

# Performance Based Contracting (PBC)

## Annex L: Navy Maintenance Process Model

### In the Context of Performance Based Contracting (PBC)

Note: This process model document should be read in conjunction with the associated process models that depict how DND conducts and execute maintenance. The focus of this document is centered on the Performance Based Contracting perspective and Electronic Information Exchange enablement.

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# 1 PLATFORM MAINTENANCE PROCESSES DETAILS

## 1.1 Record Platform Usage and Faults

It is required that both, Canada (Department of National Defence (DND)) and Industry (In-Service Support Contractor (ISS Contractor)) collect and exchange platform usage data during the In-Service Support (ISS) phase. Unprocessed usage data from the Health and Usage Monitoring System (HUMS) will also be transferred to the ISS Contractor via means other than Electronic Information Environment (EIE) Electronic Data Exchange (EDE) on a periodic basis. If the HUMS data are not available, Canada is responsible for loading and/or manually entering the counters/measurements and fault codes recorded on the Platform into the Canada Maintenance Management System (CMMS). Measurement documents will be transferred to the ISS Contractor via the EIE EDE [N1.4.3.4.2] [N1.4.3.5.1] on a scheduled basis.

Reference: Navy - [Perform Maintenance – Usage Data and Fault Codes](#)

## 1.2 Preventive Maintenance Planning

### 1.2.1 Preventive Maintenance Initialization

Preventive maintenance is planned and scheduled in accordance with predetermined maintenance plans.

The usage data, i.e. measurements of counters of different Platform and system components are either automatically loaded from the HUMS or manually read and entered into CMMS. The measurements are recorded against CMMS database objects, i.e., Equipment Master Records (EMRs) and/or Functional Locations (FLOCs) in the form of measurement documents associated with these objects.

Deadline monitoring is an automated process that will be executed within CMMS to generate notifications and/or work orders for preventive maintenance. The scheduling and advanced creation of notifications and/or work orders described below is based on the assigned maintenance staff who will be conducting the maintenance activities.

Deadline monitoring can be triggered based upon usage data and the maintenance plan definitions recorded in CMMS. In addition to measurement types or performance-based measurements, the time-based or calendar-based events can also trigger the creation of preventive maintenance objects (notifications and/or work orders).

Deadline monitoring for preventive maintenance performed by ship staff runs weekly and creates work orders one month in advance (maintenance work order type N017) [N1.4.3.2.1] [N1.4.3.2.2] with the creation and auto-release of the corresponding maintenance notifications (maintenance notification type N9) [N1.4.3.1.1] [N1.4.3.1.2].

Deadline monitoring for the preventive maintenance performed by Fleet Maintenance Facility (FMF) runs weekly and creates maintenance notifications six months in advance (maintenance notification type N9) [N1.4.3.1.1] [N1.4.3.1.2] with the auto-setting of the user status of the maintenance notification to 'Passed to Repair Facility' (PTRF).

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Deadline monitoring for the preventive maintenance required to be performed by the ISS Contractor runs weekly and creates maintenance notifications six months in advance (maintenance notification type N9) [N1.4.3.1.1] [N1.4.3.1.2] with the auto-setting of the user status of the maintenance notification to 'Passed to ISSC' (PISC).

The preventive maintenance notifications [N1.4.3.1.1] [N1.4.3.1.2] and/or work orders [N1.4.3.2.1] [N1.4.3.2.2] that are created as a result of deadline monitoring are sent from CMMS to the ISS Contractor, via the EIE EDE on a predefined periodicity/frequency.

Reference: [Navy - Perform Maintenance - Maintenance Initialization](#)

## 1.2.2 Maintenance Planning – Ship Staff

Ship staff may be assigned preventive maintenance tasks as a result of deadline monitoring by having work redirected from the FMF (e.g. to order serialized material) or as a result of a work tasking by the On-Site Management Team (OSMT).

If ship staff has available resources, they proceed with executing the required maintenance. Ship staff may forward the maintenance request due to unavailability of resources or other constraints by setting the Notification user status to PTRF, and cloning the original notification if required [N1.4.3.1.1] [N1.4.3.1.2]. The notification's Main Work Centre will be set to one belonging to the OSMT. All maintenance notifications that are not accepted by a maintenance organization will be reviewed by the OSMT and the maintenance work will be reassigned to another organization or sent back to the originator for review and resolution.

Reference: [Navy - Perform Maintenance – Maintenance Planning - Ship Staff](#),

## 1.2.3 Maintenance Planning – FMF

The FMF may be assigned preventive maintenance tasks as a result of deadline monitoring, or as a result of a work tasking by the OSMT.

If FMF does not have the resources available to perform maintenance, the maintenance notification user status is set to 'Rejected by Repair Facility' (RERF), and returned to the OSMT for review and action.

If the FMF accepts the maintenance tasking, the notification user status is set to 'Accepted by Repair Facility' (ACRF) [N1.4.3.1.1] [N1.4.3.1.4], and a maintenance work order is created and released [N1.4.3.2.2] [N1.4.3.2.1]. If no serialized material is required, the FMF proceeds with executing the maintenance.

If serialized material is required to perform maintenance, the FMF will contact ship staff to order the material. Refer to [Corrective Maintenance Planning – Ship Staff](#) and [Preventive Maintenance Planning - Ship Staff](#)

Reference: [Navy - Perform Maintenance – Maintenance Planning - Fleet Maintenance Facility](#)

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### 1.2.4 Maintenance Planning – OSMT

The OSMT reviews maintenance notifications and determines whether work should be performed by the ISS Contractor or Canada. The exception is preventive maintenance notifications generated by deadline monitoring that are assigned to the ISS Contractor. These are not reviewed by OSMT, and are directly actioned by the ISS Contractor.

For all other notifications sent to the OSMT, it may route notifications to ship staff, FMF or to the ISS Contractor.

The OSMT may reject a notification with user status set to ‘Rejected by OSMT’ (REOM), which routes the notification back to the originator. OSMT may assign a notification to FMF by assigning the work centre to the corresponding FMF. Finally, the OSMT may assign a maintenance request to the ISS Contractor by setting the notification user status to ‘Passed to ISSC’ (PISC) [N1.4.3.1.1] [N1.4.3.1.4].

The ISS Contractor may be assigned preventive maintenance tasks as a result of deadline monitoring, or as a result of a work tasking by the OSMT. For work tasking which the ISS Contractor does not accept, the maintenance notification user status is set to ‘Rejected by ISSC’ (RISC), along with the reason for rejection, and returned to the OSMT for review and action [N1.4.3.1.6].

If the ISS Contractor accepts the maintenance tasking via the EIE EDE, the notification user status is set to ‘Accepted by ISSC’ (AISC) [N1.4.3.1.6].

Reference: [Navy - Perform Maintenance – Maintenance Planning - On-Site Management Team](#)

### 1.3 Corrective Maintenance Planning

A corrective maintenance notification (N1 notification), will be created as a result of an identified fault or defect. A corrective maintenance notification could also be created to capture a fault code recorded on the HUMS, or reassignment of an existing corrective maintenance notification [N1.4.3.1.1] [N1.4.3.1.2].

If the notification is approved for work by ship staff, or a ship staff maintainer is ordering serialized parts on behalf of FMF, a corrective maintenance work order is created [N1.4.3.2.2] [N1.4.3.2.1]. Following the creation and release of the work order [N1.4.3.2.2], the maintenance execution process can begin.

A corrective maintenance notification may be cancelled if it is not approved by the supervisor, and the material re-planning is not permitted. Cancellation and closure of a maintenance notification is described in the [Cancel](#) section of this document.

If corrective maintenance cannot be performed by ship staff, the notification will be passed to the OSMT for disposition.

Reference: [Navy - Perform Maintenance – Corrective Maintenance Planning](#).

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## 1.4 Execute Corrective or Preventive Maintenance

### 1.4.1 Execute Maintenance – Ship Staff/FMF

The execution of maintenance tasks (corrective or preventive) is determined by the identification of a defect or a maintenance plan. A work order is created [N1.4.3.2.1] [N1.4.3.2.2] and released [N1.4.3.2.2] from the originating notification if the work order does not already exist.

As maintenance is carried out, Equipment Master Records (EMR) may be uninstalled from the Platform, EMR [N1.4.3.4.1] data and the last measurement document [N1.4.3.4.2] for that EMR are sent to the ISS Contractor at the time of uninstall.

The execution of the preventive or corrective maintenance may result in a deviation or waiver. A deviation or waiver (ND notification) will be created to request its approval. The maintenance deviation or waiver notification will require approval by the Design Authority. Refer to [Deviation and Waiver - Ship Staff/FMF](#) section of this document for details of the Deviation and Waiver process.

While conducting maintenance, materiel may be consumed as per the maintenance program. Materiel will be issued from available stores holdings, or will result in a demand for parts being sent to the ISS Contractor. (**Refer to the Annex M - Navy Supply Process Model** for additional information on materiel management). If maintenance activity results in new EMRs being installed on the Platform, the EMR installation configuration information is captured [N1.4.3.4.1].

If required, trials will be conducted and recorded in a trial notification (N3 notification) [N1.4.3.1.1] [N1.4.3.1.2]. The trial notification will reference the originating notification. Refer to [Conduct Trials - Navy](#) section of this document for details of trials process.

Parts removed from the Platform, and consumables that need to be disposed of, are returned to the ISS Contractor in accordance with materiel management practices. (**Refer to the Annex M - Navy Supply Process Model** for additional information on materiel management).

Upon completion of the maintenance execution, the technician records their hours against the work order, and the work order is set to technically complete (TECO) [N1.4.3.2.1] [N1.4.3.2.2] [N1.4.3.2.6]. The work order is reviewed for completeness by the Section Head. If accepted, the maintenance notification is closed (NOCO) [N1.4.3.1.1] [N1.4.3.1.2]. After a predetermined time, the CMMS will 'business close' the maintenance work order (CLSD) [N1.4.3.2.1] [N1.4.3.2.2]. If there are outstanding issues with the work order, it is sent to ship staff for resolution. Resolution may result in the creation of new notifications to record deficiencies.

On EMR installs, EMR [N1.4.3.4.1], data is extracted from CMMS and sent to the ISS Contractor via the EIE EDE on a predefined periodicity/frequency. On uninstalls, EMR [N1.4.3.4.1] and EMR measurement document [N1.4.3.4.2] data are extracted from CMMS and sent to the ISS Contractor via the EIE EDE.

Reference: [Navy - Perform Maintenance – Execute Maintenance – Ship Staff/FMF](#).

