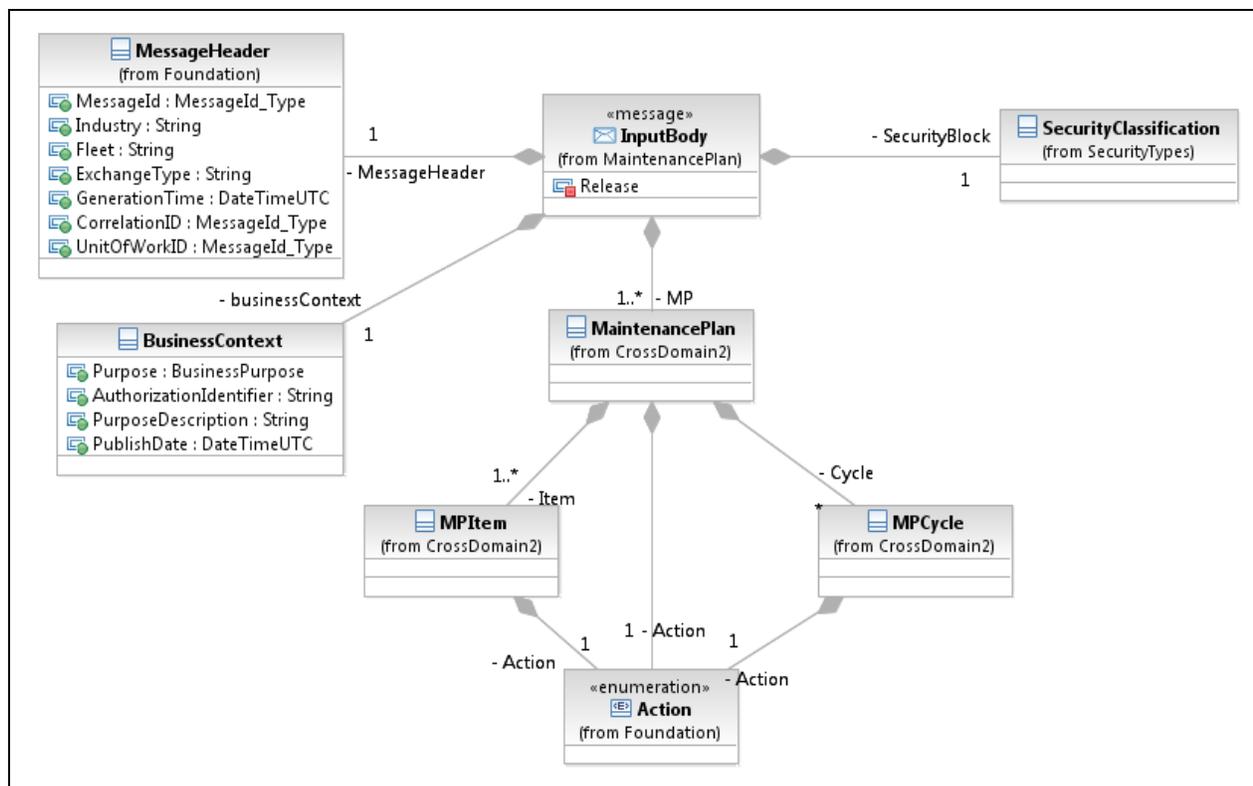
Figure 7-1 MP Input Body

The MessageHeader UnitofWorkID must equal the UnitofWorkID value of an existing valid unit of work.[10] The MessageHeader Correlation ID must equal the Message ID of the message which created the unit of work. Purpose and ContextDescription fields must match the corresponding fields in the Unit of Work which envelopes this input message.

The MP InputBody also contains an attribute 'Release' which designates the release of the MP service. The 'Release' attribute uses an "X.Y" numbering convention and the value is hard-coded in the XML schema for every service. The value will be incremented when a new version of the service is released[11].

The 'Release' attribute is mandatory in every instance of the InputBody to allow any input body instance to be traced back to the appropriate release. A 'Release' attribute appears in all message bodies.

