Maintenance Strategy Adjustment (MSEMSA)
Functional Overview
Ellipse EAM® 9.0
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## Definitions, Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Definition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSA</td>
<td>Maintenance Strategy Adjustment</td>
</tr>
<tr>
<td>MST</td>
<td>Maintenance Schedule Task</td>
</tr>
<tr>
<td>EGI</td>
<td>Equipment Group Identifier</td>
</tr>
<tr>
<td>Maintenance Strategy</td>
<td>Maintenance strategies are defined outside of Ellipse EAM. Ellipse supports these strategies through the configuration of Equipment Classes, Equipment Group Identifiers (EGI), Standard Jobs and Maintenance Scheduled Tasks (MSTs).</td>
</tr>
</tbody>
</table>
Introduction

Purpose

The purpose of this functional overview is to provide a summary of the new Maintenance Strategy Adjustment application (MSEMSA) and the enhanced functionality that is introduced in Ellipse EAM 9.

Maintenance strategies are defined by organisations to support specific asset management plans. These strategies are defined outside of Ellipse EAM detailing the activities to be undertaken on assets to deliver the organisation’s objectives. Ellipse EAM supports these strategies through the configuration of Equipment Classes, Equipment Group Identifiers (EGI), Standard Jobs and Maintenance Scheduled Tasks (MSTs) etc. MSEMSA was developed to support these strategies by defining the MST strategy that is applied and allow for the creating and adjusting of these MSTs.

Strategy adjustments made using MSEMSA are kept on file providing a historical record available for review. Additionally a new Maintenance Strategy Adjustment report (MSBMSA) can be run to identify inconsistencies in the implemented strategy by comparing the template EGI MSTs and the equipment MSTs. These inconsistencies are reviewed and actioned through MSEMSA to adjust the implemented maintenance strategy, if required.

Prior to Ellipse EAM 9, asset managers had no way of recording and managing the changes to MSTs within the one application. MSEMSA provides the capability to review the changes made, apply and assess new changes, and action those changes to ensure the maintenance strategy remains current and effective. These changes currently can only be created manually, or from the MSBMSA batch report. Maintenance strategy adjustments can be created as a template defined against an EGI, or against specific equipment.

Business Benefits

The customer business benefits are:

- Visibility of the MST strategies are applied to EGIs and Equipment, in support of the appropriate asset management plan.
- Changes to the maintenance strategy are recorded, providing a historical record.
- Purpose-built application to maintain MSTs supporting the maintenance strategy, saving time and effort.
- Visibility of changes to EGI and equipment MSTs, to assist in keeping the maintenance strategy current.
- Ability to make bulk changes, improving the efficiency of maintaining the maintenance strategy.
- Ability to identify inconsistencies in the maintenance strategy.

Business Rules

Linear assets are not currently included in MSEMSA. Adjustments to a maintenance strategy only can only be applied to the entire asset.
Functional Enhancements

MSEMSA – Maintenance Strategy Adjustment application

The MSEMSA – Maintenance Strategy Adjustment application was developed to support an organisation’s asset management plans. MSEMSA provides the capability to define MST strategies that are applied and allow for the creation and adjustment of the MSTs that support the strategy. MSEMSA allows the recording of the Strategy Change type to provide a historical record of the adjustments made to the maintenance strategy. These changes can be created manually by you, or by the Maintenance Strategy Adjustment batch program (MSBMSA), assisting asset managers to create and maintain MSTs supporting asset strategies. Examples of strategy adjustments include: changing MST frequencies, changing standard job on the MST, creating new MSTs, or deactivating MSTs. Maintenance strategy adjustments can exist as either templates defined against an EGI, or as an equipment specific maintenance strategy adjustment.

MSBMSA – Maintenance Strategy Adjustment batch program

A batch application MSBMSA – Maintenance Strategy Adjustment was developed to be run in conjunction with MSEMSA, to identify inconsistencies in the existing MST maintenance strategies. These inconsistencies can be reviewed and actioned in MSEMSA to correct the maintenance strategy, if required.

Maintenance Scheduled Tasks

The MSEMST - Maintenance Scheduling Task application and the nature of EGI MSTs are enhanced to support the introduction of MSEMSA.

