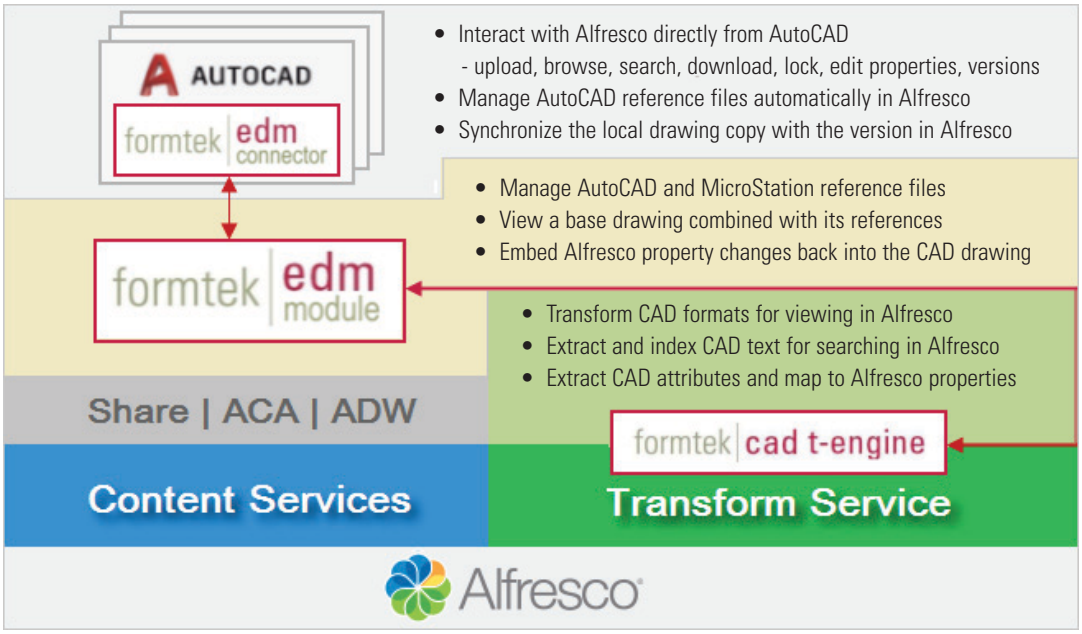


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ENGINEERING DATA MANAGEMENT (EDM) SOLUTION FOR ALFRESCO®

Formtek's EDM Solution works in conjunction with Alfresco Content Services (ACS) to provide flexible yet secure management of vital engineering documents and drawings.

The EDM Solution is available as a subscription for Alfresco 7.x and 23.x on Windows and Linux platforms. Access to the Formtek Online Support portal for ticketing, bug fix patches, and product updates are included.



The Formtek EDM Solution is comprised of several products. The products and their capabilities are summarized below, and in more detail on the following pages:

- The **Formtek EDM Module** provides a set of server-based extensions to the Alfresco repository and Alfresco Share. The EDM Module includes custom content types and properties that can be used to associate metadata with engineering drawings and documents. The EDM Module provides methods to both manually and automatically manage and associate AutoCAD and MicroStation reference files within the repository. This information then allows the EDM Module to combine a base drawing and its references into a single PDF rendition for preview or download.

