AUTODESK

Fusion Manage
Tech Sales Utilities

Reduce implementation time & cost by automating repetitive tasks with utilities based on the REST API

September 11, 2024

Disclaimer

Solution is provided as is without support

This solution is provided as is and there should be no assumption that updates, patches, bug fixes and / or new features will be delivered to you. There will also be ***no support*** *available either through Autodesk Support channels or by the Autodesk Pre-sales Technical Team.*

Please feel free to take the source code and ideas from this tool to develop your own production ready tool. This package contains native source code on purpose so that you can change or reuse it as you like.

STOP

Read this before continuing

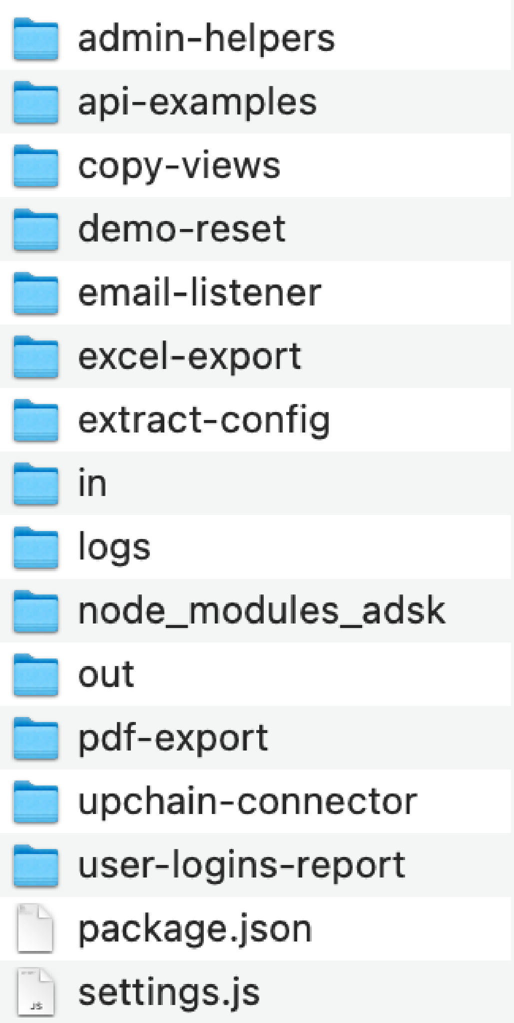
Download Package

A single package covering it all

There is a single package containing all utilities of this slide deck. Download this given zip file using the link below and extract it
(e.g. to `c:\temp`).

There will certainly be updates to this package, but the download link will not change. Bookmark this link to easily download updates in future.

Download package at **https://github.com/dickmans/plm-utilities**



Software Setup

Install node.js as runtime

All code examples of this package are based on node.js, enabling their usage on any platform.

To run these solutions, you must download and install this free and open-source software. Just download it here: https://nodejs.org/en

Perform the setup of node.js with default options.

Install Node Packages

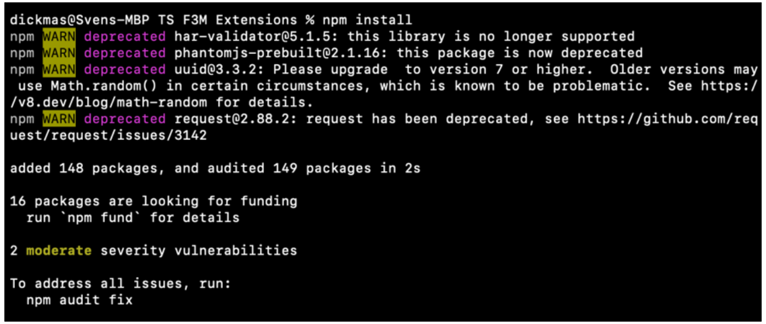
Download additional node modules

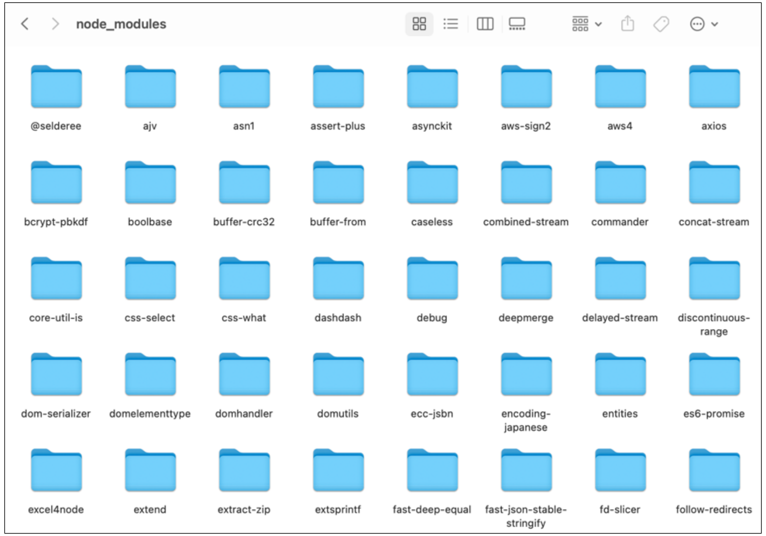
The node.js programs require installation of additional modules. Before running any of the solutions for the first time, make sure to download these required modules using npm.

Open a command prompt, navigate to the package's root folder (e.g. `c:\temp\plm-utilities`) and run this command:

```
npm install
```

This will automatically create the folder **node_modules** and store the given modules in there.





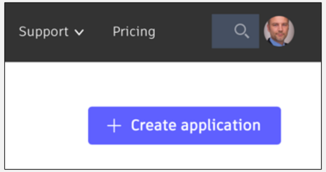
Create APS Application

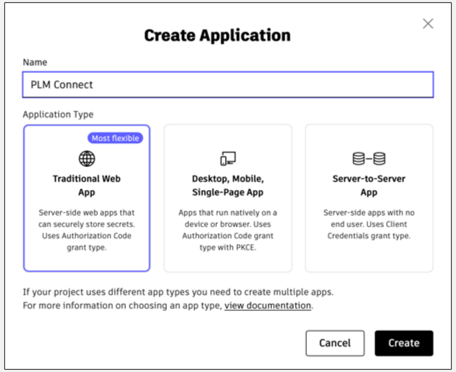
Grant access to your PLM tenant

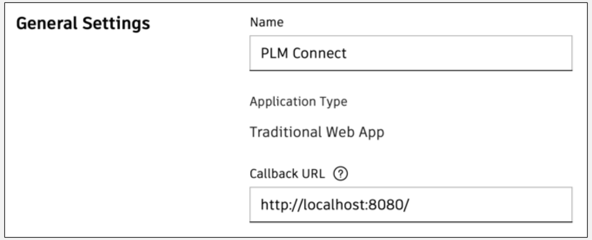
The extensions in this deck make use of the REST API to connect to your tenant from outside. This requires an Autodesk Platform Services app. If you created such an application already, you can proceed to next slide. Otherwise, create a new application like this:

- Login at aps.autodesk.com with your Autodesk Account
- Click on **Go to my apps** or your list of **Applications**
- Click on **Create application**
- Enter any name, select **Traditional Web App** and click **Create**
- A **Client ID** will be generated. Copy this to the clipboard as you will need this for the steps described in next slide.

If this application will be used for the Tech Sales Applications as well, please make sure that the **Callback URL** is correct. Keep default (http://localhost:8080) if everything will operated locally only.





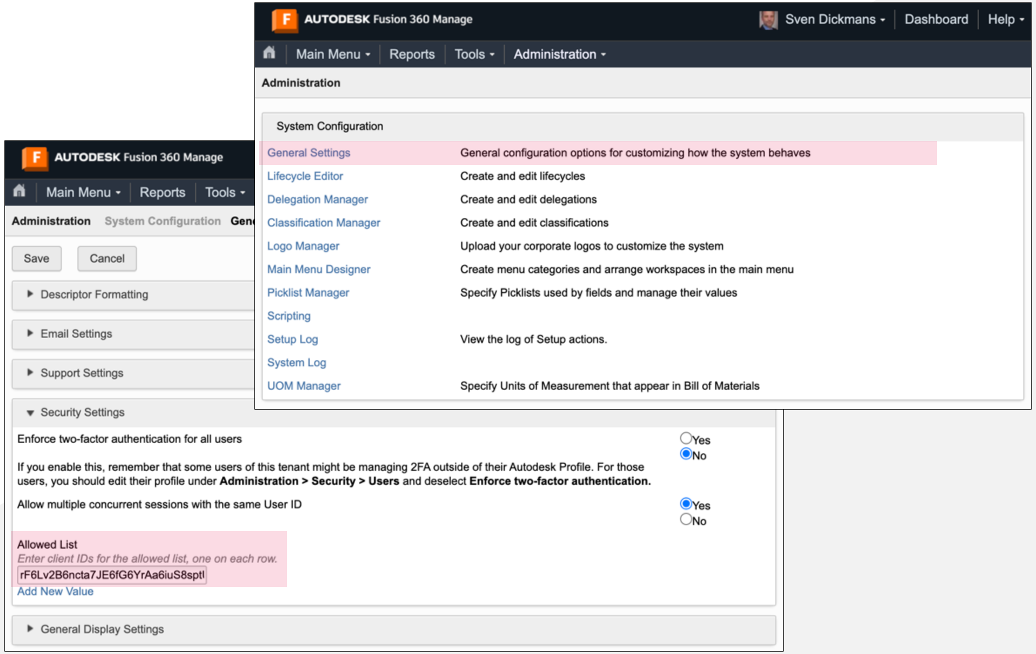


Whitelist your APS Application in PLM

Grant access to your PLM tenant

Your APS Application must be whitelisted in your PLM tenant. This will grant access by using the application's ClientID and Client Secret.

- Login to your PLM tenant as administrator
- Click on **Administration | System Configuration** in the main menu. Next, click **General Settings**
- Paste your Client ID in section **Security Settings** in field **Whitelist** and click **Save**



Configure Server Settings

Grant access to your PLM tenant

In the package's root folder, you will find the file `settings.js`. Open this file in a text editor (or Visual Studio Code) and provide the parameters listed below before launching any of the extensions. These settings enable access to your tenant and are used by all extensions:

`clientId` = Client ID of your APS Application (see slide **Create APS Application**)

`clientSecret` = Client Secret of your APS Application (see slide **Create APS Application**)

`tenant` = Name of your Fusion Manage tenant

`user` = Fusion Manage user account that will be used to connect

```
// Fusion 360 Manage connection based on APS Application
exports.clientId        = 'rF6Lv2B6ncta7JE6fG6YrAa6iuS8sptU';
exports.clientSecret    = 'qaADWGkxw0ESoX4Z';
exports.tenant          = 'adsktsesvend';
exports.user            = 'sven.dickmans@autodesk.com';
```

Enable logging at runtime

Store output in log files

You can run the utilities in this package from a console / command prompt easily and will see log messages in the prompt directly. For example, you can launch the E-Mail Listener like this:

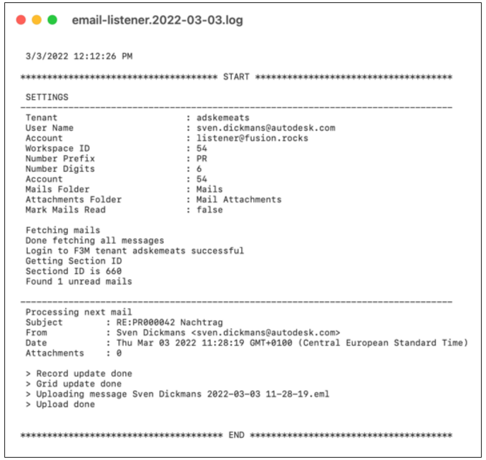
```
node listener.js
```

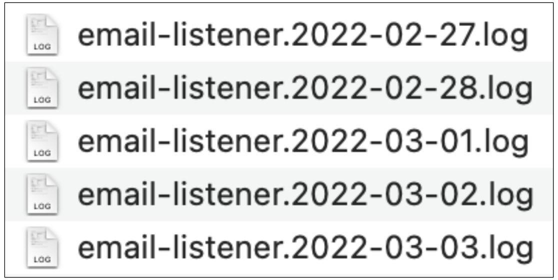
However, if you run these tools with the task scheduler later, you may want to store the output in files as you do not see the console in this case. In order to do so, simply redirect the output to a log file like this:

```
node listener.js >> ../out/email-listener.log
```

If you run the tools on a Unix based system, you can also store the output in a new file every day:

```
node listener.js >> ../out/email-listener.$(date +'%Y-%m-%d').log
```





Use '>>' to append the output to existing files and '>' to overwrite the previous file.