The functionality of EGI MSTs is enhanced by allowing the EGI MST to define the strategy for the EGI and, through the use of MSEMSA, apply the strategy across all equipment using the EGI; where previously it was only used as a manual template to create new equipment MSTs.

Two fields are added to equipment MSTs to define an expiry date and the maintenance strategy adjustment rule for the MST.

The expiry date provides details to define when the MST finishes. This allows asset managers and planners to determine the date that the MSTs does not apply from. The intent of the Expiry Date is to exclude intentional changes to the maintenance strategy from the MSBMSA report results. If used, the No Action status remains current until the Expiry Date expires.

The maintenance strategy adjustment rule defines the behaviour for the equipment MST and has the following settings:

- **Independent MST**, which means the MST is completely independent of a strategy applied by a template EGI MST, and is not effected by any strategy adjustments. This is the default setting for all equipment MSTs. Forecasting of these MSTs uses all the information on the equipment MST.

- **Apply Strategy for EGI**, means the corresponding EGI MST defines the general maintenance strategy to use for this equipment and the equipment MST inherits the definition, and any changes made to its corresponding EGI MST. Forecasting of these MSTs uses the indicator and frequency values from the EGI MST, with the last performed/scheduled details from the equipment MST.
- **Override Strategy for EGI**, means the settings on the equipment MST override any settings from the corresponding EGI MST Strategy. This would generally indicate the asset experts have determined the generic maintenance strategy is ineffective for this equipment and a deviation is applied for a different maintenance strategy on the equipment. Forecasting of these MSTs is done using all the information on the equipment MST.

The search application for MSTs is enhanced with the Maintenance Strategy field to provide the capability to refine searches for above mentioned maintenance strategy types.
Component Differences in Ellipse EAM 9
New Components

The following new components are implemented as a result of this development item:

**MSEMSA – Maintenance Strategy Adjustment Application**

A new application, MSEMSA, was developed to create and manage adjustments to MSTs representing implementations or any organisations maintenance strategies.

**MSF7S1 and MSF7S2 – Maintenance Strategy Adjustment files**

New database tables, MSF7S1 for the header and MSF7S2 for the child records are created to manage the strategy adjustments and provide the historical view of adjustments.

**MSBMSA – Maintenance Strategy Adjustment Batch**

A new batch program, MSBMSA, is created that identifies inconsistencies or gaps in the existing maintenance strategy and suggests changes to improve the strategy.

The batch configuration and parameters are defined as follows:

<table>
<thead>
<tr>
<th>Order</th>
<th>Description</th>
<th>Offset</th>
<th>Length</th>
<th>Field Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>District</td>
<td>1</td>
<td>4</td>
<td>Alpha Numeric (AN) Repeats 1</td>
</tr>
<tr>
<td>2</td>
<td>EGI</td>
<td>5</td>
<td>12</td>
<td>Alpha Numeric (AN) Repeats 1</td>
</tr>
<tr>
<td>3</td>
<td>Equipment Location</td>
<td>17</td>
<td>5</td>
<td>Alpha Numeric (AN) Repeats 1</td>
</tr>
<tr>
<td>4</td>
<td>Equipment Status</td>
<td>22</td>
<td>2</td>
<td>Alpha Numeric (AN) Repeats 1</td>
</tr>
</tbody>
</table>
Modifications to Existing Components

The following components are modified as a result of this development item:

**MSEMST – Maintenance Schedule Task**

MSEMST is enhanced to enable EGI MSTs to behave as a template for equipment MSTs. Through the use of MSEMSA, adjustments to the EGI MST are applied across all equipment using the EGI.

MSEMST search application is enhanced with a new Maintenance Strategy field to allow the refining of searches for the type of MST strategy.

MSEMST detail application is enhanced with two new fields available for equipment MSTs. A new field Maintenance Strategy is added to the MST header to define the strategy adjustment rule that the equipment MST follows. An Expiry Date field is also added to the General Information tab to define the date when the MST is no longer excluded by MSBMSA.

