ITS ASSET MANAGEMENT TOOL

GUIDANCE DOCUMENT

Task 11 Assignment 17

Draft #1.2

Task 11 Assignment 17

NYSDOT Statewide ATDM Contract

Author: ICF International

Table of Contents

Contents

List of Tables

List of Figures

Version History

Table 1: Version History

Version	Developed by (Date)	Comments and Nature of Change	Author / Editor
0.1	17 Jul 2020	Original Draft Version	ICF
0.2	16 Nov 2020	Update Guidance to include new functions	ICF

1.   Introduction

Scope

The ITS Asset Management Tool (AMT) Guidance document supports data custodians to manage ITS asset and information. The bulk of this document focuses on creating, editing, and configuring asset information.

Audience

The audience for this document includes NYSDOT Main Office and Regional office staff who will review, edit and manage ITS asset information to establish a consistent asset inventory and management strategy for ITS equipment and systems owned by NYSDOT.

References and Contacts

Support for this guidance document and the asset management tool are listed below in Table 2: Tool and Document Support Contact List and Table 3: Links to P&R Editing Tool and Resources.

Table 2: Tool and Document Support Contact List

Contact Type	Contact Name, Email, and Phone
❖ Person responsible for this guidance document	Joe Longo Joe.Longo@icf.com (518) 452-2012
❖ System administrator contact	Joe Longo Joe.Longo@icf.com (518) 452-2012
❖ Technical Assistance line	Thy Vo Thy.Vo@icf.com (703) 251-0866
❖ Data Analyst and Governance guidance	Polly Okunieff Polly.Okunieff@icf.com

How to Read this Document

The document is organized by topic, starting with this an overview of how to navigate the ITS Asset Management Tool (AMT), and then addressing each of the major services provided by the tool – create and edit new assets and profiles, browse assets in map and tabular views, and configure additional asset values. In addition, the Guidance document offers the reader tips, recommended practices, and warnings for users. These are designated by special icons used in this document. Details of the chapter summaries and icons used in this document are described below.

Chapter Sections

The document is divided into 4 sections and 1 appendix.

Section 2: Navigating the ITS Asset Management Tool

Section 2 describes how to log in, landing page navigation, and the icons used throughout the tool.

Section 3: ITS Asset Management Tool Overview

Section 3 presents an overview of the ITS AMT features and includes a description of each tab, e.g., Home, Browse, Add New, Configure, and History.

Section 4: Workflows

Section 4 details data governance processes and describes tool functionalities through basic workflows including how to view, create, and edit asset and configuration data.

Appendix A: Data Dictionary

The data dictionary is compiled in a separate spreadsheet file. It lists the data field name, description, format (if applicable), and menu in which it is included or referenced by.

Icons Used in the Guidance Document

Throughout the document, icons are used to call out guidance and recommendations on the ITS AMT functions.

	Tip	Techniques and methods to help users navigate and manage the data.
	Recommended Practice	For consistent practice by all editors, please apply these methods to entering and managing your data.
	Warning	Watch out for these actions, they may trip you up.

2.   Navigating the ITS Asset Management Tool

Web Browsers

Users are recommended to use the ITS AMT in either Google Chrome or Mozilla Firefox web browsers. Other browsers, such as Microsoft Edge, Internet Explorer, and Safari are suitable alternatives.

Google Chrome 🌐   Mozilla Firefox 🦊

Important browser functions relevant to the ITS AMT are displayed in Figure 1 and are described in the corresponding table. These functions and their uses remain consistent across both Google Chrome and Mozilla Firefox.
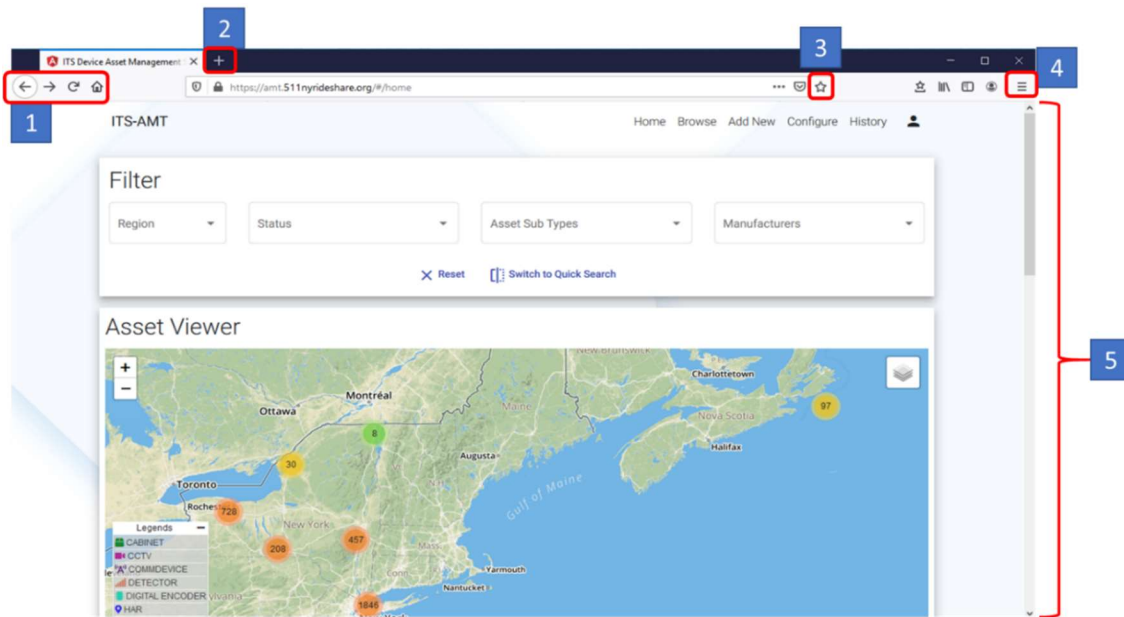
Figure 1: Browser Functions – Mozilla Firefox

Table 3: Browser Functions corresponding to Figure 1

Label Num	Browser Function	Icon	Description
1	Back/Forward		Navigate back to the last viewed page or forward to the next in a sequence of destinations
	Refresh		Reload the current page
	Home		Open the browser home page
2	New Tab		Open a new tab

3	Bookmark		Save the destination address of the current page
4	Menu		Open to customize and control the web browser
5	Scrollbar		Page up or down the screen via arrows, shaded bar, or mouse scroll wheel

Logging In

The login page for the ITS Asset Management Tool requires a username and password.

 Tip: *Call your system administrator to recover your username or password.*

Information on how to obtain or recover a username and password is available through your system administrator. See Table 2 for more contact information.
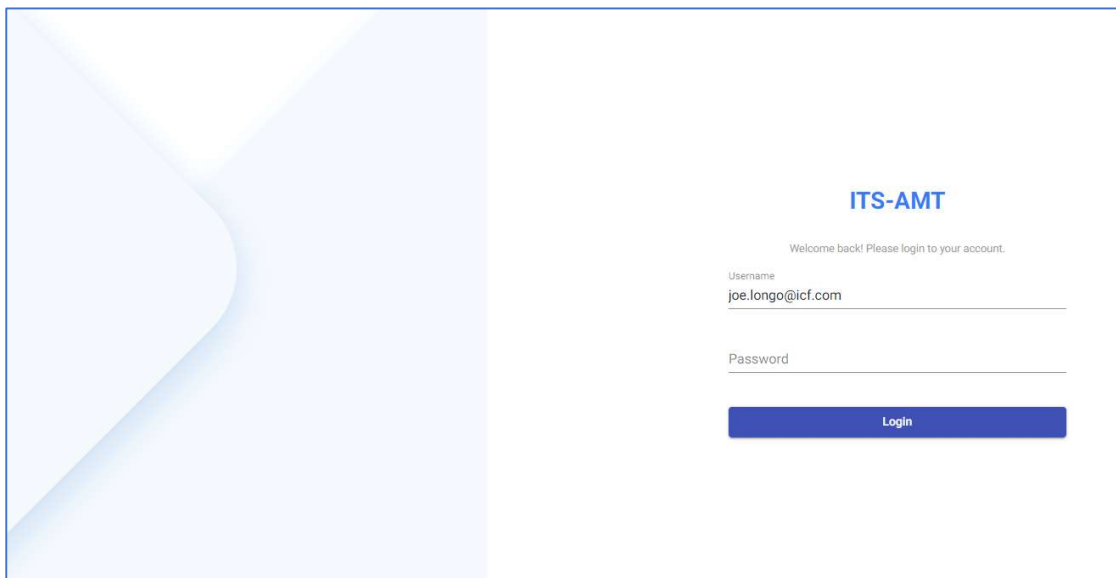
Figure 2: Login Page

STEPS TO LOGIN

1. Type in your username
2. Type in your password
3. Select Login. The display will transition to the Landing Page (Map Viewer page)

Navigation

Navigation of the ITS Asset Management Tool Landing or Home page is shown in this section. The Landing Page, shown in Figure 3. Sections of the page are partitioned using red rectangles and each section is referenced with blue indices that correlate to the column called *Label Num*, listed in Table 4.

Figure 3: Landing Page Components

Table 4: Landing Page Navigation describes the components of the Landing Page. Navigation of the Asset Viewer functions is presented in Section 3 ITS Asset Management Tool Overview (Table 7).

Table 4: Landing Page Navigation

Label Num	Component	Description	References
1	Asset Viewer	Enables the filtering and browsing of assets in both a map and tabular view	Figures 6, 7, 24, 25
2	Header Tab Bar	Provides links to other tabs	Section 3
3	Announcements	Shows recent changes to profiles	Section 3
4	Recent Activities	Shows recent changes to assets	Section 3

Icons Used in the ITS Asset Management Tool

Tip: *Mouse over* any button to identify its function.
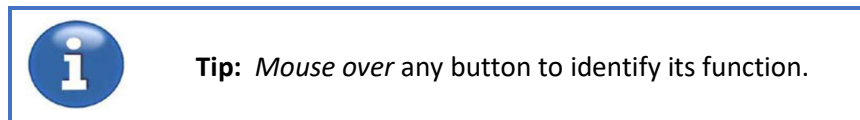
Table 5: Icons in the ITS Asset Management Tool

Icon and Name	Description	References
Edit	Change the attributes of a record	Figures 11 – 16
Add a new record	Create a new record	Figure 18
Save	Save your changes to a record	Figure 18
Delete	Delete a record	Figures 15, 18, 31
Cancel	Cancel or do not save changes made to a record	Figure 18
Open in new tab	Open asset details in a new tab	Figures 6, 9, 10, 24, 25, 26
Show on the map	Pan to the location of the asset on the Asset Viewer map	Figures 6, 24
Download Excel	Export asset data to Excel Spreadsheet	Figure 6

✕ Reset	Select the Reset icon to remove filter and revert to unfiltered.	Figures 6, 9, 10
⊏⦙⊐ Switch to Quick Search	Quick search of asset list by Name, Type, Manufacturer, etc.	
⊏⦙⊐ Switch to advance filter	Switch back to the default filtering options.	
Filter	Search for records by one or multiple attribute values	Figures 19, 20
Open document	Initiate download of the document in the row as a pdf file	Figures 11, 15
Delete document	Remove the document in the row	Figures 11, 15

> ⚠ **Warning:** *The save icon will save the record only if all the mandatory fields are completed.*
>
> If all the mandatory fields are not completed, a warning will alert the user to the field or fields that are missing.

3.   ITS Asset Management Tool Overview

This section presents the components of the ITS AMT including descriptions of the major viewing and editing functions:
- General functions (for all components)
- Asset Viewer
- Browse
- Add New
- History

An overview of each of these components is described in this section as well as recommended practices and data editing processes to manage and enter data that is consistent, complete, and accurate.

