Electronic Information Environment (EIE) Project

Business Use Case (BUC)

BUC 4.23 Navy - Exchange Maintenance EMR Install/Uninstall Data

EIE Project

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1. EIE Business Use Case[1] Overview

1.1 Introduction

Performance Based Contracting (PBC) is a set of guidelines to Canada DND Major Capital Projects (MCPs) on how to model a Platform acquisition and in-service support (ISS) processes. Under these guidelines Canada is responsible to perform corrective and/or preventive maintenance activities on the Platform. In order for Canada and an ISS Contractor partner to fulfill their obligations under PBC specific datasets must be exchanged between Canada and ISS Contractor.

The collection of information systems provided by DND and ISS Contractor used to maintain the Platform and the various information exchange mechanism between Canada and the ISS Contractor Partner, is collectively known as the Electronic Information Environment (EIE).

The collection of web services and supporting infrastructure which enables exchange of data between ISS Contractor and Canada's operational systems in support of PBC between Canada and ISS Contractor(s) is collectively known as Electronic Data Exchange (EDE) within Canada. The EDE components span application nodes, network zones and the Internet.

1.2 Purpose

Canada Maintenance Management System (CMMS) tracks all DND-performed maintenance activities. Exchange of maintenance-related data involves new exchange business processes between CMMS and the ISS Contractor data consumers, which complement already documented maintenance business processes.

This Business Use Case (BUC) describes the exchange of Equipment Master Record (EMR) data between Canada and the ISS Contractor for a Platform managed according to PBC. EMR data includes changes to actual WS configuration, structural WS changes related to parts (or equipment). These parts (or equipment) are installed or removed from specific locations on a Platform and are identified by serial numbers. Location may be a Functional Location (FLOC) as defined in the Platform configuration or parent equipment.

[1] "Business Use Case: A business process, representing a specific workflow in the business; an interaction that a stakeholder has with the business that achieves a business goal. It may involve both manual and automated processes and may take place over an extended period of time." - http://www.ibm.com/developerworks/rational/library/apr07/english/.

1.3 Intended Audience

The intended audience for this business use case includes:

- The ISS Contractor(s) who require detail of their business service-level interactions, benefits and obligations under PBC.
- Canada Program Management Offices implementing PBC.
- Solution Architects who will define a Business Service Model for the business service(s) described here.
- Functional Testers who will use the business use case to define test scenarios for Integration testing.
- Designers who will perform detailed design and unit test.

1.4 References and Traceability

Business Process documents

[Ref. 1] PBC Business Process Catalogue Annex L: Navy Maintenance Process Model - In the Context of Performance Based Contracting (PBC)

With respect to the referenced document, this BUC addresses the following sections:

Reference	Section
[Ref. 1] PBC Business Process Catalogue: Annex L	Annex L - Navy Maintenance Process Models

2. BUC 4.23 Navy - Exchange Maintenance EMR Install/Uninstall Data

This Business Use Case will identify processes and activities and define scenarios which apply to EMRs that pertain to as-maintained structural changes. The term "**Maintenance EMR datasets**" will be used to refer to the data.

2.1 Overview

Identifier	BUC 4.23
Name	Navy - Exchange Maintenance EMR Install/Uninstall Data
Business goal	• Send Maintenance EMR Install/Uninstall dataset to the ISS Contractor as necessary to allow the ISS Contractor to fulfill its obligations under PBC.
Stakeholders	Canada and the ISS Contractor(s)
Workflow/interaction	• Exchange of Maintenance EMR Install/Uninstall dataset from Canada to the ISS Contractor as defined at multiple points in corrective and preventive maintenance business processes. Reference [Ref. 1].
Processes	Information exchange is automated (system to system). The frequency of exchange is determined by Canada and each the ISS Contractor. Some error scenarios may require manual intervention.
Context	Business Domain: Maintain Platform Functional Area: Preventive and Corrective Maintenance • Execute Preventive or Corrective Maintenance – Execute Maintenance - Ship Staff/FMF – Execute Maintenance - ISS Contractor
Period of Time	The full lifecycle of the subject Platform.
Description	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

[redacted]	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.