The intent of the Expiry Date is to exclude intentional changes to the maintenance strategy from the MSBMSA report results. If used, the No Action status remains current until the Expiry Date expires.

**Jobs Forecasting Service**

The service for forecasting MSTs is enhanced to apply the Maintenance Strategy indicator on equipment MSTs. The forecasting application uses the scheduling indicator and frequency definitions from the equipment MST or the EGI MST depending on the Maintenance Strategy indicator, refer to the maintenance scheduled tasks section.

The applications using this service respects the new functional configuration for the strategy indicator on equipment MSTs. The applications using this service are:

- MSEWJO – Jobs application. Used to forecast and commit MSTs online.
- MSBWMC – Jobs batch committal. Used to forecast and commit MSTs in batch.
- MSEWTS – Tasks applications. Has capability to show MST forecast in search results.

**Obsolete Components**

N/A
How to Configure

Modules

<table>
<thead>
<tr>
<th>Module No</th>
<th>Module Name</th>
<th>Required</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3701</td>
<td>Maintenance Scheduling</td>
<td>Yes</td>
<td>N/A</td>
</tr>
</tbody>
</table>

System Control File
N/A

District Control File
N/A

Table Codes

<table>
<thead>
<tr>
<th>010 Table</th>
<th>Description</th>
<th>Table Type Def</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSAC</td>
<td>Maintenance Strategy Adjustment Change Type</td>
<td>M - Mincom Defined</td>
<td>Predefined codes as core data.</td>
</tr>
</tbody>
</table>

Data Conversion
N/A
## Security

### MSE02D – Update Security Application

<table>
<thead>
<tr>
<th>Application</th>
<th>Access Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSEMSA</td>
<td>Updater: Full Access, Reviewer: Full Access</td>
</tr>
</tbody>
</table>

### MSE02C – Update Security Classes – Methods

<table>
<thead>
<tr>
<th>Class Name</th>
<th>Class Method</th>
<th>Access Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAINTENANCESTRATEGY</td>
<td>Create</td>
<td>Updater: Full Access, Reviewer: Review Access</td>
</tr>
<tr>
<td></td>
<td>Delete</td>
<td>Updater: Full Access, Reviewer: Review Access</td>
</tr>
<tr>
<td></td>
<td>Read</td>
<td>Updater: Full Access, Reviewer: Review Access</td>
</tr>
<tr>
<td></td>
<td>Search</td>
<td>Updater: Full Access, Reviewer: Review Access</td>
</tr>
<tr>
<td></td>
<td>Update</td>
<td>Updater: Full Access, Reviewer: Review Access</td>
</tr>
<tr>
<td>MAINTENANCESTRATEGYMST</td>
<td>Apply Adjustment</td>
<td>Updater: Full Access, Reviewer: Review Access</td>
</tr>
<tr>
<td></td>
<td>Create</td>
<td>Updater: Full Access, Reviewer: Review Access</td>
</tr>
<tr>
<td></td>
<td>Delete</td>
<td>Updater: Full Access, Reviewer: Review Access</td>
</tr>
<tr>
<td></td>
<td>No Action</td>
<td>Updater: Full Access, Reviewer: Review Access</td>
</tr>
<tr>
<td></td>
<td>Read</td>
<td>Updater: Full Access, Reviewer: Review Access</td>
</tr>
<tr>
<td></td>
<td>Search</td>
<td>Updater: Full Access, Reviewer: Review Access</td>
</tr>
<tr>
<td></td>
<td>Update</td>
<td>Updater: Full Access, Reviewer: Review Access</td>
</tr>
</tbody>
</table>

