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E-SMS User Help Documentation

Find help using E-SMS and unlock the power of better-informed decisions.

The Enterprise Sustainment Management System (E-SMS) Web Application is a cloud-based solution that brings all real property infrastructure domains under the umbrella of a single SMS application. Performing long-range work requirement projections across domains allows for comprehensive analysis of options and related effects. E-SMS provides increased control of user permission definition, teaming, and application; updated business intelligence reporting capabilities; and improved user experience.

Training Videos

SMS Helpdesk

U.S. ARMY

ERDC

Getting Started

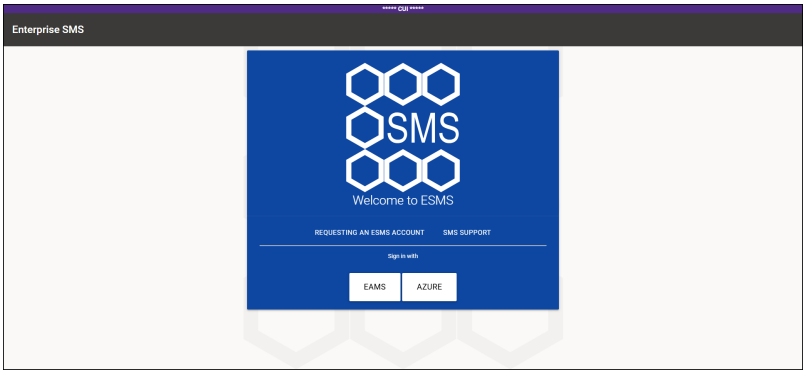
Helpful information for new E-SMS users.

Logging In

Login types for existing users and instructions for first-time users without accounts.

There are two login options available for E-SMS web: Enterprise Access Management Service (EAMS) and Azure Active Directory (AAD). EAMS is the preferred login method for E-SMS.

- **EAMS** - EAMS is the default login method for E-SMS web, and is available to all Common Access Card (CAC) holders.
- **Azure** - Azure login is available to non CAC[1] holders.



New User Accounts

CAC Users (EAMS)

First-time E-SMS users will need to take a few steps to gain access to the E-SMS web application. These steps will only need to be completed once.

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[1](Common Access Card). Identification for active-duty military, Selected Reserve, DoW civilians, and qualified contractors.

1. Select the EAMS button on the Welcome screen. The user account will be locked at this stage.
2. Email the SMS Helpdesk to unlock the user account. The SMS Helpdesk will ask for additional information to finish set-up of the new user account.
3. Navigate back to the Welcome screen of E-SMS. Select the EAMS button again.
4. Select "PKI Login."

Users Without a CAC (Azure)

> **Note:** Non CAC holders must be sponsored prior to account creation. Visit the AESMP portal and ICAM FAQ for more information.

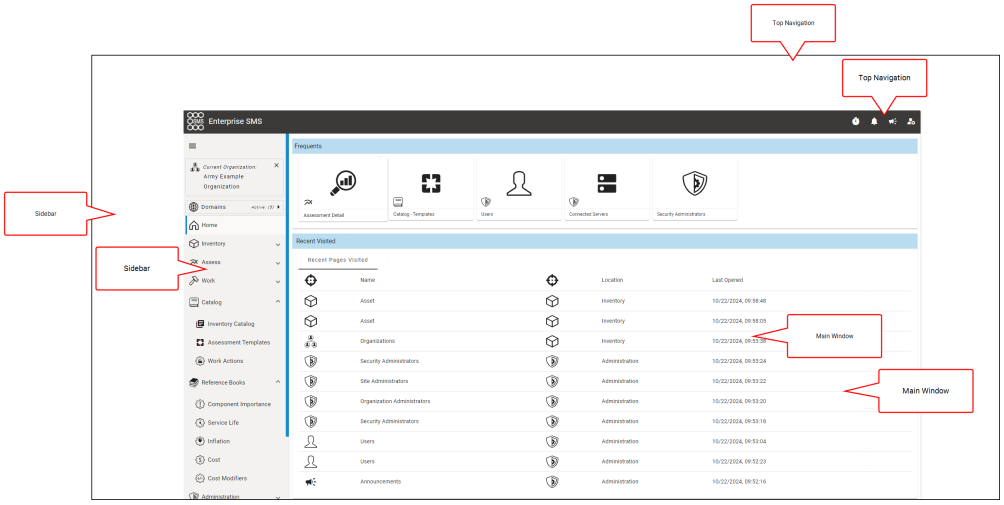
Users wishing to use this login method can follow the same steps as the EAMS login, but with the "Azure" button instead.

If Azure login is desired, the user will need to inform the SMS Helpdesk the Azure login method is preferred over EAMS during account creation.

> **Tip:** For additional assistance with your E-SMS account, please contact the SMS Helpdesk.

Primary Interface Sections

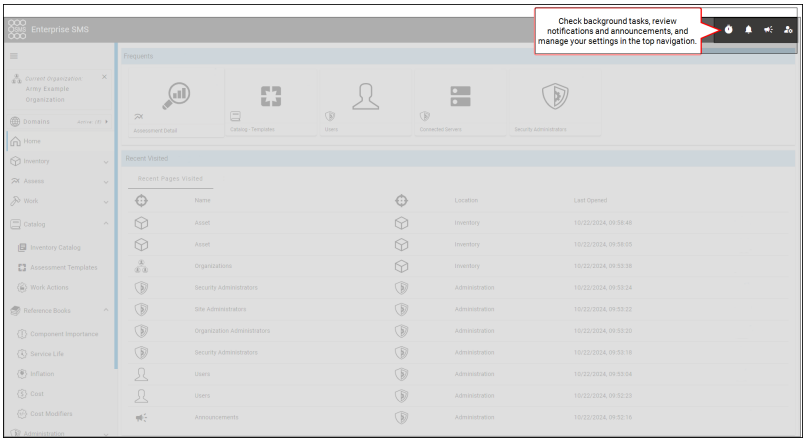
E-SMS's interface is composed of three main sections: the top navigation, the sidebar, and the main window.



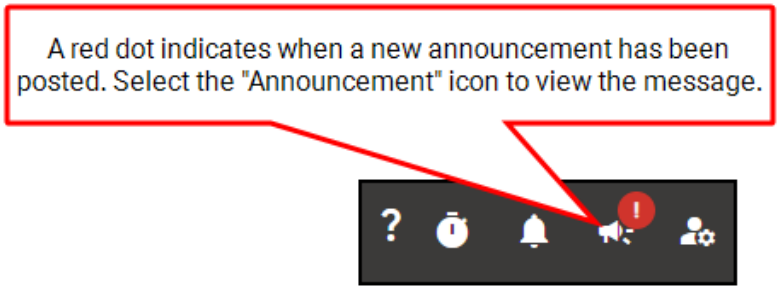
Tip: Select the E-SMS logo in the top left of the screen to return to the home page at any time.

Top Navigation

Located in the top right of the browser window, users can access background tasks, review notifications, check announcements, and mange user settings.



Announcement Notifications



When a red dot appears at the top right of the Announcement icon (located in the upper right corner), a new announcement is available to view. Select the "Announcement" icon as indicated above to view it.

Sidebar

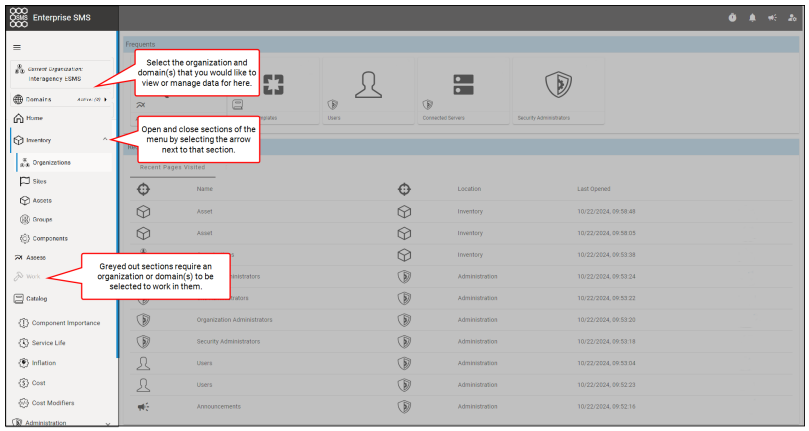
The Sidebar is located on the far left side of the E-SMS page. It is where users can select an organization, pick a domain, and choose a section to work from.

> **Note:** The sections in the Sidebar are where users have permissions to view and work.

Many sections in E-SMS will require users to select an organization and domain before proceeding.

1. Select an organization:
    - Select the Current Organization button at the top left of the Sidebar.
    - Select the desired organization, or filter results by typing in the search box and selecting the magnifying glass icon to apply the filter to the list.
    - The selected organization will be displayed in the Current Organization button.
2. Select one or more domain(s).
    - Check the boxes next to the desired domains to add or remove domains.
    - Check the Select All checkbox to add all domains.
    - Select the Apply Selected Domains button to save selections and exit the domain selection window.

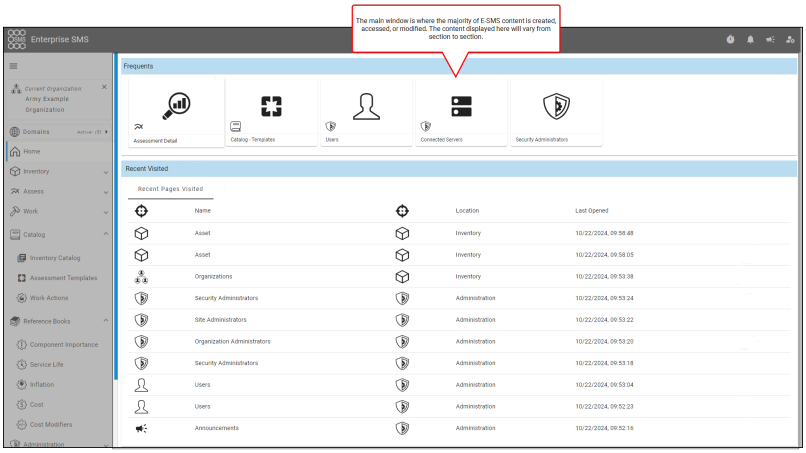
Tip: Save default organization and domain selections in the "Settings" on page 13.



Main Window

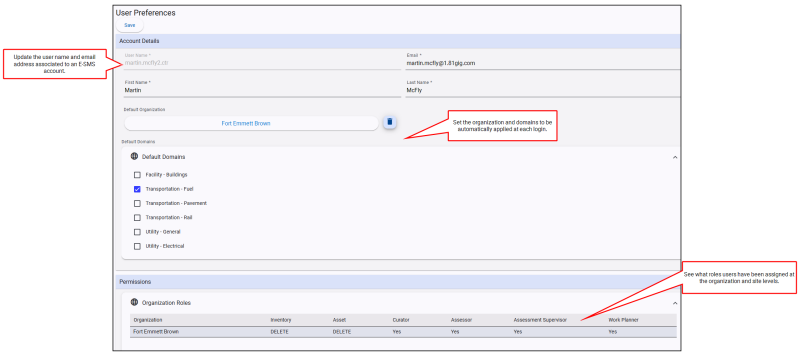
The main window is where the majority of E-SMS content can be created, accessed, or modified. While content varies from section to section, users can expect features like the following:

- The ability to add, edit, and/or delete data.
- The option to explore and filter applicable E-SMS data.
- The ability to search through information related to the section.
- The option to export and download data into a CSV spreadsheet.
- The ability to view and/or assign user permissions (Administrators only).



Settings

- **Theme Picker** - Choose between light and dark mode, as well as multiple color scheme options.
- **User Preferences** - Opens a page listing the user's name and assigned permissions. Users may edit the email address, user name, default organization, and domains.



- **Save Default Org/Domains** - Sets the currently selected organization and domains as default user preferences.
    - The user's chosen organization and domains are automatically enforced at every login.
    - Users can also select and save the default organization and domains in User Preferences.
- **Apply Default Org/Domains** - Applies the user's default organization or domains to the current E-SMS instance.
- **Reshow Banner** - Displays the latest E-SMS announcements to users after the login stage.
- **Reset Welcome Tour** - Returns users to the start of the E-SMS Welcome Tour.
- **Install Field App** - Download the Field App for off-site E-SMS use.
- **About** - Presents the E-SMS version, license information, and active modules.
- **SMS Support** - Permits users to email the SMS Helpdesk.

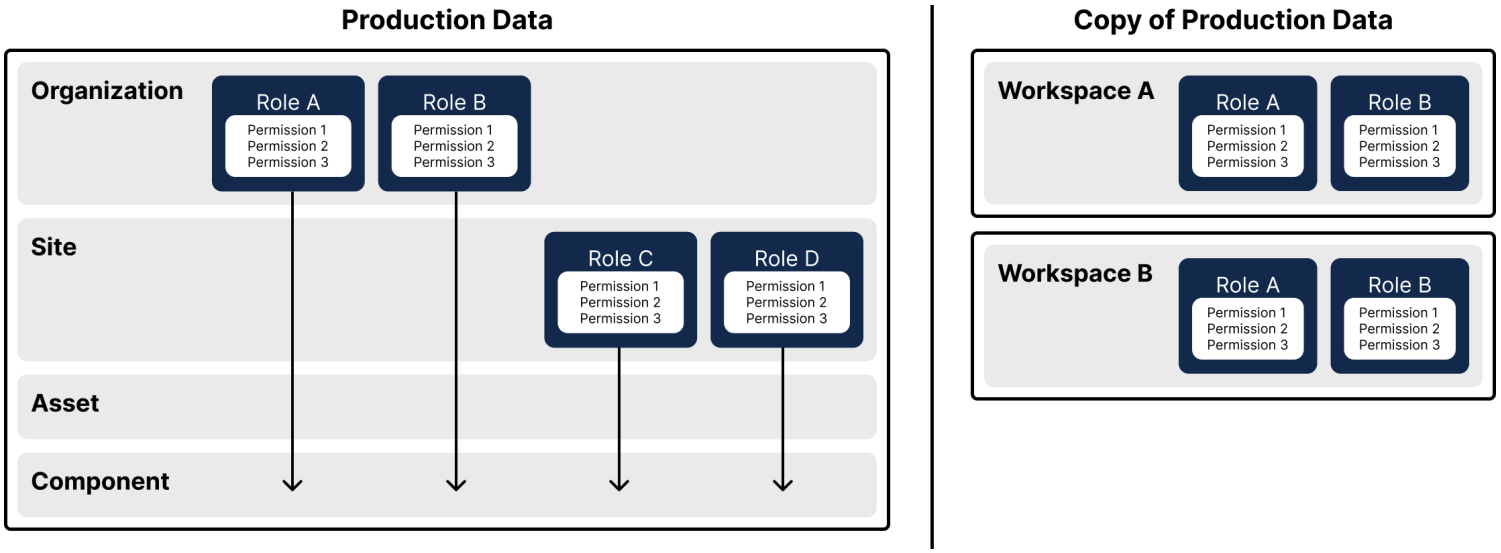
- **Developer API** - Transfers users with appropriate permissions to a list of common E-SMS API calls.
- **Log Out** - Ends the current E-SMS session.

Introduction to Permissions

Understanding permissions in E-SMS.

User permissions in E-SMS are designed to match each users' job requirements, giving access to only the organization(s) and site(s) they need and defining what actions they can take. To accomplish this, users are assigned one or more roles at the site, organization, or workspace scope. Each role enables a specific set of permissions and the scope it is assigned at defines the users access to organization or site data.

- **Permissions** - What actions users can take in E-SMS.
- **Roles** - Groupings of permissions.
- **Scopes** - The defined area of visibility in E-SMS. Roles are created with an site, organization, or workspace scope.



Tip: View the permissions assigned to users by navigating to User Preferences in the "Settings" on page 13.

Scopes

Roles can be assigned with a organization, site, or workspace scope. The scope defines what organization, site, and workspace data a user can see within the inventory hierarchy.

Organization	The organization scope grants access to child organizations, sites, assets, and components within that organization.
Site	The site scope grants access to assets and components within those sites, but not access to the parent organization.
Workspace	The workspace scope grants management of workspaces or access to data within a specific workspace, and does not grant access to production data on its own.

For example, in the figure above roles A and B have organization scope and have access to the data for that organization and all child organizations and sites underneath that organization. Roles C and D have site scope and only have access to data for the site they were given permissions to, and would not be able to see upward to the organization data. Users with workspace scope would not be able to see any data outside of the workspace they were assigned to.

Roles

Roles are a way to group permissions and assign them to users. E-SMS provides several roles in different categories. For the full list of permissions see the "Permission Matrix" on page 18

Administrator	Administrators are the only users able to manage and assign other users to roles. They have all inventory, assess, and work planning permissions. **Inherits**: Curator, Assessment Supervisor, Work Planner, and Reader roles.

	Scope: Organization, site, and workspace
Curator	Curators are similar to Administrators, but without the user management capabilities within the organization and site scope. They have all other inventory, assess, and work planning permissions. **Inherits**: Assessment Supervisor, Work Planner, and Reader roles. **Scope**: Organization, site, and workspace
Assessment Supervisor	Assessment Supervisors have access to most inventory and all assess permissions. They are able to manage permissions within workspaces. **Inherits**: Reader **Scope**: Organization, site, and workspace
Workspace Assessor	Workspace Assessors are a temporary role that only have access to data within a workspace, and does not have access to production data. Access to workspace data is removed once a workspace is closed. **Inherits**: None **Scope**: Workspace
Work Planner	Work Planners have read-only access to inventory data, and access to all work planning permissions. **Inherits**: Reader **Scope**: Organization and site
Reader	Readers have read-only access to inventory data.

	Inherits: None **Scope**: Organization and site

Permission Matrix

User & Organization Management						
	Administrator	**Curator**	**Assessment Supervisor**	**Workspace Assessor**	**Work Planner**	**Reader**
Scope	Organization Site Workspace	Organization Site Workspace	Organization Site Workspace	Workspace	Organization Site	Organization Site
Assign users to roles	✓					
Create roles	✓					
Create, update, and delete organization funding	✓	✓				
View reference books	✓	✓	✓	✓	✓	✓

Inventory						
	Administrator	**Curator**	**Assessment Supervisor**	**Workspace Assessor**	**Work Planner**	**Reader**

Scope	Organization Site Workspace	Organization Site Workspace	Organization Site Workspace	Workspace	Organization Site	Organization Site
Access to production data	✓	✓	✓		✓	✓
Add images to assets and components	✓	✓	✓	✓		
Create, update, and delete assets				✓		
Create, update, and delete components	✓	✓	✓	✓		
Create, update, and delete documents	✓	✓	✓	✓		
Associate and dissociate document tags with inventory	✓	✓	✓	✓		
View documents	✓	✓	✓		✓	✓
View reports	✓	✓	✓		✓	✓
Create, update, and	✓	✓				

delete groups						
View groups	✓	✓	✓		✓	✓

Assess						
	Administrator	**Curator**	**Assessment Supervisor**	**Workspace Assessor**	**Work Planner**	**Reader**
Scope	Organization Site Workspace	Organization Site Workspace	Organization Site Workspace	Workspace	Organization Site	Organization Site
Create and update assessments that are owned, within configured time limits, and unlocked				✓		
Create roles within a work-space	✓	✓	✓			
Create, update, and delete assess-ments	✓	✓	✓			
Create, update, and delete work-spaces	✓	✓	✓			

View assessments	✓	✓	✓	✓	✓	✓

Work Planning						
	Administrator	**Curator**	**Assessment Supervisor**	**Workspace Assessor**	**Work Planner**	**Reader**
Scope	Organization Site Workspace	Organization Site Workspace	Organization Site Workspace	Workspace	Organization Site	Organization Site
Create, update, and delete projects	✓	✓			✓	
Create, update, and delete work items	✓	✓		✓	✓	
Create, update, and delete work plans	✓	✓			✓	
Run work analysis	✓	✓			✓	
View work items	✓	✓	✓	✓	✓	✓

SMS Process

Learn about the 5 step process behind E-SMS.

SMS is an engineered process for asset life-cycle management developed by the SMS-TCX to objectively and consistently assess, analyze, and prioritize investment requirements and guide Sustainment, Restoration, and Modernization activities (SRM[1]).

Inventory **Assess** **Forecast** **Plan** **Analyze**

Knowing what users have (**inventory**) and the current performance (**assess**) is the foundation of the process. **Forecasting** provides future performance of components, which allows work to be **planned** through a prioritized list of work actions based on mission and economic factors. The final step, **analysis**, allows us to see longer-term effects of the planned SRM[2] actions.

Inventory

> The first step in the process is to capture your inventory, starting at the top organization level, and going all the way down the hierarchy to the component level. This component level is the management level in the SMS where most assessments are performed.

Assess

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[1](Sustainment, Restoration, and Modernization). Program designed to ensure operational capability of assets through routine maintenance and repairs, renovations, and alterations to incorporate newer, higher standards.
[2](Sustainment, Restoration, and Modernization). Program designed to ensure operational capability of assets through routine maintenance and repairs, renovations, and alterations to incorporate newer, higher standards.

After the inventory is captured, an initial condition assessment is performed against each component. The condition assessments will result in a condition index (CI[1]) score for each assessed component.

These component CI[2] scores are then “rolled up” to whatever level is desired and normalized based on the cost of the individual elements. The component replacement value along with the component CI[3] scores are used to roll up to the asset level, and then the asset plant replacement value (PRV[4]) is used to roll up to the site level, and then the site PRV[5] is used to roll up to the organization level.

Once the initial assessment for all inventory has been completed, planning and forecasting can begin.

Forecast

Since the condition noted during an assessment is only for that moment in time, it is critical that condition be predicted between assessments. Doing so prevents small problems from becoming major issues.

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[1](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[2](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[3](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[4](Plant Replacement Value). The total cost to rebuild or recreate an asset. This value may be defined or use the sum of its constituent components' PRV values at higher inventory levels (i.e., sites or organizations) or the sum of the PRV values for constituent assets.

[5](Plant Replacement Value). The total cost to rebuild or recreate an asset. This value may be defined or use the sum of its constituent components' PRV values at higher inventory levels (i.e., sites or organizations) or the sum of the PRV values for constituent assets.

These predictions also guide which assets will be evaluated in the next assessment. This is known as a knowledge-based inspection (KBI[1]).

E-SMS leverages decades of extensive research on asset management, using past inventory's real-world performance data, to provide estimated and forecasted (CI[2] and RSL[3]) metrics for your inventory. E-SMS calculates and forecasts the CI[4] using the Life-Cycle (Weibull Distribution) Condition Curve.

The Weibull Curve

SMS uses the Weibull Curve to model degradation, which details how the component CI[5] degrades over time. Each component type has an initial expected design life that the curve uses, represented by the 'Expected' dashed curve. As time goes by and inspections are performed to capture the real-world performance of the component, the curve may separate from the initial curve to represent the true degradation of the component using the assessment data collected. This new lifecycle curve is represented as the 'Over-Performing' or 'Under-Performing' curve.

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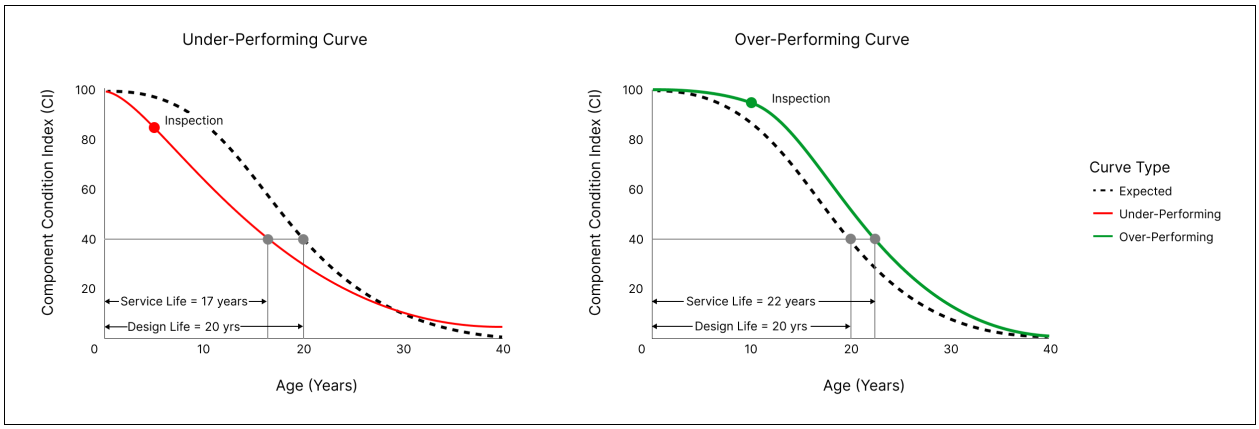
[1](Knowledge-Based Inspection). An inspection work item generated by the Work Analysis process.

[2](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[3](Remaining Service Life). The remaining time period that an asset or component is expected to perform its intended function while meeting performance requirements, based on its design life and inspections.

[4](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[5](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.



In these examples, the components are assessed at a higher or lower condition than would be expected using the initial expected design life of 20 years for this component type.

