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MFG600287

Data-Driven - Digitally share CAD data throughout the product lifecycle

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COOLORANGE

Learning Objectives

- Explore what systems can and should be connected
- Learn about different technologies available for system integrations
- Explore real-world customer integrations
- Learn about restrictions and limitations

Description

CAD data is the most important intellectual property that a manufacturer has. Autodesk offers products that create, manage, and enrich this data. AutoCAD, Inventor and Fusion 360 create this data while Vault, Fusion 360 Manage and Upchain help manage it. The cloud-based Fusion and ACC platforms facilitate collaboration with the field while Prodsmart helps collaborate with production. Simultaneously, aspects of this data need to be share with other enterprise systems like ERP. Ultimately, all these systems must be able to share aspects of this data throughout the lifecycle of a manufacturers' products.

We will demonstrate, via examples of Autodesk customer projects, how technologies such as Autodesk Platform Services (APS) and other 3rd party technologies make it possible to share this important data between these systems rather than leaving your most important data locked in silos in different systems.

Speaker(s)

Christian Gessner is a co-founder and Technical Evangelist at COOLORANGE. In this role, he helps customers to use the right technology and tools to successfully implement and customize Autodesk PDM and PLM solutions and integrate with other enterprise systems. He has over 20 years of experience in full-stack software development with a focus on Autodesk data management products and Microsoft development technologies. Prior to COOLORANGE, Christian was member of the data management software engineering team at Autodesk.

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Intro

Digitally sharing CAD (Computer-Aided Design) data throughout the product lifecycle is crucial for efficient and effective product development and management.

COOLORANGE specialized on automating and integrating CAD applications and PDM (Product Data Management) and PLM (Product Lifecycle Management) systems from Autodesk with 3rd party enterprise applications such as ERP-, DMS-, MRP-, MES-, or PM-systems to share CAD centric product details. There are many reasons why this is significantly important for our customers:

Collaboration and Communication

CAD data serves as the foundation for product design and development. By digitally sharing CAD data, all stakeholders involved in the product lifecycle, including designers, engineers, manufacturers, suppliers, and customers, can collaborate and communicate more effectively. It allows for real-time feedback, seamless information exchange, and reduces misinterpretation or errors that can occur when relying on manual or offline processes.

Design Consistency and Accuracy

CAD data represents the digital representation of a product's design, including its geometry, dimensions, tolerances, and assembly structures. Sharing CAD data digitally ensures that everyone involved has access to the latest design information, reducing the risk of inconsistencies or outdated versions. It helps maintain design accuracy throughout the product lifecycle and enables efficient design changes or iterations.

Concurrent Engineering and Simultaneous Work

Digital sharing of CAD data enables concurrent engineering, where different teams can work on different aspects of the product simultaneously. For example, design teams can work on various components while manufacturing teams simultaneously plan production processes. It improves efficiency, reduces time-to-market, and allows for parallel activities, leading to faster product development cycles.

Design Reuse and Standardization

Digital sharing of CAD data facilitates the reuse of existing design components, sub-assemblies, or standardized parts. Design libraries and databases can be created to store commonly used CAD models, reducing design time, and improving consistency. Standardized design practices and components lead to cost savings, improved quality, and easier maintenance throughout the product lifecycle.

Manufacturing and Production Optimization

Digital sharing of CAD data helps optimize manufacturing and production processes. CAD data can be directly used for computer-aided manufacturing (CAM), enabling automated generation of toolpaths, reducing manual errors, and enhancing manufacturing efficiency. Sharing CAD data with manufacturing teams allows them to better understand design intent, identify potential manufacturing challenges, and optimize production planning.

Design Analysis and Simulation
CAD data is often used for conducting design analysis, simulations, and virtual prototyping. By digitally sharing CAD data, analysis teams can access accurate geometry, dimensions, and material properties to perform structural, thermal, or fluid flow simulations. Sharing CAD data with analysis teams enhances the accuracy of simulations, enabling better-informed design decisions and reducing the need for physical prototypes.

