



Electronic Information Environment (EIE)

Service Specification Document/Interface Control Document

EMR Install/Uninstall – 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.

EIE Project

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1 Introduction

In order to fulfill its responsibilities under Performance Based Contracting (PBC), the ISS Contractor requires maintenance history information, including EMR Install and Uninstall data, from Canada.

This document defines a web service interface between Canada and the ISS Contractor's systems to exchange Equipment Master Record (EMR) data between Canada and the ISS Contractor for a Weapon System (WS) managed according to PBC. To support the message exchange between Canada Electronic Data Exchange (EDE) and the ISS Contractor, both systems need to support specific web service operations as well as request and response XML schemas as described in this document.

This document defines the EMR data exchange interface.

1.1 Intended Audience

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

1.2 References

[Ref. 1] Electronic Information Exchange Business Use Case -
BUC_4_23_Navy_Maintenance_EMR_Install_Uninstall

[Ref. 2] Annex L: Navy Maintenance Process Model – In the Context of Performance-Based Contracting (PBC)

[Ref. 3] Electronic Information Exchange Service Interaction Model

[Ref. 4] Electronic Information Exchange Maintenance History Service Operational Model – External

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2 Business Information

Business Information is based on the EIE Business Use Case [Ref. 1].

Part of Canada's responsibility within the ISS Contractor is the execution of agreed level of maintenance activities on a platform. In order to systematically track the request for execution of the maintenance activities and to record the fault identified on the platform, maintenance notifications and maintenance work orders are created in the CMMS. In the course of maintenance activities (corrective and preventive), equipment or part status may change, equipment/parts may be uninstalled from a platform, and new equipment/parts may be ordered and installed. These events result in new or updated EMR Install/Uninstall datasets.

In accordance with PBC, EMR Install/Uninstall datasets associated with the platform shall be transferred to the ISS Contractor in order to facilitate contractually agreed obligations of keeping the platform configuration synchronized between Canada and the ISS Contractor systems and applications.

On a pre-determined, periodic basis, Canada will transfer to the contracted ISS Contractor all maintenance EMR Install/Uninstall datasets which are created and which are permitted by Canada to be shared with the ISS Contractor.

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

The following business process results in a change in EMR data in CMMS. Please refer to appropriate sections in Navy Maintenance Process Model [Ref. 2] and Business Use Case [Ref. 1] for details.

- Execute Preventive or Corrective Maintenance
 - Execute Maintenance - Ship Staff/FMF
 - Execute Maintenance - ISS Contractor

2.2 Business Triggers

The following actions within CMMS, the business triggers, will result in EMR Install/Uninstall data being sent to the ISS Contractor:

1. Dismantle (or un-installed) equipment/parts from a weapon system.
2. Installation of replacement equipment/parts on a weapon system.

A business trigger applies to a particular EMR. For further information, including cross-references to business processes, refer to the Business Use Case [Ref. 1].

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2.3 EMR and EMR Exchange Records

A business trigger applies to a particular EMR in CMMS. For each occurrence of the trigger, CMMS will create an **EMR exchange record** containing a copy (complete or partial copy) of the EMR record. If the content of the EMR exchange record is the same for both triggers. An EMR exchange record always contains the unique ID of its originating EMR record and a timestamp when the data capture occurred. A collection of exchange records of the same type, arising from an EMR at different times, or from different EMRs, is called an **EMR data set**. The diagram in Figure 2-1 shows a data set consisting of four exchange records, each captured by a different trigger (diagram shows a condensed picture of three triggers).

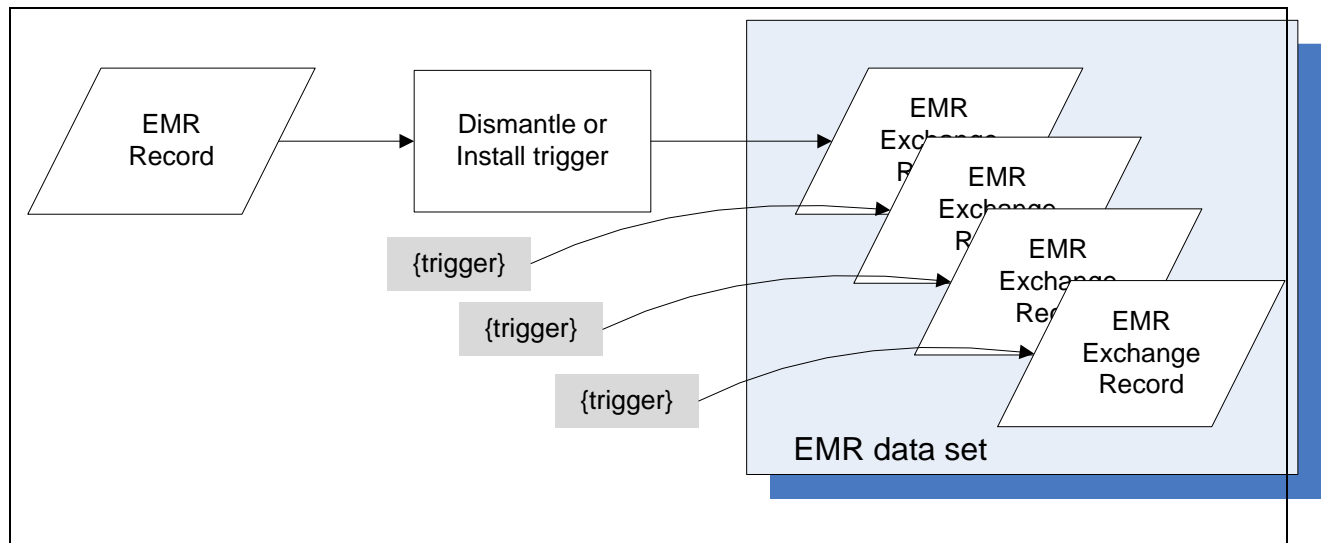


Figure 2-1 EMR data set made up of EMR Exchange Records

Over time, as triggers occur, CMMS accumulates EMR data sets. These are periodically transferred to EDE, then from EDE to the ISS Contractor. See Service Context for a more detailed view.

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3 Business Constraints

Constraints on *Usage* of the Service

- 1) The ISS Contractor's EMR Install/Uninstall service shall only be invoked by the Canada EDE System. Canada EDE system will only invoke this service upon receiving an EMR message from CMMS.
- 2) Every invocation of a service operation shall be secured using secure credentials such as: PKI Certificate.

Constraints on *Behaviour* of the Service

- 1) The EMR data may be aged for a period of time – to be determined between Canada and the ISS Contractor based on operational factors - before it will be sent to the ISS Contractor. Please see [Ref. 2] and [Ref. 4] for details.
- 2) The EMR data sets are sent to the ISS Contractor on a periodic basis (e.g., once a week every Sunday at 2 am EST) as agreed upon with the ISS Contractor.
- 3) The EMR data sets are sent to the ISS Contractor from the centralized CMMS server. There may be a delay incurred in the ISS Contractor receiving ship data due to the periodic nature of the decentralized CMMS server aboard ship synchronizing with the central CMMS server.
- 4) Since EMR data sets are being sent to the ISS Contractor, more than one record with the same EMR Id may be present in one message. The records can be distinguished by their timestamp.
- 5) Canada does not guarantee that EMR data sets will be received at the ISS Contractor in the same order that they were created. It is the responsibility of the recipient ISS Contractor system to collate the EMR exchange records based on the last updated timestamp.
- 6) The ISS Contractor will authorize invocations of operations of the Maintenance EMR service.
- 7) The ISS Contractor will report successful conclusion of business processing of the Maintenance EMR data through the Maintenance EMR Acknowledgement operation exposed by Canada using a distinct and separate invocation. In this context, successful processing constitutes the ISS Contractor successfully persisting Maintenance EMR business objects within the ISS Contractor system(s).
- 8) The ISS Contractor will report any business processing errors through the Maintenance EMR Error operation exposed by Canada using a distinct and separate invocation.
- 9) EMR messages will be signed using digital certificates between Canada EDE and the ISS Contractor. Please see Service Interaction Model [Ref. 3] for details.
- 10) Canada EDE 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.

