Essentials

Autodesk®

Vault Professional 2022

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January 2022

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Preface

The *Autodesk® Vault Professional 2022: Essentials* learning guide covers the key features of Autodesk® Vault Professional software. The focus of this learning guide is Bill of Material (BOM) management and Engineering Change Order (ECO) process.

This learning guide is intended for users with knowledge of Autodesk Vault Basic and Autodesk Vault document management features. The hands-on practices included in this guide reinforce usage of items, BOM and ECO features, and automated workflows. This learning guide also provides you with information about using the Autodesk Vault Professional software with the Autodesk® Civil 3D® software, the Autodesk® Revit® software, Thin Client, Active Directory, and Replication solutions.

Topics Covered

- Introduction to Autodesk Vault Professional
- Working with Items
- Managing Change
- Working with Bills of Materials
- Administering Autodesk Vault Professional
- Reporting
- Working with Autodesk® Civil 3D
- Working with Autodesk® Revit®
- Thin Client
- Replication

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Prerequisites

- Access to the 2022 version of the software, to ensure compatibility with this guide. Future software updates that are released by Autodesk may include changes that are not reflected in this guide. The practices and files included with this guide are not might not be compatible with prior versions (i.e., 2021).
- A good working knowledge of Autodesk CAD programs and working knowledge of Autodesk Vault Basic and Autodesk Vault document management features.
- This guide is designed to teach new users the essential elements of using Autodesk Vault Professional 2022. It is recommended that you have a working knowledge of Autodesk Vault and one or more of the following products:
  - Microsoft® Office
  - Autodesk® Inventor®
  - AutoCAD®
  - Autodesk® Civil 3D
  - Autodesk® Revit®

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The Autodesk Education Community is an online resource with more than five million members that enables educators and students to download for free the same software used by professionals worldwide (see website for terms and conditions). You can also access additional tools and materials to help you design, visualize, and simulate ideas. Connect with other learners to stay current with the latest industry trends and get the most out of your designs.

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Course and Classroom Setup

Classroom Environment

The courseware is intended for use in an instructor-led environment. If you plan to use the courseware on your own in a non-classroom environment, you must set up Autodesk Vault correctly. Before you set up your system, you should be aware of the following:

- Do not use a production vault for the practices. It is recommended that you set up a separate vault on a separate vault server.
- If you plan to repeat a practice, you must remove any files that were added to the vault when you previously completed the practice. It is recommended that you delete the entire vault and start again with a new vault.
- Do not attempt these practices on a production vault server until you are familiar with the procedures that are covered.

  Note: If you have installed AutoCAD or AutoCAD-based products after installing Autodesk Vault, you might need to Uninstall/Change the Autodesk Vault Client installation and select Add or Remove Features to select the appropriate Add-In software.

You must install and run this courseware from individual computers. You cannot run the courseware from a shared server. **DO NOT install the courseware on a computer that stores working vault data.**

Overview of Installing the Courseware

The following steps describe how to install the courseware.

1. Install Autodesk Vault Professional Client and Autodesk Vault Professional Server on each computer.
2. Install the course data sets on each computer.
3. If Autodesk Vault has been previously used on the computer, restore default settings for the user interface.

Installing Autodesk Vault

Install both Autodesk Vault Professional Client and Autodesk Vault Professional Server on each computer. See the Autodesk Vault installation help for installation instructions.

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If you are using any of the following Autodesk® software applications in conjunction with Autodesk Vault, they must be installed before installing Autodesk Vault:

- Autodesk Inventor
- AutoCAD
- AutoCAD® Mechanical
- AutoCAD® Electrical
- Autodesk Civil 3D
- Autodesk Revit

Installing the Practice Files

To install the data files for the practices:

1. Download the practice files zip file using the link provided on the Practice Files page in the guide.
2. Unzip the zip file to the C: drive. An AOTG VAULT Professional folder is created and contains all the files that you will need. The path for all the files should be *C:\AOTG VAULT Professional*\.
3. The remaining files are required to restore the database. The instructions for this are detailed below.

WARNING - The following procedure will overwrite the current datasets and file stores in your current Vault. Back up any necessary Vaults that might be required at a later time.

Restore the Backup

1. Click Start>All Programs>Autodesk>Autodesk Data Management>Autodesk Data Management Server Console 2022.
2. In the Log In dialog box:
   - For User Name, enter **administrator**.
   - Leave Password blank.
   - Click OK.
   - The Autodesk Data Management Server Console displays.
3. Select Tools>Backup and Restore.
4. Click Restore and click Next.