### MSE02C – Update Security Classes – Attributes

<table>
<thead>
<tr>
<th>Class Name</th>
<th>Class Attribute</th>
<th>Access Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAINTENANCESTRATEGY</td>
<td>COMPCODE</td>
<td>Updater: Read Write Access, Reviewer: Read Only Access</td>
</tr>
<tr>
<td></td>
<td>COMPMODCODE</td>
<td>Updater: Read Write Access, Reviewer: Read Only Access</td>
</tr>
<tr>
<td></td>
<td>CREATIONDATE</td>
<td>Updater: Read Write Access, Reviewer: Read Only Access</td>
</tr>
<tr>
<td></td>
<td>CREATIONUSER</td>
<td>Updater: Read Write Access, Reviewer: Read Only Access</td>
</tr>
<tr>
<td></td>
<td>DESCRIPTION</td>
<td>Updater: Read Write Access, Reviewer: Read Only Access</td>
</tr>
<tr>
<td></td>
<td>EQUIPGRPID</td>
<td>Updater: Read Write Access, Reviewer: Read Only Access</td>
</tr>
<tr>
<td></td>
<td>EQUIPMENT</td>
<td>Updater: Read Write Access, Reviewer: Read Only Access</td>
</tr>
<tr>
<td>Class Name</td>
<td>Class Attribute</td>
<td>Access Level</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Class Attribute</td>
<td>Updater</td>
<td>Reviewer</td>
</tr>
<tr>
<td>EQUIPREF</td>
<td>Read Write Access</td>
<td>Read Only Access</td>
</tr>
<tr>
<td>LASTMODDATE</td>
<td>Read Write Access</td>
<td>Read Only Access</td>
</tr>
<tr>
<td>LASTMODUSER</td>
<td>Read Write Access</td>
<td>Read Only Access</td>
</tr>
<tr>
<td>SOURCE</td>
<td>Read Write Access</td>
<td>Read Only Access</td>
</tr>
<tr>
<td>STATUS</td>
<td>Read Write Access</td>
<td>Read Only Access</td>
</tr>
<tr>
<td>STRATEGYCHANGE</td>
<td>Read Write Access</td>
<td>Read Only Access</td>
</tr>
<tr>
<td>STRATEGYLEVEL</td>
<td>Read Write Access</td>
<td>Read Only Access</td>
</tr>
<tr>
<td>STRATEGYTYPE</td>
<td>Read Write Access</td>
<td>Read Only Access</td>
</tr>
<tr>
<td>UUID</td>
<td>Read Write Access</td>
<td>Read Only Access</td>
</tr>
<tr>
<td>MAINTENANCESTRATEGYMST</td>
<td>ACTIONEDBY</td>
<td>Read Write Access</td>
</tr>
<tr>
<td></td>
<td>ACTIONEDDATE</td>
<td>Read Only Access</td>
</tr>
<tr>
<td></td>
<td>ACTIONEDTIME</td>
<td>Read Only Access</td>
</tr>
<tr>
<td></td>
<td>ACTIONREASON</td>
<td>Read Only Access</td>
</tr>
<tr>
<td></td>
<td>ADJUSTTYPE</td>
<td>Read Only Access</td>
</tr>
<tr>
<td></td>
<td>COMP CODE</td>
<td>Read Write Access</td>
</tr>
<tr>
<td></td>
<td>COMPMODCODE</td>
<td>Read Only Access</td>
</tr>
<tr>
<td></td>
<td>CREATIONDATE</td>
<td>Read Write Access</td>
</tr>
<tr>
<td></td>
<td>CREATIONUSER</td>
<td>Read Only Access</td>
</tr>
<tr>
<td></td>
<td>EQUIPGRPID</td>
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<td></td>
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<td>Read Write Access</td>
</tr>
<tr>
<td></td>
<td>EQUIPREF</td>
<td>Read Write Access</td>
</tr>
<tr>
<td></td>
<td>EXISTINGSCHEDFREQ1</td>
<td>Read Write Access</td>
</tr>
<tr>
<td></td>
<td>EXISTINGSCHEDFREQ2</td>
<td>Read Write Access</td>
</tr>
<tr>
<td></td>
<td>EXISTINGSCHEDIND700</td>
<td>Read Write Access</td>
</tr>
<tr>
<td></td>
<td>EXISTINGSTATTYPE1</td>
<td>Read Write Access</td>
</tr>
<tr>
<td></td>
<td>EXISTINGSTATTYPE2</td>
<td>Read Write Access</td>
</tr>
<tr>
<td></td>
<td>EXISTINGSTDJOBNO</td>
<td>Read Write Access</td>
</tr>
</tbody>
</table>
### Core Menu Changes

Other Configuration

N/A
Functional Overview

MSEMSA assists asset managers to manage and maintain MSTs that support existing maintenance strategies by providing a record of adjustments that can be reviewed, assessed and applied where required. Additionally, the asset manager can place a hold on adjustments until such time they are ready to be applied. MSEMSA allows you to search for, create and apply maintenance strategies. Strategy changes can be applied manually, generated from a new batch analysis program, and/or applied through MSEMSA.

