Electronic Information Environment (EIE)

Service Specification Document/Interface Control Document

Navy Inventory Replenishment – External

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

EIE Project

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1 Introduction

This document establishes an interface between Canada Electronic Data Exchange (EDE) system and the In-Service Support (ISS) Contractor responsible for maintenance of a platform subject to Performance Based Contracting (PBC). This interface will be used by ISS Contractor to send Inventory Replenishment messages to Canada EDE. To support the Inventory Replenishment message transfer between Canada EDE and 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.

1.1 Intended Audience

- ISS Contractor System Designers
- Canada EDE Designers
- ISS Contractor Testers
- Canada EDE Testers

1.2 References

[Ref. 1] Electronic Information Exchange Business Use Case – BUC 3.48 Navy - Exchange Inventory Replenishment Data

[Ref. 2] PBC Business Process Catalogue Annex M: Navy Supply Process Model - In the Context of Performance Based Contracting (PBC)

[Ref. 3] Electronic Information Exchange Service Interaction Model

[Ref. 4] Electronic Information Exchange Materiel Management Service Operational Model – External.

2 Business Information

Business Information is based on the EIE Business Use Case for Exchange of Inventory Replenishment Data [Ref. 1].

In certain situations agreed to between Canada and the ISS Contractor, the ISS Contractor may initiate a replenishment of inventory stock without a demand transaction being initiated by Canada. The Inventory Replenishment service is used by ISS Contractor[1] to inform Canada that the parts for a specific Canada ship or storage location are available for pick-up. ISS Contractor will then supply the actual parts and/or Special Tools and Test Equipment (STTE) as part of the materiel delivered to Canada.

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 Defence Resource Management Information System (DRMIS).

2.1 Business Processes

In certain situations agreed to between Canada and the ISS Contractor, the ISS Contractor may initiate a replenishment of inventory stock without a demand transaction being initiated by Canada. Inventory replenishment is shipped by ISS Contractor to a designated Hand-Over Point (HoP), from where Canada assumes responsibility.

ISS Contractor will also send the Equipment Master Record (EMR) structure (for serialized parts). This EMR data is colloquially known as “part history” data, and is required to properly initialize the Canada CMMS and CSS systems prior to acceptance of the Inventory replenishment Advanced Shipping Notice (ASN) notice. This data is a touch point between supply operations and information required when conducting the maintenance.

2.2 Business Triggers

The following actions within ISS Contractor systems, the business triggers, will result in Inventory Replenishment data being sent to Canada EDE:

- Canada and the ISS Contractor agree to initiate a replenishment of inventory stock without a demand transaction being initiated by Canada.

For further information, including cross-references to business processes, please refer to the Business Use Case Exchange Inventory Replenishment Data [Ref. 1].

[1] In this document the terms Industry and ISS Contractor are synonymous. The term ISS Contractor is used during description of the business process to align with the Business Use Cases. The term Industry is used during description of service interactions and service descriptions.

2.3 Business Error Processing

In the event Canada encounters business errors while attempting to post Inventory Replenishment data to their backend systems, Canada will report errors on all line items within an Inventory Replenishment message in one message.

Where possible, ISS Contractor will correct erroneous line item data based upon reported errors, and generate a new Inventory Replenishment message and including only the corrected line items.

2.4 Inventory Replenishment Unit of Work

As noted above, ISS Contractor is responsible for sending EMR data (for serialized components) for parts issued to Canada with the Inventory Replenishment notification, in near-real time if data exist, although via separate service interfaces. Typically this EMR data is required for serialized parts.

To achieve consistency, the Inventory Replenishment record and associated EMR records are always sent from ISS Contractor to Canada EDE in a single ***unit of work (UOW).*** The unit of work is a logical "package" of discrete business objects (possibly of more than one type) with a unique identifier. Every individual message sent as part of the Inventory Replenishment "package" has a reference to its containing unit of work. A unit of work will have a ***manifest*** which explicitly defines the exchange (message) types and number of business objects per exchange type that are encapsulated within the unit of work. The manifest message is a declaration of the expected data and will be used by Canada EDE to manage the receipt of the subsequent messages with a reference to the UOW.

For further discussion on units of work, see the EIE Service Interaction Model [Ref. 3].

3 Business Constraints

Constraints on *Usage* of the Service

1) Canada EDE shall ensure an Inventory Replenishment message is only processed from an Industry which is properly authenticated and authorized to see maintenance and materiel data for that ship class.

2) If any of the parts issued to Canada have associated EMR data, (for serialized components), Industry must define a unit of work with a unique identifier prior to sending Inventory Replenishment data and any of its EMR data. Each Inventory Replenishment message and its associated EMR data messages must reference its containing unit of work.

3) The unit of work for Inventory Replenishment always contains an explicit manifest. Please refer to **Materiel Management Service Operational Model** [Ref.4] for details on the Manifest.

4) Every invocation of a service operation shall be secured using secure credentials, such as Public Key Infrastructure (PKI) Certificate.

Constraints on *Behaviour* of the Service

5) The Inventory Replenishment service shall operate in near-real time.

6) In the event parts issued to Canada have associated EMR data, Industry must first send Canada a Supply Manifest message, and await acknowledgement from Canada, prior to sending Inventory Replenishment and associated EMR messages to Canada.

7) Canada EDE does not mandate that Inventory Replenishment messages and their associated EMR messages will be received in the same order they were created by Industry. It is the responsibility of the Canada EDE to collate Inventory Replenishment and EMR messages based on the Unit of Work (UOW) identifier provided with each message that participates within that UOW.

8) Canada expects all inventory items available for an Inventory Replenishment to be included in a single Inventory Replenishment message, versus sending a single Inventory Replenishment message per inventory item or serial number.

9) Canada EDE does allow that there can be more than one Inventory Replenishment message for each single storage location replenishment. This can occur when the volume of data associated with a storage location is too large to reasonably be processed as one message.

10) Canada EDE will report any business processing errors through the Inventory Replenishment error operation exposed by Industry using a distinct and separate invocation.

11) Canada will report successful conclusion of business processing of the Inventory Replenishment data to Industry. The Part Receipt service is used for this business response.

12) Inventory Replenishment messages will be signed using digital certificates between Canada EDE and Industry. Please see Service Interaction Model [Ref. 3] for details.

13) Industry may attempt to repeat operation invocations in response to technical faults. This behaviour is controlled by parameters for each operation. Please see Service Interaction Model [Ref. 3] for details.

4 Service Use Case

The requirements for the Inventory Replenishment are defined by one use case with several scenarios.

4.1 Service Context [2]

A high level view of the context of the service is shown in Figure 4-1~~Figure 4-1~~ below. For simplicity this view omits error scenarios. These are discussed in Service Use Case Scenarios.

