



White Paper

Enterprise Asset Management

for

Microsoft Dynamics® 365 for Finance and Operations, Enterprise Edition

Software Release: EAM 1707.0 and later versions

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1 Introduction

Enterprise Asset Management (EAM) is an advanced module for managing assets and maintenance jobs in Microsoft Dynamics® 365 for Operations. Enterprise Asset Management is developed by Dynaway A/S and integrates seamlessly with several modules in Microsoft Dynamics® 365 for Operations.

In Figure 1 you will see a graphic illustration of the interfaces to other modules in Dynamics 365 for Finance and Operations.

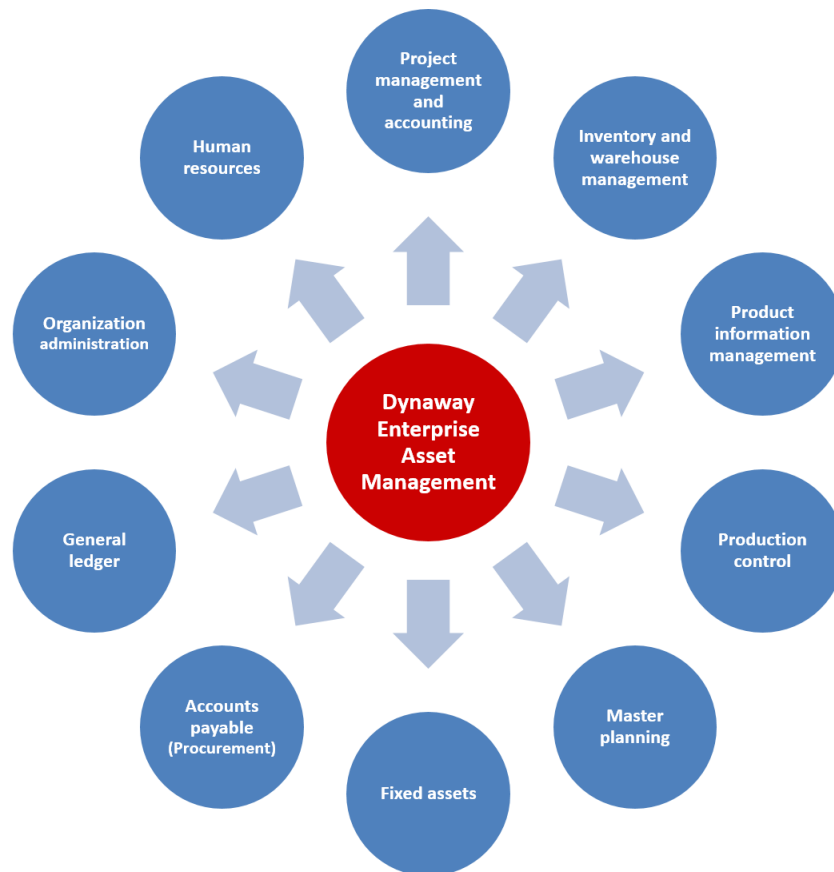


Figure 1

Enterprise Asset Management allows you to efficiently manage and carry out all tasks related to managing and servicing many types of equipment in your company, for example, machines, production equipment, and vehicles. Enterprise Asset Management can also be set up for Asset Service Management (ASM) with the main focus of servicing customer equipment.

Figure 2 shows an overview of the key functionality covered by Dynaway Enterprise Asset Management.

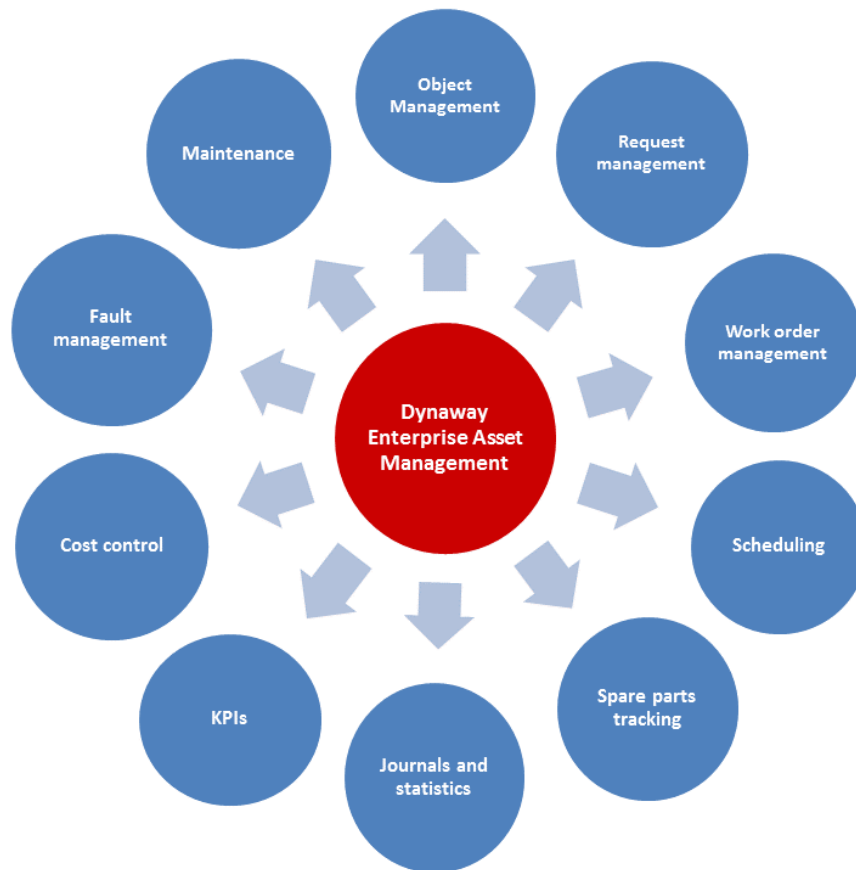


Figure 2

2 Enterprise Asset Management

Dynaway Enterprise Asset Management (EAM) comprises many features that enable your company to keep your machinery running continuously without unnecessary interruptions or breakdowns. In the following sections, we will introduce you to some of the core functionality in our asset management solution.

2.1 Objects and Work Orders

The central parts of Dynaway Enterprise Asset Management (EAM) are objects and work orders. An object is a machine or a piece of equipment that requires continuous maintenance and service. Objects can be created in a hierarchical structure. Maintenance jobs can be planned at all levels in the object structure. Various product information data can be set up on an object or a work order.

Here is a list of some of the data that can be created on an object or a work order:

- Jobs
- Product/Model relations
- Location
- Spare parts
- Check lists
- Measuring points
- Condition assessment
- Fault symptom, cause, and remedy
- Maintenance sequences (based on time or counters)
- Production stop
- Technical specifications
- Consumption (items, hours, costs)
- Notes

Objects and related sub objects can be created in a hierarchical structure to display relations and dependencies of objects. Maintenance jobs can be related to all levels in the hierarchical structure.

Job Types, Variants, and Trades

An object has an object type attached to it. The object type defines which job types, meaning which maintenance or service jobs, can be carried out on an object. When you create a work order, selecting a job type is mandatory. Job variants can be set up on a job type. Job variants define variations of a job type, for example, size (small, medium, large), periods (weekly, bi-weekly, 1 month, 3 months), and configurations (low standard, flexible, high performance). Job trades are information regarding professional trade, for example, mechanical, electrical, and hydraulic.

Copy and Move Objects

In the **All Objects** list view, objects are shown in hierarchical order in the **Object** column. Parent objects are displayed in the **Parent** column. The object hierarchy for a selected object is also shown in a tree view in the **Object tree** FactBox. It is possible to copy an entire object hierarchy. This is useful if your company has several object hierarchies with similar object structures, and you want to quickly create a number of similar object hierarchies.

You can also move objects and related sub objects in an object hierarchy. This is useful if, for example, your company wants to handle

- moving an object permanently because it has a new location
- moving an object temporarily from an object hierarchy for refurbishment and then re-inserting the refurbished object in the object hierarchy

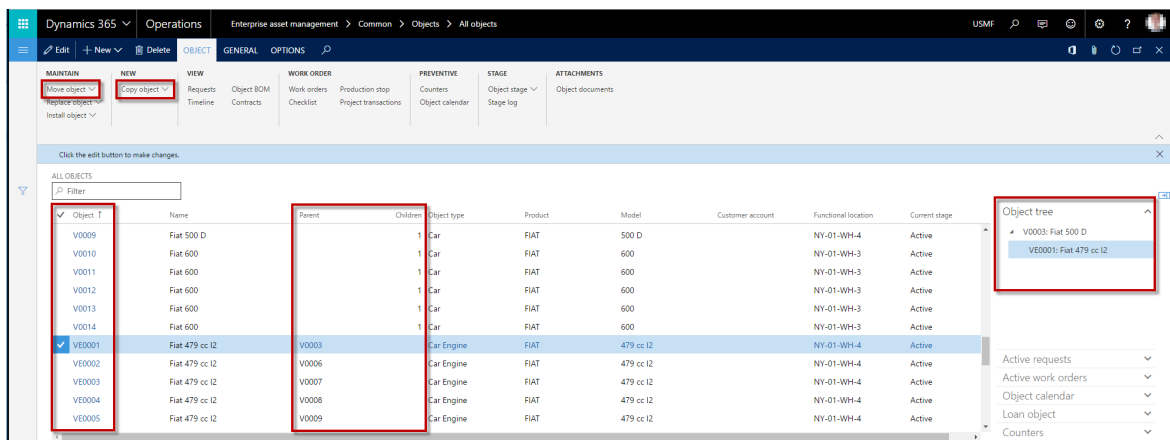


Figure 3

In order to manage maintenance jobs carried out on objects, you create work orders. A work order consists of one or more work order lines. Each work order line contains an object that requires maintenance, and a related job type, for example, 10,000 km, 50,000 km, 1-year overhaul, or safety inspection. In the figure below you will see an overview of the work flow connected to a work order.