API EXAMPLES

Get started using commonly used code snippets

API Examples

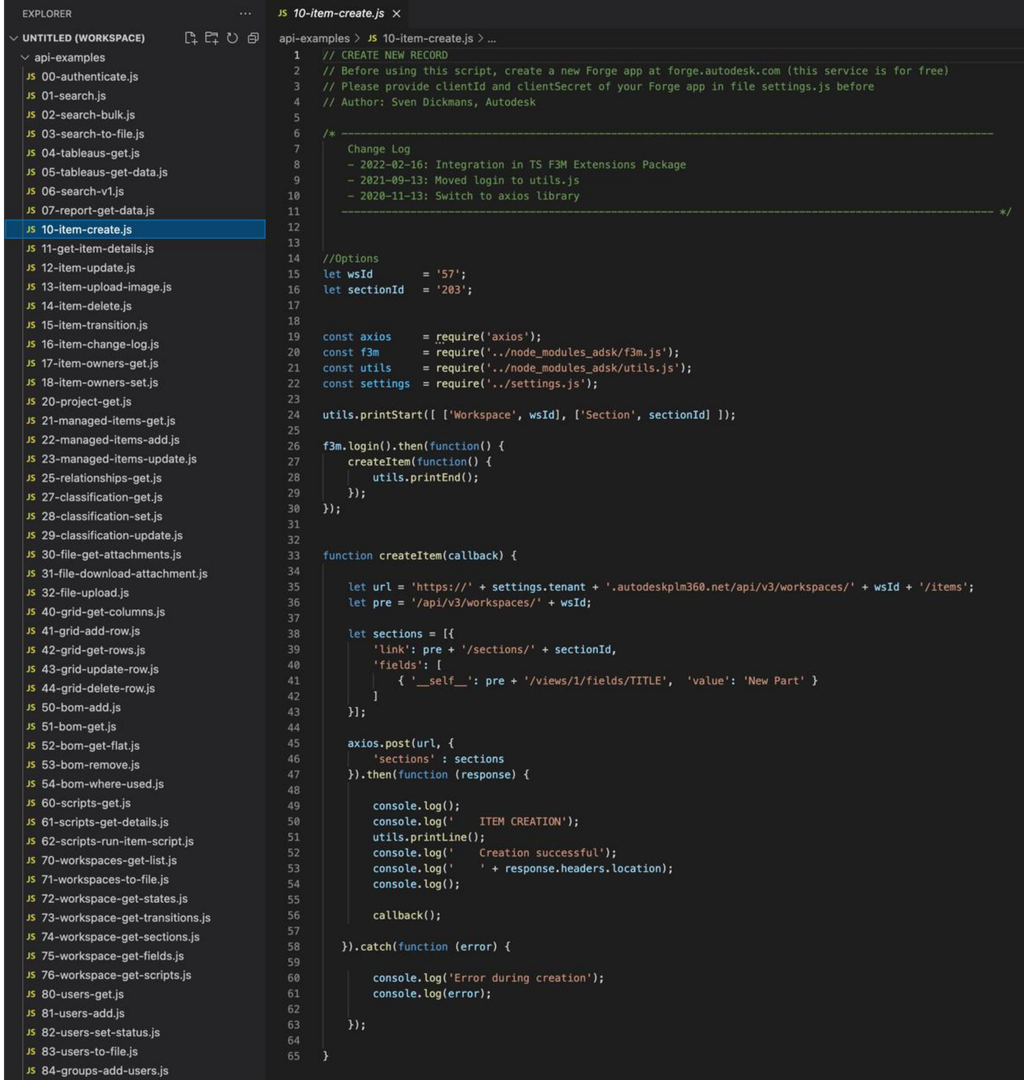
Get started by reusing code examples

In order to learn about the REST API of Fusion Manage, have a look at a collection of more than 50 basic code examples. They cover common building blocks that will be required for application integrations for example.

Use these examples in folder `api-examples` to get familar with the given endpoints and required payloads.

Some scripts provide `//Options` at the beginning which will have to be adjusted before you can run it against your tenant.

Want to share this package?
An older version is
available in this AKN Post



API Examples

Tipps to help you get started

Use V3 API calls instead of V1 API whenever possible

Items cannot be deleted by the API, use a sandbox tenant or workspace clone for testing

REST API calls cannot update fields that are set to read-only; set editable at creation if an integration has to creaate data that must not be modified aftewards

Implement a dedicated ‘integration’ role for given workspaces to set access permission easily

Make use of hidden fields for the integration as they are still accessible and editable by the REST API

REST API is aynchronous so use parallel requests to improve performance

Throttle your integration if needed to prevent server slowness. Rule of thumb:
(# of requests x duration) / 18 < 1

Prevent hard-coding section IDs as they may change when using the Workspace Manager

Use /tableaus endpoint of V3 API instead of /search to build integration (search for empty value, and/or combination)

The V1 API still provides a /search endpoint that better suits the needs of integrations (e.g. search for empty field values)

Use scripts instead of API calls to ease implementation

IMPLEMENTATION HELPERS

Save time & cost during implementation

Implementation Helpers

Introduction & Installation

There are recurring challenges in the implementation process of a PLM solution. Automation with the Fusion Manage REST API helps to address these challenges to remain agile, flexible and in time. The next slides will explain required details about the helper utilities listed on the right.

All these tools can be found in folder `admin-helpers`

Remember to configure the connection to your tenant in file settings.js before.

Add Users
Grant access to your tenant for new users and add them to groups automatically

Touch Records
Trigger modifications on given records to invoke the edit scripts after an import

Transition Records
Perform a defined workflow transition on records being in a defined status

Import Files
Upload files stored on disk to the Attachments tab of matching records

MOW Report
Retrieve the MOW list of another user to reassign tasks in case of user's absence

Store DMSID
Store DMSID for all records in a define workspace

Disable Users
Prevent all future logins for all users

Validate 2FA
List all users not having 2-factor-authentication enabled to improve security

1 Add Users

Create users and assign groups in batch

Managing users and access permission in PLM can be an exhausting job. With this utility, administrators can automate the account creation and group assignment for new users.

New users and the groups to be assigned can be defined in file
`data/add-users.js`

```
// DATA BEING USED BY add-users.js

exports.users = [
    // [ E-Mail, [ Group1, Group2, ...]]
    [ "eric@fusion.rocks", ["Engineering", "Quality", "Product Management"]],
    [ "kelly@fusion.rocks", ["Suppliers"]],
    [ "marc@fusion.rocks", ["Manufacturing", "Procurement"]],
    [ "howard@fusion.rocks", ["Manufacturing", "Procurement"]]
]
```

Once the users have been defined in this file, simply run the following command from within the folder **admin-helpers** in a command prompt:
`node add-users`

See the solution in action: https://youtu.be/5AKbnTEfLqU

```
************************************** START *****************************************

SETTINGS
------------------------------------------------------------------------------------------
Tenant        : zztsetest5
User Name     : sven.dickmans@autodesk.com
User count    : 4

Login to tenant zztsetest5 successful

LIST OF GROUPS
------------------------------------------------------------------------------------------
> Admin Group | 16 | urn:adsk.plm:tenant.group:ZZTSETEST5.58
> Administration [SYSTEM] | 16 | urn:adsk.plm:tenant.group:ZZTSETEST5.108
> Advanced Users | 18 | urn:adsk.plm:tenant.group:ZZTSETEST5.147
> Customers | 15 | urn:adsk.plm:tenant.group:ZZTSETEST5.145
> Engineering | 15 | urn:adsk.plm:tenant.group:ZZTSETEST5.133
> Executive | 15 | urn:adsk.plm:tenant.group:ZZTSETEST5.134
> Hidden Sections | 15 | urn:adsk.plm:tenant.group:ZZTSETEST5.128
> Importer | 16 | urn:adsk.plm:tenant.group:ZZTSETEST5.135
> Integration | 15 | urn:adsk.plm:tenant.group:ZZTSETEST5.136
> Legal | 15 | urn:adsk.plm:tenant.group:ZZTSETEST5.137
> Manufacturing | 16 | urn:adsk.plm:tenant.group:ZZTSETEST5.138
> Operations | 15 | urn:adsk.plm:tenant.group:ZZTSETEST5.139
> Procurement | 15 | urn:adsk.plm:tenant.group:ZZTSETEST5.140
> Product Management | 15 | urn:adsk.plm:tenant.group:ZZTSETEST5.146
> Quality | 16 | urn:adsk.plm:tenant.group:ZZTSETEST5.141
> Sales & Marketing | 15 | urn:adsk.plm:tenant.group:ZZTSETEST5.142
> Service | 15 | urn:adsk.plm:tenant.group:ZZTSETEST5.143
> Suppliers | 15 | urn:adsk.plm:tenant.group:ZZTSETEST5.144
> copyviews | 5 | urn:adsk.plm:tenant.group:ZZTSETEST5.180

(shortName | users.length | urn)

ADDING USER #1
------------------------------------------------------------------------------------------
e-Mail       : eric@fusion.rocks
Groups       : Engineering,Quality,Product Management
> user added successfully (https://zztsetest5.autodeskplm360.net/api/v3/users/jOY9p)
> adding user to defined groups (Engineering,Quality,Product Management)

ADDING USER #2
------------------------------------------------------------------------------------------
e-Mail       : kelly@fusion.rocks
Groups       : Suppliers
> user added successfully (https://zztsetest5.autodeskplm360.net/api/v3/users/q8ido)
> adding user to defined groups (Suppliers)

ADDING USER #3
------------------------------------------------------------------------------------------
e-Mail       : marc@fusion.rocks
Groups       : Manufacturing,Procurement
> user added successfully (https://zztsetest5.autodeskplm360.net/api/v3/users/C1xXw)
> adding user to defined groups (Manufacturing,Procurement)

ADDING USER #4
------------------------------------------------------------------------------------------
e-Mail       : howard@fusion.rocks
Groups       : Manufacturing,Procurement
> user added successfully (https://zztsetest5.autodeskplm360.net/api/v3/users/RWQ1A)
> adding user to defined groups (Manufacturing,Procurement)

************************************** END *******************************************
```

2 Touch Records

Trigger edit events by updating items

Sometimes there is the need to trigger the edit scripts for items managed in PLM, for example after an import of data or for data cleansing. This utility will set a defined value in a selected Item Details field in order to trigger the edit event and with this to trigger the given on edit script in PLM, allowing for any data modification. If the target value is already set in the given field, the record will be skipped and not be updated.