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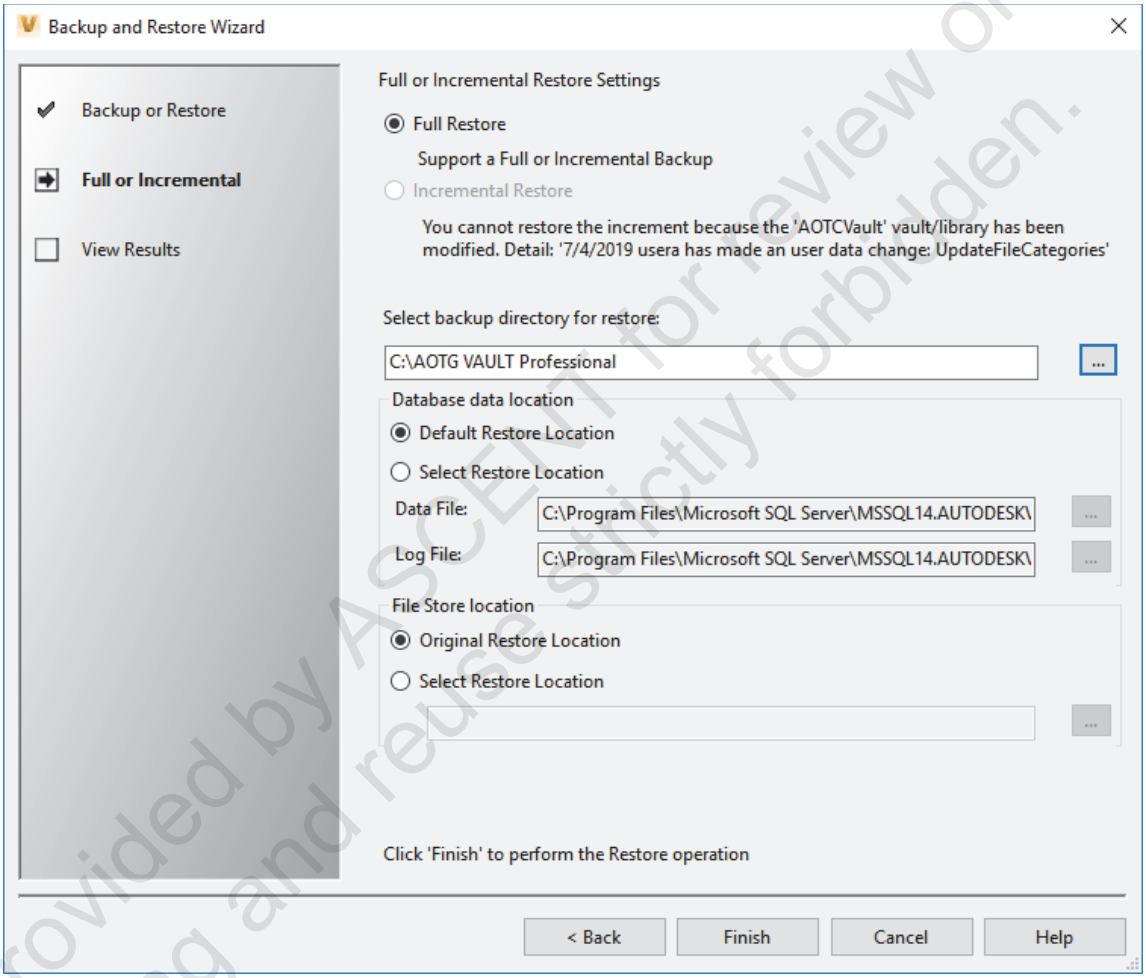
5. In the Backup and Restore Wizard dialog box, in Select backup directory for restore, navigate to the location on your local C: drive where the zip file was extracted (*C:\AOTG VAULT Professional*).

   - In the Database data location, select Default Restore Location.
   - In the File Store location, select Original Restore Location.



6. Click Finish.
7. In the Autodesk Data Management Server Console dialog box, click the Yes button to delete the current Datasets and File Stores.
8. The Restore Progress dialog box displays the restoring database progress.
9. In the Backup and Restore Wizard dialog box, click Close.
10. In the Autodesk Data Management Server Console dialog box, select File>Exit.

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In This Guide

The following highlights the key features of this guide.

Feature	Description
Practice Files	The Practice Files page includes a link to the practice files and instructions on how to download and install them. The practice files are required to complete the practices in this guide.
Chapters	A chapter consists of the following - Learning Objectives, Instructional Content, Practices, Chapter Review Questions, and Command Summary. • **Learning Objectives** define the skills you can acquire by learning the content provided in the chapter. • **Instructional Content**, which begins right after Learning Objectives, refers to the descriptive and procedural information related to various topics. Each main topic introduces a product feature, discusses various aspects of that feature, and provides step-by-step procedures on how to use that feature. Where relevant, examples, figures, helpful hints, and notes are provided. • **Practice** for a topic follows the instructional content. Practices enable you to use the software to perform a hands-on review of a topic. It is required that you download the practice files (using the link found on the Practice Files page) prior to starting the first practice. • **Chapter Review Questions**, located close to the end of a chapter, enable you to test your knowledge of the key concepts discussed in the chapter. • **Command Summary** concludes a chapter. It contains a list of the software commands that are used throughout the chapter and provides information on where the command can be found in the software.
Appendices	Appendices provide additional information to the main course content. It could be in the form of instructional content, practices, tables, projects, or skills assessment.

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Introduction to Autodesk Vault Professional

This chapter gives an overview of Autodesk® Vault Professional software, its features, functions, and benefits, and the Autodesk Vault Professional user interface.

Learning Objectives in This Chapter

- Describe Autodesk Vault Professional features.
- Identify the user interface elements and navigate the user interface.

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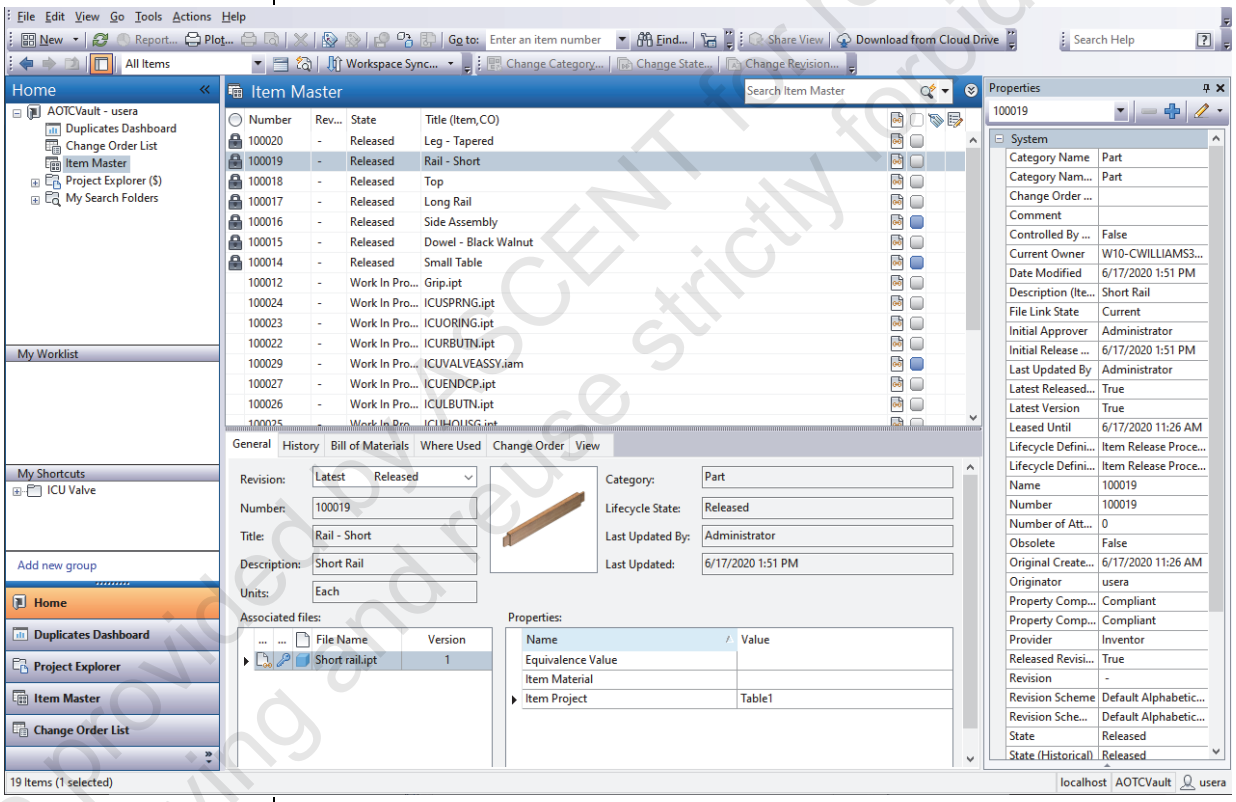
1.1 Autodesk Vault Professional Overview