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### 1.4.2 Execute Maintenance - ISS Contractor

For Docking Work Periods (DWP) and Short Work Periods (SWP), the scope of ISS Contractor conducted maintenance will be defined and agreed to between the ISS Contractor and Canada prior to the initiation of maintenance activities in accordance with the ISSC. Upon acceptance of the maintenance notification for conducting the corrective and/or preventive maintenance execution, the ISS Contractor creates a maintenance notification and work order in their Maintenance Management System and sends the work order record once it is scheduled to the CMMS via the EIE EDE [N1.4.3.2.8]. CMMS creates [N1.4.3.2.1] [N1.4.3.2.2] and releases [N1.4.3.2.2] a corresponding notification/work order in CMMS, including reference to the ISS Contractor's work order identifier.

If the agreed scope of work includes one or more Engineering Change (EC) that requires modification to master data, the ISS Contractor will send EC master data updates to Canada. (**Refer to the Annex O - Navy Configuration Management Process Model** for additional information on configuration management and master data update).

As the ISS Contractor-performed maintenance proceeds, data associated with the Platform configuration changes will also be sent to Canada. Required data includes EMR Uninstall/Install [N1.4.3.4.5], EMR Measurement readings for installed EMR [N1.4.3.4.6], EMR Measuring Point for installed EMR [N1.4.3.4.7] and Maintenance Plans for installed EMR [N1.4.3.8.1]. The data received from the ISS Contractor will be inducted into the CMMS; the EMR Uninstall/Install [N1.4.3.4.1] and EMR Measurement Document [N1.4.3.4.2] for the installed EMR will be sent to industry indicating acceptance or rejection of the content.

The execution of the preventive or corrective maintenance may result in a deviation/waiver. A deviation/waiver (ND notification) will be created to request approval of the deviation/waiver. The maintenance deviation/waiver notification will require approval by the Design Authority. Refer to [Deviation and Waiver - Navy](#) section of this document for details of the Deviation and Waiver process.

If required, the ISS Contractor will conduct trials. Refer to [Conduct Trials - ISSC](#) section of this document for details of the Conduct Trials process.

Upon completion of the maintenance execution, the ISS Contractor will close its work orders and send the work order complete records to CMMS via the EIE EDE [N1.4.3.2.8]. CMMS will update its work orders with this data, and set the work order status to technically complete (TECO) [N1.4.3.2.1] [N1.4.3.2.2]. The work orders are reviewed for completeness by DND. If accepted, the maintenance notification is closed (NOCO) [N1.4.3.1.1] [N1.4.3.1.2]. After a predetermined time, the CMMS will business close the maintenance work order (CLSD) [N1.4.3.2.1] [N1.4.3.2.2]. If there are outstanding issues with the work order, it is sent to ship staff for resolution. Resolution may result in the creation of new maintenance notifications to record deficiencies.

Reference: [Navy - Perform Maintenance - Execute Maintenance – ISS Contractor](#)

## 1.5 Backshop Maintenance

In the PBC model, the ISSC-owned parts are returned to the ISSC (**Refer to Annex M - Navy Supply Process Model** for additional information related to the Part Return). The ISS Contractor may request

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FMF to perform backshop work on any given unserviceable ISS Contractor-owned part. To request backshop work, the ISS Contractor sends a service request [N1.4.3.6.1] transaction to CMMS via the EIE EDE. The CMMS processes the service request and creates a maintenance notification [N1.4.3.1.1] [N1.4.3.1.2] to initiate the backshop work. The backshop maintenance notification is automatically forwarded to the FMF with a User Status set to the 'Passed to Repair Facility (RF)' (PTRF).

The actual backshop maintenance execution tasks are determined based on the task list received from the ISS Contractor. The task list may optionally be specified in the service request or agreed to via non-systematic means. In either case the task list must pre-exist in CMMS. (A task list specifies the details of the task to be completed, i.e. expected duration, skills or trade required, spares, consumables, Special Tools and Test Equipment (STTE) and references to technical documentation and manuals.) If a task list is not specified in the Service Request a user may manually add it to the work order, based on information previously agreed to between Canada and the ISS Contractor.

Reference: [Perform Maintenance – Backshop Maintenance](#)

## 1.6 Cancel

A work order may be closed without further progress, if it is decided that it has to be cancelled. In this case, the work order and corresponding notification will be closed. The work order user status [N1.4.3.2.4] will be set to 'Cancelled' (CANC), followed by the work order being technically completed (TECO) and eventually business closed (CLSD). The appropriate transactions will be sent to the ISS Contractor via the EIE EDE [N1.4.3.2.1] [N1.4.3.2.2] [N1.4.3.2.6].

If a notification is not approved and is cancelled, the user status [N1.4.3.1.4] of that notification is set to 'Cancelled' (CANC) [N1.4.3.1.4], and the notification is closed (NOCO). A snapshot of the full record set [N1.4.3.1.1] for the maintenance notification as well as the System Status [N1.4.3.1.2] set to the Notification Closed will be sent to the ISS Contractor via the EIE EDE.

Reference: [Navy - Perform Maintenance – Cancel](#).

## 1.7 Deviation and Waiver

The Deviation and Waiver process involves the identification of a maintenance execution deviation or waiver and processing through to approval or rejection by the appropriate authority. A deviation or waiver is a request to permit a non-conformance of a piece of equipment or system or deviation from the maintenance program before or after the event, respectively.

### 1.7.1 Deviation and Waiver – Ship Staff/FMF

When performing maintenance activities, the Navy may be required to deviate from the configuration baseline (including maintenance plans) for completion of maintenance. The deviation or waiver (ND notification) is created [N1.4.3.1.1] [N1.4.3.1.2] for a system/equipment and will be linked to the originating notification. The approval of the deviation or waiver is tracked through the notification user statuses [N1.4.3.1.1]. Only one of the statuses can be active at any time. The decision from the approval process - approved/rejected by the Formation Technical Authority (FTA), reviewed and forwarded by the

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FTA to the Maritime Equipment Program Management (MEPM), or approved/rejected by Design Authority (DA) [N1.4.3.1.1] - is sent to the ISS Contractor via the EIE EDE.

If a deviation or waiver is to be cancelled, a user status [N1.4.3.1.4] of the deviation or waiver is set to 'Cancelled' and the notification is closed. Cancellation and closure of the notification is described in the [Cancel](#) section of this document.

When the deviation or waiver is approved, the notification is closed [N1.4.3.1.1] [N1.4.3.1.2] and the related transaction is sent to the ISS Contractor via the EIE EDE. Otherwise, the process ends with the DA completing the technical inspection.

Reference: [Navy - Perform Maintenance – Deviation and Waiver](#) - Ship Staff/FMF

## 1.7.2 Deviation and Waiver - ISS Contractor

When performing maintenance activities, the ISS Contractor may be required to deviate from the configuration baseline (including maintenance plans). The ISS Contractor will inform Canada of the upcoming deviation or waiver. Canada will create a ND notification in CMMS to record the maintenance deviation or waiver. The deviation or waiver notification is created [N1.4.3.1.1] [N1.4.3.1.2] for a specific Platform, system/equipment. The deviation or waiver notification will be linked to the originating notification. The approval of the deviation or waiver is tracked through the notification user status [N1.4.3.1.1]. The decision from the approval process - approved/rejected by the FTA, reviewed and forwarded by the FTA to the MEPM, or approved/rejected by DA [N1.4.3.1.1] - is sent to the ISS Contractor via the EIE EDE.

If a deviation or waiver is to be cancelled, a user status [N1.4.3.1.4] of this deviation or waiver is set to 'Cancelled' and the notification is closed. Cancellation and closure of the notification is described in the [Cancel](#) section of this document.

When the deviation or waiver is approved, the notification is closed [N1.4.3.1.1] [N1.4.3.1.2] and the related transaction is sent to the ISS Contractor via the EIE EDE.

Reference: [Perform Maintenance - Deviation and Waiver – ISS Contractor](#). Otherwise, the process ends with the DA completing the technical inspection.

## 1.8 Conduct Trials

### 1.8.1 Conduct Trials - Ship Staff/FMF

When performing maintenance activities, the Navy may require trials before accepting completion of maintenance. The trials notification is created [N1.4.3.1.1] [N1.4.3.1.2] for a specific Platform or trial. The trial notification may be linked to the originating notification, and is used to record results of the trial. When the trial process is complete, the trial notification is closed [N1.4.3.1.1] [N1.4.3.1.2] and the related transaction is sent to the ISS Contractor via the EIE EDE. While conducting trials the usage data will be collected and the Measurement documents data [N1.4.3.4.2] will be transferred to the ISS Contractor via the EIE EDE. Refer to the [Record Platform Usage and Faults](#) section of this document for details of the process.

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Reference: [Navy - Perform Maintenance – Conduct Trials – Ship Staff/FMF](#)

### 1.8.2 Conduct Trials - ISS Contractor

When performing maintenance activities, the ISS Contractor may be required to conduct trials before Canada accepts the completion of maintenance. The ISS Contractor will inform Canada of the upcoming trial. Canada will create a notification in CMMS to record the trial. The trials notification is created [N1.4.3.1.1] [N1.4.3.1.2] for a specific Platform or trial.

The ISS Contractor will provide trial results through the collaborative environment and the usage data - EMR Measurement Document data [N1.4.3.4.6] via the EIE EDE. When the trial process is complete and accepted by Canada, the trial notification is closed [N1.4.3.1.1] [N1.4.3.1.2] and the related transaction is sent to the ISS Contractor via the EIE EDE.

Reference: [Navy - Perform Maintenance – Conduct Trials – ISS Contractor](#)

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## 2 BUSINESS TRIGGERING EVENTS

The CMMS relevant maintenance notification data, EMR data, and work order data are sent to the ISS Contractor, through the EIE EDE on a predefined periodicity/frequency and are based on specific business triggering events. These events are defined based on PBC and engineering support requirements.

The following sections describe possible business events that can initiate the exchange of the maintenance data and resulting data sets. Note that the list of business and corresponding CMMS triggers as well as the subsets of data that are extracted can change as per contract-specific PBC requirements.

### 2.1 Maintenance Notification

Table 2-1 below identifies the Maintenance Notification record types.

**Table 2-1 Maintenance Notification Record Types**

Record Type	Description
Header	Contains data elements that apply to the entity as a whole.
User Status	User status values are set manually by users and are used to indicate a specific state or condition that the object is currently in. In most cases user status values can coexist with each other at the same time. User status values can vary from one Notification type to another and not all Notification Types have user status values that are applicable to the PBC.
System Status	The system status is set by the system based on events that a user performs (e.g., the release of a Notification.) Often the system status value indicates the life-cycle stage of the Notification.
FMEA Codes	In some types of Notifications this relates to fault/damage codes as well as “object part” codes (e.g., the latter can be used to describe a generic location where the fault was found). These are based on catalogues that can be fleet-specific and have lists of predefined entries that permit the user to select from.
Cause Codes	Applicable to some types of Notifications. The cause codes can contain fix or cause codes. These are based on catalogues that can be fleet-specific and have lists of predefined entries that permit the user to select from.
Activity Codes	Applicable to some types of Notifications. The activity codes can contain disposal codes or codes related to activities performed. These are based on catalogues that can be fleet-specific and have lists of predefined entries that permit the user to select from.