2.2 Sub Processes and Activities Supported

Refer to EIE Business Process document, [Ref. 1] for diagrams that capture business process flow supported by this BUC.

2.3 Business Rules and Assumptions

1. Any EMR Install/Uninstall dataset required by the ISS Contractor for the purpose of the ISS Contractor-performed level maintenance is exchanged through the normal maintenance history processes.
2. The CMMS shall ensure maintenance EMR Install/Uninstall datasets for a platform are sent only to the ISS Contractor's system, which is properly authenticated and authorized to see Maintenance EMR (Outbound) dataset for that fleet.
3. On a regular, day-to-day basis, the CMMS may impose a latency (or delay) prior to releasing Maintenance EMR/MER datasets to the ISS Contractor, depending on Navy security requirements.
4. When a part is uninstalled from the platform, measurement data associated with the part being dismantled will be sent to the ISS Contractor without delay time unless there is a need to impose such delay for operational or security reasons.
5. Structural changes to the as-maintained EMR/MER dataset which is managed in a disconnected instance of CMMS will not be released to the ISS Contractor until the disconnected CMMS instance is synchronized with the central CMMS and/or latency is concluded, whichever is later.

2.4 Actors

The following actors have been identified as performing the documented business activities:

Role Name	Role Description / Responsibilities
Canada DND Authorized Person	• Updates to CMMS when maintenance actions are taken resulting in uninstall and install of parts.
CMMS system	• Creates and sends EMR Install/Uninstall records.
EDE	• Transports and transforms the EMR Install/Uninstall data.
ISS Contractor Data Consumer	• Provides a system that will have the ability to: - Accept and process EMR Install/ Uninstall datasets sent from Canada, and - Acceptance of the Acknowledgement of data from Canada