The Maintenance Strategy Adjustment batch program MSBMSA, used in conjunction with MSEMSA, provides the capability to identify inconsistencies in existing maintenance strategies, and is an efficient way to assess if adjustments are needed to keep the maintenance strategy up to date. By running the batch application, the asset manager can make an informed decision on the strategies that are in place, then use MSEMSA to apply adjustments. When MSBMSA is run, the output of any suggested strategy change is available within MSEMSA.

The MSEMST search application is enhanced with a new Maintenance Strategy field to allow searches to be refined for maintenance strategy types.

The MSEMST detail application is enhanced with two new fields for equipment MSTs. A new Maintenance Strategy field is added to the MST header to allow asset managers to define the strategy adjustment rule that the equipment MST follows in relation to the template EGI MST.

An Expiry Date field is also added to the General Information tab of MSEMST to provide Asset Managers with a capability to set a date for when the MST expires and once again be included in the maintenance strategy analysis of MSBMSA. When this date is passed, the MST should be considered to be set to inactive. The MST continues to operate past the expiry date if the scheduling indicator is not set to inactive. This functionality assists in the management of MSTs for equipment.

The MSEMST application is enhanced to enable EGI MSTs to behave as a template for equipment MSTs. Through the use of MSEMSA, adjustments to the EGI MST can be applied across all equipment using the EGI.

The following activities can be performed with the Maintenance Strategy Adjustment functionality:

- Implement a new maintenance strategy
- Review MSTs supporting an existing maintenance strategy
- Run MSBMSA
- Search for maintenance strategy adjustments
- Apply maintenance strategy adjustments
- Create a new maintenance strategy adjustment
- Update a maintenance strategy adjustment
- Maintain a maintenance strategy for an equipment MST
- Set an expiry date against an equipment MST
Implementing a New Maintenance Strategy

MSTs are one of the primary tools used to support an organisation's maintenance strategy for an asset. When MSTs are required to be configured to support a maintenance strategy, MSEMSA simplifies the process when creating the MSTs, and at the same time builds a historical record from the start of the process.

The following example demonstrates the creation of the maintenance strategy to define the servicing requirements for a new fleet of commercial vehicles.

Creating EGI MSTs

When the maintenance strategy is defined through asset management plans (external to Ellipse EAM), you can create the required EGI MSTs to implement the strategy. They should be configured to meet the requirements of the strategy and are used as a template to create equipment MSTs. The MSTs can be created manually using MSEMST. Using MSEMSA to create the MSTs from the start of implementing the maintenance strategy ensures a complete set of historical records.

Launch MSEMSA.

The Search Maintenance Strategy Adjustment screen displays.
Select New.
The Create Maintenance Strategy Adjustment screen displays.

Enter this information in the following header fields:

- **Strategy Type** - Equipment Group Identifier
- **Equipment Group Id** - The EGI for the Toyota Camry fleet
- **Description** - A description of the maintenance strategy.
Select Submit to save the header information for the new strategy.

A message displays advising the action was successfully completed as shown below.

To add the EGIs for the servicing requirements to support the maintenance strategy, select the +Add button in the tool bar at the top of the grid. A new line is created in the grid as shown below.

**Note:** The value in the Adjustment Type field defaults to Create, and the fields across the grid represent the fields required to create an MST.
Enter all fields necessary to successfully create an MST and select Submit to save the details.

Repeat this process to add the details for the remaining MSTs.

The screen shot below shows the information for the three EGI MSTs required to support the maintenance strategy.
To create the MSTs, select all three rows by selecting the check boxes at the start of each row. This activates the Apply Adjustment button in the tool bar at the top of the grid.

Select the Apply Adjustment button.

A message displays advising the MSTs are successfully created as shown in the screen shot below.
The MSTs are now available in MSEMST as shown below.