Table 2-2 identifies the notification business triggering events that Canada will send to the ISS Contractor. Please note that when a notification is created or closed, a system status record subset and a snapshot of a full record will be sent to the ISS Contractor. A snapshot will not contain date/time values for the system and user status fields.

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**Table 2-2 Maintenance Notification Business Triggering Events - Canada**

	Full Record Set					
	Record Subsets					
Business Trigger	Header	User Status	System Status	FMEA Codes	Cause Codes	Activity Codes
Notification created	√	√	√	√	√	√
Notification created (System Status)			√			
Notification approved/in progress			√			
Notification cancelled		√				
Notification assigned to FMF or the ISS Contractor		√				
Notification approved/rejected by Fleet Technical Authority or Design Authority	√	√	√	√	√	√
Engineering change notification implemented	√	√	√	√	√	√
Catalogue entries – add, delete, change <sup>1</sup>	√	√	√	√	√	√
Notification closed	√	√	√	√	√	√
Notification closed (System Status)			√			

Table 2-3 Maintenance Notification Business Triggering Events – identifies the maintenance notification business triggering events that the ISS Contractor will send to Canada.

**Table 2-3 Maintenance Notification Business Triggering Events – ISS Contractor**

	Full Record Set					
	Record Subsets					
Business Trigger	Header	User Status	System Status	FMEA Codes	Cause Codes	Activity Codes
Notification rejected	√	√	√	√	√	√

<sup>1</sup> For fleets which implement catalogue codes

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	Full Record Set					
	Record Subsets					
Business Trigger	Header	User Status	System Status	FMEA Codes	Cause Codes	Activity Codes
Notification accepted		√				

## 2.2 Work Order

Table 2-4 identifies the work order record types.

**Table 2-4 Work Order Record Types**

Record Type	Description
Header	Contains data elements that apply to the entity as a whole (e.g., the work order).
User Status	User status values are set manually by users and are used to indicate a specific state or condition that the object is currently in. In most cases user status values can coexist with each other at the same time. User status values can vary from one work order type to another and not all work order types have user status values that are applicable to the ISS.
System Status	The system status is set by the system based on events that a user performs (e.g., the release of a work order). Often the system status value indicates the life-cycle stage of the work order.
Operation	An operation describes a specific step within a task list. (Note that users can also manually add operations, independent of a task list.) Operations contain data such as the work centre that the work is being performed at, the planned duration of work, and the number of resources required.
Operation User Status	The operation user status is set manually by users at the operation level to indicate a specific state or condition that the object is currently in (operation deferral set or unset, restriction set or unset, interrupt set or unset, status certified).
Operation System Status	The operation system status set by the system, for example, on recording of digital signature or the detection of a missing part.
Component	Components related to material that is actually planned to be used in a work order that need to be ordered to perform the work. Most commonly, the required components are defined against Operations within a Task List.
STTEs	Special Tools and Test Equipment planned in a work order.
Task List	Data pertaining to the addition of a task list to a work order
Goods Issue	Components issued to a work order.

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Table 2-6 identifies the work order business triggering events that Canada will send to the ISS Contractor. Please note that when a work order is created or business closed, a system status record subset and a full record set will be sent to the ISS Contractor. When a work order is technically closed, a system status record and a snapshot consisting of a full record set and a goods issue record subset will be sent to the ISS Contractor.

**Table 2-5 Work Order Business Triggering Events - Canada**

Business Trigger	Record Subsets									
	Full Record Set									Goods Issue
	Header	Header User Status	Operation User Status	Header System Status	Operation System Status	Operation	Component	STTEs	Task List	Goods Issue
WO created	√	√	√	√	√	√	√	√	√	
WO created (System Status)				√						
Add Task List									√	
WO cancelled		√								
WO released				√						
WO technically completed (System Status)				√						
WO technically completed	√	√	√	√	√	√	√	√	√	√
WO business completed (System Status)				√						
WO business completed	√	√	√	√	√	√	√	√	√	

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Table 2-6 identifies the work order business triggering events that the ISS Contractor will send to Canada.

**Table 2-6 Work Order Business Triggering Events - ISS Contractor**

Business Trigger	Record Subsets									
	Full Record Set									Goods Issue
	Header	Header User Status	Operation User Status	Header System Status	Operation System Status	Operation	Component	STTEs	Task List	Goods Issue
WO created	√	√	√	√	√	√			√	
WO technically completed	√	√	√	√	√	√	√		√	

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## 2.3 EMR Record

The EMR record type serves the purpose of recording changes to the Platform configuration. It is necessary to exchange the EMR data in order to maintain the Platform current configurations synchronized between CMMS and the ISS Contractor.

An EMR record will be received from the ISS Contractor and loaded into CMMS for every serialized component sent to Canada in support of Canada-performed maintenance. If that component represents a complex structure, the data received with EMR records will reflect the number and relationship of all sub-components of that complex EMR structure.

Similarly, if the ISS Contractor removes and installs EMRs as a result of the ISS Contractor-performed maintenance, the corresponding EMR install and uninstall records must be sent from the ISS Contractor to Canada.

An EMR extract is produced whenever an EMR is installed into, or dismantled from, the structure.

Table 2-7 identifies the Canada EMR Install/dismantle business triggering events.

**Table 2-7 EMR Install/Dismantle Business Triggering Events - Canada**

Business Trigger	EMR Structure Extract
The EMR is dismantled from a Platform	√
The EMR is installed on a Platform	√

Table 2-8 identifies the ISS Contractor EMR Install/dismantle business triggering events.

**Table 2-8 EMR Install/Dismantle Business Triggering Events - ISS Contractor**

Business Trigger	EMR Structure Extract
The EMR is dismantled from a Platform	√
The EMR is installed on a Platform	√

## 2.4 EMR Measurements

EMR measurement record contains data elements that relate to measurements taken against an EMR (for example, against a serialized component within the ship structure). Reversals are negations of previously created measurement documents.

EMR measurements are extracted for the events below:

- Any time an EMR measurement document is created, whether inherited or not

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- Upon uninstall, the system will send the last active measurement document(s) related to the EMR that was uninstalled.

Table 2-9 identifies the EMR Measurement business triggering events initiated by Canada

**Table 2-9 EMR Measurement Business Triggering Events - Canada**

Business Trigger	Record Subsets	
	EMR Measurement Inherited	EMR Measurement Non Inherited
Create measurement document	√	√
A dismantle occurs for a EMR	√	√
A measurement is reversed for the EMR	√	√

Table 2-10 identifies the EMR measurement business triggering events initiated by the ISS Contractor.

**Table 2-10 EMR Measurement Business Triggering Events – ISS Contractor**

Business Trigger	Record Subsets	
	EMR Measurement Inherited	EMR Measurement Non Inherited
Create measurement document		√

## 2.5 FLOC Measurements

FLOC measurement record contains data elements that relate to measurements taken against a functional location.

Table 2-11 identifies the business triggering events when the FLOC measurement is extracted:

**Table 2-11 FLOC Measurement Business Triggering Events**

Business Trigger	Record Subsets
	Measurement
A measurement is recorded against the FLOC	√
A measurement is reversed for the FLOC	√
A FLOC measurement document's reversal indicator is reset	√

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### 3 MAINTENANCE HISTORY DATA EXCHANGE LATENCY<sup>2</sup>

Note that there may be a delay in transmitting to the ISS Contractor the maintenance history data that is captured in the CMMS and being released to the ISS Contractor. The specific period of latency has not been established for the Navy at this time. It will be defined during the realization phase between the ISS Contractor and the Class Program Manager.

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<sup>2</sup> Latency to be confirmed during the security requirements definition to assess the Statement of Sensitivity for the data being exchanged.

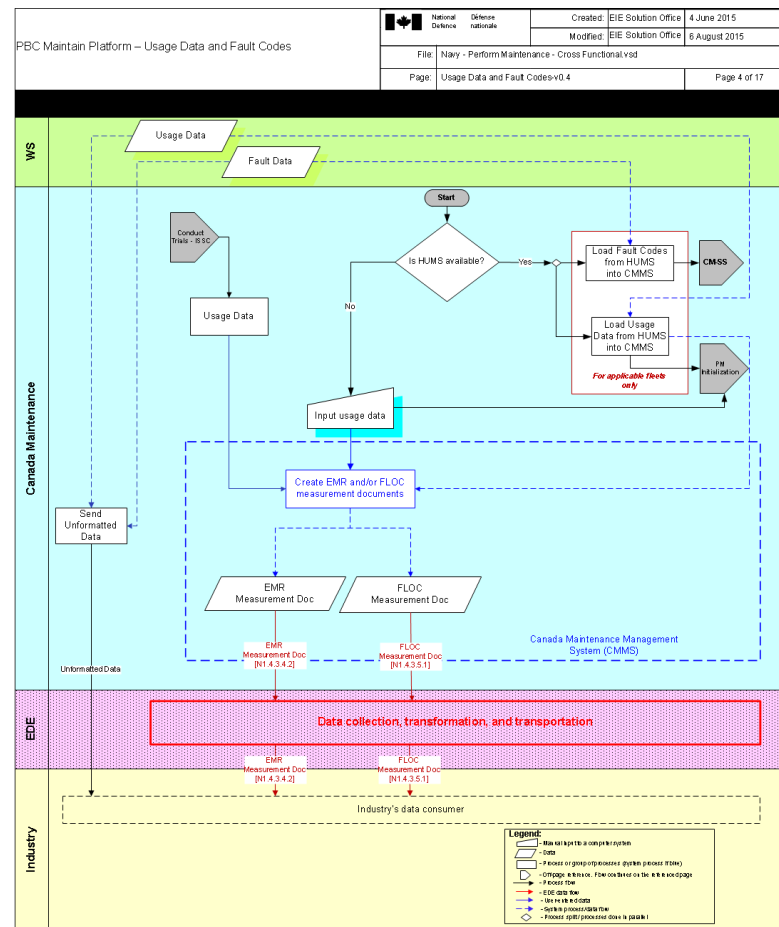
## 4 EIE TRANSACTIONS

EDE Transaction	Source	Destination
<b>Maintenance Records Data Transactions</b>		
Maintenance Notification: Full Record Set	Canada	ISS Contractor
Maintenance Notification: User Status	Canada	ISS Contractor
Maintenance Notification: Full Record Set	ISS Contractor	Canada
Maintenance Work Order: Full Record Set	Canada	ISS Contractor
Maintenance Work Order: User Status	Canada	ISS Contractor
Maintenance Work Order: Goods Issue	Canada	ISS Contractor
Maintenance Work Order: System Status	Canada	ISS Contractor
Maintenance Work Order: Full Record Set	ISS Contractor	Canada
EMR	Canada	ISS Contractor
EMR	ISS Contractor	Canada
EMR Measurement Doc	ISS Contractor	Canada
EMR Measurement Point	ISS Contractor	Canada
Maintenance Plan	ISS Contractor	Canada
<b>Platform Usage Data Transactions</b>		
Platform Usage Data <ul style="list-style-type: none"> <li>• EMR measurements</li> <li>• FLOC measurements</li> </ul>	Canada	ISS Contractor
Unformatted Usage Data	HUMS	ISS Contractor
<b>Backshop Maintenance Initiation Transactions</b>		
Service Request	ISS Contractor	Canada