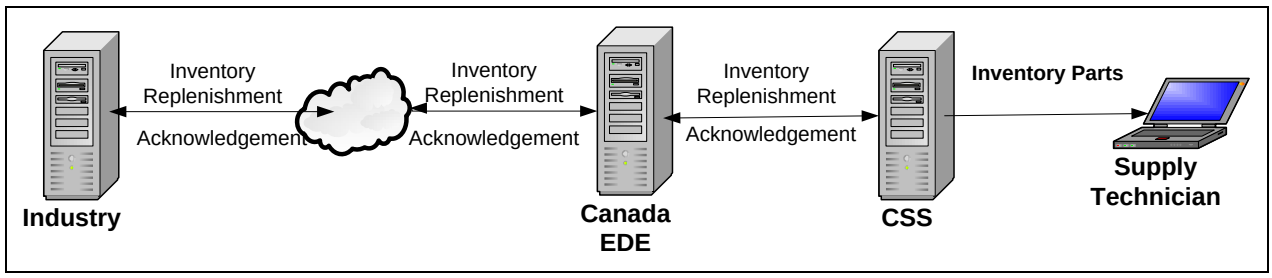


Figure 4-1 Inventory Replenishment Service Context

The following steps occur:

- Inventory and Usage report messages have been received by Industry via the respective services and Industry determines that replenishment is required – see [Ref. 2].
- Industry allocates the parts required to make up the Inventory Replenishment kit and records in the Industry supply system.
- Industry generates an Inventory Replenishment message for the Inventory Replenishment.
- Industry sends Inventory Replenishment message to Canada EDE – Canada EDE accepts the message and returns a 'technical' response.
- Canada EDE sends Inventory Replenishment to CSS – CSS accepts the message and returns a 'technical' response.
- CSS performs the required "back-end" processing including checking of business rules.
- If there is an error in "back-end" processing CSS will send a business error to Canada EDE.
- Canada EDE sends business error information to Industry.

The "technical response" referred to above either (*i*) confirms a party in the exchange has accepted a message for further processing, or (*ii*) contains a fault message. A technical acceptance does not preclude subsequent "business" errors being generated.

[2] The terms ISS Contractor and Industry are used interchangeably in this document.

4.2 Successful Request and Technical Response

The Inventory Replenishment Message Flow is shown in Figure 4-2~~Figure 4-2~~. This is the main or "Happy Day" scenario.

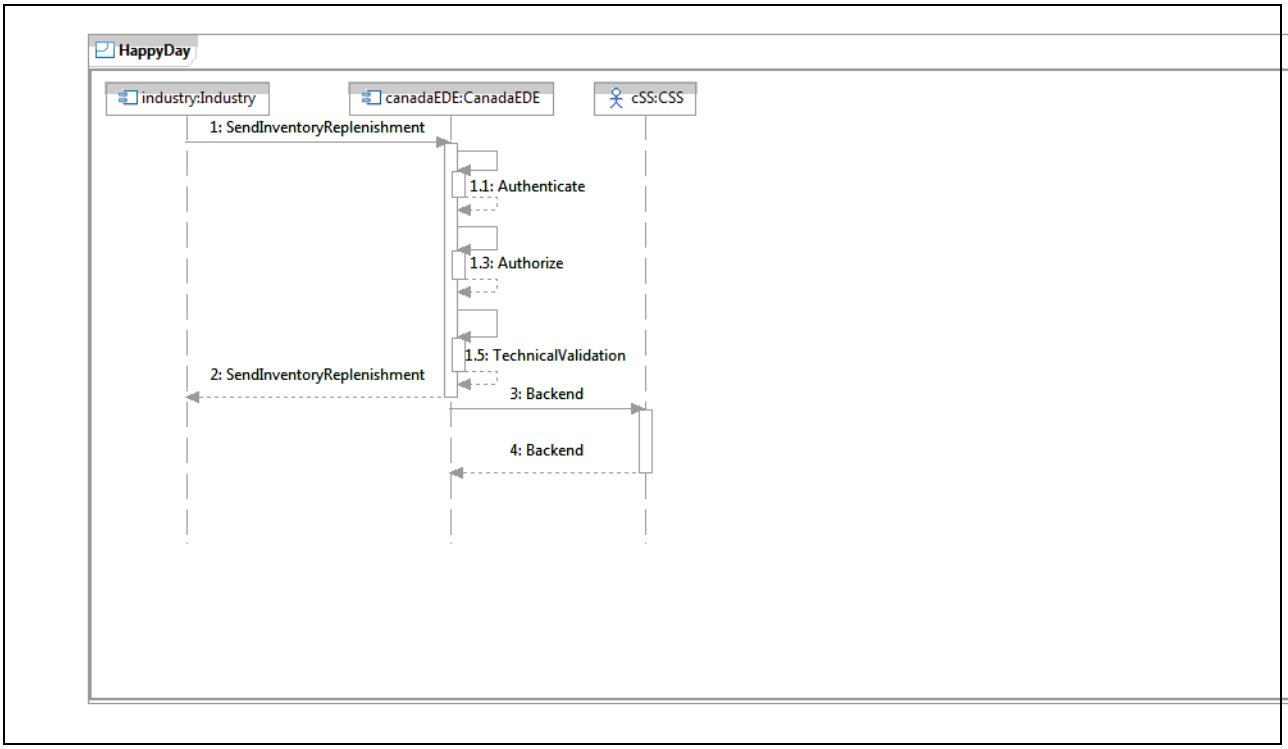


Figure 4-2 Inventory Replenishment Message Flow

Main Flow	
Scenario	"Happy Day:" Industry successfully sends Inventory Replenishment message to Canada.
Pre-Condition	Inventory and Usage report messages have been received by Industry. Industry determines that storage location replenishment is required Industry has available parts for the Inventory Replenishment.
Post-Condition	Inventory Replenishment message is successfully received by Canada. CSS is updated.

Steps	1) Industry invokes SendInventoryReplenishment operation of the Inventory Replenishment service. 2) Canada EDE successfully Authenticates the service consumer. 3) Canada EDE successfully Authorizes the service consumer. 4) Canada EDE performs a successful schema compliance check. 5) Canada EDE sends technical response to Industry indicating message was accepted. 6) Canada EDE invokes back-end processing in CSS.

Implicit in the above diagram is that a service Consumer may re-try to send a message to the service Provider in the event there is no technical response from the Provider or if the Provider response indicates a technical error. Resend behaviour is governed by parameters in the non-functional requirements of each operation.

4.3 Alternate Scenarios

The following scenarios apply to all uses of the Inventory Replenishment.

