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What Is Vault, and Why Do I Need It?

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Learning Objectives

- Discover costs and scheduling impact as related to ineffective data management

- Discover how use of metadata, fast search, lifecycles, and single-source file structures reduce costs

- Discover the benefits of a single organized structure for all design, contract, specifications, emails, and documents

- Discover the benefits of working with Engineering Change Orders (ECO) and Items in Vault Professional

Description

The overwhelming amount of data associated with modern design projects can be staggering. Add to that the difficulty of finding the correct version of a file, navigating through complex directory structures, and ensuring that you're working with the most current version of your design, and your senior professionals may be spending as much as 25% of their day handling data management tasks. This session shows you how Vault Professional software can not only eliminate that overhead but also actively improve your workflow processes to reduce project completion times and dramatically increase your profitability.

Your AU Expert:

James Coppinger is the Director of AEC, for AMS CAD + CAFM Solutions, specializing in the AEC fields, with a strong focus on document management and the benefits it can bring to clients in those industries.

Prior to joining AMS, James worked for twelve years as Director of CAD/Technical Development at one of the largest civil engineering firms on the East Coast of the United States. With over 25 years in the CAD industry, working for multiple disciplines, James brings both extensive technical skills and solid understanding of real world business concerns to any CAD discussion.

The cost and scheduling impact of ineffective data management

What is Data Management?

Let's start with what Engineering Document Management (EDM) really is. Most people think of it as software that lets you organize your files and add some extra metadata to them, such as descriptions or revision dates. That's true, but that's only a fraction of the true power behind EDM. The real strength of any EDM is the control it gives you over who can do what/when/where to every single file in your firm. How often have you had to refer to your backup system to recover lost drawings? How many times have you lost time or missed deadlines because of a careless save or unintentional change to your design?

Wouldn't it be nice to have complete control over your files so that only trusted people could open them for editing? How about keeping the ability to delete, or move, files to a handful of your best trained employees? How many times have you wished you could open up older versions of your files, without having to wait hours for I.T. to find and restore them from archive? EDM gives you all of those abilities, plus a lot more functionality than most people realize.

EDM packages move your files into a restricted database, where they can only be accessed via the software's interface. That removes the standard OS file access from the equation, so users can't bypass all the controls you put in place. In addition, because each file is part of the database, you can assign metadata fields to each file for items like file name, descriptions, lot and block numbers, or just about anything else you can conceive of. Compare that to the traditional "filename.ext" format your get from your OS and you can see the benefits right away.

One of the most powerful tools in any document management system is the ability to create archived revisions of your plans that can be accessed without the need to refer to backup tapes and time consuming archive restoration processes. Most EDM packages offer this functionality in one version or another but Autodesk Vault does an outstanding job of making the process intuitive, and simple to work with, for every user in your organization. You can select the files you need to revise, or keep record copies of, and simply "Change State" on them. This process converts a file to an archived, read-only copy (*along with all of its attachments*) so that you can refer back to it at any time right from inside Vault.

How does document management make me money?

In most firms, regardless of size, document workflow is a vital concern. We regularly share files between design teams and across multiple offices. Keeping track of which office has the current version of a design, and ensuring that all plans and reference files are integrated, can be a daunting task. In a large scale environment, standard OS file access can't give you the tools you need to effectively control a multi-discipline design project. Something as simple as figuring out who is currently working on a particular design file can become a time consuming process without effective EDM tools in place.

Without an EDM system, companies face the problem of staff designing off of incorrect and/or out of date files. Consider the inherent dangers of working a project with your landscape group working in one office location and your civil-site team in another. Your landscape team copies the site design to their local server on a Monday morning and begins their design, never realizing that the entire site undergoes a complete redesign on Monday afternoon. They send their files back for inclusion in the submittal set you're giving to the client and no one catches the conflicts . . . except for the client, of course. Ok, so you sort that out and the landscapers fix their design, but when your civil group re-prints the drawings for the second time, they don't realize the landscape group didn't copy the updated files back to the local server, so the plans sent back to your client *still* have the original –incorrect – landscaping design. End result: lots of wasted time, effort and money, along with the loss of a major client!