Run MSBMSA Maintenance Strategy Adjustment Batch Report

Now that the EGI MSTs are created to define the maintenance strategy to be applied to MSTs, you can run MSBMSA against the EGI. The batch analyses the system and identifies inconsistencies found in the maintenance strategy supported by the EGI.

The following table details the Strategy Change codes that are generated either from running MSBMSA, or generated from a third party system:

<table>
<thead>
<tr>
<th>Strategy Change Code</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGAM</td>
<td>Additional MST Needed</td>
<td>Additional MST needed - indicates that not enough MSTs are defined against the strategy (the EGI MST).</td>
</tr>
<tr>
<td>EGAS</td>
<td>Adjust Strategy MSTs</td>
<td>Frequencies need to be adjusted - when the frequencies on the equipment MSTs differ to the strategy and need to be adjusted to match the strategy.</td>
</tr>
<tr>
<td>EGIS</td>
<td>Inactivate Strategy</td>
<td>Inactive strategy - no EGI for equipment.</td>
</tr>
<tr>
<td>EGNM</td>
<td>No MSTs Defined for EGI Equipment</td>
<td>No MSTs defined for EGI equipment – the strategy has an EGI MST but the EGI equipment do not.</td>
</tr>
<tr>
<td>EQMD</td>
<td>MSTs diverge from Strategy</td>
<td>MST diverge from strategy – for a given MST the EGI has a different frequency to the equipment.</td>
</tr>
<tr>
<td>EQNM</td>
<td>No MSTs Defined for Equipment</td>
<td>No MSTs defined for the equipment – the strategy has MSTs but equipment do not.</td>
</tr>
<tr>
<td>Strategy Change Code</td>
<td>Description</td>
<td>Details</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>EQSM</td>
<td>Strategy MSTs not Applied</td>
<td>Strategy MSTs not applied – for example, the strategy has tasks 0001 and 0002 but the equipment only has task 0004.</td>
</tr>
</tbody>
</table>

When MSBMSA is run, it performs the following strategy analysis to determine if any issues exist:

- Missing Strategy Analysis – EQSM – Strategy MSTs not applied
- Partially Missing Strategy Analysis – EQMD – MSTs diverge from Strategy
- Inactive Strategy Analysis – EGIS – Inactive Strategy

The batch application has the following parameters:

- District
- EGI
- Equipment Location
- Equipment Status

The following screen shot details the parameters required to analyse the maintenance strategy for the above scenario. In this example, only District Code and EGI were entered. The Equipment Location and/or Equipment Status parameters can also be used to refine the results, if required.

When the batch run is complete, the Maintenance Strategy Adjustment Report is generated. As detailed in the example report output below, the batch analysis found two issues with the maintenance strategy for the EGI:

- Missing Strategy Analysis, identified the strategy was not applied for the equipment linked to the EGI. The strategy change code EQSM (strategy MSTs not applied) was assigned to this issue.
- The Partially Missing Strategy Analysis also identified that a strategy was not applied for the equipment linked to the EGI, and the strategy change code EQMD (MSTs diverge from strategy) was assigned to this issue.

The report results provide details for these issues and the suggested adjustments to rectify the issues in the maintenance strategy. In this case, the suggested strategy adjustment is to create a new MST for each equipment, using each EGI MST as the template. These suggested strategy adjustments are created in MSEMDSA by the batch where they can be assessed.
Note: The report output has highlighted two issues from its analysis and suggested a solution for each adjustment. Either adjustment could be suitable to resolve the issue. You need to assess which adjustment is the best solution.
Review the Recommended Adjustments from the MSBMSA Report

Using the example above, the maintenance strategy adjustments from the batch output can now be searched for and reviewed within MSEMMSA.

The screen below shows the Maintenance Strategy Adjustment search screen.

Searches can be performed for a specific equipment or EGI, or for all strategy adjustments for an equipment or EGI.

The screen below shows the Maintenance Strategy Adjustment search screen with the Strategy Level options displayed. The strategy adjustments shown in the batch report apply to the EGI, and are not actioned.