General Tool Functions and Component Overview

General functions are available or reused for all components. The features include:
- Header Tab Bar and component links
- Filtering and sorting functions
- Exporting functions

Header Tab Bar and Component Description

Each page displays the Header Tab Bar that provides links to the Tool's major components. The Header Tab Bar is shown in Figure 4. The Tool Component is summarized in Table 6.

Figure 4: Header Tab Bar

> **Tip:** *To get to the Landing Page, select the Home tab.*
>
> Your landing page (or home page) hosts the Asset Viewer map which is accessed by selecting the Home tab in the Header tab bar.

Table 6: Landing Page Tab Description corresponding with Figure 4

Tab Name	Tab Description
Home	Provides link to the landing page.

Browse	Provides a tool to search by assets or profiles.
Add New	Provides a tool to create new assets or profiles.
Configure	Provides tools to manage configuration values associated with asset parameters such as manufacturer, model, contact role, etc.
History	Shows activity chart and changelog for all data and attribute records.

Filtering

When selected, the landing page of Home and Browse display a list of assets or profiles. The Tool provides several methods for finding records – scrolling through the list, sorting columns of records using the arrows on appropriate columns (see Figure 5), Quick Search located above the map (or list), or filtering on selected fields by selecting from the filter options.

SORTING COLUMNS. The column header without an arrow, as shown in example (1) of Figure 5, indicates that the column is not ordered; an upward pointing arrow, example (2), indicates ascending order, starting from A or the lowest number, while upward pointing arrow, example (3), indicates descending order starting from blank fields then Z or the highest number.

(1)   (2)   (3)

REGION   REGION ↑   REGION ↓

Figure 5: Example of Column Sort Capabilities

QUICK SEARCH. The Quick Search function is displayed for all lists. Instructions on the field it supports are listed on the search line once clicked. The search icon ⌕ executes the search resulting in only the matching entities to be included in the list. The reset icon ✕ Reset clears the search bar and lists the complete set of entities.

> ⚠️ **Warning:** *Column sorting functions are persistent even when filtering lists.*
>
> The column sort operation is not affected by the quick search and filtering function. The column sort order will be active during search/filter application and following search/filtering clearing actions.

Home

The homepage or landing page contains the Asset Viewer, Announcements, and Recent Activities sections, as seen in Section 2 Navigating the ITS Asset Management Tool (Figure 3).

Asset Viewer

The Asset Viewer tool allows users to search and locate assets on an interactive map. Navigation of the Asset Viewer functions is presented in Section 4.

Figure 6: Asset Viewer Navigation
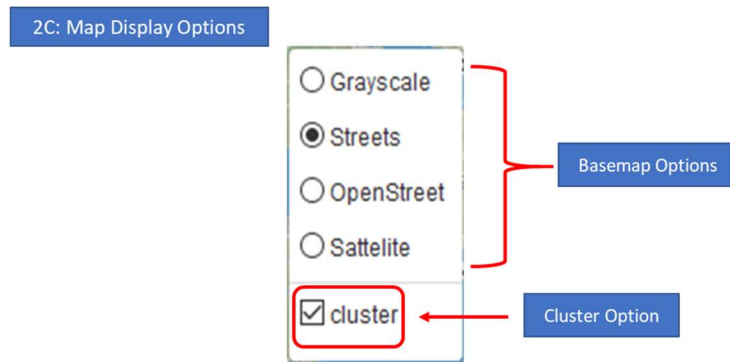
Figure 7: Asset Viewer Map Layer Options

Table 7: Asset Viewer Navigation corresponding with Figures 6 and 7

Label Num	Asset Viewer Function Description	References
1	Filter assets by Region, Status, Asset Sub Type, and/or Manufacturers	Figures 3, 5, 6
2	Asset Viewer map display of all assets in the database	Figures 24, 25
2A	Zoom Level control, click **+** to zoom in and **−** to zoom out The mouse scroll wheel also changes the zoom level	
2B	Legend describes the asset type associated with each icon displaying on the map Clicking the " − " icon minimizes the legend	
2C	Map Display Options opens a menu for changing base maps and toggling clusters Basemap Options are alternative reference maps for the assets to overlay Cluster function groups assets together	
3	Asset Tabular View is a list of assets corresponding with the queries made in 1 Filter	

3A	ID Column provides the following three options for navigating to assets in the Asset Tabular View: 1. ID number provides a link to the Asset Details page of the asset in the same tab you are working in 2. Open in new tab creates a new browser tab opened to the Asset Details of the asset in the selected row 3. Show on map centers the Asset Viewer map directly over the selected asset at the closest zoom level	⬈ 📍
3B	Export asset data to Excel Spreadsheet	⬇ Download Excel

Announcements and Recent Activities

The Announcements and Recent Activities sections of the landing page are located beneath the Asset Viewer table, displayed below in Figure 8. The functions of the features are described in Table 8.
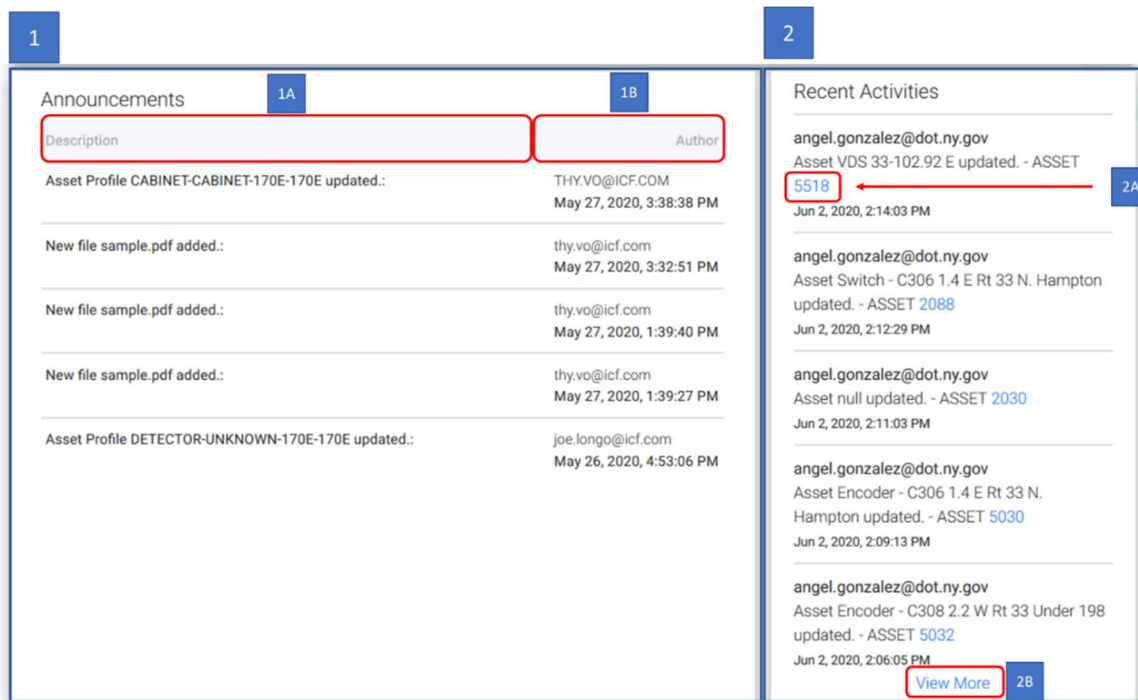
Figure 8: Landing Page – Announcements and Recent Activities

Table 8: Landing Page – Announcements and Recent Activities corresponding with **Figure 8**

Label Num	Announcements and Recent Activities Function Description	References

1	Announcements list the most recent changes made to profile records, or changes affecting multiple records, listed by Description and Author	
1A	Description defines the physical change that has been done to the profile	
1B	Author defines which user made the change and a timestamp of when it occurred	
2	Recent Activities lists the most recent changes made to individual asset and profile records	
2A	Provides a link to the Asset or Profile Details page of the recorded change in the same browser that you are working in	Figures 11 – 16
2B	View More provides a link to the History page	Figures 19, 20

Browse

The Browse page enables users to browse in a tabular view all records in the ITS AMT database. The Page also provides the option to browse profile records, unlike the Asset Viewer. Users can cycle between browsing assets and profiles by selecting either option in the top left corner of the screen, as described below.

Browse Assets

The Browse page defaults to the Browse Assets function. Descriptions of the Browse Assets functions are provided below in Figure 9 and the corresponding table.
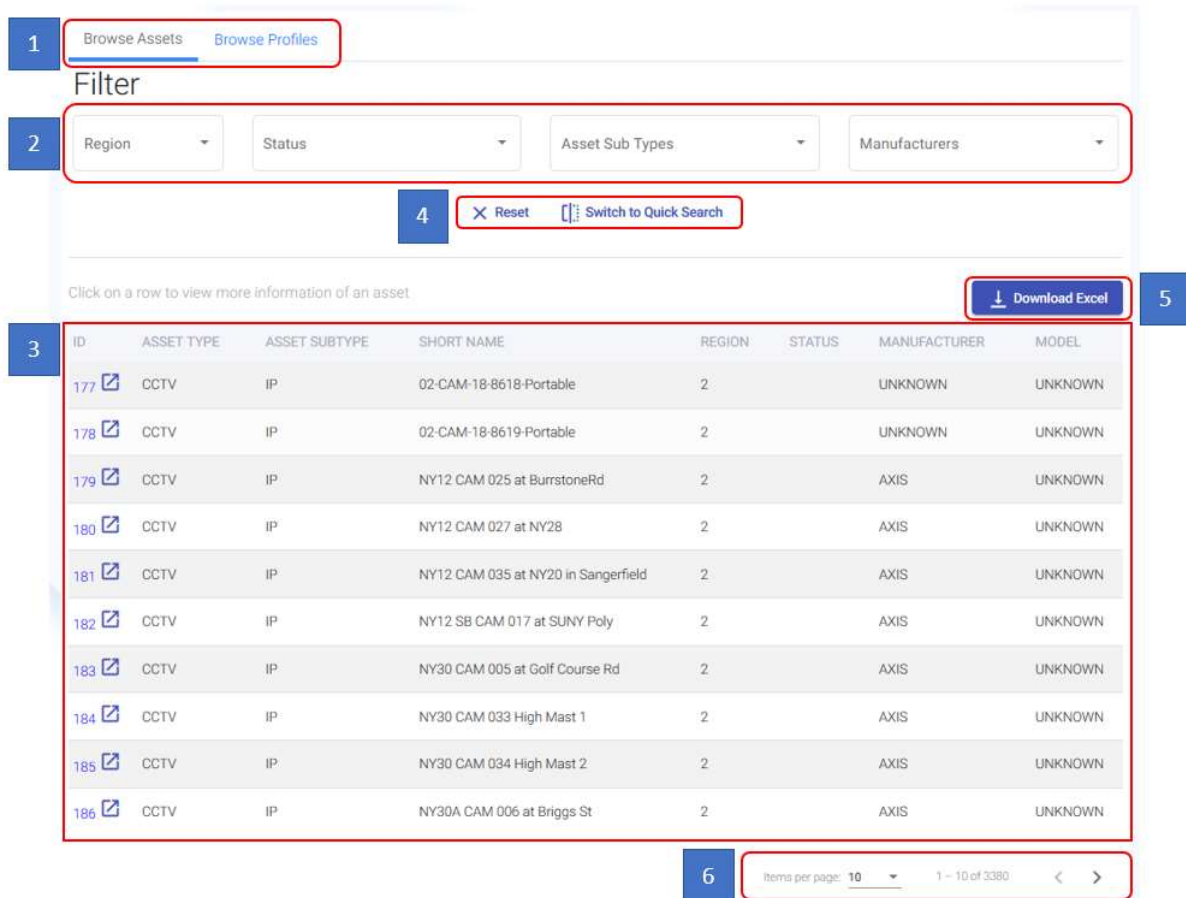
Figure 9: Browse – Assets