Within key MP business objects (MaintenancePlan, MPCycle and MPItem) there is an attribute named 'Action' which is set by the service consumer as a directive to CMMS on handling the business object. See Service Interaction Model [Ref. 2] for definition of valid values of 'Action'.

7.2   MP Output Body

The output of the SendMP() operation is the MP OutputBody. As shown in Figure 7-2, the output body consists of:

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[10] Type 1 validation will check if the unit of work is in a non-error state.

[11] The rules for incrementing the 'Release' attribute for a service will be in a separate document.

- A Message Header;
- A Custody object.

The MP OutputBody has no security block. The MP OutputBody must not contain any sensitive or protected information.
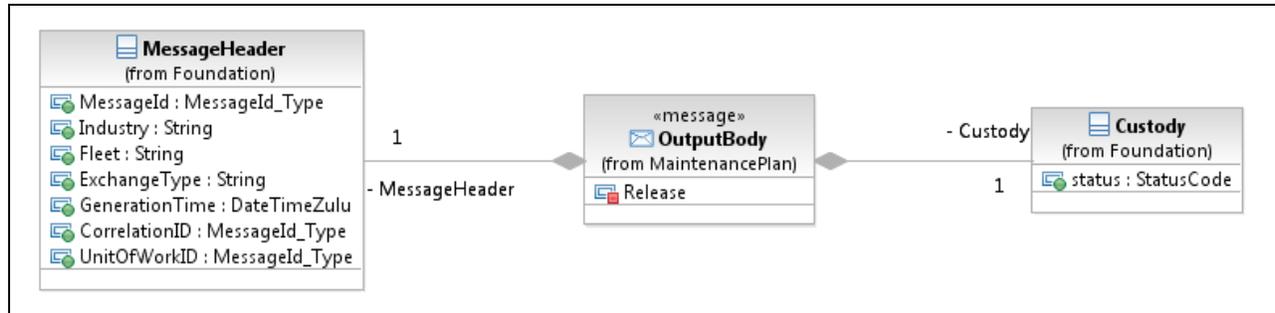

Figure 7-2 MP Output Body

For an MP OutputBody:

- The MessageHeader Message Id is a **new** unique value;
- The MessageHeader GenerationTime is the time the **output** message is generated;
- The MessageHeader CorrelationID is set to the MessageId of the MP Input Body;
- The MessageHeader ExchangeType must be set to the ExchangeType of the MP InputBody;
- The value of the Custody status field is "success" [12].

7.3   MP Fault Body

A fault returned by the SendMP() operation uses the MP FaultBody element. As shown in Figure 7-3, the MP FaultBody consists of:

- A Message Header;
- A Security Block;
- One or more FaultBlocks.

Each fault block pertains to zero to many business object(s), to the level of granularity which the Service Provider can provide. If the system cannot determine a Business Identifier, then this is omitted. To report differing faults on more than one business object, extra fault blocks can be included in the fault message.