The screen below shows the search parameters and the search results.
Note: The search results show the adjustments recommended by the batch and the strategy previously created for the EGI.

The strategy configured in Ellipse EAM supporting the servicing requirements so far consists of three EGI MSTs. The adjustments shown in the grid below are suggesting to create a new equipment MST for each equipment linked to the EGI, using the EGI MSTs as a template.

Opening a search result displays the details of the suggested strategy adjustment. The header information shows the EGI maintenance strategy information. The grid results show the suggested adjustments to resolve the issue found with the maintenance strategy.
Alternatively, you can search by the Strategy Change code as shown below.

Apply Maintenance Strategy Adjustments

The appropriate adjustments need to be applied to resolve the issue with the maintenance strategy. In this example, three new MSTs are created against the equipment linked to the EGI, by applying the adjustment through the grid actions in MSEMMSA.

To apply a strategy adjustment, search for the adjustment strategy to display the details of the best suited adjustment to resolve the issue (either the EQSM or the EQMD adjustment). As shown below, the grid results display the MSTs for the relevant equipment and the fields required to create a MST.

When the MSBMSA batch application creates the strategy adjustment from the EGI MST templates, only the information from the EGI MSTs are copied across, such as, the Standard Job and Frequency. To support the definition of the strategy and the appropriate allocation in line with the organisation’s maintenance strategies, additional fields need to be completed to
successfully create the equipment MSTs, such as, Work Group and Last Scheduled/Performed Dates.

Scroll across the grid and complete the relevant details to define the strategy.

Complete the required fields and select Submit to save the details. A system message displays advising the action has successfully completed.
To apply the strategy against each equipment, select the check boxes in the far left column as shown below. This activates the action flows in the search results toolbar.

To apply the strategy adjustment (create the equipment MSTs), select Apply Adjustment. A system message displays advising the MSTs are created, and the Action Status is set to Actioned, as shown below.
Reviewing the adjusted maintenance strategy in MSEMST shows the strategy issues identified by the MSBMSA report are resolved, that is, the MSTs that were missing from the strategy are created.

Setting Strategy Adjustments as not Required

The EQMD strategy adjustment identified in the MSBMSA report was not actioned and is flagged as No Action if required. To set the EQMD Strategy Change to No Action, search in MSEMSA using the Strategy Change code as shown below.
From the Search Results, display the details. Select the records displayed in the grid and select the No Action button. The No Action dialog box displays. Enter an Expiry Date and Action Reason.

**Note:** No MST is created when selecting No Action and the entry of the expiry date is optional.

Select OK to save. A system message displays advising the action is successfully completed and the Action Status is updated. The No Action status remains current up until the expiry date has passed.

Using the expiry date is optional, the intent is to exclude the adjustment from the MSBMSA report results until the adjustment should be considered again. For example, a vehicle in the fleet may be doing extra work or different work over the next three months, and the frequency of the relevant MST was adjusted. The batch flags this change as deviating from the strategy, using an expiry date three months in the future excludes the MST from the batch analysis for the next three months.
Adjusting an Existing Maintenance Strategy

New adjustments may need to be added to the maintenance strategy and can be created manually in MSEMSA. For example, the strategy may require a new MST to rebuild the fleet vehicles to prolong their life. It is advisable to review existing maintenance strategies before making any adjustments.

The process is similar to creating a new strategy as detailed above. First, review our strategy by searching in MSEMSA.

The strategy for the Camry fleet has the three EGI MSTs to support the servicing requirements as shown in the detail screen below.

To maintain visibility of each stage of the strategy, a new maintenance strategy adjustment is created against the EGI with a new EGI MST to support the rebuild requirements.

Select *New in the top tool bar to create the new Maintenance Strategy Adjustment. The Create Maintenance Strategy Adjustment screen displays.
Select the Equipment Group Identifier Strategy Type, enter the EGI in the Equipment Group Id field and description details, as shown below.
Select Submit to save the Maintenance Strategy Adjustment header details.

Select +Add to create a new row in the grid and enter the required details to allow successful creation of the MST.
Select Submit to save the details.

Select the row by selecting the check box in the left column.
Select Apply Adjustment to create the MST. A message displays the MST is successfully created and the Action Status updated to Actioned.