Set the options for this process in file `options/touch-records.js`

f3m.ts.utilities > admin-helpers > options > JS touch-records.js > ...

```
// OPTIONS BEING USED BY touch-records.js

exports.workspaceId      = 84;                   // workspace holding the items to update
exports.fieldId          = 'UPDATE_REQUIRED';    // ID of the field to update
exports.fieldValue       = 'No ';                // New value to be contained (and set)
exports.fieldTypeId      = 0;                    // ID of field data type as required by V1 API search
```

This process only supports fields of type **Single Line Text**. Run the update with the following command from within the folder **admin-helpers** in a command prompt:

```
node touch-records
```

This process will only update items that do not have the target value stored in the defined field. You can enforce multiple updates of the same items by running the utility repeatedly and adjusting the target value of the field for each run.

```
*********************************** START ******

SETTINGS
-----------------------------------------------
Tenant        : zztsetest8
User Name     : sven.dickmans@autodesk.com
Workspace ID  : 14
Field ID      : FLAG
Field Value   : Yes
Field Type ID : 0

Login to tenant zztsetest8 successful

Getting Section ID
Sectiond ID is 40
Getting Records
Found 14 records in total to process

Processing record #1
Processing record #2
Processing record #3
Processing record #4
Processing record #5
Processing record #6
Processing record #7
Processing record #8
Processing record #9
Processing record #10
Processing record #11
Processing record #12
Processing record #13
Processing record #14

************************************ END ******
```

3 Transition Records

Perform a defined Workflow Action on multiple records

After a data import or for data cleansing purposes, you may want to transition items being in a defined status to another one and with this, trigger all the transition scripts. This utility enables you to do so in an automated manner.

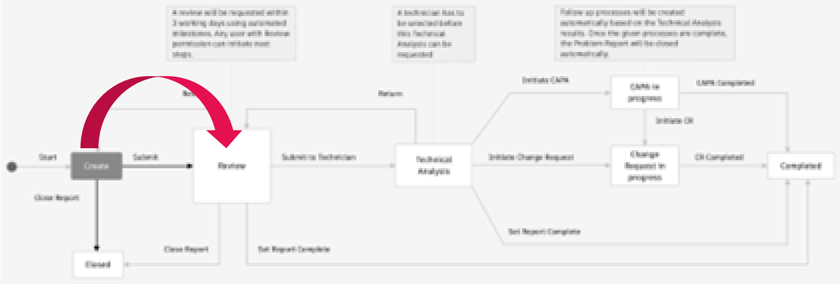
Set the options for this process in file `options/transition-records.js`

```
// OPTIONS BEING USED BY transition-records.js

exports.workspaceId      = 82;
exports.fromStatus       = 'Create';
exports.transitionId     = '523';
exports.comment          = 'Transitioned automatically';

```

Run the update with the following command from within the folder **admin-helpers** in a command prompt:
`node transition-records`



4 Import Files

Purpose of this solution

The promise of PLM is to provide a single source of truth for latest product data. In order to fulfill this promise, Fusion Manage provides standard import capabilities to reuse and combine existing data from various sources. This import feature not only enables an initial import of data, but also to push updates and upload Bill of Materials information easily. However, this solution is dealing with metadata only. It is not able to upload files that belong to the given data (Attachments).

This **Import Files** utility is an addition to the standard import functionality. It manages the file upload, not the item creation. It assumes that the given metadata has been created before by using the standard import functionality (or manually). Once you launch this program, it will parse a given folder for files and try to match these files to records managed in a defined workspaces on PLM. If a match is found, the file will be uploaded to the record. If the given file already exists in PLM, the given file may be uploaded as new version. Once the file got processed (either successfully or not), it will be moved to a defined folder and the next file will be processed. All these actions are logged in the prompt and in log files.

The match of files is based on the filename and a chosen item property - enabling to match the filenames by a number field, a title field or any other.

Direct Attachments

File Name ↑	Title	Ver.	Type	Size	Last Updated
packing machine.dwg.dwf	packing machine.dwg	1	DWF File	2.3 MB	04/16/2021
packing machine.iam.dwf	packing machine.iam	1	DWF File	3.6 MB	04/19/2021

See the matching AKN post to share this utiltiy easily
https://knowledge.autodesk.com/support/fusion-360-manage/learn-explore/caas/simplecontent/content/import-files-to-fusion-360-manage-tenant.html

See the solution in action
https://youtu.be/dGhXI8Cnb2I

4 Import Files

Options

Before this utility can be run,
you must set the options for the import in file
`options/import-files.js`
as shown to the right

Setting	Description	Default Value
pathFiles	Path to the folder containing the files to be imported	c:\temp\files
pathSuccess	All files that were uploaded successfully will be moved from pathFiles to this folder. The folder will be created automatically if it does not exist.	c:\temp\files\success
pathFailure	All files that could not be uploaded successfully will be moved from pathFiles to this folder. The folder will be created automatically if it does not exist.	c:\temp\files\failure
workspaceId	The ID of the workspace that holds the records to which the files will be uploaded	57
fieldId	The ID of the field which is used to identify the matching files.	NUMBER
includeSuffix	Determines if the file's suffix will be used for the match: • none: part.ipt.dwf will be matched to 'part' • first : part.ipt.dwf will be matched to 'part.ipt' • all: part.ipt.dwf will be matched to 'part.ipt.dwf'	none
attachmentsFolderName	You can optionally define a folder that will be created in the Attachments tab before uploading the files (leave blank if you do not want to use folders)	
searchMode	If the workspace to be used is revision controlled, select to which records the files should be uploaded (Latest, Working or All)	Latest
errorOnMultipleResults	Select if a file should be considered as failed if multiple matching records are found. If set to true and multiple records match, the file will not be uploaded at all and be moved to folder defined in pathFailure.	false
updateExistingFiles	Defines whether if files should be uploaded as new version if a file with the same name exists already. The file upload will be considered a success in any case and the file will be moved to folder set by pathSuccess without any further validation	true

4 Import Files

Run the import

Run the import in a Command Prompt from within in the **admin-helpers** folder like this:

```
node import-files
```

```
********************************** START **********************************

 SETTINGS
---------------------------------------------------------------------------
 Options File               : ./options.js
 Tenant                     : zztsetest8
 User Name                  : sven.dickmans@autodesk.com
 Folder                     : /tmp/files
 Success Folder             : /tmp/files/success
 Failure Folder             : /tmp/files/failure
 Path Log File              : logs/Import to ZZTSETEST8 2021-04-19 14-00-03.txt
 Workspace                  : 57
 Field ID                   : PRIMARY_FILE
 Include Suffix             : false
 Attachments Folder         :
 Search Mode                : All
 Error on multiple results  : false
 Update existing files      : true

 Found 649 files to import
 Authentication successful



 Processing file #1 of 649 : ADSK-011507.ipt.dwf
---------------------------------------------------------------------------
 Searching for matching item (PRIMARY_FILE=ADSK-011507)
 Found 1 matching record(s)
 Updating 10101400 - shaft D25
   | Getting list of existing attachments
   | Creating new version as file exists already
   | NEW : Preparing file upload to S3
   | Uploading file now
   | Setting file status
 Moving file to /tmp/files/success


 Processing file #2 of 649 : ADSK-011508.ipt.dwf
---------------------------------------------------------------------------
 Searching for matching item (PRIMARY_FILE=ADSK-011508)
 Found 1 matching record(s)
 Updating 10100779 - support plate long right
   | Getting list of existing attachments
   | Creating new version as file exists already
   | NEW : Preparing file upload to S3
   | Uploading file now
   | Setting file status
 Moving file to /tmp/files/success
```

5 Someone Else's Outstanding Work Report

Users are sick? Reassign crucial task using this html report

If users are unavailable, admins may need to reassign processes to other users. For this, they can generate an HTML report of the MOW of a defined user. This report then provides HTML links to open the given processes for reassignment. Open file `/options/get-sow.js` and define the user of interest:

f3m.ts.utilities > admin-helpers > options > JS get-sow.js > ...

```
// OPTIONS FILE USED BY get-sow.js

exports.user = 'sven.dickmans@autodesk.com';     // The user for whom the MOW should be fetched
exports.file = 'sow.html';                        // The output file name
```

Finally, run the utility in a command prompt:

```
node get-sow.js
```

Once processes have been reassigned, you can run the program again and simply refresh the output html page in your browser to check the MOW status and to continue with the next processes.

```
************************************ START ************************************

 SETTINGS
-------------------------------------------------------------------------------
 Tenant                          : adsktsesvend
 User Name                       : sven.dickmans@autodesk.com
 User                            : jobuser@fusion.rocks
 File                            : sow.html

 Login to F3M tenant adsktsesvend successful
 Enforcing MOW update
 Requesting updated MOW
 Found 13 entries
 Output saved to ../logs/sow.html

************************************* END *************************************
```

Total Records : 13

Last Update : 2022-04-29 08-49-12

Due Date	Flag	Item	Workspace	Status
	Create	PR-000201 - test	Problem Reports	Create
	Create	PR-000200 - tester	Problem Reports	Create
	Create	PR-000199 - validation	Problem Reports	Create
	Preparation	CO-000464 - Update	Change Orders	Preparation
	Results Review	CO-000430 - Neuentwicklung	Change Orders	Results Review
	Preparation	CO-000331 - Update	Change Orders	Preparation
	Preparation	CO-000298 - Revise assembly instructions	Change Orders	Preparation
2021-12-30 06-00-00	Planning	T-0001 - 1 - Final Functional Validation	Tests	Planning
	Preparation	CO-000166 - Gripper update	Change Orders	Preparation
	Preparation	CO-000100 - MCO Change	Change Orders	Preparation
	Preparation	CO-000067 - Final Release	Change Orders	Preparation
	Preparation	CO-000034 - Replace Housing	Change Orders	Preparation
	Definition	89-00543-812	Manufacturer P/N	Definition

6 Store DMSID

Enrich computed fields with access to dmsId

Computed fields can only access the fields managed in Item Details and do not have access to the item's dmsId. However, this id is required sometimes when http-links should be included. The dmsId also might become of relevance for your scripts. While you can easily add an onCreate script which will store the dmsId in a hidden field, in order to make your extensions work, you will also have to capture the dmsId for items that exist already in the database, for which the onCreate event will not triggered.

Use this utility to capture the dmsId for all the records where the given field is empty. Open file `/options/store-dmsid.js` and define the workspace with records of interest and the field which is used to store the dmsId (this field must be editable, but can be set to hidden):

store-dmsid.js

```
// OPTIONS BEING USED BY store-dmsid.js

exports.workspaceId      = 84;        // workspace holding the items to update
exports.fieldId          = 'DMS_ID';  // ID of the field to store the dms id

```

Finally, run the utility in a command prompt:

```
node store-dmsid.js
```

7 Disable All Users

Prevent tenant access for end users during update or after training / trial

After a successful trial or even during system updates, you may want to disable all users in a tenant to prevent further access. This can be achieved with this utility, which only keeps a defined list of users active. Make sure to add your admin to this list! For safety reasons, the connect user will be kept active anyway.

USE THIS SCRIPT WITH CAUTION AS IT MAY PREVENT ACCESS TO YOUR TENANT IF USED WRONG

Make sure to provide a user to be kept active in file `/options/disable-all-users.js`

disable-all-users.js

```
// OPTIONS BEING USED BY disable-all-users.js

exports.usersToKeepActive = ['sven.dickmans@autodesk.com', 'lee.worton.autodesk.com']   // Provide name of users to keep active

```

Afterwards, run this utility in a command prompt:

```
node disable-all-users.js
```

8 Validate 2FA Authentication

Improve resilience of a tenant by validating users 2-factor-authentication

Fusion Manage does not enforce users to have 2FA enabled in their Autodesk Account. It also does not expose this information within the user management. Fortunately, you can use the user API to validate the given information and identify users that do not have 2-factor-authentication enabled.