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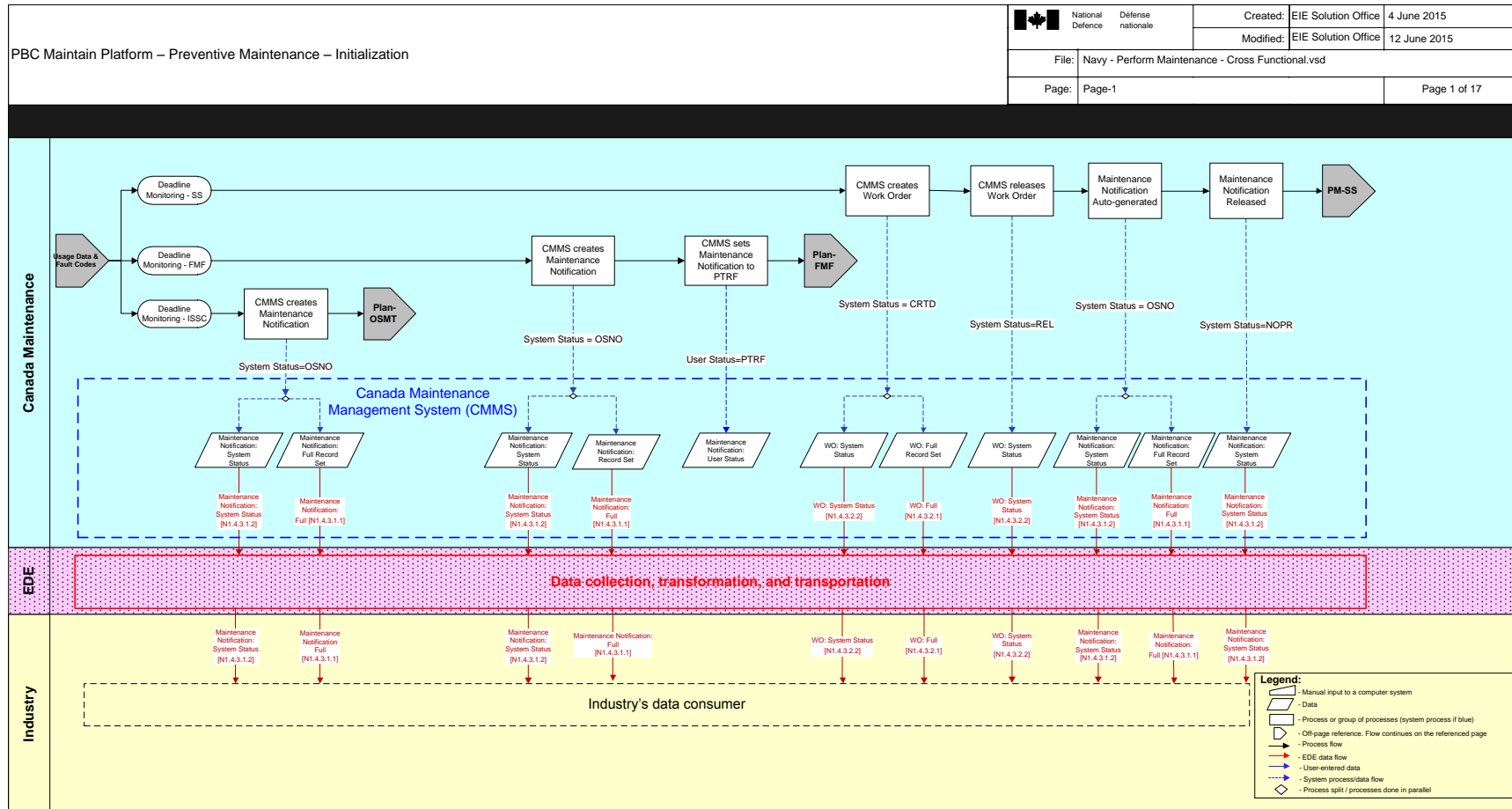
## 5 MAINTENANCE CROSS – FUNCTIONAL PROCESS FLOWS

## 5.1 Record Platform Usage and Faults



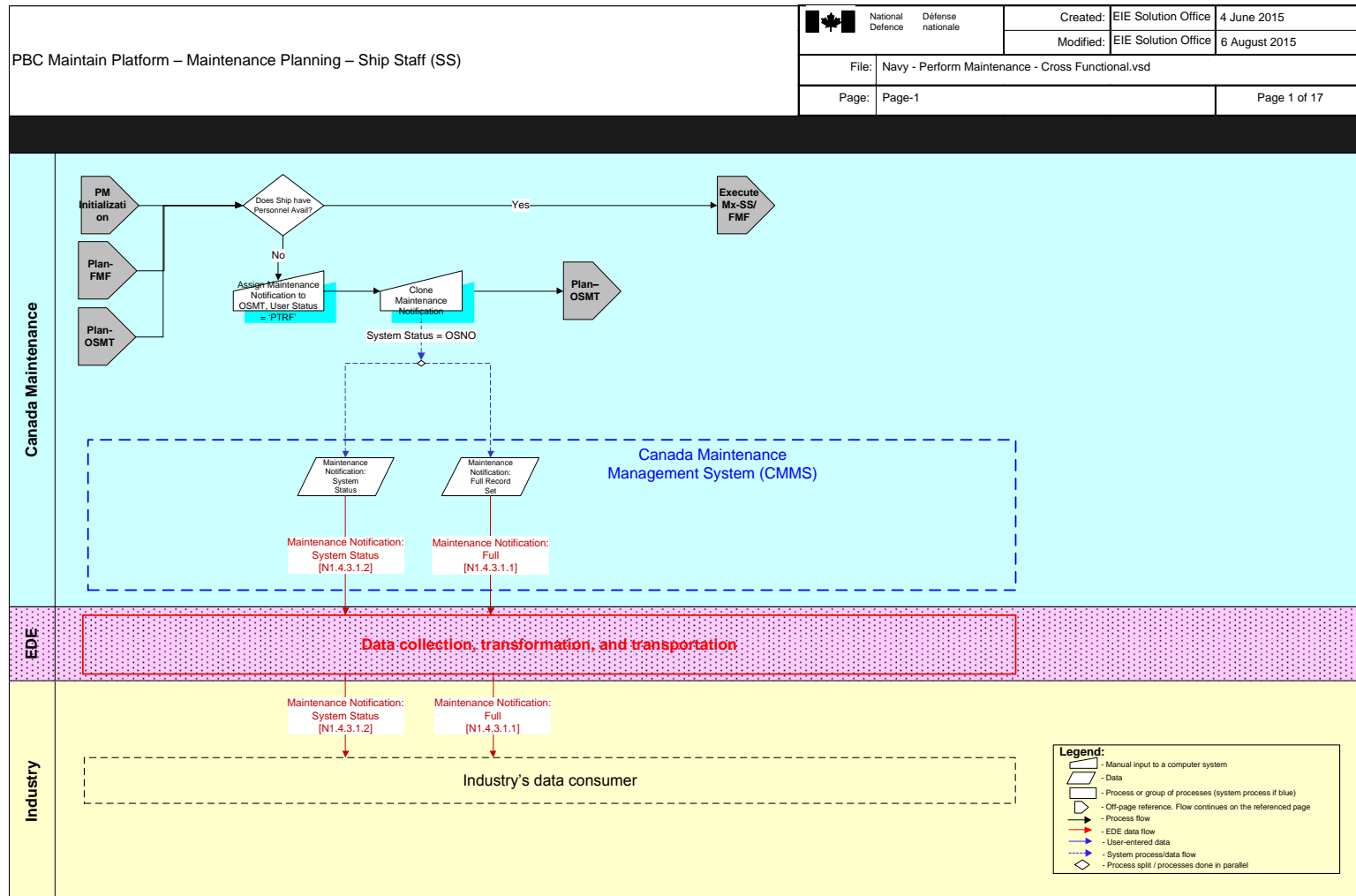
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## 5.2 Maintenance Initialization