Table 9: Browse – Assets Descriptions corresponding with Figure 9
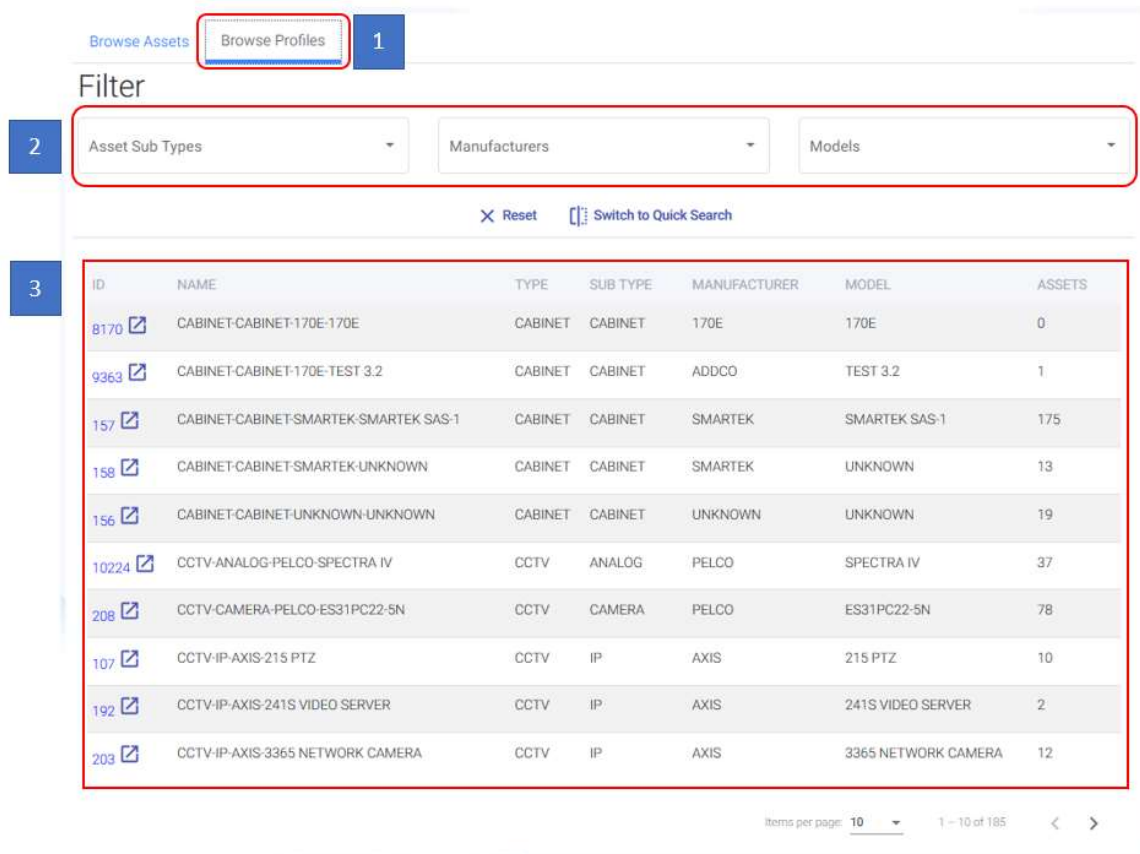
Label Num	Browse – Assets Function Description	References
1	Choose to browse assets or profiles	Figure 10
2	Filter assets by Region, Status, Asset Sub Type, and/or Manufacturers	Figures 3, 5, 6
3	Tabular asset viewer corresponding with search and filter options	Figures 6, 26
4	Select the Reset icon to remove the filter and revert to unfiltered. Quick Search all asset data by Name, Type, Manufacturer, etc.	✕ Reset ⊟ Switch to Quick Search
5	Download asset data to Excel Spreadsheet	↓ Download Excel

6	Items per page indicate the number of rows displaying in the table. Change the number of items per page by selecting an option in the dropdown. The numbers to the right describe the number of rows being viewed versus the total number in the database Arrows navigate to the previous or next page of rows by the number indicated in the Items per page dropdown	Items per page: 10 1 – 10 of 3380 < >

Tip: *The page you are browsing in – Browse Assets or Browse Profiles – will be underlined.*

Browse Profiles

The functionality of Browse Profiles is nearly identical to that of Browse Assets. The major differences between the two are the options available in the filter function and that the table lists the attributes of profiles instead of assets. Descriptions of the functions used in the Browse Assets page are provided in the figure and corresponding table below.

Figure 10: Browse – Profiles

Table 10: Browse – Profiles Descriptions corresponding with Figure 10

Label Num	Browse – Profiles Function Description
1	Choose to browse existing assets or profiles
2	Filter profiles by Asset Sub Types, Manufacturers, and/or Models
3	Profile (or Asset) list corresponding with the queries made in 2 Filter

Asset Details Page

Opening an asset in the Asset Viewer or Browse functions brings you to its Asset Details page. Each asset in the ITS AMT database has an Asset Details page where its attributes can be viewed and edited. Components of Asset Details pages are described below in Figures 11 – 14 and the corresponding tables.
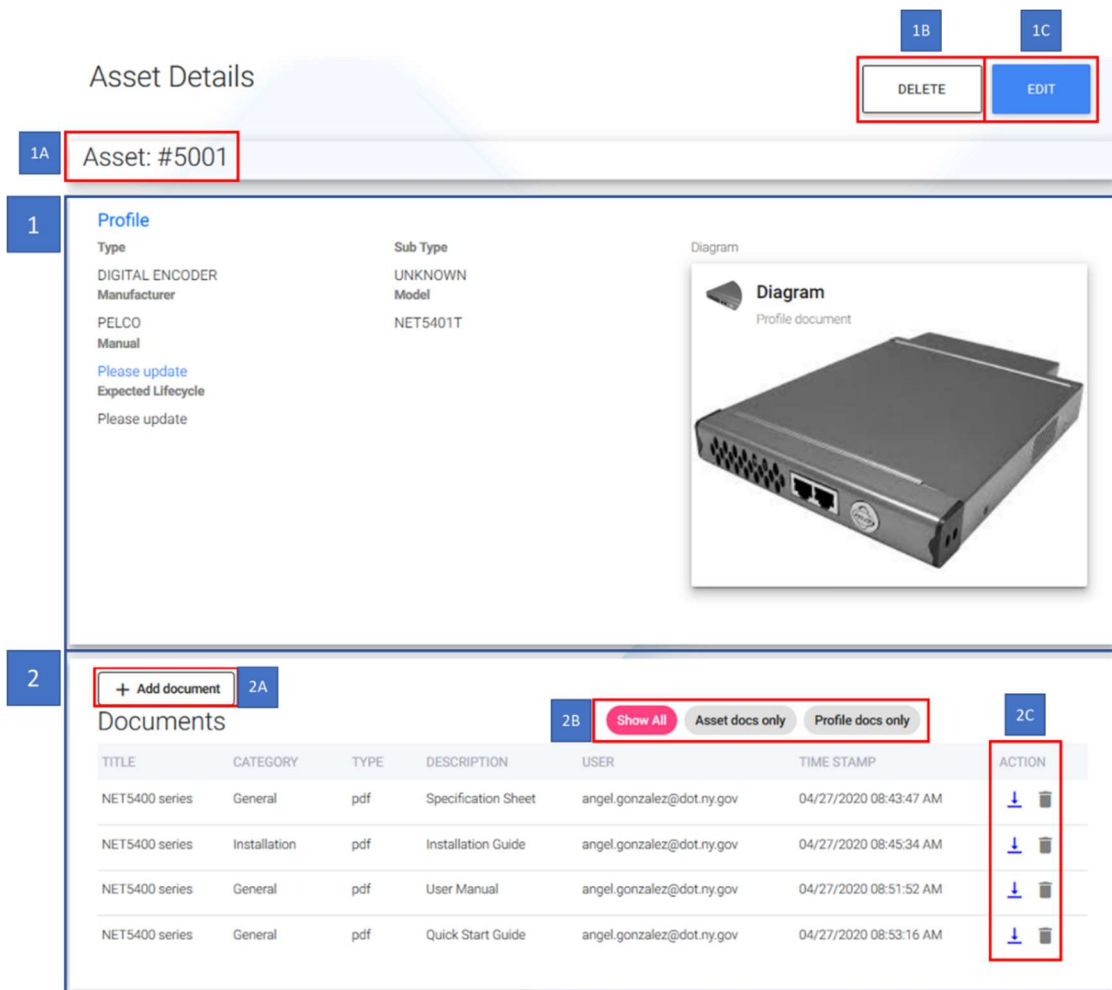
Figure 11: Asset Details Page

Table 11: Asset Details Function Descriptions corresponding with Figure 11

Label Num	Asset Details Function Descriptions
1	Asset Profile describes the Profile that the asset is associated with. Note, users cannot edit the Asset Profile section of this page
1A	Asset # is a system-generated ID number for the asset
1B	Delete provides the option to remove the asset from the ITS AMT database entirely
1C	Edit enables the user to modify data fields on the page, excluding the Profile section.
2	Documents provides a list view of the document files uploaded to the asset If there are no documents uploaded to an asset, a yellow bar will display in the table with the text "No documents found."
2A	Add Document button that opens the document upload form

2B	Three filter options:
	   ➤ Show All
	   ➤ Asset docs only
	   ➤ Profile docs only
	Note, the selected option will display as pink with white text, while unselected options will display as gray with black text

2C	Action Column where the download or delete actions can be executed
	Cancel the editing process, deleting any progress made without saving Save Changes that were made to the record (Saved changes will be noted in the activity log)
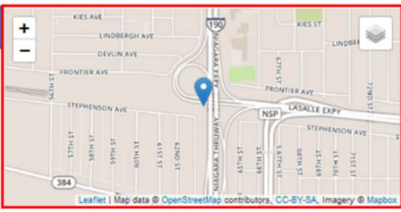
Figure 12: Asset Details Page (continued)

Table 12: Asset Details Page Function Descriptions corresponding with Figure 12

Label Num	Asset Details Description
1	**Identification** stores data relating to system and internal identifiers of the asset.
2	**Location** stores coordinates and other geographic data about the asset. Latitude and Longitude values correlate with the asset's location on the Asset Viewer map and the Location Viewer Map.
2A	**Location mini map** displays the location of the asset. To change the asset's location on the map, click and drag the pin in the map window to the desired location. This action will automatically update the Latitude and Longitude fields.

3	**Asset Type Information – Digital Encoder** is a section that changes depending on the asset type. The example is of a Digital Encoder, so the data fields are specific to digital encoders. Each asset type has specific data fields that appear in the Asset Type Information section.
4	I**nstallation** captures information on how an asset was set up or installed.
5	**Power** captures information relating to an asset's source of power.

Figure 13: Asset Details Page (continued)

Table 13: Asset Details Page Function Descriptions corresponding with Figure 13

Label Num	Asset Details Description
1	**Communication** stores identification information about an asset's communication ID, capabilities, and related components.
2	**Procurement** stores contract, purchasing, and warranty information.

3	**Maintenance** stores past and future maintenance information about the asset.
4	**Contacts** stores the contact information of people involved with the asset.

Located at the bottom of each Asset Details page is an Activity Log table under History, as seen in Figure 14. The Activity Log here is a reduced version of that in the History tab, which lists all recent activities related to an asset. See Figure 19 and Table 18 to review the Activity Log functions.

Figure 14: Asset Details Page (continued)

Profile Details Page

Profile Details pages provide the ability to view profile records. Each profile in the ITS AMT database has a Profile Details page where its attributes can be viewed. However, unlike Asset Details pages, users should not attempt to edit the values of profiles since this could corrupt any assets associated with the profile. See Section 4 for tips on data governance and change management.

Detailed descriptions of the functions on Profile Details pages are provided in Figure 15 and corresponding Table 14.