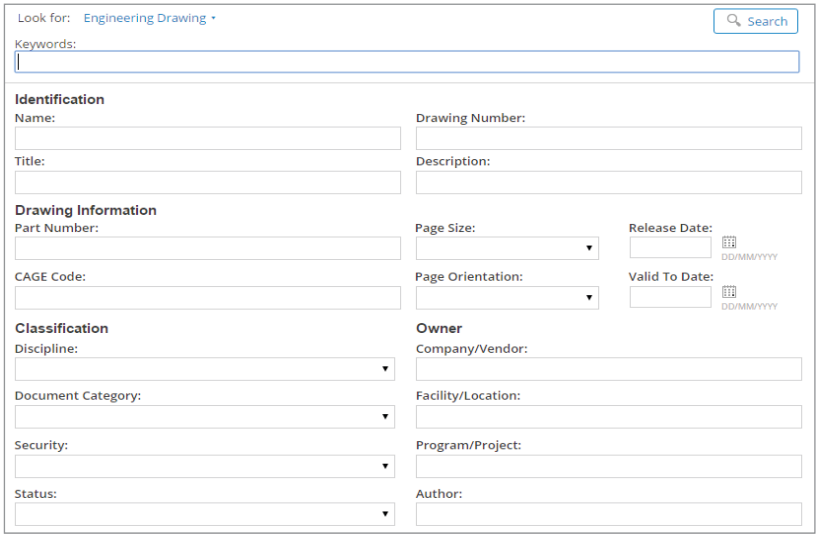
- The **Formtek CAD Transform Engine** (FTKCAD T-Engine) can be used standalone or in conjunction with the EDM Module to provide AutoCAD and MicroStation transformation and extraction capabilities, and to automatically update the CAD drawing when an Alfresco property is updated. The updated property value is embedded into the corresponding CAD attribute per a configurable mapping. To further enhance performance, the FTKCAD T-Engine can reside on a server separate from the Alfresco repository.

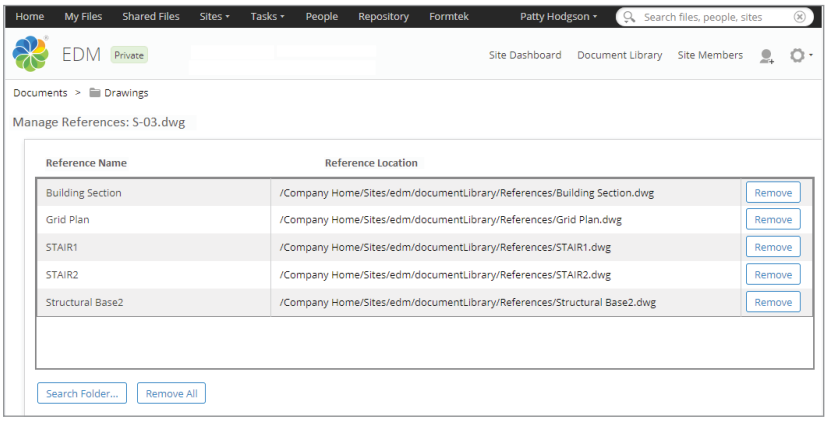
- The **Formtek EDM Module Plugin for ACA/ADW** provides a set of EDM extensions for the Alfresco ADF-based Alfresco Content Application (ACA) and Alfresco Digital Workspace (ADW), similar to the Alfresco Share extensions included in the EDM Module.

- The **Formtek EDM Connector for AutoCAD** product is an AutoCAD plugin that allows synchronized interaction between the AutoCAD application and the Alfresco repository.

The Formtek EDM Module includes a **Custom Content Model** for Engineering Drawing and Engineering Document content types. These content types include properties that can be used to associate metadata with engineering drawings and documents in Alfresco, as well as matching search, view, and edit forms.

The EDM Module can also be configured to work with an organization's custom content model and types. When so configured, the EDM content types and your custom content types would both be available in lists for Change Type and Advanced Search.





Formtek EDM also supports a configurable, **Automatic Reference Management** solution. The FTKCAD T-Engine extracts reference names from the CAD drawing on upload. Then, when a base drawing enters a folder, a configurable rule identifies which reference folder to search, and then recursively searches that folder for matching reference names.