Open file `/options/get-non-2fa-user.js` to define list of mail domains whose user accounts should be excluded:

```
// OPTIONS BEING USED BY get-non-2fa-users.js

exports.domainsExcluded = ['autodesk.com'];
```

Run this utility from a command prompt in **admin-helpers** directory:

```
node get-non-2fa-users.js
```

```
********************************** START **********************************

 SETTINGS
-----------------------------------------------------------------------------
 Tenant                     : adsktsesvend
 User Name                  : sven.dickmans@autodesk.com
 Domains Excluded           : autodesk.com

 Login to F3M tenant adsktsesvend successful

 Found next 3 users
-----------------------------------------------------------------------------
 Job User (jobuser@fusion.rocks) from Autodesk


 SUMMARY
-----------------------------------------------------------------------------
 Users having 2FA enabled     : 0
 Users not having 2FA enabled : 1
 Users excluded               : 2

*********************************** END ***********************************
```

EXTRACT TENANT CONFIGURATION

Document a tenant’s satus quo for change tracking and reuse

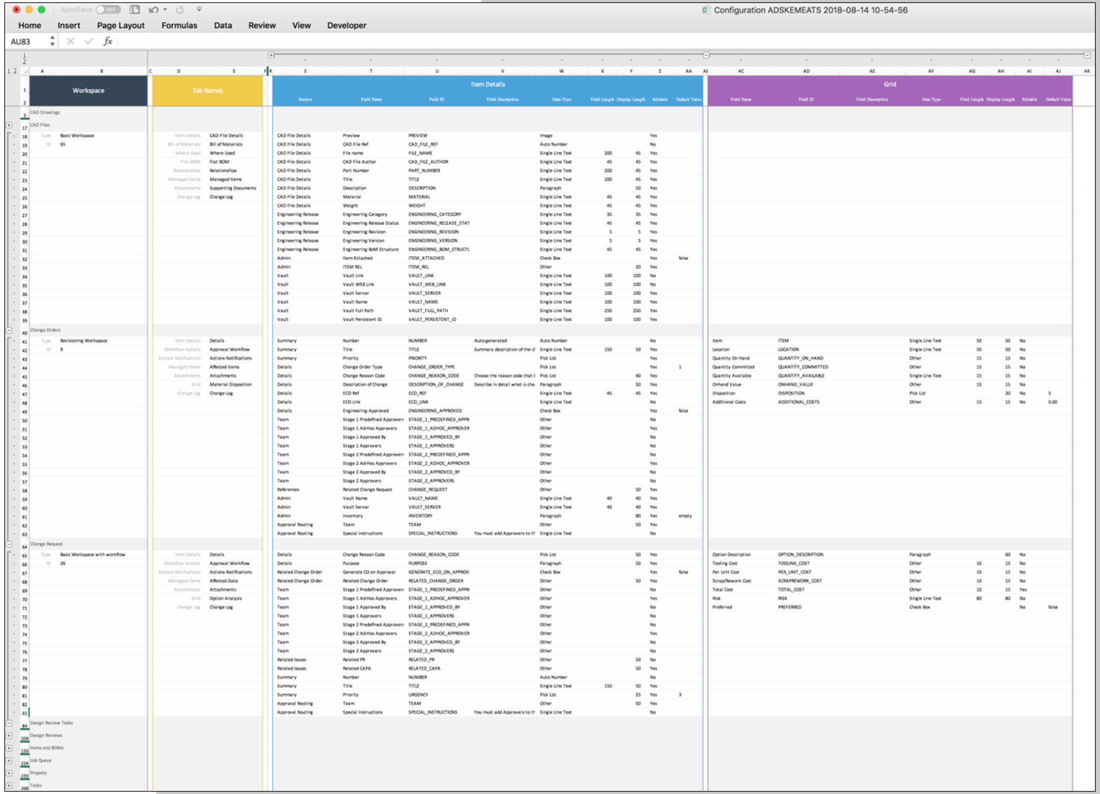
Extract Configuration Settings

Introduction

During PLM implementations, administrators often require a documentation of the tenant's configuration. Such a documentation must include details about workspaces, fields, roles, groups and other details.

The `extract-config` utility enables to create such a documentation automatically. It will extract given information and store it in a single and easy to use Excel file.

Optionally, it may also extract script files as source codes and extract configuration settings (like item details fields, grid columns, workflow states, workflow transitions and others) as json files. These files help to search for given data across multiple workspaces and to manage this information in GitHub for automated comparison.



Extract Configuration Settings

Set options and run utility

Before running this utility, you may want to update the runtime options within file `options.js`.

options.js

```
/* -----------------------------------------------------------------------------------------------------------------
    Extract Options:
    - folder               : path where to store the output files
    - workspacesIds        : Optional list of workspace IDs to extract (e.g. 9,57,101). Leave blak to export all workspaces.
    - appendDate           : If set to true, runtime date will be appended to settings.folder and file names (true | false)
    - extractScripts       : Option to extract source code of scripts (true | false)
    - extractPicklists     : Option to extract picklist information (true | false)
    - extractSecurity      : Option to extract users, groups and roles information to json files (true | false)
    - extractFields        : Option to extract item details fields definition to json files (true | false)
    - extractGrid          : Option to extract grid columnss definition to json files (true | false)
    - extractManagedItems  : Option to extract managed items columns definition to json files (true | false)
    - extractWorkflow      : Option to extract workflow states and transition definition to json files (true | false)
    - limitSystemLog       : Defines number of latest system log entries to be extracted (set it to 0 to disable this feature)
    - limitSetupLog        : Defines number of latest setup log entries to be extracted (set it to 0 to disable this feature)
    - createExcelFile      : If set to false, the Excel file with workspace information will not be created (true | false)

    IMPORTANT: Make sure that the defined user has access to all workspaces of your tenant and is member of group Hidden Sections

   ----------------------------------------------------------------------------------------------------------------- */

exports.folder                  = '/tmp/export';
exports.workspaceIds            = '';
exports.appendDate              = true;
exports.extractScripts          = true;
exports.extractPicklists        = true;
exports.extractSecurity         = true;
exports.extractFields           = true;
exports.extractGrid             = true;
exports.extractManagedItems     = true;
exports.extractWorkflow         = true;
exports.limitSystemLog          = 100;
exports.limitSetupLog           = 100;
exports.createExcelFile         = true;
```

Note: The variable `exports.user` in file `../settings.js` defines the user being used to connect to your tenant. Make sure that this user has admin privileges and access to all data of your tenant (to all workspaces and sections).

Once the options have been set, run the utility from within the **extract-config** folder:
`node extract`

```
********************************** START ******************************

 SETTINGS
-----------------------------------------------------------------------
 Tenant                      : adsktsesvend
 User Name                   : sven.dickmans@autodesk.com
 Folder                      : /tmp/export
 Workspace IDs               :
 Append Date                 : true
 Extract Scripts             : true
 Extract Picklists           : true
 Extract Security            : true
 Extract Fields              : true
 Extract Grids               : true
 Extract Managed Items       : true
 Extract Workflows           : true
 System Log Entries          : 100
 Setup Log Entries           : 100
 Create Excel File           : true

 Login to F3M tenant adsktsesvend successful

 Tenant Information
-----------------------------------------------------------------------
        Users : 3
   Picklists : 97
  Workspaces : 45
      Groups : 22
       Roles : 97
     Scripts : 100


 Downloading Script Resources
-----------------------------------------------------------------------
 Saving script    1 of 100 : Areas onCreate
 Saving script    2 of 100 : Audits WF Actions
 Saving script    3 of 100 : Audits WF Validations
 Saving script    4 of 100 : Buildings onCreate
 Saving script    5 of 100 : CAPA WF Actions
 Saving script    6 of 100 : CAPA WF Conditions
 Saving script    7 of 100 : CAPA WF Validations
 Saving script    8 of 100 : Change Management Library
 Saving script    9 of 100 : Change Orders onEdit
 Saving script   10 of 100 : Change Orders WF Actions
 Saving script   11 of 100 : Change Orders WF Validations
 Saving script   12 of 100 : Change Requests onEdit
 Saving script   13 of 100 : Change Requests WF Actions
 Saving script   14 of 100 : Change Requests WF Conditions
 Saving script   15 of 100 : Change Requests WF Validations
 Saving script   16 of 100 : Change Tasks onEdit
 Saving script   17 of 100 : Change Tasks WF Actions
 Saving script   18 of 100 : Change Tasks WF Conditions
 Saving script   19 of 100 : Checklist WF Validations
 Saving script   20 of 100 : Checklists onCreate onEdit
 Saving script   21 of 100 : Checklists WF Actions
 Saving script   22 of 100 : Claims onEdit
 Saving script   23 of 100 : Claims WF Actions
 Saving script   24 of 100 : Claims WF Validations
 Saving script   25 of 100 : Design Review Tasks WF Actions
 Saving script   26 of 100 : Design Review Tasks WF Conditions
 Saving script   27 of 100 : Design Reviews Library
 Saving script   28 of 100 : Design Reviews onEdit
 Saving script   29 of 100 : Design Reviews WF Actions
 Saving script   30 of 100 : Design Reviews WF Validations
 Saving script   31 of 100 : Document Change Orders onCreate onEdit
 Saving script   32 of 100 : Document Change Orders WF Actions
 Saving script   33 of 100 : Documents onCreate
 Saving script   34 of 100 : Documents onEdit
 Saving script   35 of 100 : Equipment Service Requests onEdit
 Saving script   36 of 100 : Equipment Service Requests WF Actions
 Saving script   37 of 100 : Equipment Service Requests WF Validations
 Saving script   38 of 100 : Equipment Types WF Validations
 Saving script   39 of 100 : Equipments onEdit
```

SHARE WORKSPACE VIEWS

Improve first time users experience

Introduction

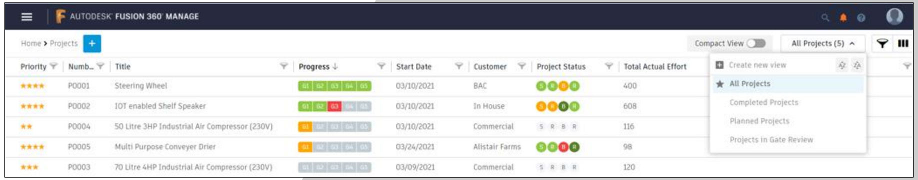
Sharing is caring

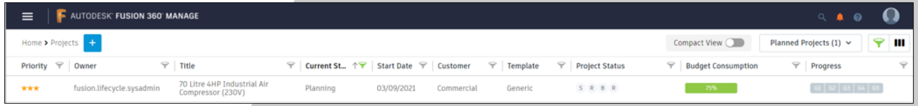
Within Fusion Manage, **Workspace Views** are a key feature to a customers experience. They allow users to visualize data quickly and easily visualize data in defined layout.

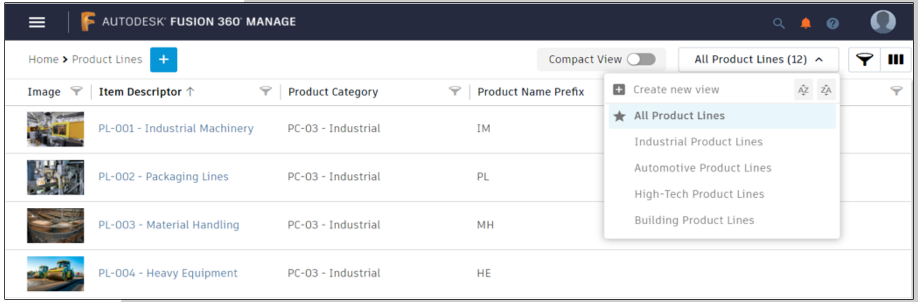
However, when logging in for the first time, users will only find the Descriptor and Status column in the default workspace views and it is up to the user to build useful views manually.