Note, features Delete, Edit, and Add document are located on both Profile Details pages and Asset Details pages. The functionality of these features remains consistent across both pages. Descriptions of the other icons used on Details pages are provided in Section 2.

Figure 15: Profile Details Page

Table 14: Profile Details Page Function Descriptions corresponding with Figure 15

Label Num	Profile Details Function Descriptions
1	The section where a profile's attributes are stored
1A	**Profile #** is a system-generated ID number for the profile
1B	Link to the Profile Details page (same page)
1C	**Type** indicates the category in which the asset belongs to.

1D	**Manufacturer** lists the producer of the asset
1E	**Manual** is where URLs to an asset's specifications manual is stored
1F	**Expected Lifecycle**
1G	**Sub Type** defines the category from the chosen Type
1H	**Model** is the particular
1I	**Diagram** is where images of the asset are stored
1J	The delete icon causes an uploaded image to be removed
2	**Profile Documents** archive for all documents associated with a profile Note, the Documents section of Profile Details pages is separate from the Documents section of Asset Details pages
3	**Profile Assets** lists all assets associated with the profile in a table If there are no assets associated with the profile, a yellow bar will display in the table with the text "No records found."

> **Tip:** *Clicking the blue "Profile" text in the top left corner of an Asset Details page opens the Profile Details page of its associated profile.*

> **Warning:** *For existing profiles, users should refrain from modifrying Type, Sub Type, Manufacturer, and Model fields to avoid data corruption.*
>
> See Section 4 for Change Management procedures and tips.

At the bottom of each Profile Details page is an Activity Log table under History, as seen in Figure 16. The Activity Log here is a reduced version of that in the History tab, which lists all recent activities related to a profile. See the History section review the functionalities of Activity Logs.

Figure 16: Profile Details Page (continued)

Add New

The Add New page is where users can create new asset or profile records. Stages of the Add New process are explained below in Figure 17 and the corresponding table. See Section 4 for detailed instructions on creating new assets or profiles using the functions on the Add New page.
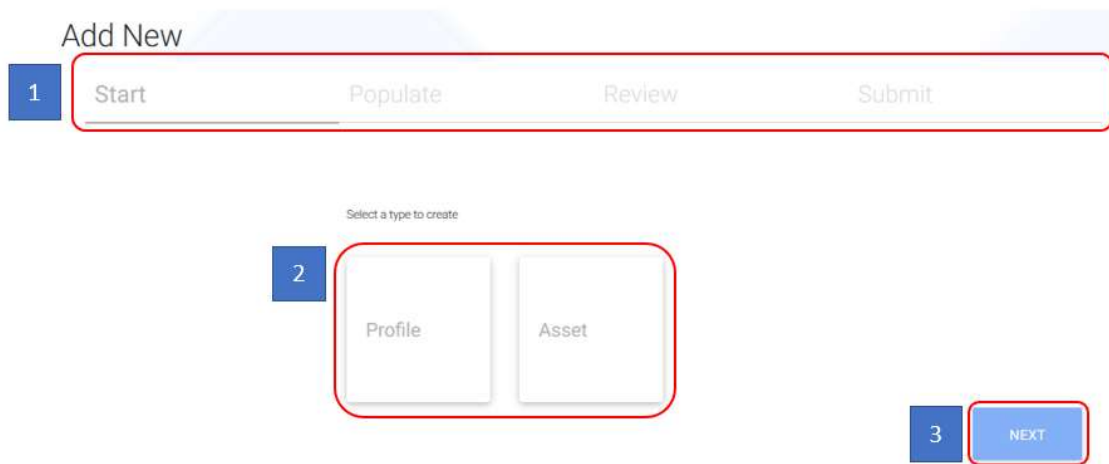
Figure 17: Add New Page

Table 15 describes the functions located on the Add New – Start page. See Section 4 for other function descriptions and instructions related to the record creation process.

Table 15: Add New Descriptions corresponding with Figure 17

Label Num	Add New Page Function Descriptions	References

1	Displays the current Stage of the asset or profile creation process	
2	Options to create a Profile or Asset	Figures 27, 28
3	Progresses to the next step (populate) of creating an asset or profile	Figure 29

Tip: *The stage of the Add New process you are working in will be underlined.*

Configure

The Configure Tab provides tools to manage configuration values associated with asset parameters such as identification, location, installation, power, contacts, etc.

The Configure Tab allows you to edit, add, or delete the values associated with specific configuration parameters that are available to assign to the asset attributes. Figure 18 shows the landing page for the Configure tab. Section 4 provides instructions for modifying configuration values and value definition can be found in Appendix A.

The configuration parameters in the Configuration Bar are listed below in Table 16:

Table 16: Configuration Bar Parameters

Asset Type	Protocol Type	Antenna Number	Humidity Sensor
Asset Sub Type	Protocol Standard	Bluetooth Class	Visibility Sensor
Manufacturer	Communication Type	Radar Operating Frequency	Contact Role Type
Status	Mounting Type	Lowering Device	Position Type
Operating Status	Display Type	County	Tow Hitch
Models	CCTV Operation Status	Ramp Type	Tow Hitch Ball
Cabinet Type	CCTV Type	Power Source	AUX Equipment
Camera Type	Poll Period	Power Connector	Hobbling Method
Camera Output	Detector Type	Pavement Temp. Sensor	Hybrid Use Method
Antenna Output	Detector Purpose	Air Temp. Sensor	Organizations
Transportation Layer	Antenna Purpose	Wind Speed Sensor	
Application Layer	Antenna Type	Precipitation Amount Sensor	
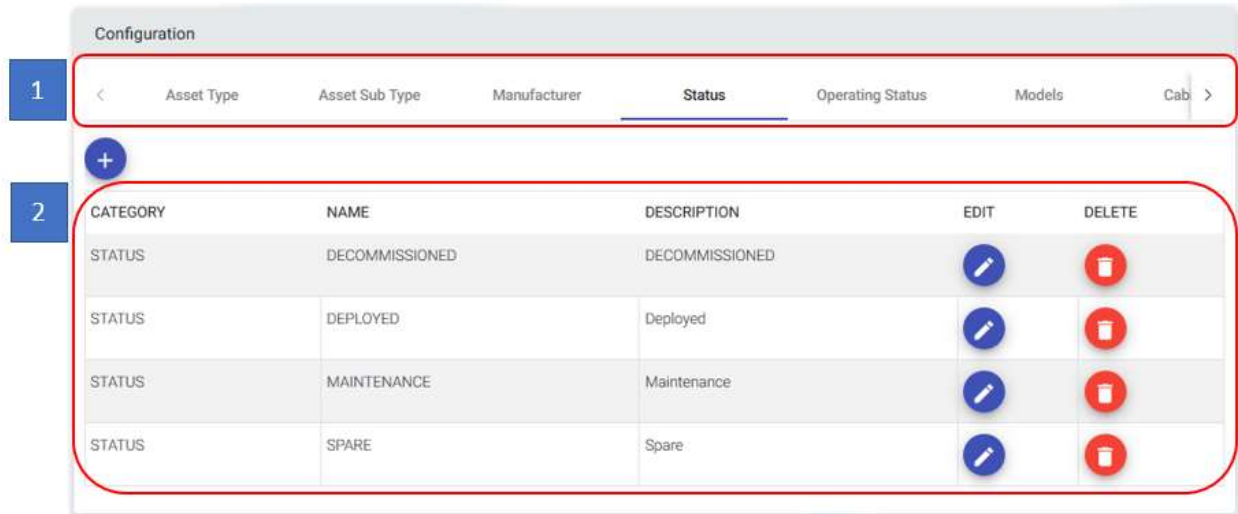
Figure 18: Configure Page

Table 17: Configure Page Description corresponding with Figure 18

Label Num	Configure Page Function Description	References
1	Configuration menu bar lists all fields containing enumerate values. Click the arrows located on either side of the menu bar to scroll through the list of options. All changes to the configuration parameters correlate to the data fields in the Asset Details pages.	Figure 33
2	Lists all existing enumerate values of the selected parameter subtab. Existing records can be edited or deleted, and new records can be added using the functions in the table.	

Tip: *The Subtab you are working in will be underlined.*

Warning: *Configuration parameter tabs with "System" in the Edit column cannot me modified by non-admin users.*

System parameters are standard values which are persistent values and can cause data corruption if changed. See Section 4 for Change Management procedures and tips.

History

Activity Logs, located in the History tab, lists all the changes to any field, value or record. A timeline and list of record changes are displayed on the page. Table 18 describes the History page (Figure 19) and when the Filter menu is active (Figure 20). Simpler versions of the Activity or History functions can also be found on Home, Asset Details pages, and Profile Details pages.
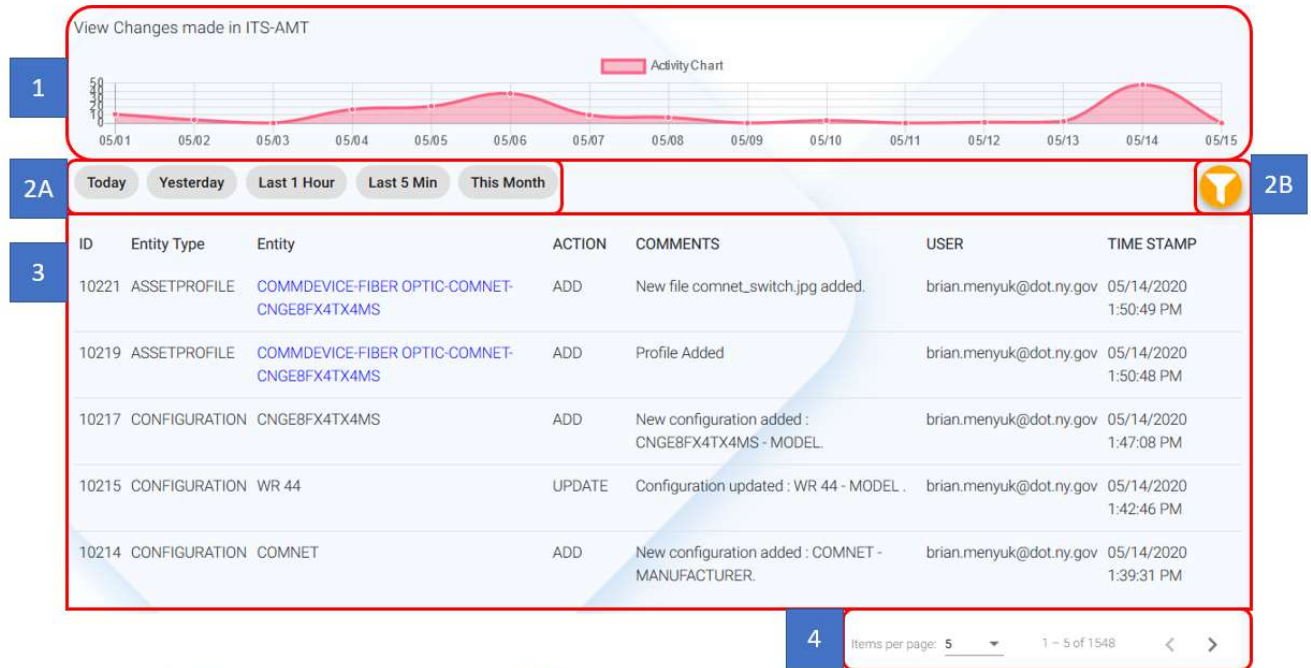
Figure 19: History Page

Figure 20: History Page Filtering Capabilities

Table 18: History Page corresponding with Figures 19 and 20

Label Num	History Page Function Descriptions	References
1	Activity Chart that shows the number of changes along a timeline.	
2A	Timeline filter to adjust Activity Chart dimension. Dimensions include: ➢ Today ➢ Yesterday ➢ Last Hour ➢ Last 5 Minutes ➢ This Month	
2B	Activity Log filtering function enables a user to select or sort log entry fields. The Apply Filter and Clear Filter buttons are located on the left, above the filter menu. Select the Apply Filter button to execute the filter. Select the Clear Filter button to clear the filter and revert back to the original order.	Apply Filter Clear Filter
3	History change log lists all the changes made to the asset, profile, and configuration.	
4	The user can select the number of records they want to display on the list page. The following functions are included in the display control. ❖ Number of records listed on the History page Items per page: 5 When ▼ is selected a drop-down list is deployed from which a user may select the number of records to show on each page ❖ Controls for navigating pages < > ❖ Number of records displaying from the total 1 – 5 of 1680 **Tip:** *The total number of assets refer to the number of assets based on the filtered list.*	Figures 6, 9, 10, 14, 16

4.   Workflows

This section describes the management, editing, and exporting capabilities of the Asset Viewer, Add New, and Configure functions with respect to asset and configuration data. Additionally, the section below offers guidance on asset data governance, the key component to effective database management.