In the Over-Performing Curve, the curve is adjusted to the new expected service life of 22 years. This new lifecycle curve shows that this component is over-performing, and as a result, premature replacement can be avoided and the component can utilize the gain in an additional 2 years of life.

In the Under-Performing Curve, the lower than expected condition assessment at 10 years adjusts the curve to the new expected service life of 17 years, showing that this component is under-performing and will need a replacement sooner than expected.

This type of analytic decision-making shines through when managing a large inventory and enables informed decision making for optimal asset management planning.

Plan

Work is the process of creating a plan to address deficiencies by optimizing available funds to achieve the desired impact. The work planning process includes the configuration of policies and standards, generation of work requirements, and production of a prioritized list

of work actions based on mission and economic factors (available funds, type of funds, and optimal timing for repair actions).

Work plans can be generated for the current year or forecasted up to 10 years into the future. Forecasting into the future enables a longer-term evaluation of the effectiveness of the work planning criteria.

Analyze

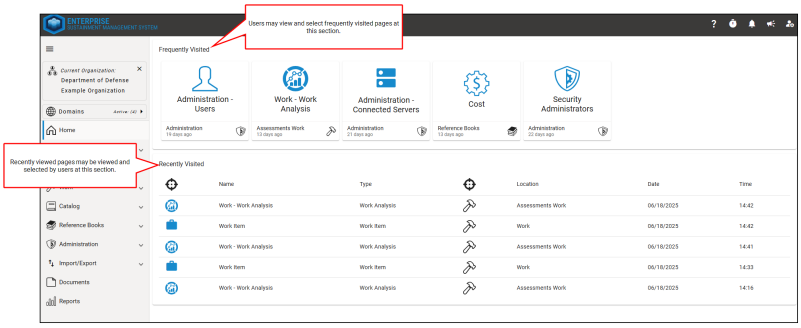
The final step of the SMS process brings all data input and generated in the previous steps together into an interactive data visualization and analysis tool, empowering users to quickly respond to data requests, share insights with compelling visuals, and ultimately make better-informed decisions.

Home

Users can view and select their frequently and recently visited pages in the Home section.

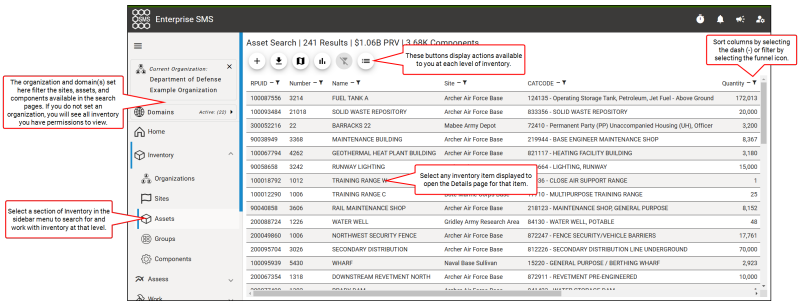
From the Home section, users can:

- View and select frequently visited pages.
- View and select recently visited pages.



Inventory

Inventory is broken up into four hierarchical sections in the sidebar menu: Organizations, Sites, Assets, and Components. Selecting any of these sections will open a search page where users can search for and work with inventory at the selected level.

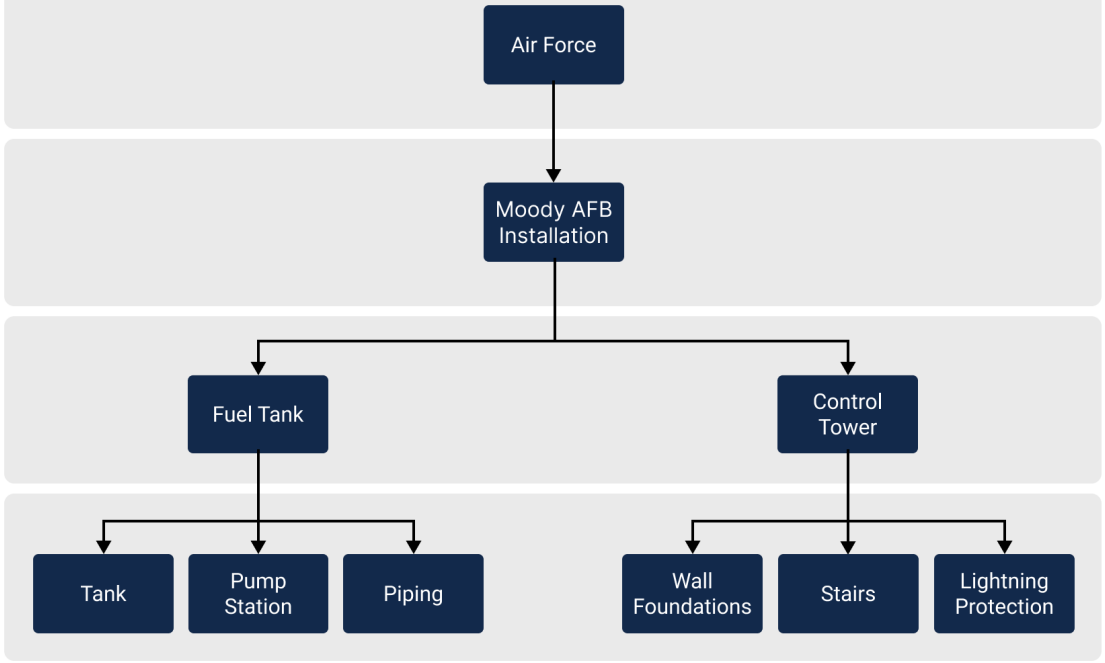


- **"Inventory Hierarchy" on the next page** - Defining each level of Inventory, and how they interact with each other.
- **"Inventory Search Pages" on page 32** - Search for managed components, assets, or sites, download CSVs, and view inventory maps and graphs.
- **"Inventory Detail Pages" on page 35** - View and manage component, asset, or site details.
- **"Index Calculations" on page 37** - Explore how index calculations are applied to the inventory hierarchy.
- **"Groups" on page 52** - Defines how groups serve the inventory hierarchy, and details how they can be added, edited, and deleted.
- **"Set Up Funding" on page 62** - Set up funding at the organization level in the Funding Tab.
- **"Assign User Permissions" on page 65** - Assign user permissions at the organization and site level in the Permissions tab.
- **"Apply Reference Books" on page 67** - Select reference books at the organization level in the Reference Books tab.

Inventory Hierarchy

The inventory hierarchy is how an organization's inventory is categorized and data interacts in E-SMS. The four categories are: organizations, sites, assets, and components. Data is input at the component and asset detail pages, which then rolls up to the organization level.

- **Organizations** - Organizations serve as the umbrella for all other managed items, containing sites, assets, and components.
    - Rules such as funding and reference books are set at the organization level and trickle down to lower levels of the inventory.
    - User permissions set at the organization level determine which organization(s) users can see and interact with. Users with permissions at this level will be able to see all sites under the organization they were assigned to.
- **Sites** - Sites are groups of assets, typically by location.
    - User permissions set at the site level determine the site(s) users can see and interact with. Users with permissions at this level will only be able to see and interact with the sites they were assigned to.
- **Assets** - Assets are real-property managed objects and are typically buildings, structures, land areas, and systems. Examples include railways, fuel storage facilities, pipelines, roads, and utility distribution lines.
- **Components** - A component is an assembly or management unit within an asset, such as tanks, pump stations, pipe fittings, carpeting, foundations, and structural slabs.

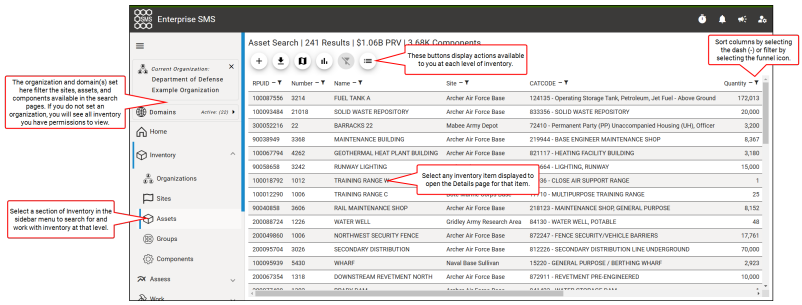
Inventory Hierarchy	Example
Organization Governing organization or sub-organization.	
Site A group of assets, typically by geographic location.	
Asset Real-property managed objects .	
Component Assembly or management units within an asset.	

Inventory Search Pages

After selecting an inventory section in the sidebar, users will land on the Search page for that section, where they can search for managed components, assets, or sites, customize and download CSVs, and, in some sections, view maps and graphs of sites, assets, and components. Selecting a managed site, asset, or component from the available list will open the Detail Page.

From the search page, users can:

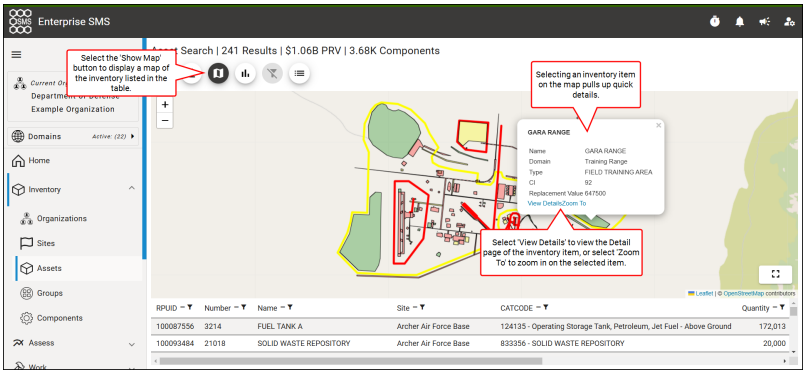
- Filter and sort displayed inventory.
- Download a CSV copy of the displayed table.
- View interactive maps and graphs of the displayed managed components, assets, or sites.
- View Inventory Detail pages by selecting a managed component, asset, or site.
- Create assets and components (depending on permissions).



Note: The organization and domain(s) selected in the sidebar do not filter the organizations displayed in the Organization Search page, but will filter the data displayed on the Site, Asset, and Component Search pages.

Site, Asset, and Component Maps

Open maps in Sites, Assets, and Component Search pages by selecting the 'Show Map' button.



Site, Asset, and Component Graphs

Open graphs in Sites, Assets, and Component Search pages by selecting the 'Show Graphs' button.

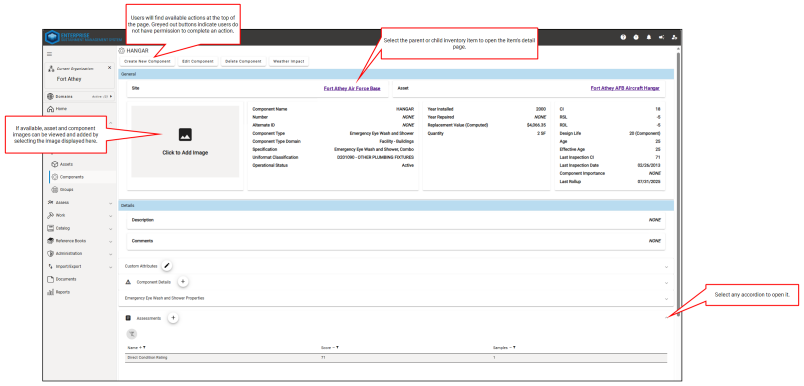
Tip: Maps and graphs can be viewed at the same time to provide comprehensive visuals of the data displayed in the table.

Inventory Detail Pages

Selecting a managed component, managed asset, or managed site from the Inventory Search page will open the Inventory Detail page. Here, users will find key information on the item selected.

From the details page, all users can:

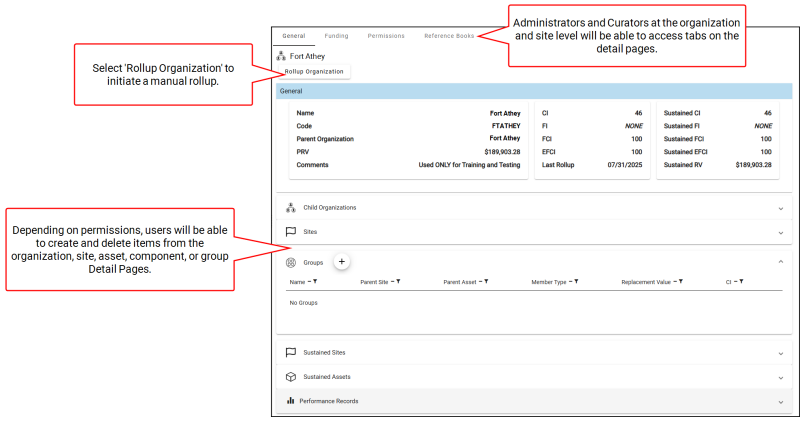
- View details and metrics of the selected managed component, asset, or site.
- See relationships between and navigate to related parent, child, and associated managed components, assets, or sites.
- View a performance records chart.



Depending on permissions, users may be able to complete additional actions on the Details page.

- Initiate a manual rollup.
- Add images to assets and components.
- Create, edit, and delete assets and components.
- Create, edit, and delete assessments and work items.
- Create, edit, and delete groups.

- Create relationships between parent, child, and associated managed components, assets, or sites.
- Manage user permissions, funding, and reference books.

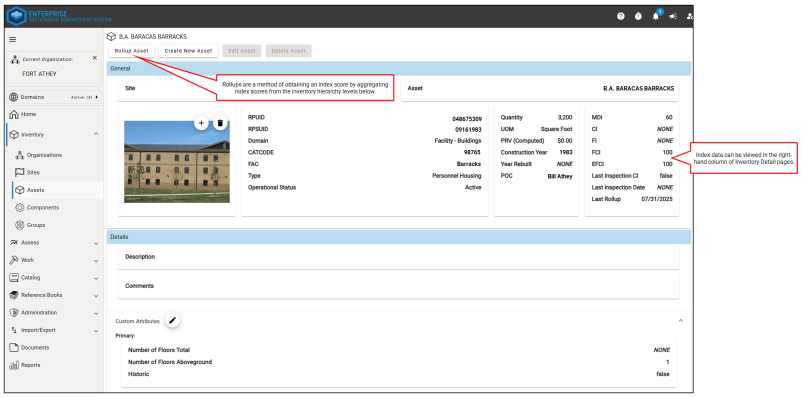


Tip: "Rollups" on the next page are a method of aggregating information to generate or update metrics for a managed component, asset, or site. Rollups can be initiated for particular assets, sites, or organizations.

Index Calculations

Index calculations are available for groups as well as each of the four levels of the E-SMS inventory hierarchy: components, assets, sites, and organizations. Indices are calculated from user input data (i.e. direct ratings or other inspection type results) and other data integrated into E-SMS (i.e. PRV[1] data pulled from the systems of record used by E-SMS). Higher levels of the inventory hierarchy use rollups to aggregate index scores from lower in the inventory hierarchy.

Review the Types of Index Calculations for more details on how each index is calculated.



Rollups

> Index calculations at higher levels of the inventory hierarchy are calculated from rollups. The rollup process aggregates – or "rolls up" – computed values from the bottom of the inventory hierarchy up to the hierarchy level where the rollup was performed.
>
> Rolled up values may be weighted, often by cost. Rollups may be performed for groups, assets, sites, and organizations, and can be initiated on inventory detail pages.

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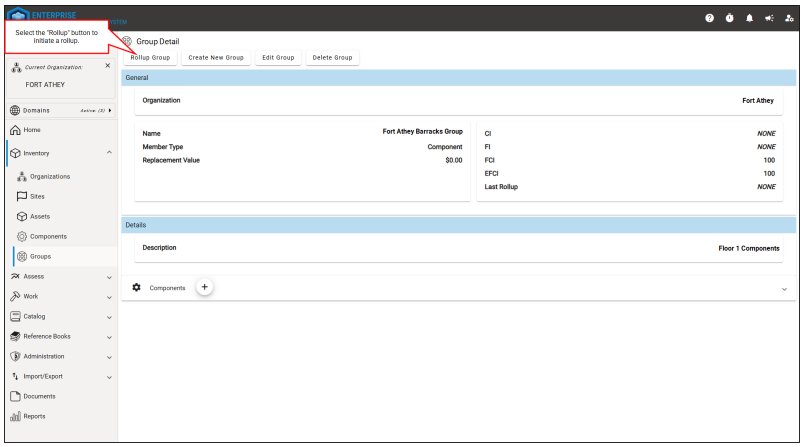
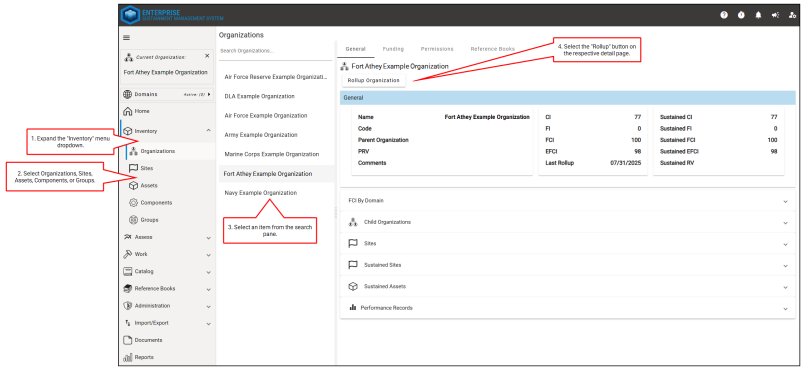
[1](Plant Replacement Value). The total cost to rebuild or recreate an asset. This value may be defined or use the sum of its constituent components' PRV values at higher inventory levels (i.e., sites or organizations) or the sum of the PRV values for constituent assets.



Initiating Rollups

To initiate a rollup on inventory detail pages:

1. Expand the "Inventory" menu dropdown
2. Select a hierarchy level
3. Select an item from the search screen/pane
4. Select the "Rollup" button on the selected item's detail page ("Rollup Organization," "Rollup Site," etc.)



Types of Index Calculations

The following table lists the types of index calculations available for groups and each of the inventory hierarchy levels:

Index Calculation	Groups	Components	Assets	Sites	Organizations
Condition Index	CI[1a]	CI[2b]	CI[3a]	CI[4a]	CI[5a]
Functionality Index	FI[6a]	—	FI[7b]	FI[8a]	FI[9a]

[1](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.
[2](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.
[3](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.
[4](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.
[5](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.
[6](Functionality Index). It addresses issues related to user requirements, technical obsolescence, and regulatory or code compliance at the Functional Area level. Uses a scale between 0-100 to match the scale used for condition indices.
[7](Functionality Index). It addresses issues related to user requirements, technical obsolescence, and regulatory or code compliance at the Functional Area level. Uses a scale between 0-100 to match the scale used for condition indices.
[8](Functionality Index). It addresses issues related to user requirements, technical obsolescence, and regulatory or code compliance at the Functional Area level. Uses a scale between 0-100 to match the scale used for condition indices.
[9](Functionality Index). It addresses issues related to user requirements, technical obsolescence, and regulatory or code compliance at the Functional Area level. Uses a scale between 0-100 to match the scale used for condition indices.

Facility Condition Index	FCI[1a]	—	FCI[2b]	FCI[3a]	FCI[4a]

[a] Rollup

[b] Calculated directly from E-SMS data

— Calculation does not exist at this level

Condition Index

The Condition Index (CI[5]) is a calculation that represents an object's condition on a 0-100 scale. The CI[6] adjusts based on condition assessment scores and models condition degradation over time using the Weibull Curve. Condition assessments can be performed at the component or asset level. The CI[7] can be rolled up the inventory

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[1](Facility Condition Index). This is a financially based index showing the relationship between the cost of deferred M&R work and the Plant Replacement Value, or PRV. Uses a scale between 0-100, with higher scores indicating better facility conditions.

[2](Facility Condition Index). This is a financially based index showing the relationship between the cost of deferred M&R work and the Plant Replacement Value, or PRV. Uses a scale between 0-100, with higher scores indicating better facility conditions.

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[4](Facility Condition Index). This is a financially based index showing the relationship between the cost of deferred M&R work and the Plant Replacement Value, or PRV. Uses a scale between 0-100, with higher scores indicating better facility conditions.

[5](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[6](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

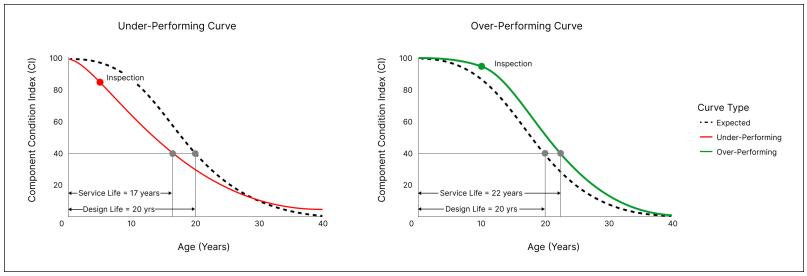
[7](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

hierarchy by taking a weighted average of the component level CI[1] values.

Note: The condition assessment score is calculated based on how the assessment template is configured. Most often, the direct condition rating is used. However, customized assessment templates can be used for different scoring methodologies.

The Weibull Curve

SMS uses the Weibull Curve to model degradation, which details how the component CI[2] degrades over time. Each component type has an initial expected design life that the curve uses, represented by the 'Expected' dashed curve. As time goes by and inspections are performed to capture the real-world performance of the component, the curve may separate from the initial curve to represent the true degradation of the component using the assessment data collected. This new lifecycle curve is represented as the 'Over-Performing' or 'Under-Performing' curve.



[1](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[2](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

In these examples, the components are assessed at a higher or lower condition than would be expected using the initial expected design life of 20 years for this component type.

In the Over-Performing Curve, the curve is adjusted to the new expected service life of 22 years. This new lifecycle curve shows that this component is over-performing, and as a result, premature replacement can be avoided and the component can utilize the gain in an additional two years of life.

In the Under-Performing Curve, the lower than expected condition assessment at 10 years adjusts the curve to the new expected service life of 17 years, showing that this component is under-performing and will need a replacement sooner than expected.

This type of analytic decision-making shines through when managing a large inventory and enables informed decision making for optimal asset management planning.

The Weibull Curve can be represented mathematically as follows:

where A in the initial condition CI (100), CI_t is the terminal CI value (usually 40), t is the ratio of the component age to its design life, β is the service life parameter, and α is the degradation parameter.

Inspection Adjust Curve

When an assessor performs a condition assessment, this results in a condition assessment score. This score is used to adjust the Weibull Curve. The inspection adjusted curve can be represented mathematically as follows:

where β_{Adj} is the adjusted service life parameter and α_{Adj} is the adjusted degradation parameter. To determine β_{Adj}, first calculate the Effective Age, and then apply the following formula:

The beta shift (β_{Shift}) parameter represents whether an actual Component Age from an installed date or an Effective Age from a condition assessment is better to use when modeling condition degradation using the Weibull Curve. The beta shift parameter helps users determine which option is better to use (or when to use both options at once).

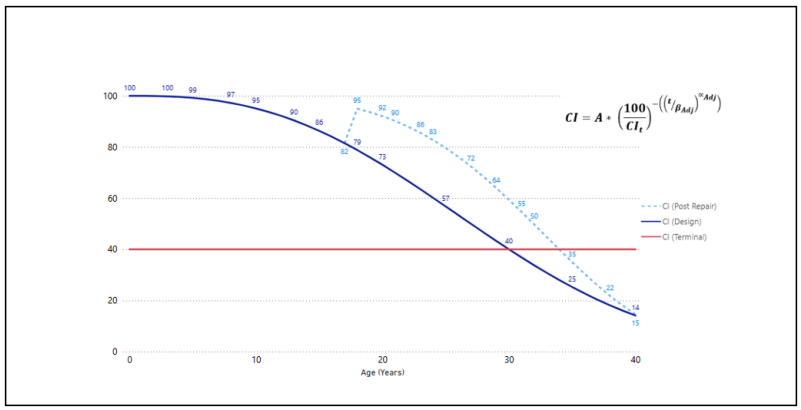
For example, a beta shift parameter of zero indicates the Effective Age is not being considered, so now there would be no adjustments to the Weibull Curve from the original design/expected curve because only the Component Age is used. Alternatively, if the beta shift parameter equals one, the Effective Age is being used, so the full adjustment to the original design/expected curve occurs as expected.

The formula to determine α_{Adj} is as follows:

These adjusted service and degradation parameters can be plugged back into the inspection adjusted Weibull Curve equation to model the lifecycle degradation of the component.

Repair Adjusted Curve

Repair actions can be generated for a component with the Work Analysis engine or a user can create a repair type custom work item for a component. Repairs increase the component CI[1], so the Weibull Curve will need to be adjusted to reflect the repair. This is represented as follows:



The repair adjusted Weibull Curve can be represented mathematically with the same equation as the inspection adjusted Weibull Curve, where the β_{Adj} and α_{Adj} parameters would instead use the Repair CI[2] and Repair Age in place of the Inspection CI[3] and Inspection Age respectively.

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[1](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[2](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[3](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

Component Condition Index Scale

The component Condition Index (CI[1]) scale helps users determine the condition of components within the inventory.

> **Note:** The Component-Section Condition Index (CSCI[2]) in BUILDER is equivalent to the component CI[3] in E-SMS.