With an EDM system like Autodesk Vault, the software ensures everyone is working on the most current version of the design. The program shows which user has a file signed out for editing to all users, whether they sit next to each other or across the country. Since the Vault database controls access to every file, there can never be an instance of your users modifying the same file in different locations, or inadvertently working on out of date information.

Even in a simple two team scenario like the one above, you can see the potential for serious loss of time and money. Imagine trying to control 10, or more, regional offices and 16 different design disciplines! The potential for conflict and loss without a document management system in place is tremendous. The potential for increased profitability with a system like Autodesk Vault, is even greater. Consider the ease with which your teams can interact, the increased ability to review and update designs and the potential for overhead reduction inherent with a single, controllable, workflow.

Using metadata, fast searches, and lifecycles to reduce costs

What are metadata properties?
Metadata Properties within Autodesk Vault are simply placeholder fields for important data about a given file. For example, you can take a simple PDF document, which you would normally have to search for using an established, often complicated, file naming structure and assign properties such as:

- **Title**
- **Author**
- **Client**
- **Project**
- **Date Modified**

You can assign as many properties as you need to every file. Those properties can be mapped to update values within your files from Vault, and to update Vault from changes made to those properties inside your file. Many firms are actively using these properties to tie to their ERP/ERM systems and to eliminate the need for custom file naming conventions. Some have even eliminated the need for folder structures within Vault, using these properties to create a "Virtual" folder structure, based on filtering off of metadata properties.

What are fast searches?

Metadata fields are quickly searchable within Vault. Instead of being limited to searching for values/wildcards in the *filename.ext* format you can look for a PDF, modified by John Smith, two months ago, for Joe Client. Once properties have been established and mapped for given files/folders, etc. within Vault, the built-in search functionality allows end user to search and filter for exactly the file they need in far less time than it would take to find the same file in a windows explorer folder structure. Less time spent searching for files means more time spent actively getting work done.

> "*. . . the typical knowledge worker spends about 2.5 hours per day, or roughly 30% of the workday, searching for information.*"
>
> *IDC – "The High Cost of Not Finding Information"*

Within Vault, users can quickly search selected folders for specific properties, or they can create "saved searches", with pre-defined filters for even faster files location. The use of folders is, in itself, an optional format within Vault that many users are doing away with. At the end of the day, folder and sub-folder names are nothing more than identifying properties. All you're doing by putting files in a folder named "Project A" is saying that each of the files in that folder belong to that project. Assigning a PROJECT property accomplishes the same thing, and your users can locate all the files for that project in seconds, instead of spending minutes manually browsing to a server, then working their way down extended tree lists of folders to find what they're looking for.

What are Lifecycles?

Lifecycles are benchmarks along the design process of a project that let you create milestone copies of important moments in that process. For example, you can create lifecycle states for "Engineering Review", "Client Approval", "Submit for Production", or anything else that you might want to keep track of. This functionality can have a major impact on you profitability because it gives you staff immediate access to every version of a file and a map of all the changes that were made to it along with why and when. Within Vault, users can immediately open any previous lifecycle version of a file for reference and Vault can be structured to automatically notify interested parties, via email and/or within Vault itself, when a lifecycle state change is made. This type of enforced communication and readily available historic data leads to a much better decision making process within your firm, which leads to fewer mistakes and higher profits.

> "*While the costs of not finding information are enormous, they are hidden within the enterprise, and therefore they are rarely perceived as having an impact on the bottom line. Decisions are usually information problems. If they are made with poor or erroneous information, then they put the life of the enterprise at stake.*"
>
> *IDC – "The High Cost of Not Finding Information*

The benefits of a single, organized, structure for all design documents and emails

What are the other benefits of using an EDM?
ROI for a value added process like EDM are often hard to put exact figures to, but some of the more easily quantified benefits are:

- *Faster project "time to completion"*
- *Increased sales*
- *Decreased time in answering inquiries*
- *Decreased time in requests for help*
- *Reduced document search time*
- *Eliminate document overwrite/data loss*
- *Reduced IT backup/restoration times & storage costs*
- *Better information for decision making*
- *Fewer poor decisions made within the enterprise*
- *Decrease in duplicated efforts*
- *Traceable Change Order process for legal protections*
- *Increased collaboration between design teams*

Intangible benefits may be hard to add specific dollar figures to, but even a quick glance at them shows a staggering potential for eliminating loss and increasing revenue. Any successful business is dependent upon the reliable flow of information. When management doesn't have immediate, and reliable, access to the correct data they can't make proper decisions to control project costs. Having an EDM system like Vault provides a single source of truth for all your data, updated in real time, so you always have the information you need to effectively control your business.

> *The Return On Investment (ROI) of investing in an electronic document management (EDM) system can be as high as 600%*
> *IDC – "The High Cost of Not Finding Information"*

Centrally Manage Your Project Data
With an EDM system like Vault, you can easily create, organize, and share project information across multiple locations and multiple platforms. Whether you have designers accessing documents through their CAD application, vendors accessing them through the cloud, or senior managers via a web interface on their smartphone, Vault provides secure, real time access to them all. Vault allows you to:

- *Enable collaborative design workflows*
- *Manage all project data in any file format*
- *Integrate with Microsoft® Office and Outlook®*
- *Secure access for team members*

The integration with MS Office products is, without question, one of the most powerful and time saving features of Vault. All Office documents are saved in their native formats within Vault, including Outlook emails. This allows you to create a shared storage location for all project related emails. That simple sounding feature has long been the Holy Grail of the corporate world, particularly the AEC industry

where the need to track messages across multiple users and design teams is vital. Because Vault stores the emails in their native format: anyone can read, open, forward, and check recipients, etc. on all project related emails. Vault is fully integrated as a plug-in to each Office package (*Word, Excel, Outlook, and PowerPoint*) so that users can open, save, and edit all their documents from right inside their client software.

Working with Engineering Change Orders and Items in Vault Professional

What is an Engineering Change Order (ECO)?

Engineering Change Orders are a formalized system of routing and tracking design changes. ECO's have been a mainstay of manufacturing for decades (usually in paper format) but more and more AEC firms are seeing the benefits of being able to effectively route design changes through a formal system of reviews and approval. Vault ECO's can be configured to follow each firm's individual routing needs, whether they have a simple three step review process or an extensive, detailed, program of checks in place. At each pre-defined step in an ECO, reviewers have the ability to open and review files, add markups, even attach comments and messages. Those comments are then moved to the appropriate person to make the needed changes, then passed to the next stage of review and so on until a project/design is complete.

ECO's ensure that your designs are being properly communicated and reviewed at all times and it also provides an auditable trail for determining who made what changes, and why. That can be an invaluable commodity in cases of legal or client conflicts. Being able to see every change point in a project, along with formal documentation as to why changes occurred, with just a click of the mouse can save hundreds of man-hours during any type of conflict resolution scenario.
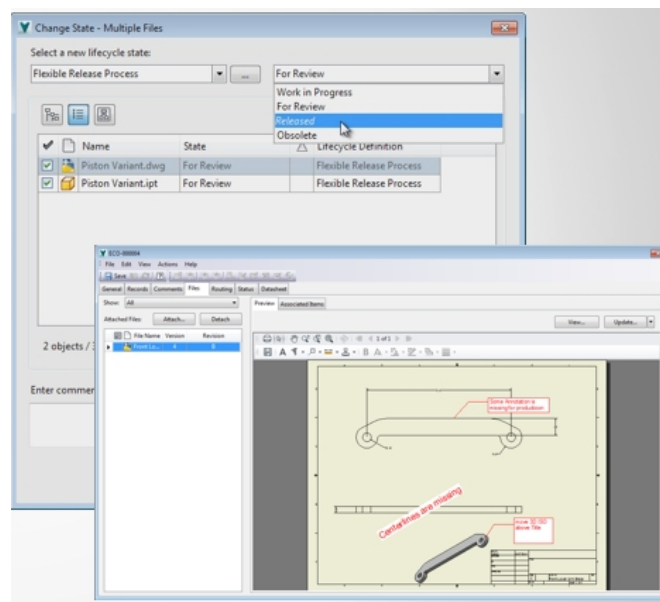
What is a Vault Item?