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11) The “Action” field in each record of the EMR object will be defined based upon business events that have impacted the record in CMMS. The "Action" field will have the following meaning:

- 1 = a new record has been created in CMMS.
- 2 = the record instance has been edited within CMMS.
- 3 = the record instance (defined by the record primary key) has been deleted in CMMS.
- 4 = indicates that the record is a point-in-time snapshot. The record may have been added or modified since the last time the record has been sent, but the Action=4 does not imply any change; it is simply a snapshot of the current record state at the timestamp.

4 Service Use Case

The requirements for the EMR Install/Uninstall service are defined by one use case with scenarios for the basic (main flow) and alternate flows.

4.1 Service Context

A high level view of the context of the service is shown in Figure 4-1 below. For simplicity this view omits acknowledgement and error scenarios. These are discussed in [Service Use Case Scenarios](#).

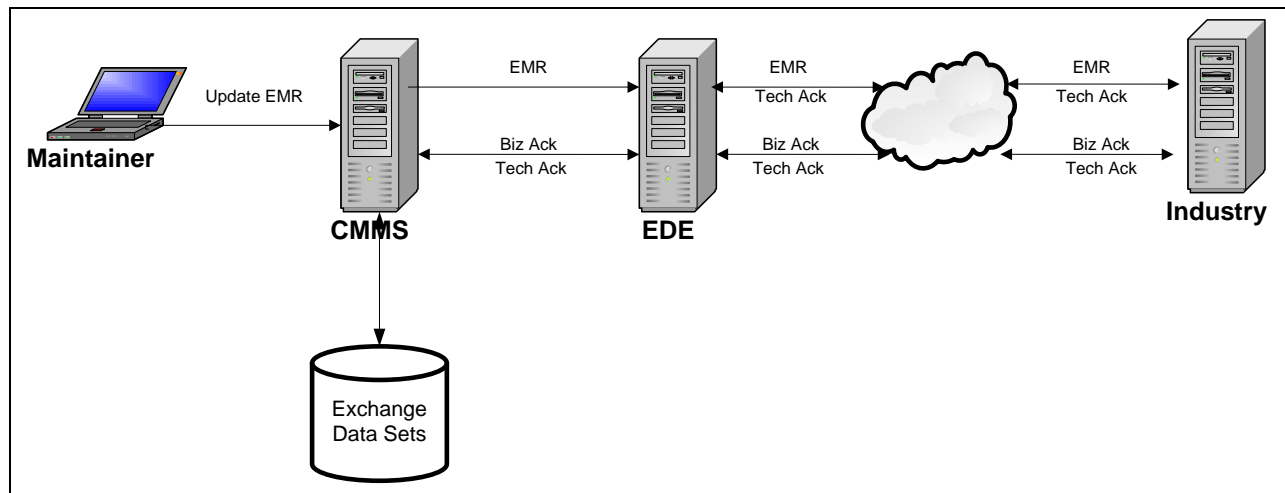


Figure 4-1 Service Context Overview

The following steps occur:

- 1) Maintainer uses CMMS to update an EMR record after an install or dismantle. .
- 2) CMMS determines the relevant EMR exchange trigger(s) and saves the applicable exchange record(s).
- 3) CMMS transfers applicable exchange records from decentralized CMMS server to centralized CMMS server.
- 4) Data sets are transferred from centralized CMMS to EDE – with timing of the transfers based on Industry¹ and Fleet.
- 5) Data sets are transferred from EDE to Industry – with timing of the transfers based on Industry and Fleet. Industry accepts the message and returns a ‘technical’ response, labelled as ‘Tech Ack’ above.
- 6) Industry performs PBC processing, including persisting EMR data, and sends a business response to Canada EDE, labeled as ‘Biz Ack’ above. Canada EDE accepts the message and returns a ‘technical’ response, labelled as ‘Tech Ack’ above.
- 7) Canada EDE forwards business response to Canada CMMS system.

¹ In the context of this document, the term ‘Industry’ is used to generically denote the ISS Contractor

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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 observed by industry and reported back to Canada as required.

The “business response” referred to above either (i) confirms Industry has successfully persisted Notification records contained within the message, or (ii) contains an error message.

4.2 Interaction Model

In a general scenario (as described in Use Case 1 below), Canada sends requests containing maintenance EMR data sets to Industry. Once Industry validates the message for compliance with agreed upon XML schema (XSD file), Industry will post an acknowledgement message to the exposed Canada acknowledgement service. If Industry detects an error in validating the message, Industry will post a negative acknowledgement message to the exposed Canada acknowledgement service.

After some time when Industry has processed the content of the EMR message in their backend system(s), Industry will send a Business Acknowledgement message to the exposed Canada acknowledgement service. In a similar manner as above, Canada will post a technical acknowledgement message through the Acknowledgement output message definition.

If while processing the message content Industry backend system generates errors on the message payload, Industry will send Error message to the exposed Canada error service. In a similar manner as above, Canada will post a technical acknowledgement message through the Error service output message definition.

Please refer to Maintenance History Operation Model for various scenarios that are applicable for Maintenance History services.

4.3 Successful Request and Response

At a high level, EMR messages are handled in the following manner:

1. Canada sends EMR message to Industry.
2. Industry Acknowledges receipt of the EMR message. This is referred to as a Technical Acknowledgement.
3. Industry processes the contents of the EMR message.
4. After processing, Industry sends Canada a Business Acknowledgement message. This confirms with Canada that the accumulated EMR data in the message is acceptable to Industry systems.

The following sequence diagram in Figure 4-2 describes steps in sending the EMR message to Industry.

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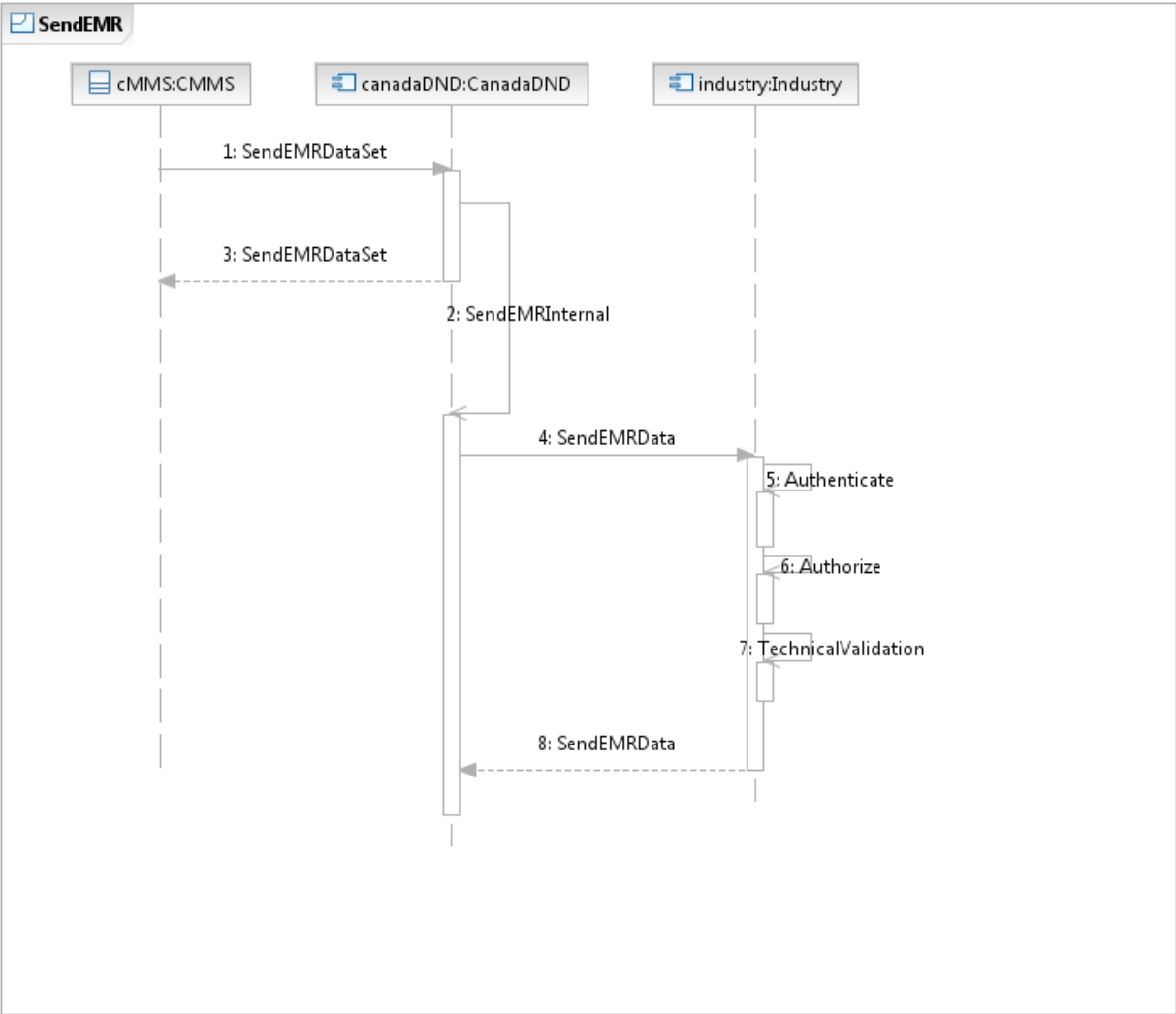