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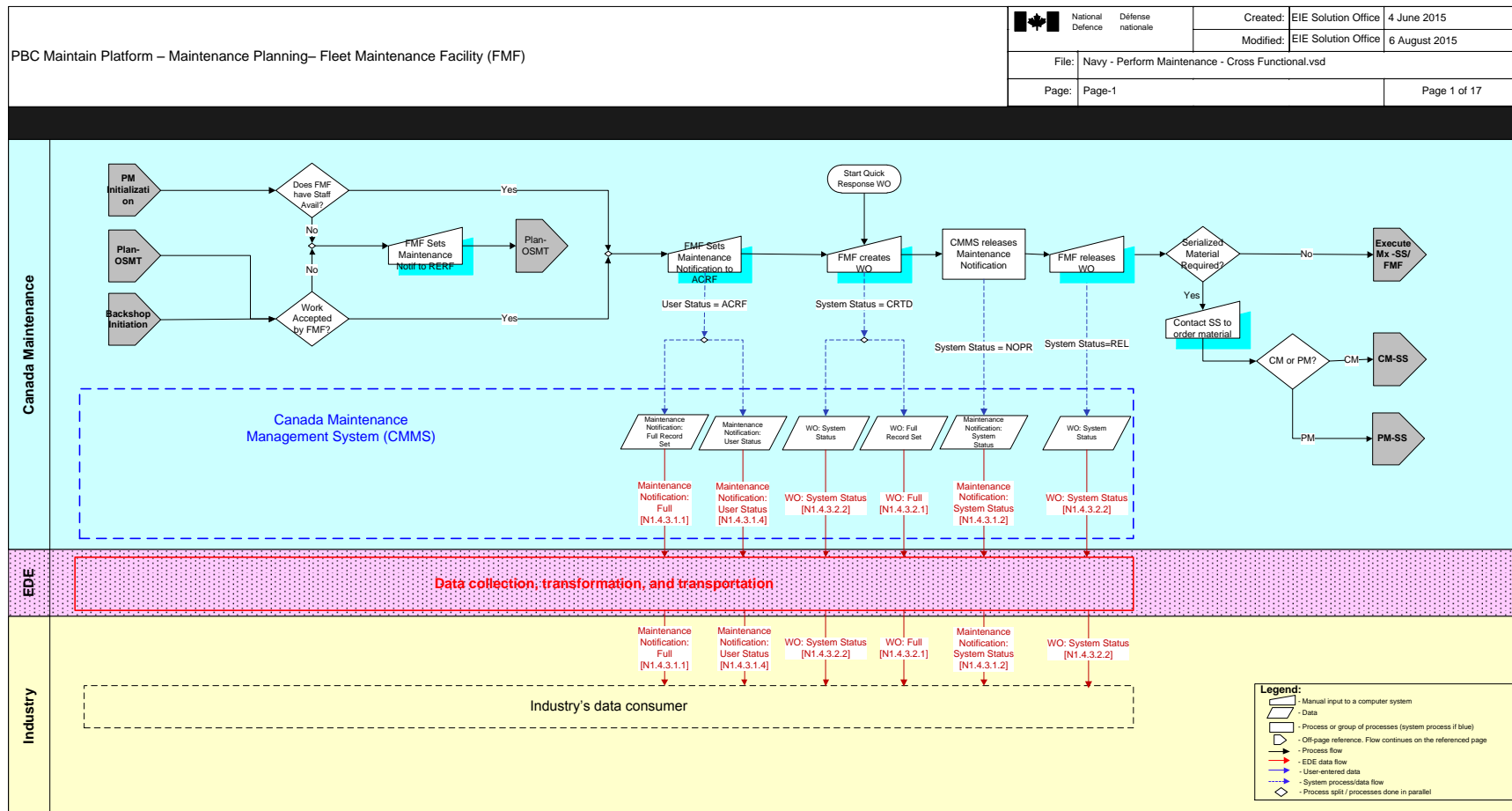
### 5.3 Maintenance Planning - Ship Staff



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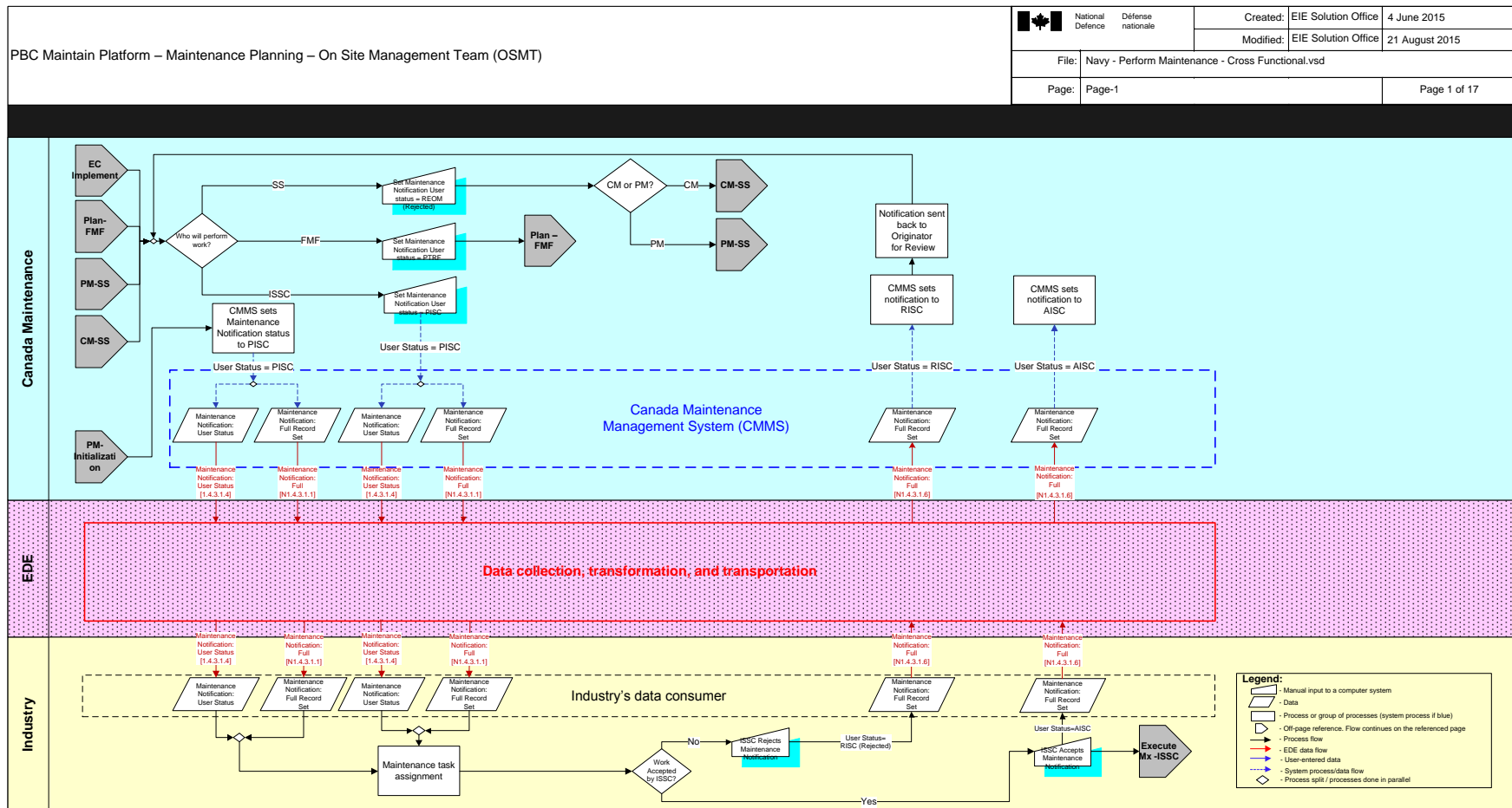


## 5.4 Maintenance Planning - Fleet Maintenance Facility



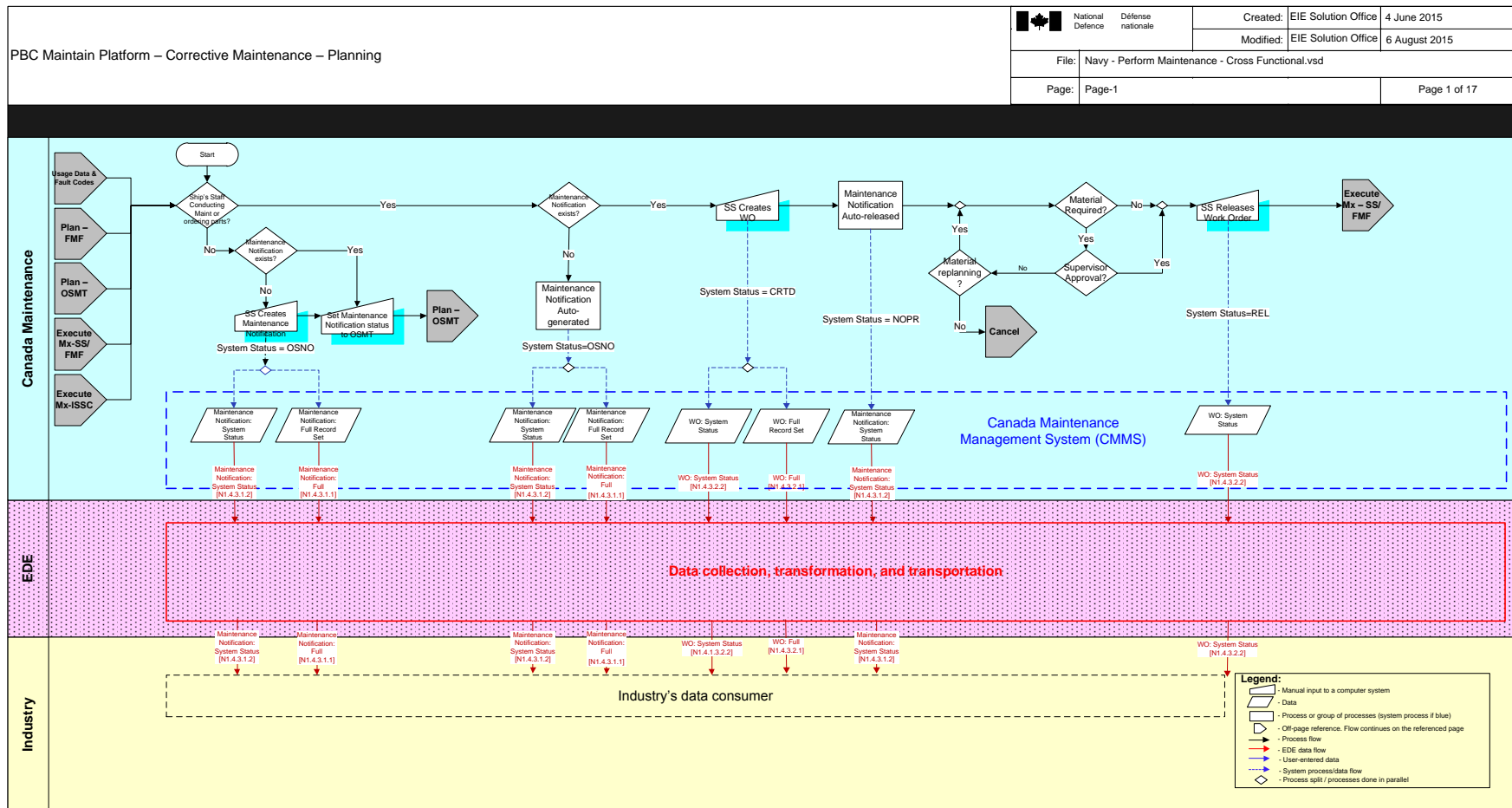
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## 5.5 Maintenance Planning - On-Site Management Team