Documentation and Traceability
CAD data serves as a crucial source for technical documentation and product information throughout its lifecycle. By digitally sharing CAD data, organizations can ensure that accurate and up-to-date information is available for creating technical drawings, specifications, bills of materials (BOM), and other product documentation. This enhances traceability, reduces errors, and facilitates compliance with industry standards and regulations.

Overall, digitally sharing CAD data throughout the product lifecycle improves collaboration, design consistency, manufacturing efficiency, and decision-making. It enables seamless information exchange, reduces errors, and supports a more streamlined and effective product development process.

This document supplements the AU class presentation by listing technologies used to connect various enterprise systems for digital exchange of CAD data and links to additional resources.

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COOLORANGE Integration Software

powerJobs

About powerJobs

Almost all manufacturers have manual Vault workflows that are tedious, time-consuming and cause errors. Manual processes can compromise design data quality, lengthen design cycles and result in costly errors. powerJobs, a software application that extends the capabilities of the Autodesk Vault Job Processor, liberates Vault users from tedious, error-prone tasks by providing an easy way to create and execute custom job scripts that replace manual processes. Job scripts are created using Microsoft's PowerShell scripting language. powerJobs includes a Settings Dialog for easy management of job queueing, job settings and job triggers. In addition, powerJobs includes pre-configured, working sample jobs that can be deployed without change or modified by the customer, Autodesk Reseller or coolOrange, to support customer specific workflows.

Common design tasks automated with powerJobs include publishing PDF, DXF and STEP on release of files, items or change orders, as well as automate file printing, email notifications when there is a change in a design, BOM publishing to ERP and more.

powerJobs scripts maintain compatibility across Vault versions due to powerJobs unique architecture. As a development partner to Autodesk, coolOrange certifies compatibility of powerJobs with Autodesk software within 6 weeks of release.

Key Features of powerJobs

- Configuration context menu to auto-trigger jobs on demand.
- Windows Desktop Alert notifies users when a problem occurs with a job, ensuring quick problem resolution.
- Queues jobs intelligently for the relevant files with meaningful priority and improved throughput.
- Prevents users from changing the state of a file while related jobs are in the queue avoiding conflicts and errors.
- Automate workflows on Vault events like lifecycle state change.
- Customizable PowerShell scripts for further custom automations and data validations.

Common Vault workflows that can be automated with powerJobs

Document Publishing

Upon release of CAD models, items or change orders, automatically publish PDF, DXF, DWG and other file formats on lifecycle transitions and store inside Vault, on a network share, FTP, Cloud, or any other location.

BOM Export

Automate the export of a Vault BOM as an xml or a csv file. The BOM export can be saved to a shared folder to it be picked up by your ERP system and processed.

Printing
Automatically print assembly drawings or BOMs in the right order by selecting the appropriate printer based on page size, user, group or department and include relevant information, such as customer name or project code.

Email Communication
Send custom content email to people in your organization on given Vault actions. For example, automatically email your purchase department when a new version of a drawing, item or BOM has been released, or when an engineering change order is created, send an email to the engineering manager and/or send a daily (or weekly, etc.) email report of all engineering change order activity.

Four Eyes Principle
Automate a lifecycle enhancement to validate that the person who sends a file for approval cannot be the same person that approves it.

Enforce Drawing Update
When a PDF or any other neutral format of an Inventor drawing is created by a Job Processor there is the chance that an outdated Inventor drawing is used to publish the PDF. This can happen if a change is performed to a part or an assembly that is used in the drawing and the drawing is not opened and updated after the model was changed.

Watermark
Add a watermark to a drawing during a lifecycle state change or when an engineering change order is created.