Asset Data Governance

Industry practice recognizes data governance as the approach to achieve consistent, repeatable, and sustainable quality data. According to Data Management Association International (DAMA) Data Management Body of Knowledge (DMBOK) "Data Governance is the exercise of authority and control (planning, monitoring, and enforcement) over the management of data assets.[1]" NASCIO[2] defines data governance as:

> "the operating discipline for managing data and information as a key enterprise asset. This operating discipline includes organization, processes, and tools for establishing and exercising decision rights regarding valuation and management of data. Key aspects of data governance include decision making authority, compliance monitoring, policies and standards, data inventories, full lifecycle management, content management, records management, preservation, data quality, data classification, data security, data risk management, and data validation."

Tools: The designated tools include this ITS Asset Management Tool and spreadsheet software.

Organization: The roles and responsibilities of the data governance organization including assigned stakeholders. The organizational structure is described in the section below.

Processes: The rules and procedures used to curate asset data. These include naming conventions, encoding methods, and the change management flow. The processes are described in the section below.

Organization

To ensure effective data governance, it is important that the roles and responsibilities of each stakeholder group are realized. The chart below in Figure 21 explains the roles of each group and the corresponding chart in Figure 22 defines their responsibilities.

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[1] DAMA DMBOK Chapter 3
[2] NASCIO, Data Governance – Managing Information As an Enterprise Asset Part 1 – An Introduction. (April 2008), p. 1.
https://www.nascio.org/Portals/0/Publications/Documents/NASCIO-DataGovernance-Part1.pdf

Executive	Data Governance Board	Executive Committee
Stategic	Enterprise Data Steward	Main Office Operations
Tactical	Business Data Steward	Regional Asset Managers
Operational	Data Custodian	Regional Data Managers, Field Maintenance & ITS AMT Operations
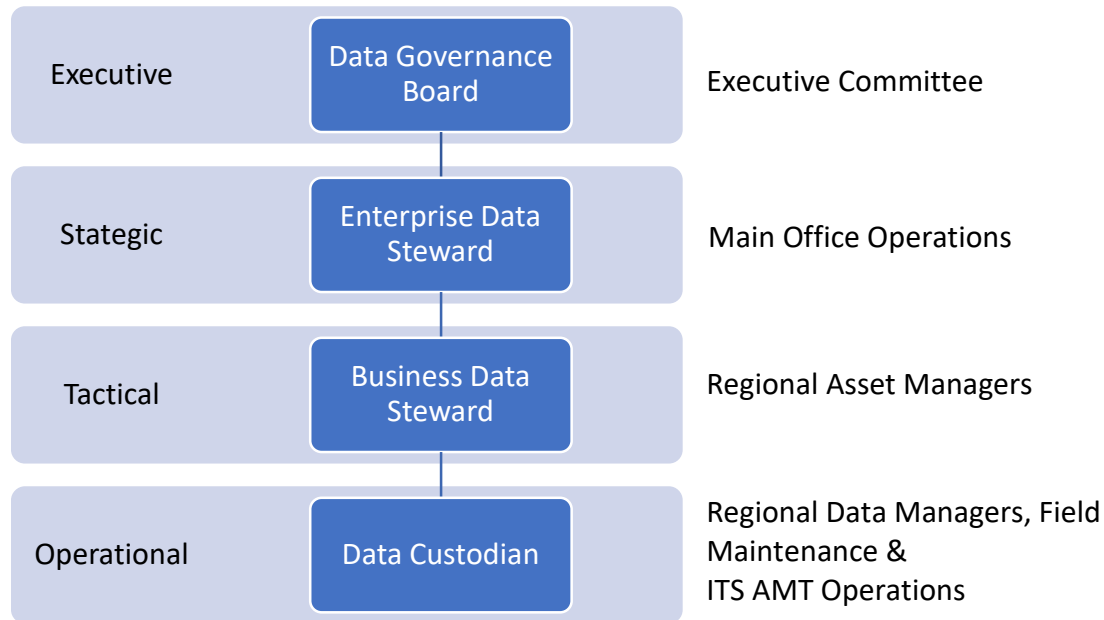
Figure 21: Roles for Stakeholder Groups

Data Governance Board

• Executive team consists of data governance stakeholders
• Responsible for establishing data governance policies and championing data accessibility and quality improvements.

Enterprise Data Steward

• Functional "enterprise" business experts
• Responsible for leading assigned functional data working groups comprised of Data Stewards and Data Custodians from each organization
• Reporting to the Data Governance Board
• Advocating for data quality, prioritization and data system usage (not control)

Business Data Steward

• Functional data expert from each organization
• Responsible for overseeing capture, maintenance, and dissemination, as well as validating quality, and participating in data working groups
• Developing Data Steward Data Plans

Data Custodian

• Operational management of data from each organization
• Responsible for data capture, maintenance, and disseminateion and following data governance policies / procedures and participating in data working groups

Figure 22: Responsibilities for Stakeholder Groups

Meetings

ITS AMT stakeholder meetings occur are held quarterly to discuss recent changes to the tool, data, and processes. As the system becomes more robust, these meeting will eventually evolve to become bi-annual occurrences. Additionally, it will be up to the Enterprise and Business Data Stewards to hold routine data governance meetings to review and update the system content and the data dictionary.

Processes

The following subsections describe the elements of the data governance processes that should be implemented during data governance meetings.

> **WHAT:** The *What* are the various components of system data that each stakeholder group is responsible for reviewing. The primary system components are:
>
> ❖ Rules – naming conventions, quality measures (e.g., location accuracy), and data entry or encoding
>
> ❖ Configuration – configuration of shared data values (e.g., Status field)
>
> ❖ Shared Content – profiles and contacts
>
> **WHO:** The *Who* are the groups responsible for each part of the processes (see Figure 21).
>
> **WHEN & HOW OFTEN:** The *When* establishes the timeframe for data governance meetings to review and approve changes to the existing content and structures. The *How Often* defines the routineness of meetings.

Change Management Processes

A change management process consists of requesting, determining attainability, planning, implementing, and evaluating of changes to a system. The standard change management procedures are outlined in the chart below.
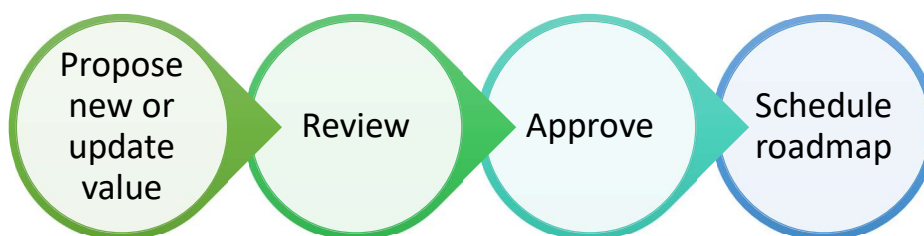
Figure 23: Order of Change Management Processes

Propose new or update value
- Complete evaluation of backward compatibility
- Assess costs and impacts

Review
- Data Steward review
- Enterprise Data Steward schedule meeting

Approve
- Meet to discuss potential change(s)
- Approve or reject

Schedule roadmap
- Change management requiring coding
- Change value(s)
- Ensure resources are available to make the change

Table 19: Change Examples

Change Type	Change Examples
New Values	Profile attribute
	Asset Attribute (global attribute or specific to asset type / subtype)
	Asset type / subtype
	Configuration type (excluding asset type / subtype)
	(add) configuration type value
	Procedure / trigger / UX/UI
Change or Update Values	Asset type/subtype
	Relationship between attributes, asset types/subtypes
	Naming conventions – profiles, identifiers
Deprecate or Delete Values	Asset type (e.g., HAR) or subtype
Security Updates	User roles and access)
	Infrastructure security patches (part of platform work)

ITS AMT Workflow Use Cases

This subsection describes how to use the ITS AMT for various workflow uses cases.

Locating Assets

Whether for updating existing asset data or conducting an asset inventory count for a given area, users can identify the locations of assets using the Asset Viewer function on the Home page, or with the Browse page functions. Instructions for using each method are provided in the following subsections.

Asset Viewer

The Asset Viewer is a geographic display of existing assets in the database, as well as in a tabular view beneath the map. For descriptions of the general functions on the Home page, see Figures 6 and 7, and Table 7 in Section 2. Using the filter, search, and sort functions, users can view assets by various attributes including asset type, asset subtype, short name, region, manufacturer, and model.

The Asset Viewer map, shown below in Figure 24, exhibits all assets in the ITS AMT database. Assets are displayed as icons representative of their asset type. Steps on using the Asset Viewer to locate an asset are provided below.

STEPS TO LOCATE AN ASSET IN ASSET VIEWER

1. **Query**. Query the assets appearing on the map with the Filter function or Quick Search bar. Whenever a filter option is selected, or a search is performed, the map view will automatically center over a general area based on the query.
2. **Locate the asset on the map**. Users can center the map view over an individual asset by clicking the "Show on map" icon in the row of the desired asset in the tabular view beneath. Alternatively, the pan and zoom functions of the map can be used to navigate to the asset manually.
3. **Preview the asset**. Hover your mouse over an asset icon to display the Short Name, or nickname, designated to it for identifying purposes.
4. **Open the Preview Details window**. Click on the asset icon to open the Preview Details window where a snapshot of the asset's data is provided (Figure 25). Review the data in the Window to ensure it is the asset you are searching for.
5. **View Details**. Select the "View Details" icon in the Preview Details window to open the asset's Details page in a new tab.
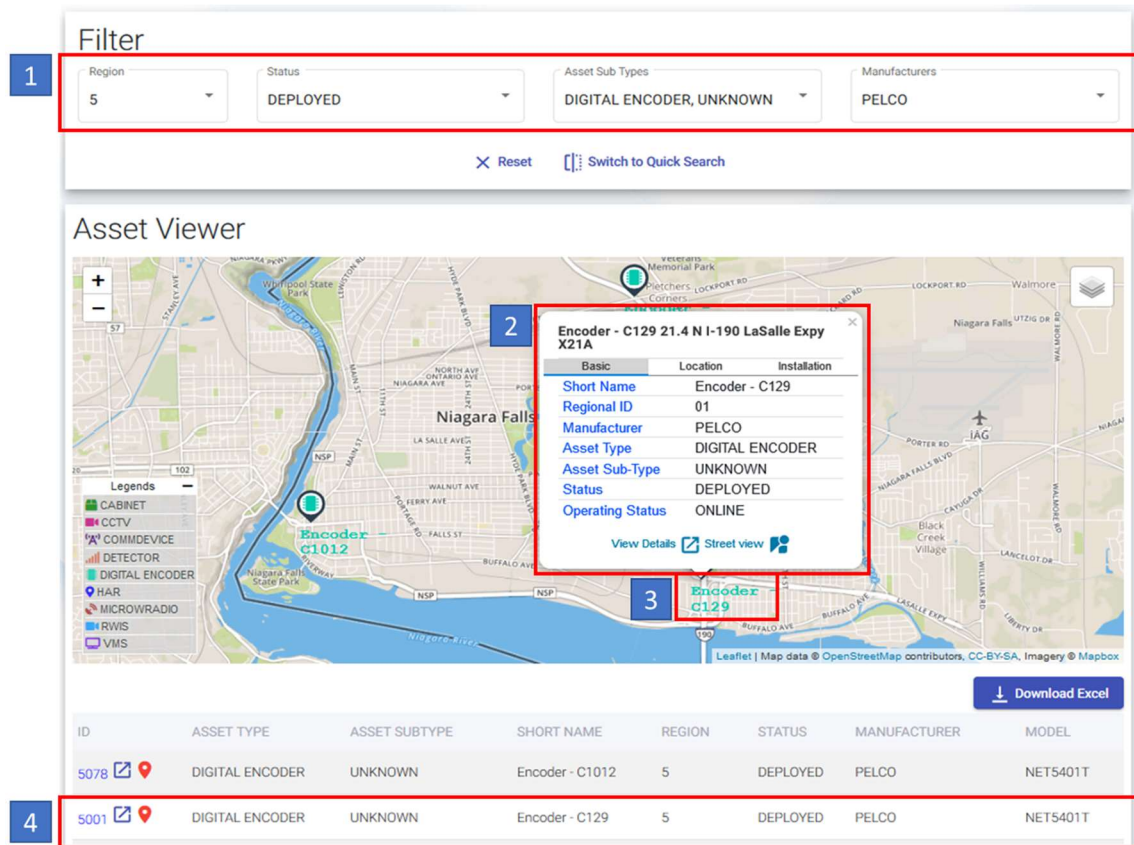
Figure 24: Locating Assets Using the Asset Viewer