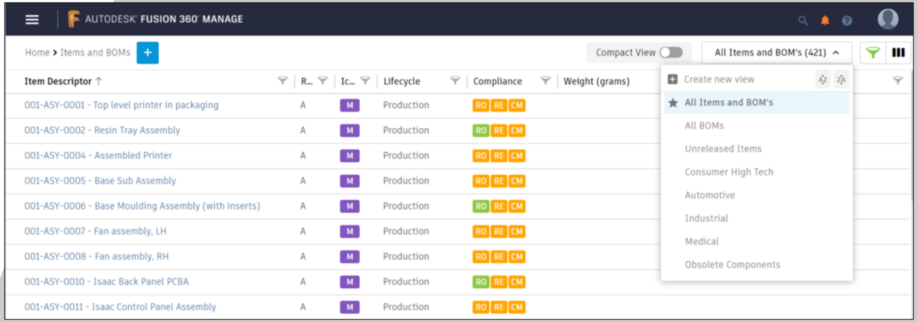
In order to provide a better experience for first time users, you can now use the utility `copy-views` to copy predefined workspace views continuously from a reference user to multiple users and user groups automatically.

With this, first time users do not have to configure the views up themselves any longer and benefit from pre- defined which they can still tweak afterwards if desired.





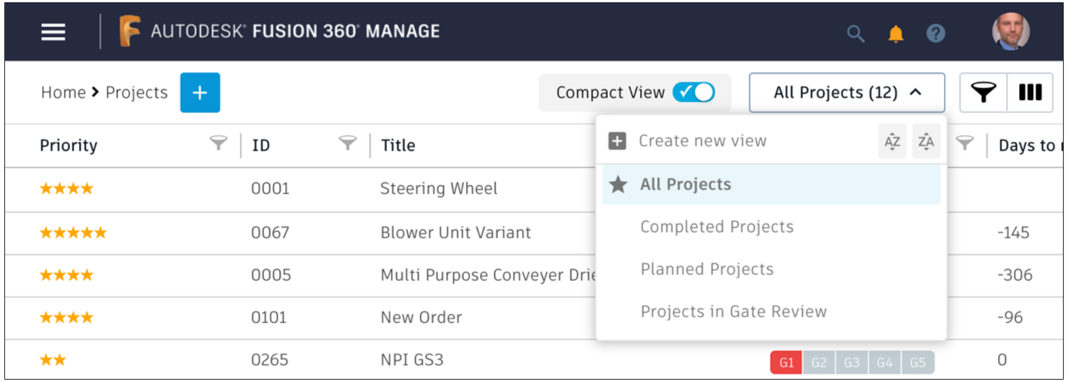




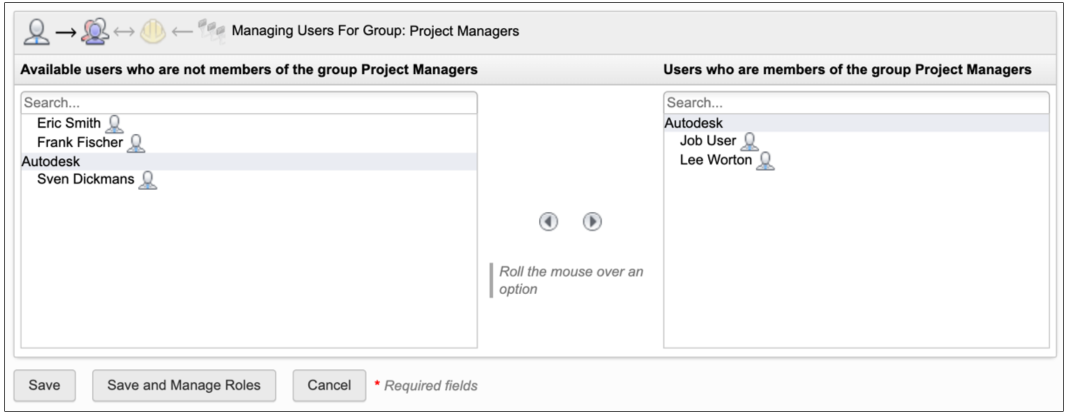
An Example

Copy views of Projects workspaces

Within my Projects workspace
(ID = 86), I have multiple views (All, Completed, Planned, Gate Review)



I wish to copy some of these views to all Project Managers and set the list **All Projects** as default.



Preparation

Set runtime options

Edit `options.js` to define the views to be copied from the master user account and the list of user (groups) to which the list of views should be copied.

`exports.distributeTo` contains the list of user groups in Fusion Manage which will receive the given views. Instead, you can set it to "*" in order to copy the views to all users. Using group names will copy the **Workspace Views** to users who belong to that group. We highly recommend using this option first whilst understanding the utility. You may use temporary groups for this copy process also (e.g. a group 'Views Copy' to easily select the target users).

`exports.ViewsToCopy` is a json object that allows to define the workspaces and their views to copy. For each workspaces, provide

- Workspace ID
- Names of views to be copied
- Name of the view to be set as default
- Force set to true or false in order to enforce an update of the view if it exists already for a target user

Note: The variable `exports.user` in file `../settings.js` defines the user being used to copy views from. Login with this given user to define the default workspaces views to be copied.

```
// OPTIONS BEING USED BY copy.js

exports.distributeTo = 'Project Managers,Product Management';    // Users Groups who will receive the  views
exports.viewsToCopy  = [
    { wsId : 86, views : 'All Projects,Planned Projects', default : 'All Projects', force: false },
    { wsId : 95, views : 'All Products,Proposals', default : 'All Products', force: true }
];
```

Run

Execute the view copy process

To perform the view copy process, enter the following command in folder **copy-views**:

```
node copy
```

Note: You may run this command repeatedly. Existing user views will only be overwritten if the ‚force‘ setting is set to true.

```
************************************* START *************************************

 SETTINGS
--------------------------------------------------------------------------------
 Tenant                         : adsktsesvend
 User Name                      : sven.dickmans@autodesk.com
 Copy to                        : Product Management
 Workspaces Count               : 1

 Login to F3M tenant adsktsesvend successful
 Found 5 active users in total
 Copying view(s) to 2 users


 GETTING DEFINED VIEWS
--------------------------------------------------------------------------------
 WS 95 : Found the view 'All Products'
 WS 95 : Found the view 'Proposals'
 Found 2 views in total to copy


 GETTING VIEW CONFIGURATIONS
--------------------------------------------------------------------------------
 Requesting /api/v3/workspaces/95/tableaus/318
 Requesting /api/v3/workspaces/95/tableaus/2063


 COPYING VIEWS
--------------------------------------------------------------------------------
 WS 95 : Getting current views of user eric@fusion.rocks
 WS 95 : Updating "All Products" for eric@fusion.rocks (default : true)
 WS 95 : Updating "Proposals" for eric@fusion.rocks (default : false)
 WS 95 : Getting current views of user frank@fusion.rocks
 WS 95 : Updating "All Products" for frank@fusion.rocks (default : true)
 WS 95 : Updating "Proposals" for frank@fusion.rocks (default : false)

************************************** END **************************************
```

USER LOGINS REPORT

Track your success in adoption

User Logins Report

Introduction

During PLM implementations, customers and partners often require information about the usage of a tenant. They want to know if end users make use of the application.

While the system log holds the information about the user logins, it is quite some effort to get the required information out of this data. Which is even more of a problem if one wants to have this information on a monthly basis.

The `user-logins-report` automates this analysis. It pulls the required information from the system log and parses this data for login information and finally provides a report of the results.

```
************************************ START *************************************

 Settings
--------------------------------------------------------------------------------
 Tenant              : zztsetest8
 User Name           : sven.dickmans@autodesk.com
 Output file name    : Logins to ZZTSETEST8 as of 2021-04-15 20-57-36.txt
 Print all logins    : false
 Request Size        : 500

 Processing
--------------------------------------------------------------------------------
 Login to tenant zztsetest8 successful
 There are 2019 log entries in total

 Getting log entries 1 to 500 (ending 2021-04-12T10:00:33.337-04:00)
 Getting log entries 501 to 1000 (ending 2021-04-07T11:21:39.884-04:00)
 Getting log entries 1001 to 1500 (ending 2021-04-07T08:40:09.414-04:00)
 Getting log entries 1501 to 2000 (ending 2021-04-06T11:26:08.285-04:00)
 Getting log entries 2001 to 2500 (ending 2021-04-01T15:39:47.509-04:00)

 Unique logins per day
--------------------------------------------------------------------------------
 This Week                 : 8
 This Month                : 21
 Last Month                : 0
 Month before last month   : 0


 Logins by user                          This |    This |    Last | Month before
 User Name                               Week |   Month |   Month |   last month
--------------------------------------------------------------------------------
 Brian Schanen                              0 |       1 |       0 |            0
 Christopher Paradiso                       0 |       1 |       0 |            0
 Giancarlo Caldarella                       3 |       5 |       0 |            0
 Lee Dodds                                  0 |       2 |       0 |            0
 Lee Worton                                 2 |       5 |       0 |            0
 Sven Dickmans                              3 |       6 |       0 |            0
 Vahid Zohrehvandi                          0 |       1 |       0 |            0


************************************* END **************************************
```

User Logins Report

Run and review results

Run the report with the following command in folder **user-logins-report**:
`node report`

The report's output is shown on screen immediately, but also stored in a file within the sub folder `reports`. The report's file name is dynamic and contains the tenant's name as well as the report date.