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[12] As stated in Section 5.3, the main significance of the output is that, by its presence, there is no fault.
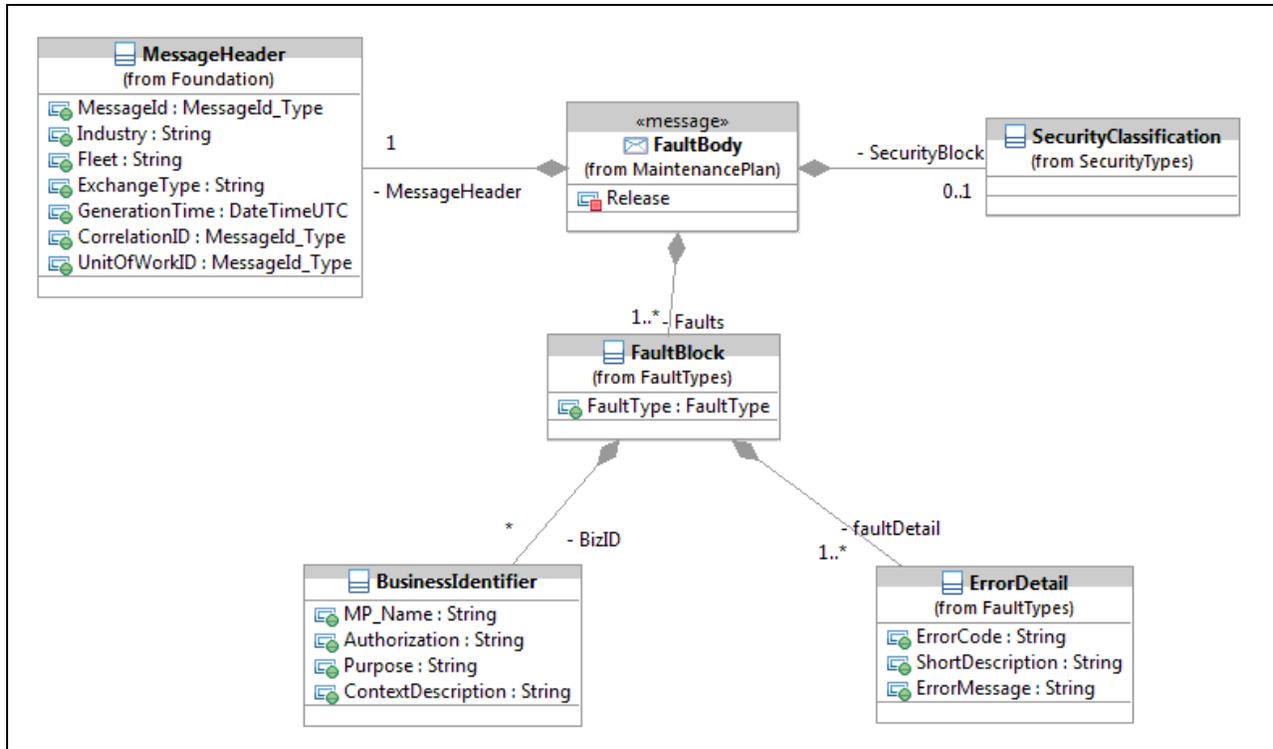
Figure 7-3 MP Fault Body

MessageHeader is mandatory, but only MessageId and GenerationTime are mandatory within the header (both are new values, as for the Output Body). This is for the scenario where the input message is so damaged that the necessary attributes cannot be found.

CorrelationID is set to the MessageId of the input message – whenever it is available.

SecurityClassification is optional for the scenario where the input message is so damaged that the necessary attributes cannot be determined.

7.4   MP Acknowledgement Input Body

The input to the SendMPAck() operation consists of a Message Header, a list of business identifiers, and a "success" status indicating the business objects were accepted in Industry systems. (see Figure 7-4).
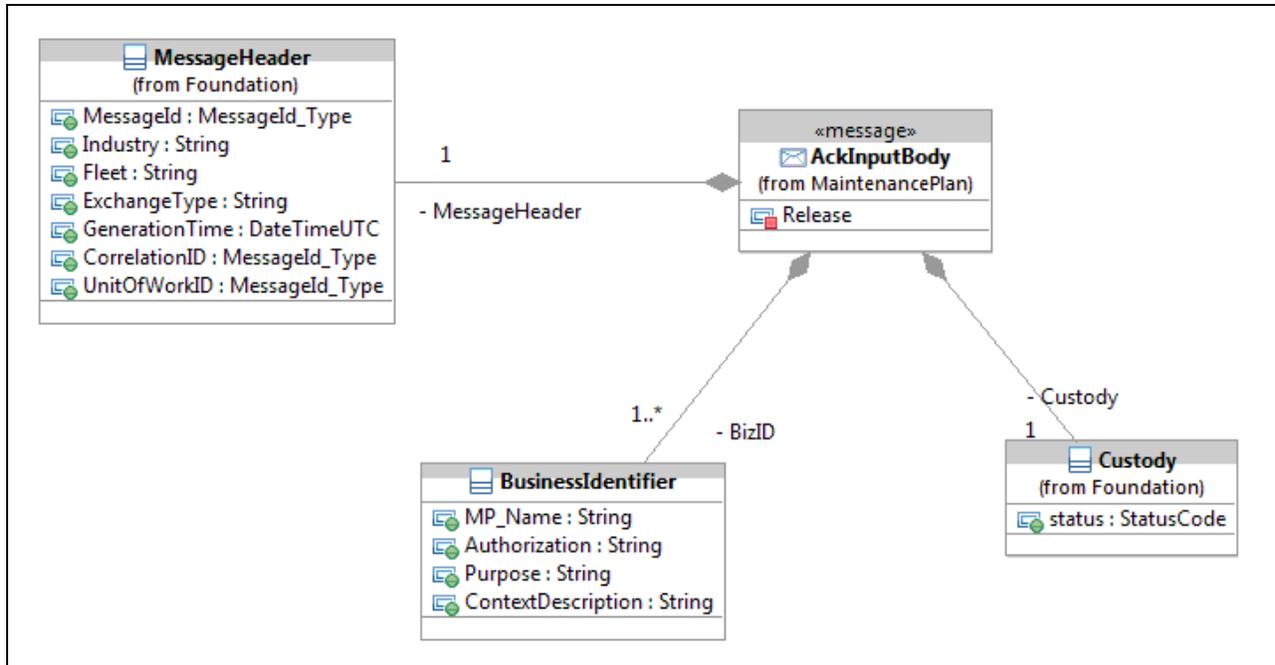
Figure 7-4 MP Acknowledgement Input Body