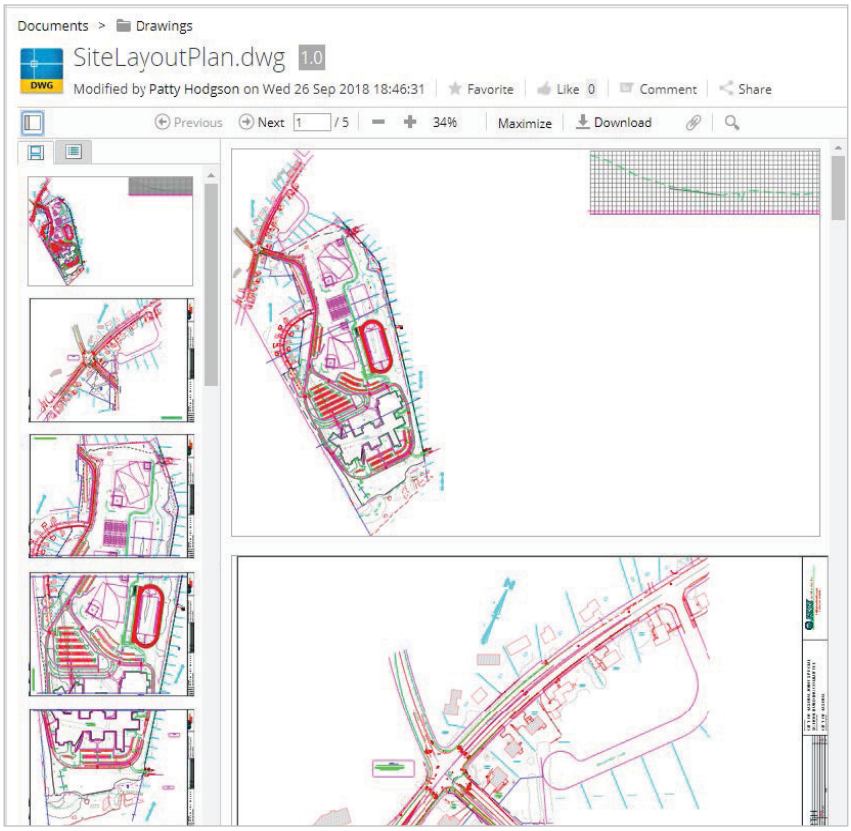
When chosen, the Manage References command lists each reference name and a link to the corresponding reference file in the Alfresco repository. Clicking a Reference Location link displays the Document Details window for that reference.

The base drawing and its references are stored in the Alfresco repository as separate items because they're separate drawing files. The reference management capabilities of the EDM Module then allows the user to **Generate a Complete Drawing** that combines the base drawing and its multiple reference files, into a single PDF rendition.

Similar to the PDF rendition that is displayed in the standard Alfresco preview pane, the complete drawing rendition includes all models, layouts, and views in the base drawing. Use the **Download Original** command to download the complete drawing PDF rendition.



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The EDM Module uses the FTKCAD T-Engine to perform **Custom Transformation** of AutoCAD DWG, DWT, DXF, DWF formats, as well as MicroStation DGN, IFC 2x3 and IFC 4 files, into thumbnail and high-fidelity vector PDF preview formats for viewing in Alfresco.

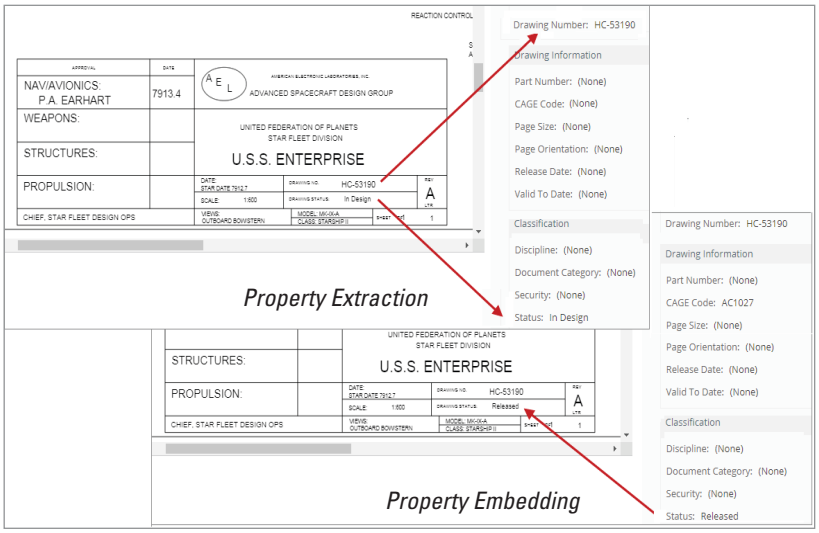
The rendition created for drawing previews includes **all models, layouts, and views** in the form of a multi-page PDF. When you click the Toggle Sidebar icon, a thumbnail for each page is displayed, and each available drawing view can be previewed as a separate page in the preview pane. For example, the drawing shown to the left is displayed as a 5-page PDF preview with the thumbnails visible in the sidebar.