Alternate Flow 1 (Authentication Failure)	
Scenario	Industry does not provide appropriate credentials to Canada EDE.
Pre-Condition	Industry has invoked the Canada EDE Inventory Replenishment Service.
Post-Condition	Canada EDE sends an Authentication Failure fault response
Steps	1) The authentication credentials are either not provided or are incorrect. 2) Canada EDE sends an Authentication Failure fault as the technical response. 3) Industry processes the error.
Alternate Flow 2 (Authorization Failure)	
Scenario	Industry is not authorized to use a service.
Pre-Condition	Industry has invoked the Canada EDE Inventory Replenishment Service. Canada EDE has completed Authentication successfully.
Post-Condition	Canada EDE sends an Unauthorized Request fault response.
Steps	1) The request message does not pass Canada EDE authorization. 2) Canada EDE sends an Unauthorized Request fault as the technical response. 3) Industry processes the error.
Alternate Flow 3 (Message Technical Validation Failure)	
Scenario	Industry sends a malformed message to Canada EDE.
Pre-Condition	Industry has invoked the Canada EDE Inventory Replenishment Service. Canada EDE has completed Authentication and Authorization successfully.

Post-Condition	Canada EDE sends a Malformed Message fault response.
Steps	1) The message does not pass validation as per agreed schema. (Regardless of the number and types of errors). 2) Canada EDE sends Malformed Message error information as the technical response. 3) Industry processes the message technical validation failure.
Alternate Flow 4 (Canada EDE Service unresponsive)	
Scenario	Industry does not receive technical response within ACK_TIME_INTERVAL.
Pre-Condition	Industry has invoked the operation but does not receive the technical response within the time specified for the Inventory Replenishment service.
Post-Condition	Industry marks the message as Dead Message.
Steps	1) Industry does not receive any response from Canada EDE within the allowed ACK_TIME_INTERVAL. 2) Industry 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 Industry marks the request message as Dead and handles it via the DeadMessageHandlerService.

The Inventory Replenishment Business Validation Failure Message Flow is shown in Figure 4-3~~Figure 4-3~~.

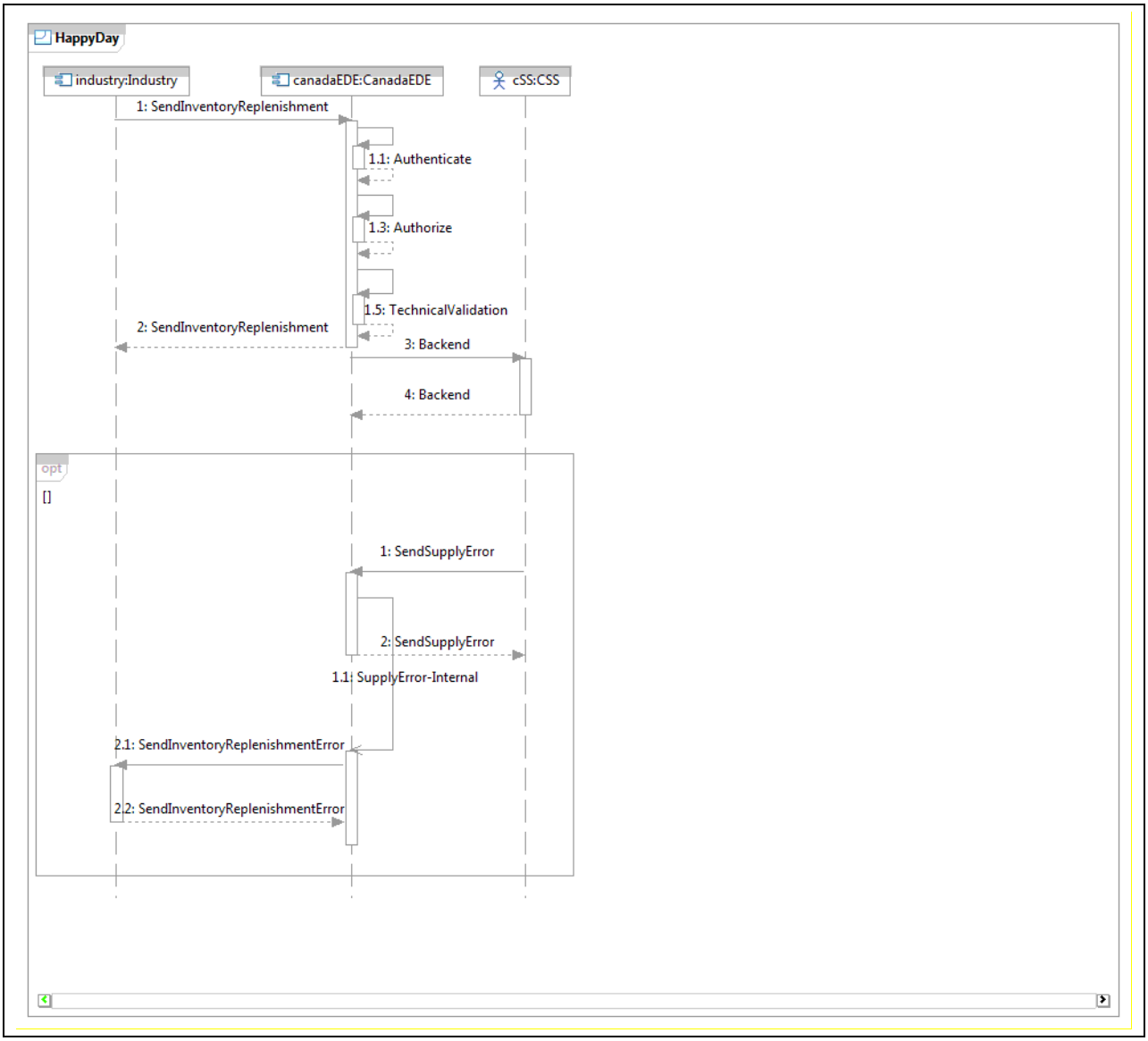


Figure 4-3 Inventory Replenishment Business Validation Failure Message Flow

Alternate Flow 5 (Business Validation Failure)	
Scenario	CSS business validations fail on one or more Inventory Replenishment data records.
Pre-Condition	Industry has invoked the Canada EDE Inventory Replenishment service, the message has passed Authentication, Authorization and Schema Validation and a successful technical response has been received by Industry.
Post-Condition	Canada EDE sends error information to Industry.

Steps	1) The Inventory Replenishment data records failed CSS's business validation process. 2) Canada EDE sends business error information to Industry using the Inventory Replenishment Error operation. 3) Where possible, Industry will correct erroneous line item data based upon reported errors, and generate a new Inventory Replenishment message and including all of the corrected inventory items.

5 Service Description – Inventory Replenishment Service

5.1 Service Overview

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

Industry will provide an Inventory Replenishment Error operation to be used by Canada EDE to report a Technical or Business Fault if errors are found during Canada processing. See [Ref. 4].