The Message Header has a new unique Message Id and the Correlation ID is set to the Message Id of the MP Input Body which is being acknowledged.

7.5 MP Error Input Body

The input to the SendMPError() operation consists of a Message Header, a Security Block and a list of Error Blocks, as shown in Figure 7-5. Each Error Block references business object(s) (by business identifier) and a list of one or more errors pertaining to the business object.
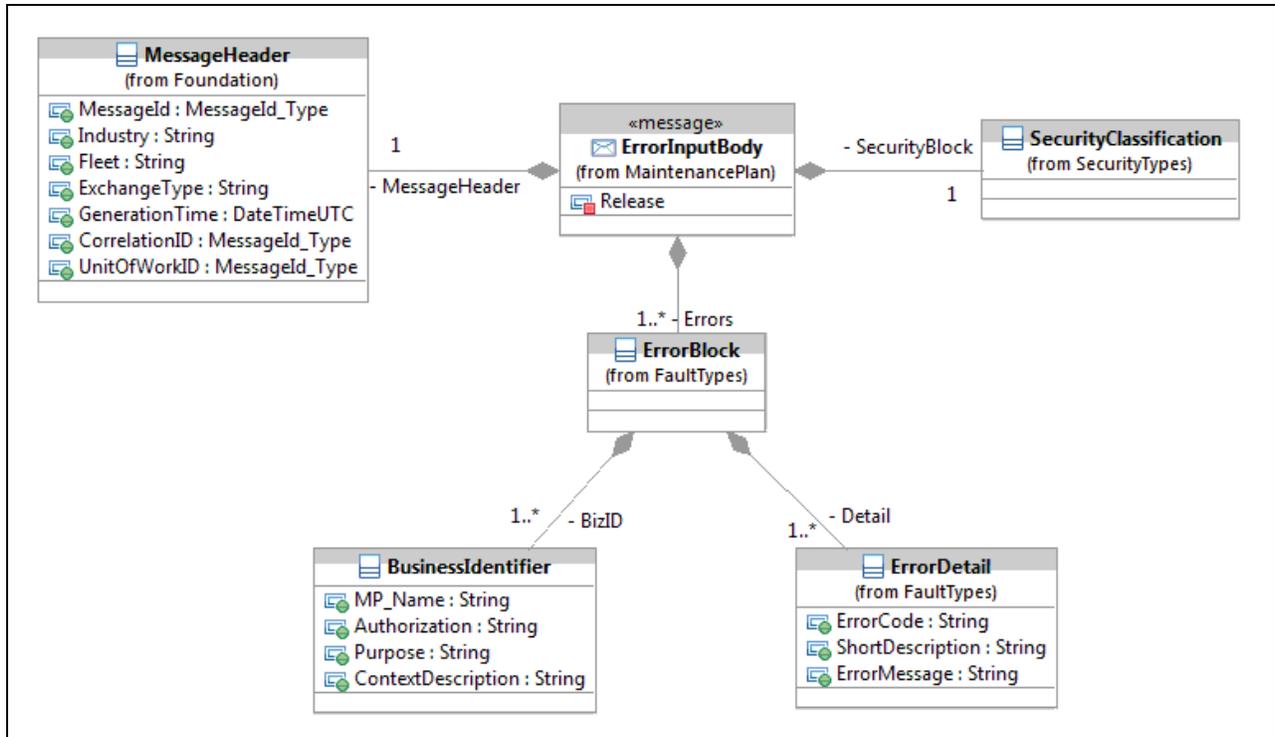
Figure 7-5 MP Error Input Body