Figure 4-2 Send EMR Sequence

The following scenario applies to the EMR data.

Main Flow	
Scenario	Canada System sends its EMR data to the industry.
Pre-Condition	EMR data is collected by the Canada CMMS system.
Post-Condition	EMR data is successfully received by the industry.
Steps	1) CMMS sends EMR message to Canada EDE. 2) Canada EDE successfully Authenticates, Authorizes and Validates the message; then starts an internal process. 3) Canada EDE responds that the message has been accepted. 4) The Canada EDE system invokes the Industry hosted and exposed Send EMR

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	<p>operation.</p> <ol style="list-style-type: none">5) Industry successfully Authenticates the service consumer.6) Industry successfully Authorizes use of the service/operation.7) Industry conducts the required validations as per Service Interaction Model [Ref. 3]- Section Technical Delivery Phase8) Industry provides technical response to Canada EDE. The response may indicate a status of Success or contain a fault.
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Following processing of EMR data by Industry backend systems, Industry will send a Business Acknowledgement message to Canada. This is depicted in the following sequence diagram in Figure 4-3.

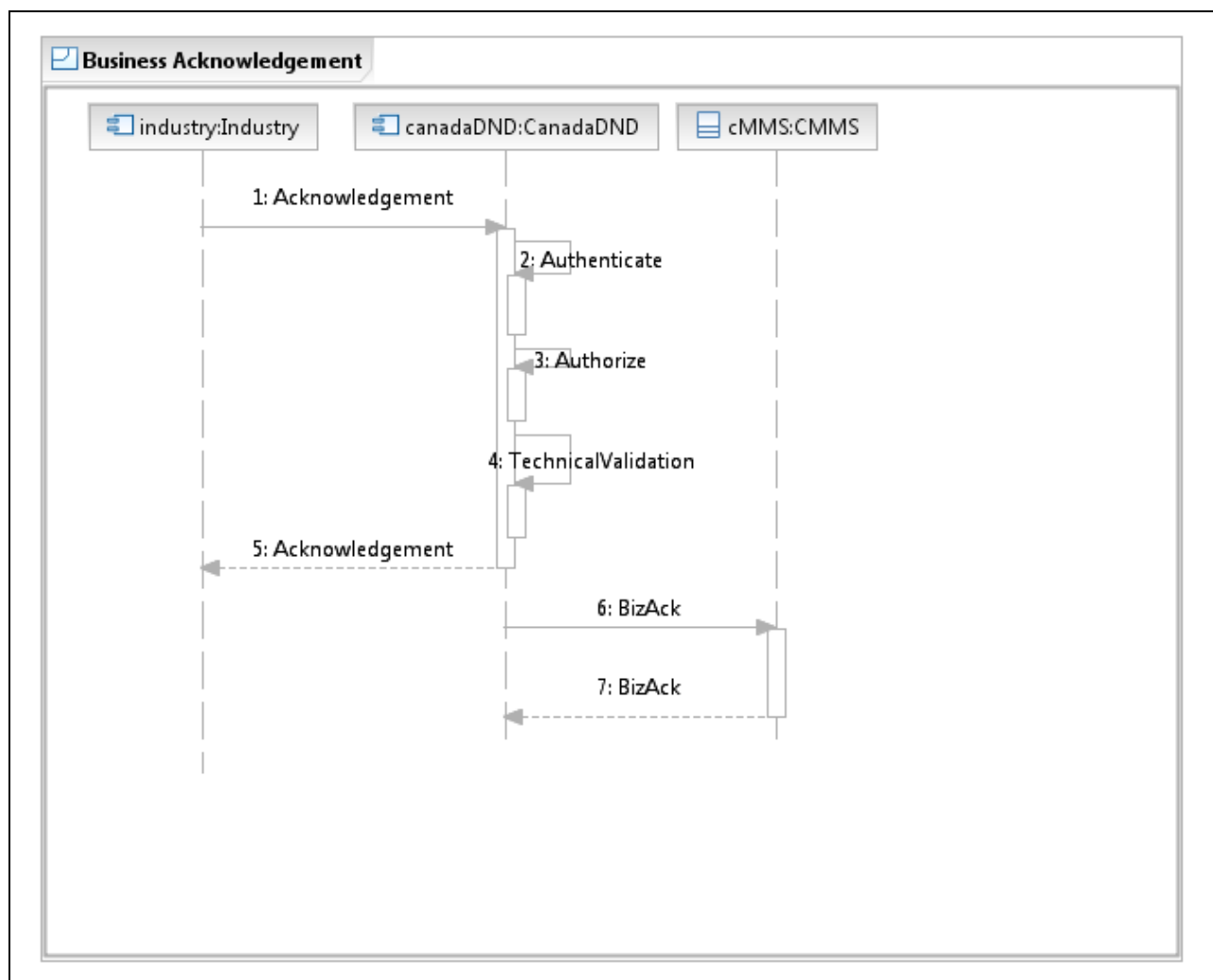


Figure 4-3 Send Business Acknowledgement Sequence

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Main Flow	
Scenario	"Happy Day:" Industry successfully sends its EMR Business Acknowledgement message to Canada.
Pre-Condition	EMR data has been received and processed by Industry.
Post-Condition	Acknowledgement successfully received by Canada EDE.
Steps	<ol style="list-style-type: none">1) After a delay², Industry sends <i>Business Acknowledgement</i> to Canada EDE, indicating Business Objects within the EMR message payload were successfully processed by invoking the Canada hosted and exposed EMR Acknowledgement operation.2) Canada EDE successfully Authenticates the service consumer.3) Canada EDE successfully Authorizes use of the service/operation.4) Canada EDE conducts the required validations as per Service Interaction Model [Ref. 3] - Section Technical Delivery Phase5) Canada EDE sends a technical Acknowledgement to Industry, indicating successful receipt of the message.6/7) Canada EDE sends Biz Ack message to CMMS confirming EMR data consumed by Industry.

The following alternate scenarios are applicable for both the EMR and Business Acknowledgment sequences presented above. Alternate Scenarios are written for the Canada-to-Industry EMR message, but can be interpreted for Business Acknowledgement by reversing use of Canada EDE and Industry throughout.

4.4 Alternate Scenarios

Alternate Flow 1 (Authentication Failure)	
Scenario	Canada does not provide appropriate credentials to Industry.
Pre-Condition	Canada System has invoked the EMRIndustry_Service.
Post-Condition	The Industry System sends a HTTP Authentication Failure response.
Steps	<ol style="list-style-type: none">1) The authentication credentials are not provided or are incorrect.2) The Industry System sends an HTTP Authentication Failure response to Canada, within ACK_TIME_INTERVAL period.3) Canada processes the fault.

² Delay may be several days while business processing of EMR data occurs.