Along with numerical scores, component CI[4] values are represented by corresponding color schemes. High values are displayed in green, medium values in amber, and low values in red, as shown in the following table:

Component Condition Index Scale

Rating and Color Scheme	Number Association Range	Sustainment Needs	Rating Definition
Green	86-100	Sustainment consisting of possible preventative maintenance	Little to no component or sample serviceability or reli-

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[1](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[2](Component-Section Condition Index). Historical term from BUILDER. A condition rating for a target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, and then subtracting that deduct value from the maximum possible rating of 100.

[3](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[4](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

		(where applicable) and minor repairs (corrective maintenance) to some child components.	ability reduction. Some, but not all, non-critical child components or a few major critical child components may suffer from slight degradation.
Amber	56-85	Sustainment or restoration to any of the following: minor repairs to several child components, or significant repair, rehabilitation, or replacement of one or more child components, but not	Component or sample component serviceability or reliability is degraded or significantly impaired. Some child components may suffer from moderate deterioration with several minor

		enough to encompass the component as a whole (or combinations thereof).	(non-critical) child components suffering from severe degradation.
Red	0-55	Sustainment or restoration required consisting of major repair, rehabilitation, or replacement to the component as a whole.	Significant or total serviceability or reliability reduction in component or sample component. Most child components are severely degraded while others are not salvageable.

Asset Condition Index Scale

The asset CI[1] measures the condition of the asset based on standardized inspection observations about the in-service condition and performance of the groups and components that make it up. The individual component index scores are aggregated to an asset level using a weighted average approach.

> **Note:** The Building Condition Index (BCI[2]) in BUILDER is equivalent to the asset Condition Index (CI[3]) in E-SMS.

Like the component Condition Index (CI[4]) scale, asset Condition Index (CI[5]) values are represented by numerical scores that correspond to different color schemes.

Green values indicate assets in excellent condition or good condition with some sustainment required. Amber values represent assets in fair condition. Red values indicate assets in poor condition.

Asset Condition Index Scale

Rating and Color Scheme	Number Association Range
Green	86-100

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[1](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[2](Building Condition Index). Historical term from BUILDER. The overall condition rating for a building. For each building, the BCI is computed by taking the average of its systems' CIs, weighted by replacement cost.

[3](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[4](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[5](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

Amber	70-85
Red	0-69

Functionality Index

E-SMS uses a functionality index (FI[1]) to indicate the functionality state of a group, asset, site, or organization. The FI[2] is calculated at the asset level based on functionality assessment data, and can be rolled up to the group, site, and organization levels.

Inventory Hierarchy Level	Formula
Organization	
Site	

Facility Condition Index

[1](Functionality Index). It addresses issues related to user requirements, technical obsolescence, and regulatory or code compliance at the Functional Area level. Uses a scale between 0-100 to match the scale used for condition indices.

[2](Functionality Index). It addresses issues related to user requirements, technical obsolescence, and regulatory or code compliance at the Functional Area level. Uses a scale between 0-100 to match the scale used for condition indices.

The Facility Condition Index (FCI[1]) represents an asset's financial state. The FCI[2] indicates the financial liability of the deferred maintenance and repair work that has accumulated in the asset over time.

The FCI[3] is expressed as a ratio of the estimated cost of the repairs needed to correct the accrued M&R[4] needs against the PRV[5].

Inventory Hierarchy Level	Index Formula
Organization	
Site	
Asset	

[1](Facility Condition Index). This is a financially based index showing the relationship between the cost of deferred M&R work and the Plant Replacement Value, or PRV. Uses a scale between 0-100, with higher scores indicating better facility conditions.

[2](Facility Condition Index). This is a financially based index showing the relationship between the cost of deferred M&R work and the Plant Replacement Value, or PRV. Uses a scale between 0-100, with higher scores indicating better facility conditions.

[3](Facility Condition Index). This is a financially based index showing the relationship between the cost of deferred M&R work and the Plant Replacement Value, or PRV. Uses a scale between 0-100, with higher scores indicating better facility conditions.

[4](Maintenance and Repair). Activities designed to keep existing assets or components functioning as designed or to restore them to working order.

[5](Plant Replacement Value). The total cost to rebuild or recreate an asset. This value may be defined or use the sum of its constituent components' PRV values at higher inventory levels (i.e., sites or organizations) or the sum of the PRV values for constituent assets.

Tip: The FCI[1] and CI[2] are two distinct indices. The FCI[3] represents the financial state of an object, while the CI[4] represents the condition of an object.

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[1](Facility Condition Index). This is a financially based index showing the relationship between the cost of deferred M&R work and the Plant Replacement Value, or PRV. Uses a scale between 0-100, with higher scores indicating better facility conditions.

[2](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

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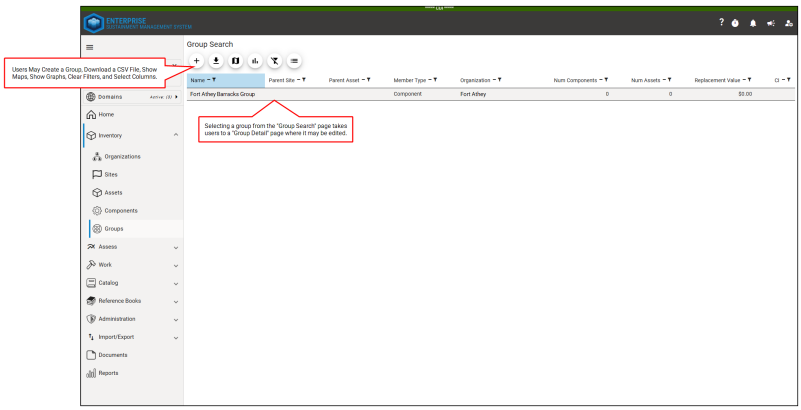
[4](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

Groups

> **Note:** Requires Administrator, Curator, or Assessment Supervisor permissions to edit or delete.

In E-SMS, groups are a collection of components or assets which belong to one or more organizations. Groups are non-hierarchical and cannot contain other groups; a group may be composed of either components or assets, but not both. Groups provide a flexible way to segment data and view metrics on curated subsets of data. Group membership may be based on factors like system type, geospatial area, engineering discipline, or resource mission dependence. For additional information on groups and permissions, review the About Groups section, or the Introduction to Permissions.

- **About Groups** - How user permissions determine group visibility, where to find group membership information, and group metrics.
- **Adding Items to Groups** - Add components or assets with step-by-step instructions
- **Edit or Delete Groups** - Update or remove existing groups with step-by-step instructions
- **Example Use Cases** - How users can use groups in E-SMS



About Groups

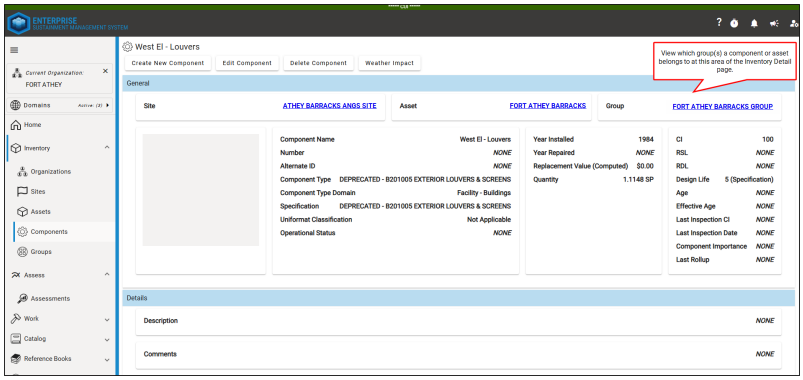
Visibility

The Group Search page will display the list of available groups for the organization selected in the side navigation. This list and visibility throughout E-SMS also depends on the user's permissions. For example, if the user has permissions to a site but no permissions at the organization level, the list of groups will only show groups at the asset and component levels. If a user has permissions at an organization, all groups under that organization will appear.

Membership

The number of groups to which a component or asset belongs may be viewed at the Number Count column on the component's or asset's Inventory Search Page.

To view the groups to which an item belongs, select the component or asset Detail Page and view the groups card.



Metrics

Groups can be rolled up on demand by selecting the "Rollup Group" button on a group's detail page. Groups may also be rolled up to the organization that owns them by selecting the "Rollup Organization button on the Organization's Detail Page.

This process computes metrics such as CI[1], FI[2], and RSL[3] for the group.

Adding Items to Groups

Users with the permissions to create groups may add groups at the "Group Search" page for member types under that level. Users with "update" permissions may edit groups by adding or removing members from the group. Only users with "delete" permissions at a particular level may delete groups at that level. These actions can be executed at the "Groups" detail page.

To create or edit a group at the site level, users must have write permissions for that level. Users without site-level permissions may not create or edit a group at the site level. However, they may create or edit asset-level groups.

Group dropdown menus are found on Site and Organization Detail Pages. Selecting the "+" button by the respective "Groups" dropdown menu lets users create a new group or edit an existing one from the list of options.

Adding a Single Item

To add a single item to a group:

1. Select "Groups" from the Inventory dropdown.
2. Click on the desired group.
3. Select the "Add Component" or "Add Asset" button represented by "+".

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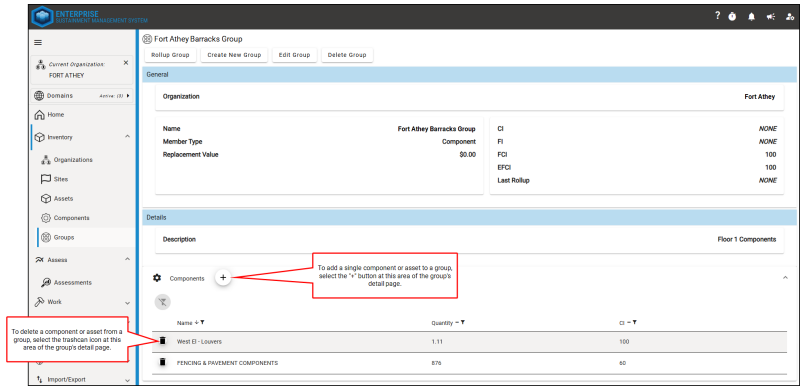
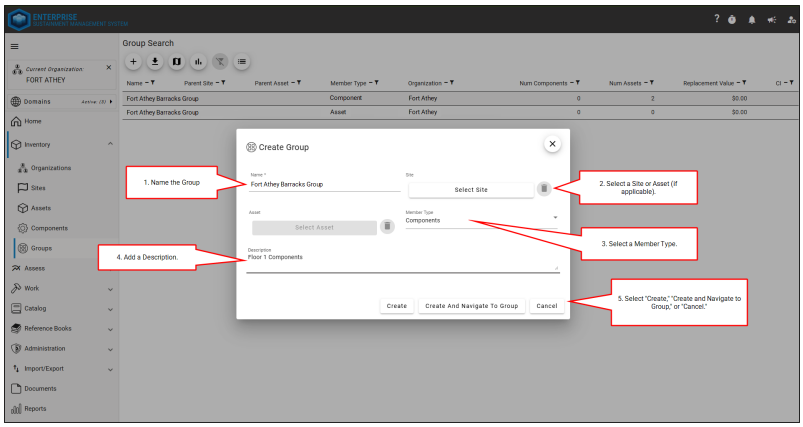
[2](Functionality Index). It addresses issues related to user requirements, technical obsolescence, and regulatory or code compliance at the Functional Area level. Uses a scale between 0-100 to match the scale used for condition indices.

[3](Remaining Service Life). The remaining time period that an asset or component is expected to perform its intended function while meeting performance requirements, based on its design life and inspections.

4. On the "Select Component" or "Select Asset" popup, select "Name", "Asset" or "Type" from the Search Field dropdown, type an item into the "Search Name" field, and select an item from the Search screen.



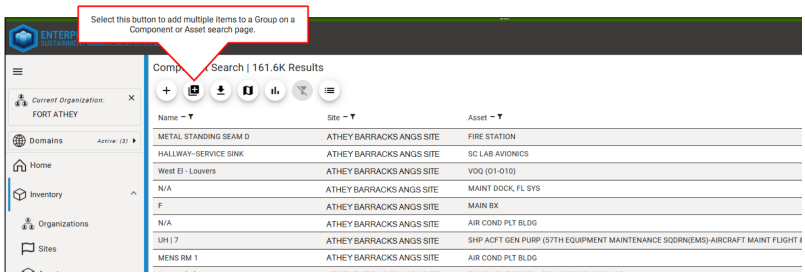


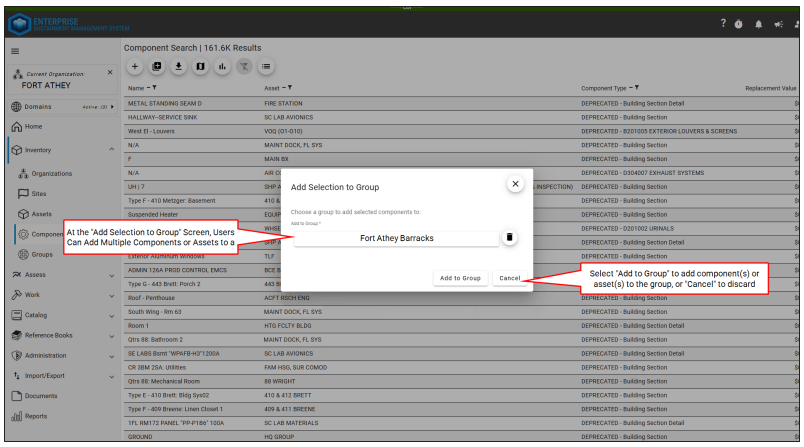
Adding Multiple Items

To add multiple items to a group:

1. Select "Components" or "Assets" from the Inventory dropdown. Apply desired filters.
2. Select the "Add Components to a Group" button on the Component Search page, or "Add Assets to a Group" on the Asset Search page.
3. At the "Add Selection to Group" popup, select a Group.

4. Select the "Add to Group" button to add the Component(s) or Asset(s) to the Group, or "Cancel" to discard changes.

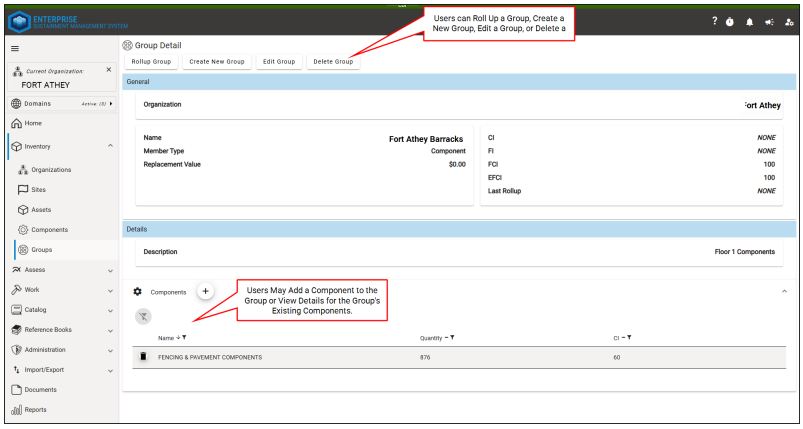




Tips for Adding Objects to Groups

- Single items may be added or removed at the group detail page. (Multiple items may be added, but they can only be added one at a time).
- Multiple items may be added to (but not removed from) a group at the component and asset search pages. Filters can be applied on the component and asset search pages which makes it easy to add specific components or assets to a group at once.
- It is not necessary to select a site at the "Create Group" screen; if a site is not selected, the group may include members from multiple sites.

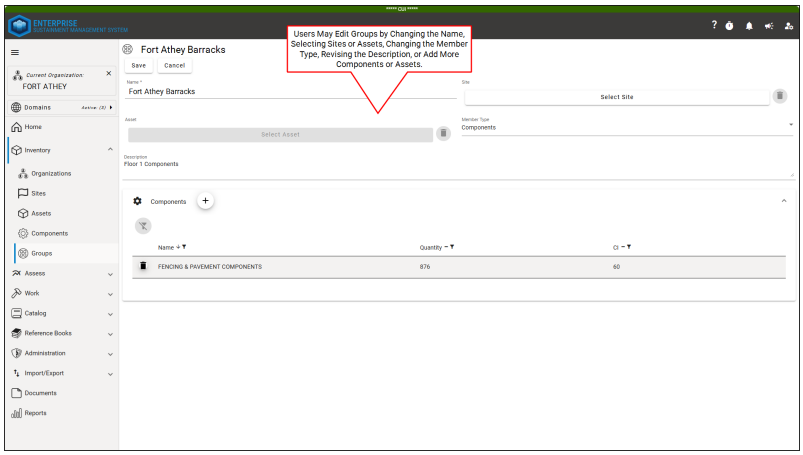
- If an asset or component that is already in a group is selected to be added again, it is ignored; objects may be added to a group only once.



Edit or Delete Groups

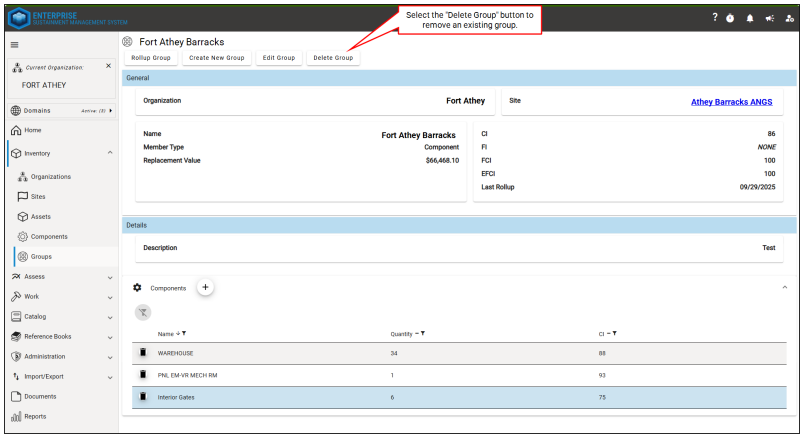
Edit a Group

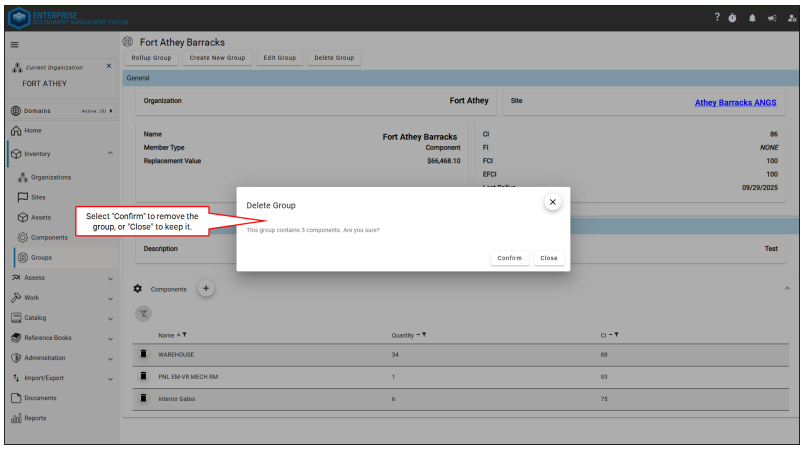
1. Select a Group from the Group Search screen.
2. Select the "Edit Group" button at the next screen.
3. Make changes to the Group's name, selected Sites or Assets, Member Type, and Description.
4. Add Components and Assets as desired.
5. Select "Save" to keep the updates, or "Cancel" to discard them.



Delete a Group

1. Select a Group from the Group Search screen.
2. Select the "Delete Group" button at the next screen.
3. At the "Delete Group" popup, select "Confirm" to remove the group, or "Close" to keep it.



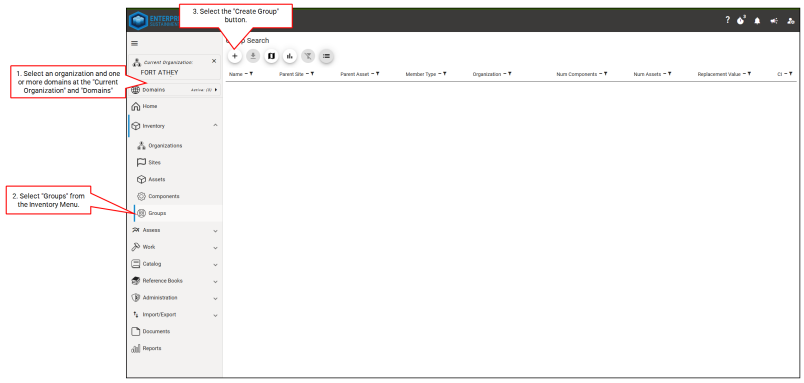


Example Use Cases

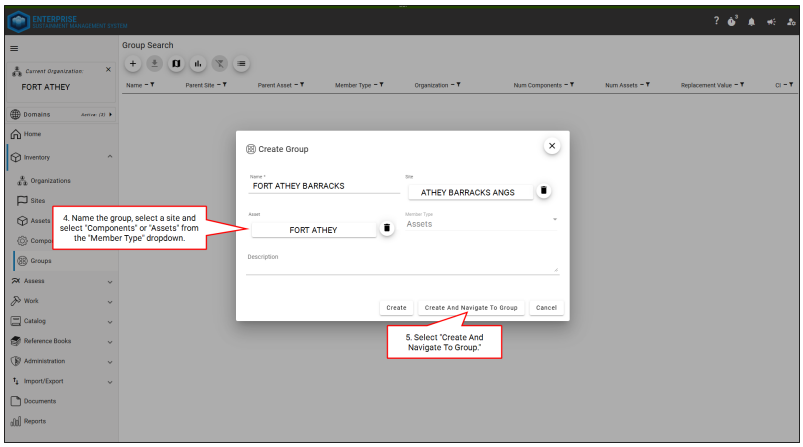
Example Use Case 1

Consider a site with multiple building types. Users can set up groups to generate metrics about barracks only.

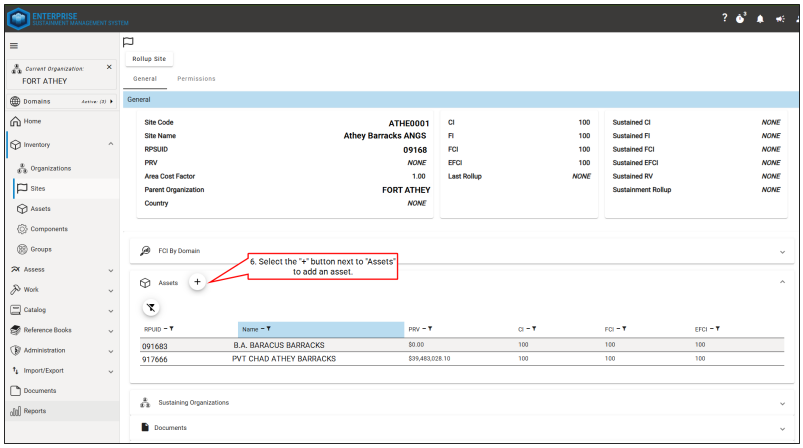
1. First, select an organization and one or multiple domains from the side navigation menu.
2. Next, select "Groups" from the Inventory Menu.
3. At the Group Search screen, select the "Create Group" button.



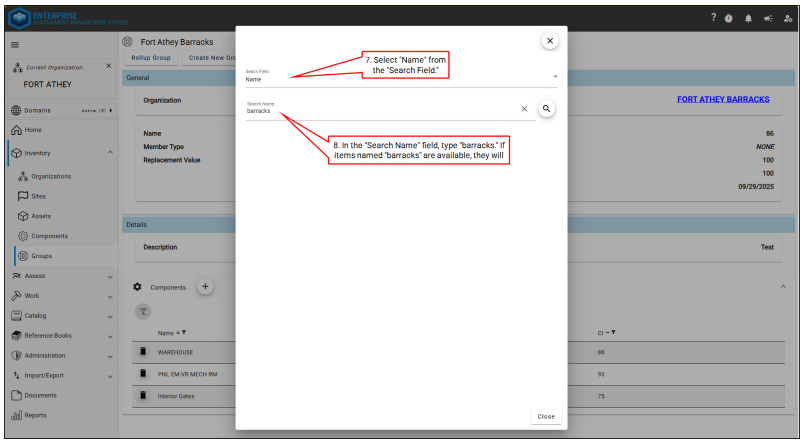
4. After the popup screen appears, name the group, select a site, and select "Assets" from the "Member Type" dropdown.
5. Select "Create And Navigate To Group."



6. Under the "Details" section, select the + button next to "Assets" to add an asset.



7. At the "Select Asset" screen, select "Name" from the "Search Field."
8. In the "Search Name" field, type "barracks." All items named "barracks" appear in a list underneath.



9. Select an item, and it appears under the "Asset" dropdown on the group page.
10. Select the funnel icon at the "Name" column and type "barracks" in the search box. Now, only items with "barracks" in the name are ready to view.

Example Use Case 2

Consider a user who wishes to create a group for items on a asset's roof.