In this lesson, you learn about the basic features and functionalities of Vault Professional, and its advantages as a design data management system.

With Vault Professional, you can implement an automated release and change management process with complete tracking of bills of materials (BOMs) and related design information.



Objectives

After completing this lesson, you will be able to:

- Describe Vault Professional.
- Explain the roles of Vault Professional in lifecycle management and change management.
- List some of the roles users can be assigned in Vault Professional.
- Describe Vault Professional integration with other design applications.

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About Autodesk Vault Professional

Autodesk Vault Professional is an integral part of the Autodesk data management solution. It uses vault files as item data, making vault files available to an extended design team that can include personnel from departments outside of engineering.

Autodesk Vault Professional helps you manage your vault data by creating and tracking change orders, managing bills of materials, and working with item revisions and lifecycles to oversee files throughout the design and manufacturing process.

Benefits of Autodesk Vault Professional

When designers and engineers place their data files in a vault, Autodesk Vault Professional connects these files to item numbers that can integrate with ERP systems. Thus Autodesk Vault Professional is a gateway connecting two different parts of a company: the design/engineering team and the extended product team.

Example of How to Use Autodesk Vault Professional

With Autodesk Vault Professional, more users can connect directly to the files in the vault, assign items to these files, enable other users in a larger team to work with the items, view items using visualization files, and manage these items as they move through their lifecycle from design to manufacturing to completion.

Autodesk Vault Professional Functions

Autodesk Vault Professional automates the release management process by managing engineering changes and bills of materials. You use Autodesk Vault Professional to manage items throughout their lifecycle.

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Manage Items

Function	Description
Create Items	With Autodesk Vault Professional, you can create items by assigning items to data files or by creating new items.
Delete Items	When an item has reached the end of its lifecycle and is no longer used, you can delete it from the Item Master.
Organize Items	Using the Item Master list, you can quickly search, sort, and filter items, and customize how the item list is viewed.
Add User-Defined Properties to Items	In addition to the default properties for each item, you can add user-defined properties (fields) to item records.
Where Used	You can analyze where items are used and check item dependencies before editing an item or requesting an engineering change order.
Track Item Revisions	A flexible revision numbering scheme keeps track of the history of items. You can use a predefined number of letter schemes, or use the ASME Y14.35M scheme. You can use secondary and tertiary schemes to track data with even more detail.

Bill of Materials (BOM)

Function	Description
Link Items	A BOM is built automatically when an assembly file in the vault is assigned an item. You can also link items together to create your own BOM that includes newly created items.
Edit BOMs	You can edit materials and quantities for any design. You can override quantities in a BOM.
Units of Measure	Autodesk Vault Professional and Autodesk® Inventor® support the same units of measure, so any units of measure used in Inventor are automatically transferred to Autodesk Vault Professional BOMs. You can also specify the base measure of items, including mass, volume, quantity, and length.
Property Mapping	You can map CAD properties in design files in Autodesk Vault to item properties. These CAD properties are carried over to corresponding items in Autodesk Vault Professional that can be used in the Item Master list and in the BOM.

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Engineering Change Orders (ECOs)

Function	Description
Manage ECOs	You can create ECOs and send them to members of the team. You can also attach notes and red-lined drawings to ECOs. ECOs are reviewed and tracked by members of the team then can be rejected, approved, or withdrawn. The status of these ECOs is shown graphically and can be tracked to ensure that change orders are not forgotten or misplaced.
Set Up Routes	You can set up routing lists with email support. You can use these lists to ensure that the right team members are notified of changes.

Item Lifecycle

Every item is tracked with indicators that show the state of the item (Work in Progress, Released, In Review, and Obsolete). Revisions increment automatically in some cases when an item changes state. This process ensures that correct revision control is used. Generally, items are in a Work in Progress state when edited and in a Released state when released to manufacturing.

Manage Security

Users receive system access based on their departments, positions, and roles. Security features prevent inadvertent changes and enable only authorized users to access or edit data. Certain functions, such as creating new numbering schemes, mapping CAD properties to item properties, and editing users, are restricted to administrators.

Example of Linking Design Data

The design work on an ICU valve is nearing completion and released by the design team. As part of managing the valve data, you need to set up the packaged product. You add an item representing the final packaged assembly, an item representing the packaging itself, and another item representing the product specification sheet. You link these items to the assembly design data to form a BOM for all the components then release the items to manufacturing.