MessageHeader and SecurityClassification are mandatory as in this scenario (after Type 1 validation has passed) the input message is well-formed.

The Message Header has a new unique Message ID.

7.6   Summary of Operation to input/output/fault body Mapping

The following diagram in Figure 7-6 shows the mapping for each of the three operations in the MP service - SendMP(), SendMPAck() and SendMPError() - to their respective input, output and fault bodies as further defined in the MP Web Service Definition Language (WSDL) file.
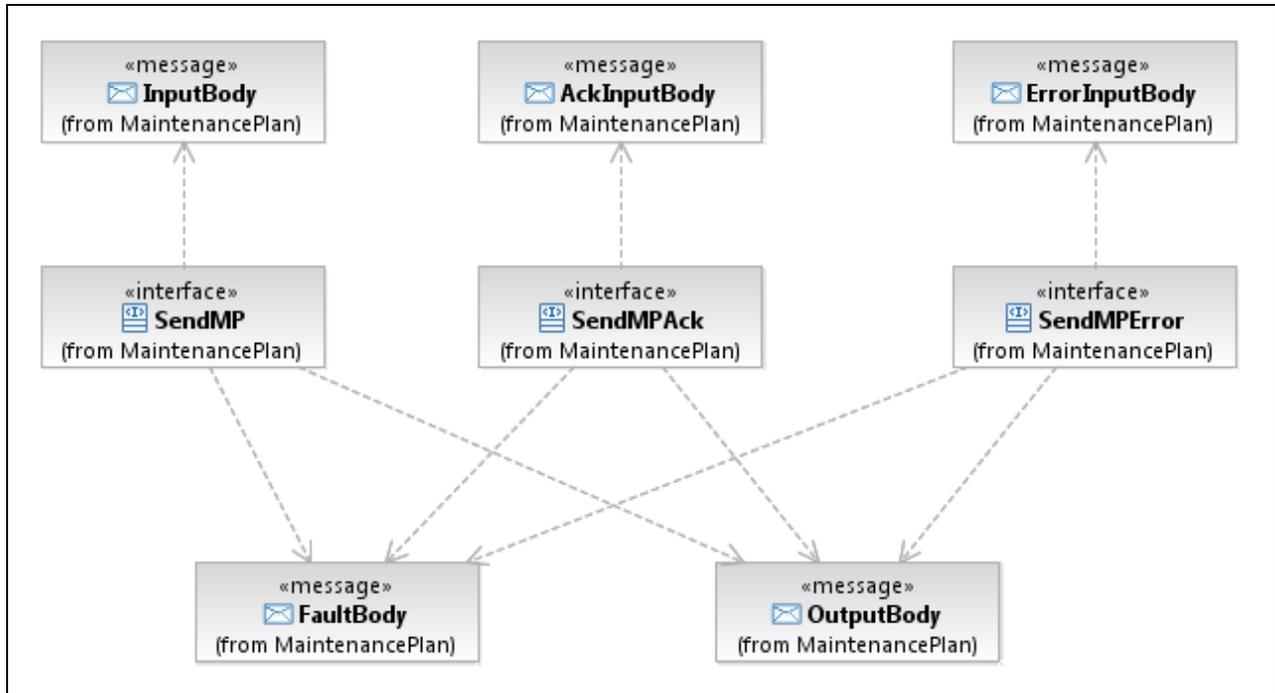
Figure 7-6 MP Operations to Input/Output/Fault Mapping

8 Service Operation Details

8.1 Detailed Operation Characteristics – SendMP()

Canada EDE will invoke the exposed Industry MP service through this operation. The input will consist of a MP InputBody (as above).