Items are used primarily in a manufacturing setting and they are an invaluable resource. The concept of an Item is that you can build an assembly of documents, with related source files, references, sub-parts, specifications, etc. all being accessed via a single location, regardless of where they exist within your Vault. Not only does this save countless hours of searching for related documents but Vault Items also have the ability to generate Bills of Material (BOM) from the assembled Item. Think about that: if you have a product that is an assembly of ten components, the Item Master will automatically generate a BOM that includes not only those ten components, but all the sub-parts that make up each of them, and so-on. In short, an Item will generate a BOM of an assembly with three hundred parts without you having to do a single thing. Those BOM's can be used inside your CAD system, your quantity takeoff package and even linked directly to your ERP/ERM system for inventory and order control.
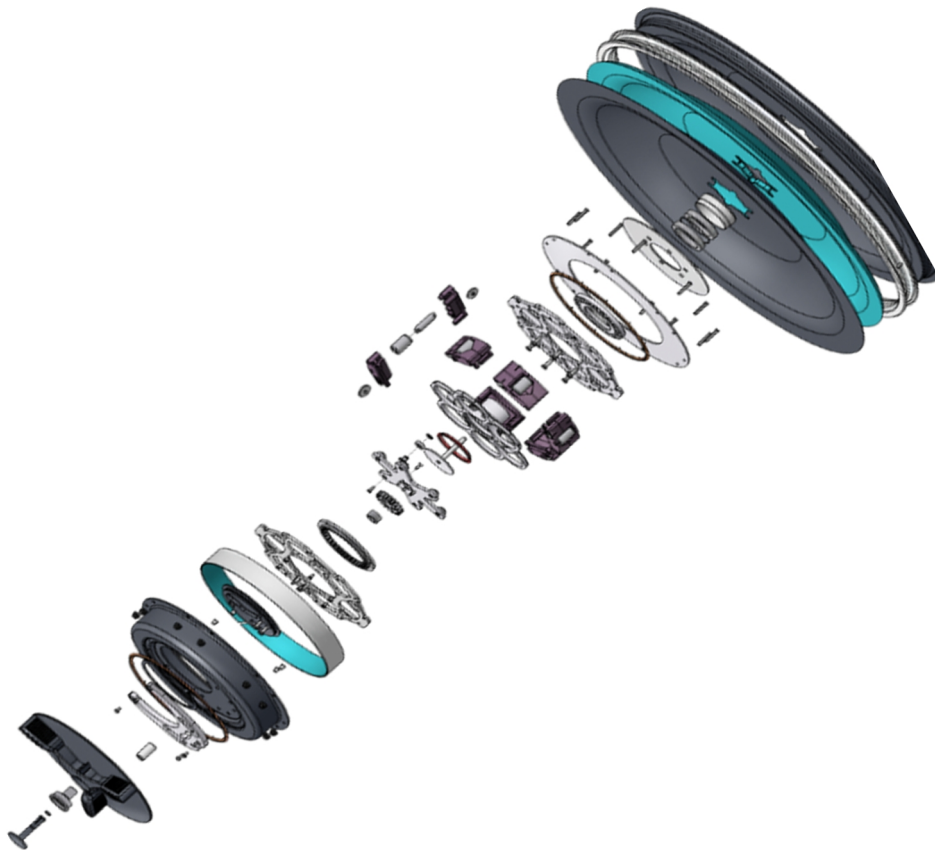
Vault Items improve the efficiency of the design to manufacturing process by:

- Create BOM's directly from CAD models
- Exchange data with ERP systems
- Improve design costing with accurate purchasing and inventory management
- Maintain accuracy of materials, quantities, and other required properties
- Automate change order processes
- Easily access data from the shop floor