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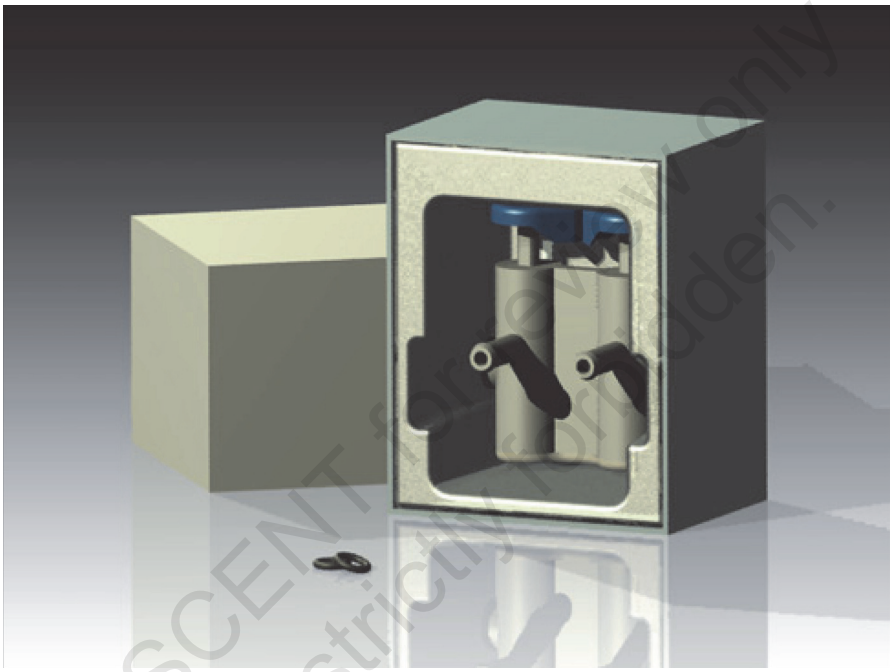
Based on an ECO, a new revision of the ICU valve packaged assembly has spare O-rings, and the ICU valve buttons are no longer painted.



Security and Users in Autodesk Vault Professional

You can control who has access to certain features in Autodesk Vault Professional by assigning users different roles and permissions.

Add Users

When you add a new user, you should include their email address so that they can receive automatic notification of ECOs.

As a Vault Professional administrator, you can add, modify, and disable users from the system. You can group users with similar roles and manage permissions and roles for both groups and individual users.

You can also add users from a domain.

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Specify Roles

In addition to the numerous Administrator, Content Center, and Document predefined roles, Autodesk Vault Professional has the following predefined roles: Change Order Editor (Levels 1 and 2), ERP Manager, Item Editor (Levels 1 and 2), Item Reviewer, Custom Object Consumer, Custom Object Editor (Levels 1 and 2), and Custom Object Manager (Levels 1 and 2). You can also create your own custom roles. You can do this by creating a new role, editing a role, or copying an existing role to then edit. For example, you can copy the Document Editor Level 2 role and then remove the Folder Create permission so that users cannot create their own folders within the vault. Users can be assigned roles based on their required level of access in the company.

Role-Based Permissions

Users are assigned Vault Professional task permissions based on the role they are assigned by an administrator. Administrators can also create Access Control lists for any folder in a vault. Folder permissions such as Full Access and Read-Only can be assigned to groups or individual users.

Example

New employees join the company and require access to design data in the vault. The administrator adds new users and sets their roles based on their required access to vault and Vault Professional data. However, because the new employees are training during the first two weeks, the administrator sets their access to certain sensitive folders as read-only until they have finished training.

Integration with Other Products

The Autodesk Vault Professional software is a web services-based application. The application interfaces with files located in a vault file store and database. The file store and database were created during installation or migrated from another Autodesk Vault release.

Vault Professional integrates with the applications that produced the files in the vault. You can access the vault from the design application or open files created by these applications in Vault Professional.

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Autodesk Inventor

Vault Professional integrates with Autodesk Inventor. Vault Professional reads Autodesk® Inventor® files and the relationships amongst these files. The items' type and BOM information is built on this data.

- Inventor can control BOM data. By assigning BOM structure properties to components, such as phantom or inseparable, Inventor influences how the Vault Professional application reads and builds its BOMs for those items.
- You can transfer custom properties between Inventor and Vault Professional.
- Vault Professional fully supports all units of measure used by Inventor.

AutoCAD-Based Products

Autodesk Vault Professional integrates with other design applications and reads data in AutoCAD® drawing (DWG™) files. The following list outlines how AutoCAD-based applications work with Autodesk Vault Professional.

- External references (xrefs) are added as attachments to items in Vault Professional when the parent drawings are assigned items.
- Vault Professional can read drawing files and map their properties to item properties.
- Vault Professional can read projects, drawings, and properties from Autodesk® Civil 3D® drawing files, and it can map their properties to item properties. Vault Professional also provides Autodesk Civil 3D software users with additional project management functionality by displaying a Project tree in the Prospector tab. This enables the Autodesk Civil 3D software users to safely share their drawing files and individual AEC objects with other team members.
- Vault Professional reads BOM data in AutoCAD® Mechanical drawing files. It uses this data to create BOM data and determine object types.
- If the vault is set to enforce file locking, you cannot check out a drawing from the vault unless its lifecycle state is set to Work in Progress.

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Autodesk Revit

The Autodesk Vault Professional software with Revit Vault Add-in offers Autodesk Revit users with file security, version control, and multi-user support. Autodesk Vault integrates with Autodesk® Revit® Architecture, Autodesk® Revit® MEP, and Autodesk® Revit® Structure.