Please refer to Service Interaction Model [Ref. 2] for definitions of the terminology used in the non-functional requirements section.

Please refer to Maintenance Plan WSDL files for implementation details.

Detailed Operation Characteristics

Interface Definition	Description
Operation Name	Send MP
Operation Technical Name	SendMP()
Operation Description	This operation is invoked by Canada EDE to send one or more MP business objects to Industry.
Target Operation Provider	Industry
Target Operation Consumer	Canada EDE
Properties	*Request/Response* message exchange pattern.
Input Message Definition	Please refer to Operation Message Model Section 7.1 MP Input Body for details.
Output Message Definition	Please refer to Operation Message Model Section 7.2 MP Output Body for details.
Fault Definition	Please refer to Section 7.3 MP Fault Body for details. Please see Service Interaction Model [Ref. 2] for Type 1 faults.

Non-Functional Requirements

Non-Functional Requirements/Technical Details	
Frequency	A-periodic according to business triggers (Section 2.2). Will be determined between Canada and Industry on a per-ship class basis.
Peak Throughput Time	Based on Service Level Agreements (SLA) to be determined between Canada and Industry on a per-ship class basis.
Peak Throughput Volume	Based on Service Level Agreements (SLA) to be determined between Canada and Industry on a per-ship class basis.
Payload Size	<10 Kb per business object.

Non-Functional Requirements/Technical Details	
Attachments	None
Attachment Size	N/A
ACK Time Interval	Nominal value is 2 minutes – to be confirmed between Canada and Industry on a per-ship class basis.
Retry Time Interval	Nominal value is 10 minutes – to be confirmed between Canada and Industry on a per-ship class basis.
Number of Retries	Nominal value is 3 retries – to be confirmed between Canada and Industry on a per-ship class basis.
Biz. Response Time Interval	N/A
Time to Live Span	For Master Data context: - 24 hours from the creation of the unit of work. -
Service Op Availability	During core processing hours. The specific period will be defined during later phases of service realization 95% available uptime is the goal of the service
Downtime Requirements	The service cannot be used during established maintenance windows, which is currently expected to be for about 2 hours per week. The unavailability window may be accumulated and invoked during major maintenance periods, but ensuring that the overall availability of the service is still maintained.
Dead Message Handling	Alternative communication channel applies to report that this operation is not available when Canada EDE cannot successfully send MP business objects to Industry. See Service Interaction Model [Ref. 2].

8.2 Detailed Operation Characteristics – SendMPError()

Industry will use this operation to inform Canada EDE of errors detected in internal processing and faults returned from delivery to Industry systems.

Refer to Maintenance Plan WSDL files for implementation details.

Detailed Operation Characteristics

Interface Definition	Description
Operation Name	Send MP Error
Operation Technical Name	SendMPError()

Interface Definition	Description
Operation Description	This operation is invoked by Industry to send one or more MP errors to Canada EDE.
Target Operation Provider	Canada EDE
Target Operation Consumer	Industry
Properties	*Request/Response* message exchange pattern.
Input Message Definition	Please refer to Operation Message Model Section 7.5 MP Error Input Body for details. Please refer to Service Interaction Model [Ref. 2] for Type 2 faults for the error inputs which may be sent in this operation.
Output Message Definition	Please refer to Operation Message Model Section 7.2 MP Output Body for details.
Fault Definition	Please refer to Section 7.3 MP Fault Body for details. Please see Service Interaction Model [Ref. 2] for faults which may be returned by this operation.