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Alternate Flow 2 (Authorization Failure)	
Scenario	Canada System's is not authorized to use a service.
Pre-Condition	Canada System has invoked the EMRIndustry_Service. Industry has completed Authentication successfully.
Post-Condition	The Industry System sends a HTTP Authentication Failure response.
Steps	<ol style="list-style-type: none">1) The request message does not pass Industry authorization.2) The Industry System sends an HTTP Unauthorized Request response to Canada System, with in ACK_TIME_INTERVAL period.3) Canada processes the fault.
Alternate Flow 3 (Schema Validation Failure)	
Scenario	Canada sends a malformed message to Industry.
Pre-Condition	Canada System has invoked the EMRIndustry_Service. Industry has sent an HTTP 202 response.
Post-Condition	The Industry System invokes corresponding Canada EMR Acknowledgement operation
Steps	<ol style="list-style-type: none">1) The message does not pass validation as per agreed schema, with one or more errors.2) Industry sends schema validation error information by invoking the corresponding Canada EMR Acknowledgement operation - within the Time-to-Live interval.3) Canada processes fault.
Alternate Flow 4 (Business Validation Failure)	
Scenario	Business validations fail on one or more EMR data records.
Pre-Condition	Main Flow (as above) has been completed. EMR data records failed the Industry system's business validation process.
Post-Condition	The Industry System invokes Canada's Business Error Service.
Steps	<ol style="list-style-type: none">1) Industry sends Business Error information by invoking the corresponding Canada Business Error service.
Alternate Flow 5 (Industry Service unresponsive)	
Scenario	Canada System does not receive request ACK within ACK_TIME_INTERVAL
Pre-Condition	Canada System has invoked the EMRIndustry_Service.

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Post-Condition	Canada System marks the request as Dead Message.
Steps	<ol style="list-style-type: none">1) Canada system does not receive the ACK from Industry system and times out.2) Canada system waits for the RETRY_TIME_INTERVAL period and checks if request's TIME_TO_LIVE period has expired or not.3) If the TIME_TO_LIVE period has not expired, then Canada system attempts to send the request message again.4) If the TIME_TO_LIVE period has expired, then Canada system marks the request message as Dead and handles it via DeadMessageHandlerService³.
Note	Due to network timing variability a resend prior to TIME_TO_LIVE expiry may result in a duplicate message received by Industry.

³ DeadMessageHandler Service is defined separately

5 Information Model (General)

The purpose of this section is to provide a bridge between the functional view of the information model as presented in the business use case and the specifics of the design as expressed in an XML Schema. This service is responsible for exchange of EMR records from Canada to Industry. A functional view⁴ of the information model is provided in the Business Use Case [Ref. 1].

In general, an EMR contains a sub-record type that acts as the primary key (EMR Identifier). An EMR Request message adds four fields which are used by Industry to correctly process the incoming request:

- *Action* – indicates if the exchange record is new, an edit to an existing record, or a deletion of a prior exchange record;
- *RecordTimestamp* – the time the exchange record was captured in CMMS.
- *Business Correlation ID* – measurement extract identifier
- *Business Sequence Number* – further refinement of measurement extract identifier required to ensure uniqueness

Within every EMR request, the combination of [Cage, MPN, Serial Number, RecordTimestamp, BusinessCorrelationID, BusinessSequenceNumber] must be unique.

Details are added in the following Service Description sections.

⁴ The Business Use Case defines the collection of fields which make up an EMR exchange record.



6 Service Inventory

Table 6-1 EMR Install/Uninstall Services

Service: EMR_Industry_Service		
Provider	Consumer	Operation
Industry	Canada EDE	SendEMR
Canada EDE	Industry	SendEMRAck
Canada EDE	Industry	SendEMRError

The Table 6-1 above provides the information exchange that is supported by the EMR Install/Uninstall Business Service. Each of these services is described in the following sections.

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7 Service Description- EMR Install/Uninstall

7.1 Service Overview

7.1.1 EMR (Canada to Industry)

This operation is used by Canada EDE to send an EMR message to Industry. Industry's implementation of this operation includes provisions for authentication, authorization, and schema validation of the EMR message. Industry returns a status or fault information.

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

7.1.2 Acknowledgement (Industry to Canada)

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

If Canada accepts the message for further processing an output message is returned. If 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.

The EMR acknowledgement allows Industry to report back a positive acknowledgment upon consuming the incoming EMR message.

For a positive (successful) acknowledgement, Industry returns the following:

- Message Header
- EMR Identifier (including Record timestamp, Business Correlation ID, Business Sequence Number)

7.1.3 Error (Industry to Canada)

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

If Canada accepts the message for further processing an output message is returned. If 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.

The EMR error allows Industry to report back business errors encountered while processing the business objects contained within the EMR payload. Industry returns the following:

- Message Header
- EMR Identifier (including Record Timestamp, Business Correlation ID, Business Sequence Number)
- Errors encountered in processing.

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7.1.4 Service Properties

Service Property	Description
Enterprise Service Name (Business)	Maintenance Equipment Master Record Service
Enterprise Service Name (Technical)	EMRIndustry_Service
Purpose	This service supports the Canada Maintenance process. This service sends EMR data to Industry on a pre-negotiated schedule.
Service Domain	Maintain Platform
Business Owner	ADM (IM)
Service Grouping	Maintain Platform – Corrective and Preventive maintenance
Source Provider	EMR – Canada EMR Acknowledgement – Industry EMR Error – Industry
Target Service Consumers	EMR – Industry EMR Acknowledgement – Canada EMR Error – Canada
Business Process Supported (now)	Execute Corrective or Preventive Maintenance <ul style="list-style-type: none">• Execute Maintenance - Ship Staff/FMF• Execute Maintenance - ISS Contractor
Business Process Supported (future)	None currently identified.
Business Objective Supported	Industry uses EMR data to maintain weapon system configuration as required by PBC.
Expected life time	Full life-time of weapon systems using PBC.

7.2 Information Model

7.2.1 EMR

An EMR Information Model is shown in Figure 7-1. Each EMR has an identifier consisting of:

- CAGE;
- MPN;
- Serial number;

Each record has a flag indicating if the record corresponds to an equipment/part uninstall or install action.

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Each record has an optional Parent_MER_ID field which is only populated in the case the parent for the install/dismantle is the weapon system itself.

Each record has one or the other of the following parent identifiers:

- Parent_FLOC

OR

- Parent CAGE;
- Parent MPN;
- Parent Serial number.