By default, the preview rendition is generated based on the original colors saved in the drawing. However, additional options are provided to preview the drawing in grayscale, black and white, or based on a stored CTB/STB plot style file.

Both extraction and embedding of CAD file attributes, including title block attributes, is supported.

The FTKCAD T-Engine performs **extraction** of block attributes from AutoCAD files, as well as extraction of both tags and Item Types from MicroStation files, and stores these attribute values in corresponding properties in the Alfresco repository.

The reverse process can also be configured to occur when a change to a property value is made within Alfresco. When **embedding** is enabled, property changes are automatically embedded into the corresponding attribute of the CAD file, resulting in an updated CAD file.



AutoCAD Block Attribute/Property Name	EDM Property Name
DWG-NO	Drawing Number
PART-NO	Part Number
CAGE-CODE	CAGE Code
COMPANY	Company/Vendor
LOCATION	Facility/Location
PROJECT	Program/Project

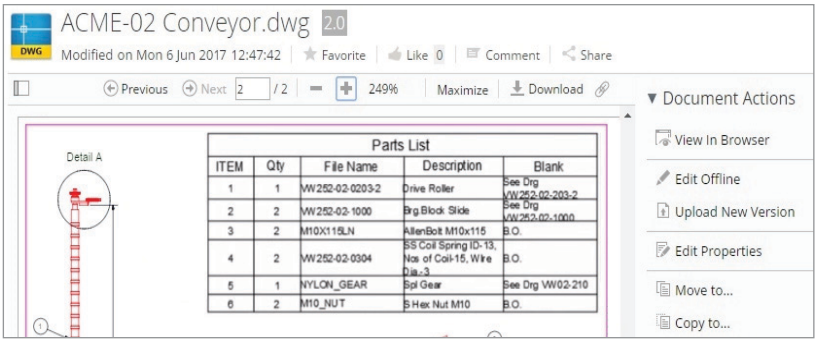
The **configurable mapping** identifies the exact name of the CAD attribute and the corresponding Alfresco property where the extracted value is saved.

Extracted AutoCAD and MicroStation file properties can be used for **metadata searching** in Alfresco, or to trigger the use of Alfresco rules or behavior policies.

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In addition to performing extraction of CAD file attributes, the FTKCAD T-Engine also **extracts text** from AutoCAD DWG, DWT, and DXF files, and well as from MicroStation DGN files.

The extracted text, for example, the Parts List information to the right, is then used for Solr indexing within Alfresco, allowing users to perform **content-based searches** to find drawings in the repository.





The Alfresco Content Application (ACA) and Alfresco Digital Workspace (ADW) are newer content management applications built using the Alfresco Application Development Framework (ADF).