1. First, select the "Create Group" button from the "Group Search" screen.
2. At the "Create Group" popup, select "Components" from the "Member Type" dropdown.
3. Next, select appropriate components to add to the group.
4. Select "Create" or "Create And Navigate to Group."
5. To add more items to the group, select the group from the "Group Search" screen.
6. Select the "+" button next to the respective item type, and click "Name" in the search field dropdown at the "Select Component" or "Select Asset" popup.
7. Enter text in the "Search Name" field and select an option from the search to add it to the Group.

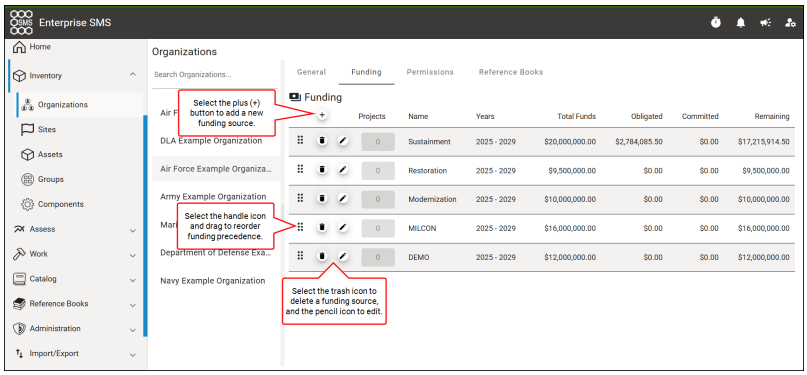
For more information on adding items to a group, refer to Adding Items to Groups.

Set Up Funding

Organization Admins can set up funding at the organization level in the Funding tab. This tab contains information related to an organization's budget. The information input here can be used in Work Analysis.

From the Funding tab, users can:

- Add a new funding source by selecting the plus (+) icon.
- Update funding precedence by selecting the handle icon and dragging into the preferred order.
- Create "Funding Restrictions" on the next page to limit the use of each funding source by site and domain.



Funding Fields

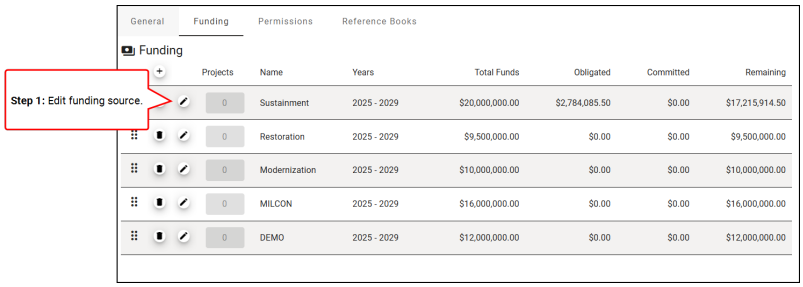
Name	The funding source.
Years	The time span of the funding.
Total Funds	The funding's full dollar amount.
Obligated	How much of the funding is set aside for mandatory use.
Committed	How much of the funding has been allocated.

Remaining	The amount of funding that is still available to use.

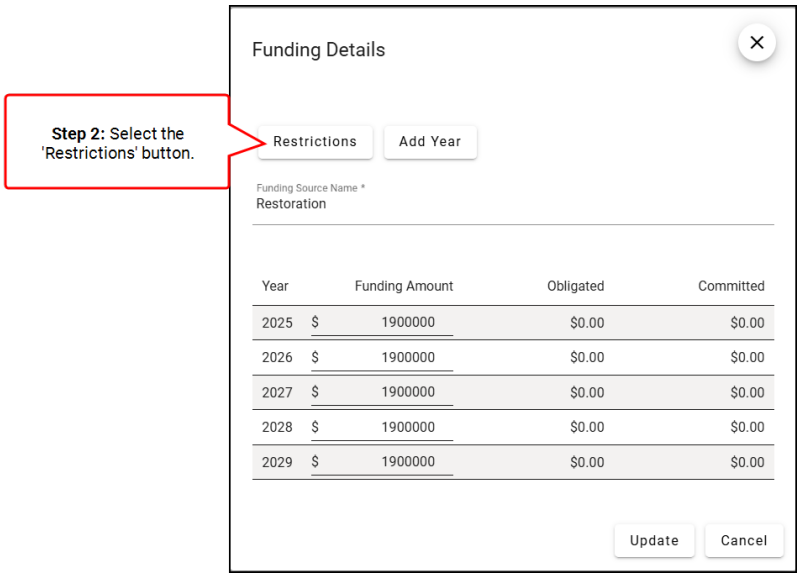
Funding Restrictions

Restrictions can be added to limit the use of each funding source by site and domain. Multiple restrictions can be applied to a funding source.

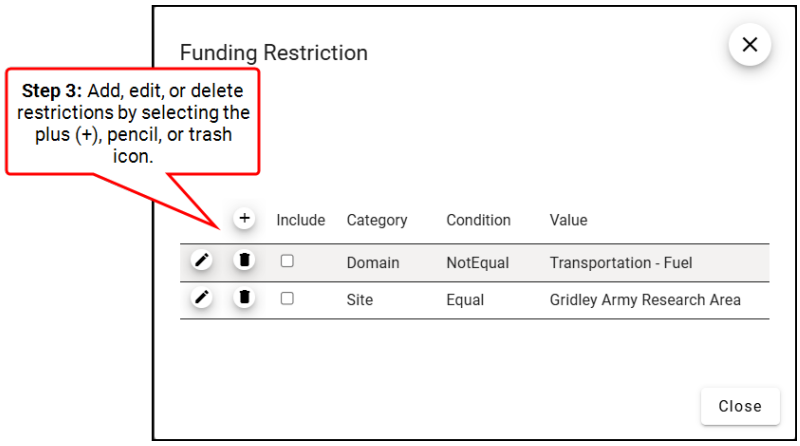
1. Select the pencil icon next to the funding source.



2. Select the 'Restrictions' button.

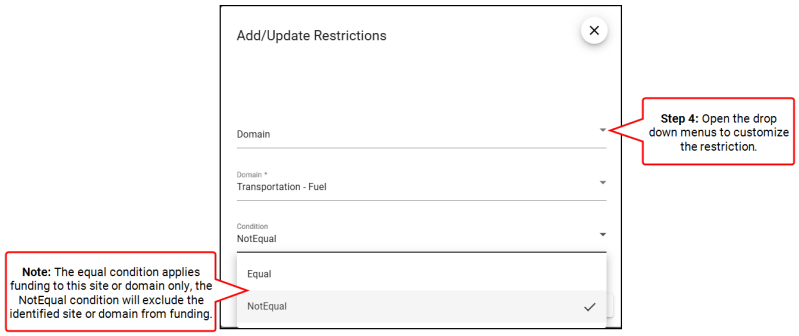


3. Add, edit, or delete restrictions by selecting the plus (+), pencil, or trash icon.



4. Customize restrictions with the drop down menus.

> **Note:** Note: The equal condition applies funding to this site or domain only, the NotEqual condition will exclude the identified site or domain from funding.

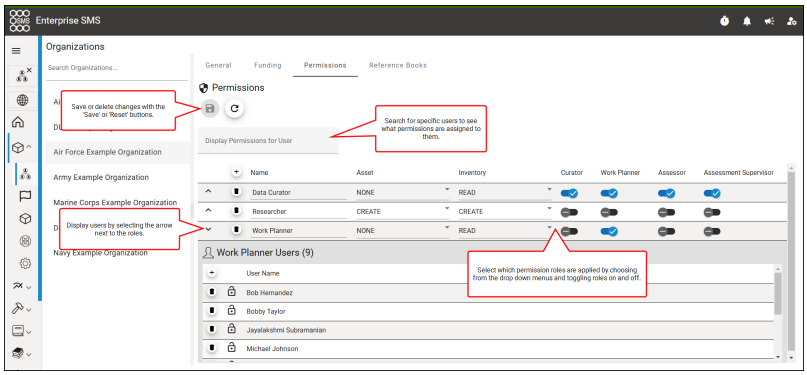


Assign User Permissions

Organization and Site Administrators can assign user permissions at the organization and site level in the Permissions tab.

In the Organization or Site Permissions tab, Administrators can:

- Create permission roles.
- Select permission roles.
- Assign users to roles.
- Search individual users to see what permissions are assigned to them.



Tip: Visit "Introduction to Permissions" on page 15 to learn about permission roles and how they interact with the "Inventory Hierarchy" on page 30.

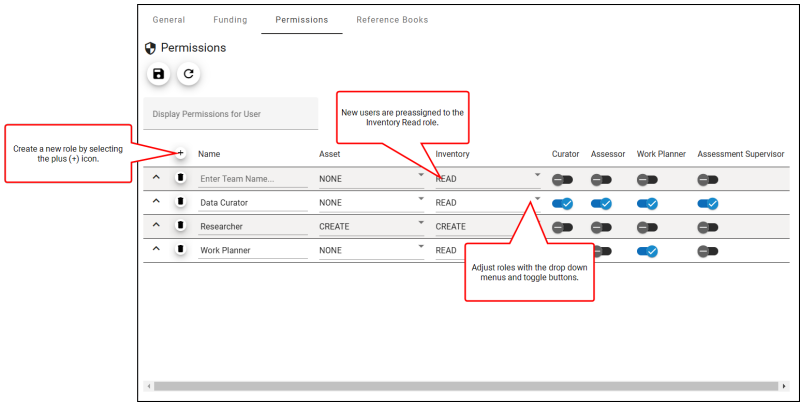
Creating Roles

In E-SMS, permissions are assigned to users through roles. These roles will have permissions given to them, which controls the access users will have.

1. Select the plus (+) icon at the top left of the table.
2. Enter the role name in the text box.

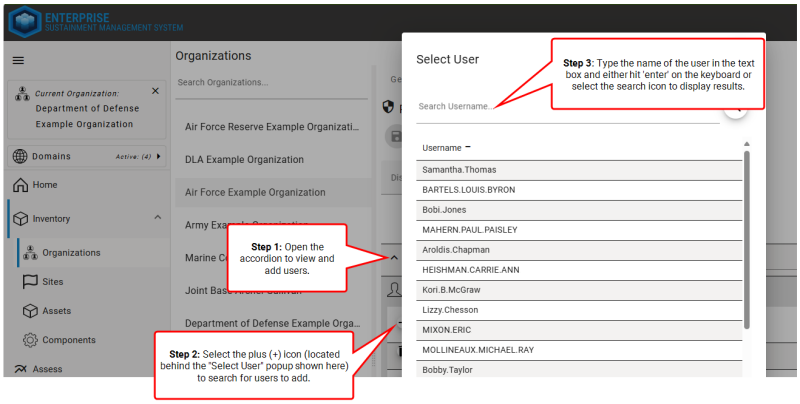
3. Select which roles to inherit.

> **Note:** Inventory Read is already selected as it is the lowest level of access and necessary for the other roles to perform their functions.



Assigning Users

1. Open the role accordion to view and add users.
2. Select the plus (+) icon to search for users to add.
3. Type the user's name in the text box and either hit 'enter' on the keyboard or select the search icon to display results.



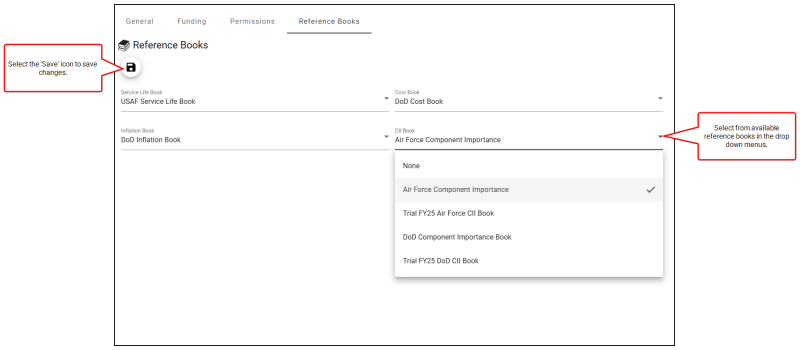
Apply Reference Books

Organization Admins can select reference books at the organization level in the Reference Books tab. The selections in this tab affect service life, cost, cost modifiers, inflation, and component importance data throughout E-SMS.

> **Note:** Reference books selected in this tab affect component level calculations that will rollup into the organization level.

In the Reference Books tab, users can:

- Select from configured organization or parent organization reference books.

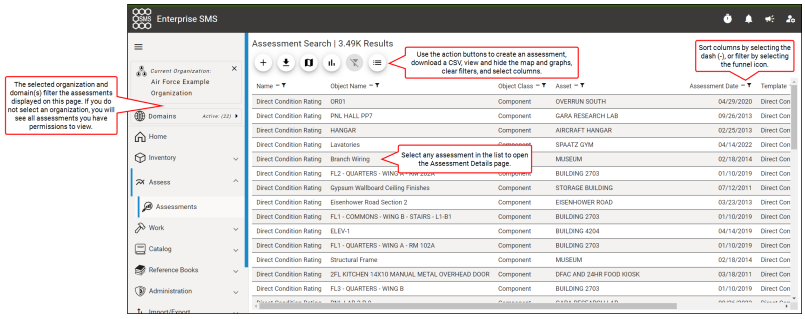


> **Tip:** Reference books are configured for each organization in the Reference Books section.

Assessments

Learn about assessments, and what you can do in the Assessments section in E-SMS.

Assessments are a way to collect information about the state of components. In the Assessments Section, users will land on the "Assessment Search Page" on page 71, where they can view assessments, customize and download CSVs, and view maps and graphs of the components and assets displayed in the table. Selecting an assessment will open the "Assessment Details Page" on page 74.



- **"Understanding Assessments" on the next page** - An overview of assessment types and templates.
- **"Assessment Search Page" on page 71** - Manage assessments, customize and download CSVs, and view assessment maps and graphs.
- **"Assessment Details Page" on page 74** - View and manage details associated with a specific assessment.
- **"Create Assessments" on page 77** - Create assessments on the "Assessment Search Page" on page 71 and the "Assessment Details Page" on page 74.
- **"Edit and Delete Assessments" on page 80** - Edit and delete assessments from the "Assessment Details Page" on page 74.
- **Workspaces** - Plan and delegate workspaces, QA/QC inventory data, and submit workspace approvals.

Understanding Assessments

An overview of assessment types and templates.

Over time, everything in the real property inventory will experience a deterioration in physical condition due to general aging, and exposure to a number of external or environmental factors. An assessment is simply a way to collect performance information about a component or asset. This could mean a direct rating on a chiller component or a functionality assessment on a tactical equipment maintenance facility. It is different from repair or replacement, for example, in that the goal is to learn about the performance state of the item being assessed. The information collected during an assessment and, if applicable, the resulting index value help you to make better decisions about when to repair, replace, inspect, and perform maintenance.

Assessment Templates

When creating an assessment in E-SMS, users have the option of selecting which assessment type they want to use. Assessment templates are composed of one or more questions which prompt an assessor to provide information about a particular item. Most assessment templates result in a condition index score or functionality index score.

Assessment Types

There are two categories of assessments: condition and functionality.

Note: E-SMS currently supports distress survey and direct rating condition assessments.

Condition Assessments

Condition assessments are used to determine the deterioration in physical condition. For example, you may note that a chiller subcomponent has corrosion or spalling is visible on a concrete deck.

These types of assessments are typically conducted at the component level and will result in a CI[1] metric that represents the condition of the inventory being assessed.

Types of condition assessments:

- **Distress Surveys** - these surveys involve the recording of the type of distresses observed, and their severity and density, for the piece of inventory being assessed.
- **Direct Rating** - where a single qualitative rating is assigned to the piece of inventory being assessed based on condition observations.

Functionality Assessments

Functionality assessments are used to assess the capability of functioning for the mission it was designed, or is required to support. For example, an assessor may note that a headquarters building does not meet ADA requirements.

These types of assessments are typically conducted at the asset level and will result in a FI[2] metric that represents the functionality state of the piece of inventory. These two metrics, CI[3] and FI[4], are used to compute the PI.

---

[1](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[2](Functionality Index). It addresses issues related to user requirements, technical obsolescence, and regulatory or code compliance at the Functional Area level. Uses a scale between 0-100 to match the scale used for condition indices.

[3](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[4](Functionality Index). It addresses issues related to user requirements, technical obsolescence, and regulatory or code compliance at the Functional Area level. Uses a scale between 0-100 to match the scale used for condition indices.

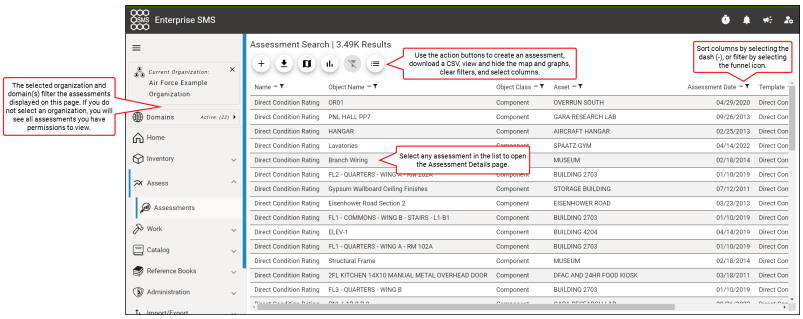
Assessment Search Page

View and modify assessments.

Note: The selected organization and domain(s) filter the assessments displayed on this page.

From the Assessment Search page, users can:

- "Create Assessments" on page 77
- Filter and sort displayed components and assets
- Download a CSV of the displayed table
- View maps of the components or assets listed
- View the "Assessment Details Page" on page 74 by selecting any assessment listed in the table.



Tip: The selected organization and domain(s) filter the assessments displayed on this page. If you do not select an organization, you will see all assessments that you have permission to view.

Assessment Search Functions

Create Assessment	Add a new assessment.

Download as CSV	Download assessment data in spreadsheet format. Column selection and filtering applied to the table will also dictate what data is contained in the CSV.
Show Map	Show or hide a map of the assessed inventory.
Show Graphs	View or hide graphs.
Clear Filters	Remove filters applied to the table. If grayed out, no filters have been applied.
Select Columns	Choose the columns shown in the table.
Filter and Sort Columns	Filter with specific terms or sort alphabetically or numerically
View Assessment Details	Click any assessment to view the Detail page.

Assessment Maps

View a map of the assessed inventory.

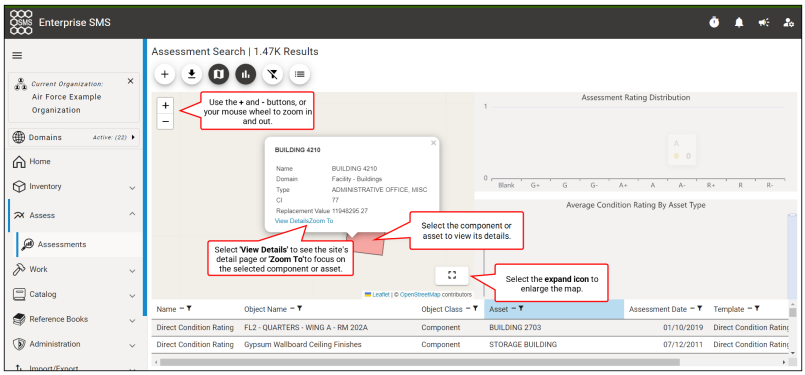
When viewing maps, users can:

- Zoom in and out with the + and - buttons or with the mouse wheel.
- Drag and drop the map to navigate to different areas.
- View asset and component details in the map.
    - Select the desired component or asset to view its name, domain, type, CI[1], and replacement value.

---

[1](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

- Select 'View Details' to see the component or asset's detail page.
- Select 'Zoom To' to focus on the selected component or asset.



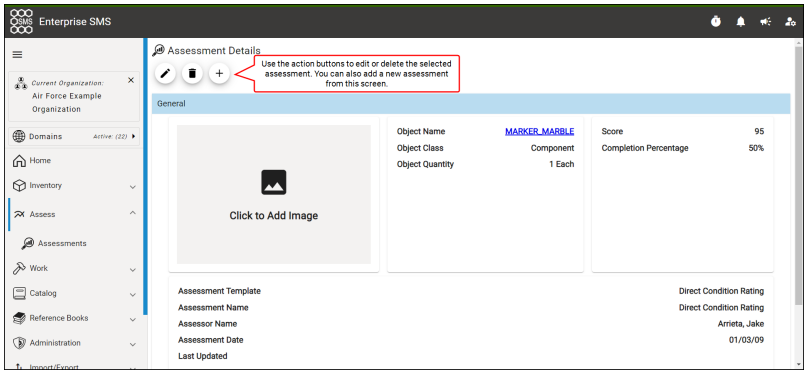
Assessment Details Page

View and manage details associated with a specific assessment.

Note: Navigate to an assessment's details by selecting an assessment from the Assessment Search Page.

From the Assessment Details page, users can:

- View assessment details and questions
- Create assessments
- Edit and delete assessments



Assessment Detail Fields

Object Name	The name of the item being assessed.
Object Class	Class of the assessed item: site, asset, or component.
Object Quantity	How many items are in the assessment.
Score	The final result of answering one or more questions in the assessment. The score calculation is dependent upon the

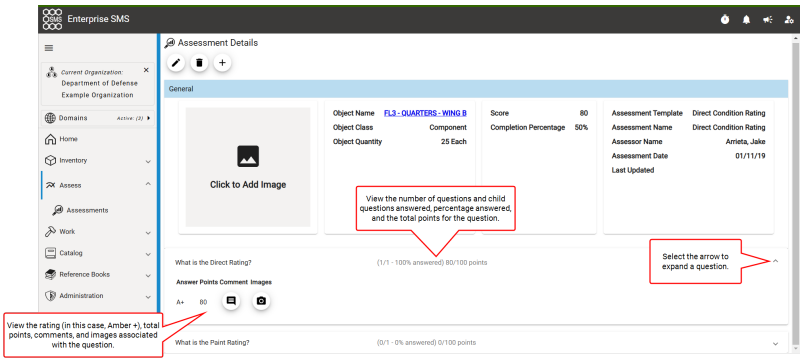
	assessment template.
Completion Percentage	The number of questions answered divided by the total number of questions.
Assessment Template	The assessment template used.
Assessment Name	A user-entered field that allows assessors to provide a name for the assessment.
Assessor Name	The assessment creator.
Assessment Date	When the assessment was performed.
Last Updated	When the assessment was last modified.
Comments	Comments associated with the assessment.

Assessment Questions

All assessment templates are composed of predetermined questions and child questions. Users can find the questions associated with each assessment at the bottom of the component or asset's Assessment Details page.

Each question accordion will contain:

- The number of questions and child questions answered
- The percentage answered
- The number of points for the question
- Comments and images (if applicable)

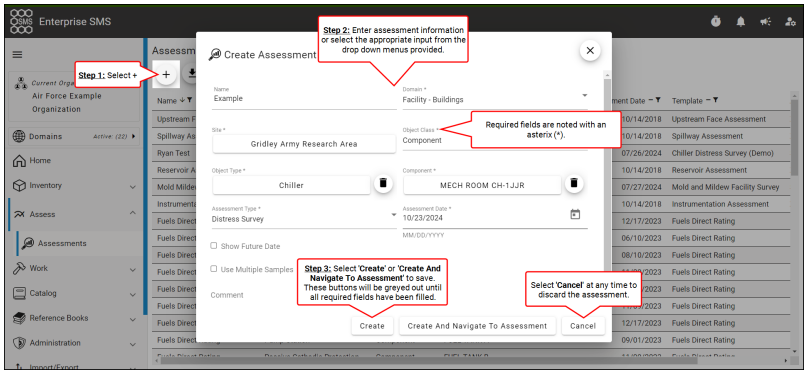

Enterprise SMS
Assessment Details
Current Organization:
Department of Defense
Example Organization
Domains
Active: (3)
Home
Inventory
Assess
Assessments
Work
Catalog
Reference Books
Administration
General
Click to Add Image
Object Name FL3 - QUARTERS - WING B
Object Class Component
Object Quantity 25 Each
Score 80
Completion Percentage 50%
Assessment Template Direct Condition Rating
Assessment Name Direct Condition Rating
Assessor Name Arrieta, Jake
Assessment Date 01/11/19
Last Updated
View the number of questions and child questions answered, percentage answered, and the total points for the question.
What is the Direct Rating?
(1/1 - 100% answered) 80/100 points
Select the arrow to expand a question.
Answer Points Comment Images
A+ 80
What is the Paint Rating?
(0/1 - 0% answered) 0/100 points
View the rating (in this case, Amber +), total points, comments, and images associated with the question.

Create Assessments

How to create, edit, and delete assessments.

Note: You must have Assessor or Assessment Supervisor permissions to complete these actions.

1. Select the plus icon (+) action button.
    - If creating from the "Assessment Search Page" on page 71, you must select an organization first.
2. Enter assessment information or select the appropriate input from the drop down menus provided.
    - Fields toward the bottom of the creation window depend on previous selections. For example, the assessment type depends on the component selected. If no component is selected, you will not be able to select an assessment type.
    - If creating from the "Inventory Detail Pages" on page 35, you will only need to select the assessment type and date in the creation window.
3. Select 'Create' or 'Create And Navigate To Assessment' to save. These buttons will be grayed out until all required fields have been filled.