More Information
https://www.coolorange.com/powerjobs

powerGate

About powerGate

Manufacturers that use Autodesk Vault and Inventor rely on both their ERP and Vault/Inventor for managing engineering data, inventory control, purchasing and BOM information. For many manufacturers, there is no workflow communication from Vault/Inventor, where the design lives, to the finalized bill of materials sent to purchasing. Consider the common scenario of an engineer releasing a design. When there isn't a live connection between Vault/Inventor and ERP, someone needs to manually enter the engineering BOM into ERP or import BOM detail into ERP. Using spreadsheets to manage critical engineering data is inefficient, error-prone, tedious, and costly.

coolOrange offers manufacturing companies a proven solution for automating engineering BOM workflows. Our solution includes powerGate, middleware software that connects Vault/Inventor to ERP systems that expose a Web API. powerGate has connected over 25 unique ERP systems to Vault/Inventor using the latest Web API technologies. With a live, direct connection through a Web API it is possible to retrieve any information from the ERP system in real time and display it within Vault/Inventor. Retrieval is done by providing a part number, BOM number or the number for the object to be retrieved. All other data remains within the ERP system but can be viewed within Vault/Inventor. There is no need for redundant data and the data is 100% accurate. From within Vault/Inventor, users can view and update data within ERP. Operations like creation and update are immediate. If there is an issue, such as a record is in use by an ERP user, the Web API responds with a notification. Having a direct connection allows for a central source of numbers, usually from ERP. Live searches from within Vault can be performed against ERP to compare a Vault BOM with an ERP BOM.

Leading manufacturing companies choose powerGate software to connect Vault/Inventor with ERP to automate the BOM transfer and save engineering time, eliminate errors, ensure data compliancy, and improve engineering efficiency. The coolOrange team accompanies you from the initial consultation to go-live status of the project. With over 900 projects, 1000s of satisfied users and 20 years of experience in data management, we offer best practices gained from working with other manufacturing companies to automate their Vault workflow processes and connect to other business systems.

Using powerGate to create a live bi-directional connection with ERP eliminates the risks that come with manual BOM management and offers the following benefits:

powerGate simplifies part/item creation and the BOM transfer process from Autodesk Vault or Inventor, saving time, improving data quality, and eliminating errors that are guaranteed when engineering data is managed manually or with spreadsheets.

powerGate extends the Vault user interface, providing easy access to ERP data. Engineers and designers can perform all required ERP actions directly from Vault/Inventor.

BOM comparison and BOM transfer checks ensure that the BOM changes are transferred securely.

The live connection with ERP means that every action is immediate, fast, secure and provides the user with immediate feedback.

coolOrange certifies compatibility with Autodesk software within 6 weeks of release and workflow customizations remain compatible between Vault versions.

Key Features of powerGate

Item Search and Creation

- Search and create new ERP items from within Inventor and Vault.
- Pull the next ERP item number and automatically assign it to the design.
- View and update ERP item information from within Inventor and Vault.
- Mass create and update items on transfer of the BOM.

BOM Compare & Transfer

- Before transferring the BOM, check that all items are present, in the correct state and have matching properties.
- Compare the CAD/Vault BOM with the ERP BOM and take appropriate actions.
- Load a complete multi-level assembly, compare, and transfer all levels with one click.
- Be notified immediately when conflicts or problems occur.

Add Raw Materials

- Search ERP items from within Inventor and Vault and insert them as virtual components or raw material.
- Complete your Inventor CAD BOM with non-design parts.
- Avoid typos by selecting valid items from ERP.

Validate on Release

- Validate the Vault/Inventor data with ERP to prevent a release if the data is not compliant with existing standards.
- Ensure that Vault released data follows business rules for purchasing and production.
- Prevent downstream issues due to data inconsistencies.