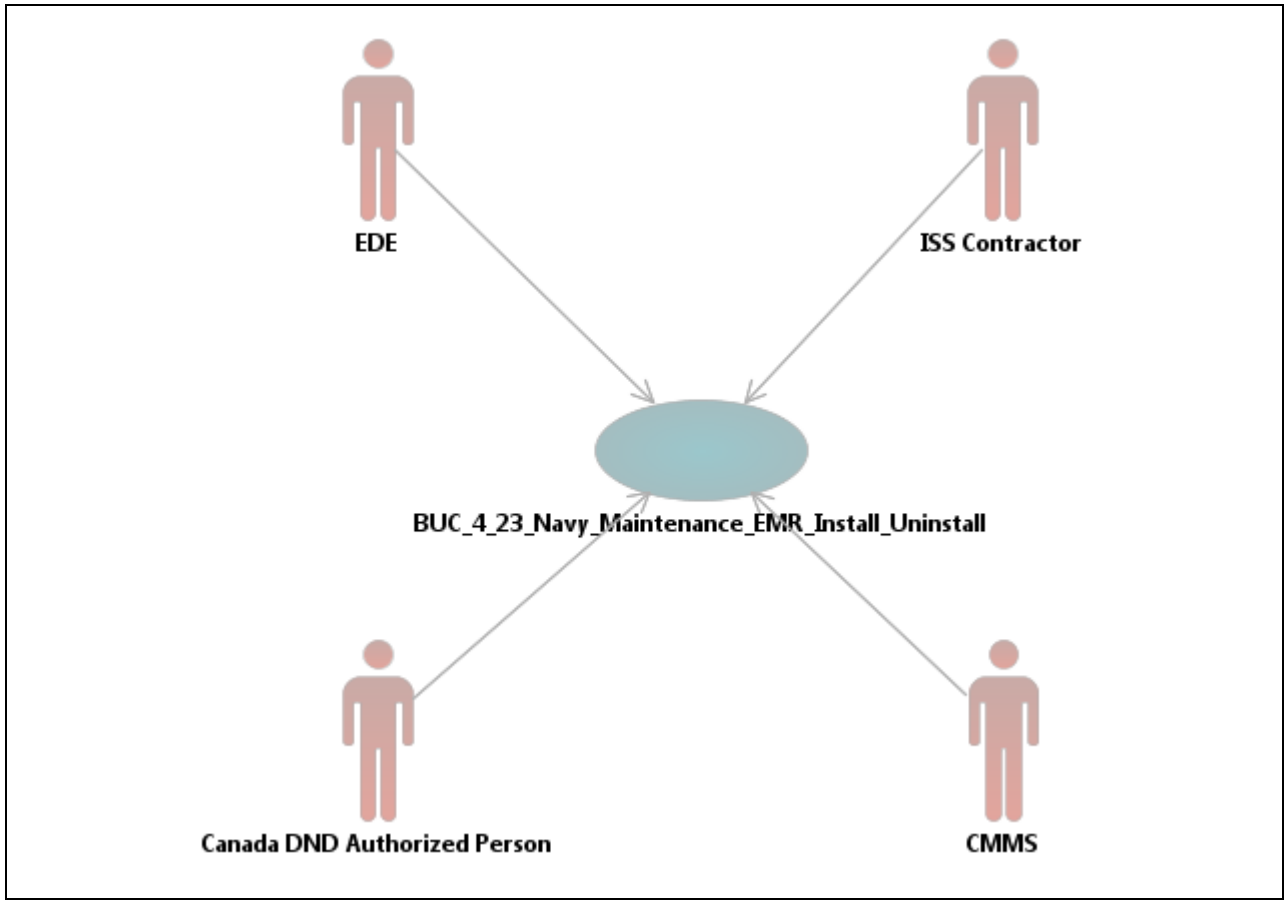

Figure 2-1 Navy - Exchange Maintenance EMR Install/Uninstall Data

2.5 Common Pre-Conditions[2]

These apply to every scenario unless explicitly stated otherwise.

1. The ISS Contractor requires that the Maintenance EMR Install/Uninstall datasets be sent to the ISS Contractor Data Consumers/Systems;
2. Canada and the ISS Contractor have agreed upon Maintenance EMR Install/Uninstall datasets format (see Functional Data Definition)
3. Canada and the ISS Contractor have agreed upon Maintenance EMR Install/Uninstall data exchange mechanism.

[2] A pre-condition is something which happens or is established outside the scope of the normal day-to-day operation of CMMS and EDE.

2.6 Common Post-Condition(s) [3]

The following applies to every scenario unless explicitly stated otherwise.

1. Maintenance EMR Install/Uninstall dataset has been received by the ISS Contractor and an acknowledgement has been received by Canada.

2.7 Common BUC Steps

Each scenario defined below includes the following common steps:

Common Steps	Step Description	Actor
Determine which EMR Install/Uninstall datasets are to be sent to the ISS Contractor	CMMS determines which EMR Install/Uninstall data is applicable for a given the ISS Contractor, ship class, and business event and applies latency conditions to determine what is available for release to the ISS Contractor.	CMMS
Prepare and send EMR Install/Uninstall data	CMMS creates and sends EMR Install/Uninstall records.	CMMS
Convert EMR Install/ Uninstall data to the ISS contractor format	EDE converts data to a format acceptable by the ISS Contractor.	EDE
Send EMR Install/ Uninstall data to the ISS Contractor	EDE sends EMR Install/Uninstall datasets to the ISS Contractor, in accordance with transmission definition agreed to with the ISS Contractor.	EDE
Acknowledge receipt of EMR Install/Uninstall data	The ISS Contractor System acknowledges receipt of EMR Install/Uninstall records.	ISS Contractor
Forward acknowledgement to CMMS	EDE forwards the acknowledgement receipt to CMMS.	EDE
Mark EMR Install/ Uninstall records as sent	CMMS updates its EMR Install/Uninstall records as being sent.	CMMS
Send data integrity validation acknowledgement	ISS Contractor System conducts data integrity validation as per established business rules as agreed between Canada and ISS Contractor. ISS Contractor system sends acknowledgement to Canada EDE. Note: ISS Contractor will send error information if the data fails integrity validation	ISS Contractor

[3] Under the business –optimistic assumption, there is only one post-condition.