The report counts all unique usernames that logged in on a single day: If the same user logged in multiple during the same day, this will only be counted once.

```
Processing
--------------------------------------------------------------------------------
Login to tenant zztsetest8 successful
There are 2019 log entries in total

Getting log entries 1 to 100 (ending 2021-04-14T10:11:49.590-04:00)
Getting log entries 101 to 200 (ending 2021-04-13T09:27:33.575-04:00)
Getting log entries 201 to 300 (ending 2021-04-13T06:04:59.490-04:00)
Getting log entries 301 to 400 (ending 2021-04-12T11:11:50.318-04:00)
Getting log entries 401 to 500 (ending 2021-04-12T10:00:33.337-04:00)
Getting log entries 501 to 600 (ending 2021-04-12T06:59:33.650-04:00)
Getting log entries 601 to 700 (ending 2021-04-08T13:48:04.551-04:00)
Getting log entries 701 to 800 (ending 2021-04-07T16:05:07.273-04:00)
Getting log entries 801 to 900 (ending 2021-04-07T14:32:23.250-04:00)
Getting log entries 901 to 1000 (ending 2021-04-07T11:21:39.884-04:00)
Getting log entries 1001 to 1100 (ending 2021-04-07T10:14:59.847-04:00)
Getting log entries 1101 to 1200 (ending 2021-04-07T10:04:49.398-04:00)
Getting log entries 1201 to 1300 (ending 2021-04-07T09:19:16.077-04:00)
Getting log entries 1301 to 1400 (ending 2021-04-07T09:15:48.375-04:00)
Getting log entries 1401 to 1500 (ending 2021-04-07T08:40:09.414-04:00)
Getting log entries 1501 to 1600 (ending 2021-04-06T15:54:27.572-04:00)
Getting log entries 1601 to 1700 (ending 2021-04-06T12:08:24.725-04:00)
Getting log entries 1701 to 1800 (ending 2021-04-06T11:57:36.760-04:00)
Getting log entries 1801 to 1900 (ending 2021-04-06T11:45:06.172-04:00)
Getting log entries 1901 to 2000 (ending 2021-04-06T11:26:08.285-04:00)
Getting log entries 2001 to 2100 (ending 2021-04-01T15:39:47.509-04:00)

Unique logins per day
--------------------------------------------------------------------------------
This Week                : 8
This Month               : 21
Last Month               : 0
Month before last month  : 0


Logins by user                              This |   This |   Last | Month before
User Name                                   Week |  Month |  Month |   last month
--------------------------------------------------------------------------------
Brian Schanen                                  0 |      1 |      0 |            0
Christopher Paradiso                           0 |      1 |      0 |            0
Giancarlo Caldarella                           3 |      5 |      0 |            0
Lee Dodds                                      0 |      2 |      0 |            0
Lee Worton                                     2 |      5 |      0 |            0
Sven Dickmans                                  3 |      6 |      0 |            0
Vahid Zohrehvandi                              0 |      1 |      0 |            0


************************************** END **************************************
```

```
************************************** START **************************************

Settings
--------------------------------------------------------------------------------
Tenant            : zztsetest8
User Name         : sven.dickmans@autodesk.com
Output file name  : Logins to ZZTSETEST8 as of 2021-04-15 22-14-01.txt
Print all logins  : false
Request Size      : 100

Processing
--------------------------------------------------------------------------------
Login to tenant zztsetest8 successful
There are 2019 log entries in total

Getting log entries 1 to 100 (ending 2021-04-14T10:11:49.590-04:00)
Getting log entries 101 to 200 (ending 2021-04-13T09:27:33.575-04:00)
Getting log entries 201 to 300 (ending 2021-04-13T06:04:59.490-04:00)
Getting log entries 301 to 400 (ending 2021-04-12T11:11:50.318-04:00)
Getting log entries 401 to 500 (ending 2021-04-12T10:00:33.337-04:00)
Getting log entries 501 to 600 (ending 2021-04-12T06:59:33.650-04:00)
Getting log entries 601 to 700 (ending 2021-04-08T13:48:04.551-04:00)
Getting log entries 701 to 800 (ending 2021-04-07T16:05:07.273-04:00)
Getting log entries 801 to 900 (ending 2021-04-07T14:32:23.250-04:00)
Getting log entries 901 to 1000 (ending 2021-04-07T11:21:39.884-04:00)
Getting log entries 1001 to 1100 (ending 2021-04-07T10:14:59.847-04:00)
Getting log entries 1101 to 1200 (ending 2021-04-07T10:04:49.398-04:00)
Getting log entries 1201 to 1300 (ending 2021-04-07T09:19:16.077-04:00)
Getting log entries 1301 to 1400 (ending 2021-04-07T09:15:48.375-04:00)
Getting log entries 1401 to 1500 (ending 2021-04-07T08:40:09.414-04:00)
Getting log entries 1501 to 1600 (ending 2021-04-06T15:54:27.572-04:00)
Getting log entries 1601 to 1700 (ending 2021-04-06T12:08:24.725-04:00)
Getting log entries 1701 to 1800 (ending 2021-04-06T11:57:36.760-04:00)
Getting log entries 1801 to 1900 (ending 2021-04-06T11:45:06.172-04:00)
Getting log entries 1901 to 2000 (ending 2021-04-06T11:26:08.285-04:00)
Getting log entries 2001 to 2100 (ending 2021-04-01T15:39:47.509-04:00)

Unique logins per day
--------------------------------------------------------------------------------
This Week                : 8
This Month               : 21
Last Month               : 0
Month before last month  : 0


Logins by user                              This |   This |   Last | Month before
User Name                                   Week |  Month |  Month |   last month
--------------------------------------------------------------------------------
Brian Schanen                                  0 |      1 |      0 |            0
Christopher Paradiso                           0 |      1 |      0 |            0
Giancarlo Caldarella                           3 |      5 |      0 |            0
Lee Dodds                                      0 |      2 |      0 |            0
```

DEMO RESET

demo – reset - repeat

Demo Reset

Like a travel back in time …

After you performed or practiced a demo, you may want to clear all new data to be able to run the same demo again. `demo-reset` will query all (or defined) workspaces of your tenant for data that has been created on the same day and purge the given data. Matching data will be archived and not deleted, so you can undo the changes if needed.

The file `options.js` enables to adjust the behavior if needed:

- Archive records of defined workspaces only by entering the given workspace IDs in `workspaces`. If you leave this array blank, the utility will query all workspaces for new records.
- You can set the option `reportOnly` to true in order to perform a preview of what will be deleted. Set it back to false afterwards to get the matching records archived.
- In case you run the script on the next day, set the option `yesterday` to true to delete yesterday's items.

Note that additions within tabs will not be reset if the item itself is not getting archived (e.g. BOM and Grid changes).

Not only helpful for customer meetings and fairs, but also developments!

Perform the reset by running the following command in folder **demo-reset**:
`node reset`

```
*********************************** START ***********************************

 SETTINGS
-----------------------------------------------------------------------------
 Tenant                        : adsktsesvend
 User Name                     : sven.dickmans@autodesk.com
 Workspaces                    : 57,79,84
 Report only                   : false
 Requests Count                : 5
 Date                          : 2022-02-17

 Login to F3M tenant adsktsesvend successful

-----------------------------------------------------------------------------
 Start Processing Workspace #1: 57

-----------------------------------------------------------------------------
 Start Processing Workspace #2: 79
  > Archiving 0002 - Sub Assembly in workspace Vault Items and BOMs
  > Archiving 0001 - Parent Assembly in workspace Vault Items and BOMs
  > Archiving 0003 - Item in workspace Vault Items and BOMs

-----------------------------------------------------------------------------
 Start Processing Workspace #3: 84
  > Archiving CO-000364 - Initial Release in workspace Change Orders

*********************************** END ***********************************
```

options.js

```
// Options
exports.workspaces  = [57,79, 84];
exports.reportOnly  = true;
exports.yesterday   = false;
```

EXCEL EXPORT

Automate information extract to Excel using standard PLM reports

Export Data To Excel

Extract standard PLM reports to provide data for external systems

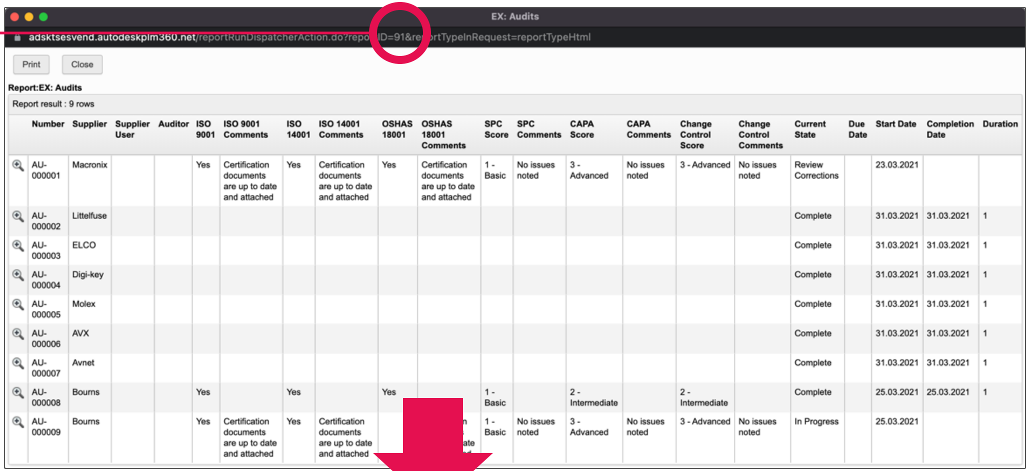
Your external system like PowerBI may be able to parse Excel data. So you can make use of PLM's Excel report feature to continuously extract data into Excel and provide it to the external system.

This solution requires a report definition accessible to the connect users. This report definition can be changed at any time, the next extraction will take the changes into account.

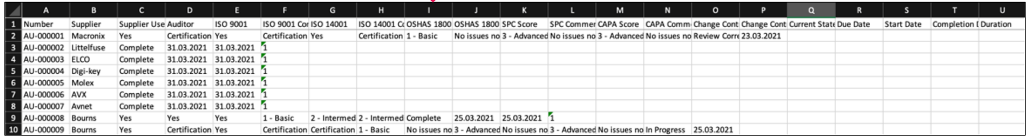
Perform the export by running the following command in folder **excel-export**, passing the id of the report to export:

```
node export 91
```

Use the Task Scheduler (or crontab on unix systems) to run this program automatically at defined intervals



Number	Supplier	Supplier User	Auditor	ISO 9001	ISO 9001 Comments	ISO 14001	ISO 14001 Comments	OSHAS 18001	OSHAS 18001 Comments	SPC Score	SPC Comments	CAPA Score	CAPA Comments	Change Control Score	Change Control Comments	Current State	Due Date	Start Date	Completion Date	Duration
AU-000001	Macronix			Yes	Certification documents are up to date and attached	Yes	Certification documents are up to date and attached	Yes	Certification documents are up to date and attached	1 - Basic	No issues noted	3 - Advanced	No issues noted	3 - Advanced	No issues noted	Review Corrections		23.03.2021		
AU-000002	Littelfuse															Complete		31.03.2021	31.03.2021	1
AU-000003	ELCO															Complete		31.03.2021	31.03.2021	1
AU-000004	Digi-key															Complete		31.03.2021	31.03.2021	1
AU-000005	Molex															Complete		31.03.2021	31.03.2021	1
AU-000006	AVX															Complete		31.03.2021	31.03.2021	1
AU-000007	Avnet															Complete		31.03.2021	31.03.2021	1
AU-000008	Bourns			Yes		Yes		Yes		1 - Basic		2 - Intermediate		2 - Intermediate		Complete		25.03.2021	25.03.2021	1
AU-000009	Bourns			Yes	Certification documents are up to date and attached	Yes	Certification documents are up to date and attached	[illegible]	[illegible]	1 - Basic	No issues noted	3 - Advanced	No issues noted	3 - Advanced	No issues noted	In Progress		25.03.2021		



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	Number	Supplier	Supplier Use	Auditor	ISO 9001	ISO 9001 Cor	ISO 14001	ISO 14001 Cc	OSHAS 1800	OSHAS 1800	SPC Score	SPC Commer	CAPA Score	CAPA Comm	Change Cont	Change Cont	Current State	Due Date	Start Date	Completion I	Duration
2	AU-000001	Macronix	Yes	Certification	Yes	Certification	Yes	Certification	1 - Basic	No issues no	3 - Advanced	No issues no	3 - Advanced	No issues no	Review Corre	23.03.2021					
3	AU-000002	Littelfuse	Complete	31.03.2021	31.03.2021	1															
4	AU-000003	ELCO	Complete	31.03.2021	31.03.2021	1															
5	AU-000004	Digi-key	Complete	31.03.2021	31.03.2021	1															
6	AU-000005	Molex	Complete	31.03.2021	31.03.2021	1															
7	AU-000006	AVX	Complete	31.03.2021	31.03.2021	1															
8	AU-000007	Avnet	Complete	31.03.2021	31.03.2021	1															
9	AU-000008	Bourns	Yes	Yes	Yes	1 - Basic	2 - Intermed	2 - Intermed	Complete	25.03.2021	25.03.2021	1									
10	AU-000009	Bourns	Yes	Certification	Yes	Certification	Certification	1 - Basic	No issues no	3 - Advanced	No issues no	3 - Advanced	No issues no	In Progress	25.03.2021						