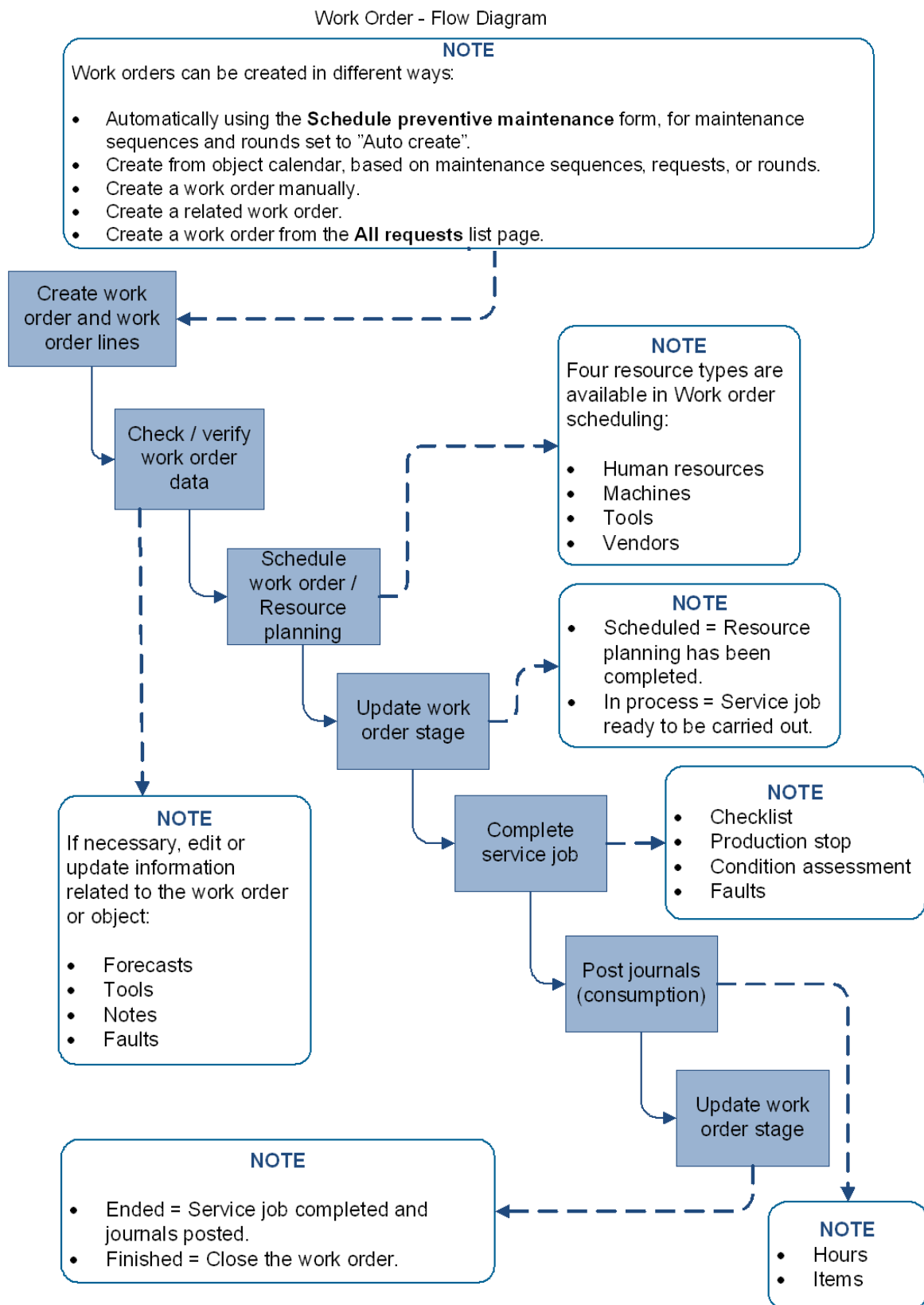
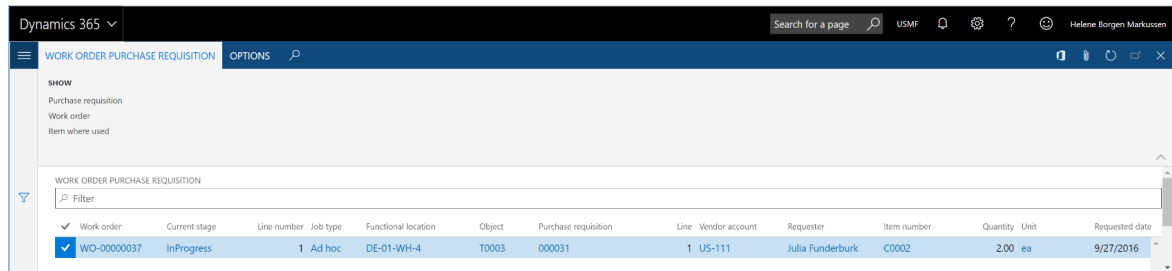


Figure 4

Procurement

In Enterprise Asset Management, you can get an overview of purchase requisitions and purchase orders related to work orders. It is also possible to create a purchase order or a purchase requisition from a work order.



Work order	Current stage	Line number	Job type	Functional location	Object	Purchase requisition	Line	Vendor account	Requester	Item number	Quantity	Unit	Requested date
WO-00000037	InProgress	1	Ad hoc	DE-01-WH-4	T0003	000031	1	US-111	Julia Funderburk	C0002	2.00	ea	9/27/2016

Figure 5

2.2 Functional Locations

Functional locations are used to manage objects on locations, including track object costs on functional locations. Functional locations are structured hierarchically, and locations can have sub locations. The functional location structure is static; locations cannot change place. Objects can be installed on functional locations and, if required, the objects can later be installed on another functional location.

Functional locations are elements of a technical structure, for example, functional units within a system. Here are examples of how you can use functional locations:

- Functional (user-oriented, manage objects with similar behavior)
- Process-related (work flow-oriented)
- Spatial (geographical locations, sites)

Object costs always follow the location of the object meaning that if you install an object on a new functional location, the object automatically uses the financial dimensions related to the functional location. Therefore, object costs are always related to the functional location to which the object was related at any given time. This automatic handling of financial dimensions ensures complete traceability of costs when your company performs project controlling and reporting on functional locations.

How you build your functional location hierarchy is based on your company's requirements for maintaining internal equipment or servicing customer equipment. The two figures below show examples of functional locations - based on geographical locations and customers.

Functional location based on sites

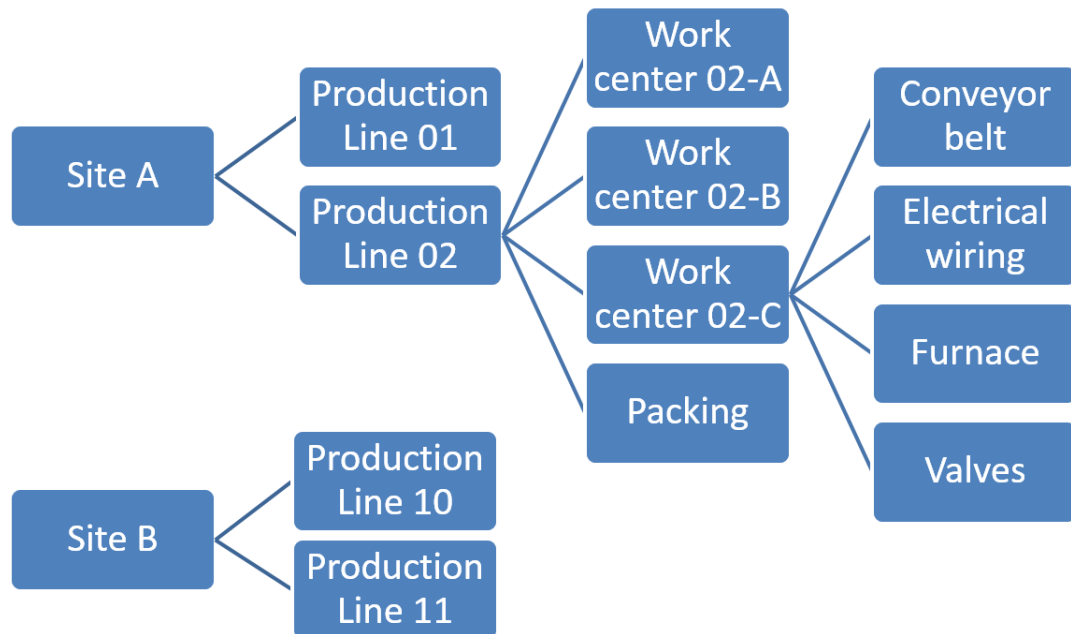


Figure 6

Functional location based on customers

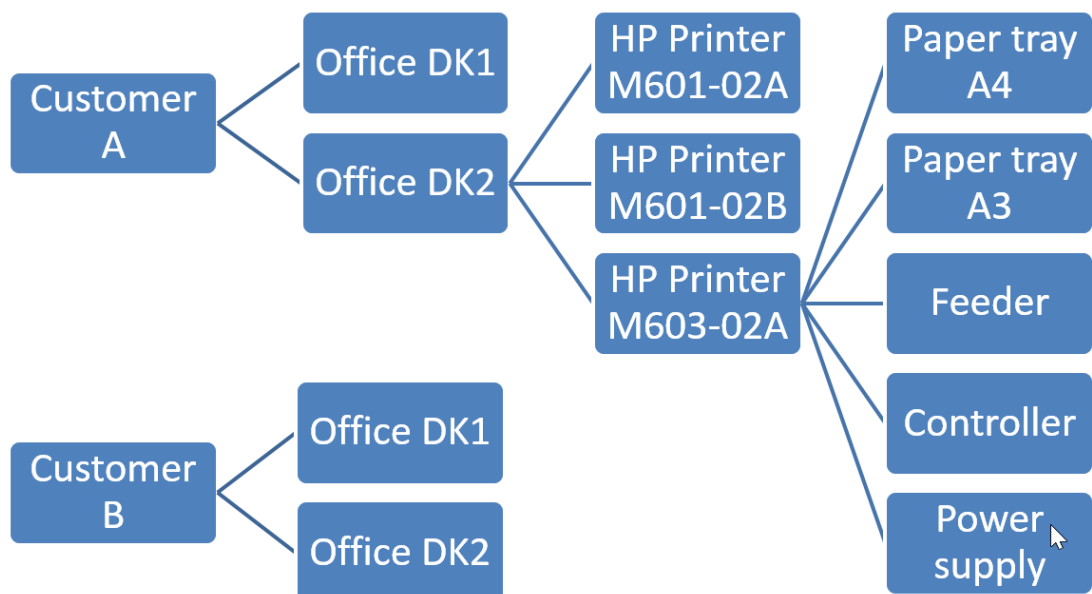


Figure 7

Functional locations provide traceability of objects in relation to requests, work orders, fault registrations, condition assessments, production stop registrations, and object counter registrations.

Click the edit button to make changes.

Functional location	Name	Functional location type	Parent	Children	Objects	Stage	Active requests	Active work orders
00	New things	Default location			20	Active	22	35
0000x	Test	FLType				New		
0001	0001	FLType				Extra		
9999	9999	FLType			1	Active		
CH	Chicago Location	City		2	1	Active		
CH-BP1	Chicago Brand Brewing Plant	Plant	CH	10	1	Active		
CH-BP1-01	Malting	Area	CH-BP1	3	1	Active		
CH-BP1-01-01	Steeping	Area	CH-BP1-01		3	Active		7
CH-BP1-01-02	Germination	Area	CH-BP1-01		1	Active		
CH-BP1-01-03	Kilning	Area	CH-BP1-01		1	Active		
CH-BP1-02	Milling	Roller mill	CH-BP1		2	Active		
CH-BP1-03	Brewing	Area	CH-BP1	3	1	Active		

Functional location tree

- CH: Chicago Location
 - CH-BP1: Chicago Brand Brewing Plant
 - CH-BP1-01: Chicago Brand Brewing Plant
 - CH-BP1-02: Chicago Brand Brewing Plant
 - CH-BP1-03: Chicago Brand Brewing Plant
 - CH-BP2: Chicago Monarch Brewing Plant

Figure 8

2.3 Spare Parts

Spare parts are managed in the **Product information management** module in Dynamics 365 for Finance and Operations. Spare part consumption is registered on work orders. Replenishment of stock, including the spare parts ordering process, is done using standard Dynamics 365 for Finance and Operations functionality.