Common Steps	Step Description	Actor
Receive data integrity validation acknowledgement from ISS Contractor	EDE receives the data integrity validation acknowledgement and dispatches the information to CMMS.	EDE
Mark EMR Install/ Uninstall records as being business acknowledged	CMMS updates its Install/Uninstall records as being business acknowledged by ISS Contractor System.	CMMS

2.8 Scenarios[4]

In the following scenarios the pre-condition and trigger serve to uniquely identify the EMR exchange in the context of a maintenance business process. This supports direct traceability between maintenance business processes and exchange use case scenarios.

The numeric identifier that appears in square brackets besides each scenario name is an identifier that can be used to locate the event in the business process flow as per [Ref. 1].

[4] A scenario corresponds to a specific activity in a maintenance business process when a triggering event occurs which causes a Maintenance EMR dataset exchange. Picture the maintenance business process as proceeding horizontally through recognition of a corrective or preventive maintenance situation, through fault isolation, some maintenance activities, and possibly a trial. Each exchange use case scenario corresponds to a vertical slice from a maintenance business process that results in a maintenance EMR dataset being transferred to the ISS Contractor.

2.8.1 4.23.1 EMR Install/Uninstall [N1.4.3.4.1]

Scenario Name	**4.23.1 EMR Install/Uninstall [N1.4.3.4.1]**
Business Process	This scenario occurs in the following business process: • Execute Corrective or Preventive Maintenance – Execute Maintenance - Ship Staff/FMF – Execute Maintenance - ISS Contractor
Business Context	According to the business processes identified above, the Canada DND Authorized Person (ship staff/FMF) will execute maintenance task lists/operations, which may require that equipment be uninstalled and installed. As a result the as-maintained structure in CMMS will change, indicating that uninstalled equipment is no longer part of actual Platform structure and similarly, that a new equipment is installed. Uninstall or install is always done for the serialized equipment of the Platform. Execute Maintenance - Ship Staff/FMF • As maintenance is carried out, Equipment Master Records (EMR) may be uninstalled from the Platform, EMR data and the last measurement document for that EMR are sent to the ISS Contractor via the EIE EDE at the time of uninstall. • If maintenance activity results in new EMRs being installed on the Platform, the EMR installation configuration information is captured. • On EMR installs, EMR data is extracted from CMMS and sent to the ISS Contractor via the EIE EDE on a predefined periodicity/frequency. • On uninstalls, EMR and EMR measurement document data are extracted from CMMS and sent to the ISS Contractor via the EIE EDE. Execute Maintenance - ISS Contractor • The data received from the ISS Contractor will be inducted into the CMMS; the EMR Uninstall/Install and EMR Measurement Document for the installed EMR will be sent to the ISS Contractor indicating acceptance or rejection of the content.
Precondition(s)	See Common Pre-Conditions.
Trigger event	Canada DND Authorized Person installs or uninstalls an equipment/part.
Steps	**Step Name** | **Step Description** | **Actor**

	Execute maintenance task(s)	Canada DND Authorized Person uninstalls or installs an equipment or part.	Canada DND Authorized Person
	Update EMR object in CMMS – indicate if installed or uninstalled	Canada DND Authorized Person performs a structure change transaction that updates the as-maintained structure.	Canada DND Authorized Person
	Create EMR object dataset	The system will create an EMR object dataset. The EMR object dataset includes a timestamp representing the date-time at which the install or uninstall event occurred.	CMMS
	Continue with Common BUC Steps		
Postcondition(s)	See Common Post-Conditions.		
Notes	The uninstall and install actions both result in a record in the dataset, so the ISS Contractor has complete information for configuration management of the Platform.		

2.9 Information Requirements

The details on the data elements are provided in Section 3.

2.9.1 EMR Install/Uninstall Type

Primary Key

Each record has a unique identifier consisting of:

- Commercial And Government Entity (CAGE);
- Manufacturer Part Number (MPN);
- Serial number.

Install/Uninstall Indicator

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

Parent Reference

Each record may have a Parent reference consisting of

- Parent_MER_ID (Unique identifier)

Parent Identifiers

In addition to the parent MER reference, each record has one or the other of the following parent identifiers:

- Parent_FLOC

  OR

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

2.10 Special Requirements

None identified.

3. Functional Data Definition[5]

The data elements that make up an EMR Install/Uninstall datasets are enumerated in this section. A detailed technical message schema for exchange of datasets will be provided following the awarding of the ISS contract.