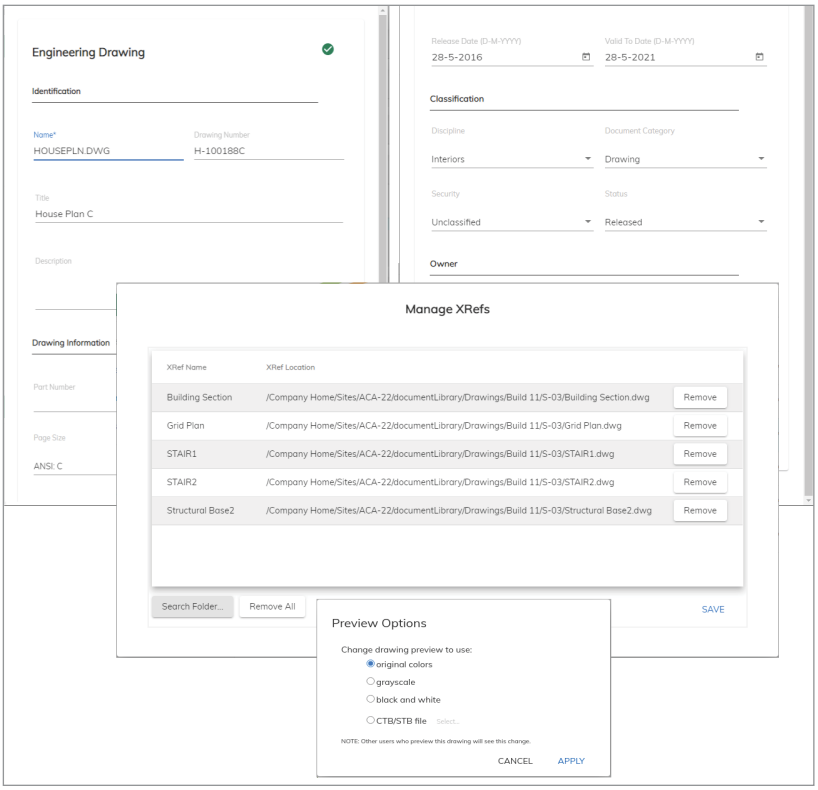
For those customers using the ACA or ADW application as an alternative to the Alfresco Share application, Formtek provides an EDM Module Plugin.

The **Formtek EDM Module Plugin for ACA/ADW** provides a set of EDM extensions for the ACA and ADW applications, which provide capabilities similar to the Formtek EDM Module Share extensions.

The Formtek EDM Module and Formtek CAD Transform Engine repository components continue to function in an ACA or ADW environment, including for CAD drawing transformation and viewing (as seen above), and CAD attribute and text extraction.

The EDM Module Plugin for ACA/ADW supplements these capabilities by providing the following **EDM functionality within the ACA/ADW applications**:

- EDM Properties (for editing Engineering Drawing or Engineering Document type properties)
- Manage References
- Set/Remove Reference Search Folder (for automatic reference management)
- View Complete Drawing
- Regenerate Complete Drawing
- Export as Zip File
- Preview Options (for CAD file previews and complete drawing previews)