Name	Title of the assessment.
Domain	The domain of the item being assessed. The dropdown menu is filtered to only the domains selected in the domain filter in the left sidebar navigation if creating from the assessment search. The dropdown menu will be filtered to the domain of the item being assessed if creating the assessment from a details page.
Site	The site of the item being assessed. This dropdown menu is filtered based on the Organization selected in the left sidebar navigation if creating the assessment from the assessment search. This dropdown will be pre-populated to the site of the item being assessed if creating the assessment from a details page.
Object Class	The category of the object being assessed: component or asset. This will be pre-populated if creating the assessment from a details page.
Object Type	The type of component. This field is only available if "Component" is selected as the Object Class. This field will be pre-populated if creating from a component details page.
Asset	The name of the asset being assessed. This field is only available if "Asset" is selected as the Object Class. This field will be pre-populated if creating the assessment from an asset details page.
Component	The name of the component being assessed. This field is only available if "Component" is selected as the Object Class. This field will be pre-populated if creating the assessment from a component details page.
Assessment Type	Drop down menu with the list of available assessment templates. The selections available are determined by the object type selected.
Assessment Date	When the assessment was executed. This field defaults to the current day, but may be edited to a date in the past if that is when the assessment was performed.
Future Date	The date of the next planned assessment. Select the checkbox to show

	the future date selection field. Only dates in the future can be input for the future date.
Sample	Sampling is a way to break up large or spatially dispersed objects into more manageable parts, with each part being assessed individually. Check the "Use Multiple Samples" checkbox to create samples. For each sample created, select the location, enter the quantity, and check the "Non_Representative" box if needed.
Comment	User-entered field where the assessor can create a comment for the assessment

Edit and Delete Assessments

How to create, edit, and delete assessments.

Note: You must have Assessor or Assessment Supervisor permissions to complete these actions.

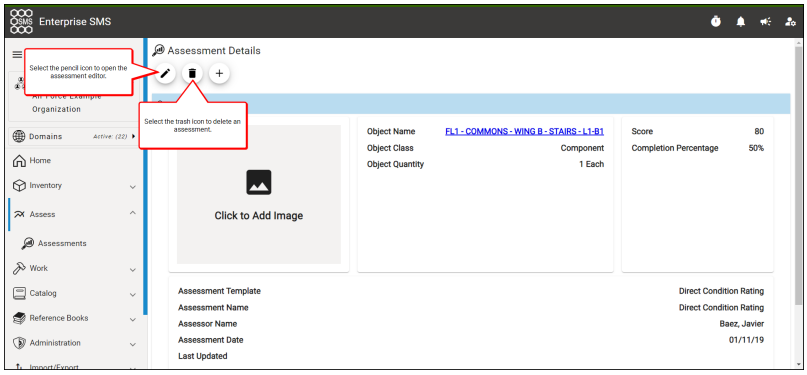
Assessments can be edited or deleted on the Assessment Details page.

To edit an assessment:

- Select the pencil icon at the top left of the screen.
- Make the desired changes.
- Select the save icon at the top left to save changes, or the cancel icon to abandon changes.

To delete an assessment:

- Select the trash icon at the top left of the screen.
- Select 'Confirm' to delete or 'Close' to return to the assessment details.



Workspaces

Workspaces are a core feature of E-SMS that allow users to work on a specific set of assets in a controlled environment. Changes made within a workspace are isolated and do not affect live E-SMS data until they are approved and merged. This feature is designed to streamline the quality assurance and validation process.

Key aspects of workspaces include:

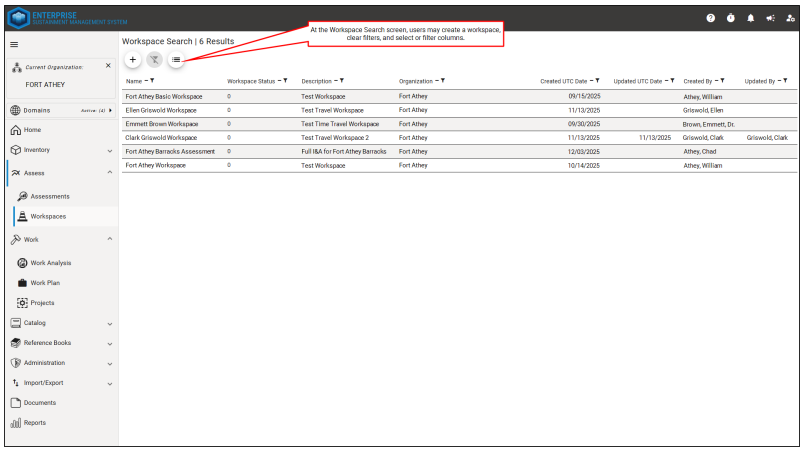
- Siloed Data: Changes in a workspace do not impact live data
- Data Locks: Assets within a workspace are protected from edits outside the workspace
- Designed for QA/QC: Provides a streamlined process for review and validation

There are five main stages to the data collection process in E-SMS:

1. Planning - Creating a workspace and adding assets
2. Delegation - Assigning users and approvers to the workspace
3. Data Collection - Using the field app to collect data
4. QA/QC - Reviewing and correcting data in the Web App
5. Data Acceptance - Approving and merging the final data

There are planning decisions that Organizations should make prior to beginning the data collection process. These include:

1. Data Locks - Assets in a workspace are locked from all outside edits. To avoid locking inventory for extended periods, break long-term data collection efforts (one year or longer) into smaller chunks, locking assets for three months or less.
2. Exclusivity - An asset can only be in one workspace at a time. It will not appear in search results to be added to a new workspace until it is removed from its current one by merging or deletion.



Planning

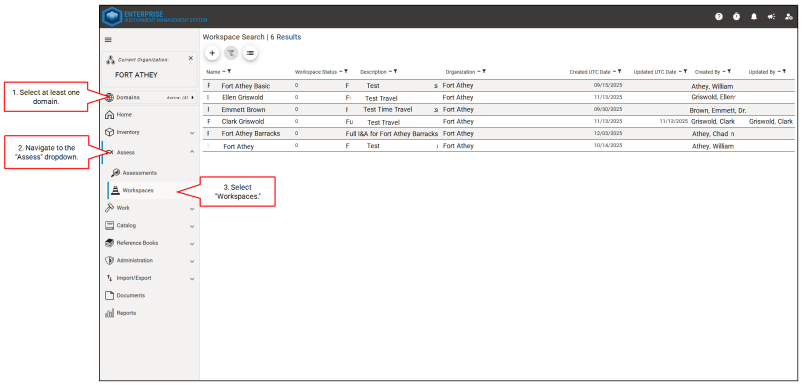
The first stage is to create a workspace and add the assets users need to assess.

Users must meet the following criteria before navigating to the workspace search screen:

1. At least one domain is selected
2. User must be assigned to at least one existing workspace, or have the Assessment Supervisor role for at least one Organization

To navigate to the workspace search screen:

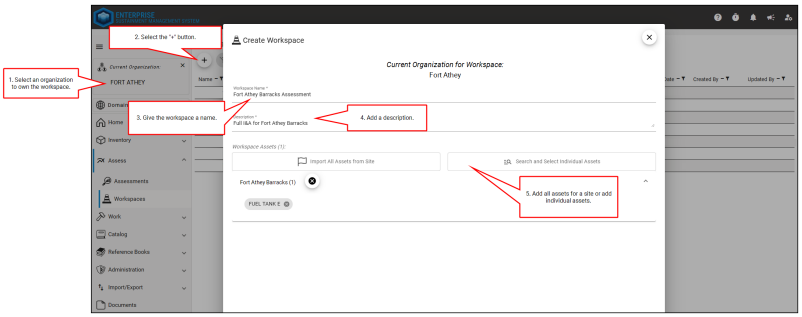
1. Select one or more domain(s)
2. Navigate to the "Assess" dropdown
3. Select "Workspaces"



Users who want to create a new workspace must first select an organization from the "Current Organization" list.

To create a new workspace:

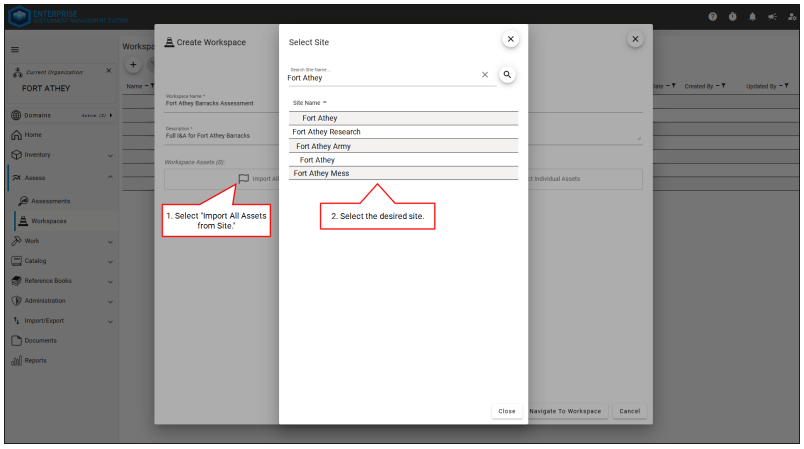
1. Select an organization to own the workspace
2. Select the "+" button
3. Give the workspace a name
4. Add a description
5. Add all assets for a site or add individual assets



To add assets to a workspace during the workspace creation process, a user can either add all assets for a site or select individual assets to be added.

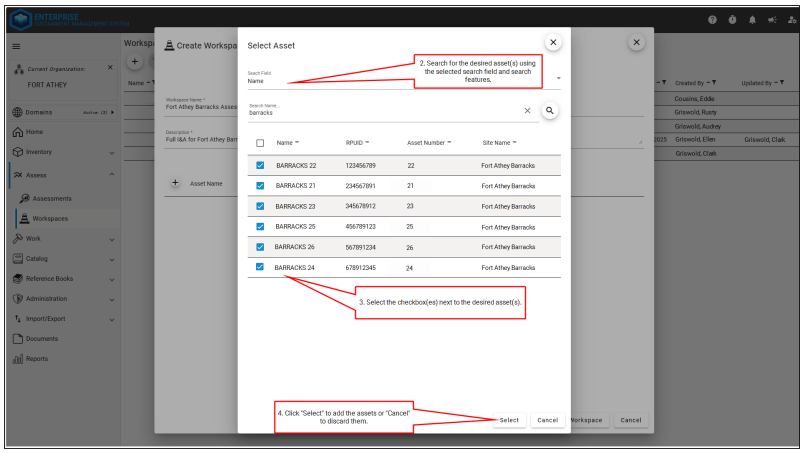
To add all assets for a site:

1. Select "Import All Assets from Site"
2. Select the desired site



To add individual assets:

1. Select "Search and Select Individual Assets"
2. Search for the desired asset(s) using the selected search field and search features
3. Select the checkbox(es) next to the desired asset(s)
4. Click "Select" to add the assets or "Cancel" to discard them

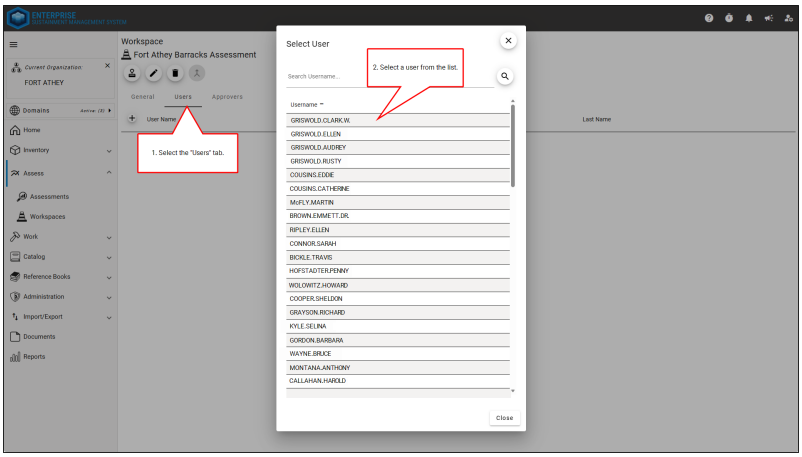


Delegation

The delegation stage is when approvers may assign users or other approvers to a workspace.

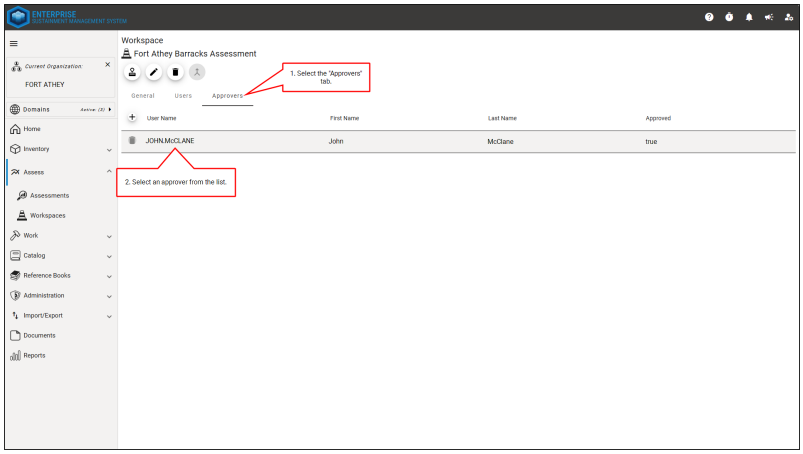
To delegate a user to a workspace:

1. Select the "Users" tab
2. Select a user from the list



To delegate an approver to a workspace:

1. Select the "Approvers" tab
2. Select an approver from the list



For details on User and Approver Permissions, view the full list below.

User and Approver Permissions

Permissions	Users	Approvers
Update all components in the workspace	✓	✓
Create new assets, components, and assessments in the workspace	✓	✓
Sync the workspace to the Field App and perform all inventory and assessment operations	✓	✓
Update workspace name or description		✓
Approve, merge, or delete the workspace		✓
Modify assigned users and approvers		✓

Data Collection

Once a workspace has been created and users assigned, the next step is to perform the physical inventory and assessment using the E-SMS Field App. Users can sync the workspace to their mobile device, which downloads all necessary asset data for offline data collection.

QA/QC

After data is collected in the field, it can be reviewed, corrected, and appended in the E-SMS Web App.

Navigating and Filtering Data

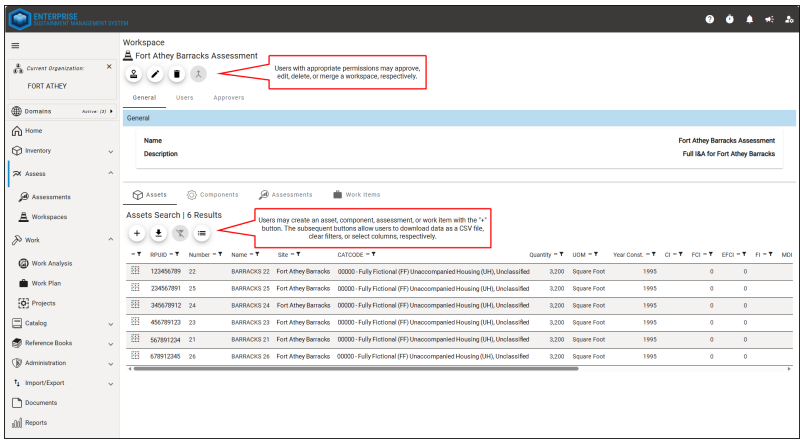
- From the Workspace Detail screen, use the Asset, Component, Assessment, and Work Item tabs to find and navigate the inventory.
- Users can filter inventory items based on status: New, Modified, Not Modified, or Deleted.
- The "Updated By" column shows what user last modified an item.

> **Note:** Edits to items associated with a component do not trigger the "Modified" status for that component.

Making Corrections in the Web App

- Modifications to data can be made directly in the Web App.
- Assessors can make corrections and updates on the corresponding detail pages.
- Assessments can be updated. For example, long-form comments can be added more conveniently than via the Field App. Additional images may also be uploaded here.

> **Note:** Real Property asset information cannot be edited.

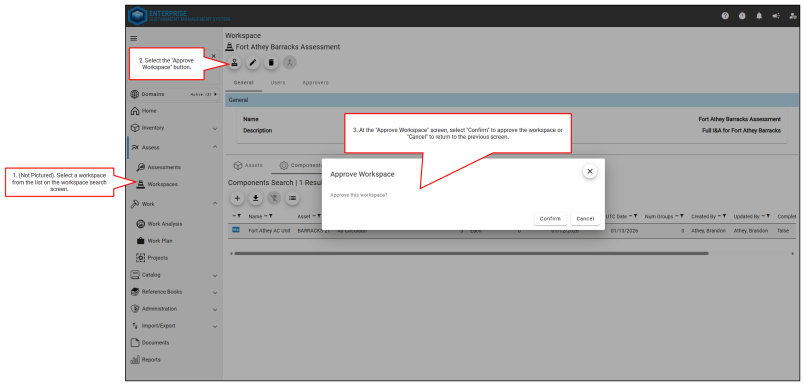


Data Acceptance

The Data Acceptance stage is the formal approval and merging of workspace data into the live E-SMS data. An approval requires all assigned approvers; merges cannot be completed until all approvers approve the workspace. Any changes to the workspace will revoke all prior approvals for the workspace.

To approve a workspace:

1. Select a workspace from the list on the workspace search screen
2. Select the "Approve Workspace" button
3. At the "Approve Workspace" popup, select "Confirm" to approve the workspace or "Cancel" to return to the previous screen



To merge a workspace after it has received approval from all assigned approvers, select the "Merge Workspace" button.

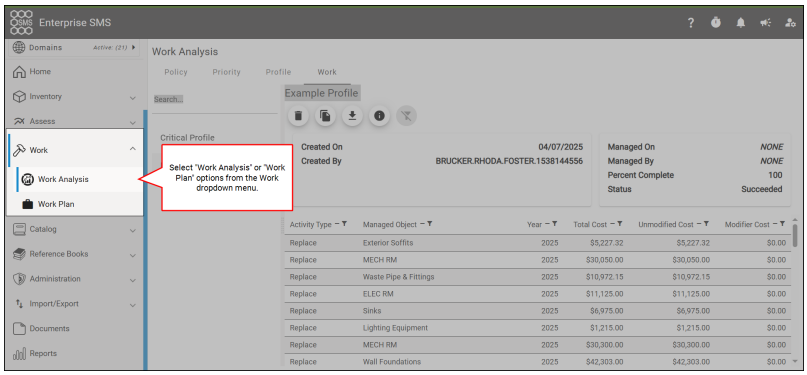
> **Note:** Workspaces can be merged only when all approvers have approved the workspace.

Work

> **Note:** Requires Work Planner permissions.

In E-SMS, Work is where users create prioritized work plans for future mission requirements while executing and tracking projects in the present. This section helps users determine how to most efficiently address deficiencies using available funds to maximize mission utility.

The overall objective of the work planning process is to maintain a comprehensive, accurate, current, and justifiable work plan. It is a continuous process of updating the work items in the work plan to account for new inventory changes, field assessments, project statuses, funding restrictions, mission requirements, etc. "Work Analysis" on page 92 is a tool in this process which allows users the ability to fill in the gaps of the work plan by generating work item candidates using policies and priorities.



> **Note:** The Buildings domain will heavily rely on work items generated in Work Analysis to fill out the work plan. Other domains like Water Control and Waterfront domains will largely depend on work items created in the "Work Plan" on page 113.

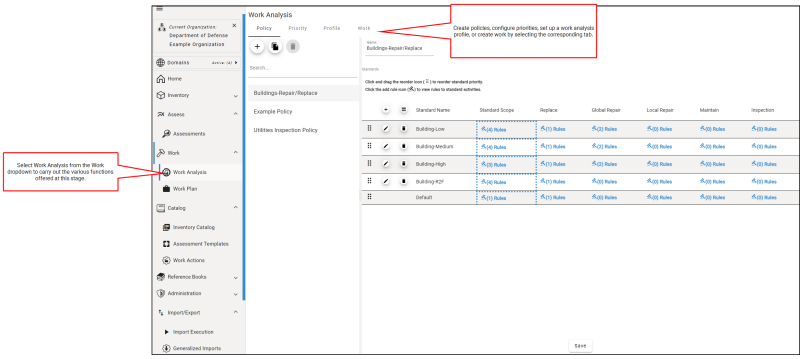
- "Work Analysis" on page 92 - Run profiles to generate, prioritize, and fund work item candidates. Work item candidates generated in Work Analysis must be copied over to the Work Plan to become official work items.

    - The work analysis capability is what allows users to fill in the gaps of the work plan.
- Work Plan - The official list of work items that may be grouped or assigned to a work plan. Users can manually create work items in this section.
    - Work plans help users take account of asset deficiencies so that funds may be allocated to maximum effect. Work plans may be generated for just the current year or up to ten years in the future.

Work Analysis

> **Note:** Requires Work Planner permissions.

Work analysis allows users to fill in the gaps of the work plan by comparing simulated work plans with varying policies and priorities. This can be accomplished by setting up a profile, running it, comparing it to other profile runs as needed, and copying the generated work item candidates into the work plan.



Tips for Running a Profile:

- It is important to make sure that your funding, time horizon, and scope are aligned when running a limited funding scenario.
- A profile with a large scope will take longer to run through the simulation.
- Each time users run a simulation from the Profile or Work tabs, the resulting work item candidates replace those from the previous simulation run under the given profile. Only one set of work item candidates can exist for each profile at a given time.
- Rollup in Inventory is not required before running a profile or during any part of the work analysis process.

Note: The output generated in Work Analysis (work item candidates) only become official work items when copied over to the Work Plan.

Set up a Profile

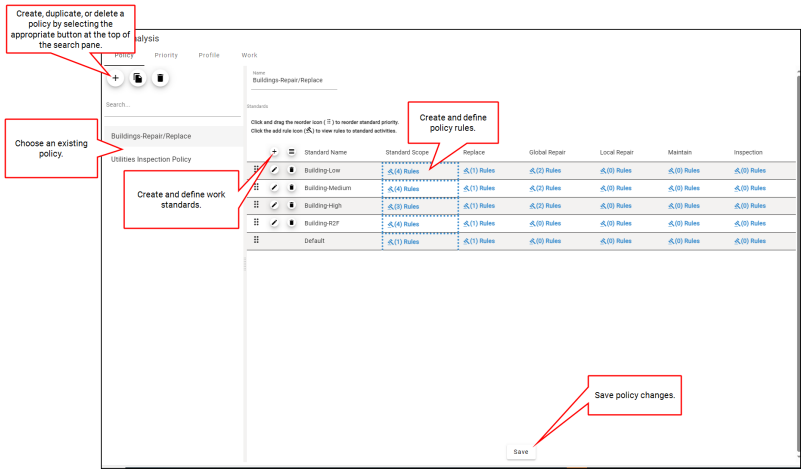
To set up a profile, policies and priorities must first be configured.

Configure a Policy

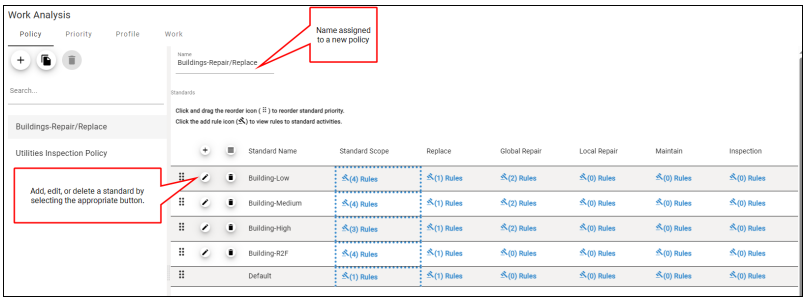
Policies use standards, which are rules that trigger work activities or inspections. Users must order policy standards in a precise sequence so they are fulfilled in the desired order.

Users may modify an existing policy, duplicate a policy, or create a new policy. The example featured below demonstrates how to create a new policy. Existing policies may be edited in a similar fashion.

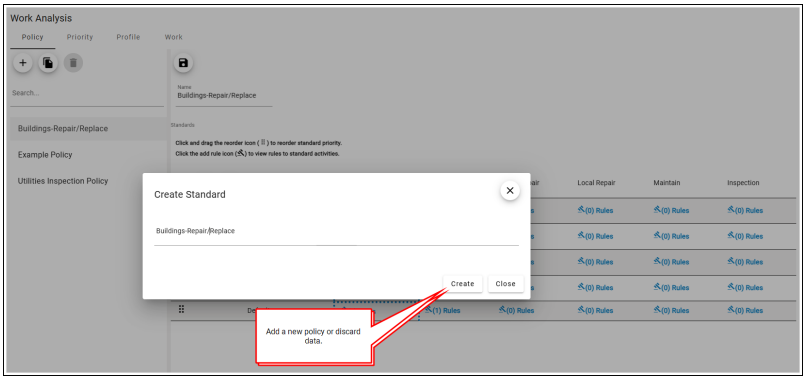
- Select the 'Add New Policy' button above the search pane.
- Assign the new policy a relevant name (for example, "Buildings-Repair/Replace").
- Define a work standard and rules for each new policy in the main window.