5.2 Service Properties

Service Property	Description
Enterprise Service Name (Business)	Inventory Replenishment Service
Enterprise Service Name (Technical)	InventoryReplenishment_Canada InventoryReplenishment_Industry
Purpose	This service supports the Canada EDE Maintenance process for scheduled and unscheduled maintenance tasks. On the occurrence of business triggers, Industry uses this service to send Inventory Replenishment messages to Canada EDE on a near-real time basis. This service also supports reporting of business errors encountered while processing Inventory Replenishment messages within the Canada supply systems.
Business Response Time Interval	48 hours nominally (time for Canada to respond with Part Receipt message) – Exact number of hours will be determined based on each Industrys agreement with Canada
Service Domain	Supply Management
Business Owner	ADM (IM)
Service Grouping	Supply Materiel / Inventory Replenishment
Source Provider	Canada EDE
Target Service Consumers	Industry
Business Process Supported (now)	Perform 1st and 2nd level maintenance: • Corrective Maintenance Planning • Preventive Maintenance Planning • Execute Corrective or Preventive Maintenance

Service Property	Description
Business Process Supported (future)	None currently identified.
Business Objective Supported	See Section 2: Business Information.
Expected life time	The full lifecycle of the subject platform using PBC.

5.3 Service Operations

Provider	Consumer	Operation
Canada EDE	Industry	SendInventoryReplenishment
Industry	Canada EDE	SendInventoryReplenishmentError

5.3.1 SendInventoryReplenishment Operation

This operation is used by Industry to send a Inventory Replenishment message to Canada EDE. Canada EDE's implementation of this operation will perform authentication, authorization and technical message validation on the Inventory Replenishment message. Canada EDE will return a status or fault information to the consumer.

If Canada accepts the message for further processing an output message is returned. The content of the output indicates SUCCESS Canada accepts custody of the message for further processing. If Canada does NOT accept the message, Canada will return one or more fault blocks.

5.3.2 SendInventoryReplenishmentError Operation

This operation is used by Canada to send a Inventory Replenishment Error message to Industry in the event a business error is encountered by Canada backend supply system. Industry's implementation of this operation will perform authentication, authorization and technical message validation on the Inventory Replenishment Error message. Industry will return a status or fault information to the consumer.

If Industry accepts the message for further processing an output message is returned. The content of the output indicates SUCCESS, Industry accepts custody of the error message for further processing. If Industry does NOT accept the message, Industry will return one or more fault blocks. Irrespective of outcome, if Canada reports a business error through this service, no further processing of the originating Inventory Replenishment message takes place.

5.4 Message Interaction

As defined in Section 4: Service Use Case, the Inventory Replenishment service supports a business-asynchronous interaction with a message-passing paradigm. Each Web Service operation must be defined such that the messages required by the system use case (faults in particular, see Section 4.3 Alternate Scenarios) are explicit in the Web Service definition. This implies each Inventory Replenishment web service operation must be defined with an input, output and fault element.

Message interaction is further described in Electronic Information Exchange Service Interaction Model [Ref. 3].

6 Information Model

This section describes the **business objects** which are used for Inventory Replenishment. The Unified Modeling Language (UML) notation is used. A functional view[3] of the information model is provided in the Business Use Case Inventory Replenishment Data [Ref. 1], Section 3: Functional Data Definition, and an Entity-Relationship diagram (ERD) is provided in Appendix A of this document.

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 expressed in an XML Schema.

Note: In the case of the discrepancy between various representations of the information model, the authoritative definition of the information model will always be the XML schema that is defined for the service.

6.1 Inventory Replenishment Demand

An Inventory Replenishment message contains an Inventory Replenishment business object. The Inventory Replenishment information model is shown in Figure 6-1~~Figure 6-1~~ below.

The Inventory Replenishment (class Inventory) is used to manage "goods movement" between Canada and Industry. An Inventory contains one or more Inventory Items (class InventoryItem).

An Inventory Item represents a quantity of parts – all of the same type. An Inventory Item must be contained in an Inventory.

Information about individual parts is included (class PartDetail). A PartDetail must be contained in an InventoryItem.

The field descriptions are elaborated in the Functional view (please see Business Use Case Exchange Inventory Replenishment Data [Ref. 1]).

[3] The Functional View details the collection of fields which make up an Inventory Replenishment and its sub-records.

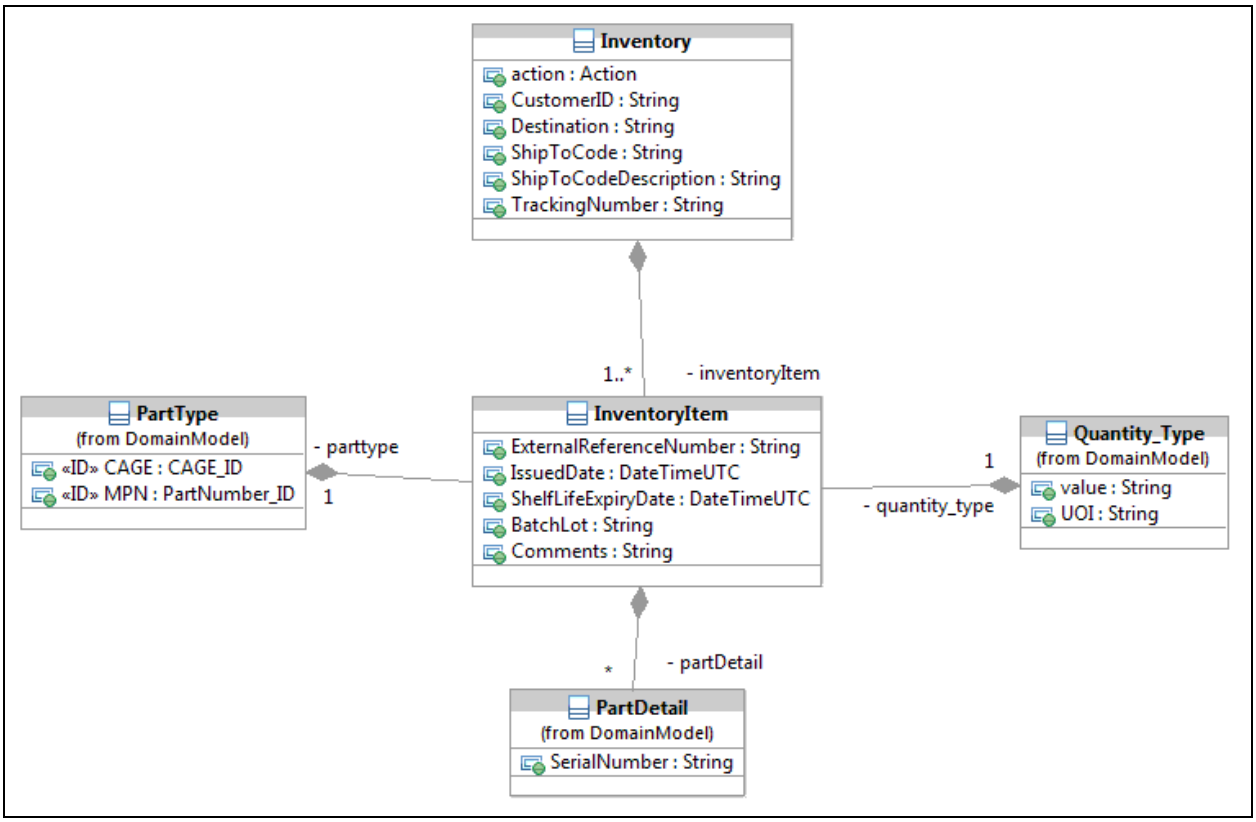


Figure 6-1 Information Model – Inventory Replenishment

The 'action' attribute is discussed in Section 7.1.1 Inventory Replenishment Input Messages.