Spare parts are set up on object types, which are related to objects. A spare part list can contain a list of approved spare parts as well as spare part alternatives to be used in case approved spare parts are not available.

Object type setup

OBJECT TYPE	Product	WARRANTY	DETAILS	Spare parts
Conveyor		Vendor warranty	Maintenance sequences	2
	Model	Customer warranty		Spare part alternative items

Spare parts

+ Add - Remove Approve Item where used

☐ Approved ☒ Active

Item number	Product name	Alternative item number	Alternative product name	Valid from	Valid to	Approved	Approved by	Approved date
4403	A. Datum 50W Car Radio			1/20/2017	1/31/2017	✓	Poul Christensen	1/20/2017 09:57:56 AM
A0001	HDMI 6' Cables			12/14/2016		✓	Poul Christensen	12/14/2016 09:03:04 AM

Figure 9

When you have created a work order, it is possible to add approved spare parts to the work order, if required.

After you have completed a maintenance job, and item consumption has been registered on a work order, you will be able to track consumption of spare parts and other items used on the object. This functionality allows you to keep a complete item consumption record on all your objects. For example, you can use the record to monitor if a specific spare part is often replaced, or keep track of which spare parts or other items are currently used on an object.

2.4 Checklists

Checklists and measuring points can be created to ensure that maintenance jobs are carried out correctly. For example, you want to ensure that safety precautions or special procedures relating to a particular machine type are observed.

Checklists are set up on job types. When you create a new work order line and select an object, the checklist related to the object is automatically transferred to the work order line. It is possible to define that a worker must attach his or her worker identification to each item in a checklist. This means that a job cannot be completed until the worker has signed off on all checklist items. If required, workers can also create additional checklists and measurements.

Line	Name	Unit	Min value	Max value
1.0	Front brake pads	mm	4.00	6.00
2.0	Rear brake pads	mm	3.00	6.00

Figure 10

2.5 Consumption

When a maintenance job has been completed on a work order, the next step is to make consumption registrations and post journals. You can make registrations on the following consumption types: Hours and items. The different consumption types are registered and posted in the **Journal** form. The journal setup is used for creating and posting separate journals for hours and items, which is handled in the **Project management and accounting** module.

2.6 Mobile Client

Workers can work with objects and work orders on the Mobile Client. Regarding objects, the following information and functionality are included:

- A list of objects related to the work orders assigned to the worker who is logged in on the Mobile Client
- Search options, using either a search field or the smart filter bar

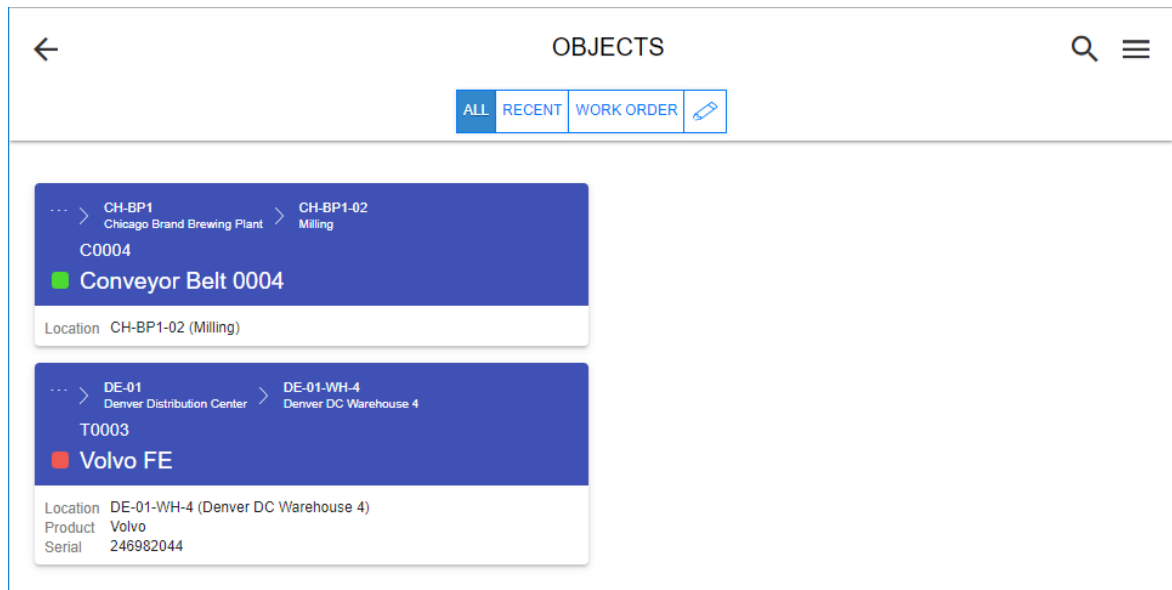


Figure 11

- Overview of object-related information
 - Fault registrations
 - Production stop registrations
 - Requests
 - Work orders
 - Counter registrations
 - Spare parts
 - Object specifications
 - Object documents
 - Bill of Materials
 - Attachments

CONVEYOR BELT 0004

CH > CH-BP1 > CH-BP1-02 > C0004

Chicago Location > Chicago Brand Brewing Plant > Milling > Conveyor Belt 0004

OBJECT FAULTS STOPS WORK ORDERS REQUESTS COUNTERS ITEMS SPECIFICATION

Type Conveyor (Conveyor Belts)
Location CH-BP1-02 (Milling)

Notes

Timeline

General object information

Google Maps route planner

Create or edit object notes.

Work order **WO-000013** assigned to object 10/02/2017

Work order WO-000013
Work order type Preventive
Description Test new rollers for belt part 035-BQ
Stage Scheduled
Number of lines 1
Start / end 10/02/2017 4:00 PM / 10/03/2017 12:30 AM

Work order **WO-000004** assigned to object 09/27/2017

Work order WO-000004
Work order type Corrective
Description Adjust belt speed
Stage Scheduled
Number of lines 1
Start / end 09/27/2017 4:00 PM / 09/27/2017 12:30 AM

Notes Inspect equipment

Service request **WR-000005** assigned to object 09/25/2017

Request WR-000005
Request type Memory note
Description Update belt part A32-17 with new belt type
Started by 000500 (Dana Birkby)
Stage New

Figure 12

Work Orders

The work calendar shows a list of work orders scheduled for the worker who is logged in on the Mobile Client.

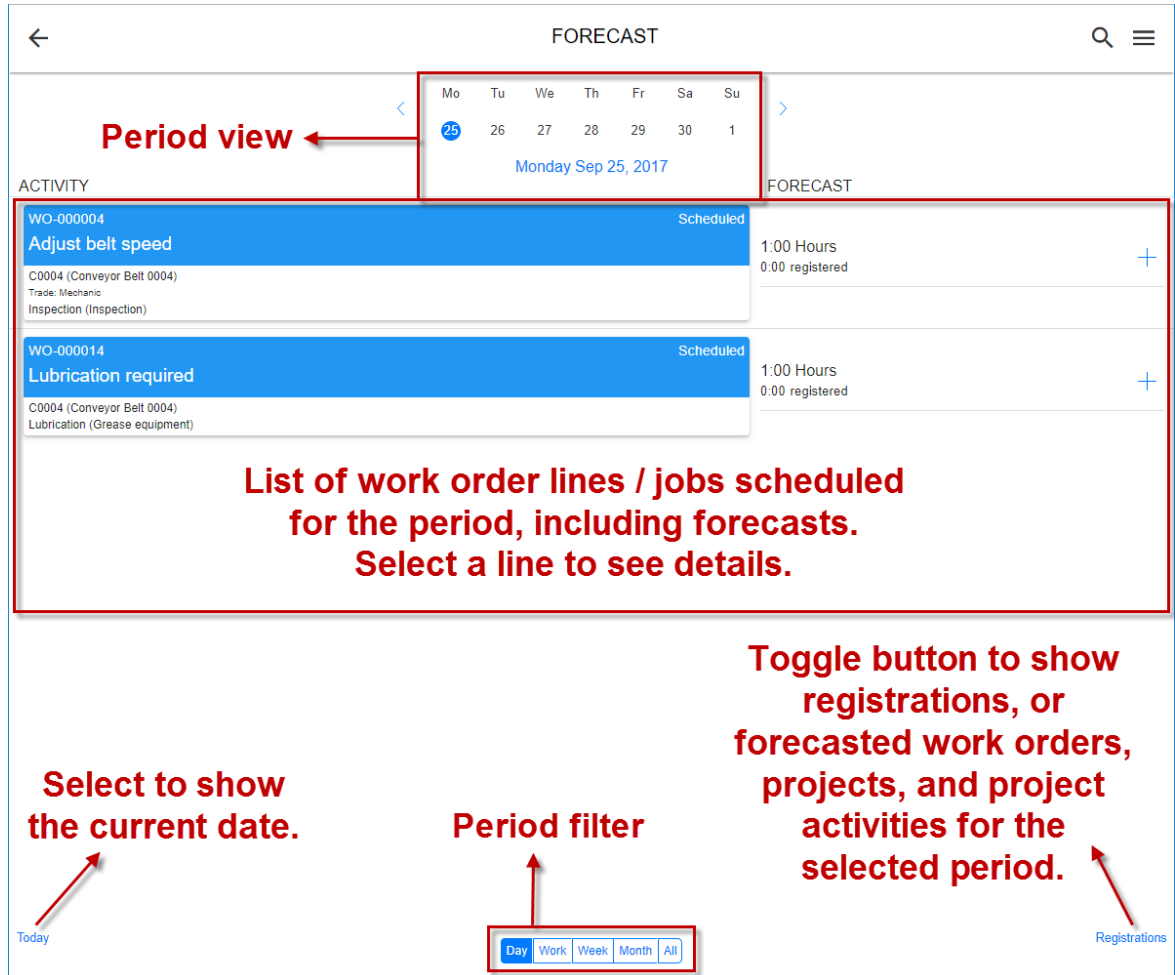


Figure 13

You can see and work with the following data on a work order and related work order lines:

- Checklists
- Fault registrations
- Production stop registrations
- Attachments
- Consumption (hours, items, expenses)
- Related purchase orders
- Work order stage
- Sign-off report

The screenshot shows a mobile application interface for a work order titled 'ADJUST BELT SPEED'. The interface includes a top navigation bar with a back arrow, the title, and a menu icon. Below the bar is the work order ID 'WO-000004'. A horizontal menu contains tabs: WORK ORDER (selected), ATTACHMENTS (with a yellow '1' badge), LINE DETAILS, CHECKS, FAULTS (with a yellow '1' badge), STOPS, CONSUME, and LINE ATTACHMENTS. On the right, the 'SCHEDULED start date' is '09/25/2017' with a yellow '20' badge. Two green buttons, 'SIGN-OFF' and 'SCHEDULED', are visible. The main content area is divided into 'Work order information' and 'Lines'. The information section lists: Type (Corrective), Description (Adjust belt speed), Priority (20 (Medium)), Criticality (3 (Low)), Actual start (09/27/2017 4:00 PM), and Actual end. The 'Lines' section shows a single line item: '1 : Inspection - Inspect equipment'. Red arrows point from text labels to specific UI elements: 'Scheduled start date' to the date, 'Work order priority' to the priority value, 'Work order information' to the information section, 'Work order lines' to the line item, 'Create sign-off report for the work order.' to the SIGN-OFF button, and 'Update work order stage.' to the SCHEDULED button.