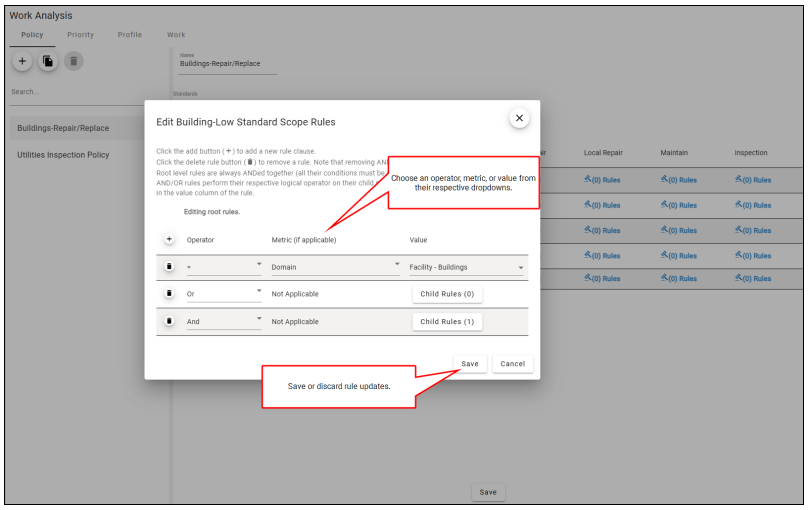
- Create new standards by selecting the "Add New Standard" button.



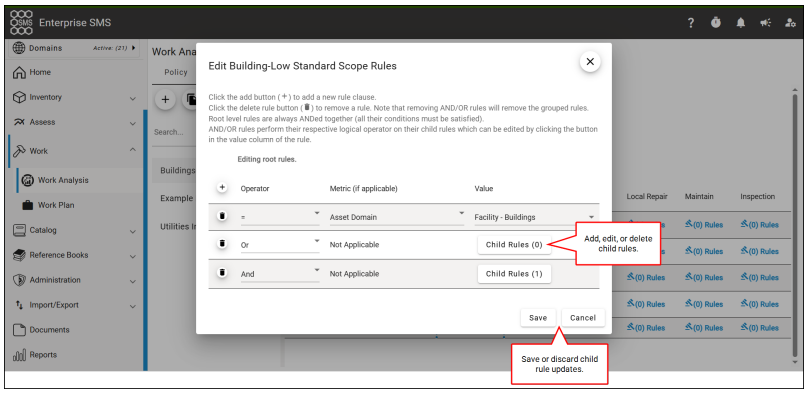
- If the standard is new, give it a name. Select "Create."



- Select any of the "Rules" under the available work standards to add or edit the corresponding rule. On the next screen, select the plus button to add a new rule clause.
- Select an "Operator," a "Metric" (if applicable), and a "Value" from their drop-downs.
    - Dropdown options may vary based on the previous selection.



- Add one or more "Child Rules" by selecting the and/or operators if more complex queries are needed.



- Repeat the previous steps as needed for each work standard. Select "Save" to retain data. Select "Save" on the subsequent screen to confirm changes.
- Progress through the other standards and repeat the previous steps as needed.

Tip: Policy standards can be reorganized in any order by selecting the handles to the left of the standard, and then dragging and dropping it.

Tip: To remove a rule clause, select the trashcan icon to the left of any rule clause.

Configure a Priority

Priorities use objectives (targets and measures) to define the relative importance of select properties related to work item candidates so that funding can be directed to the highest priority items.

Users may modify an existing priority, duplicate a priority, or create a new priority. The example below involves configuring a new priority. Existing priorities may be edited in a similar fashion.

- Assign the priority a relevant name ("Condition Critical," for example) and description ("Component Projected CI[1] and Component RDL[2]").
- Add a new top-level objective by selecting the plus button next to "Objectives." Select "Target" or "Measure" ("Target" in this example), add the objective's name, and then the objective's weight.
- To add another objective under the target, select the plus button next to the top-level objective.

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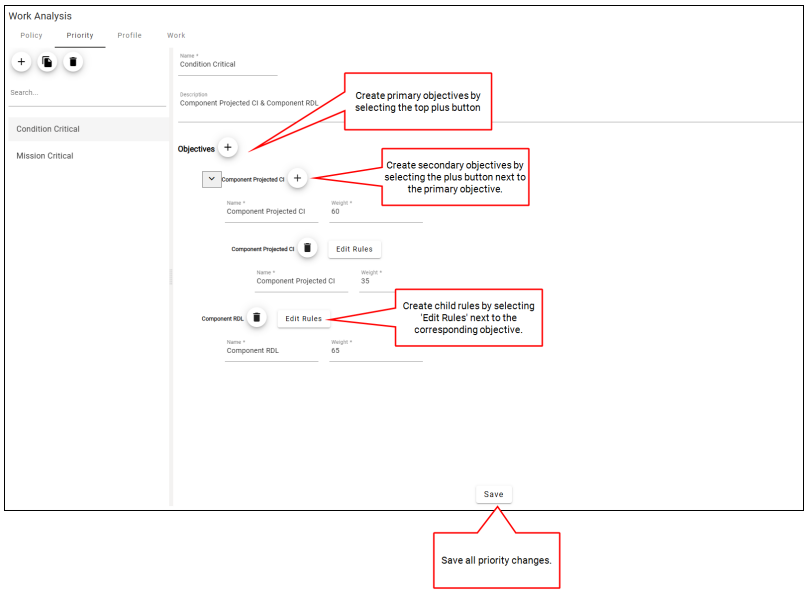
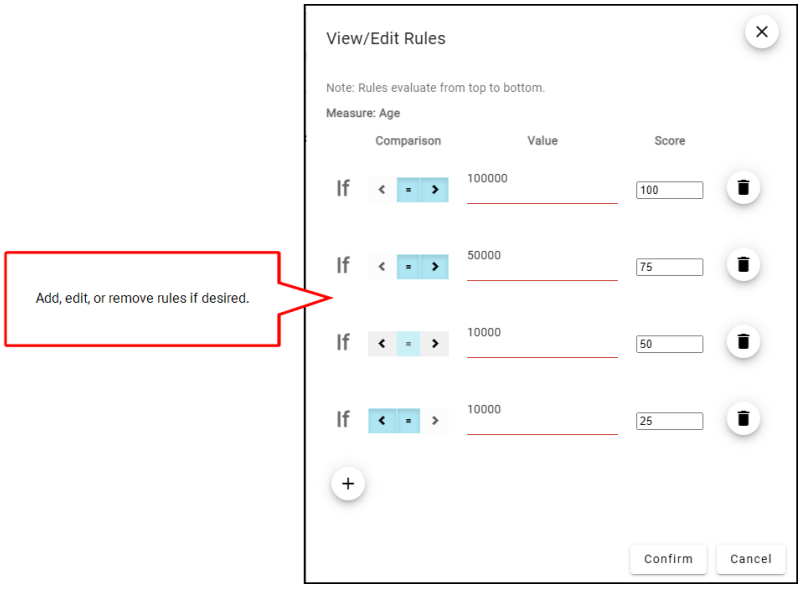
[1](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[2](Remaining Design Life). The remaining time period that an asset or component is expected to perform its intended function while meeting performance requirements, based solely on its design life.



- Users may view or edit rules related to the target by selecting "Edit Rules." Select "Confirm" once the rule updates are complete, or "Cancel" to discard changes.



- If additional top-level objectives are desired, select the plus button by "Objectives" and repeat the previous steps as necessary.

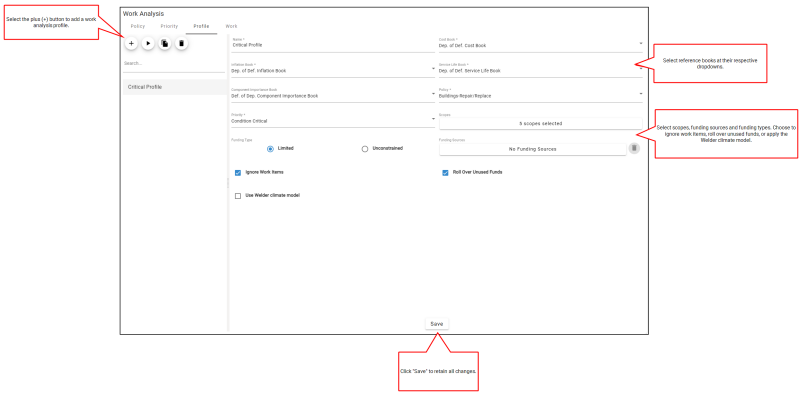
- Select the "Save" button at the bottom of the priority to retain all changes.

Configure a Profile

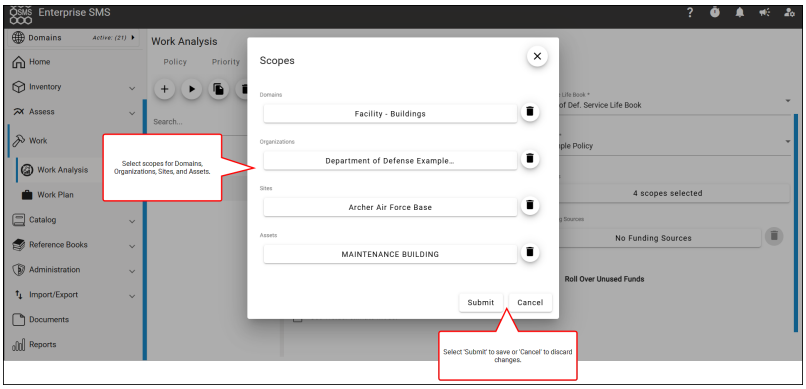
The goal of this step is to set the parameters of the simulation including "Reference Books" on page 118, policy, priority, scope, and funding type. To produce meaningful output, you must, at a minimum, ensure that your rulesets are set up properly for your selected policy and priority and that your selected "Reference Books" on page 118 are not missing values.

Users may select an existing profile from the list, or configure a new one. The example below involves setting up a new profile. Existing profiles may be edited in a similar manner.

Tip: Setting up a profile in E-SMS is the equivalent of setting up a scenario in BUILDER.



- Select the plus button to add a work analysis profile.
- Give it a name ("Critical Profile" for example). Next, progress through the dropdowns to select reference books that apply to the policy.
- Select scopes for "Domains," "Organizations," "Sites," and "Assets."

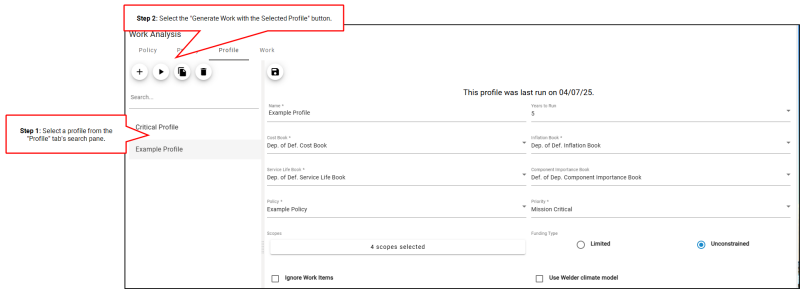


- Select a funding type ("Limited" or "Constrained").
    - If "Limited" funding type is selected, select a funding source.
- Select "Ignore Work Items," "Roll Over Unused Funds," or "Use Welder Climate Model," if applicable. Save the work profile.

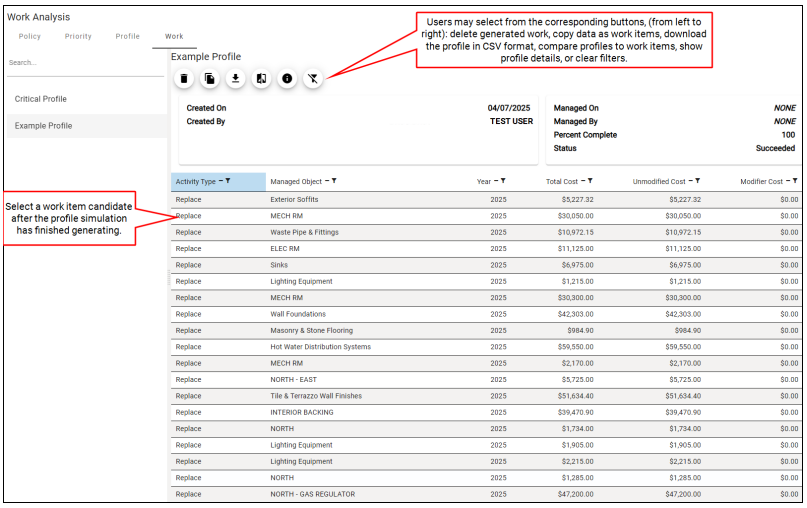
Run a Profile

Users may generate work from a selected profile on the Profile tab. Once generated, candidate work items appear on the Work tab, where details may be viewed and edits may be made.

- Select a profile on the Profile tab.
- Select the "Generate Work with the Selected Profile" button. Once generated, the resulting work item candidates appear on the Work tab.

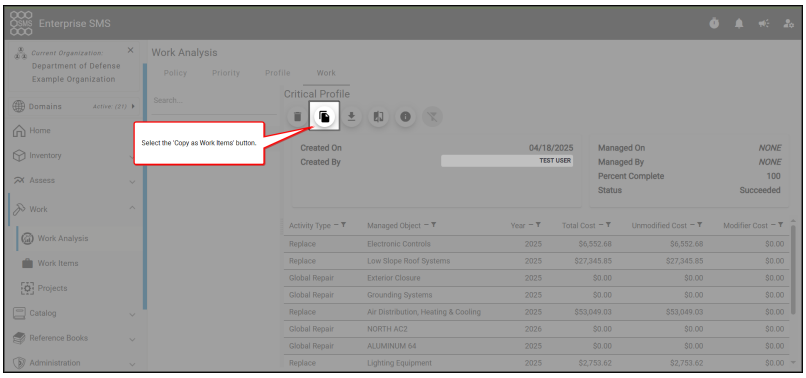


- At the Work tab, select the generated work profile data from the Search screen.
- Users may review the list of work item candidates generated from the profile simulation or download them in a CSV file.



Copy Work Item Candidates to Work Plan

- Select the "Copy as Work Items" Button



- Select work items from a particular year, or copy all work item candidates over to the work plan.

Note: Work items are not the same as work item candidates. The work plan is the official work item. The simulation output of a work analysis profile run contains work item candidates; these are unofficial until moved into the work plan.

Work Activity Types

The following table lists the work activities available for Assets and Components.

Work Activity	Description	Included in FCI[1] Calculation	Object Class
Add/Install	Indicates when new Components have been created when none existed previously.	No	Component
Alter	Indicates when a work action changes a Component's configuration or quantity.	No	Component
Corrective Maintenance	The process of repairing Components that have malfunctioned or failed.	Yes	Component
Demolish	Indicates the planned destruction of a Component.	No	Component
DEMO (Demoli-	The removal of	No	Asset

[1](Facility Condition Index). This is a financially based index showing the relationship between the cost of deferred M&R work and the Plant Replacement Value, or PRV. Uses a scale between 0-100, with higher scores indicating better facility conditions.

tion/Disposal)	excess, obsolete or unsafe Assets.		
Global Repair	Maintaining, upgrading, and constructing Components using major overhauls to guarantee installations are operation-ready.	Yes	Component
Inspection	An evaluation of a Component's condition and operational readiness compared to established criteria.	No	Component
Inspection - Direct Rating	A condition assessment where a single quantitative rating is assigned to a Component based on user observations.	No	Component
Inspection - Distress Survey	A condition assessment that requires	No	Component

	users to identify and record distresses affecting a Component.		
Inspection - Distress Survey with Quantity	A condition assessment that requires a quantity and identification of distresses affecting a Component.	No	Component
Local Repair	Low-level Component fixes which are designed to maximize efficiency.	Yes	Component
Maintain	The regular upkeep required to ensure a Component remains operational.	No	Component
MILCON (Military Construction)	Major capital investments used for building new Assets or expanding existing infrastructure.	No	Asset

Modernize	Improving Component performance by replacing or upgrading outdated items.	No	Component
Paint	A coating used to protect a Component, increase its aesthetic appeal, or indicate safety hazards.	Yes	Component
Remove	Indicates the removal of an existing Component that has not been replaced.	No	Component
Replace	Indicates the removal of a Component and its replacement by a new, similar item.	Yes	Component
Restoration and Modernization (R&M)	The upkeep and repair of existing Assets. Also known as Sustainment, Restoration,	Yes	Asset

	and Modernization (SRM[1]), this ensures that current infrastructure remains mission-capable.		
Stop Gap	A temporary measure used to help keep a Component operational.	Yes	Component

Work Analysis Rules

Field	Description	Object Class
Asset Age	Identifies the time that has elapsed since an Asset was constructed.	Asset
Asset CATCODE	A service-specific numerical identifier that corresponds to the type of Real Property Asset. Asset categories are determined through analysis of similar Assets.	Asset
Asset Domain	An Asset's environment as determined by its Facility Analysis Category (FAC) (such	Asset

[1](Sustainment, Restoration, and Modernization). Program designed to ensure operational capability of assets through routine maintenance and repairs, renovations, and alterations to incorporate newer, higher standards.

	as "Facility-Buildings," "Transportation-Pavement," or "Utilities-Water").	
Asset FAC	Facility Analysis Categories (FACs) that use Real Property data to group category codes (CATCODEs) across services.	Asset
Asset Last Inspection CI[1]	The most recent Asset-level condition assessment score.	Asset
Asset Last Inspection FI[2]	The most recent Asset-level functionality assessment score.	Asset
Asset MDI	A measure of the relative importance of an Asset in relation to mission require-ments.	Asset
Asset Operational Status	Identifies an Asset's current Real Property status.	Asset

[1](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[2](Functionality Index). It addresses issues related to user requirements, technical obsolescence, and regulatory or code compliance at the Functional Area level. Uses a scale between 0-100 to match the scale used for condition indices.

Asset PRV[1]	An aggregation of the PRV[2] of all Assets included in a managed item.	Asset
Asset Year Constructed	The year an Asset's construction was completed.	Asset
Asset Years Since Last CI[3] Inspection	The number of years that have elapsed since an Asset's last condition assessment.	Asset
Asset Years Since Last FI[4] Inspection	The number of years that have elapsed since an Asset's last functionality assessment.	Asset
Component Age	The number of years that have elapsed since a Component was installed.	Component
Component Design Life	The expected length of time before a new Component reaches its end of useful life.	Component

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[1](Plant Replacement Value). The total cost to rebuild or recreate an asset. This value may be defined or use the sum of its constituent components' PRV values at higher inventory levels (i.e., sites or organizations) or the sum of the PRV values for constituent assets.

[2](Plant Replacement Value). The total cost to rebuild or recreate an asset. This value may be defined or use the sum of its constituent components' PRV values at higher inventory levels (i.e., sites or organizations) or the sum of the PRV values for constituent assets.

[3](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[4](Functionality Index). It addresses issues related to user requirements, technical obsolescence, and regulatory or code compliance at the Functional Area level. Uses a scale between 0-100 to match the scale used for condition indices.

Component Effective Age	A Component's age based on its most recent condition inspection score and design life curve.	Component
Component Forecast CI[1]	A Component's expected CI[2] value based on a condition degradation algorithm.	Component
Component Global Repair Cost	The expected repair cost of a Component for a given year, calculated using the global repair work activity method.	Component
Component Importance Index (CII)	Specifies the relative importance of Component specifications; prioritizes different importance thresholds for different Components.	Component
Component Last Inspection CI[3]	The most recent Component-level condition inspection score.	Component
Component Last	The most recent Component-level func-	Component

[1](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.
[2](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.
[3](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

Inspection FI[1]	tionality inspection score.	
Component Operational Status	An indication of a Component's current functionality.	Component
Component Percent RDL[2]	A Component's Remaining Design Life expressed as a percentage.	Component
Component Percent RSL[3]	A Component's Remaining Service Life expressed as a percentage.	Component
Component RDL[4]	A Component's Remaining Design Life minus its age.	Component
Component Replacement Cost	A Component's expected replacement value for a given year, calculated from the replacement work activity type and the unit cost from the selected profile's cost book.	Component

[1](Functionality Index). It addresses issues related to user requirements, technical obsolescence, and regulatory or code compliance at the Functional Area level. Uses a scale between 0-100 to match the scale used for condition indices.

[2](Remaining Design Life). The remaining time period that an asset or component is expected to perform its intended function while meeting performance requirements, based solely on its design life.

[3](Remaining Service Life). The remaining time period that an asset or component is expected to perform its intended function while meeting performance requirements, based on its design life and inspections.

[4](Remaining Design Life). The remaining time period that an asset or component is expected to perform its intended function while meeting performance requirements, based solely on its design life.

Component ROI	The Return on Investment of a Component's global repair work action for a given year.	Component
Component RSL[1]	The number of years remaining before a Component's forecasted condition reaches the terminal CI[2] value.	Component
Component Type	A physical object that provides a good or service in support of a Component's mission.	Component
Component Type Domain	The domain to which a Component is assigned.	Component
Component UNIFORMAT Level 2	A three-digit code in the ASTM UNIFORMAT II hierarchy that represents an Asset system; also known as a "Group Element."	Component
Component UNIFORMAT Level 3	A five-digit code in the ASTM UNIFORMAT II hierarchy that represents a system Component; also known as an "Individual Element."	Component

[1](Remaining Service Life). The remaining time period that an asset or component is expected to perform its intended function while meeting performance requirements, based on its design life and inspections.
[2](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

Component UNIFORMAT Level 4	A seven-digit code in the ASTM UNIFORMAT II hierarchy that represents a material category; also known as a "Sub Element."	Component
Component Work Activity Type	Type of work performed on a Component that determines if changes are made to its condition, Weibull parameters, or other factors.	Component
Component Year Installed	The year in which a Component was installed.	Component
Component Year Repaired	The year in which a Component was most recently repaired.	Component
Component Years Since Last CI[1] Inspection	The number of years that have elapsed since a Component's last condition assessment.	Component

[1](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

Work Plan

> **Note:** Requires Work Planner permissions.

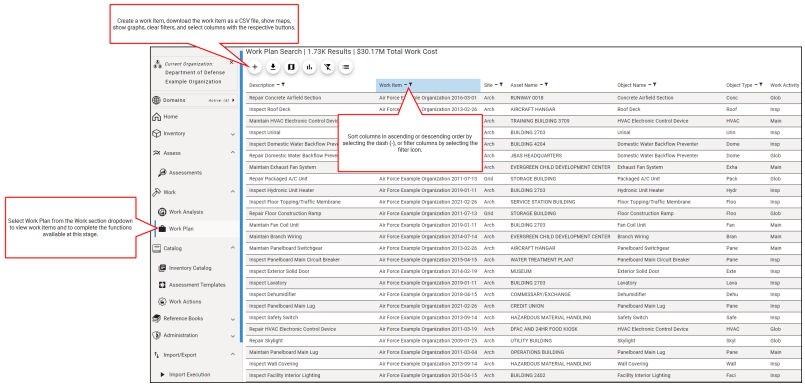
The Work Plan is the list of official work items that span an organization. User permissions restrict access to the relevant subset of the Work Plan.

Note: Child organizations only have access to work items relevant to that organization. For example, the Air Force is a child organization to the Department of War. Air Force users have access to work items relevant to the Air Force. Meanwhile, a DoW user would have access to the entire Work Plan, including the work items that apply to the Air Force.

A work item is a discrete work action against a single component, asset, or site which increases an organization's mission effectiveness either through an increase in performance (e.g. global repair improving condition) or an increase in information (e.g. functionality assessment to make better decisions about functional deficiencies). These work items can come from several different sources including the "Work Analysis" on page 92 generation capability and from user-entered custom work items in the Work Plan section of E-SMS.

In Work Plan, users may:

- Review and search for official work items.
- View and edit a work item's Detail page by selecting the work item.
- View maps and graphs.
- Sort columns in ascending or descending order by selecting the dash (-), or filter columns by selecting the filter icon.
- "Create and Edit Work Items" on page 115.
- "Delete Work Items" on page 117.



Note: FCI[1] is calculated using the work items on this page.

Work Plan Search Screen

Available Actions

The following actions are available on the Work Item Search screen, from left to right:

Button	Function
Create Work Item (plus button)	Adds a new work item to the Work Item Search screen
Download as CSV (arrow with underline button)	Converts work item data into a spreadsheet to download
Show Map (flag button)	Displays map data for a selected work item
Show Graphs (bar graph button)	Displays graph data related to a selected work item
Clear Filters (funnel button)	Removes the filters that were applied to the work item

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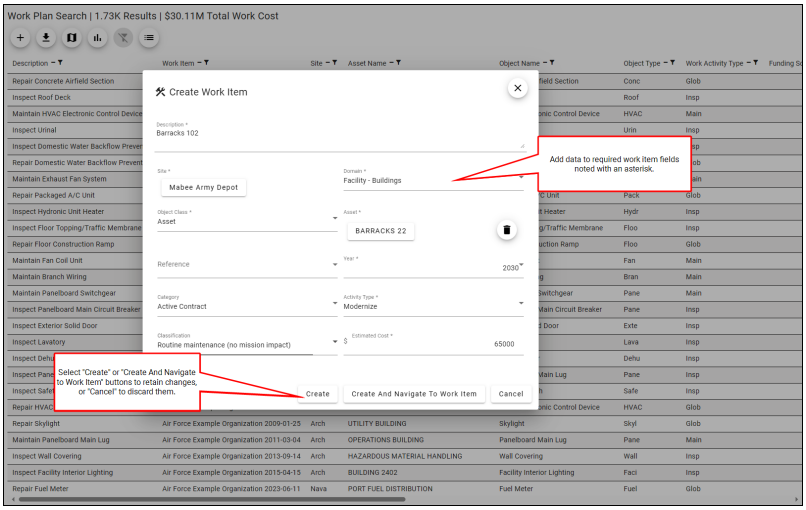
[1](Facility Condition Index). This is a financially based index showing the relationship between the cost of deferred M&R work and the Plant Replacement Value, or PRV. Uses a scale between 0-100, with higher scores indicating better facility conditions.