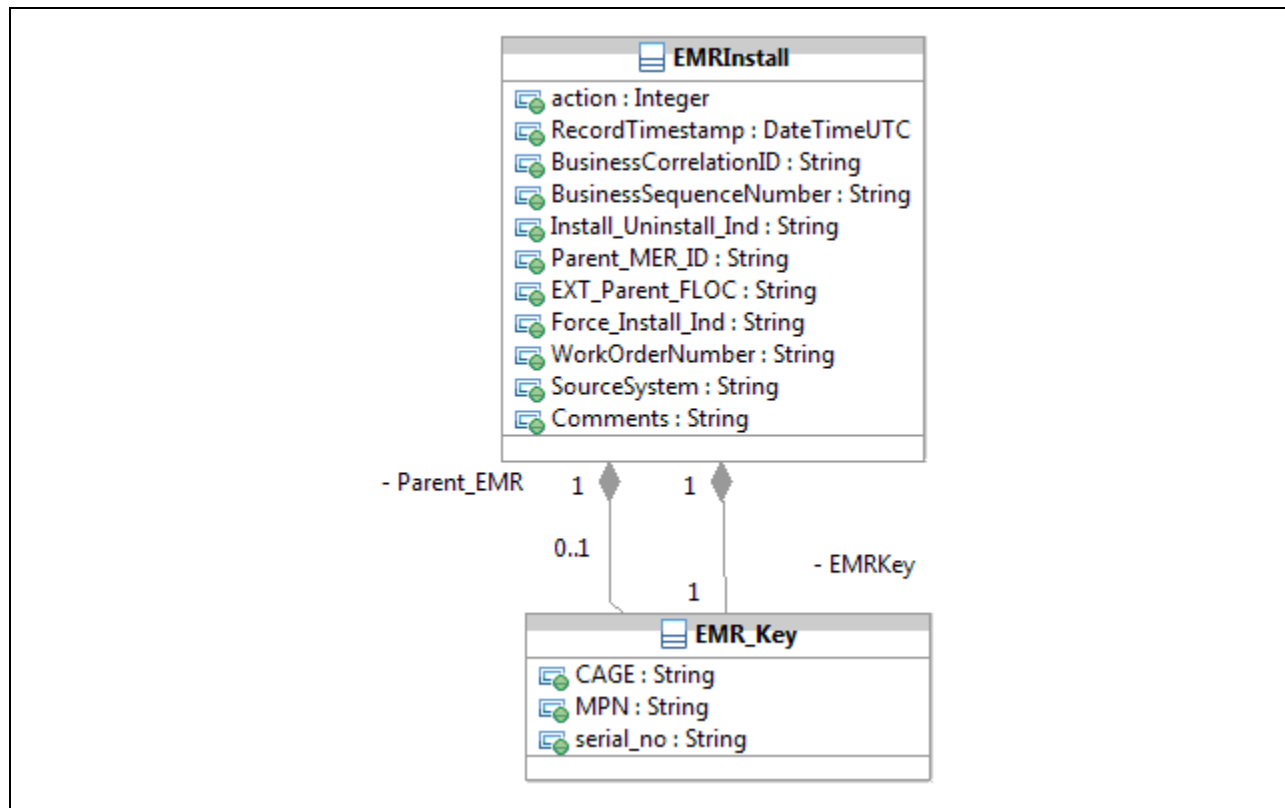


Figure 7-1 Information Model – EMR

Note the 'action' field is defined in the Operation Message Models section.

7.2.2 EMR Acknowledgement

An EMR Acknowledgement Information Model is shown in Figure 7-2. An EMR acknowledgement is comprised of the following:

- EMR identifier (CAGE, MPN, Serial No.)
- Record Timestamp, Business Correlation ID, Business Sequence Number

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- Status (Success or Failure)

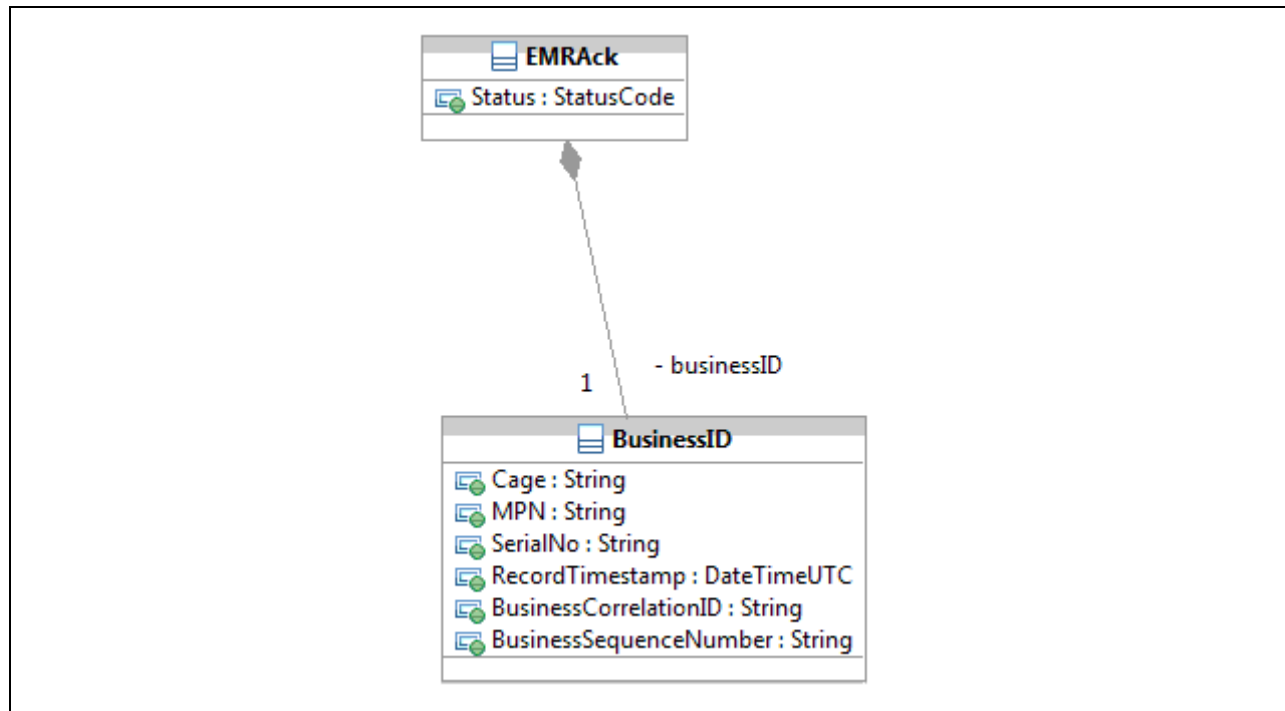


Figure 7-2 Information Model – EMR Acknowledgement

7.2.3 EMR Error

An EMR Error uses a common EMR Error definition, which is comprised of the following:

- Business Identifier, in this case EMR identifier and Record Timestamp, Business Correlation ID, Business Sequence Number
- Errors

The EMR error record information model is shown in Figure 7-3 below.

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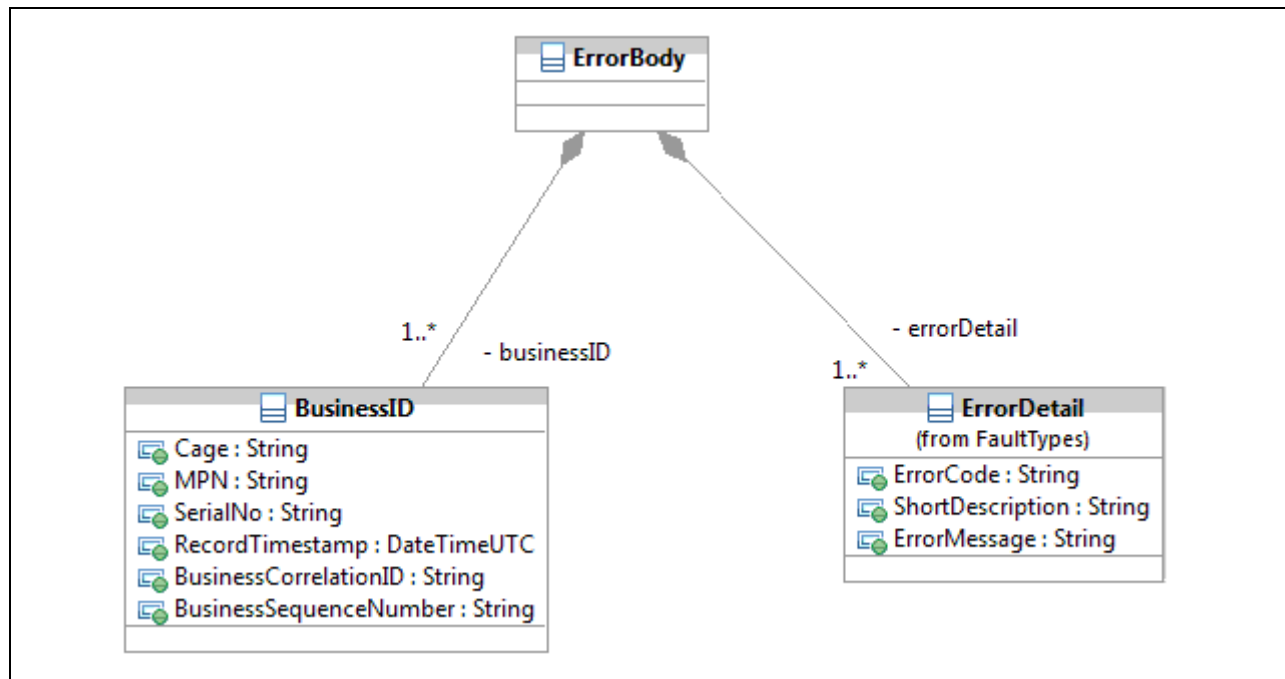


Figure 7-3 Information Model – EMR Error

7.3 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.