More Information

https://www.coolorange.com/powergate

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powerPLM

About powerPLM

Fusion 360 Manage, an Autodesk PLM platform, promises manufacturers improved product quality and faster time to market through better processes for product development, change orders, bill of material management and supplier collaboration. For manufacturing companies using on-prem Vault Professional for their engineering data, coolOrange offers powerPLM connector software to easily share Vault information with Fusion 360 Manage.

powerPLM connector software is easy to set up and working within minutes thanks to pre-configured workflows. The built-in configuration dialog makes it easy to map workspaces, properties and define overall behaviors. Simply install powerPLM and configure your Autodesk Fusion 360 Manage tenant and connection credentials. No additional configuration is required to get started as the delivered workflows already match the default Vault configuration and Autodesk Fusion 360 Manage workspaces.

Pre-configured, out-of-the-box workflows for BOM transfer and change management can be used immediately and easily adapted through simple configuration options. These workflows were developed in collaboration with Autodesk and cover standard best practices. New workflows can be created, and existing workflows improved through PowerShell scripting, which eliminates the need to know Fusion 360 Manage APIs. Modified and new scripted workflows maintain compatibility when upgrading Fusion 360 Manage and Vault Professional versions.

Key Features of powerPLM

Configuration

- Configuration dialog for defining settings can be performed by a Vault Professional or Autodesk Fusion 360 Manage administrator.
- Settings allow users to customize the Vault Pro/Fusion 360 Manage connection, workspace selection, and property mapping for workflows.

Item Centric BOM Workflow

- Simple property mapping defines shared information from Vault to Fusion 360 Manage.
- Miscellaneous settings control detailed behavior of the workflow.
- Transfer BOM to Fusion 360 Manage workflow.
- Vault item BOM automatically populates Fusion 360 Manage.
- Items are created and attachments uploaded.
- BOM workflow supports all Vault features.
- BOM can include raw material, purchase parts, BOM row related properties, multiple item instances.

Change Order Workflow

- Standard Change Management workflow captures change tasks in Fusion 360 Manage.

- Transfers tasks to Vault Engineering Change Orders (ECO).
- Involved items and files are automatically attached.
- Information flows automatically between systems.

More Information
https://www.coolorange.com/powerplm

To request a free demo or to purchase software solutions from COOLORANGE, please contact sales@coolorange.com

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PowerShell

All COOLORANGE products contain a powerful PowerShell customization engine that hides the complexity of the Autodesk APIs. This PowerShell engine can be utilized to communicate with other systems using web services. For web service communication, PowerShell has pre-build command-lets, such as Invoke-RestMethod or Invoke-WebRequest.

Invoke-RestMethod

The Invoke-RestMethod cmdlet sends HTTP and HTTPS requests to Representational State Transfer (REST) web services that return richly structured data.

PowerShell formats the response based to the data type. For JavaScript Object Notation (JSON) or XML, PowerShell converts, or deserializes, the content into [*PSCustomObject*] objects.

Link
https://docs.microsoft.com/en-us/powershell/module/microsoft.powershell.utility/invoke-restmethod?view=powershell-5.1

Invoke-WebRequest

The Invoke-WebRequest cmdlet sends HTTP, HTTPS, FTP, and FILE requests to a web page or web service. It parses the response and returns collections of forms, links, images, and other significant HTML elements.

Link
https://learn.microsoft.com/en-us/powershell/module/microsoft.powershell.utility/invoke-webrequest?view=powershell-5.1

Please note: Multiple HTTP calls may be needed when exchanging data with other systems. One to authenticate, another to read or update the data with the authentication token gathered from the first call.

Webhooks

A webhook can be thought of as a type of API that is driven by events rather than requests. Instead of one application making a request to another to receive a response, a webhook is a service that allows one program to send data to another as soon as a particular event takes place.

To subscribe to this event, a webhooks needs to be configured at the application that sends out the webhook because the application needs to know the URL that receives the callback (*Callback URL*).

Usually, a webhook can be subscribed using the application's API (Application Programming Interface).

The Postman app (https://www.postman.com/downloads/) can be used to send the API calls below. Several postman collections are part of the class materials!