7 Operation Message Model

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

All EIE Supply services are request/response and each operation definition includes a distinct input, output and fault message. Message definitions use a common supply message header definition, as well as a common security block definition. Please refer to Electronic Information Exchange Service Interaction Model [Ref. 3] for details on message header and security block definition.

7.1 Inventory Replenishment Input Message Constructs

7.1.1 Inventory Replenishment Input Body

As shown in Figure 7-1~~Figure 7-1~~, an Inventory Replenishment input message consists of:

- A Message Header;
- A Security Block;
- An Inventory Replenishment (with contained InventoryItems and PartDetail).

In order to uniquely identify data from a business payload, certain elements will be identified as elements that can make up the unique Business identifier for each business object that has been transmitted. These elements will then be used by either the consumer or provider to report any errors associated with the contained business payload.

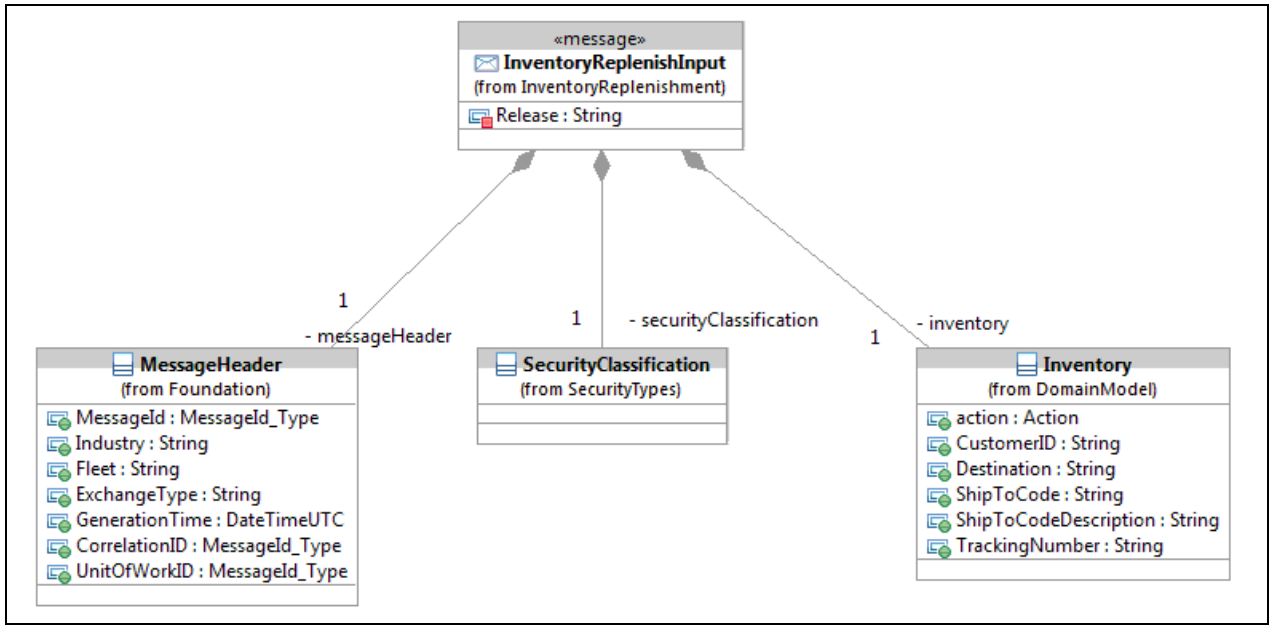


Figure 7-1 Inventory Replenishment Input Message

- For an InventoryReplenishmentInputMessage the MessageHeader Correlation ID is not used if the InventoryReplenishment message is standalone message.

- If the InventoryReplenishment is sent in the context of a manifest, then the MessageHeader UnitofWorkID must equate to the UnitofWorkID value set within the Manifest message, and the MessageHeader Correlation ID must equate to Message ID set within Manifest Message header.

Within the InventoryReplenishment and InventoryItem business objects (the latter not shown here) there is an attribute named 'action' which is set by the service consumer as a directive to CSS on handling the business object. Valid values for 'action' are:

- Create a new business object: action = 1;
- Edit an existing business object: action = 2;
- Delete a business object: action = 3.

Note: The value for the "action" will always be set to 1 since it is always to create a new business object.

7.1.2 Inventory Replenishment Output Body

The output of the SendInventoryReplenishment operation is the InventoryReplenishmentOutputBody. As shown in Figure 7-2~~Figure 7-2~~, the output body consists of:

- A Message Header;
- An InventoryReplenishmentOutput indicating acceptance; the Inventory Replenishment message is accepted in its entirety only.

The output message has no security block. The output does not contain any sensitive or protected information.

This output body definition is also used in the Inventory Replenishment Error service.