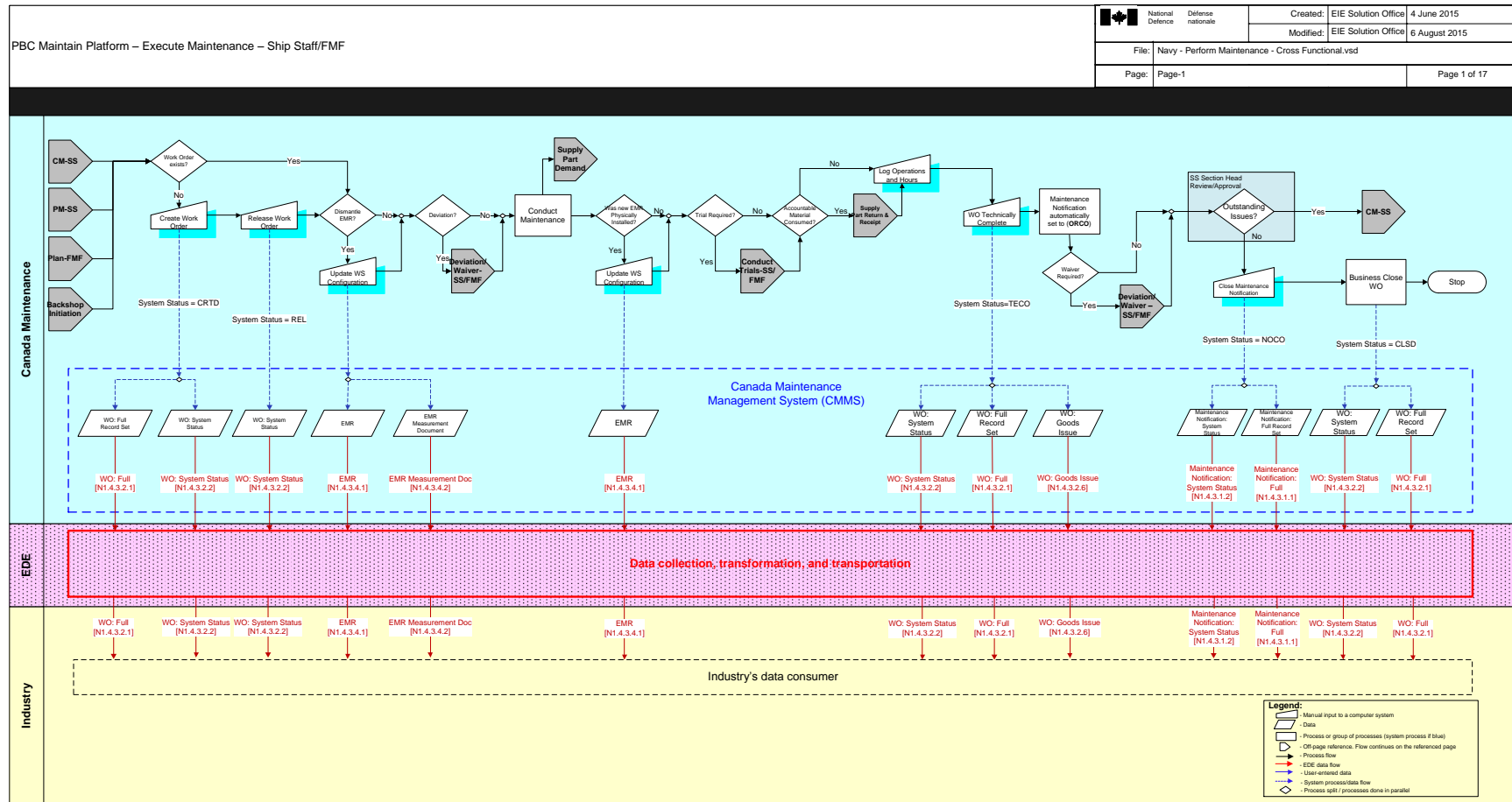
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## 5.6 Corrective Maintenance Planning



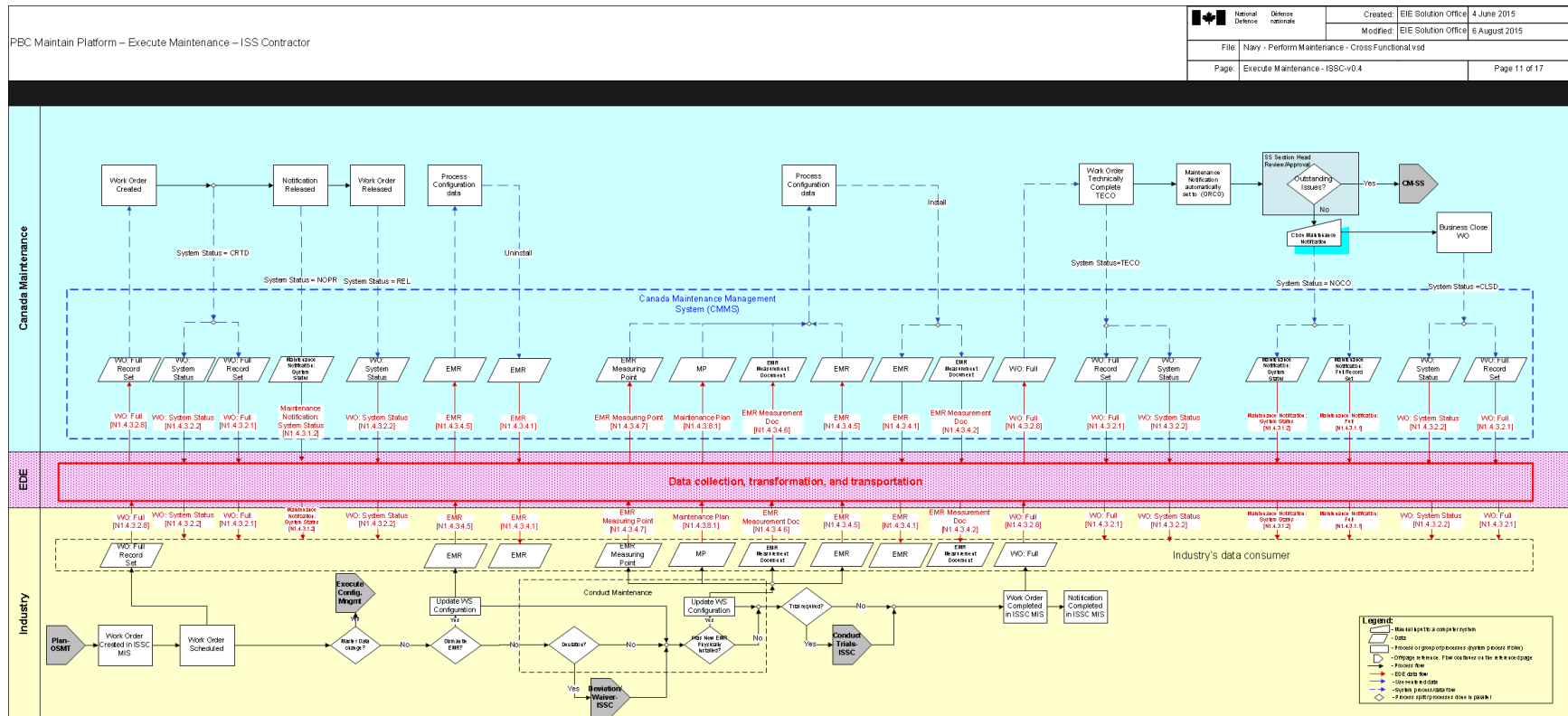
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## 5.7 Execute Maintenance - Ship Staff/FMF



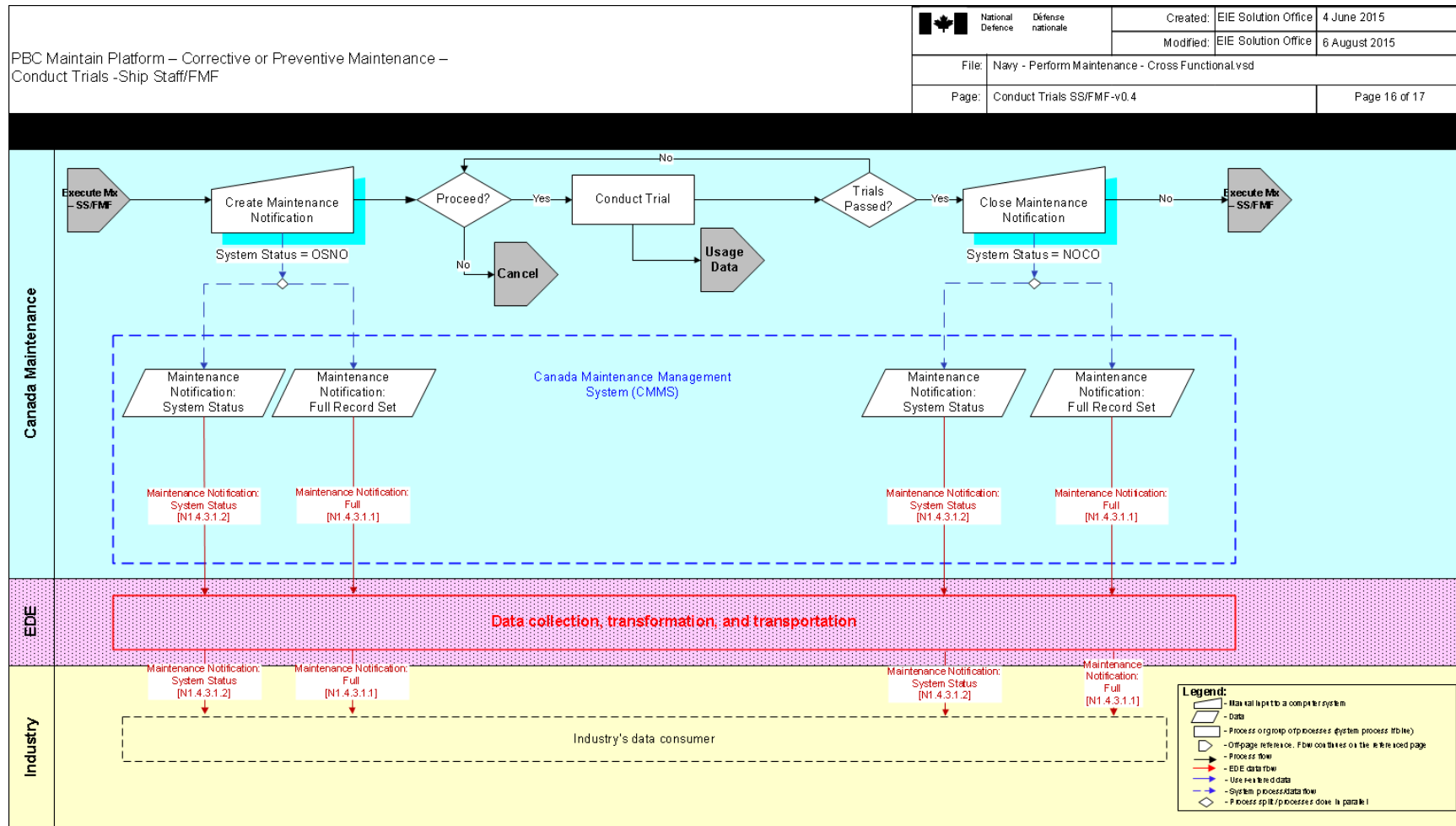
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## 5.8 Execute Maintenance - ISS Contractor