Since EIE Maintenance services are request/response, each operation requires input, output and fault message definitions. Message definitions use a common 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.

As all EMR messages use a similar pattern for output and fault message definition, it will be defined once here and referenced elsewhere.

7.3.1 EMR Request

7.3.1.1 EMR Input Body

As shown in Figure 7-4, an EMR Input body consists of:

- A Message Header;
- A Security Block;
- A set of EMR records.

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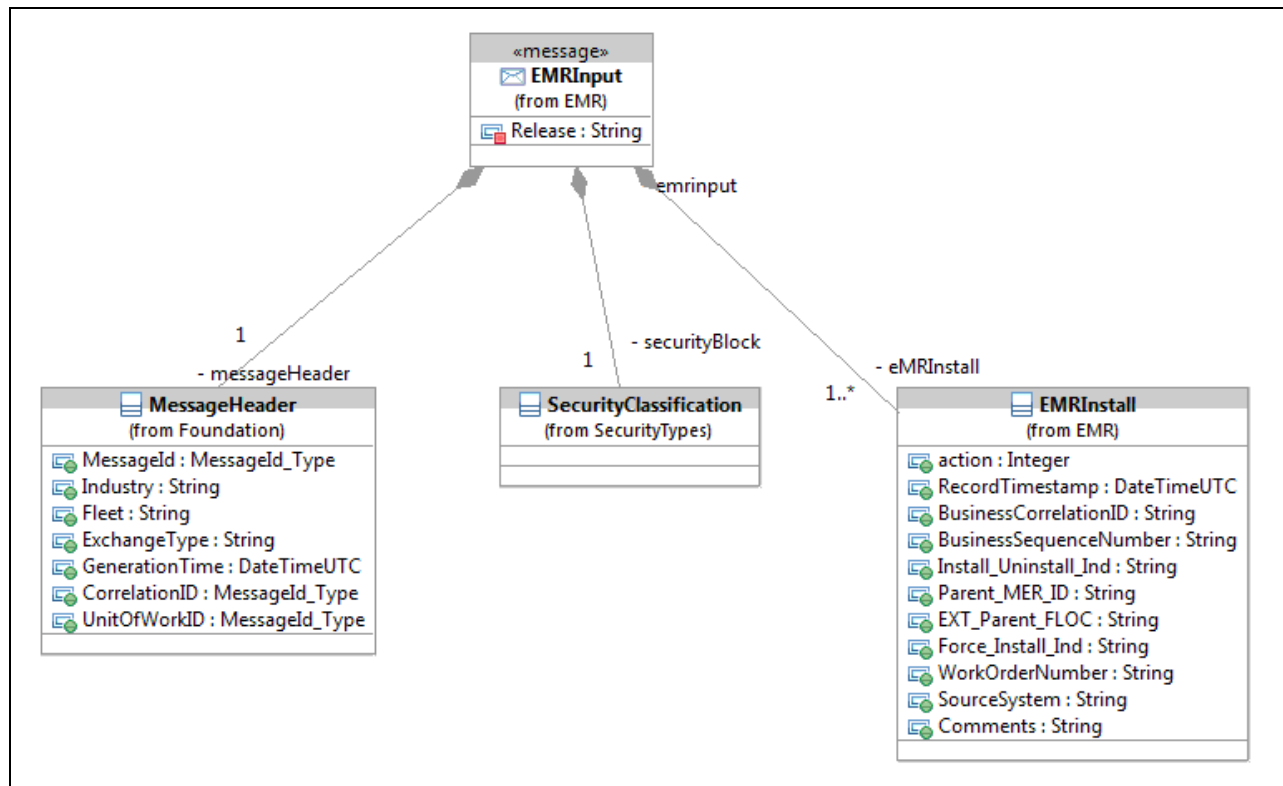


Figure 7-4 Exchange Messages - EMR Request

7.3.1.2 EMR Output Body

The output of the EMR Request operation is the EMROutputBody.

As shown in Figure 7-5, the EMR Output Body is comprised of the following:

- A Message Header;
- An EMROutput indicating acceptance; the EMR message is accepted in its entirety only.

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

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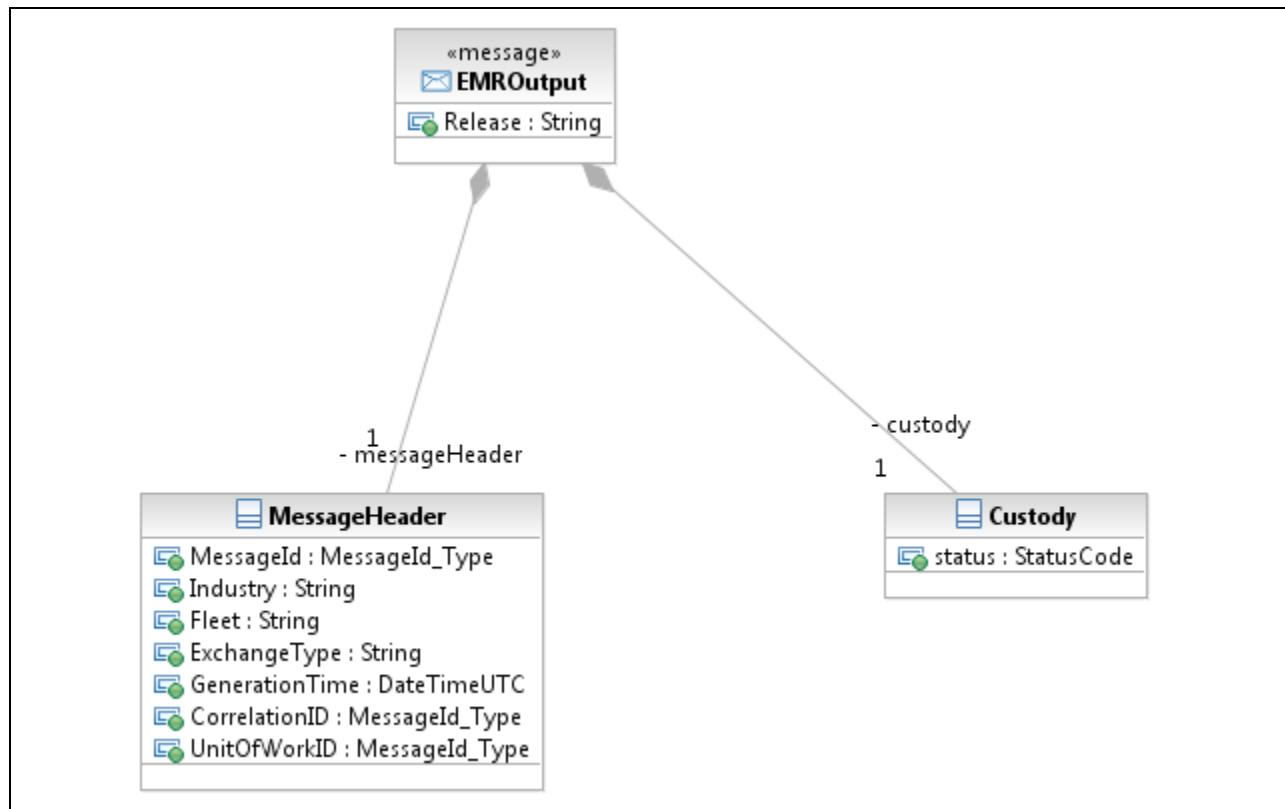


Figure 7-5 Exchange Messages - EMR Output Body

For an EMR OutputBody:

- The MessageHeader Correlation ID will reflect the Message ID of the originating input message.
- The MessageID is a newly generated UUID
- UnitofWorkID is not used or applicable for this type of message;
- The MessageHeader Exchange Type must be set to the Exchange Type of the Input message;
- The value of the EMROutput 'Custody' evaluates to "success".

Please note that this is a common Output Body definition is used through all EMR output messages.