← ADJUST BELT SPEED ☰

WO-000004

Scheduled start date 09/25/2017 20

WORK ORDER ATTACHMENTS 1 LINE DETAILS CHECKS FAULTS 1 STOPS CONSUME LINE ATTACHMENTS

Type Corrective
Description Adjust belt speed
Priority 20 (Medium)
Criticality 3 (Low)
Actual start 09/27/2017 4:00 PM
Actual end

Work order information

Lines

1 : Inspection - Inspect equipment

Work order lines

Work order priority

Create sign-off report for the work order.

Update work order stage.

SIGN-OFF SCHEDULED

Figure 14

3 Preventive and Reactive Maintenance

Preventive maintenance is a discipline involving planned maintenance jobs, for example, regular service, calibration, and inspections. You can create maintenance sequences and set them up on objects or functional locations. Also, you can read counter registrations (production hours or quantity produced) on your equipment and subsequently create counter registration records on the objects. The counter registrations are used in preventive and reactive maintenance scheduling.

Maintenance sequences can be set up on objects or functional locations. Instead of setting up maintenance sequences on objects, you can create rounds that include multiple objects on which you need to perform related types of maintenance jobs in the same work routine. Maintenance sequences are used for preventive and reactive maintenance on individual objects. Rounds are used for preventive maintenance on a group or a set of objects.

A maintenance sequence defines when a pre-planned preventive maintenance job is to be carried out on an object. Maintenance sequences can be related to objects, object types, functional locations, or functional location types. There are two types of maintenance sequences:

- Counter
- Time

Examples of preventive maintenance sequences of type "Time" are "Repeated from start date", "Repeated from last work order", and "Linked from last work order" (repeated after every completed work order).

Examples of reactive maintenance sequences of type "Counter" are "Once reached above" (validating against an upper limit) and "Once reached below" (validating against a lower limit).

The figure below provides an overview of the work flow from creating maintenance sequences to creating work orders for objects based on those sequences.

Flow Diagram: Schedule Preventive Maintenance Work Orders

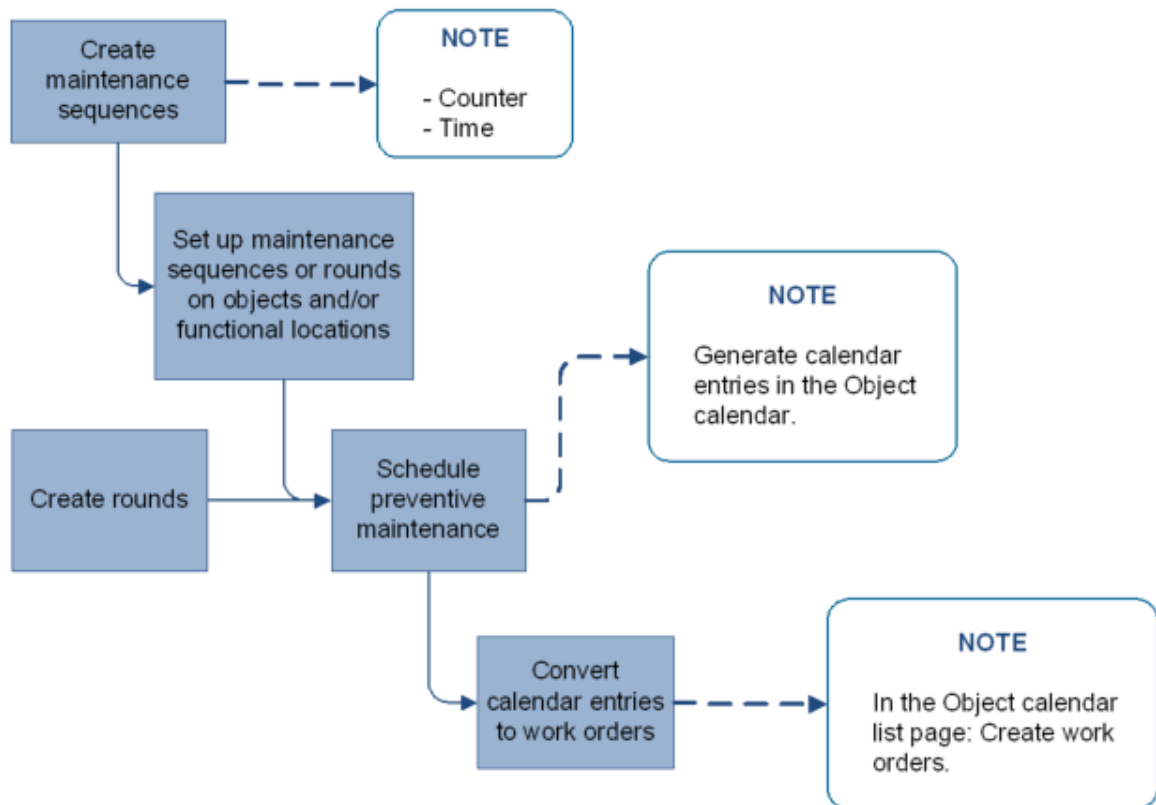


Figure 15

Requests and Notes

Workers can create requests and notes in the system, for example, if they discover the need for further maintenance or repair when they are performing a preventive maintenance job. When working with requests you can

- create a request on a customer
- create a request on a functional location
- start a production stop registration on a request
- verify the object selected on a request

You can create a request based on a customer or a functional location without having to select an object. The object selection is optional, in case you don't know the exact object ID when you create the request. The object can later be selected and verified in the **All requests** detail view. If required, you can also make a production stop registration in the **All Requests** detail view.

Dynamics 365 | **Operations** | Enterprise asset management > Common > Requests > All requests

USMF | [Icons]

REQUEST | OPTIONS

MAINTAIN | **NEW** | **VIEW** | **LOAN** | **STAGE** | **REPORTS**

Work order pool | Work order | Object fault | Send loan object | Request stage | Request details

Work orders | Return object loan | Stage log

ALL REQUESTS
R-00000065: Req made on XA-022

General | R-00000065

IDENTIFICATION
Request: R-00000065
Request type: Breakdown
Description: Req made on XA-022
Priority: 20

LOCATION
Longitude: 0.0000000000
Latitude: 0.0000000000

STARTED
Started by: Frederic Segal
Actual start: 1/26/2017 01:15:28 PM
Actual end:

DETAILS
Number of faults:
Work order pools:

STAGE
Current stage: InProgress
Active: Yes

CONTRACT/WARRANTY
Date:

Notes

Object

OBJECT
Customer account:
Functional location: 00
Object: NewObj

VERIFIED
Object verified: Yes
Verified by:

Object type
Conveyor
Product: Prodtest
Model:

JOB
Job type: Ad hoc
Variant:
Trade:

WORK ORDER
Production stop:
Work order: WO-00000075
Object loan:

Figure 16

Service Portal on the Mobile Client

The **Service portal** module on the Mobile Client allows you to quickly and easily create requests on objects, for example, when a worker detects an error, a faulty setup, or a need for inspection on a machine / work center. This module is intended for shop floor workers who operate machines or other types of equipment, which regularly require maintenance or service. The **Service portal** ensures that a worker can quickly report faults and errors in your production facility. A maintenance manager or maintenance clerk decides what needs to be done to follow up on the request.

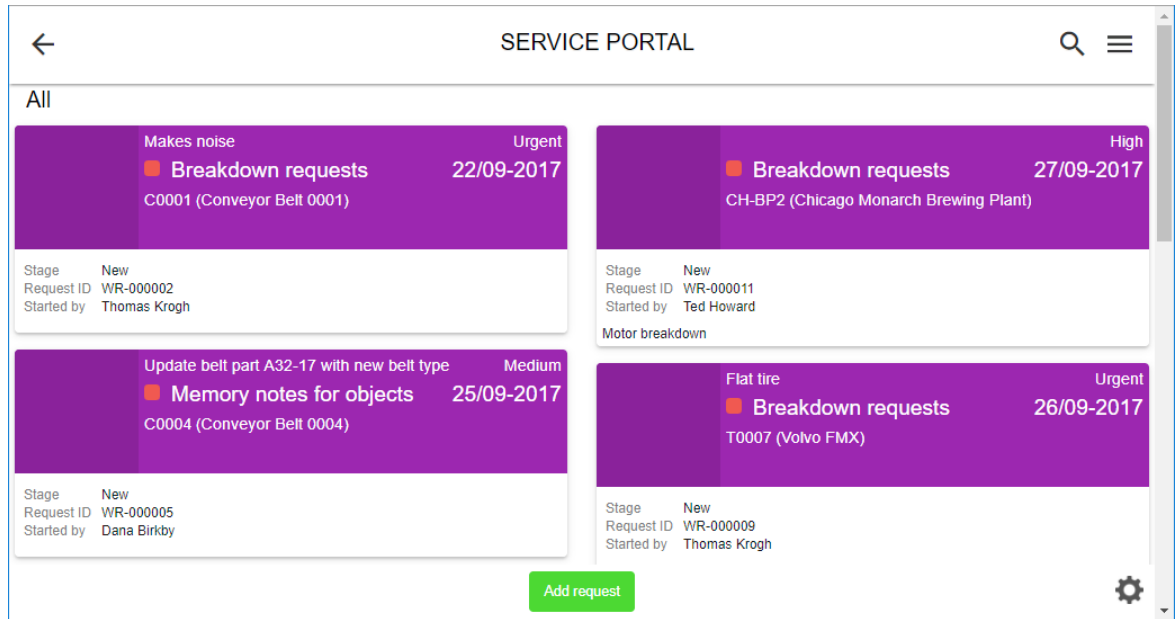


Figure 17

Note

The **Service portal** requires a separate license. In order to use the **Service portal** module, licenses for Enterprise Asset Management must have been purchased and installed in advance.

Object Calendar

The object calendar is used for scheduling all the expected preventive maintenance jobs to be carried out. The object calendar provides an overview of the following job types: Preventive maintenance jobs, rounds, and requests. When the calendar entries have been converted to work orders, you will be able to see the work order ID related to each job.

Maintenance Budget

Maintenance budgets are used to get an overview of expected costs for preventive maintenance. Budget lines are calculated based on object calendar lines with an expected start date in the budget period.

Maintenance budgets are based on the cost types used in Enterprise Asset Management: Preventive, Corrective, and Investment. Investment budget costs are included for active objects that have a replacement date in the budget period, and a related replacement value. Budget costs for corrective maintenance are included if a past corrective date is included in the budget calculation. In that case, corrective costs from an earlier period will be calculated for the same future period for which you calculate the maintenance budget.