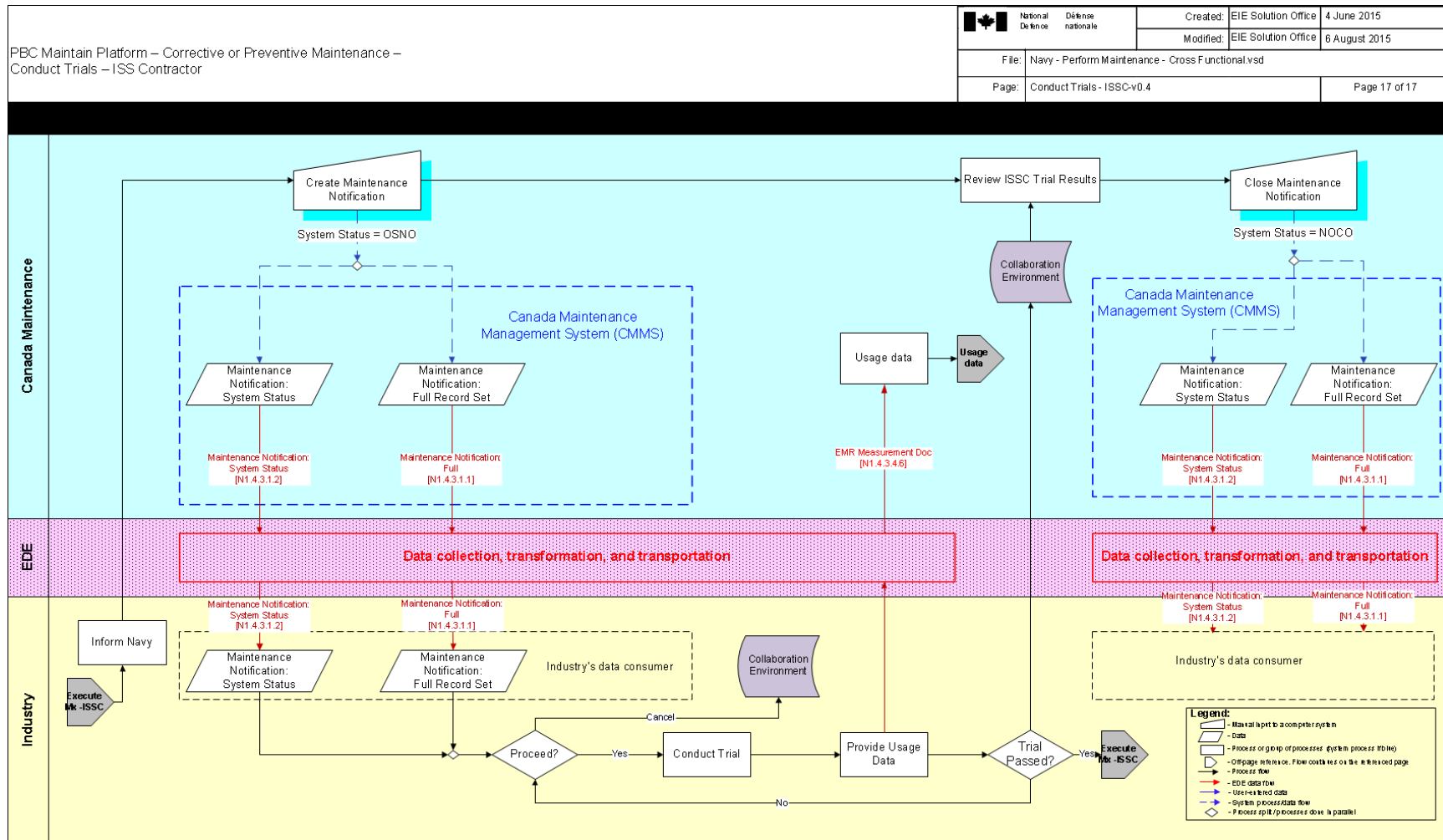
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## 5.9 Conduct Trials - Ship Staff/FMF



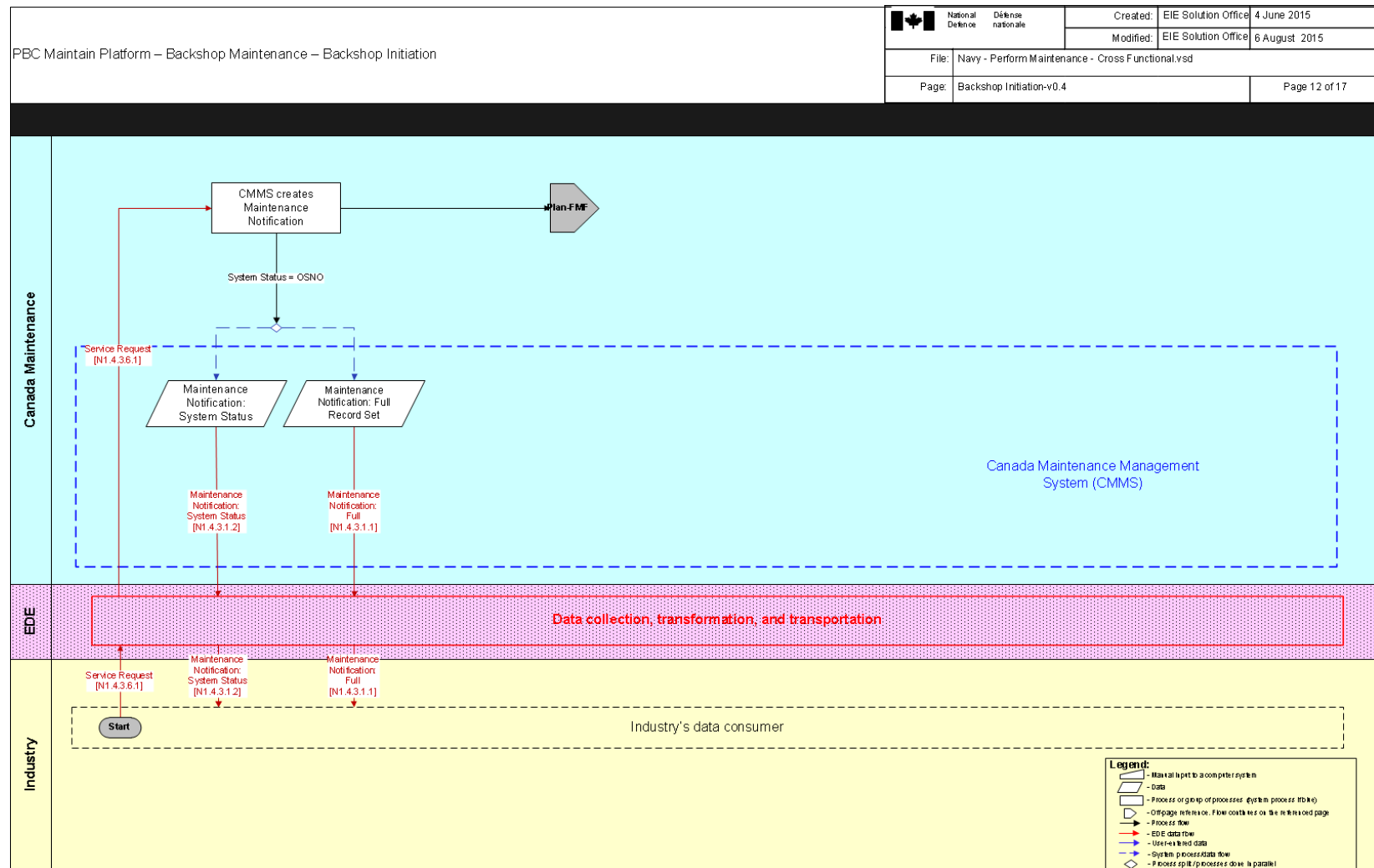
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## 5.10 Conduct Trials - ISS Contractor



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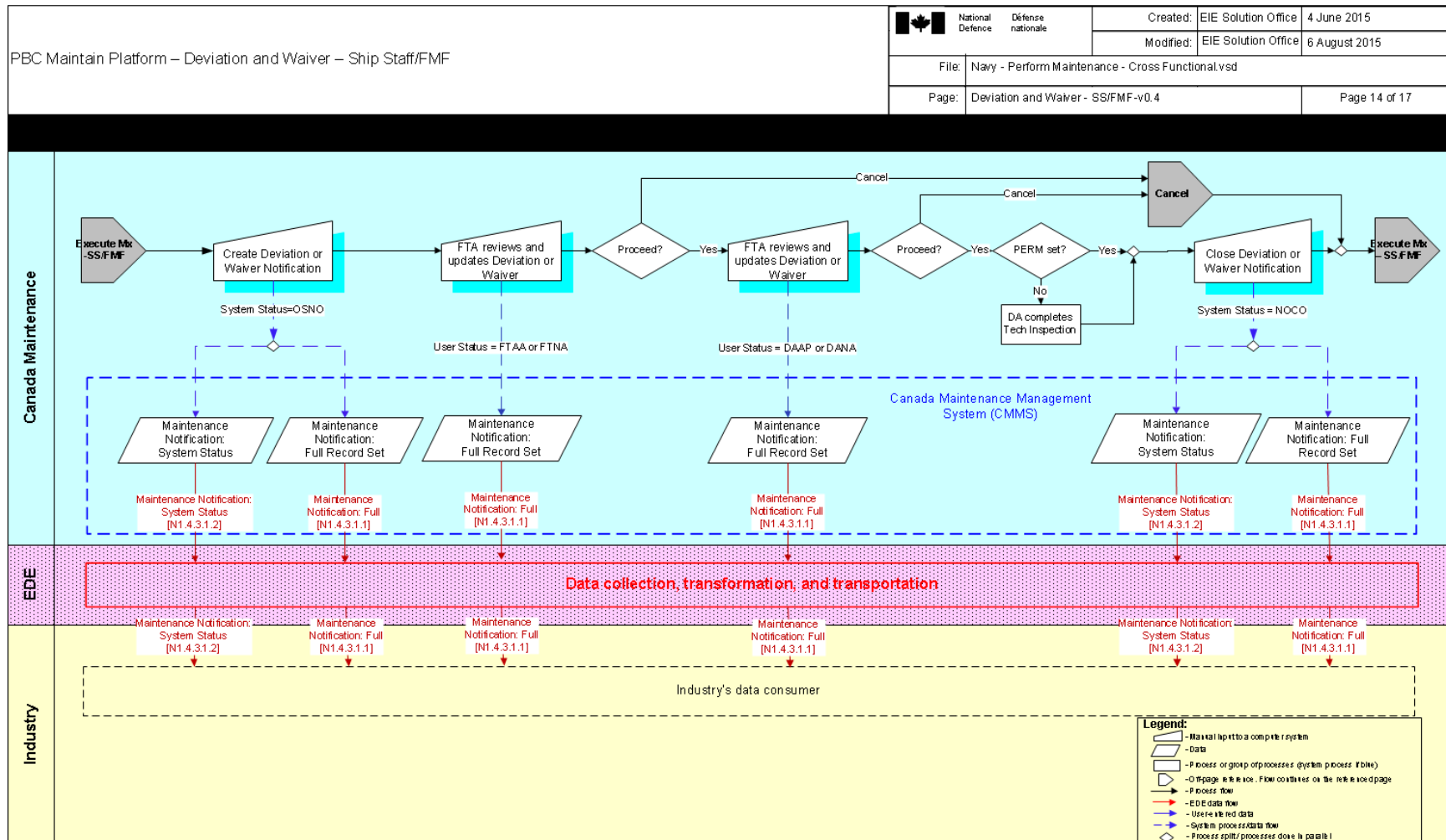
## 5.11 Backshop Maintenance