3.1 Data Entities Definition

The Data Entities Definition Table 3-1 below contains examples of the reference data. Specific and accurate reference data should be obtained from DND through official channels prior to using the reference data in downstream design and implementation activities.

Table 3-1 Data Entities Definition

Name	Definition	Type	Length
CAGE	Commercial And Government Entity (CAGE) code number that uniquely identifies the manufacturer of the part or product, sometimes produced under government contract.	Char	5
MPN	Manufacturer Part Number for the Equipment Note: DND-supplied parts may have an MPN up to 34 characters in length. Industry-supplied parts must have an MPN of 31 characters or less.	Char	34
Serial Number	Manufacturer Serial Number for the Equipment.	Char	30
Record Timestamp	The timestamp an EMR record snapshot is saved in the CMMS. It is equivalent to the time the actual install or uninstall took place.	Datetime	
Install/Uninstall Indicator	Indicator: Install ("I") or Uninstall ("U")	Char	1
Forced Install Indicator	Indicates an instance of a forced install (“Y”), or not (“N”).	Char	1

[5] This is a ***functional*** view of the data. A detailed schema including fields for parent/child structure, metadata to manage exchange with Industry, more specific types, etc will be defined in the associated service specification that this business use case will use to fulfill the identified scenarios.

Name	Definition	Type	Length
Parent MER Identifier	A unique identifier of the platform itself, where this equipment has been installed or from which it has been uninstalled. Note: Parent MER identifier is null when the equipment in question is not installed on a ship's structure (i.e., constituent components of complex assemblies).	Char	14
External Parent FLOC Identifier	A unique identifier of a Functional Location of the containing external system. At install: The FLOC into which the equipment is installed. Blank when the equipment is installed into higher-level equipment. At uninstall: The FLOC from which the equipment was uninstalled. Blank when a piece of equipment is uninstalled from the higher-level equipment.	Char	30
Parent CAGE Code	CAGE code number that uniquely identifies the next higher-level equipment Maintenance History: Populated if install/uninstall to/from the higher-level equipment. Not populated when install or uninstall was to/from a FLOC.	Char	5
Parent MPN	Manufacturer Part Number of the next higher-level equipment. Maintenance History: Populated if install/uninstall to/from the higher-level equipment. Not populated when install or uninstall was to/from a FLOC. Note: DND-supplied parts may have an MPN up to 34 characters in length. Industry-supplied parts must have an MPN of 31 characters or less.	Char	34
Parent Serial Number	Serial Number of the next higher-level piece of containing equipment. Maintenance History: Populated if install/uninstall to/from the higher-level equipment. Not populated when install or uninstall was to/from a FLOC.	Char	30
Work Order Number	A unique identifier of a work order under which the uninstall/ install of the EMR occurred.	Char	12
Business Correlation ID	Canada CMMS identifier used with Business Sequence number to uniquely identify a business object sent to the ISS Contractor	Char	40

Name	Definition	Type	Length
Business Sequence Number	Canada CMMS identifier used with Business Correlation ID to uniquely identify a business object sent to the ISS Contractor	Char	2
Comments	A text field used to record comments	Char	50
Source System	An identifier as to where an event occurred that resulted in a web service being generated. Can be used to determine, for example, which ship performed an uninstall of equipment.	Char	10

4. Issues and Exceptions

None identified.

5. Business Process Flows

Refer to EIE Maintenance Business Process document, [Ref. 1] for diagrams that capture business process flow supported by this BUC.

6. Definitions, Acronyms, Abbreviations

Term	Description
BUC	Business Use Case
CAGE	Commercial And Government Entity
CMMS	Canada Maintenance Management System
DND	Department of National Defence
E&M	Engineering and Maintenance
EDE	Electronic Data Exchange
EMR	Equipment Master Record
FLOC	Functional Location
FMF	Fleet Maintenance Facility
ICD	Interface Control Document
ISS	In Service Support
MCP	Major Capital Project
MER	Master Equipment Record
MPN	Manufacturer Part Number
PBC	Performance Based Contracting
WO	Work Order

7. Document History

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1.0	Final ready for Navy RFP	17 August 2015