Different tasks can be carried out when working with maintenance budgets:

Task	Description
Create maintenance budget	Create a new maintenance budget
Recalculate maintenance budget	Recalculate an existing maintenance budget. This means that you delete existing budget lines and make a new calculation.
Adjust budget lines	Instead of recalculating the entire budget, you can select some budget lines and adjust them either by adding an amount to the selected lines, or by selecting a multiply value to be used on the lines.
Update actual costs	When the dates on the budget lines have passed, and actual costs have been posted, you can update actual costs on the maintenance budget.
Add budget lines manually	Add a new budget line manually and make selections on the budget line.

The option of manually adding budget lines may be useful if, for example:

- You know that refurbishment on some objects is currently in the planning phase, but related jobs have not yet been created, and you want budget costs for those jobs to be included in the maintenance budget.
- New objects or object types have been created since you made the maintenance budget, but maintenance sequences used for preventive maintenance have not yet been set up on those objects or object types, and you want budget costs for those object types to be included in the maintenance budget.

Note

The maintenance budget calculates budget costs based on object calendar lines. If you want to calculate actual costs for the same period, make that calculation in the [Object cost control](#) form.

4 Work Order Scheduling

When a work order has been created and planned, the next step is to allocate the required resources to complete the maintenance job. Resources are used in work order scheduling to make capacity reservations. Three resource types are available:

- Human resources
- Machines
- Tools

Work order scheduling can be carried out on two levels - advanced work order scheduling or exclusive work order scheduling - depending on your requirements for resources for the maintenance job. The "Schedule exclusively" option is useful if, for example, a worker has called in sick, and you need to quickly reschedule jobs from one worker to another. The scheduling process in the **Enterprise Asset Management** module is done by including different factors in the scheduling calculation:

- Calculating scores for work orders and workers. The scores are set up in the **Enterprise asset management parameters** form.
- Checking for matching competencies, meaning skills and certificates, required to perform the job. Skills and certificates are set up on workers in the **Human resources** module in Dynamics 365 for Finance and Operations.

Work Order Calendar

The work order calendar is used to get an overview of the work orders allocated to a resource. Work orders using resource types "Human resources", "Tools", and "Machines" are displayed in the list. The list can be used to get an overview of work orders allocated to a specific resource. You can also use it to find a work order allocated to a worker who, for example, called in sick this morning, and then quickly allocate another worker to the job.

Scheduled start	Week	Scheduled end	Hours	Worker	Resource	Job type	Variant	Trade	Object	Functional location
12/31/2016 11:00:00 PM	53	1/31/2017 11:00:00 PM	1.00	Jesper Rasmussen	000666	Misc	Ad hoc		NewObj	00
1/15/2017 11:00:00 PM	3	1/22/2017 11:00:00 PM	1.00	Maintenance Clerk	000665	Inspections	Inspection		TestObj	00
1/15/2017 11:00:00 PM	3	1/22/2017 11:00:00 PM	1.00	Maintenance Clerk	000665	Misc	Ad hoc		NewObj	00
1/15/2017 11:00:00 PM	3	1/22/2017 11:00:00 PM	1.00	Maintenance Clerk	000665	Misc	Ad hoc		NewObj	00
1/21/2017 11:00:00 PM	3	1/28/2017 11:00:00 PM	1.00	Rune Jeppesen	000668	Misc	Ad hoc		NewObj	00
1/21/2017 11:00:00 PM	3	1/28/2017 11:00:00 PM	1.00	Rune Jeppesen	000668	Misc	Ad hoc		NewObj	00
1/23/2017 06:00:00 AM	4	1/28/2017 11:00:00 PM	1.00	Maintenance Clerk	000665	Misc	Ad hoc		NewObj	00
1/23/2017 06:00:00 AM	4	1/28/2017 11:00:00 PM	1.00	Maintenance Clerk	000665	Service	Service	2000 km	Mechanical	CustObj50
1/25/2017 06:00:00 AM	4	1/25/2017 07:00:00 AM	1.00	Maintenance Clerk	000665	Misc	Ad hoc		NewObj	00
1/30/2017 06:00:00 AM	5	2/4/2017 11:00:00 PM	1.00	Maintenance Clerk	000665	Misc	Ad hoc		CustObj21	00
1/30/2017 06:00:00 AM	5	2/4/2017 11:00:00 PM	1.00	Maintenance Clerk	000665	Misc	Ad hoc		Mechanical	CustObj21
1/30/2017 06:00:00 AM	5	2/4/2017 11:00:00 PM	1.00	Maintenance Clerk	000665	Misc	Ad hoc		Mechanical	NewObj

Figure 18

Scheduled Execution

Work order priorities can be used to set up scheduled execution. You can use scheduled execution to provide flexibility in work planning for the maintenance worker or service worker by setting up more detailed or less detailed requirements as to the interval during which a work order should be completed. For example, if a worker has completed a job faster than expected at a customer site, the worker may be able to complete a job nearby, not necessarily planned for the current day, but for the current week. This approach provides the possibility of optimizing worker planning and job completion.

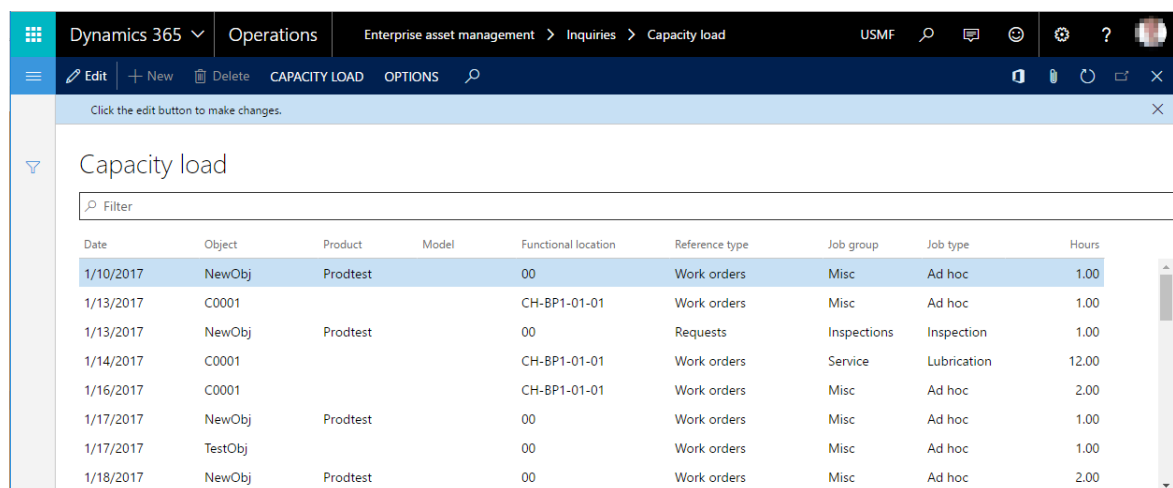
Scheduled execution can be set up for various levels related to a work order. It can be generic, based on date, time, week, month, or it can be more specific and relate to a work order type, object type, product, model, job group, job type, job variant, job trade, priority, or a combination.

Capacity Planning

In Enterprise Asset Management it is possible to calculate capacity load and item forecasts. You can make capacity load and item forecast calculations on

- Object calendar lines
- Work orders that have not yet been scheduled
- Scheduled work orders

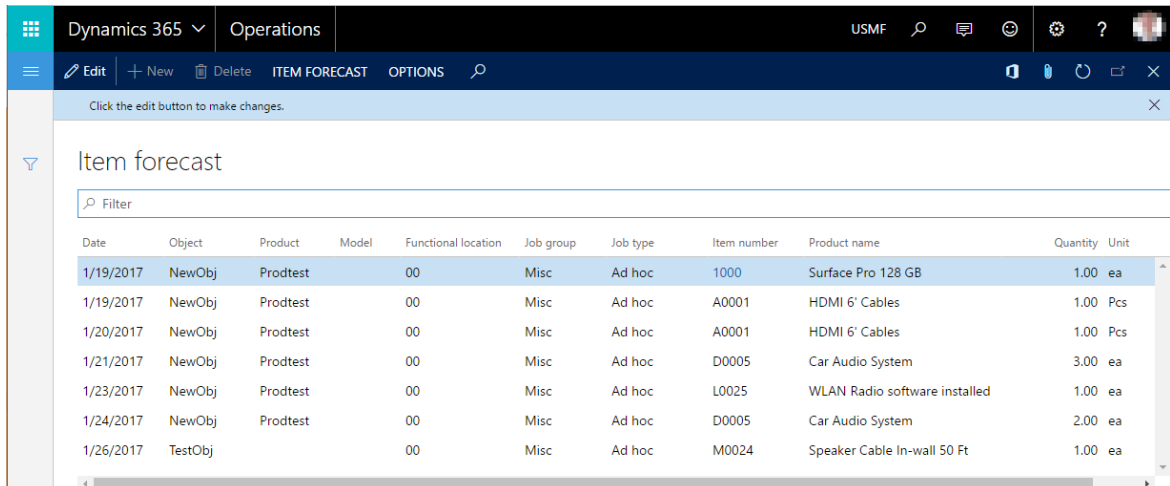
This is useful if you want to get an overview of expected capacity load or expected item consumption (spare parts and other items required for completing work orders) for a specific period. Calculation of capacity load and item forecast can be done on all objects or selected objects. You can also make a calculation on a maintenance stop, or on a work order pool.