The examples below for
- Fusion 360 Manage,
- Upchain and
- Microsoft Business Central

demonstrate how to use the application's APIs to
- get all existing webhooks,
- create a new webhook and
- delete a webhook

APS / Fusion 360 Manage

Get existing webhooks
Request:
```
GET https://developer.api.autodesk.com/webhooks/v1/hooks HTTP/1.1
```
Header:
```
Authorization: Bearer <BEARER_TOKEN>
```

Get all Fusion 360 Manage workspaces
Get a list of all available workspaces from a Fusion 360 Manage tenant. The URN of a workspace is needed to create a new webhook:

Request:
```
GET https://<TENANT>.autodeskplm360.net/api/v3/workspaces?limit=50 HTTP/1.1
```
Header:
```
Authorization: Bearer <BEARER_TOKEN>
```

Create new webhook

Request:

```
POST https://developer.api.autodesk.com/webhooks/v1/systems/adsk.flc.production/
      events/<EVENT>/hooks HTTP/1.1
```

Header:

```
X-Tenant: <TENANT_UPPERCASE>
Authorization: Bearer <BEARER_TOKEN>
Content-Type: application/json
Content-Length: <BODY_LENGHT>
```

Body:

```
{
    "callbackUrl": "<CALLBACK_URL>",
    "scope": {
        "workspace" : "<WORKSPACE_URN>"
    }
}
```

The following events (`<EVENT>`) are supported by Autodesk Forge:

Event	Description
item.clone	When a Fusion 360 Manage item is cloned.
item.create	When a Fusion 360 Manage item is created.
item.lock	When a Fusion 360 Manage item transitions into a locked state.
item.release	When a Fusion 360 Manage item is released.
item.unlock	When a F360M item transitions from locked to an unlocked state.
item.update	When the item details of a Fusion 360 Manage item are updated.
workflow.transition	When a specific transition is performed on a F360M item.

Note: The X-Tenant header value must be uppercase to be recognized by Autodesk Forge!

Delete webhook

Request:

```
DELETE https://developer.api.autodesk.com/webhooks/v1/systems/data/
      events/<EVENT>/hooks/<HOOK_ID> HTTP/1.1
```

Header:

```
Authorization: Bearer <BEARER_TOKEN>
```

Links

https://forge.autodesk.com/en/docs/webhooks/v1/reference/http/webhooks/systems-system-hooks-POST/

Upchain

Get existing webhooks

Request:

```
GET https://live.upchain.net/api/v1/hooks/ HTTP/1.1
```

Header:

```
Upc-Selected-Company: <COMPANY_ID>
Authorization: Bearer <BEARER_TOKEN>
```

Create new webhook

Request:

```
POST https://live.upchain.net/api/v1/hooks/ HTTP/1.1
```

Header:

```
Upc-Selected-Company: <COMPANY_ID>
Authorization: Bearer <BEARER_TOKEN>
Content-Type: application/json
Content-Length: <BODY_LENGHT>
```

Body:

```
{
    "description":"<WEBHOOK_DESCRIPTION>",
    "events": [
        "<EVENT>"
        ],
    "url":"<CALLBACK_URL>"
}
```

The following events (`<EVENT>`) are supported by Upchain:

Event	Description
conversion.finished	Notifications are sent to the subscriber when translations are generated.
ecr.status.updated	Notifications are sent whenever a Change request (CR) workflow passes an Update primitive that is configured as Type > Work Order Status.