Table 20: Locating Assets Using the Asset Viewer corresponding with Figure 24

Label Num	Asset Viewer Function Descriptions	References
1	Filtering options selected	Figures 3, 6, 9, 10
2	Preview window that displays a snapshot view of the asset's data located in its Asset Details page	Figure 25
3	Asset Short Name that displays on the map, corresponds with the value entered in the Short Name field	
4	Row of the asset being previewed	
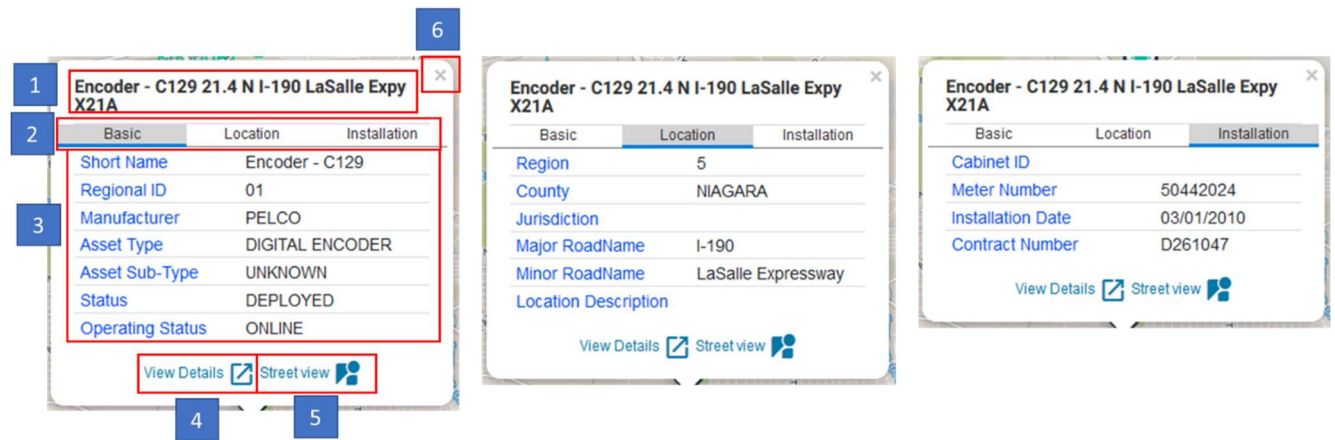
Figure 25: Asset Viewer – Asset Preview Window

Table 21: Asset Viewer – Asset Preview Window corresponding with Figure 25

Label Num	Asset Viewer – Asset Preview Window Function Descriptions	References
1	Displays the Name field of the asset	Figures 12, 13
2	Shaded bar indicating which category of asset data is being displayed The second and third images of Figure 22 display examples of the asset's Location and Installation data categories	
3	Table displaying the data fields corresponding with the category being viewed	Figures 12, 13
4	Opens the asset details page of the asset in a new tab	Figures 12, 13, 14
5	Opens the Google Maps Street View of the asset's location in a new tab	
6	Closes the Preview window	

Browse

Similar to the Asset Viewer, the query options in the Browse pages ultimately bring users to Asset Details or Profile Details pages. Descriptions of the functions found on the Browse pages can be found in Section 3.

One benefit of searching in the Browse pages is the greater amount of screen space designated for the tabular list of assets or profile records. With a less cluttered page, users may find it easier for making numerous manual edits one after the other.

Unlike the Asset Viewer, users can also identify existing profile records in the Browse Profiles function of the Browse tab. Under the Assets column, you can find the number of existing assets in the database associated with individual profile records, as seen in Figure 26.

ID	NAME	TYPE	SUB TYPE	MANUFACTURER	MODEL	ASSETS
8170	CABINET-CABINET-170E-170E	CABINET	CABINET	170E	170E	0
9363	CABINET-CABINET-170E-TEST 3.2	CABINET	CABINET	ADDCO	TEST 3.2	1
157	CABINET-CABINET-SMARTEK-SMARTEK SAS-1	CABINET	CABINET	SMARTEK	SMARTEK SAS-1	175
158	CABINET-CABINET-SMARTEK-UNKNOWN	CABINET	CABINET	SMARTEK	UNKNOWN	13
156	CABINET-CABINET-UNKNOWN-UNKNOWN	CABINET	CABINET	UNKNOWN	UNKNOWN	19

Figure 26: Number of Assets Associated with Existing Profiles

Exporting Asset Information

Asset data can be exported from the Asset Viewer on the landing page, as well as on the Browse page. The "Download Excel" button is located in the top right corner of the asset tabular views of each page, shown in Figure 6, Label 3B. The instructions to export a file of asset data are listed below.

STEPS TO EXPORT A FILE OF ASSET DATA

1. Query the data you want to export via the Filter or Quick Search function
2. Select the Download Excel button
3. Depending on the browser you are using, a pop-up window will appear where you can choose to open or save the file, or the file will be created and stored in your Downloads directory
4. Open the file using Microsoft Excel or other spreadsheet program, although the file is saved with a Microsoft Excel extension (xlsx).
5. Save the file. The file name of the export defaults to "AssetExport_DDMMYYYY," where the month, date, and year corresponds to the date of the export. For example, AssetExport_11142018 indicates the export occurred on 11/14/2018. If you prefer, rename the file using a different name before you save it.

Creating an Asset or Profile

New asset or profile records are created in the Add New tab (see Section 3 for function descriptions). Asset data can be created either manually or via an import process. Instructions for manually creating a new asset or profile are listed below.

STEPS TO CREATE NEW A NEW ASSET OR PROFILE

1. Choose between creating a new asset or profile (Figures 27 and 28)
2. Select a data entry method, then click Next (Figures 27 and 28)
3. Enter data for the new record in the Populate stage and click Preview (Figure 29)
4. Review the data entered, then click Save and Review

The following subsections provide instructions for each stage of the Add New process in accordance with the Progress Bar, displayed in Figure 17.

Start

Start is the first stage of creating a new record, where users can select to create a profile or asset record, as seen in Figure 17. Choosing one or the other will direct you to a tree of options specific to assets or profiles. Selecting to create a Profile will prompt the options seen in Figure 27 while selecting Asset will prompt the options seen in Figure 28.

Creating a New Profile:
When prompted to select a type to create, select the Profile option. By selecting Profile, the options Manual Entry and Use Existing Profile will appear, as seen in Figure 27.

To begin populating a new profile, choose one of the options, and click Next. Note, the Use Existing Profile option is currently under development.
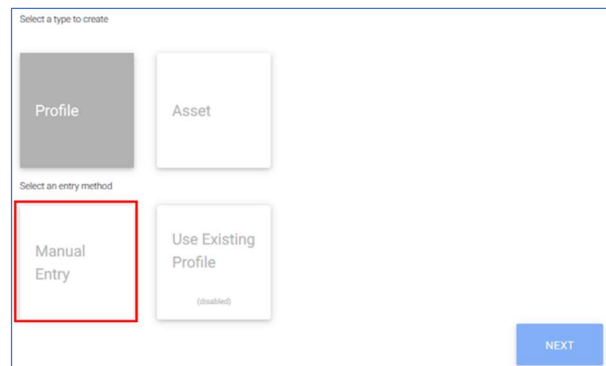
Figure 27: Creating a New Profile

Creating a New Asset:
Selecting to create a new asset will prompt users with three options: Manual Entry, Use Existing Profile, and Import Spreadsheet, as seen in Figure 28.

Currently, only the Use Existing Profile option is available to users. Selecting this option and clicking Next will direct you to the Populate stage of Add New (Figure 28).
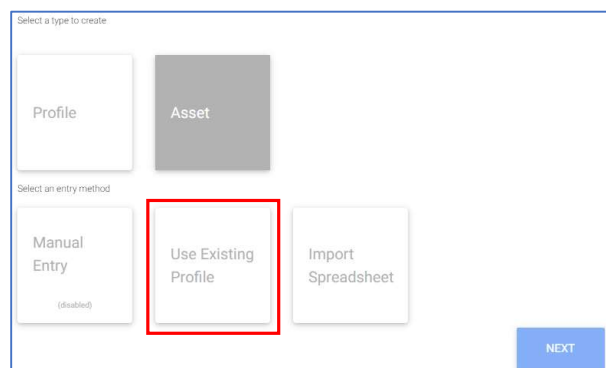
Figure 28: Creating a New Asset

Populate (Asset)

The Populate stage is where a new profile or asset's data is recorded. Instructions on populating a new asset record are provided below in Figure 29 and the corresponding table.

Figure 29: Populating a Newly Created Asset

Table 22: Populating a Newly Created Asset corresponding with Figure 29

Label Num	Add New Asset Function Descriptions	References
1	**Populate** is the stage where data entry is performed	Figure 17
2	Associate the asset with an existing profile in the database by choosing options from the Manufacturer and Model dropdowns	Figure 15
3	Data entry is performed in the Identification and Location (pictured), as well as the following (non-pictured): Asset Type Information, Installation, Power, Communication, Procurement, Maintenance, Contacts (See Section 3) Data entries must adhere to the data format of each field.	
4	Location data, such as Latitude, Longitude, and Region, are required data fields that correspond to the asset's geographic location on the Asset Viewer map.	Figure 6, 24

Review

The Review stage provides the opportunity to review the data entered for the new asset by displaying what its Asset Details page would look like.

Submit

To finalize the record creation, click the Save and Review button at the bottom right of the screen. Clicking Cancel and Go Back will bring you back to the populate stage. Once the Add New process is complete and you the Successfully saved notification appears, you will be directed to the new asset's Asset Details page.

> ⚠️ **Warning:** *Data The new asset record will only save and be added to the database if all of the mandatory fields are filled out.*
>
> Once all mandatory fields are filled out and Save and Review is selected, a green bar will appear indicating that the asset was successfully uploaded.
>
> Successfully saved uploaded document.

Importing Asset Data

For adding multiple new asset records, users can choose to import the data via spreadsheet. The steps and figures below describe the import process.