The screenshot shows the Dynamics 365 user interface for Capacity load. The top navigation bar includes 'Dynamics 365', 'Operations', and 'Enterprise asset management > Inquiries > Capacity load'. Below the navigation bar, there are buttons for 'Edit', '+ New', and 'Delete', followed by 'CAPACITY LOAD' and 'OPTIONS'. A message bar says 'Click the edit button to make changes.' The main content area is titled 'Capacity load' and contains a table with the following data:

Date	Object	Product	Model	Functional location	Reference type	Job group	Job type	Hours
1/10/2017	NewObj	Prodtest		00	Work orders	Misc	Ad hoc	1.00
1/13/2017	C0001			CH-BP1-01-01	Work orders	Misc	Ad hoc	1.00
1/13/2017	NewObj	Prodtest		00	Requests	Inspections	Inspection	1.00
1/14/2017	C0001			CH-BP1-01-01	Work orders	Service	Lubrication	12.00
1/16/2017	C0001			CH-BP1-01-01	Work orders	Misc	Ad hoc	2.00
1/17/2017	NewObj	Prodtest		00	Work orders	Misc	Ad hoc	1.00
1/17/2017	TestObj			00	Work orders	Misc	Ad hoc	1.00
1/18/2017	NewObj	Prodtest		00	Work orders	Misc	Ad hoc	2.00

Figure 19

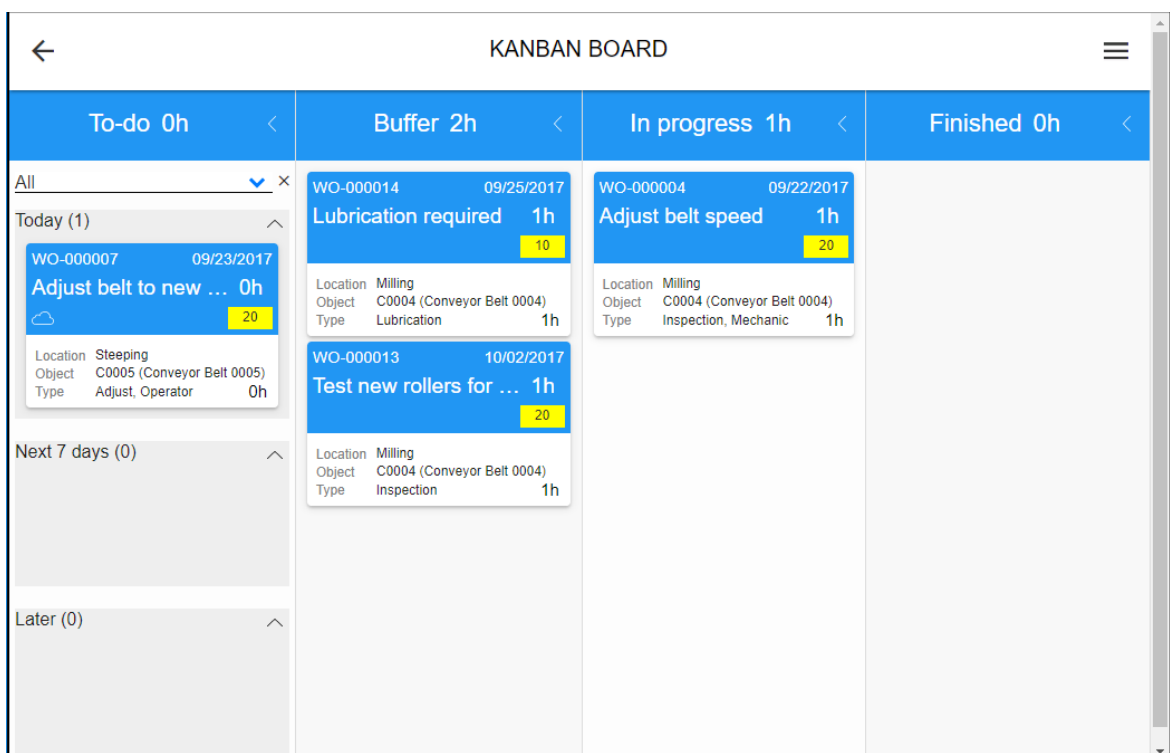


Date	Object	Product	Model	Functional location	Job group	Job type	Item number	Product name	Quantity	Unit
1/19/2017	NewObj	Prodtest	00	Misc	Ad hoc		1000	Surface Pro 128 GB	1.00	ea
1/19/2017	NewObj	Prodtest	00	Misc	Ad hoc		A0001	HDMI 6' Cables	1.00	Pcs
1/20/2017	NewObj	Prodtest	00	Misc	Ad hoc		A0001	HDMI 6' Cables	1.00	Pcs
1/21/2017	NewObj	Prodtest	00	Misc	Ad hoc		D0005	Car Audio System	3.00	ea
1/23/2017	NewObj	Prodtest	00	Misc	Ad hoc		L0025	WLAN Radio software installed	1.00	ea
1/24/2017	NewObj	Prodtest	00	Misc	Ad hoc		D0005	Car Audio System	2.00	ea
1/26/2017	TestObj		00	Misc	Ad hoc		M0024	Speaker Cable In-wall 50 Ft	1.00	ea

Figure 20

Scheduling on the Mobile Client

The **Kanban board** is used for handling and completing work orders within teams on the Mobile Client. For example, your company may set up teams of workers with different skills to work on specific work orders, or you may have groups of professionals such as electricians, mechanics, or plumbers, which work on the same types of jobs / work orders, or groups may be divided geographically on a site if you have multiple production facilities on one company address.



To-do 0h	Buffer 2h	In progress 1h	Finished 0h
<p>All</p> <p>Today (1)</p> <p>WO-000007 09/23/2017 Adjust belt to new ... 0h 20</p> <p>Location Steeping Object C0005 (Conveyor Belt 0005) Type Adjust, Operator 0h</p> <p>Next 7 days (0)</p> <p>Later (0)</p>	<p>WO-000014 09/25/2017 Lubrication required 1h 10</p> <p>Location Milling Object C0004 (Conveyor Belt 0004) Type Lubrication 1h</p> <p>WO-000013 10/02/2017 Test new rollers for ... 1h 20</p> <p>Location Milling Object C0004 (Conveyor Belt 0004) Type Inspection 1h</p>	<p>WO-000004 09/22/2017 Adjust belt speed 1h 20</p> <p>Location Milling Object C0004 (Conveyor Belt 0004) Type Inspection, Mechanic 1h</p>	

Figure 21

The **Planning board** is used for planning unscheduled work order lines on individual workers. Planners, supervisors, and managers can schedule and reschedule work order lines on the Mobile Client. Scheduling is updated in real time. The planning board is meant to be used for tasks or jobs

that require only one worker per work order line and no additional tools or other capacity reservations to complete the job.

Note

The **Planning board** requires a separate license. In order to use the **Planning board** module, licenses for Enterprise Asset Management must have been purchased and installed in advance.

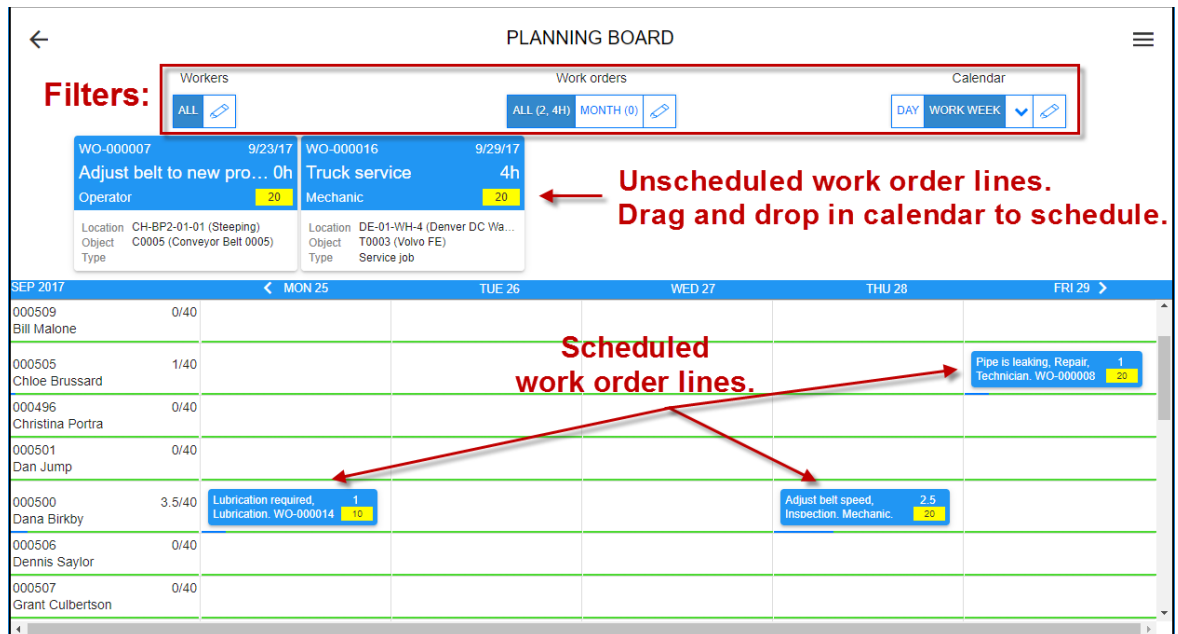


Figure 22

5 Workspaces

A workspace is an area in Dynamics 365 for Finance and Operations in which you can perform tasks and get overview of work in progress and completed tasks, which are related to the same work area or business process. The workspaces in Enterprise Asset Management are intended for planners, supervisors, or managers who work with managing requests and work orders in your company.

A workspace may contain various parts, for example buttons, tiles, and statistics (charts).

Request Management

The **Request management** workspace is intended for users who work with and manage requests on a daily basis. Below you see an extract of the **Request management** workspace.

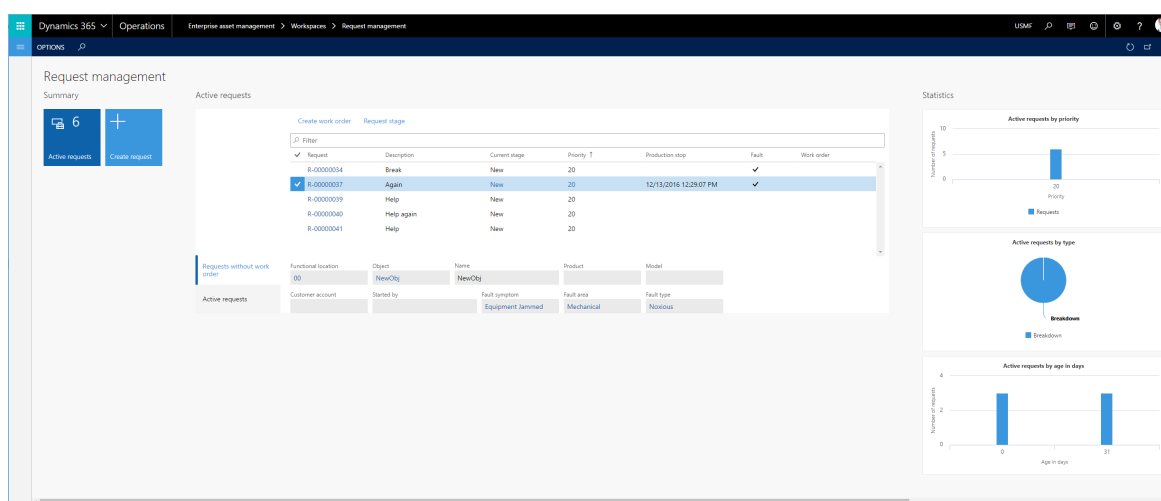


Figure 23

If required, you can add Power BI tiles to your request management workspace, for example:

- Average closing age, showing average age of requests when they are no longer active, meaning they have been rejected or closed, or the related work order has been completed.
- Number of new, active, and closed requests per day, displayed in three colors. This view does not inform you how many new or active requests have been closed. This view provides historical data from the latest 2-week period.

Work Order Management

The **Work order management** workspace is intended for users who work with and manage work orders on a daily basis.