Delete webhook

Request:

```
DELETE https://live.upchain.net/api/v1/hooks/<WEBHOOK_ID> HTTP/1.1
```

Header:

```
Upc-Selected-Company: <COMPANY_ID>
Authorization: Bearer <BEARER_TOKEN>
```

Links

https://help.autodesk.com/view/UPCHN/ENU/?guid=UC-API-WBHK-NTFCTN

Get existing webhooks

Request:

```
GET https://api.businesscentral.dynamics.com/v2.0/<ENVIRONMENT>/api/
      v2.0/subscriptions HTTP/1.1
```

Header:

```
Authorization: Bearer <BEARER_TOKEN>
```

Create new webhook

Request:

```
POST https://api.businesscentral.dynamics.com/v2.0/<ENVIRONMENT>/api/
      v2.0/subscriptions HTTP/1.1
```

Header:

```
Authorization: Bearer <BEARER_TOKEN>
Content-Type: application/json
Content-Length: <BODY_LENGHT>
```

Body:

```
{
  "notificationUrl": "<CALLBACK_URL>",
  "resource": "/api/v2.0/companies(<COMPANY_ID>)/items"
}
```

Delete webhook

Request:

```
DELETE https://api.businesscentral.dynamics.com v2.0/sandbox/api/
      v2.0/subscriptions('<SUBSCRIPTION_ID>') HTTP/1.1
```

Header:

```
Authorization: Bearer <BEARER_TOKEN>
If-Match: <SUBSCRIPTION_@ODATA.ETAG>
```

---

*Note: Environment **<ENVIRONMENT>** can be either "sandbox" or "production"*

Links

https://docs.microsoft.com/en-us/dynamics365/business-central/dev-itpro/api-reference/v2.0/dynamics-subscriptions
https://docs.microsoft.com/en-us/dynamics365/business-central/dev-itpro/api-reference/v2.0/dynamics-subscriptions
https://docs.microsoft.com/en-us/dynamics365/business-central/dev-itpro/administration/automation-apis-using-s2s-authentication
https://www.kauffmann.nl/2021/07/06/service-to-service-authentication-in-business-central-18-3-how-to-set-up/

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Action Scripts

Fusion 360 Manage

In addition to webhooks, Fusion 360 Manage supports scripts (JavaScript) to be executed on several events, such as a workflow action or a button in the UI.
This can be used to send HTTP POST messages – just like a webhook would do – to other systems.

A JavaScript script that sends a message to a callback URL would look like this:

```
// Defining the payload data
var obj = {
    descriptor: item.key,
    number: item.NUMBER,
    title: item.TITLE,
    description: item.DESCRIPTION,
    owner: item.descriptor.ownerID,
    workspace: item.master.workspaceID,
    dmsID: item.master.dmsID
};

// Converting JS object to JSON string
var payload = JSON.stringify(obj, null, 2);

// Creating HTTP request
var request = new XMLHttpRequest();
request.withCredentials = false;

// Defining the method and endpoint
request.open("POST", "<CALLBACK_URL>");

// Defining the content type
request.setRequestHeader("Content-Type", "application/json");

// Send the request
request.send(payload);
```

Links

https://help.autodesk.com/view/PLM/ENU/?guid=DEV-ABOUT-SCRP

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Additional Materials

AU Online Classes

Hybrid PDM, PLM and ERP: Sync Data Between Cloud and On-Premises Systems

Author
Christian Gessner

Description
Product lifecycle management (PLM) systems such as Autodesk Fusion 360 Manage software or Upchain run in the cloud while Vault software and most enterprise resource planning (ERP) systems are still installed on-premises. Hidden behind firewalls, on-premises software cannot directly receive update notifications from cloud applications and have difficulty synchronizing with changes from cloud systems. Polling data from large data sets is time consuming and inefficient. Automated synchronization and digital transformation of data between hybrid PDM, PLM, and ERP systems require more-sophisticated solutions. This class will demonstrate how to efficiently send data from cloud to on-premise systems. We'll use different examples to demonstrate how the Autodesk Forge Webhooks API and Autodesk Fusion 360 Manage Action Scripts are used to automatically update entities in Vault software, or how cloud PLM systems automatically send Bill of Materials (BOM) data to on-premise ERP systems without the need for the on-premise software to poll for data.