7.3.1.3 EMR Fault Body

A fault returned by the EMR operation uses the FaultBody element. An EMR Fault Body uses a common EMR Fault Body definition (see Figure 7-6), which is comprised of the following:

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

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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.

Note: Follow implementation direction as per the Service Interaction Model [Ref. 3] for the Fault Message in addition to what has been specified above.

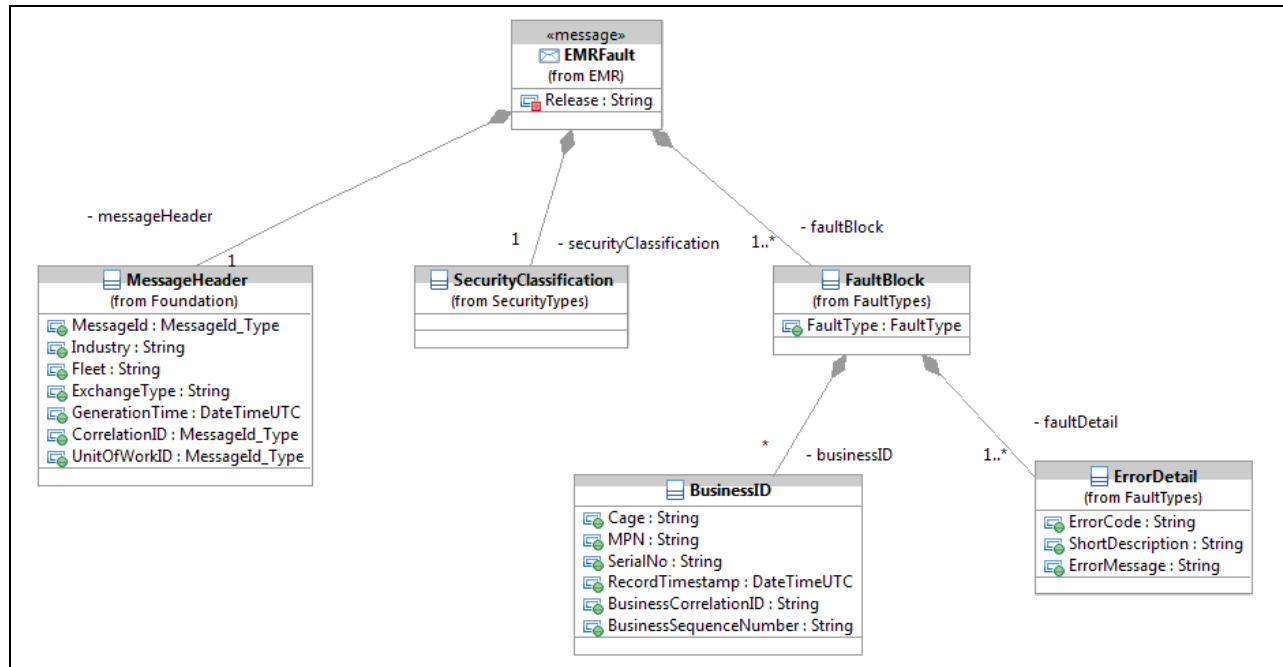


Figure 7-6 Exchange Messages – EMR Fault Body

For an EMR FaultBody:

- The MessageHeader Correlation ID will reflect the Message ID of the originating EMR input message.
- The MessageID is a newly generated UUID
- UnitofWorkID is not used;
- The MessageHeader Exchange Type must be set to the Exchange Type of the EMR InputBody.

Please note that this is a common Fault Body definition used through all EMR fault messages.

7.3.2 EMR Acknowledgement Request

7.3.2.1 EMR Acknowledgement Input Body

Within the scope of this service there is an input request named 'EMRAckRequest' (see Figure 7-7), consisting of:

- A Message header;

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- A set of EMR Acknowledgement blocks which may be comprised of the following:
 - EMR identifier (Cage, MPN, Serial Number and Record Timestamp, Business Correlation ID, Business Sequence Number)
 - Status (Success)

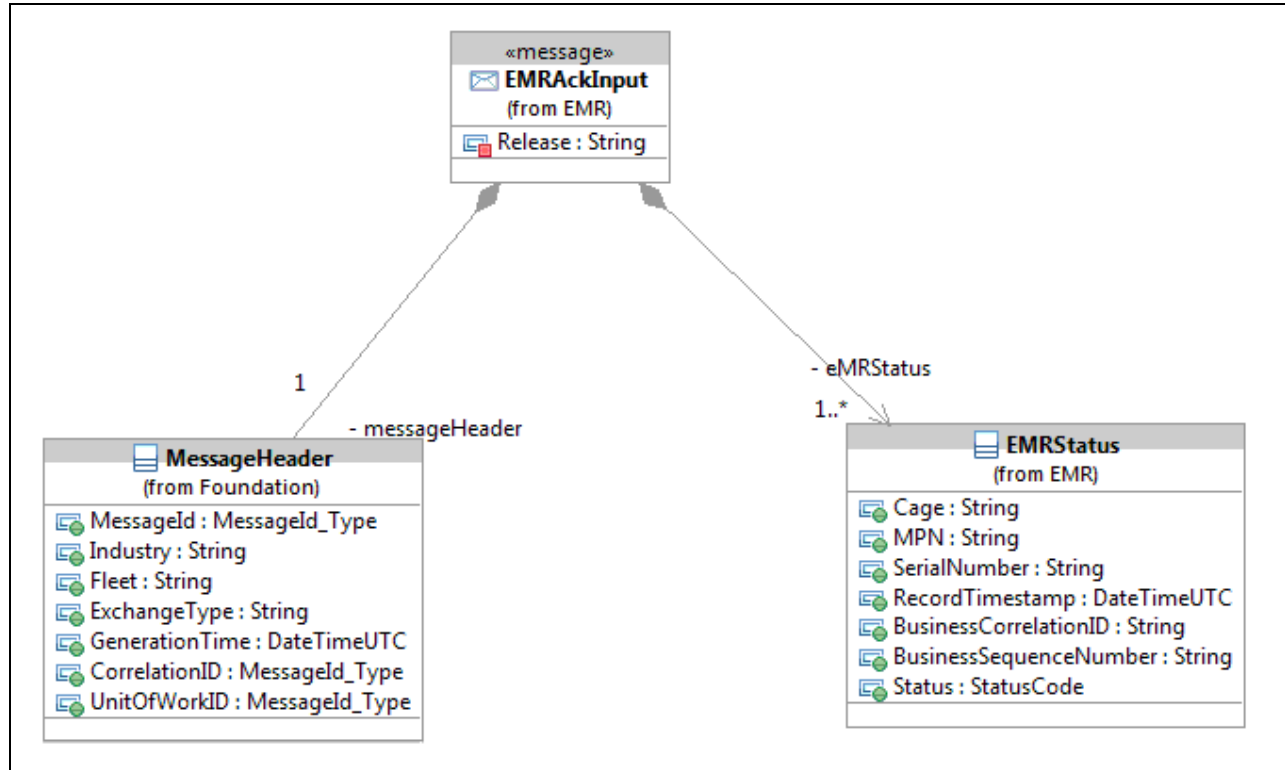


Figure 7-7 Exchange Messages - EMR Acknowledgement Request

7.3.2.2 EMR Acknowledgement Output Body

Please refer to [7.3.1.2 EMR Output Body](#) for this definition.

7.3.2.3 EMR Acknowledgement Fault Body

Please refer to [7.3.1.3 EMR Fault Body](#) for this definition.

7.3.3 EMR Error Request

7.3.3.1 EMR Error Input Body

An EM Error Input Body uses a common EMR Error Input Body definition (see Figure 7-8), which is comprised of the following:

- A Message Header;
- A Security Block;
- A set of errors identified by Business ID.