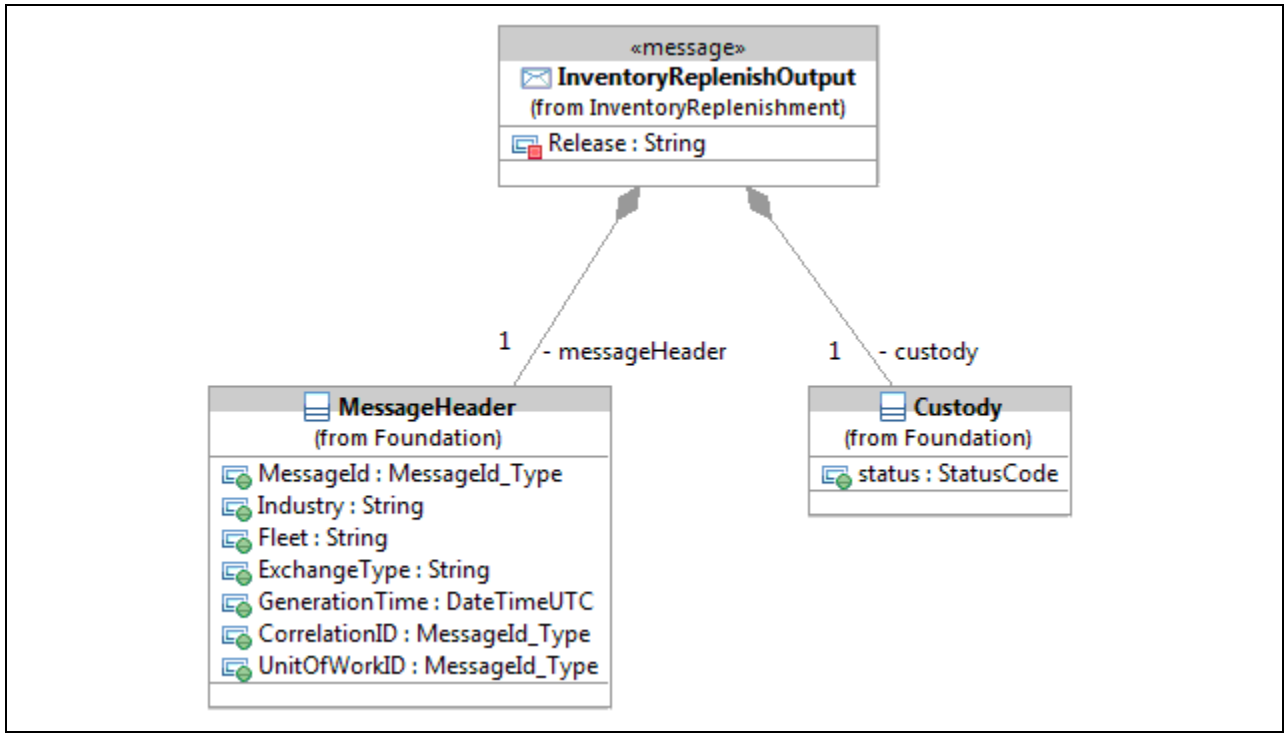


Figure 7-2 Inventory Replenishment Output Message

For an InventoryReplenishmentOutputBody:

- The MessageHeader Correlation ID will reflect the Message ID of the originating Inventory Replenishment input message.
- If the InventoryReplenishment is sent in the context of a manifest, then the MessageHeader UnitofWorkID must equate to the UnitofWorkID value set within the Manifest message.
- The MessageHeader Exchange Type must be set to the Exchange Type of the InventoryReplenishmentInputBody.
- The value of the SupplyOutput 'Custody' evaluates to "success".

7.1.3 Inventory Replenishment Fault Body

A fault returned by the SendInventoryReplenishment operation uses the InventoryReplenishmentFaultBody element. As shown in Figure 7-3~~Figure 7-3~~, the fault message consists of:

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

Each fault block pertains to zero to many business objects, 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.

This fault body definition is also used in the Inventory Replenishment Error service.

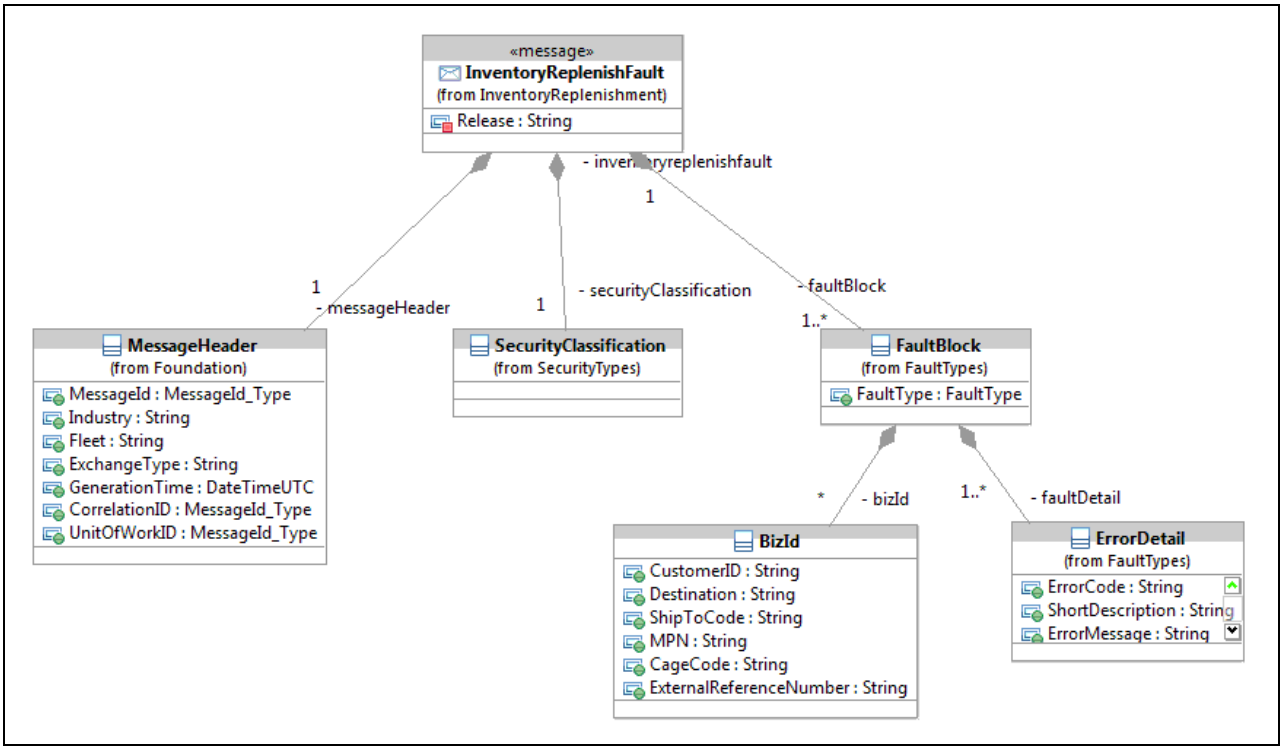


Figure 7-3 Inventory Replenishment Fault Body

For an InventoryReplenishmentFaultMessage:

- The MessageHeader Correlation ID will reflect the Message ID of the originating Inventory Replenishment input message.
- If the InventoryReplenishment is sent in the context of a manifest, then the MessageHeader UnitofWorkID must equate to the UnitofWorkID value set within the Manifest message.
- The MessageHeader Exchange Type must be set to the Exchange Type of the InventoryReplenishmentInputBody.

7.2 Inventory Replenishment Error Message Constructs

In the event Canada encounters a business error while processing the Inventory Replenishment in their backend supply system, Canada will send Industry an Inventory Replenishment Error message through the following constructs.

7.2.1 Inventory Replenishment Error Input Body

As shown in Figure 7-4~~Figure 7-4~~, an Inventory Replenishment Error input message consists of:

- A Message Header;
- A Security Block;

- An Error body.