E-MAIL LISTENER

Let PLM listen to your conversations to easily track information exchange

E-Mail Listener

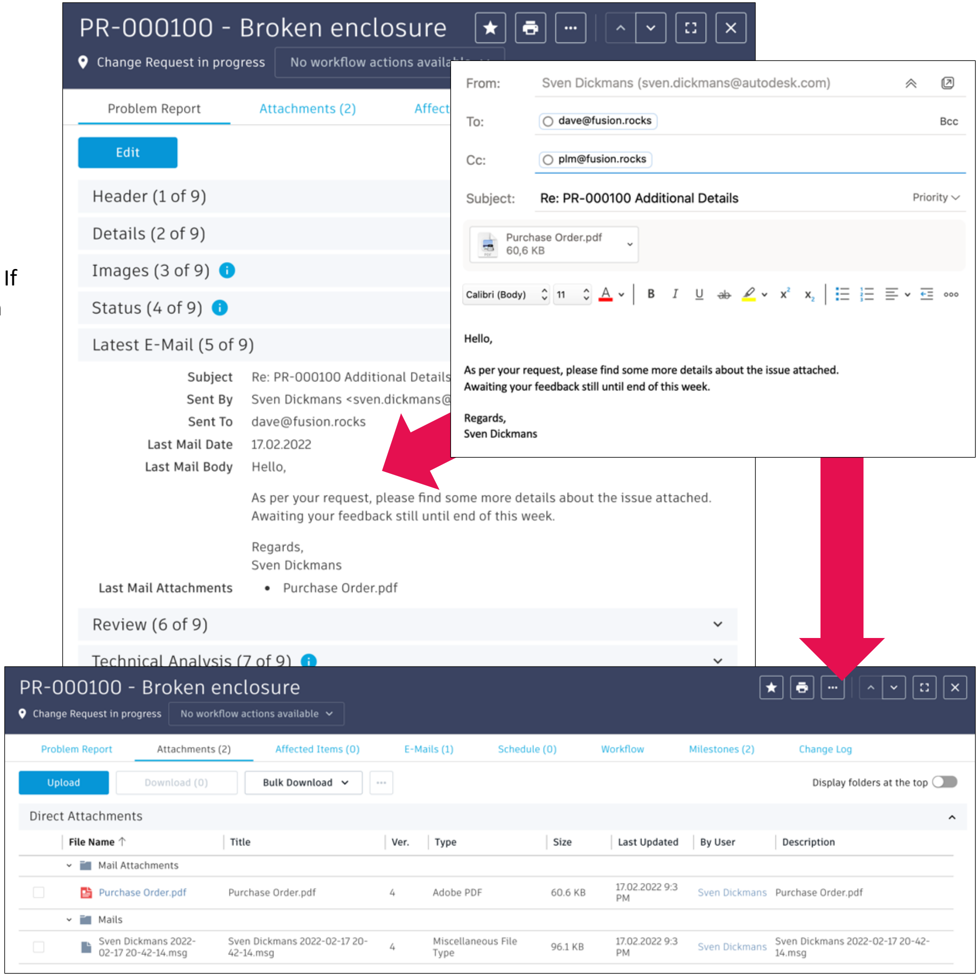
Introduction

Customers often want to capture mails being sent in context of given business processes within PLM. For ease of use, you can have PLM listen on a specific mail address. All mails being sent to this address (in to, cc or bcc) will be received by a program which will then try to relate the conversation to a business process in PLM. If the mail's subject contains the ID of a given process, the mail will be captured within PLM automatically.

The mail content will be stored in multiple ways:

- The latest mail details will be stored in the process' item details
- Mail messages will be uploaded as msg files to the attachments tab
- Mail attachments will be added to the process' attachments tab
- The process' grid is used to capture the history of all mails

The instructions on next slides show how to configure the capturing of mails in context of Problem Reports, based on the new tenant template. However, you can use the exact same feature with any workspace.



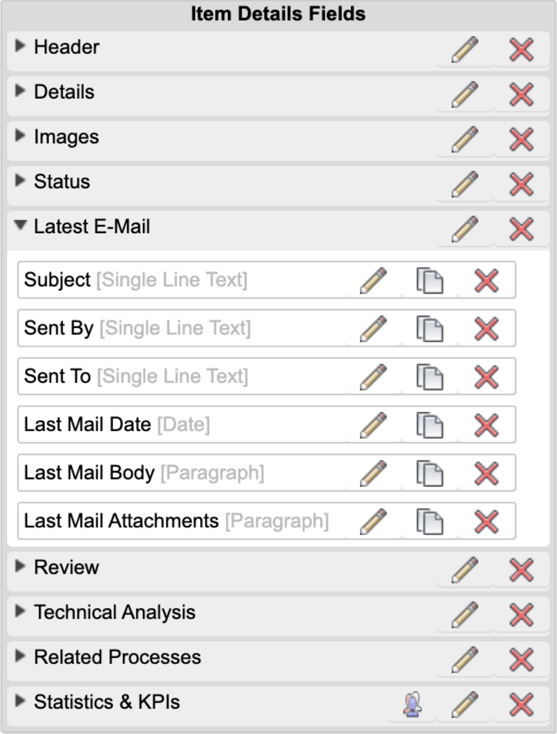
E-Mail Listener

Workspace Item Details Configuration

In order to store information about the latest mail of the conversation thread, a couple of fields must be added to the given business process' Item Details tab.

Add all the fields shown below. All fields must be placed in the same section. You may change the labels within your tenant, but you must not use different IDs for the given fields!

Label	ID	Type	Remarks	Editable
Subject	SUBJECT	Single Line Text	Length : 500	True
Sent By	SENT_BY	Single Line Text	Length : 200	True
Sent To	SENT_TO	Single Line Text	Length : 1000	True
Last Mail Date	LAST_MAIL_DATE	Date		True
Last Mail Body	LAST_MAIL_BODY	Paragraph	Length : 1000000	True
Last Mail Attachments	LAST_MAIL_ATTACHMENTS	Paragraph	Length : 1000000	True



E-Mail Listener

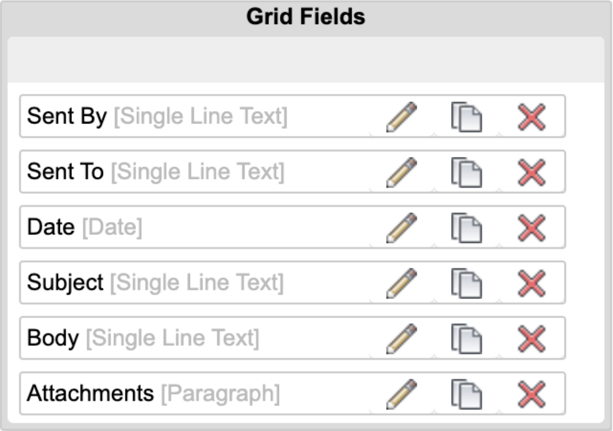
Workspace Grid Configuration

All mails that get captured will be listed in the record's grid hence the columns must be configured properly. Add all the columns shown below to the target workspace's grid.

The mail's body text will be truncated to only display a preview of the mail, a Single Line Text field is enough to store this preview. You may want to rename the grid tab in the given workspace (e.g. to E-Mails).

Make sure that the defined user account has write permission for the grid.

Label	ID	Type	Remarks	Editable
Sent By	SENT_BY	Single Line Text	Length : 200	True
Sent To	SENT_TO	Single Line Text	Length : 1000	True
Subject	SUBJECT	Single Line Text	Length : 500	True
Date	DATE	Date		True
Body	BODY	Single Line Text	Length : 500	True
Attachments	ATTACHMENTS	Paragraph	Length : 1000000	True



E-Mail Listener

Configure Settings & Run Program

Open file `email-listener/options.js` and set the options shown to the right to match your environment, including access details for an imap mail account.

Once the options are set, run the program from folder **email-listener**:

```
node listener
```

Note that this program will flag all messages as read in the mail account (if `markMailsRead` is set to true) to prevent multiple processing of messages. However, the messages will remain in the inbox.

Use the Task Scheduler (or crontab on unix systems) to run this program automatically at defined intervals

options.js

```js
// IMAP Account
exports.mailUser           = 'plm@fusion.rocks';
exports.mailPassword       = 'autodesk';
exports.mailHost           = 'imap.customer.com';
exports.markMailsRead      = false;

// Fusion 360 Manage schema
exports.workspaceId          = '82';
exports.numberPrefix         = 'PR-';
exports.numberDigits         = 6;
exports.folderMails          = 'Mails';
exports.folderAttachments    = 'Mail Attachments';
```

Option	Description
mailUser	IMAP mail user account
mailPassword	IMAP mail user password
mailHost	IMAP server
markMailsRead	Set this to false only for testing purposes; only if this is set to true, mails will be marked as read and not be processed multiple times
workspaceId	Id of workspaces to hold the related business processes (e.g Problem Reports)
numberPrefix	Prefix of the process IDs
numberDigits	Number of digits contained in the process IDs
folderMails	Name of folder that will be created to store the msg files
folderAttachments	Namoe of folder that will created to store the mail attachments

PDF EXPORT

Convert Advanced Print Views to PDF

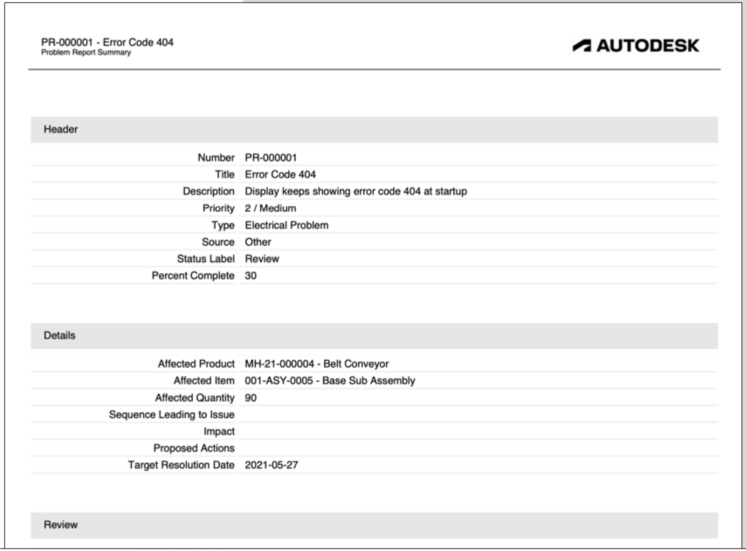
PDF Export

Introduction

Fusion Manage provides a high level of flexibility to configure Advanced Print Views of existing data. However, these views provide an online view of existing data only.

With this extension in folder `pdf-export`, these Advanced Print Views can be converted into PDF files to share them with other stakeholders and systems.

Creation of these PDF is performed by an external utility that makes use of the REST APIs of Fusion Manage. It is configurable and reuses the Advanced Print View definitions. The resulting PDF files also can be uploaded to the matching record in PLM if needed. The utility can be invoked for single items but can also batch process multiple items as well.