Non-Functional Requirements

Non-Functional Requirements/Technical Details	
Frequency	Same as SendMP() operation. Worst case is one error per MP business object.
Peak Throughput Time	Same as SendMP() operation.
Peak Throughput Volume	Same as SendMP() operation.
Payload Size	5KB – estimated for one ErrorBlock with one BizID and two ErrorMessage's
Attachments	None
Attachment Size	N/A
ACK Time Interval	Nominal value is 2 minutes – to be confirmed between Canada and Industry on a per-ship class basis.
Retry Time Interval	Nominal value is 10 minutes – to be confirmed between Canada and Industry on a per-ship class basis.
Number of Retries	Nominal value is 3 retries – to be confirmed between Canada and Industry on a per-ship class basis.
Biz. Response Time Interval	N/A
Time to Live Span	60 minutes.

Non-Functional Requirements/Technical Details	
Service Op Availability	During core processing hours. The specific period will be defined during later phases of service realization 95% available uptime is the goal of the service
Downtime Requirements	The service cannot be used during established maintenance windows, which is currently expected to be for about 2 hours per week. The unavailability window may be accumulated and invoked during major maintenance periods, but ensuring that the overall availability of the service is still maintained.
Dead Message Handling	Alternative communication channel applies to report that this operation is not available when Canada EDE cannot successfully send MP business objects to Industry. See Service Interaction Model [Ref. 2].

8.3   Detailed Operation Characteristics – SendMPAck()

Industry *may* use this operation to inform Canada EDE of successful processing of business objects. Usage of this operation is to be confirmed between Canada and Industry on a per-ship class basis.

Refer to Maintenance Plan WSDL files for implementation details.

Detailed Operation Characteristics

Interface Definition	Description
Operation Name	Send MP Acknowledgement
Operation Technical Name	SendMPAck()
Operation Description	This operation is invoked by Industry to send one or more MP acknowledgement objects to Canada EDE.
Target Operation Provider	Canada EDE
Target Operation Consumer	Industry
Properties	*Request/Response* message exchange pattern.
Input Message Definition	Please refer to Operation Message Model Section 7.4 MP Ack Input Body for details.
Output Message Definition	Please refer to Operation Message Model Section 7.2 MP Output Body for details.
Fault Definition	Please refer to Section 7.3 MP Fault Body for details. Please see Service Interaction Model [Ref. 2] for faults which may be returned by this operation.

Non-Functional Requirements

Non-Functional Requirements/Technical Details	
Frequency	To be confirmed between Canada and Industry on a per-ship class basis. Depends on pace of back-end processing.
Peak Throughput Time	To be confirmed between Canada and Industry on a per-ship class basis. Depends on pace of back-end processing.
Peak Throughput Volume	To be confirmed between Canada and Industry on a per-ship class basis. Depends on pace of back-end processing.
Payload Size	~ 2KB per acknowledgement
Attachments	None
Attachment Size	N / A
ACK Time Interval	Nominal value is 2 minutes – to be confirmed between Canada and Industry on a per-ship class basis.
Retry Time Interval	Nominal value is 10 minutes – to be confirmed between Canada and Industry on a per-ship class basis.
Number of Retries	Nominal value is 3 retries – to be confirmed between Canada and Industry on a per-ship class basis.
Biz. Response Time Interval	N/A
Time to Live Span	60 minutes.
Service Op Availability	During core processing hours. The specific period will be defined during later phases of service realization 95% available uptime is the goal of the service
Downtime Requirements	The service cannot be used during established maintenance windows, which is currently expected to be for about 2 hours per week. The unavailability window may be accumulated and invoked during major maintenance periods, but ensuring that the overall availability of the service is still maintained.
Dead Message Handling	Alternative communication channel applies to report that this operation is not available when Canada EDE cannot successfully send MP business objects to Industry. See Service Interaction Model [Ref. 2].

8.4 Service Bindings

8.4.1 SOAP Over http

The implementation of this service will use a Simple Object Access Protocol (SOAP) binding with document style messages and http transport.

The business objects (Section 6) are bound to the SOAP Body element. The SOAP Header is used for EIE adopted WS-* standards-based elements (e.g., WS_Security assertions) and, typically, MessageHeader and SecurityMarkings elements.

In this binding the http response is used for each operation's technical response (i.e., output or fault messages).