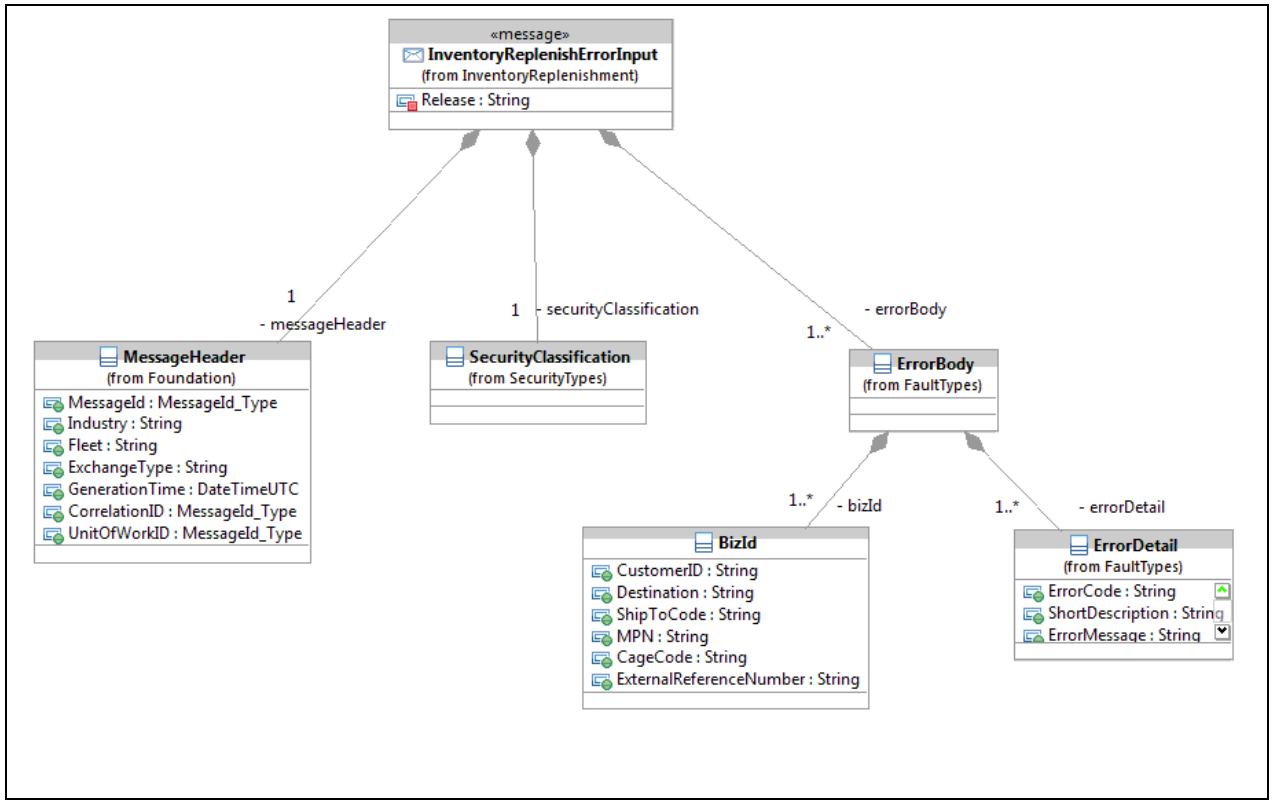


Figure 7-4 Exchange Messages – Inventory Replenishment Error Input Body

For an InventoryReplenishmentErrorInputBody the MessageHeader CorrelationID and UnitofWorkID are not used.

The fault body consists of:

- A Message Header;
- A Security Block;
- One or more Error body.
- Within the Error Body, at least one BizID must be provided, along with at least one ErrorDetail block.
    - If appropriate, multiple BizIDs may be provided referencing a common error(s).
- If appropriate, multiple errors can be defined within the error body. These errors would apply to all BizIDs defined within the ErrorBody construct.

Each error pertains to one or more business objects, to the level of granularity which the Service consumer can provide. To report differing errors on more than one business object extra error blocks can be included in the error input message.

7.2.2 Inventory Replenishment Error Output Body

The output of the SendInventoryReplenishmentError operation is the InventoryReplenishmentErrorOutputBody.

Please refer to 7.1.2 Inventory Replenishment Output Body for this definition.

7.2.3 Inventory Replenishment Error Fault Body

A fault returned by the SendInventoryReplenishmentError operation uses the InventoryReplenishmentErrorFaultBody element.

Please refer to 7.1.3 Inventory Replenishment Fault Body for this definition.

8 Service Operation Details

8.1 Detailed Operation Characteristics – SendInventoryReplenishment

Industry will invoke the exposed Canada EDE Inventory Replenishment service through this operation. An Inventory Replenishment message will contain Inventory Replenishment business objects.

Refer to InventoryReplenishment_Canada.wsdl for implementation details.

Detailed Operation Characteristics

Interface Definition	Description
Operation Name	Send Inventory Replenishment
Operation Technical Name	SendInventoryReplenishment
Operation Description	This operation is invoked by Industry to send an Inventory Replenishment data to Canada EDE. The Inventory Replenishment describes parts issued to Canada.
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 7.1.1 Inventory Replenishment Input for details.
Output Message Definition	Please refer to Operation Message Model Section 7.1.2 Inventory Replenishment Output for details.
Fault Definition	Please refer to Operation Message Model Section 7.1.3 Inventory Replenishment Faults for details. As discussed in Section 4: Service Use Case, the following faults may be reported: 1) Unauthenticated access 2) Unauthorized request 3) Malformed message 4) Service Unavailable

Non Functional Requirements

Non Functional Requirements/Technical Details	
Frequency	Based on Service Level Agreements (SLA) to 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.

Non Functional Requirements/Technical Details	
Peak Throughput Volume	Based on Service Level Agreements (SLA) to be determined between Canada and Industry on a per ship class basis.
Payload Size	~ 2KB per Inventory Replenishment Line Item
Attachments	None
Attachment Size	N / A
ACK Time Interval	2 minutes
Retry Time Interval	5 minutes
Number of Retries	5
Biz. Response Time Interval	Business Response to a Inventory Replenishment message is a Part Receipt message. Response Time Interval based on Service Level Agreements (SLA) to be determined between Canada and Industry on a per ship class basis.
Time to Live Span	Nominally 1 hour – if message cannot be delivered within 1 hour, revert to secondary delivery channel, which may be manual.
Service Op Availability	During core processing hours. 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 for this operation when Industry cannot successfully send Inventory Replenishment message to Canada EDE.

8.2 Detailed Operation Characteristics – SendInventoryReplenishmentError

Canada system will invoke the exposed Industry InventoryReplenishmentError service through this operation. An Inventory Replenishment error message will contain Canada-reported business errors encountered while attempting to process an InventoryReplenishment message generated by Industry.

Refer to InventoryReplenishment_Industry.wsdl for implementation details.