STEPS TO IMPORT ASSET DATA

1. Navigate to the Add New tab
   a. Select Asset and then Import Spreadsheet
   b. Click Next
2. Click the Download Template button
   a. Open the Excel template
   b. Click Enable Editing
3. Populate the AssetImport_Template excel spreadsheet with your asset data
   a. Do not include data in column A (ID) – this is a system generated ID number
   b. Make sure that your data for Profile columns K – P match an existing Profile record
      i. If not, create a new Profile
   c. Make sure to only include data relevant to the asset type you are adding
      i. BK – BM: Cabinet
      ii. BN – BP: CCTV
      iii. BQ – BS: Comm Device
      iv. BT – CB: Detector
      v. CC – CD: Digital Encoder

      vi.   CE – CG: HAR Device

      vii.   CH – CN: RWIS

      viii.   CO – DF: VMS

      ix.   DG: MicroWave Radio

4. Save the AssetImport_Template file to your computer
5. In the ITS AMT, drag and drop the file into the yellow rectangle
   a. Or, left click inside the yellow rectangle to open your files and choose your file
6. Wait to make sure that two green messages appear in the ITS AMT:
   a. All records are valid; and
   b. # record/s imported successfully
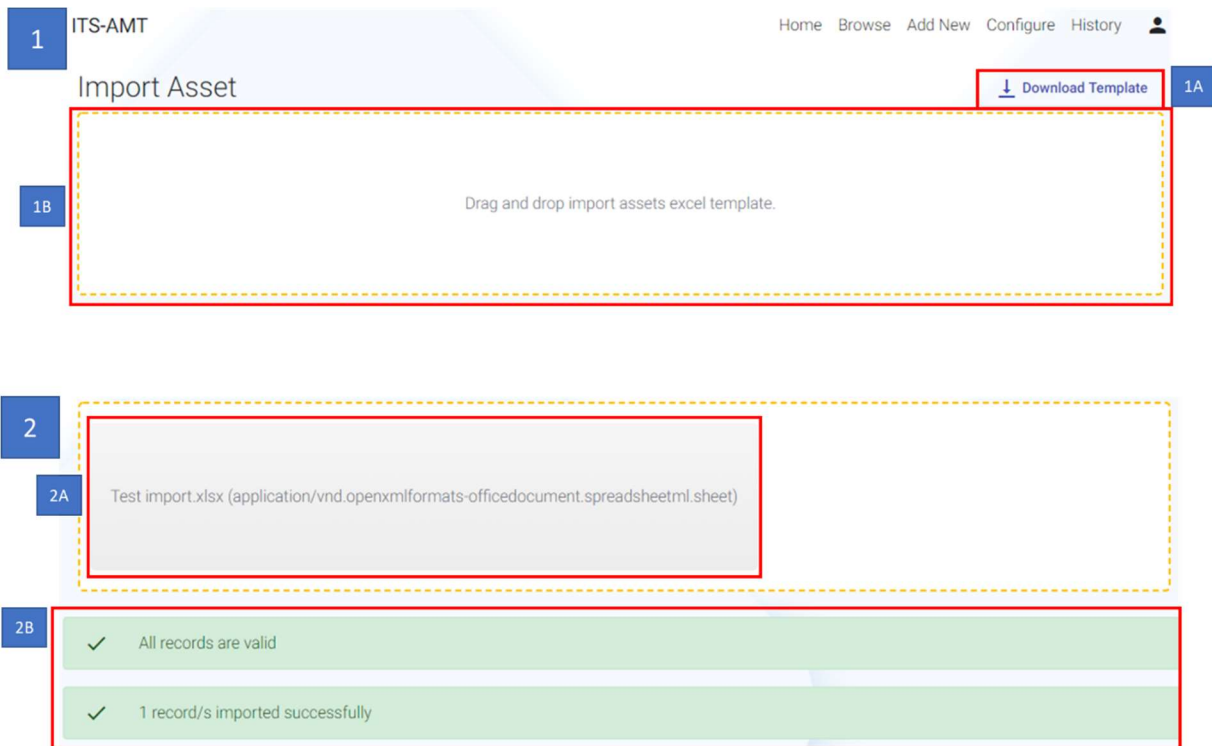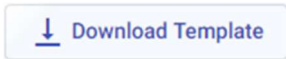
Figure 30: Import Asset Page

Table 23: Importing New Assets corresponding with Figure 30

Label Num	Import Asset Function Descriptions	References
1	Import Asset page where a data import can be initiated. **1A**: Download Template button that initiates the download of a blank Excel asset data template. **1B**: Yellow box where a completed asset data template can be dragged to initiate the file upload.	

| 2 | Import Asset page after a file has been successfully uploaded, importing the asset data into the ITS AMT.

2A: Gray box representing the selected file for upload.

2B: Two green messages that confirm a successful file upload. | |

Editing Existing Asset and Profile Data

Assets and Profiles can be edited or deleted in the Asset or Profile Details page of the particular record. This section provides instructions for making physical changes to asset data, specifically how to add contacts and documents.

STEPS TO EDIT AN ASSET

1. Locate the asset using the Asset Viewer or Browse functions
2. Navigate to its Asset Details page by clicking View Asset Details, or a linked asset ID #
3. Click the Edit button once on the Asset Details page
4. Click the desired data field and add, modify, or remove values
   a. Enumerate value vs. # format
5. Save Changes or Cancel

Adding a Contact

Contact information can be added to an asset record on its Asset Details page via the Add New Contact function, as seen in Figure 30.

STEPS TO ADD A CONTACT TO AN ASSET

1. Select the Edit button on the Asset Details page
2. Scroll down to the Contacts section and select the Add New Contact button (Figure 30)
3. Enter information about the contact in the data fields (Figure 31)
4. Review the entered information to ensure data quality
5. Click the Save Changes button
6. Wait for the green "Successfully updated asset" notification to appear
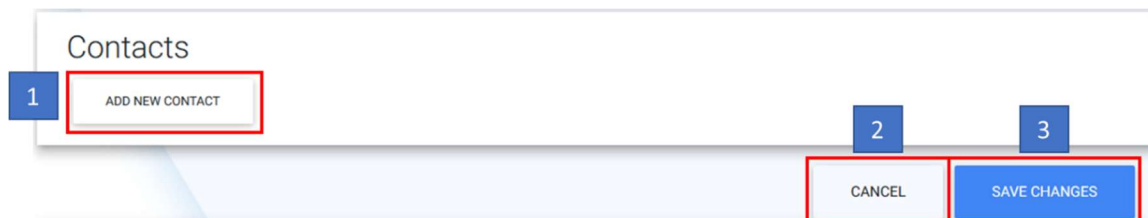
Figure 31: Adding a Contact

Figure 32: Adding A Contact (continued)

Table 24: Adding a Contact corresponding with Figures 31 and 32

Label Num	Adding Contact Function Descriptions	References
1	Add New Contact expands the data entry window (Figure 30)	
1A	Data fields where contact information such as Role Type, Representative Name, Organization, etc. are entered for a given contact record	Appendix A
1B	Add New Contact opens another window for entering new contact information each time it is clicked	
1C	Delete Entry removes the contact entry	
2	Cancel ends the editing process without saving changes	
3	Save Changes made to the record (Saved changes will be noted in the activity log)	

Warning: *Changes to an asset will save only if all of the mandatory fields are filled out.*

Once all mandatory fields are filled out and Save Changes is selected, a green bar will appear indicating that the asset was successfully updated.

Adding a Document

Documents containing useful information, such as an installation guide or specification sheet, can be archived in the Documents section. This section provides instructions on using the Add Document feature referenced in the sections above. The functionality of the Add document feature is described below in Figure 32 and corresponding Table 24.
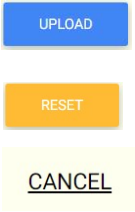
STEPS TO ADD A DOCUMENT TO AN ASSET

1. Open the Asset Details page of the asset
2. Select the Add Document button in the top left corner of the Documents section
3. Select the Browse button to choose a file from your computer to upload
4. Choose from the Category dropdown to categorize the document
5. Enter a title for the document in the Title field
6. Enter a description for the document in the Description field
7. Select the Upload button to complete the process, or select the Reset button to clear the fields

Figure 33: Add Document Form

Table 25: Add Document Form Function Descriptions corresponding with Figure 33

Label Num	Add Document Form Function Descriptions	References
1	File provides a Browse function for selecting a saved file on your computer Note, only pdf, excel, word, and image files of < 50 MB can be uploaded	
2	Category is an enumerate value field to associate the document with one of the following: General, Installation, Power, Communication, Procurement	Figures 12, 13
3	Title is an open text field for a title information to include about the document	
4	Description is an open text field for additional information to include about the document	

5	Upload the selected document to the Documents table	UPLOAD
	Reset all fields of the Add Document Form to blank	RESET
	Cancel the action of adding a new document and closes the Add Document Form window	CANCEL

> ⚠️ **Warning:** *A document will upload only if a file is selected in the required File field.*
>
> A green bar will appear once a document upload is successfully performed.
>
> Document uploaded successfully

> 👍 **Recommended Practice:** *Use the Add Document function to associate manual documents with asset profiles that no longer have functioning manual URLs.*

Modifying the Configuration

As the ITS AMT database continues to grow and change, the occasional need will arise to add, delete, or edit an existing enumerate value option of a data field. For example, when editing or populating an asset or profile, a user might find that the dropdown menu of a data field does not include the value they are looking to input.

Users can modify the parameters of a dropdown menu by editing the configuration. Changes to the configuration can be executed on the Configure page, described in Section 3. Configurable data fields are indicated in Section 5. Note, all changes to the configuration are subject to Data Governance Change Management Processes.

Step 1: Go to the Configure page   →   **Step 2:** Navigate to the correct tab   →   **Step 3:** Edit the value   →   **Step 4:** Click Save
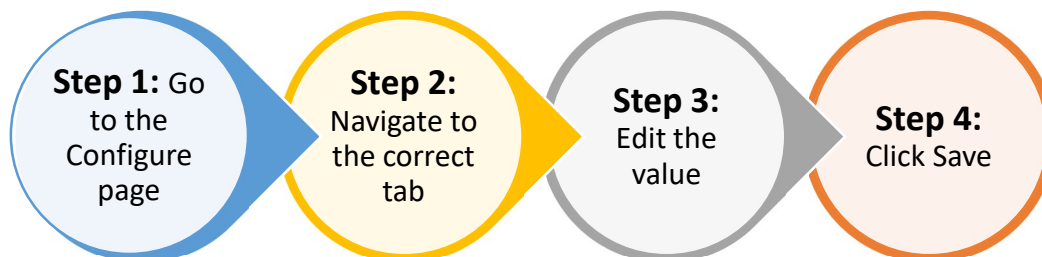
Figure 34: Steps involved in modifying the configuration

> ⚠️ **Warning:** *Changes to the configuration impact all users and should only be made in consideration of the Change Management procedures mentioned in section 4.*

APPENDIX A. Data Dictionary

<mark>TBD – This function is under construction.</mark>

Table 26: Asset Types

Asset Type	Subtype
Cabinet	n/a
CommDevice	CELLULAR
CommDevice	RADIO
CommDevice	DIAL-UP
CommDevice	FIBER OPTIC
CommDevice	MICROWAVE
CommDevice	Ethernet Switch
CCTV	analog
CCTV	digital
CCTV	VDS
VMS	permanent
VMS	portable
VMS	semi-permanent
VMS	hybrid
Detector	bidirection
Detector	calling
Detector	directional
Detector	magnetic
Detector	loop
Detector	radar
Detector	lidar
Detector	ultrasound
Detector	acoustic
Detector	camera/video
Detector	bluetooth/WiFi
Detector	TRANSMIT
Detector	TRIGG (overheight veh)
Detector	microwave
RWIS	n/a
HAR	n/a
MicroWRadio	n/a
Digital Encoder	n/a