Link
https://www.autodesk.com/autodesk-university/class/Hybrid-PDM-PLM-and-ERP-Sync-data-between-cloud-and-premises-systems-2022

Synchronizing Change Orders Between Vault and Fusion 360 Manage

Author
Christian Gessner

Description
Both Vault Professional software and Fusion 360 Manage software enable you to delegate, track, and manage your data changes. While Vault Professional focuses on CAD-related changes, Fusion 360 Manage enables you to manage any data stored in the application. With powerPLM, COOLORANGE offers an easy-to-use and flexible tool to combine Fusion 360 Manage and Vault Professional processes. This class demonstrates how to use powerPLM to synchronize CAD design changes between Fusion 360 Manage and Vault Professional.

Link
https://www.autodesk.com/autodesk-university/class/Synchronizing-Change-Orders-Between-Vault-and-Fusion-360-Manage-2021

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Share Your Bill of Materials: Connecting PDM, PLM, and ERP

Author
Christian Gessner

Description
Bills of materials (BOMs) serve several purposes throughout a product lifecycle. While BOM data is usually created by CAD designers and managed in product data management (PDM) systems such as Vault software, it also needs to be shared with departments outside engineering where BOM information is used for production planning, assembling, or purchasing. Each of these steps requires a different view of the same BOM. Sometimes BOMs even need to be extended with information such as "work stages" or "work orders." Sharing and enriching BOM information is usually done in systems other than Vault, such as Fusion 360 Manage or enterprise resource planning (ERP) systems. This class will explore bills of materials and their different uses. We'll showcase different ways to share BOM data among product lifecycle management (PLM) systems, PDM systems, and ERP systems. And we'll analyze the available APIs to help you implement BOM workflows among Vault Professional (PDM), Fusion 360 Manage (PLM), and ERP systems.

Link
https://www.autodesk.com/autodesk-university/class/Share-Your-Bill-Materials-Connecting-PDM-PLM-and-ERP-2021

Vault Advanced Administration

Author
Lauren Drotar, Kim Hendrix

Description
Basic administration of Vault software is pretty clean, but what about when your data over the years has gotten dirty. Ever feel like you'd like to run your data through a power wash? Maintaining a clean functioning Vault takes time if done manually. In this class, we'll explore ways to use PowerShell and the API to clean, rearrange, and add metadata to your data. Duplicate file names, missing information, other data sources, or maybe a new file structure. You can handle all of these things and more with PowerShell and the API.

Link
https://www.autodesk.com/autodesk-university/class/Vault-Advanced-Administration-2021

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Joint Effort: Vault and Fusion Lifecycle As the New Dream Couple

Author
Christian Gessner

Description
When used together, Vault Professional software and Fusion Lifecycle software provide a combined solution that is the best of all worlds for product data management (PDM) and product lifecycle management (PLM). While Vault runs on-prem to keep your CAD data safe behind your firewall, Fusion Lifecycle is cloud-based for flexibility and ease of deployment. With powerFLC (Vault Fusion Lifecycle connector), coolOrange offers an easy-to-use and flexible tool to combine Fusion Lifecycle and Vault processes. Previous versions of powerFLC included predefined workflows, and with the latest version of powerFLC, it is even possible to create custom workflows to synchronize any data between Vault and Fusion Lifecycle. This class will demonstrate the advantages of using both products together and show some of the endless possibilities of this integration.

Link
https://www.autodesk.com/autodesk-university/class/Joint-Effort-Vault-and-Fusion-Lifecycle-New-Dream-Couple-2020

PDM and PLM United: Vault Fusion Lifecycle Connector – a Zero-Code Connector

Author
Christian Gessner

Description
When used together, Vault Professional software and Fusion Lifecycle software provide a combined solution that is the best of all worlds for product data management (PDM) and product lifecycle management (PLM). While Vault runs on-premises to keep your CAD data safe behind your firewall, Fusion Lifecycle is cloud based for flexibility and ease of deployment. Sadly, this has made a seamless integration between the two difficult—until now. This class describes the benefits of the Vault Fusion Lifecycle Connector, including installation, configuration, and extensibility, so you can create a best-of-all-worlds solution.