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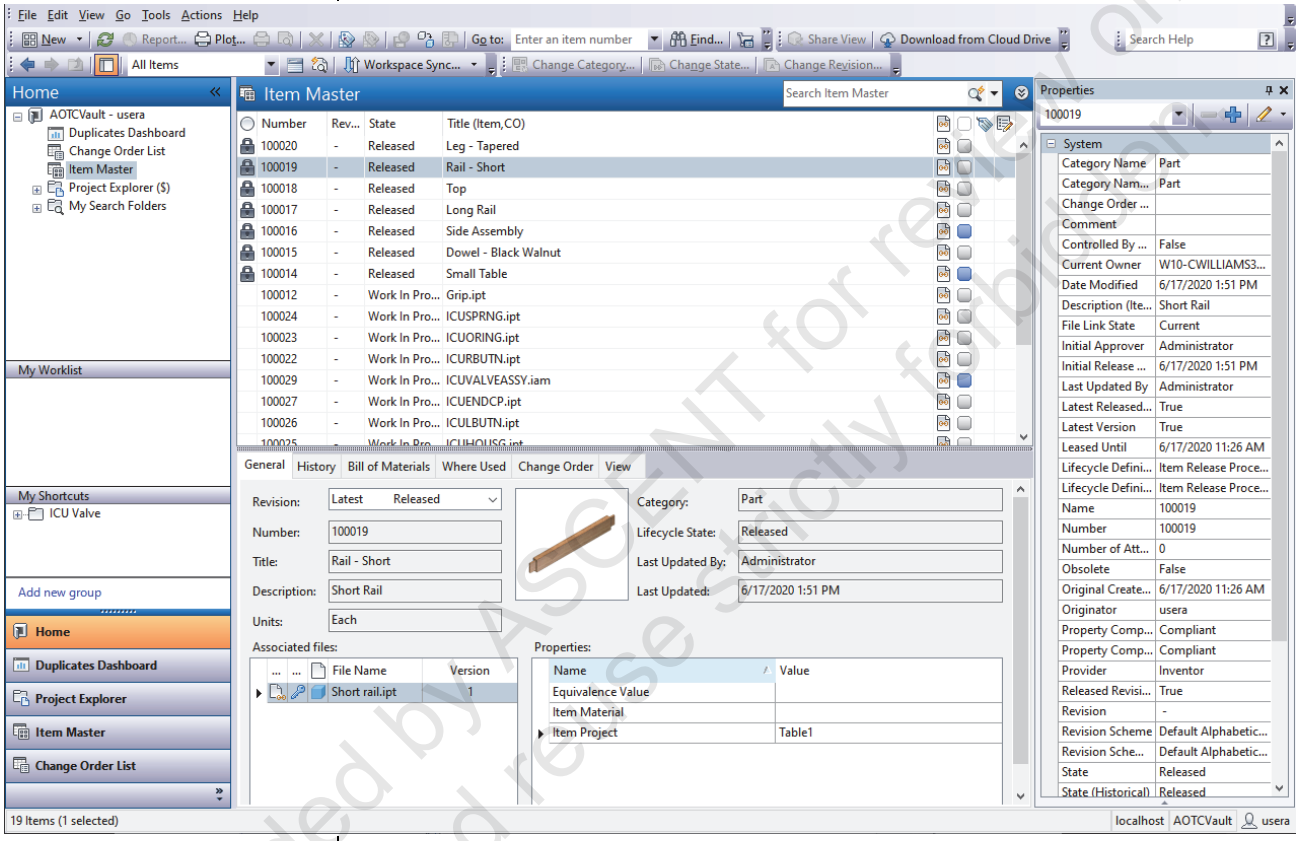
1.2 User Interface

Overview

This lesson describes the features of the Vault Professional user interface.



Objectives

After completing this lesson, you will be able to:

- Identify the user interface elements in Vault Professional.
- Describe the three main areas of the user interface.
- Use the Main pane in Vault Professional to show a list of objects that can be files in the vault, items, or engineering change orders (ECOs).
- Navigate the user interface.

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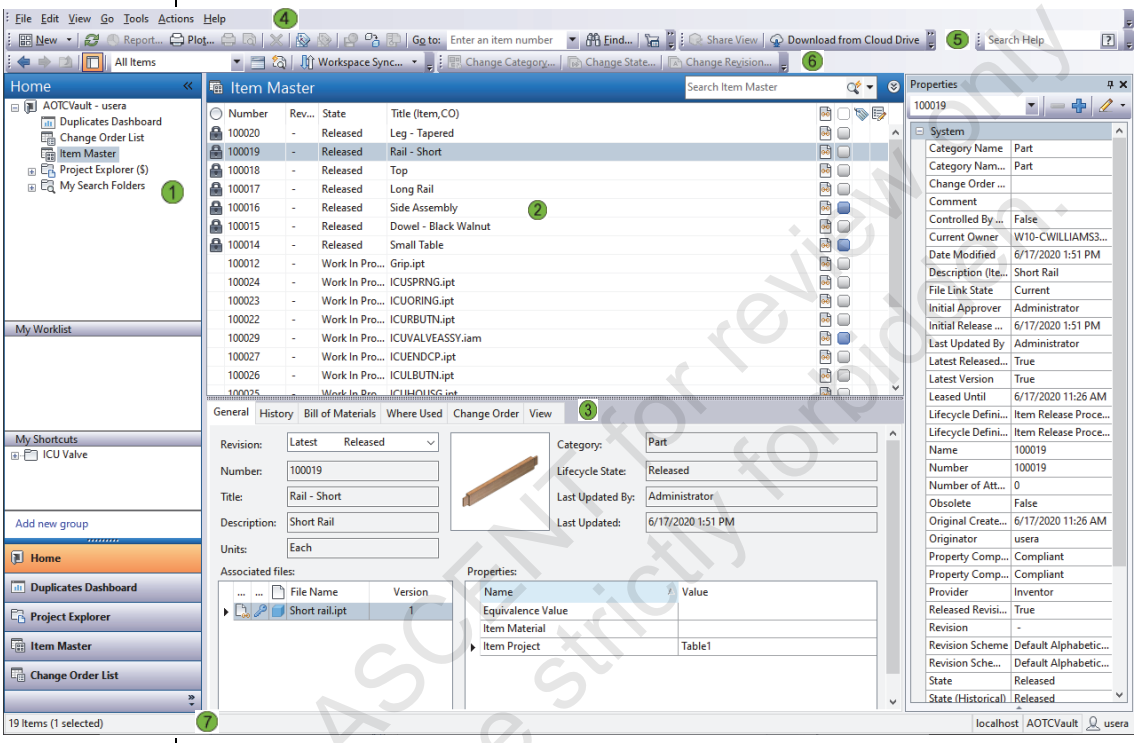
User Interface Elements

With the user interface elements in Autodesk Vault Professional, you can work quickly and efficiently with data.