Cabinet
Cabinet Type: describes the primary purpose of the cabinet (add enumerated values)
- Enumerate
- Mandatory

Cabinet Description: Type or model of cabinet
- String
- Optional

Cabinet Notes: any notes associated with the cabinet
- String
- Optional

Cabinet Inventory: Reference to other inventory database
- URL
- Optional

Cabinet Dimension: height by width by depth in inches
- Mask
- Optional

CCTV
Video-URL: Video-URL address to view video
- URL
- Optional

Camera Type: Type of camera deployed [PTZ/FIXED/BARREL]
- Enumerate
- Optional

Camera Output Format: The output format of the camera [H.264 / MPEG4 / MPEG2 / MJPEG]
- Enumerate
- Mandatory

CCTV Notes:
-
- Optional

CommDevice
Comm Sutbypte: The type of communication used for communicating: ["CELLULAR", "RADIO", "DIAL-UP", "FIBER OPTIC", MICROWAVE]
- Enumerate

- Optional

Comm Manufacturer: The manufacturer of the comm device
- Enumerate
- Optional

Comm Model: The model of the comm device
- Enumerate
- Optional

Antenna Type: Type of antenna needed for wireless comm
- Enumerate
- Optional

Antenna Manufacturer: The brand/manufacturer of antenna
- Enumerate
- Optional

Antenna Model: The model of antenna
- Enumerate
- Optional

Comm Notes: Any notes related to the CommDevice
- Memo
- Optional

Communications
IP Address: Assigned IP address (static)
- IP mask
- Mandatory

MAC Address: Assigned MAC address
- Mask
- Optional

Protocol: The protocols used to connect to the device (e.g., Transport layers: UDP, TCP, and Application layers: SNMP, https, http, ftp, sftp, etc.)
- Enumerate
- Optional

Protocol Standard: Type of interface standard used to provide control, communications, and data exchange, for example, NTCIP version #
- Enumerate or link to the URL (PICS)
- Optional

Communication ID: Asset ID where asset type = communications

- String
- Optional

<mark>Tel Number: Line or mobile number (for dropped line communications, sometimes called dropped address)</mark>
- Address Mask
- Optional

Antenna Type: Type of antenna needed for wireless comm
- Enumerate
- Optional

Antenna Manufacturer: The brand/manufacturer of antenna
- Enumerate
- Optional

Antenna Model: The model of antenna
- Enumerate
- Optional

Contacts-Roles
Role: the role of the contact
- Enumerate
- Mandatory

Contact organization: the organization responsible
- Enumerate
- Mandatory

Contact representative: the name of a contact person
- Text
- Mandatory

Contact phone: the phone of the contact person
- Text
- Optional

Contact email: the email of the contact person
- Text
- Mandatory

Account number: the account number associated with the role
- Text
- Optional

Website: the website that is associated with the role

- URL
- Optional

Contact emergency phone: the emergency contact number (to be called or messaged) if an event occurs to the asset
- Text
- Optional

Detectors
Detector Subtype: All
Detector Type: The type of detector. [bidirection, calling, directional, magnectic, loop (inductive loop), infrared, magnetometer, radar, lidar, ultrasonic, acoustic, camera/video, bluetooth/WiFi, TRANSMIT, TRIGG (overheight veh), microwave]
- Enumerate
- Mandatory

Poll Period: The polling period or sampling rate that composes the frame or window from which the raw data is generated into a value.
- Number
- Optional

Purpose of the detector: The main reason that the detector is used. [travel time only, speed/vol/occ, overheight, etc.]
- Enumerate
- Optional

Detector Notes: Any notes associated with the detector.
- Memo
- Optional

Antenna Purpose: Purpose of antenna [Wifi Sniffer, Transmit]
- Enumerate
- Optional

Antenna Type: A type of antenna needed for the detector to detect vehicles.

Antenna Manufacturer: The manufacturer of the antenna

Antenna Model: The model of the antenna

Antenna Number: The number of antennas associated with detector

<u>Detector Subtype: Bluetooth</u>
Class: The Bluetooth class [class 1, class 2, class 3]

- Enumerate
- Optional

<u>Detector Subtype: Radar</u>
Operating Frequency: The operating frequency of the radar. [800 MHz, 50 MHz, 75 MHz]
- Enumerate
- Optional

Digital Encoder
Version Number: The version number of the digital encoder
- String
- Optional

Decoder Notes: Notes associated with the digital encoder
- Memo
- Optional

HAR
HAR ID: The identification of the HAR
- Number
- Optional

Frequency: The operating frequency of the HAR, e.g., 97.7
- Float
- Mandatory

Band: The frequency band in which the HAR operates [AM/FM]
- Enumerate
- Optional

FCC License: The license number of the HAR.
- String
- Optional

HAR Notes: Notes associated with the HAR including additional indicators such as a flasher, that a message is available on the frequency.
- Memo
- Optional

Identification
Asset ID: auto assigned index (by the database)
- Auto

- Mandatory

Regional ID: Internal regional identifier used in their database
- String
- Mandatory

DOT ID: Identification assigned by the owner agency. This might be an inventory sticker with a QR code or tag.
- String
- Optional

Serial Number: Serial number assigned by the manufacturer
- String
- Mandatory

Name: Name assigned by Coval naming convention or another TMC convention
- String
- Optional

Short Name: A nickname for the device
- String
- Optional

Description: A short description of the asset and its purpose.
- Memo
- Optional

Status: The operational status of the asset including deployed, spare, maintenance.
- Enumerate
- Mandatory

Operating Status: The operational status of the asset including on-line, off-line, removed from service
- Enumerate
- Optional

Notes: Additional notes related to the asset
- Memo
- Optional

Installation
Marker ID: The place (marker ID) or pole on which the asset is mounted
- String
- Optional

Mounting Type: The type of mounting -- pole, ground, signal, other
- Enumerate

- Mandatory

Cabinet ID: A reference to a Asset ID where asset type = cabinet.
- String
- Optional

Installation date: date that device was installed
- Date
- Optional

Lowering device: there is a lowering device, values include [MG^2, CLS]
- Enumerate
- Optional

Meter number: If powered by a utility, the meter number associated with the power.
-
- Optional

Installation notes: any notes related to the installation
-
- Optional

Drawing: as built drawing
-
- Optional

Installation contract number: The identification of the installation contract if different from procurement contract.
- String
- Optional

Location

Geo ID: index assigned by the mapping tool; more than one asset may use this asset geo ID when assets are co-located (e.g., sensor in cabinet).
- String
- Optional

Latitude: WGS 84 (at least 6 decimal places)
- Float
- Mandatory

Longitude: WGS 84 (at least 6 decimal places)
- Float
- Mandatory

Reference Marker:

<mark>Mile Marker:</mark>

Major Road Name: Highest level road name for example, the interstate number would be the highest road name, then a named road would be a minor road name.
- String
- Mandatory

Minor Road Name: Road name where asset is deployed. Add code if asset is spare.
- String
- Optional

Flow Direction: Flow direction of road (NB, SB, EB, WB, median)
- Enumerate
- Optional

Location Description: a short description of the asset location; if asset is spare, then location in storage.
- Memo
- Optional

Jurisdiction: The jurisdiction in which the asset resides (e.g., city, county, borough)
- String
- Optional

County: The county in which the asset resides
- Enumerate
- Optional

Region: NYSDOT region 1-11 and headquarters
- Enumerate
- Mandatory

Ramp: Related to the road name [ingress, egress] (based on direction of road and flow direction)
- Enumerate
- Optional

Maintenance
PM schedule: next preventative maintenance service
- Optional

Power
Power source: Types of power sources includes: Electric, Solar, Battery
- Enumerate
- Mandatory

Power: The current, voltage (range and max), amperage and wattage needed to power the asset
-
- Optional

Power connector: The connector and cabling used to connect the asset to the power supply
- Enumerate
- Optional

Battery number: The number of batteries in power source
- Number
- Optional

Battery manufacturer: if specialized batteries, the manufacturer
- String
- Optional

Battery model: model of battery (or size)
- String
- Optional

Battery specifications: URL or link to cut sheet for batteries
- URL
- Optional

Solar panel manufacturer: Manufacturer of solar panel
- String
- Optional

Solar panel model: model of solar panel
- String
- Optional

Solar panel specification: URL or link to specifications/cut sheet
- URL
- Optional

Procurement
Contract date: The date of the contract
- Date
- Optional

Contract number: The contract or PO number
- String
- Optional

Warranty period expiration: expiration date (last day of warranty)
- Date
- Optional

Purchase date: date of purchase
- Date
- Optional

Profile
Asset Type / Subtype: The type and subtype of an asset stored in the ITS AMT
- Enumerate
- Mandatory

Manufacturer: asset manufacturer
- Enumerate
- Mandatory

Model: asset model number
- Enumerate
- Mandatory

Life Expectancy: mean time to failure (MTTF) or other measure of reliability
-
- Optional

Manual: URL or link to O&M manuals
- URL
- Optional

Diagrams: specification drawings or photos
- Blob
- Optional

RWIS
Pavement Temperature Sensor: A type of pavement temperature sensor.
- Enumerate
- Optional

Air Temperature Sensor: A type of air temperature sensor.
- Enumerate
- Optional

Wind Speed Sensor: A type of precipitation sensor.
- Enumerate
- Optional

Precipitation Amount Sensor: A type of precipitation sensor.
- Enumerate
- Optional

Humidity Sensor: A type of humidity monitoring sensor.
- Enumerate
- Optional

Visibility Sensor: A type of visibility monitoring sensor.
- Enumerate
- Optional

Fenced: Indicates if a fence surrounds the sensor location. [yes, no]
- Boolean
- Optional

RWIS Notes: Any note associated with the road weather information sensor.
- Memo
- Optional

VMS
VMS Subtype: All
Display type: The type of display. [Character matrix, full matrix, line matrix]
- Enumerate
- Mandatory

Character Numbers: The maximum number of characters per line.
- Number
- Optional

Lines (rows): The maximum number of lines on the sign.
- Number
- Optional

Width (px): The maximum number of pixels wide that can be displayed on the board.
- Number
- Optional

Height (px): The maximum number of pixels high that can be displayed on the board.
- Number
- Optional

Color: The type of color displayed. [Amber, full color]
- Enumerate
- Optional

VMS Notes: Any notes related to the VMS
- Memo
- Optional

VMS Subtype: Permanent
Position: The position of the permanent sign [overhead, roadside]
- Enumerate
- Optional

Board size: The total size of the board (width by height) in feet
- Enumerate
- Optional

Board Access: The means of access to the board electronics. [front, rear, walk-in]
- Enumerate
- Optional

VMS Subtype: Portable
Tow hitch type: The type of tow hitch used to mount the portable VMS trailer [trailer hitch ball, pintle hitch ball]
- Enumerate
- Optional

Tow hitch ball: The size of the ball in the tow hitch [1.8, 2.3, 2, 3] in inches
- Enumerate
- Optional

Auxiliary Equipment: Any auxiliary equipment or sensors that are included in the portable VMS sign. [radar, camera, radar-Speed warnings, Radar-Traffic Counting, Cell modem]
- Enumerate
- Optional

Lock: Internal lock is included in the equipment [yes, no]
- Enumerate
- Optional

VMS Subtype: Semi-permanent
Hobbling method: The method by which the portable VMS trailer is prevented from moving or being moved. [Hitch lock; chain to object; tires removed; mounted to platform; hard wired to power]
- Enumerate
- optional

VMS Subtype: Hybrid
VMS Hybrid Use: Reason for the variable message information presented in the hybrid sign. [Free Text, Travel Time, HOV Lane, Character only]. Note a hybrid sign is a static sign with an embedded variable message sign.

- Enumerate
- Optional

Sign Reference: The identification number from an external sign inventory source.
- String
- C

Sign Inventory:
- String
- Optional