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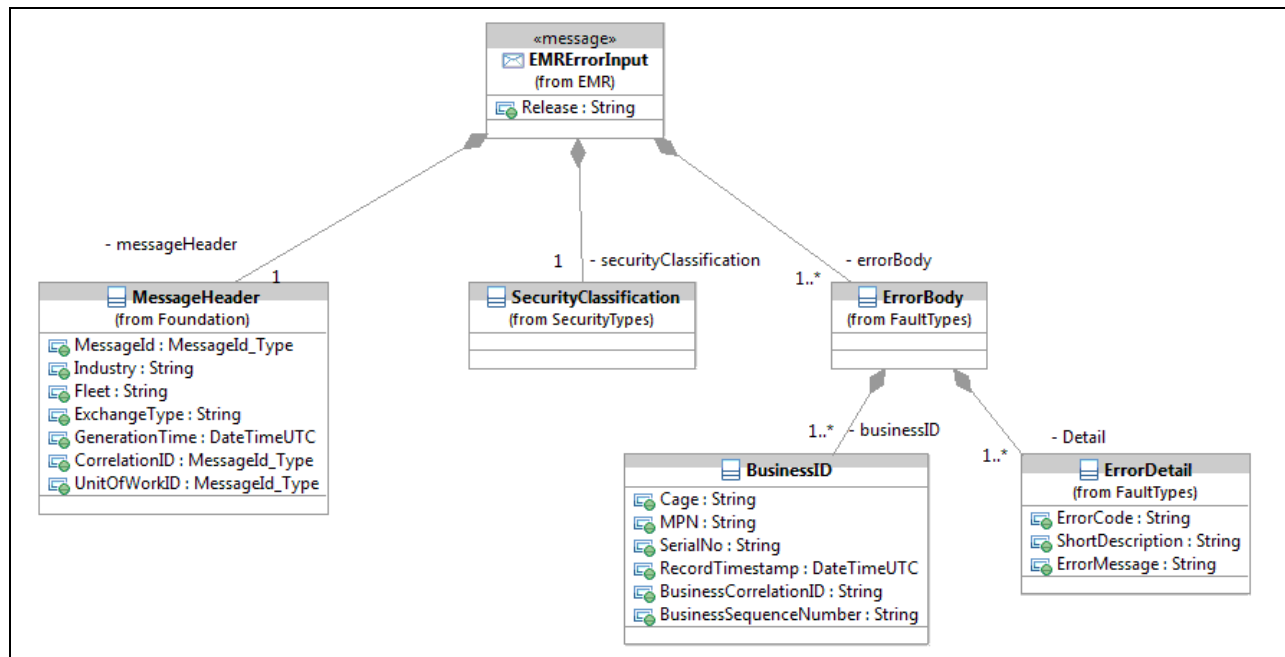


Figure 7-8 Exchange Messages – EMR Error Request

The error input 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 Provider can provide. To report differing errors on more than one business object extra error blocks can be included in the error input message.

7.3.3.2 EMR Error Output Body

Please refer to [7.3.1.2 EMR Output Body](#) for this definition.

7.3.3.3 EMR Error Fault Body

Please refer to [7.3.1.3 EMR Fault Body](#) for this definition.

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7.4 Service Operations

7.4.1 Detailed Operation Characteristics - SendEMR

Each operation will have the detailed characteristics described in the following tables.

Details of non-functional requirements may vary depending on Industry and fleet.

Interface Definition	Description
Operation Name	Send EMR
Operation Technical Name	SendEMR
Operation Description	This operation will send a data set consisting of one or more EMR exchange records to Industry by Canada, subject to size and delay constraints for the Fleet and Industry.
Target Operation Provider	Industry
Target Operation Consumers	Canada EDE
Properties	<i>RequestResponse</i> message exchange pattern.
Input Message Definition	Please refer to operation message model section 7.3.1.1 EMR Input Body for details. Refer to EMR_Industry.wsdl for implementation details.
Output Message Definition	Please refer to operation message model section 7.3.1.2 EMR Output Body for details. Refer to EMR_Industry.wsdl for implementation details.
Fault Conditions	Please refer to operation message model section 7.3.1.3 EMR Fault Body for details. Refer to EMR_Industry.wsdl for implementation details.
Non-Functional Requirements/Technical Details	
Frequency	Initially once per day.
Peak Throughput Time	Expected to be off-peak, e.g. after ZULU 01:00 and before ZULU 11:00 ZULU
Peak Throughput Volume	Based on Service Level Agreements (SLA) to be determined between Canada and Industry on a per ship class basis.
Payload Size	Less than 2KB per EMR record This estimate is for message payload prior to addition of security classification, signature, encryption, and other infrastructure overheads.
Attachments	None
Attachment Size	N/A

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Interface Definition	Description
Trigger	Agreed upon scheduled time
ACK Time Interval	5 minutes
Retry Time Interval	15 minutes
Biz. Response Time Interval	Not Applicable
Time to Live Span	24 hours
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.

7.4.2 Detailed Operation Characteristics – EMRAcknowledgement

Each operation will have the detailed characteristics described in the following tables.

Details of non-functional requirements may vary depending on Industry and fleet.

Interface Definition	Description
Operation Name	EMR Acknowledgement
Operation Technical Name	EMRAcknowledgement
Operation Description	This operation is invoked to send one or more EMR acknowledgement records to Canada by Industry.
Target Operation Provider	Canada EDE
Target Operation Consumer	Industry
Properties	<i>Request/Response</i> message exchange pattern.
Input Message Definition	Please refer to operation message model section 7.3.2.1 EMR Acknowledgement Input Body for details. Refer to EMR_Canada.wsdl for implementation details.
Output Message Definition	Please refer to operation message model section 7.3.2.2 EMR Acknowledgement Output Body for details. Refer to EMR_Canada.wsdl for implementation details.
Fault Definition	Please refer to operation message model section 7.3.2.1 EMR

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Interface Definition	Description
	Acknowledgement Fault Body for details. Refer to EMR_Canada.wsdl for implementation details.

7.4.3 Detailed Operation Characteristics –EMRError

Interface Definition	Description
Operation Name	EMR Error
Operation Technical Name	EMRError
Operation Description	This operation is invoked to send one or more EMR error records to Canada by Industry.
Target Operation Provider	Canada EDE
Target Operation Consumer	Industry
Properties	<i>Request/Response</i> message exchange pattern.
Input Message Definition	Please refer to operation message model section 7.3.3.1 EMR Error Input Body for details. Refer to EMR_Canada.wsdl for implementation
Output Message Definition	Please refer to operation message model section 7.3.3.2 EMR Error Output Body for details. Refer to EMR_Canada.wsdl for implementation
Fault Definition	Please refer to operation message model section 7.3.3.3 EMR Error Fault Body for details. Refer to EMR_Canada.wsdl for implementation

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8 Definitions, Acronyms, Abbreviations

Term	Description
CAGE	Commercial And Government Entity
CMMS	Canada Maintenance Management System
CSS	Canada Supply System
EIE	Electronic Information Environment
EMR	Equipment Master Record
DRMIS	Defense Resource Management Information System
FLOC	Functional Location
FMEA	Failure Mode and Effects Analysis
Industry	The industry contracted to provide support to Canada according to PBC
ISS	In Service Support
MER	Master Equipment Record
MPN	Manufacturer Part Number
PBC	Performance Based Contracting
WS	Weapon System

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9 Appendix A - Entity Relationship Model

Information Model – Entity-Relationship View

EMR_INSTALL		
P *	Cage	VARCHAR (5)
P *	MPN	VARCHAR (34)
P *	Serial_No	VARCHAR (30)
P *	Record_Timestamp	Datetime
P *	Business_Correlation_ID	VARCHAR (40)
P *	Business_Sequence_Number	VARCHAR (2)
	Parent_MER_ID	VARCHAR (14)
	Parent_FLOC_ID	VARCHAR (14)
	Parent_Cage	VARCHAR (5)
	Parent_MPN	VARCHAR (34)
	Parent_Serial_No	VARCHAR (30)
*	Install_Uninstall_Ind	VARCHAR (1)
	Force_Install_Ind	VARCHAR (1)
	WorkOrder_Number	VARCHAR (12)
	Source_System	VARCHAR (10)
	Comments	VARCHAR (50)
*	Action	Integer
MER_INSTALL_PK (Record_Timestamp, Cage, MPN, Se		

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10 Document History

Revision Number	Description	Date
1.0	Ready for Navy RFP	05 October 2015

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