Link
https://www.autodesk.com/autodesk-university/class/PDM-and-PLM-United-Vault-Fusion-Lifecycle-Connector-Zero-Code-Connector-2019

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Autodesk Vault 2020—Programming 101

Author
Markus Koechl, Jeffrey Fishman

Description
Get started programming Vault Workgroup or Vault Professional applications, extensions, and custom jobs. The Vault 2020 Software Development Kit (SDK) shares new templates and sample code removing barriers accessing the entry level in Vault Web Services, Vault Job Processor, and Vault Client programming. This class will discuss real-life automation and extension tasks, and will guide participants through the steps required to solve them.

Link
https://www.autodesk.com/autodesk-university/class/Autodesk-Vault-2020-Programming-101-2019

Vault Extensions Snorkeling—First Touch to Vault Extension and Automation Programming

Author
Markus Koechl, Christian Gessner

Description
Vault data management software isn't just a single program; it's a framework, composed of many pieces like CAD add-in or Vault Explorer (Client) working together. You can customize some of these pieces and not others. This class will discuss the various ways to customize and integrate with Vault, including Vault Data Standard advanced scripting layer and Vault application programming interface. Following samples of standalone applications interacting with Vault, jobs automating repetitive tasks, or event handlers extending workflows, you can get started scripting and coding your own first extensions.

Link
https://www.autodesk.com/autodesk-university/class/Vault-Extensions-Snorkeling-First-Touch-Vault-Extension-and-Automation-Programming-2017

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Seamless integration with Forge Webhooks

Author
Adam Nagy, Monmohan Singh

Description
Take your Forge applications to the next level with the newly introduced Forge Webhooks API. Webhooks are an industry standard mechanism for subscribing to 'event notifications', allowing you to streamline and simplify your Forge workflows and leverage leading integration services such as Jitterbit, Zapier and Mulesoft. In this class we'll show you everything you need to get started with this simple but powerful tool.

Link
https://www.autodesk.com/autodesk-university/class/Seamless-integration-Forge-Webhooks-2017

Fusion Lifecycle Software's Evented Web Is Off the Hook

Author
Michael Pares, Doug Mclean, Martin Gasevski

Description
This class will explain Fusion Lifecycle software's (formerly Autodesk PLM 360) native support for connecting cloud, on-premise, social, and mobile technology without changing its existing architecture and site configurations—all accomplished with very little administrative effort. We will demonstrate how a product lifecycle management (PLM) site administrator can configure the built-in Evented Web features, and extend such needs programmatically to effortlessly and in real-time interconnect data, people, and processes with numerous other business solutions. This session features PLM 360 (now Fusion Lifecycle) and Fusion Lifecycle.

Link
https://www.autodesk.com/autodesk-university/class/Fusion-Lifecycle-Softwares-Evented-Web-Hook-2016

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Smart Workflow: Adding Business Logic to Your Fusion Lifecycle Workflows with Scripting

Author
Michael Vesperman, Fred Smith, Vahid Zohrehvandi

Description
This class will review how your company can achieve true process improvement by methodically analyzing your As-Is process, and identifying redundant steps, bottlenecks, missed activities, and so on. Design a streamlined To-Be process that incorporates decision-making automation of business logic, and enable Fusion Lifecycle software to manage your logic-driven process. This class will be a technical review covering the Fusion Lifecycle application scripting frameworks and API. We will expose students to workspace modeling and scripting techniques that will enable them to automate and streamline their product lifecycle management workflows. This session features PLM 360 (now Fusion Lifecycle) and Fusion Lifecycle.

Link
https://www.autodesk.com/autodesk-university/class/Smart-Workflow-Adding-Business-Logic-Your-Fusion-Lifecycle-Workflows-Scripting-2016