Detailed Operation Characteristics

Interface Definition	Description
Operation Name	Send Inventory Replenishment Error
Operation Technical Name	SendInventoryReplenishmentError
Operation Description	This operation is invoked by Canada to send a Business Error message to Industry. The Business Error describes errors encountered while processing Industry's Inventory Replenishment message.
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 7.2.1 Inventory Replenishment Error Input for details.
Output Message Definition	Please refer to Operation Message Model Section 7.2.2 Inventory Replenishment Error Output for details.
Fault Definition	Please refer to Operation Message Model Section 7.2.3 Inventory Replenishment Error Fault for details.

Non Functional Requirements

Non Functional Requirements/Technical Details	
Frequency	Based on Service Level Agreements (SLA) to be determined between Canada and Industry on a per ship class basis.
Peak Throughput Time	N/A
Peak Throughput Volume	N/A
Payload Size	~ 5KB per Error
Attachments	None
Attachment Size	N/A
ACK Time Interval	2 minutes
Retry Time Interval	5 minutes
Number of Retries	5
Biz. Response Time Interval	N/A
Time to Live Span	Nominally 1 hour – if message cannot be delivered within 1 hour, revert to secondary delivery channel, which may be manual.

Non Functional Requirements/Technical Details	
Service Op Availability	During core processing hours. 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 for this operation when Canada EDE cannot successfully send Inventory replenishment Error message to Industry.

8.3 Service Bindings

8.3.1 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), MessageHeader and SecurityMarkings elements[4] are bound to the SOAP Body element. The SOAP Header is used for EIE adopted WS-* standards-based elements (e.g., WS_Security assertions) elements.

In this binding the http response is used for operations' output or fault messages.

8.3.2 SOAP Over JMS

Not currently supported for this service.

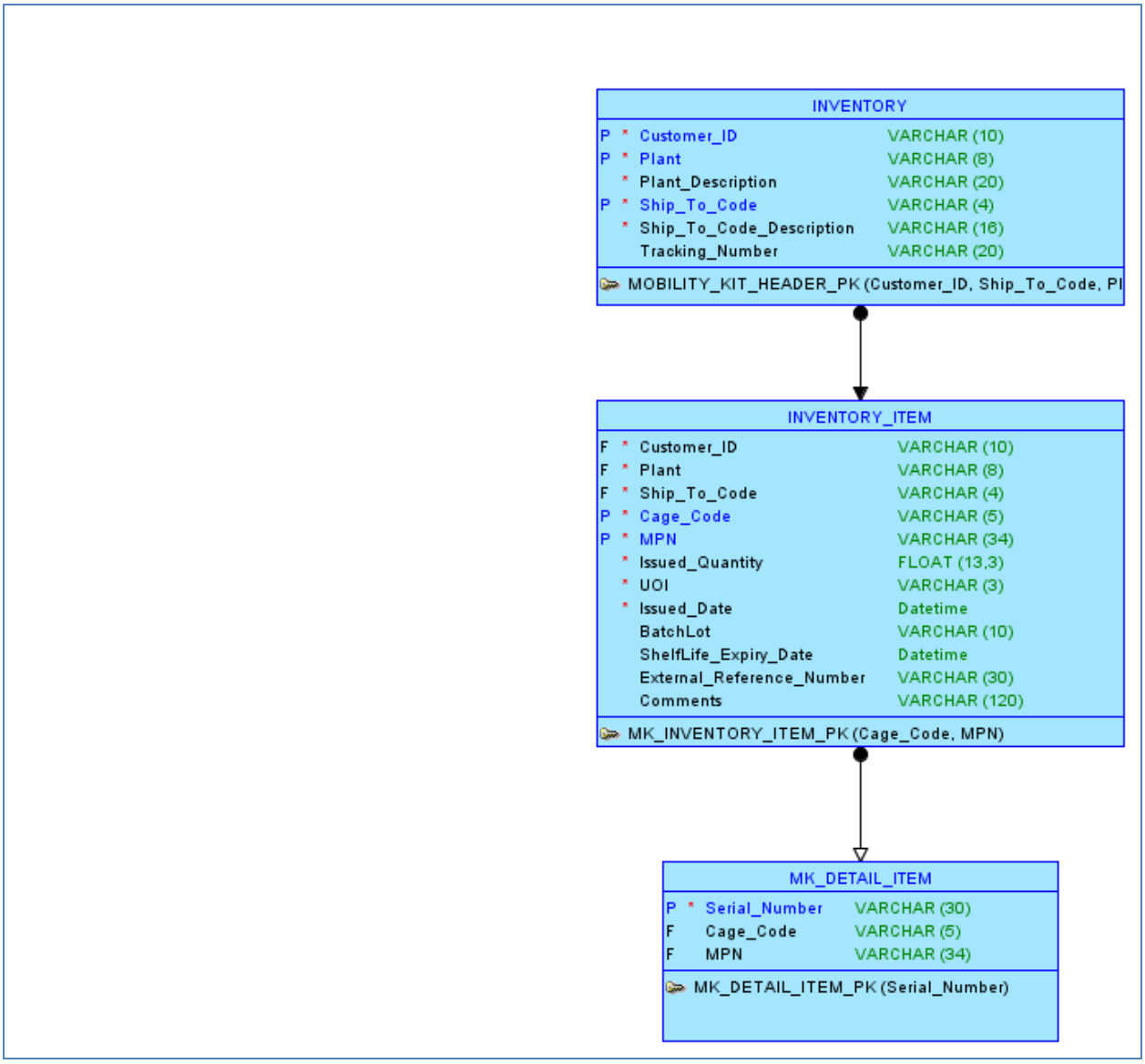
[4] See the Inventory Replenishment Service WSDL file for the precise binding

9 Definitions, Acronyms, Abbreviations

Term	Description
ADM (IM)	Assistant Deputy Minister (Information Management)
ADM (Mat)	Assistant Deputy Minister (Materiel)
ASN	Advanced Shipping Notice
BUC	Business Use Case
CMMS	Canada Maintenance Management System
CSS	Canada Supply System
DND	Department of National Defence
DRMIS	Defence Resource Management Information System
EDD	Estimated Delivery Date
EDE	Electronic Data Exchange
EIE	Electronic Information Environment
HoP	Hand-Over Point
HTTP	Hyper Text Transfer Protocol
HTTPS	Hyper Text Transfer Protocol Secure
ISS	In-Service Support
JMS	Java Message Service
MP	Maintenance Plan
PO	Purchase Order
SLA	Service Level Agreement
SOAP	Simple Object Access Protocol
STTE	Special Tools and Test Equipment
UML	Unified Modeling Language
URL	Uniform Resource Locator
WO	Work Order
WS	Weapon System
WSDL	Web Service Definition Language
XML	Extensible Markup Language
XSD	XML Schema Definition
XSL	Extensible Stylesheet Language

10 Appendix A – Information Model Entity Relationship View

Information Model – Entity-Relationship View



11 Document History

Revision Number	Description	Date
1.0	Initial release for Navy RFP.	23 September 2015