Run MSBMSA. The batch identifies that the strategy was not applied to the EGIs equipment and new equipment MSTs are required to support the strategy.
Search for the new strategy recommendations in MSEMSA. The search results below show the history records for the strategy, i.e. the original strategy with the Actioned status and the new adjustment to the strategy recommended from the above batch program.

Display the new recommended strategy details.

As shown below, the three equipment MSTs identified in the report results are listed.
Scroll across and enter the details required to create the MSTs.

Select Submit to save the details.
Select the check boxes at the left of each row.

Select Apply Adjustment to create the equipment MSTs.

The adjustments to the maintenance strategy are actioned as shown below in the detail screen.
The adjustments to the maintenance strategy are actioned as shown below in the search results.

Reviewing the adjusted maintenance strategy in MSEMST shows the new MSTs that were created through MSEMSA.
Using the Maintenance Strategy Adjustment Rules

The maintenance strategy adjustment rules define the behaviour for the equipment MST. There are three rules:

- Independent MST
- Apply Strategy for EGI
- Override Strategy for EGI

The Maintenance Strategy rules default to Independent MST. This means the MSTs are completely independent of any strategy applied by a template EGI MST, and are not affected by any strategy adjustments. Forecasting of these MSTs is done using the information on the equipment MST. Changing the rule to Apply Strategy for EGI allows adjustments made to EGI MSTs to flow down to the equipment MSTs.

An example to demonstrate these rules; make a change to the servicing intervals for the servicing requirements in our maintenance strategy.

In MSEMST, search for the MSTs supporting our maintenance strategy.
Change the Maintenance Strategy rule to Apply Strategy for EGI for the servicing MSTs.

In MSEMSA, select New and create new header details for the EGI.
Select **Add** to create a new row.

Change the Adjustment Type to **Update** and enter details for the minor service EGI MST, using the new frequency.
Select Submit to save the details.

Select the row and select **Apply Adjustment** to make the changes to the EGI MST.

A message displays advising the MST was successfully updated, and the Action Status is updated to Actioned.
Repeat the above process using new frequencies for EGI MSTs 0002 and 0003 to complete the changes to the strategy.

The adjustment to the strategy displays in MSEMSA as Actioned.

In MSEMST, return the equipment MSTs supporting the maintenance strategy and conduct a search. The following screen shots displays the before and then adjusted equipment MSTs with their frequency changes applied.

**Note:** That the MSTs are also re-forecasted.

**Before Adjustment:**

![Before Adjustment](image1)

![Before Adjustment](image2)
After Adjustment

Update the Maintenance Strategy

As part of ongoing maintenance strategy improvements, maintenance strategies may need updating to meet current requirements. For example, servicing intervals may need adjusting as equipment ages or operates under harsh conditions, or changes to standard jobs on MSTs may be required.

In the maintenance strategy example, the rebuild MSTs do not need to be done until later in the vehicle’s lifecycle, therefore the scheduling frequency needs to be changed. To update the existing maintenance strategy, a new maintenance strategy for the equipment needs to be created to record the change to the maintenance strategy.

Launch MSEMSA

Select New.

The MSEMSA Create Maintenance Strategy Adjustment screen displays.
As the strategy applies to an equipment, the new strategy is created against the equipment. In the header section complete the following fields:

- Strategy Type as Equipment Reference
- Equipment Reference
- Description

Select **Submit** to save the new strategy.

Select the +Add button in the search results toolbar to add a new row. Change the Adjustment Type to Update and enter the existing maintenance strategy details with the updated frequency to reflect the increase to the interval for the existing MST.
When the required fields are complete, select Submit to save the strategy. A system message displays advising the action was successfully completed.

To apply the strategy against the equipment, select the check box in the far left column, as shown below. This activates the action flows in the search results toolbar.

To apply the strategy adjustment (update the equipment MST), select Apply Adjustment. A system message displays advising the MST was updated and the Action Status was set to Actioned as shown below.
Repeat the above process for the remainder of the equipment MSTs to complete the strategy adjustment. The changes display in MSEMST for the three equipment MSTs.