1. Navigation pane – Contains folders and subfolders for different environments, shortcuts for searches, and filters. The work environment (All Folders, Item Master, Change Order List, or Vault Explorer) is determined by the selection in the Navigation pane.

2. Main pane – Contains the primary list of data, which changes based on the current work environment. It can be a list of items, a list of files in the vault, or a list of ECOs. Depending on the type of environment, the records for these lists can be selected, previewed in more detail, and edited

3. Preview pane – Shows a preview of the selected record in the Main pane. The different tabs are logically organized views of details of the record and change, depending on the environment.

4. Main menu – Contains the commands used in Vault Professional.

5. Standard toolbar – The Standard toolbar provides quick access to common commands depending on the environment

6. Secondary toolbars – An Advanced and Behavior toolbar provides quick access to other common commands depending on the environment.

7. Status bar – Shows information such as the number of records in the Main pane, the number of records selected, the user name, and the name of the vault in which the user is logged.

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Example of the Autodesk Vault Professional User Interface

In Autodesk Vault Professional, you normally begin in the Navigation pane. This pane contains one or more objects that essentially behave as folders, because they contain other objects.

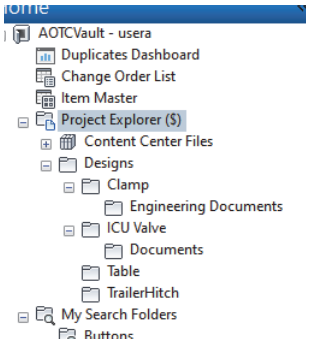
When you select one of these folders, the data in the selected folder displays in the Main pane. You then work in the Main pane. When a record in the Main pane is selected, it is previewed in the Preview pane.

About the Navigation Pane

The Navigation pane is the starting point in the Autodesk Vault Professional user interface. Use the Navigation pane to go directly to required data.

Using the main workflows, you can work efficiently with Autodesk Vault Professional and quickly locate the data you require.

Navigation Pane Areas

Screen Element	Description
Home	The upper part of the Navigation pane shows the folders you can click. These folders can be filtered so that only the Item Master or only Project Explorer is visible. In the following illustration, the Home view is shown, where all possible folders for navigation are visible.  Three major work environments exist in Vault Professional: • Items • Change orders • Project Explorer By clicking the folders, you change the work environment displayed, which affects the Main pane and the Preview pane

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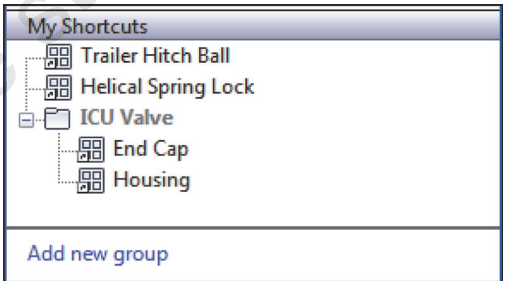
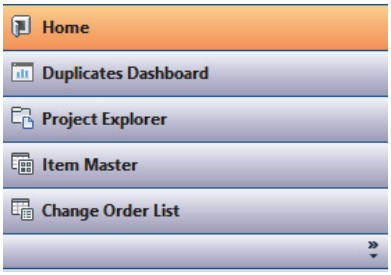
My Search Folders	In the previous illustration, saved searches are also visible. These saved searches are environment specific. For example, if you create a search in the Item Master for the word Valve then save this search, it displays under My Search Folders. Clicking this Valve folder brings up the Item Master work environment and displays the filtered items containing the word Valve.
My Worklist	ECOs requiring your attention or action are listed under My Worklist together with the due date. Clicking the listed item brings up the Change Order list work environment with the ECO highlighted.
My Shortcuts	You can create group folders in the My Shortcuts area. You can fill these folders with shortcuts to items, documents, files in the vault, and ECO. Clicking these links takes you to the selected objects immediately. 
Navigation Pane Buttons	Buttons in the Navigation pane, located in the lower-left corner of the main interface screen, filter the folders at the top of the Navigation pane. For example, clicking Project Explorer removes all folders except those displayed in Project Explorer.  **Tip:** Use these buttons to filter the folders saved under My Search Folders. In the Main pane, you see the results of searches for all work environments. However, when you click a button such as Project Explorer, only search results for the Project Explorer environment display.