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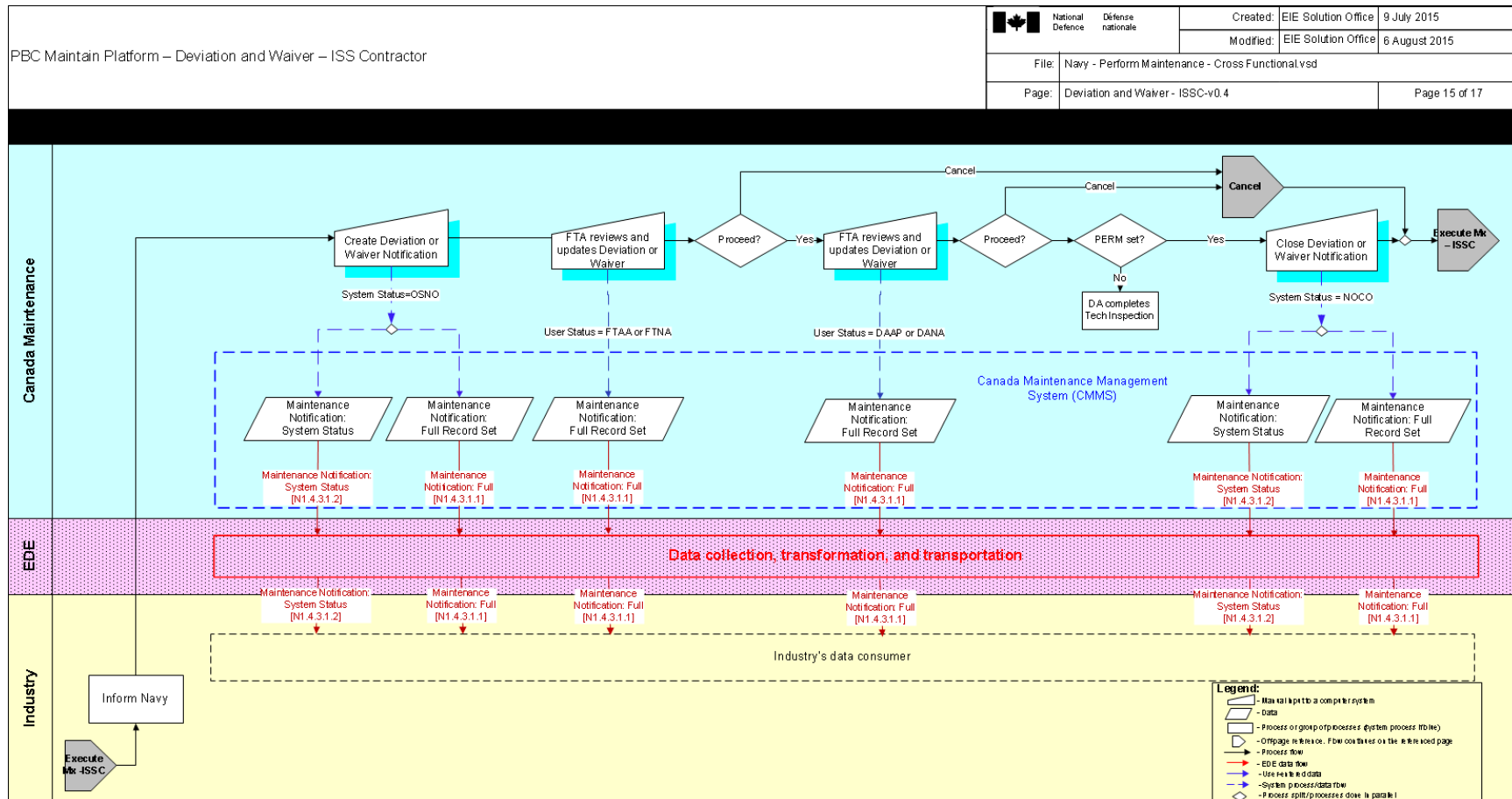


## 5.12 Deviation and Waiver - Ship Staff/FMF



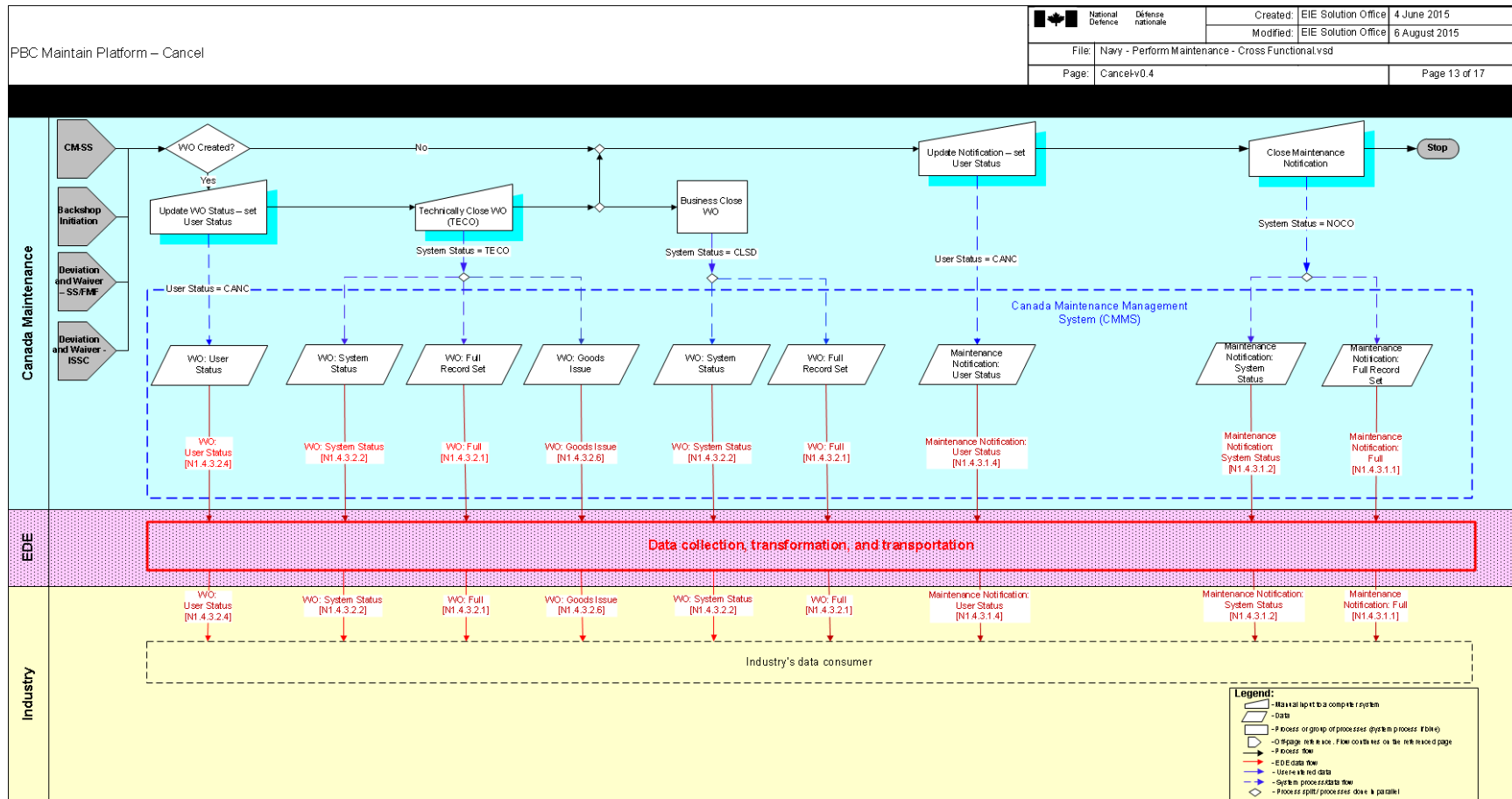
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### 5.13 Deviation and Waiver - ISS Contractor



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## 5.14 Cancel



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## 6 TOUCH POINT REFERENCE TABLE

Reference numbers below are used for touch points in the Functional Decomposition, Business Process Catalogue and Business Use Case documents.

Reference #	ISS Contractor / Canada Touch-point
<b>N1.4.3.1</b>	<b>Maintenance Notification</b>
N1.4.3.1.1	Maintenance Notification: Full
N1.4.3.1.2	Maintenance Notification: System Status
N1.4.3.1.4	Maintenance Notification: User Status
N1.4.3.1.6	Maintenance Notification: Full/ISSC
<b>N1.4.3.2</b>	<b>WO</b>
N1.4.3.2.1	WO: Full
N1.4.3.2.2	WO: System Status
N1.4.3.2.4	WO: User Status
N1.4.3.2.6	WO: Goods Issue
N1.4.3.2.8	WO: Full/ISSC
<b>N1.4.3.4</b>	<b>EMR/MER</b>
N1.4.3.4.1	EMR
N1.4.3.4.2	EMR Measurement Doc
N1.4.3.4.5	EMR/ISSC
N1.4.3.4.6	EMR Measurement Doc/ISSC
N1.4.3.4.7	EMR Measuring Point/ISSC
<b>N1.4.3.5</b>	<b>FLOC</b>
N1.4.3.5.1	FLOC Measurement Doc
N1.4.3.5.2	FLOC Measurement Doc/ISSC
<b>N1.4.3.6</b>	<b>Back-shop</b>
N1.4.3.6.1	Service Request
<b>N1.4.3.7</b>	<b>Unformatted Data</b>
<b>N1.4.3.8</b>	<b>Maintenance Plan</b>
N1.4.3.8.1	Maintenance Plan/ISSC

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## 7 DOCUMENT HISTORY

Revision Number	Description	Date
1.0	Release for Navy RFP	14 September 2015

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