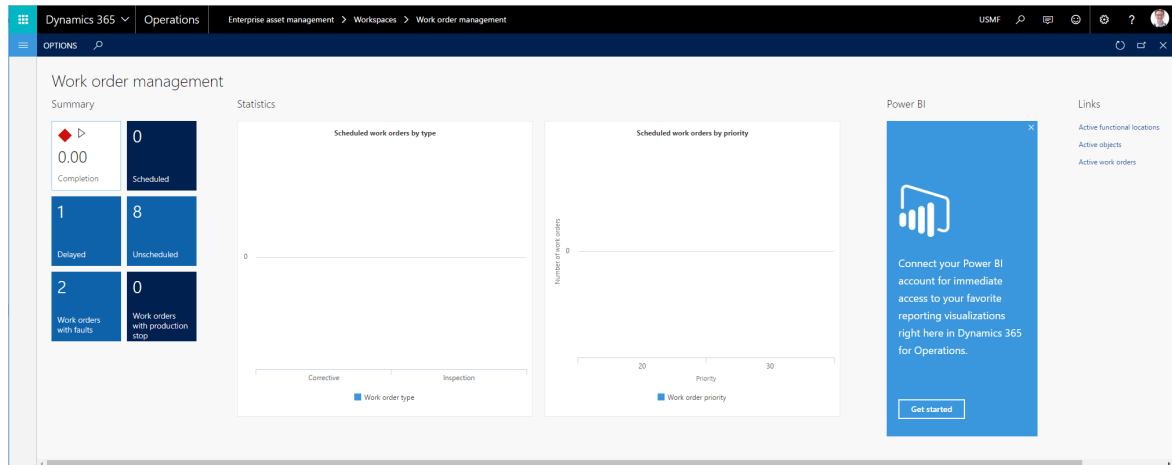


Figure 24

The standard tiles shown in this work space include:

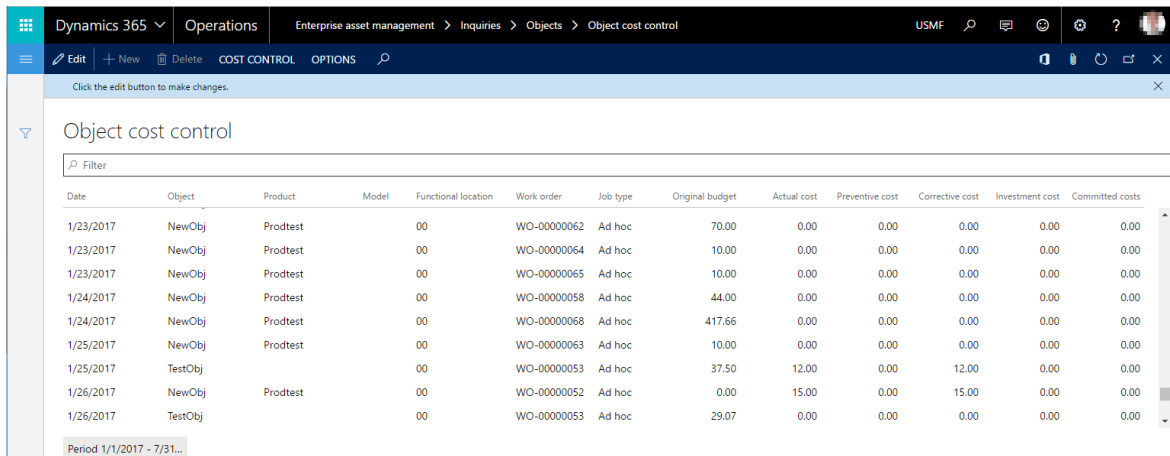
- **Scheduled** - work orders scheduled for today
- **Delayed** - work orders for which scheduled start date and time is in the past and not yet completed
- **Unscheduled** - active, but not yet scheduled work orders
- **Work orders with faults** - active work orders containing fault registrations
- **Work orders with production stop** - active work orders containing production stop registrations
- **Completion (KPI)** - shows percentage of work orders completed of the work orders scheduled for today. Click on the tile to see detailed information. You can edit a KPI, for example, you can change the color used when displaying threshold. KPI data are automatically updated every 10 minutes.

6 Cost Control

In Enterprise Asset Management, you can calculate costs to get a complete overview of actual costs compared to budget costs on

- Objects
- Functional locations
- Work orders
- Fault registrations

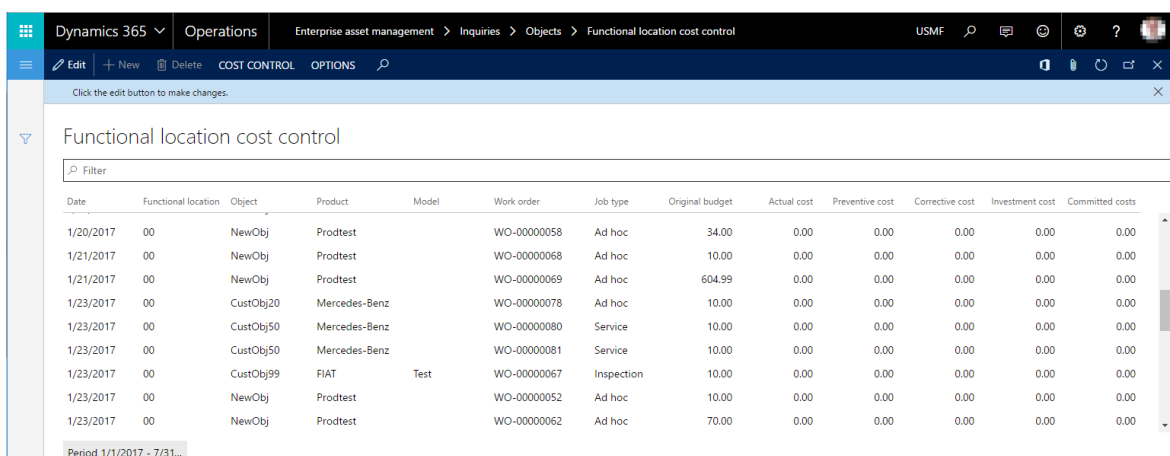
Actual costs are based on posted transactions. The date is the transaction date when the registration was recorded.



The screenshot shows the 'Object cost control' table in Dynamics 365. The table has columns for Date, Object, Product, Model, Functional location, Work order, Job type, Original budget, Actual cost, Preventive cost, Corrective cost, Investment cost, and Committed costs. The data is filtered for the period 1/1/2017 - 7/31/2017.

Date	Object	Product	Model	Functional location	Work order	Job type	Original budget	Actual cost	Preventive cost	Corrective cost	Investment cost	Committed costs
1/23/2017	NewObj	Prodtest		00	WO-00000062	Ad hoc	70.00	0.00	0.00	0.00	0.00	0.00
1/23/2017	NewObj	Prodtest		00	WO-00000064	Ad hoc	10.00	0.00	0.00	0.00	0.00	0.00
1/23/2017	NewObj	Prodtest		00	WO-00000065	Ad hoc	10.00	0.00	0.00	0.00	0.00	0.00
1/24/2017	NewObj	Prodtest		00	WO-00000058	Ad hoc	44.00	0.00	0.00	0.00	0.00	0.00
1/24/2017	NewObj	Prodtest		00	WO-00000068	Ad hoc	417.66	0.00	0.00	0.00	0.00	0.00
1/25/2017	NewObj	Prodtest		00	WO-00000063	Ad hoc	10.00	0.00	0.00	0.00	0.00	0.00
1/25/2017	TestObj			00	WO-00000053	Ad hoc	37.50	12.00	0.00	12.00	0.00	0.00
1/26/2017	NewObj	Prodtest		00	WO-00000052	Ad hoc	0.00	15.00	0.00	15.00	0.00	0.00
1/26/2017	TestObj			00	WO-00000053	Ad hoc	29.07	0.00	0.00	0.00	0.00	0.00

Figure 25



The screenshot shows the 'Functional location cost control' table in Dynamics 365. The table has columns for Date, Functional location, Object, Product, Model, Work order, Job type, Original budget, Actual cost, Preventive cost, Corrective cost, Investment cost, and Committed costs. The data is filtered for the period 1/1/2017 - 7/31/2017.

Date	Functional location	Object	Product	Model	Work order	Job type	Original budget	Actual cost	Preventive cost	Corrective cost	Investment cost	Committed costs
1/20/2017	00	NewObj	Prodtest		WO-00000058	Ad hoc	34.00	0.00	0.00	0.00	0.00	0.00
1/21/2017	00	NewObj	Prodtest		WO-00000068	Ad hoc	10.00	0.00	0.00	0.00	0.00	0.00
1/21/2017	00	NewObj	Prodtest		WO-00000069	Ad hoc	604.99	0.00	0.00	0.00	0.00	0.00
1/23/2017	00	CustObj20	Mercedes-Benz		WO-00000078	Ad hoc	10.00	0.00	0.00	0.00	0.00	0.00
1/23/2017	00	CustObj50	Mercedes-Benz		WO-00000080	Service	10.00	0.00	0.00	0.00	0.00	0.00
1/23/2017	00	CustObj50	Mercedes-Benz		WO-00000081	Service	10.00	0.00	0.00	0.00	0.00	0.00
1/23/2017	00	CustObj99	FIAT	Test	WO-00000067	Inspection	10.00	0.00	0.00	0.00	0.00	0.00
1/23/2017	00	NewObj	Prodtest		WO-00000052	Ad hoc	10.00	0.00	0.00	0.00	0.00	0.00
1/23/2017	00	NewObj	Prodtest		WO-00000062	Ad hoc	70.00	0.00	0.00	0.00	0.00	0.00

Figure 26

Dynamics 365 | **Operations** | Enterprise asset management > Inquiries > Work orders > Work order cost control

USMF

Click the edit button to make changes.

Work order cost control

Filter

Date	Work order	Object	Product	Model	Functional location	Job type	Original budget	Actual cost	Preventive cost	Corrective cost	Investment cost	Committed costs
1/19/2017	WO-00000057	NewObj	Prodtest		00	Ad hoc	12.00	26.00	0.00	26.00	0.00	0.00
1/20/2017	WO-00000058	NewObj	Prodtest		00	Ad hoc	34.00	0.00	0.00	0.00	0.00	0.00
1/21/2017	WO-00000068	NewObj	Prodtest		00	Ad hoc	10.00	0.00	0.00	0.00	0.00	0.00
1/21/2017	WO-00000069	NewObj	Prodtest		00	Ad hoc	604.99	0.00	0.00	0.00	0.00	0.00
1/23/2017	WO-00000052	NewObj	Prodtest		00	Ad hoc	10.00	0.00	0.00	0.00	0.00	0.00
1/23/2017	WO-00000062	NewObj	Prodtest		00	Ad hoc	70.00	0.00	0.00	0.00	0.00	0.00
1/23/2017	WO-00000064	NewObj	Prodtest		00	Ad hoc	10.00	0.00	0.00	0.00	0.00	0.00
1/23/2017	WO-00000065	NewObj	Prodtest		00	Ad hoc	10.00	0.00	0.00	0.00	0.00	0.00
1/23/2017	WO-00000067	CustObj99	FIAT	Test	00	Inspection	10.00	0.00	0.00	0.00	0.00	0.00
1/23/2017	WO-00000078	CustObj20	Mercedes-Benz		00	Ad hoc	10.00	0.00	0.00	0.00	0.00	0.00
1/23/2017	WO-00000080	CustObj50	Mercedes-Benz		00	Service	10.00	0.00	0.00	0.00	0.00	0.00
1/23/2017	WO-00000081	CustObj50	Mercedes-Benz		00	Service	10.00	0.00	0.00	0.00	0.00	0.00
1/24/2017	WO-00000058	NewObj	Prodtest		00	Ad hoc	44.00	0.00	0.00	0.00	0.00	0.00
1/24/2017	WO-00000068	NewObj	Prodtest		00	Ad hoc	417.66	0.00	0.00	0.00	0.00	0.00
1/25/2017	WO-00000053	TestObj			00	Ad hoc	37.50	12.00	0.00	12.00	0.00	0.00
1/25/2017	WO-00000063	NewObj	Prodtest		00	Ad hoc	10.00	0.00	0.00	0.00	0.00	0.00
1/26/2017	WO-00000052	NewObj	Prodtest		00	Ad hoc	0.00	15.00	0.00	15.00	0.00	0.00
1/26/2017	WO-00000053	TestObj			00	Ad hoc	29.07	0.00	0.00	0.00	0.00	0.00
1/30/2017	WO-00000087	CustObj21	Mercedes-Benz		00	Ad hoc	10.00	1.69	0.00	1.69	0.00	0.00

Period 1/1/2017 - 7/31/2017

Figure 27

Dynamics 365 | **Operations** | Enterprise asset management > Inquiries > Object fault > Object fault cost control

USMF

Click the edit button to make changes.