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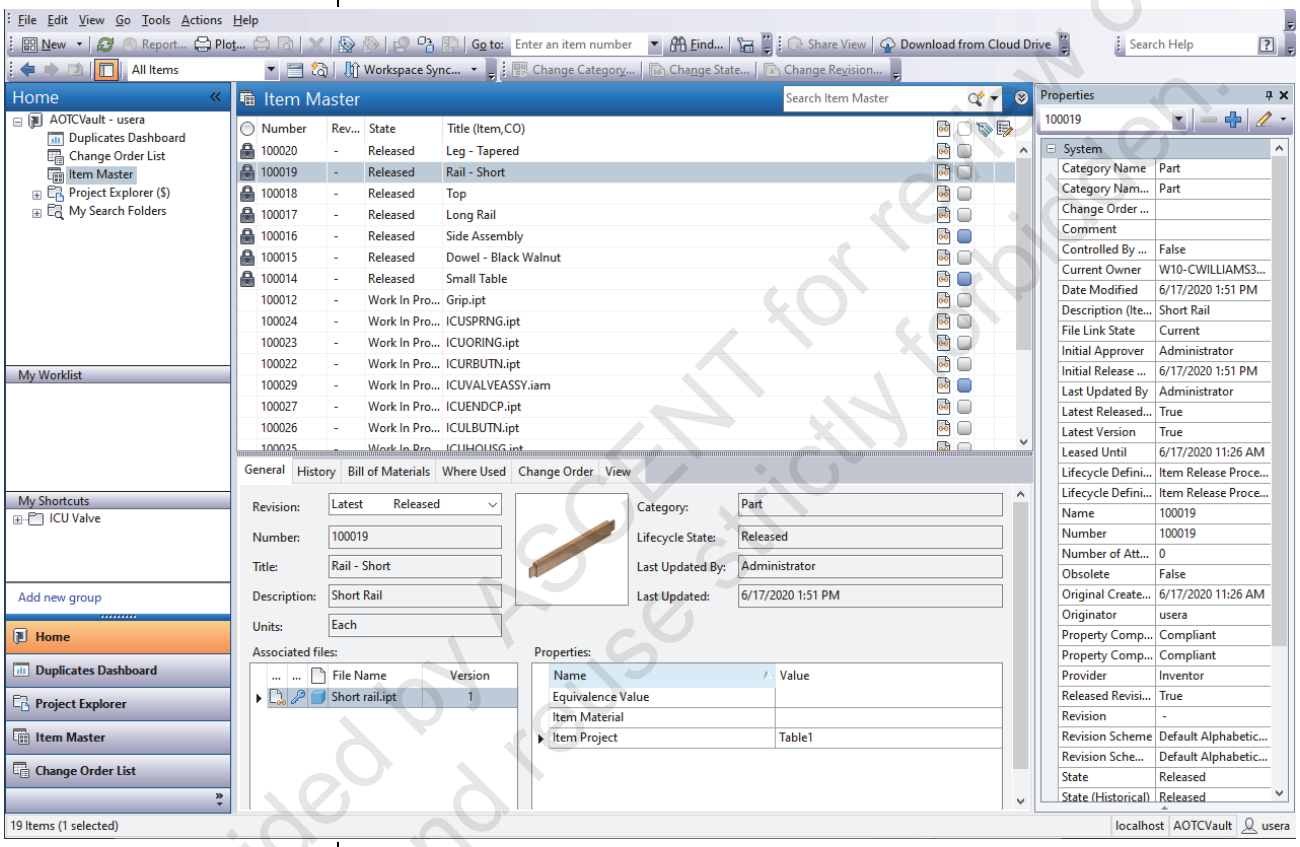
Example of the Navigation Pane

In the following illustration, Home is selected in the lower-left corner of the user interface. The Item Master is selected in the Navigation pane. The contents of this folder (Item Master) display in the Main pane.



About the Main Pane

The Main pane changes based on the work environment and how the view is customized. Use the Main pane to sort, filter, and view records in the list.

The Main pane lists records of objects. These objects can be items, files in the vault, or ECOs, based on the work environment.

You can customize the Main pane to show different fields and to filter the list based on different criteria. You can also use Find to quickly search a list.

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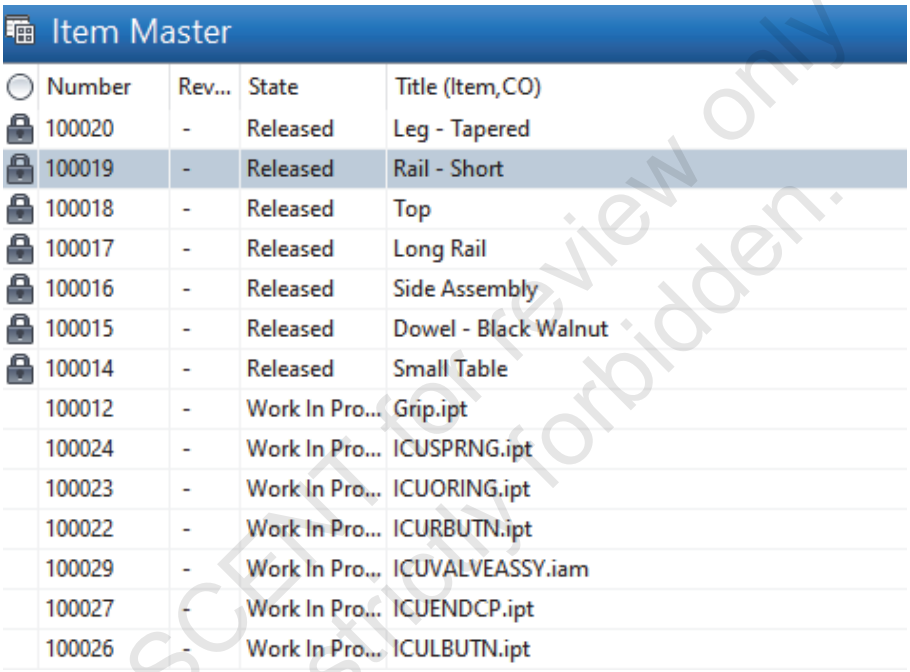
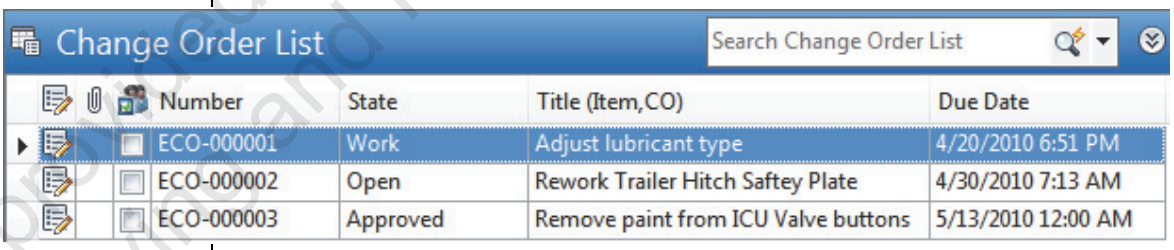
Example of Item Master

When working with items, the Main pane shows the Item Master.



Example of the Change Order List

ECOs are listed in the Change Order list.