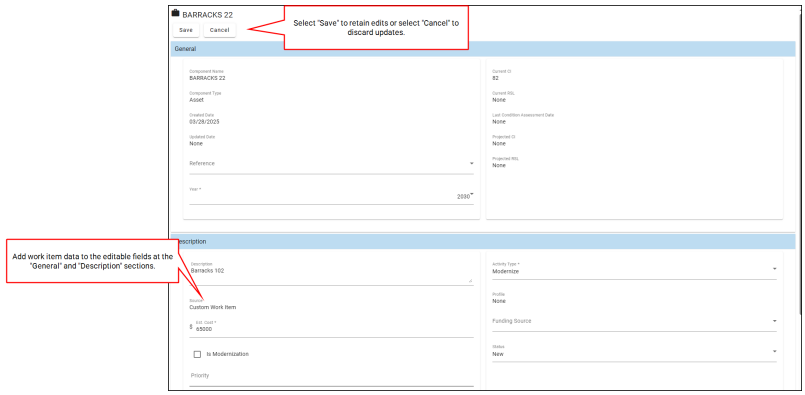
Select and Order Columns ("hamburger" button)	Adds columns to a work item and organizes them
Load Saved Configuration (folder button)	Access user-preferred profile settings for a work item
Save Current Configuration (save button)	Retains user-preferred profile settings for a work item

Create and Edit Work Items

- To add a new work item, select the "Create Work Item" button.
- Required fields are noted with an asterisk. Once data has been added, users may select the "Create" or "Create And Navigate to Work Item" buttons to retain data, or choose "Cancel" to discard all entered data.



- To edit a work item, select the "Edit Work Item" button. The screen displays general and descriptive data which can be modified.
- Progress through the editable fields for the work item and insert or change data as needed. To retain updates, select the "Save" button, or "Cancel" to discard them.



- Dropdowns for "Category," "Activity Type," and "Classification" allow for further customization. The "Category" dropdown lists the different project types and stages to which a work item may belong. The "Activity Type" dropdown lists available work activities for the asset or component. The "Classification" dropdown lists the available work item priorities.
    - Category: SRM[1]; RMMR; MILCON; CMP/Inspection; Local/BOSC; Operator; Environmental; Deferred; DEMO; Active Contract; RFP; Deleted; Completed; and Undetermined.
    - Activity Type: Replace; Global Repair; Local Repair; Stop Gap; Paint; Inspection; Inspection - Direct Rating; Inspection - Distress Survey; Inspection - Distress Survey with Quantity; Maintain; Corrective Maintenance; Add/Install; Alter; Modernize; Demolish; and Remove.
    - Classification: Energy Conservation Projects (as mandated); Environmental deficiencies addressing non-compliance (cannot mitigate); Life, health, and safety concerns (cannot mitigate); Other (i.e. Unified Facilities Criteria (UFC) for design consideration, etc.; Other warfighter support facilities (mission impact); Routine

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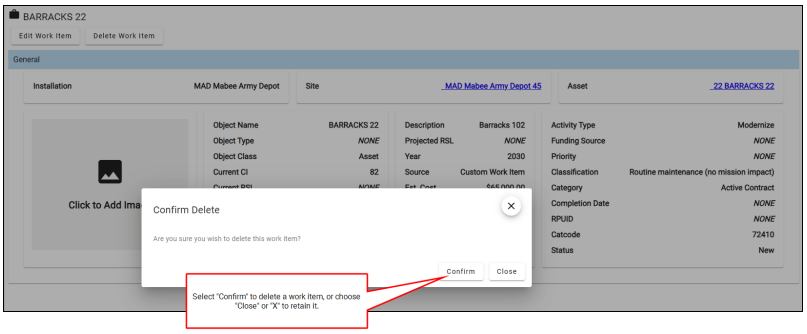
[1](Sustainment, Restoration, and Modernization). Program designed to ensure operational capability of assets through routine maintenance and repairs, renovations, and alterations to incorporate newer, higher standards.

maintenance (no mission impact); Security deficiencies including cyber security (cannot mitigate); Unknown (i.e. the default priority); and Warfighter support facilities (mission failure).

Note: "Estimated Cost" or "Calculated Cost" options appear once a user selects an "Activity Type" and "Classification."

Delete Work Items

To delete a work item, select the "Delete Work Item" button found on any work item. To complete the deletion, select "Confirm." To retain the work item data, select "Close" or "X" instead.

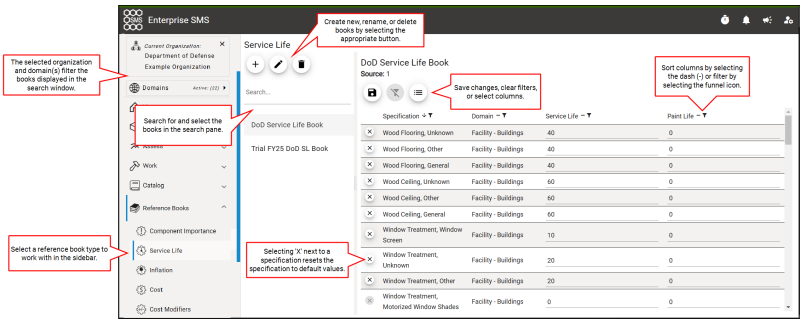


Reference Books

> **Note:** Requires Organization or Site Admin permissions.

Reference books provide some of the underlying reference data in E-SMS. This reference data is used throughout the rest of the application such as in condition forecasting and component cost determination.

Each organization has a set of default reference books, and additional reference books may be configured. Organization Admins can select which reference books their organization uses on the organizations' "Inventory Detail Pages" on page 35.



> **Tip:** The organization and domain selections in the side navigation filter the available reference books.

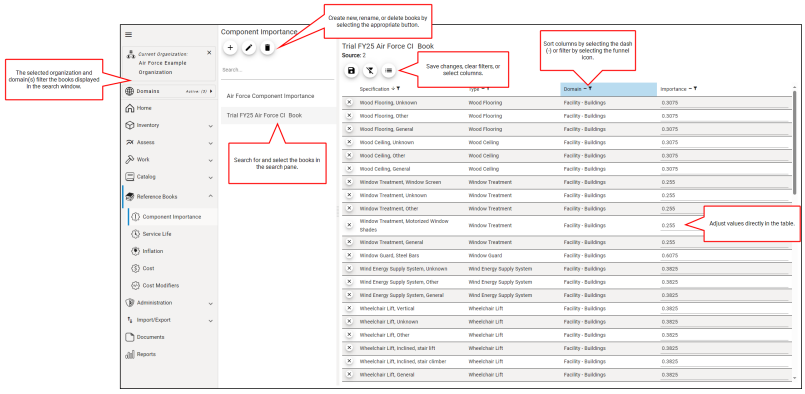
- Component Importance books specify the importance of different component types based on mission criticality and other factors.
- Service Life (or design life) books specify the expected service lives for component specifications.
- Inflation books contain annual inflation rates which are used to compute current and future component work action costs, which is used to compute component replacement costs in the "Inventory Detail Pages" on page 35.
- Cost books specify unit costs for all types of work items books specify the replacement costs for component specifications and work activities.

- Cost Modifiers are used to adjust the costs of components based on local factors. Modifiers may be configured at site, asset, and component levels.

Component Importance Books

> **Note:** Restricted to Organization and Site Administrators.

Component Importance books are used to specify the relative importance of component specifications. Component Importance (CI) is primarily used in Work Analysis to apply different importance thresholds for different components in work analysis policies, and can also be used to prioritize different components based on their importance in work analysis prioritization. Each organization has one or more CI books, which affect all components within that organization.



Updating CI Books and Values

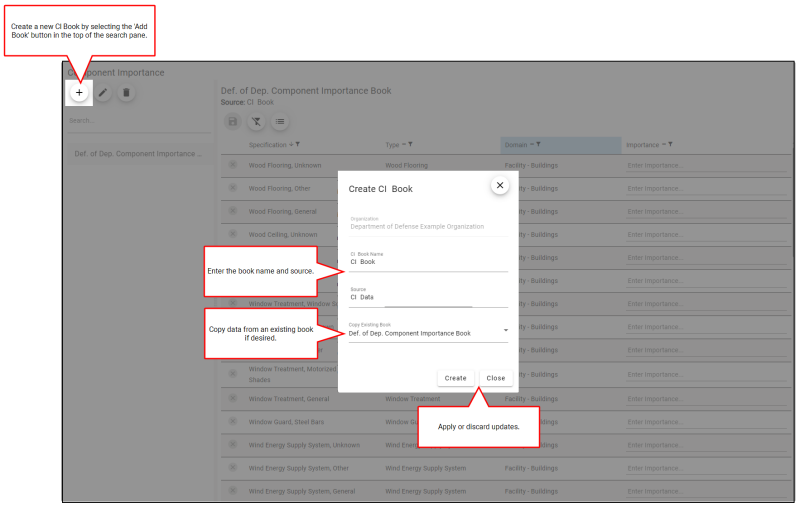
Create and Update CI Books

Add a New Book

1. Select the 'Add Book' button in the top right of the search pane.
2. Enter a unique book name.
3. Define the source.

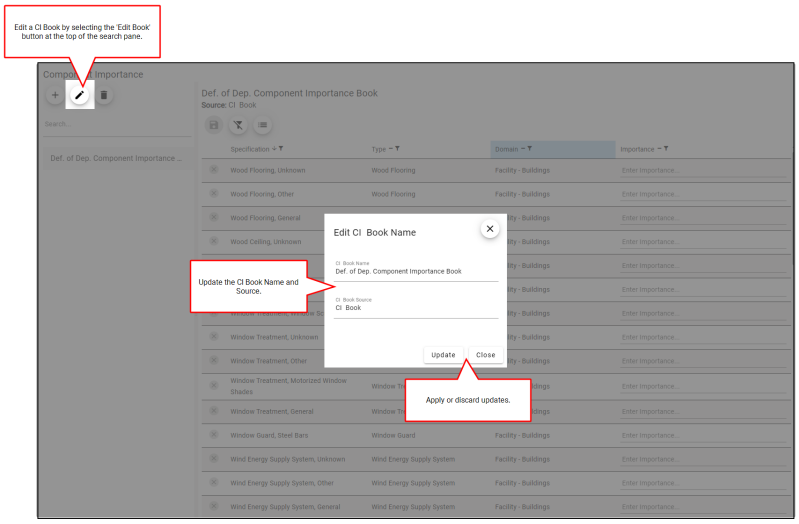
4. Copy data from an existing book if desired.
5. Select 'Create' to finish adding a new book, or 'Close' to discard the new book.

Note: Source definitions vary depending on the reference book used. CI, service life, inflation, and cost modifier sources are organizationally defined. CI book sources may be defined by external sources, or they may be organizationally defined.



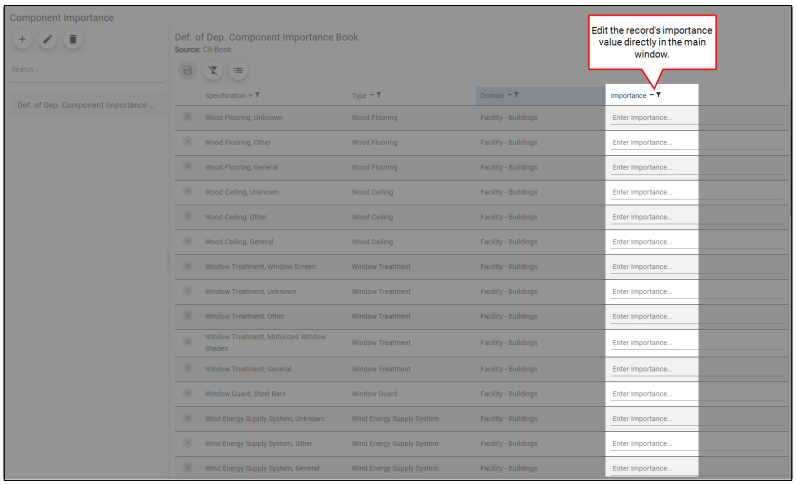
Edit an Existing Book

1. Select the 'Edit Book' button in the top right of the search pane.
2. Update the book name and source.
3. Apply or discard updates by selecting 'Update' or 'Close'.



Updating Importance Values

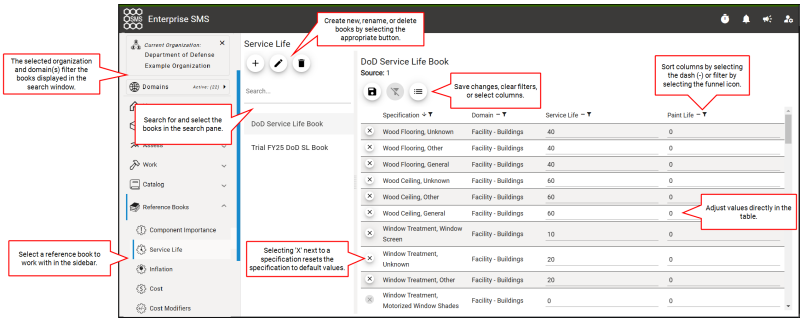
Importance values can be changed directly in the main window.



Service Life Books

> **Note:** Requires Organization or Site Administrator permissions.

Service Life books are used to specify the service life and paint life of component specifications. Service lives are a key input in the E-SMS forecasting models that generate predicted performance data, such as Condition Index (CI[1]) and Remaining Service Life (RSL[2]). Each organization has a default service life book, and has the option of creating one or more custom service life books.



Updating Service Life Books and Values

Create and Update Service Life Books

Add a New Book

1. Select the 'Add Book' button in the top right of the search pane.
2. Enter a unique book name.
3. Define the source.

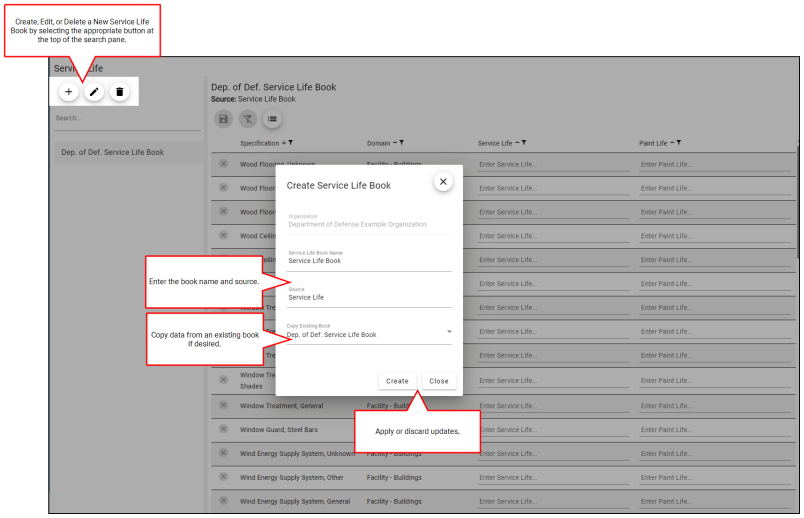
---

[1](Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

[2](Remaining Service Life). The remaining time period that an asset or component is expected to perform its intended function while meeting performance requirements, based on its design life and inspections.

4. Copy data from an existing book if desired.
5. Select 'Create' to finish adding a new book, or 'Close' to discard the new book.

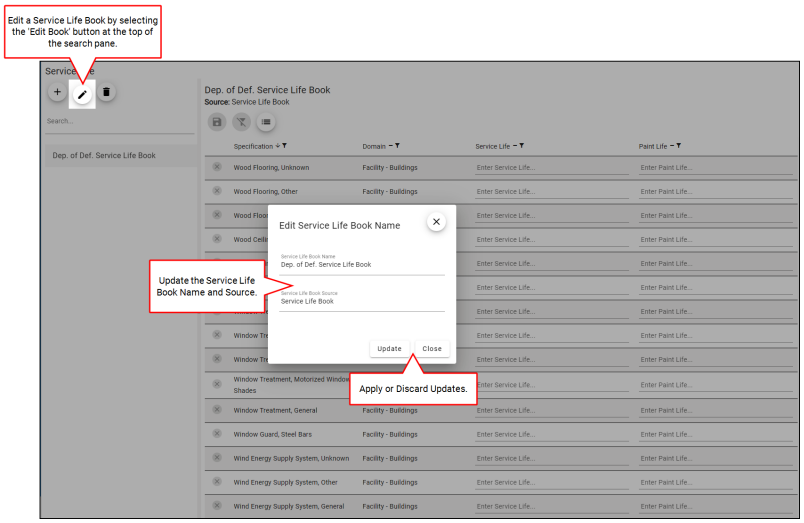
Note: Source definitions vary depending on the reference book used. Component index, service life, inflation, and cost modifier sources are organizationally defined. Service Life book sources may be defined by external sources, or they may also be organizationally defined.



Edit an Existing Book

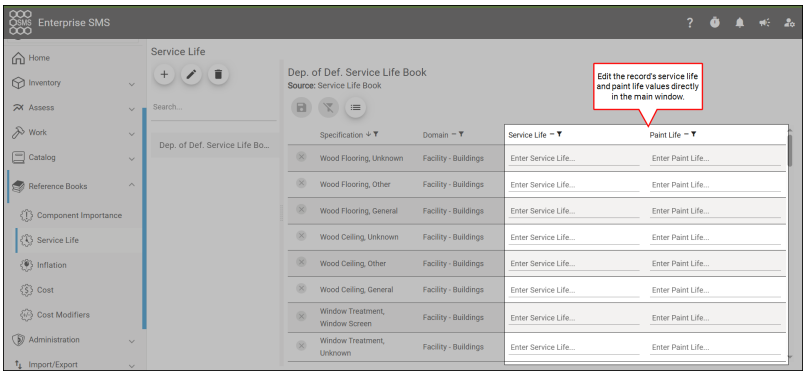
To edit existing service life data, users may:

1. Select the 'Edit Book' button in the top right of the search pane.
2. Update the book name and source.
3. Apply or discard updates by selecting 'Update' or 'Close'.



Update Service and Paint Life Values

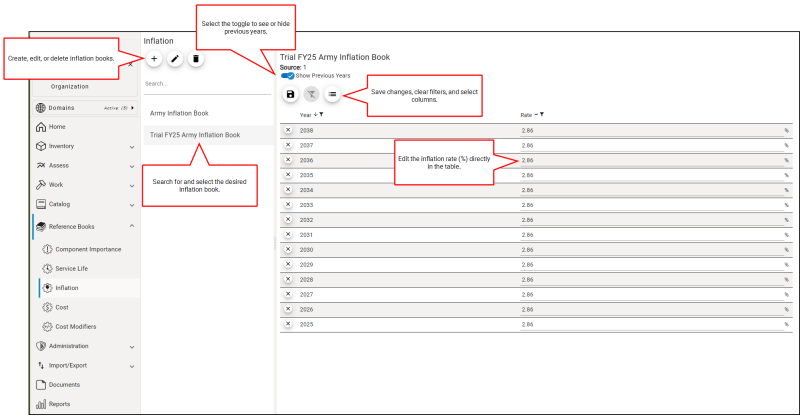
Service life and paint life values can be changed directly in the main window.



Inflation Books

> **Note:** Requires Organization or Site Administrator permissions.

Inflation books allow users to input inflation rates, expressed as annual percentages, that are used for computing future costs. A top-level organization must have a defined inflation book, and custom inflation books can be created for any given organization. If no inflation book is assigned to an organization, E-SMS moves up the organization hierarchy until an organization is found where an inflation book is defined.



Updating Inflation Books and Values

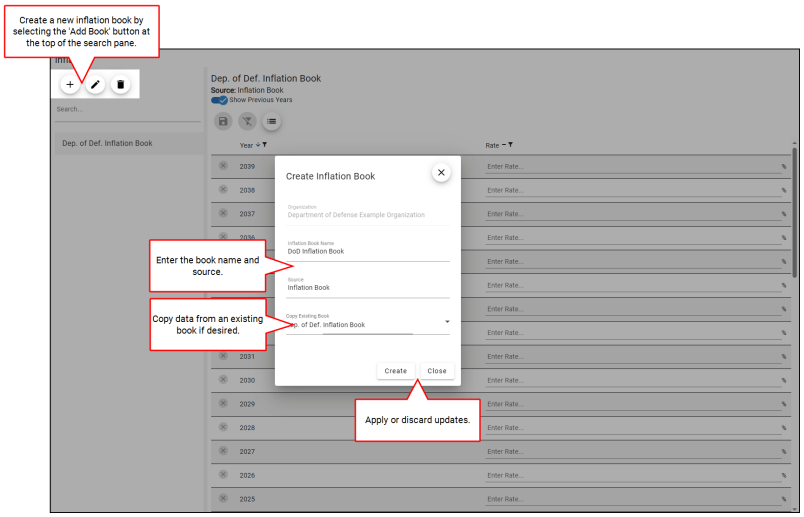
Create and Update Inflation Books

Add a New Book

1. Select the 'Add Book' button in the top right of the search pane.
2. Enter a unique book name.
3. Define the source.

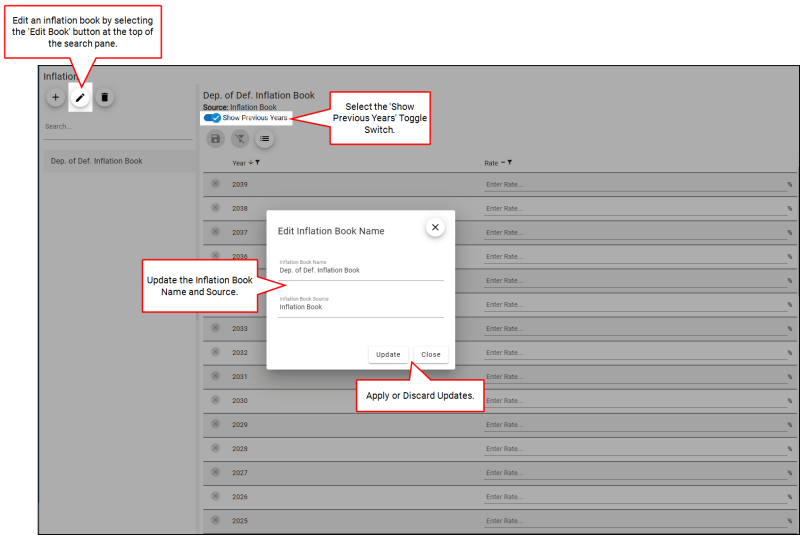
4. Copy data from an existing book if desired.
5. Select 'Create' to finish adding a new book, or 'Close' to discard the new book.

Note: Source definitions vary depending on the reference book used. CI, service life, inflation, and cost modifier sources are organizationally defined. Inflation book sources may be defined by external sources, or they may also be organizationally defined.



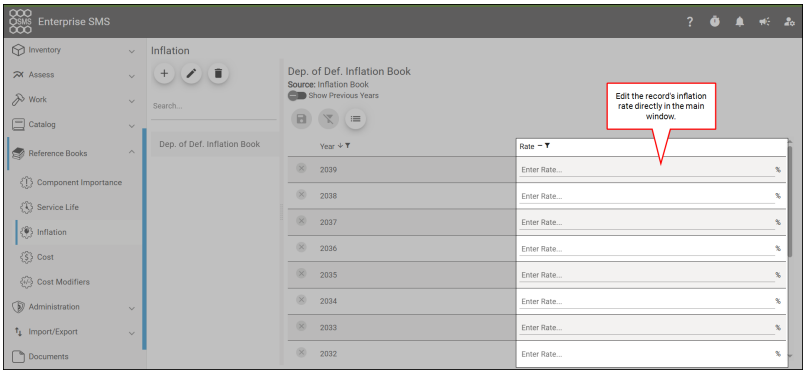
Edit an Existing Book

1. Select the 'Edit Book' button in the top right of the search pane.
2. Update the book name and source.
3. Apply or discard updates by selecting 'Update' or 'Close'.
4. To include inflation data from past years in an inflation book, select the 'Show Previous Years' toggle switch.



Update Inflation Rate Values

Inflation rate values can be changed directly in the main window.