See the Maintenance Plan Service WSDL file for the precise binding.

8.4.2 SOAP Over JMS

Not currently supported. .

8.4.3 XML files via SFTP

As an interim measure while an industry partner implements their web service infrastructure, Canada EDE supports sending XML files to a secure DND SFTP site for Industry consumption.

9   Definitions, Acronyms, Abbreviations

Term	Description
CM	Configuration Management
CMMS	Canada Maintenance Management System
CSS	Canada Supply System
DND	Department of National Defence
DRMIS	Defense Resource Management Information System
EDE	Electronic Data Exchange
EIE	Electronic Information Environment
EMR	Equipment Master Record
FLOC	Functional LOCation
ISS	In Service Support
ISSCF	In Service Support Contracting Framework
MER	Master Equipment Record
MP	Maintenance Plan
MPN	Manufacturer Part Number
MMR	Material Master Record
NATO	North Atlantic Treaty Organization
NSN	NATO Stock Number
PBC	Performance Based Contracting
SFTP	Secure File Transfer Protocol
SOAP	Simple Object Access Protocol
UTC	Coordinated Universal Time
WS	Weapon System
WSDL	Web Service Definition Language
XML	Extensible Markup Language

10 Appendix A - Entity Relationship Model

Information Model – Entity-Relationship View
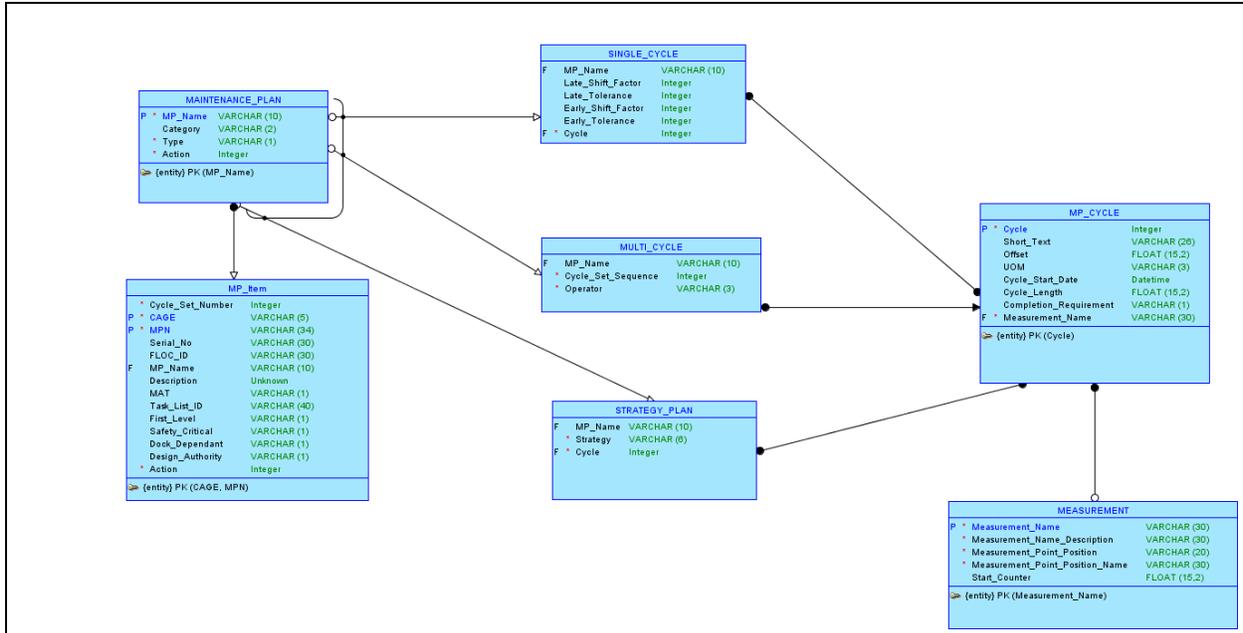
Figure 10-1 MP ERD

11   Document History

Revision Number	Description	Date
1.0	Ready for Navy RFP	27 October 2015