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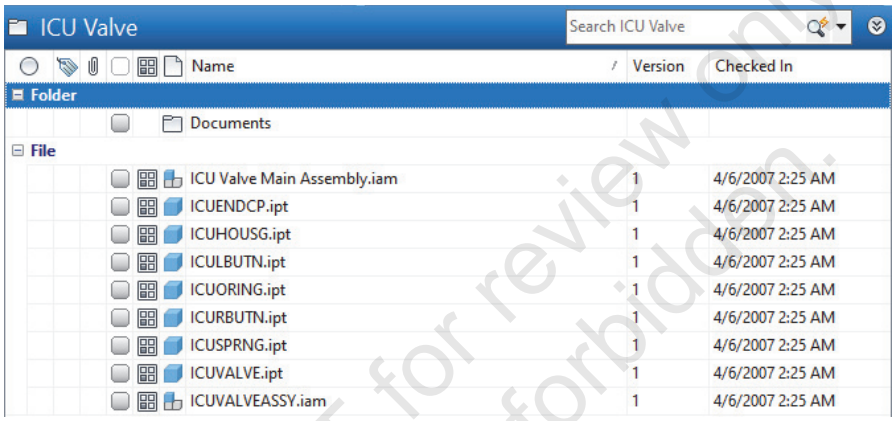
Example of Files in a Vault Folder

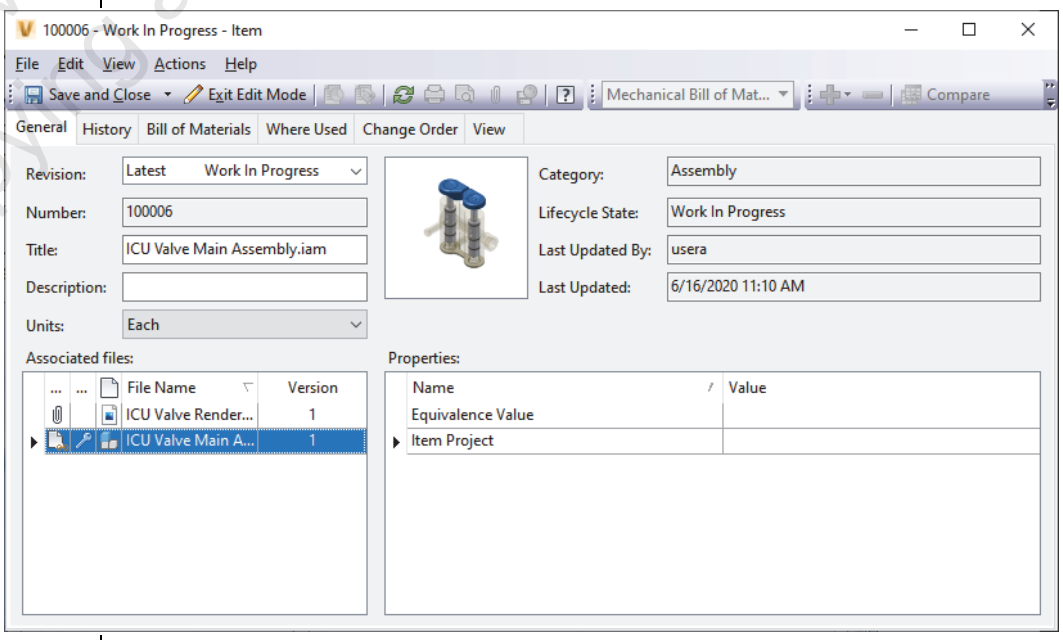
Files and their properties are listed when a vault folder is selected in the Navigation pane.



About the Item Record Dialog Box

Along with the major interface panes, one of the most commonly used interface elements in Vault Professional is the Item Record dialog box. Use the Item Record dialog box to view (Open) or edit (Edit) items and their BOMs, and to attach and detach files. Items must be in the Work In Progress state in order to open them for editing. Otherwise they can be opened read-only for viewing. This feature is helpful when the item has a lot of details or when you want to view the associated files.

Using the Item Record interface, you can edit an item's properties, including the item's BOM, attach and detach files, and view change orders associated with that item.



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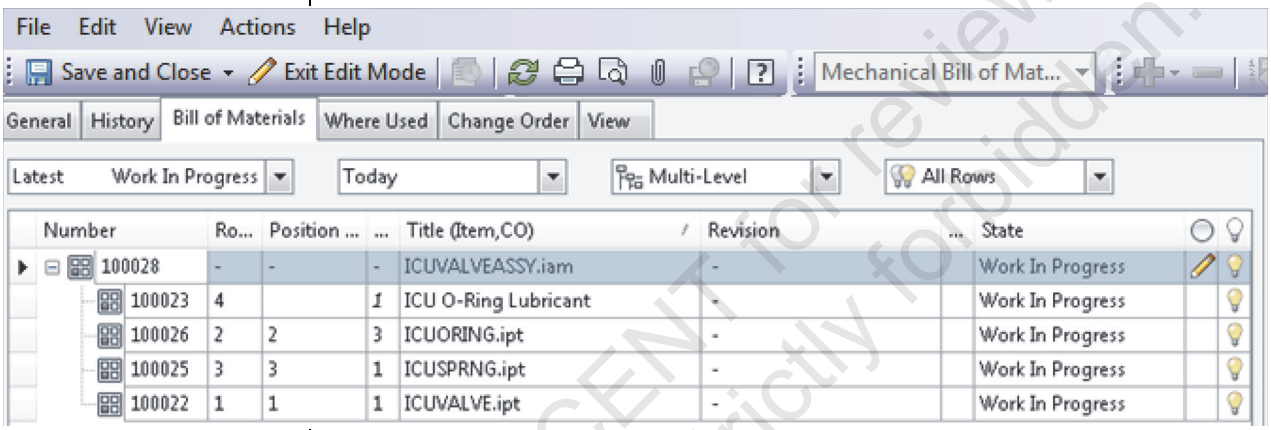
Example of the Item Record Interface

You create a new item such as lubricant in the Item Master. In the Item Master, you double-click an item representing an assembly to open it and click Edit for editing. You add the lubricant item in the assembly item's BOM. When you have completed the task, you click Save and Close to save the changes and exit the Edit Item Record dialog box.



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1.3 Chapter Summary

Autodesk Vault Professional provides product management to your manufacturing designs. A common interface provides access to files, items, BOMs, and change orders.

Having completed this chapter, you can:

- Describe Autodesk Vault Professional features.
- Identify the user interface elements and navigate the user interface.

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