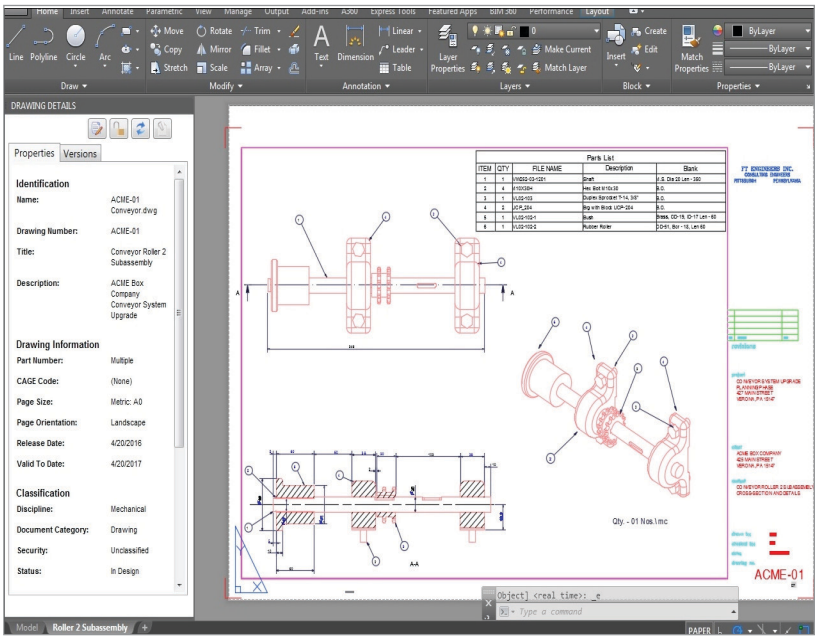


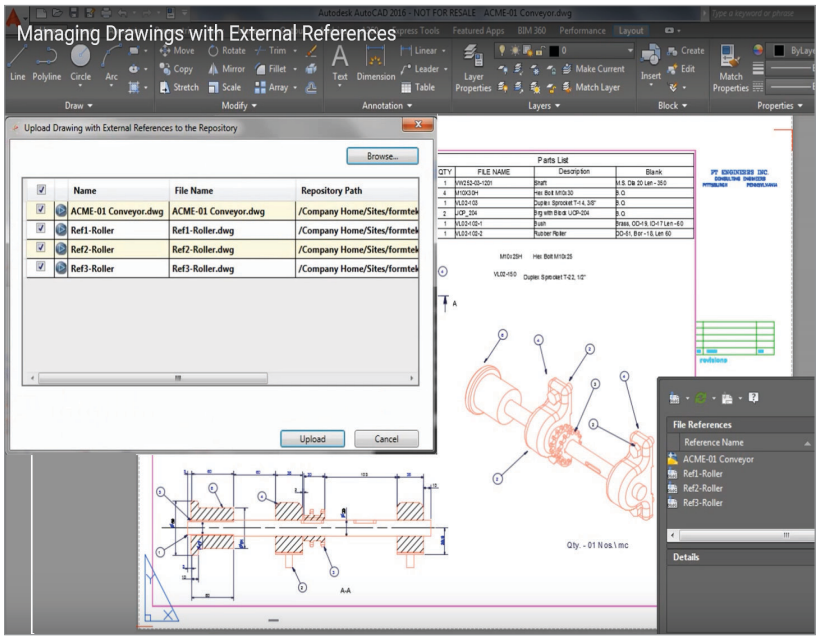
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Working in conjunction with the EDM Module, the **Formtek EDM Connector for AutoCAD** provides direct access to the Alfresco repository from AutoCAD. The Formtek EDM Connector is installed and configured as a plugin on the AutoCAD client workstation.

With the EDM Connector, users can upload a new drawing or revision to the Alfresco repository from AutoCAD, store the drawing properties and block attributes as repository properties, and lock or unlock drawings in the repository.

Similarly, CAD users can browse or search the Alfresco repository to download and open a drawing in AutoCAD, view or edit the drawing's properties, and view the drawing's revision history in Alfresco.





The EDM Connector includes the ability to **synchronize** the local copy of the drawing with that in Alfresco. This function checks the repository for a newer version of the drawing, and if one is found, asks the user if they want to download it.

The EDM Connector also maintains the integrity of referenced drawings (XRefs), as well as other types of referenced files (DGN, DWF, PDF, and raster), by **automatically associating** the base drawing to its references within the Alfresco repository.

When a drawing is checked-in or checked-out using the EDM Connector, the user is presented with a list of all associated files, which can then be selected for check-in or check-out in association with the current drawing.

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ABOUT FORMTEK®

For over two decades, Formtek has been providing mission-critical IT software and services to some of the most demanding engineering, manufacturing, aerospace, industrial, and technical organizations in the world. We build products and solutions for content management platforms that are open and adaptable to complex IT environments, including Formtek | Orion Content Repository Services and the Alfresco Digital Business Platform. Our software application solutions also include the Formtek Engineering Data Management (EDM) Solution for Alfresco.

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