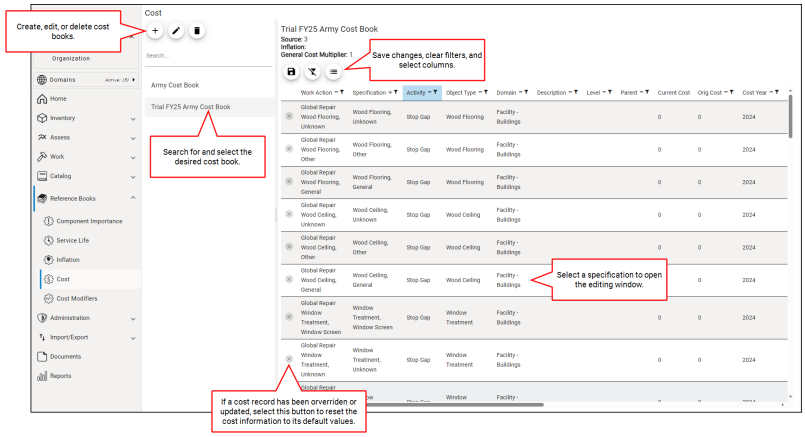


Cost Books

> **Note:** Requires Organization or Site Admin permissions.

Cost books are used to specify cost information for component specifications. This cost information is used throughout the rest of the E-SMS application, such as in Rollups. Default costs are set for particular specifications and work activity types. Optionally, custom cost books may be used to override the default costs.

Multiple custom cost books may be defined for each organization. If an organization has a single cost book assigned to it, that cost book will be used for rollups. If no book is found to be assigned to an organization, then the rollups will use the next available cost book up the organizational hierarchy.



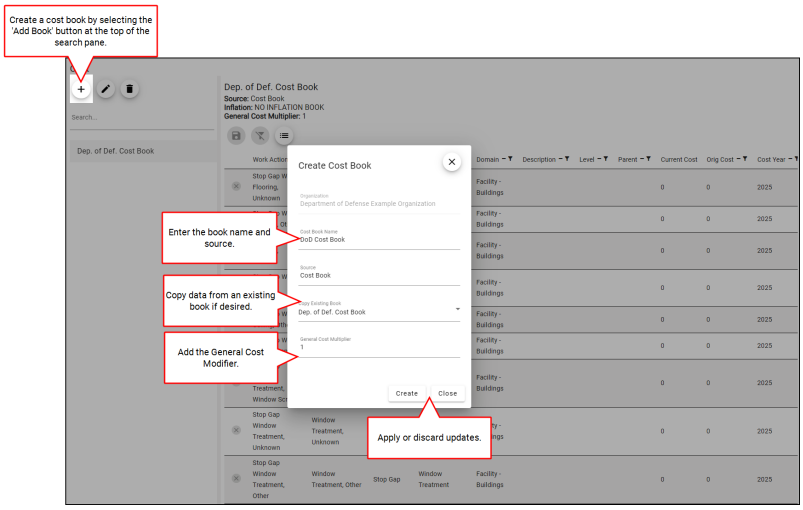
> **Tip:** If a cost record has been overridden or updated, the Reset button appears at the far left of the record's row. Select this button to reset its cost information to its default values.

Updating Cost Books and Values

Create and Update Cost Books

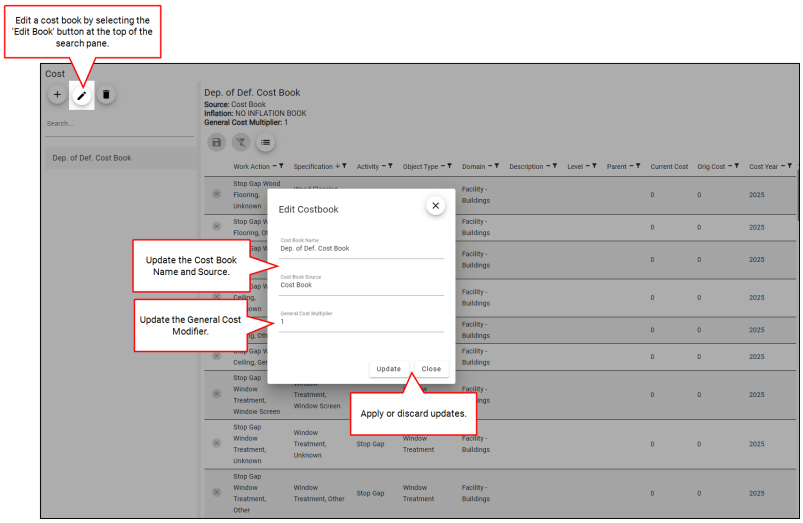
Add a New Book

1. Select the 'Add Book' button in the top right of the search pane.
2. Enter a unique book name.
3. Define the source.
4. Copy data from an existing book if desired.
5. Add a general cost modifier.
6. Select 'Create' to finish adding a new book, or 'Close' to discard the new book.



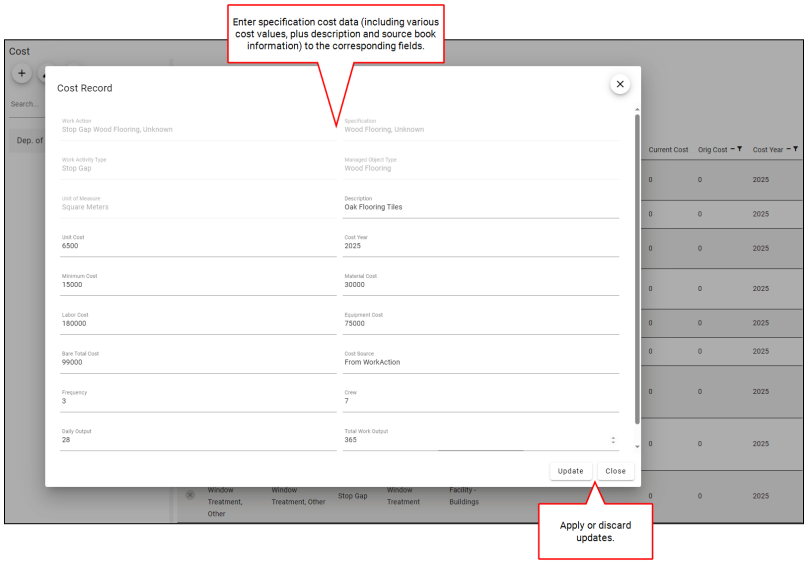
Edit an Existing Book

1. Select the 'Edit Book' button in the top right of the search pane.
2. Update the book name and source.
3. Update the general cost multiplier.
4. Apply or discard updates by selecting 'Update' or 'Close'.



Update Cost Values

1. Select a specification from the cost record table.
2. Enter relevant data for each data field in the subsequent popup screen.
3. Select 'Update' to save data, or 'Close' to discard it.



Cost Book Columns

Activity	The work activity type represents a type of asset management action that can be used for a particular managed object which will improve performance metric(s) and/or add information about a certain performance state. Some common work activity types are Replace, Global Repair, Local Repair, Maintain, and Inspect.
Bare total	The summation of material, labor, and equipment unit costs. Excludes markups.
Cost year	The year that the Original Cost was last updated.
Crew	A group of workers with specific skills and responsibilities who work together to complete a task, often led by a supervisor or foreman.
Current cost	The Original Cost inflated to the current year.
Daily output	The quantity of work that a crew or individual can complete in a single day, often measures in units.
Description	A narrative describing the work action in detail, including what is included in the work action.
Domain	The domain of the component type.
Equipment	The unit cost of the specialized and/or heavy equipment to complete the work action.
Frequency	The frequency at which the work action is performed.
Labor	The unit cost of the workers and crews needed to complete the work.
Materials	The unit cost of the materials needed to complete the work action.
Minimum cost	The minimum cost to perform a work action. The minimum cost puts a floor on the total calculated cost if the unit cost is low and the component quantity is small.

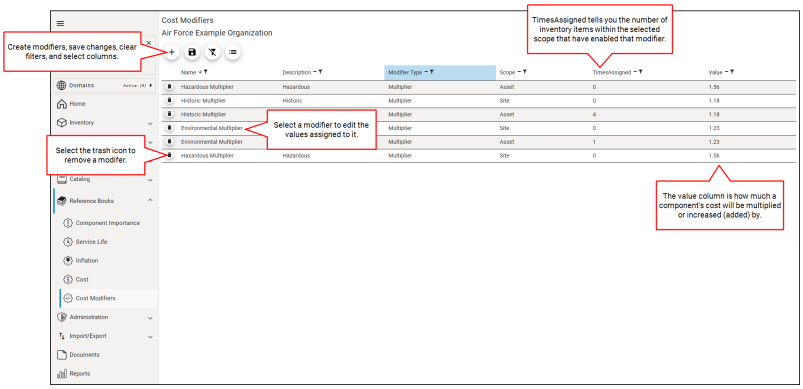
Object type	A type classification for a component that is more general than the specification.
Original cost	The last updated cost from the source. It is associated with Source and Cost Year fields.
Source	The basis of the original cost.
Specification	The most detailed type description of a component. Every component has a specification (aligned with BUILDER CMC). Specifications are used for setting cost, service life, and component importance values.
UoM[1]	The unit of measure for the cost record.
Work action	A work activity type for a particular specification.

[1](Area Cost Factor). A multiplier that scales default costs which are based on national average labor, material, and equipment costs. The ACF is used to adjust costs based on location.

Cost Modifiers

> **Note:** Requires Organization or Site Administrator permissions.

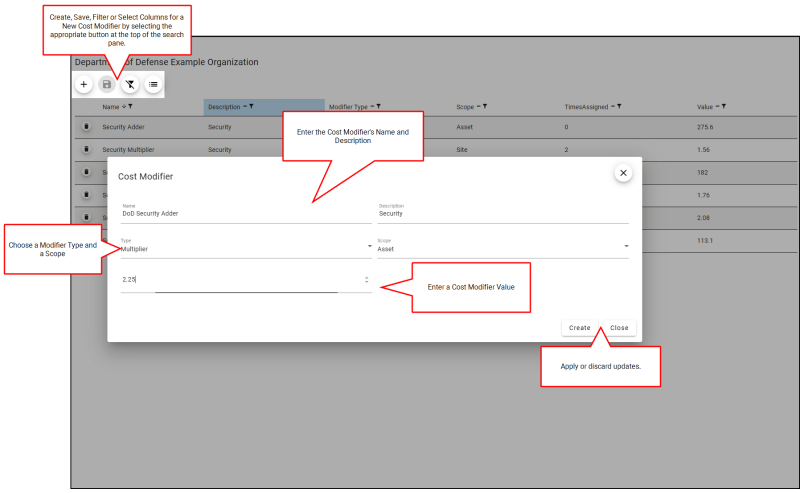
Cost modifiers are used to adjust the costs of components based on local factors such as security or health and safety requirements.



Updating Cost Modifiers

Add a New Cost Modifier

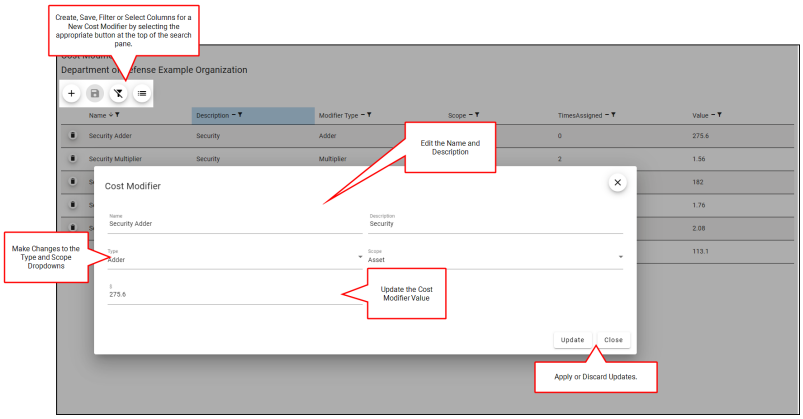
1. Select the 'Create Modifier' button in the top right of the search pane.
2. Enter a unique cost modifier name.
3. Enter a unique description.
4. Select a type ('Adder' or 'Multiplier') from the dropdown.
5. Select a scope ('Component', 'Asset', or 'Site') from the dropdown.
6. Enter a cost modifier value.
7. Select 'Create' to add a new cost modifier, or 'Close' to discard it.



Edit a Cost Modifier

To edit a cost modifier:

1. Select a cost modifier record from the menu.
2. Update the modifier name and description.
3. Select a type ('Adder' or 'Multiplier') from the dropdown.
4. Select a scope ('Component', 'Asset', or 'Site') from the dropdown.
5. Update the cost modifier value as needed.
6. Apply or discard updates by selecting 'Update' or 'Close'.



Enabling Cost Modifiers

Cost modifiers are manually enabled for sites, assets, or components on their respective Detail pages. Child objects will inherit cost modifiers of their parent.

Note: A cost modifier's scope must match the managed item's scope to appear on the site's, asset's, or component's "Inventory Detail Pages" on page 35. For example, you cannot enable a cost modifier with a component scope for an asset.

Cost Modifier Types & Scope

Cost Modifier Types

Cost multipliers and adders are applied in addition to the ACF[1], the general multiplier for the cost book, and any specific modifiers for that cost book identified in the list of cost modifiers.

- **Cost Multiplier** - A cost multiplier is a multiplication factor applied to the enabled managed component's asset's or site's cost.
- **Cost Adder** - A cost adder is an added fixed cost applied to the enabled managed component's, asset's or site's cost.

Cost Modifier Scopes

Cost modifier books are created at the organization level, and can be applied to sites, assets, or components.

When a cost modifier is enabled, it is applied to all managed components, assets, or sites within the scope of the modifier. For example, if a modifier is enabled at site level, then all assets and components within the site will also be modified.

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[1](Area Cost Factor). A multiplier that scales default costs which are based on national average labor, material, and equipment costs. The ACF is used to adjust costs based on location.

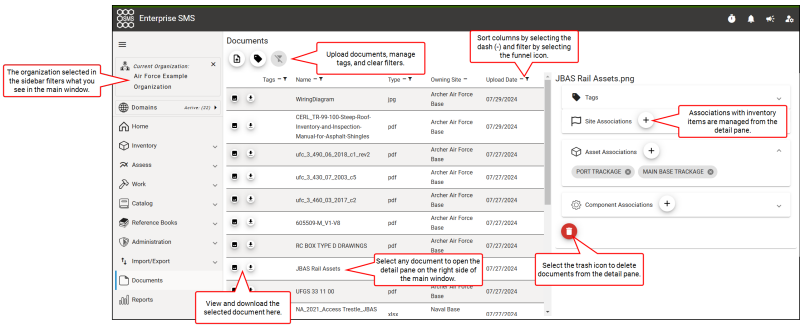
Documents

Documents allows users to attach reference materials to sites, assets, and components in E-SMS, and provides a centralized location for users to find files.

Examples of reference materials include: asset floor plans, component specification sheets, inspection or report data spreadsheets, presentations with system data, site photographs, instruction manuals, and installation maps.

In the Documents section, users can:

- View, upload, download, and delete documents.
- Preview certain file types.
- Manage tags and associations with sites, assets, or components in the detail pane.



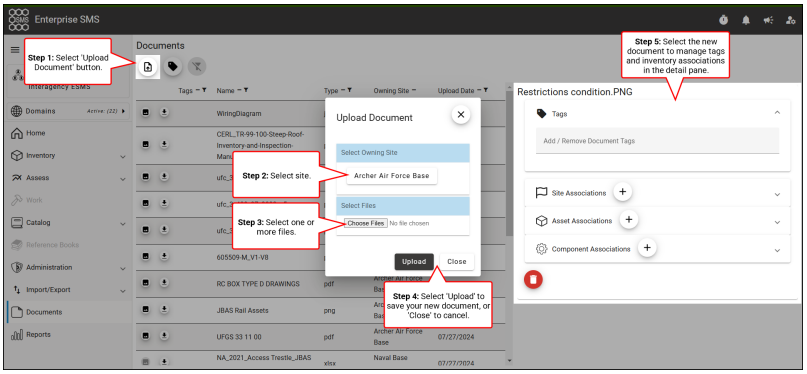
Note: The organization selected in the sidebar filters the documents listed in the main window.

Uploading Documents

Documents may be added from the Documents section, or from the site, asset, and component detail pages.

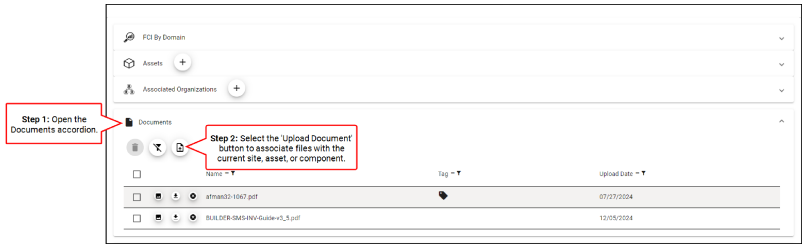
Uploading From The Documents Section

1. Click the Upload Document button on the Documents page.
2. Select a site to attach the document to.
3. Select one or more files to upload.
4. Select 'Upload' to save the file(s) or 'Close' to discard it.
5. Select the new document to open the detail pane to administer tags and associations with managed sites, assets and components.



Uploading Documents from an Inventory Detail Page

1. Open the Documents accordion on the Sites, Assets, or Components pages.
2. Select the 'Upload Document' button.
3. Choose a file to upload.



Note: Adding a document from an Inventory Detail page associates it with the current site, asset, or component.

Supported File Types

File Types	Preview Available
CSV	No
DOC	No
DOCX	No
GIF	Yes
JPEG	Yes
JPG	Yes
MRSI	No
PDF	No
PNG	Yes
PPT	No
PPTX	No
TXT	No

File Types	Preview Available
XLS	No
XLSX	No
ZIP	No

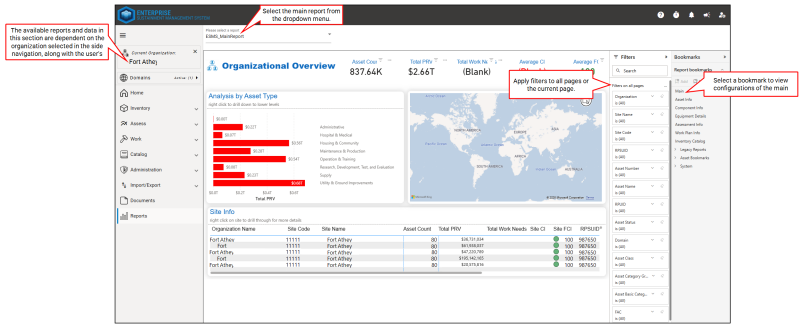
Reports

Reports provide a way for users to explore, visualize, and export data.

Note: Reports and bookmarks can be customized to fit an organization's needs. Contact a System Admin or the SMS Helpdesk to learn more.

Using Reports:

1. Select a main report from the dropdown menu at the top left of the window.
2. Use bookmarks to open preconfigured views of the main report.
3. Apply filters to tailor a user's perspective.



Note: The organization selected in the sidebar and a user's permissions limit the available reports and data in this section.

Tip: Collapse the Filter and Bookmark panes to save screen space and enlarge the report visuals.

Interacting with Graphs and Tables

Right Click

Right-click on graphs or table records to view additional actions.

- **Show as table** - Convert data into a table.
- **Include** - Include filter applied on the current visual.
- **Exclude** - Exclude filter applied on the current visual.
- **Drill through** - Navigate to a more detailed view of the selected item.

Left-Click

Select a piece of any visual to filter the visuals and table data; conversely, selecting an item from the table to highlight the item in the visuals.

- Hold the Control or Command key to select multiple graphics or list items.
- Selecting the graph or list item a second time removes the filter and reverts the page back to its original state.
- Select multiple columns in a table by holding the "Shift" key. Columns will sort the table in the order which they are selected.

Graph Actions

- **Filters and slicers** - Displays all filters and slicers applied to that visual.
- **Focus mode** - Enlarges the selected graphic to fill the window.
- **More options:**

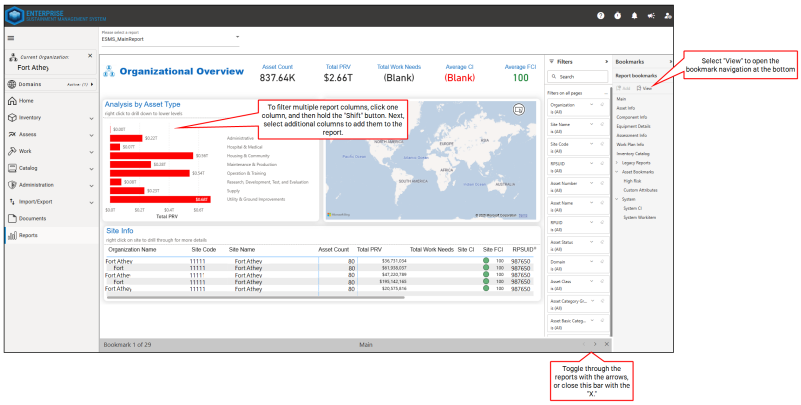
- **Export data** - Converts data from the selected chart into a .csv or Excel file (.xls or .xlsx format).
- **Show as a table** - Converts the user-selected chart data into a viewable table.
- **Spotlight** - Converts the user-selected chart data into a viewable table.
- **Get insights** - Focuses on a user-selected segment of the report for easy viewing.
- **Sort axis** - Displays report-related anomalies, trends, and data analysis.

Report Bookmarks

Each organization has one or more main reports to choose from the top left dropdown menu. Bookmarks are configurations of the main report, and allow users to focus on specific categories, classifications, or other versions of the main report.

In this particular example, E-SMS provides several default report bookmarks: Main Page, Asset, System, Component, Inspection, and Work Item. Within each of these default bookmarks, users can find child bookmarks.

Selecting the 'View' button allows users to cycle through all available bookmarks by clicking the arrows at the bottom right. Select "<" to go to the previous page, or ">" to proceed to the next page. Selecting "X" or the Exit button returns users to the standard report screen.



Report Filters

Filters can be applied to the current page, or all pages of the report.

Advanced Filtering

Advanced filtering offers the ability to filter results by combining two statements with "and" or with "or." To use advanced filters, open a filter and change the filter type from 'Basic filtering' to 'Advanced filtering'.

Additional Resources

E-SMS' Reports section employs the Power BI business intelligence service. For additional information, see Microsoft's PowerBI Get Started Documentation or visit the links below.

- How to Use Filters
- How to Use Bookmarks
- Changing and Sorting Data
- Visual Cross-Filtering
- How to Use Slicers
- Identifying and Using Buttons

Glossary

A

ACF
(Area Cost Factor). A multiplier that scales default costs which are based on national average labor, material, and equipment costs. The ACF is used to adjust costs based on location.

B

BCI
(Building Condition Index). Historical term from BUILDER. The overall condition rating for a building. For each building, the BCI is computed by taking the average of its systems' CIs, weighted by replacement cost.

C

CAC
(Common Access Card). Identification for active-duty military, Selected Reserve, DoW civilians, and qualified contractors.

CI
(Condition Index). The Condition Index expresses an item's condition on a 0-100 scale where higher numbers indicate a better condition.

CSCI
(Component-Section Condition Index). Historical term from BUILDER. A condition rating for a target Component-Section. The CSCI is computed by using the assessment data to calculate a deduct value, and then subtracting that deduct value from the maximum possible rating of 100.

D

Direct Rating
A type of condition assessment approach where a single qualitative rating is assigned to the Component based on condition observations.

Distress Survey
A type of condition assessment approach that involves the individual identification and recording of the type and nature of distresses observed for a Component.

E

ERDC-CERL

(Engineering Research and Development Center - Construction Engineering Research Laboratory). Conducts research and development in support of soldiers, military installations, and the U.S. Army Corps of Engineers' civil works missions.

F

FCI

(Facility Condition Index). This is a financially based index showing the relationship between the cost of deferred M&R work and the Plant Replacement Value, or PRV. Uses a scale between 0-100, with higher scores indicating better facility conditions.

FI

(Functionality Index). It addresses issues related to user requirements, technical obsolescence, and regulatory or code compliance at the Functional Area level. Uses a scale between 0-100 to match the scale used for condition indices.

K

KBI

(Knowledge-Based Inspection). An inspection work item generated by the Work Analysis process.

M

M&R

(Maintenance and Repair). Activities designed to keep existing assets or components functioning as designed or to restore them to working order.

P

PM

(Preventative Maintenance). Work actions that ensure equipment continually operates as intended, so that repairs are not necessary.

PRV

(Plant Replacement Value). The total cost to rebuild or recreate an asset. This value may be defined or use the sum of its constituent components' PRV values at higher inventory levels (i.e., sites or organizations) or the sum of the PRV values for constituent assets.

R

RDL
(Remaining Design Life). The remaining time period that an asset or component is expected to perform its intended function while meeting performance requirements, based solely on its design life.

RSL
(Remaining Service Life). The remaining time period that an asset or component is expected to perform its intended function while meeting performance requirements, based on its design life and inspections.

S

SMS
(Sustainment Management System). A five-step engineered process (Inventory, Assess, Forecast, Plan, and Analyze) for asset life-cycle management to objectively and consistently assess, analyze, and prioritize investment requirements and guide Sustainment, Restoration, and Modernization activities (SRM).

SRM
(Sustainment, Restoration, and Modernization). Program designed to ensure operational capability of assets through routine maintenance and repairs, renovations, and alterations to incorporate newer, higher standards.

U

UoM
(Unit of Measure). A standard representation of a quantity. Examples include meters, gallons, kilowatts, and "each."