Object fault cost control

Filter

Fault date	Object	Product	Model	Fault	Fault symptom	Fault cause	Original budget	Actual cost	Corrective cost	Preventive cost	Investment cost	Committed cost
12/14/2016	NewObj	Prodtest		F-00000010	Blown fuse	Faulty thermometer	5.00	0.00	0.00	0.00	0.00	0.00
1/18/2017	TestObj			F-00000011	Fins deformed	Faulty thermometer	5.00	-10.35	0.00	-10.35	0.00	0.00
1/19/2017	NewObj	Prodtest		F-00000012	Fan stopped		0.00	0.00	0.00	0.00	0.00	0.00
1/19/2017	NewObj	Prodtest		F-00000013	Surging engine		0.00	0.00	0.00	0.00	0.00	0.00
1/19/2017	NewObj	Prodtest		F-00000014	Fan stopped		0.00	0.00	0.00	0.00	0.00	0.00
1/19/2017	NewObj	Prodtest		F-00000015	Fan blades damaged		0.00	0.00	0.00	0.00	0.00	0.00
1/19/2017	NewObj	Prodtest		F-00000016	Fins deformed	Wear and tear	5.00	0.00	0.00	0.00	0.00	0.00
1/19/2017	NewObj	Prodtest		F-00000017	Misfiring engine		0.00	0.00	0.00	0.00	0.00	0.00
1/20/2017	NewObj	Prodtest		F-00000020	Air Leak		88.00	0.00	0.00	0.00	0.00	0.00
1/24/2017	CustObj99	FIAT	Test	F-00000021	Blown fuse	No cause	5.00	0.00	0.00	0.00	0.00	0.00
1/24/2017	CustObj99	FIAT	Test	F-00000022	Equipment Jammed		0.00	0.00	0.00	0.00	0.00	0.00
1/25/2017	NewObj	Prodtest		F-00000024	Blown fuse		0.00	0.00	0.00	0.00	0.00	0.00
1/25/2017	NewObj	Prodtest		F-00000025	Air Leak	Faulty thermometer	35.00	0.00	0.00	0.00	0.00	0.00
1/26/2017	NewObj	Prodtest		F-00000026	Blown fuse		10.00	15.00	15.00	0.00	0.00	0.00
1/27/2017	CustObj51	Mercedes-Benz		F-00000027	Air Leak		0.00	0.00	0.00	0.00	0.00	0.00
1/31/2017	C0007			F-00000030	Fan blades damaged		0.00	0.00	0.00	0.00	0.00	0.00
1/31/2017	CustObj20	Mercedes-Benz		F-00000031	Oil level too high		0.00	0.00	0.00	0.00	0.00	0.00
1/31/2017	CustObj21	Mercedes-Benz		F-00000029	Fan blades damaged	Faulty accelerometer	5.00	0.00	0.00	0.00	0.00	0.00
2/1/2017	C0007			F-00000034	Fan blades damaged	Faulty accelerometer	5.00	0.00	0.00	0.00	0.00	0.00
2/1/2017	NewObj	Prodtest		F-00000032	Calibration problem		427.66	0.00	0.00	0.00	0.00	0.00

Figure 28

Note

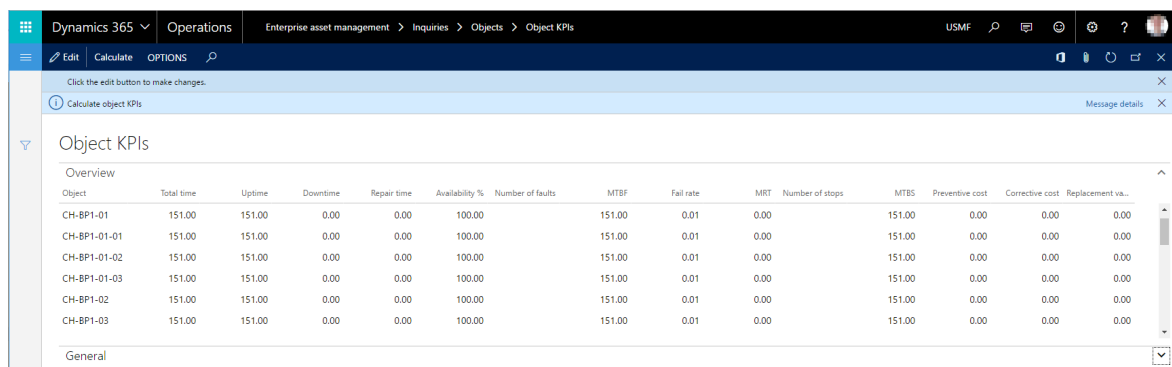
The **Original budget** field shows budget costs from the work order forecast. The **Actual cost** field shows posted costs on work orders. The **Committed cost** field shows costs that your company is committed to in relation to work orders, but these costs have not yet been posted.

In Enterprise Asset Management, you can also get an overview of actual work hours compared to budget hours on objects, functional locations, or work orders.

7 KPIs

In Enterprise Asset Management, you can calculate various Key Performance Indicators (KPIs) for objects and object types. KPIs are used to get an overview of performance on objects in relation to, for example

- Uptime
- Downtime
- Repair time
- Mean Time Between Failure (MTBF)
- Mean Time Between Stops (MTBS)
- Mean Repair Time (MRT)



Object	Total time	Uptime	Downtime	Repair time	Availability %	Number of faults	MTBF	Fail rate	MRT	Number of stops	MTBS	Preventive cost	Corrective cost	Replacement va...
CH-BP1-01	151.00	151.00	0.00	0.00	100.00	1	151.00	0.01	0.00	1	151.00	0.00	0.00	0.00
CH-BP1-01-01	151.00	151.00	0.00	0.00	100.00	1	151.00	0.01	0.00	1	151.00	0.00	0.00	0.00
CH-BP1-01-02	151.00	151.00	0.00	0.00	100.00	1	151.00	0.01	0.00	1	151.00	0.00	0.00	0.00
CH-BP1-01-03	151.00	151.00	0.00	0.00	100.00	1	151.00	0.01	0.00	1	151.00	0.00	0.00	0.00
CH-BP1-02	151.00	151.00	0.00	0.00	100.00	1	151.00	0.01	0.00	1	151.00	0.00	0.00	0.00
CH-BP1-03	151.00	151.00	0.00	0.00	100.00	1	151.00	0.01	0.00	1	151.00	0.00	0.00	0.00

Figure 29

8 Security Roles

In Dynamics 365 for Finance and Operations, security roles are used to grant access rights to a user, allowing the user to access certain menu items and perform specific tasks. Security roles relate to Client Access Licenses (CAL) in Dynamics 365 for Finance and Operations.

Below, you will see the roles and related tasks defined for Dynaway Enterprise Asset Management.

Enterprise Asset Management

Role	Related tasks	CAL level in Dynamics 365 for Finance and Operations
Maintenance Manager	Maintain base data and perform all maintenance-related tasks. Able to access and work with all menu items in Enterprise Asset Management.	Enterprise
Maintenance Clerk	Schedule work orders, register consumption, post journals, maintain work orders, create purchase orders. Able to work with all menu items in Enterprise Asset Management except items located in the Setup area, which are read only.	Enterprise
Maintenance Worker	Print work order report, register consumption.	Activity

9 Industries

Dynaway Enterprise Asset Management (EAM) is designed for maintenance management across various industries. Companies in the manufacturing, distributing, and servicing sectors will benefit from our EAM solution through powerful asset data management. Dynaway EAM helps maximize the reliability and availability of your assets.

The Dynaway EAM solution is a strong partner whether your primary focus is maintenance of buildings, machines, vehicles, facilities, or any other object that requires regular inspection or overhaul.

Here are a few examples of industries that currently profit from the Dynaway Enterprise Asset Management solution:

- Discrete manufacturing
- Process manufacturing
- Project manufacturing
- Chemical processing
- Metal processing
- Pharmaceuticals
- Food / Beverage
- Energy supply
- Bio diesel
- Mining

For more information, take a look at our case stories on www.dynaway.com.

10 About Dynaway

Dynaway A/S is a privately held independent software vendor with an exclusive focus on providing valuable solutions for the Microsoft Dynamics platforms.

Dynaway A/S was founded in 2001 as a spin-off from one of the largest Microsoft Dynamics AX Value Added Resellers (VAR) in Denmark. The intention of the spin-off was to create a software development powerhouse, capable of absorbing trends, ideas and partial solutions from the mother company and its end customers, and transform these into fully-fledged, high-quality software packages for the entire Microsoft Dynamics AX partner channel. Today, Dynaway A/S is owned by the EG group, a Microsoft Gold Certified Partner.

Dynaway designed and developed the Shop Floor Control module for Microsoft Dynamics AX, which has been divided into two separate modules, Manufacturing execution and Time and attendance, in Microsoft Dynamics AX 2012 and Dynamics 365 for Finance and Operations. Those modules are now owned by Microsoft. Production management has been a core focus area for Dynaway for more than 15 years.

Today, the main focus area for Dynaway is Enterprise Asset Management (EAM). Our EAM solution sets the de facto standard for maintenance, service, and contract management in Microsoft Dynamics AX 2012 and Dynamics 365 for Finance and Operations. The Enterprise Asset Management solution is sold through Microsoft Dynamics partners world-wide, and the solution is Certified for Microsoft Dynamics (CfMD).

Dynaway has also developed mobile solutions to provide optimum flexibility for mobile workers to handle various kinds of job registrations. The mobile solutions are based on HTML5 technology and integrate seamlessly with several modules in Microsoft Dynamics AX 2012 and Dynamics 365 for Finance and Operations. The Mobile EAM Client is customized for maintenance workers and service technicians to provide quick and easy access to information and registrations related to objects and work orders.

For more information on Dynaway and our products, visit our website on www.dynaway.com, or email to info@dynaway.com.

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