PR-000001 - Error Code 404
Problem Report Summary

AUTODESK

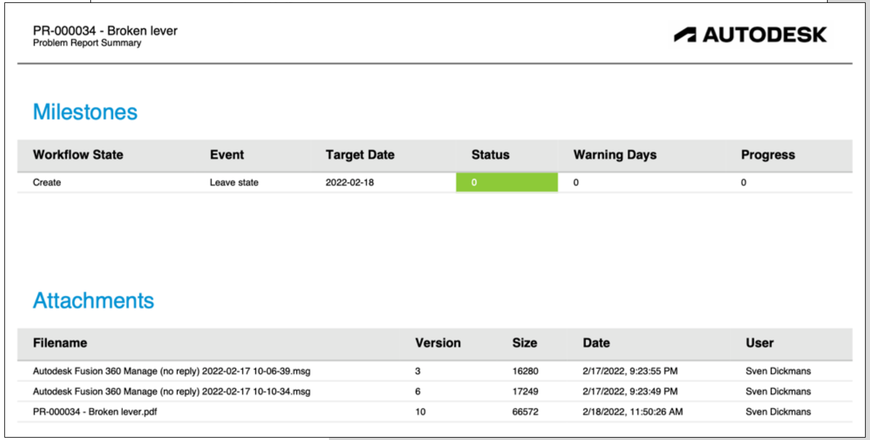
Header

Number	PR-000001
Title	Error Code 404
Description	Display keeps showing error code 404 at startup
Priority	2 / Medium
Type	Electrical Problem
Source	Other
Status Label	Review
Percent Complete	30

Details

Affected Product	MH-21-000004 - Belt Conveyor
Affected Item	001-ASY-0005 - Base Sub Assembly
Affected Quantity	90
Sequence Leading to Issue	
Impact	
Proposed Actions	
Target Resolution Date	2021-05-27

Review


PR-000034 - Broken lever
Problem Report Summary

AUTODESK

Milestones

Workflow State	Event	Target Date	Status	Warning Days	Progress
Create	Leave state	2022-02-18	0	0	0

Attachments

Filename	Version	Size	Date	User
Autodesk Fusion 360 Manage (no reply) 2022-02-17 10-06-39.msg	3	16280	2/17/2022, 9:23:55 PM	Sven Dickmans
Autodesk Fusion 360 Manage (no reply) 2022-02-17 10-10-34.msg	6	17249	2/17/2022, 9:23:49 PM	Sven Dickmans
PR-000034 - Broken lever.pdf	10	66572	2/18/2022, 11:50:26 AM	Sven Dickmans

PDF Export

Configure Settings

This utility will reuse an existing APV (Advanced Print View) definition, retrieve the required information in PLM and then save the result as PDF. In order to define the contents of your PDF report, you can define multiple html pages in folder `templates`.

This package already provides two template files in this folder: `empty.html` to build your own layouts and `problem-report.html` to have a reference that is properly configured.

In order to build your own template, create a copy of file **empty.html**. Open this file in an editor like Visual Studio Code. In line #108 replace 'Empty Template' with a good name for your report. Replace #117 with the 'source code' of your APV defined in PLM (see problem-report.html as reference). Do not modify the rest of this file.

In the next step, we will define which of these templates to use.

```
1   <html>
2
3       <head>
4
5           <style>…
100         </style>
101
102     </head>
103
104     <body>
105
106         <div id="pageHeader">
107             <div id="phDescriptor"></div>
108             <div id="phTitle">Empty Template</div>
109             <img id="phLogo" src="https://adsknews.au
110         </div>
111         <div id="pageFooter">
112             <div id="printDate"></div>
113             <div id="pageNumber"><span>Page {{page}}<
114         </div>
115
116
117     <!-- Paste your APV contents here -->
118
119
120     </body>
121 </html>
```

PDF Export

Edit file options.js to set general options

exports.template	Sets the template file to be used from within folder templates
exports.output	Folder where the output should be stored (relative path)
exports.uploadReport	Enable upload of PDFs to matching item in PLM
exports.uploadFolder	If report upload is enabled, let it be uploaded to a defined folder within the attachments tab
exports.transitionId	After PDF has been generated, the given item(s) can be transitioned to a next workflow status by entering the given internal transition ID here (you can retrieve this ID within the Workflow Editor)

```javascript
exports.template     = 'problem-report.html';
exports.output       = 'pdf';
exports.uploadReport = true;
exports.uploadFolder = '';
exports.wsId         = '82';
exports.dmsId        = '';
exports.status       = 'Review';
exports.transitionId = '';
exports.fieldId      = 'TITLE';
exports.fieldValue   = '';


exports.format     = {
    'border' : {
        'top'      : '0.5cm',    // default is
        'right'    : '0.8cm',
        'bottom'   : '0.5cm',
        'left'     : '0.8cm'
    },
    'format' : 'A4',
    'orientation': 'portrait',
    'header' : {
        'height' : '20mm'
    },
    'footer' : {
        'height' : '8mm'
    }
};
```

PDF Export

Edit file options.js to define records to process

exports.wsId	Set the workspaced id of all the item(s) to process (only one id can be defined)
exports.dmsId	If the utility should only process one item, provide its unique dmsId
exports.status	The utility can batch process multiple records and search for records being in a defined status
exports.fieldId exports.fieldValue	The utitlity also can batch process records identified by a certain value in a defined field (e.g. you can add a field 'genPDF' to be set by script to flag the items to be processed)

```
exports.template     = 'problem-report.html';
exports.output       = 'pdf';
exports.uploadReport = true;
exports.uploadFolder = '';
exports.wsId         = '82';
exports.dmsId        = '';
exports.status       = 'Review';
exports.transitionId = '';
exports.fieldId      = 'TITLE';
exports.fieldValue   = '';


exports.format      = {
    'border' : {
        'top'       : '0.5cm',    // default is
        'right'     : '0.8cm',
        'bottom'    : '0.5cm',
        'left'      : '0.8cm'
    },
    'format' : 'A4',
    'orientation': 'portrait',
    'header' : {
        'height' : '20mm'
    },
    'footer' : {
        'height' : '8mm'
    }
};
```

PDF Export

Let the utility process the defined record(s)

Once the options are set, run the program from folder **email-listener**:

```
node run
```

Please note that this solution only supports the following artifacts of Advanced Print Views:

- Item Details Sections (Image fields are not supported)
- Attachments
- Grid
- Change Log
- Milestones
- Flat BOM
- Managed Items

```
[dickmas@C02YF1ZSJGH6 render-pdf % node run

    *************************** START *****************************
             run.js version 1.0 of September 27, 2021
    ***************************************************************


     SETTINGS
    ---------------------------------------------------------------
     Tenant          : adsktsesvend
     User Name       : sven.dickmans@autodesk.com
     Template        : problem-report.html
     Output folder   : pdf
     Upload Report   : true
     Upload Folder   :
     Workspace ID    : 82
     DMS ID          :
     Field ID        : TITLE
     Field Value     :
     WFL Status      : Review
     Transition ID   :

     Login to tenant adsktsesvend successful

     Getting tab labels
     Searching for records in workspace 82 in status Review
     Records found : 1

     Processing record 1 of 1
    ---------------------------------------------------------------
     > Requesting Item Details data
     > Requesting Attachments data
     > Requesting Milestones data
     > Requesting Change Log data
     > File saved as PR-000001 - Error Code 404.pdf
     > Getting list of attachments
     > Checking list of attachments
     > Creating new version as file exists already
     > Preparing file upload to S3
     > Uploading file now
     > Setting attachment status in PLM

     Finished processing 1 of 1 records

    **************************** END ******************************
```

UPCHAIN CONNECTOR

Exchange Project and Item Master data with Upchain

Disclaimer

Connector is provided as is without support

This solution is provided as is and there should be no assumption that updates, patches, bug fixes and / or new features will be delivered to you. There will also be ***no support*** *available either through Autodesk Support channels or by the Autodesk Pre-sales Technical Team.*

Please feel free to take the source code and ideas from this tool to develop your own production ready tool. This package contains native source code on purpose so that you can change or reuse it as you like.

Mind the limitations of this connector POC:

- *This is not and will not become the standard Autodesk solution offering*
- *It cannot perform updates of items in PLM, but only perform the initial upload*
- *The End Items will not contain all information due to APIs being used. Only elements within the BOM will have all information (like the file name).*
- *This solution does not scale*
- *Item sync is performed per project level which helps for demos. In production environments, it should rather be based on release activity.*
- *The sync operations are invoked by external processing, triggering a couple of requests. To make the solution more robust, it should make use of webhooks instead.*

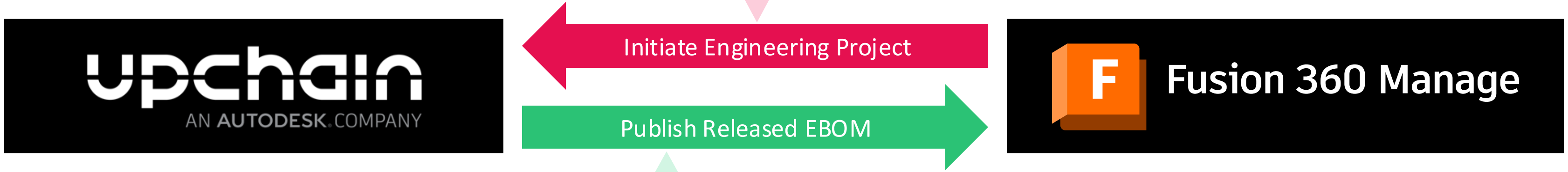
Upchain Connector

Extend rich Cloud PDM with best-in-class Cloud PLM

Folder `upchain-connector` contains utilities to connect a Fusion Manage tenant to an Upchain tenant, supporting two major use cases:

Upon approval of a NPI project in Fusion Manage, the integration creates the matching project in Upchain. It stores a link for quick access in the Fusion Manage Project's Item Details.

Run the following command to initiate this mechanism:
`run 01-publish-npi-to-upchain`



Upon release of End Items in Upchain, the integration copies them to Fusion Manage including their Bill of Materials, preview images and attachments. These items will be added to the BOM tab of the related Fusion Manage project and provide a link to access the given counterpart item in Upchain.

Run the following command to initiate this mechanism:
`run 02-send-items-to-f3m`

Make use of this Proof-of-concept of a connector to learn about how to integrate each system by using the given REST API. This connector is also useful for sales engagements for Fusion Manage or Upchain where you now can show the integration with other systems (i.e. as placeholder of an ERP).

Limitation: This early POC can only perform the initial upload of designs from Upchain to Fusion Manage.
Follow-up item transfers will fail if the given item has been copied before already.

Upchain Connector Setup

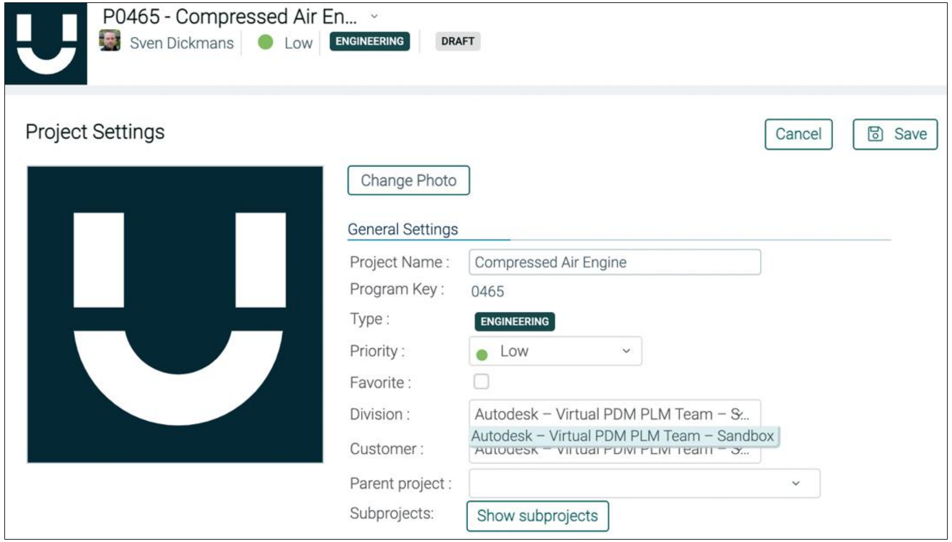
Step #1: Get Upchain Client ID & Secret

The integration will connect to your Upchain tenant using the REST API

This requires an Upchain Client ID and Client Secret to authenticate the API calls

If you do not have such an ID and secret yet (they are different from your APS Client ID & Client Secret), create a support ticket to request them for your tenant

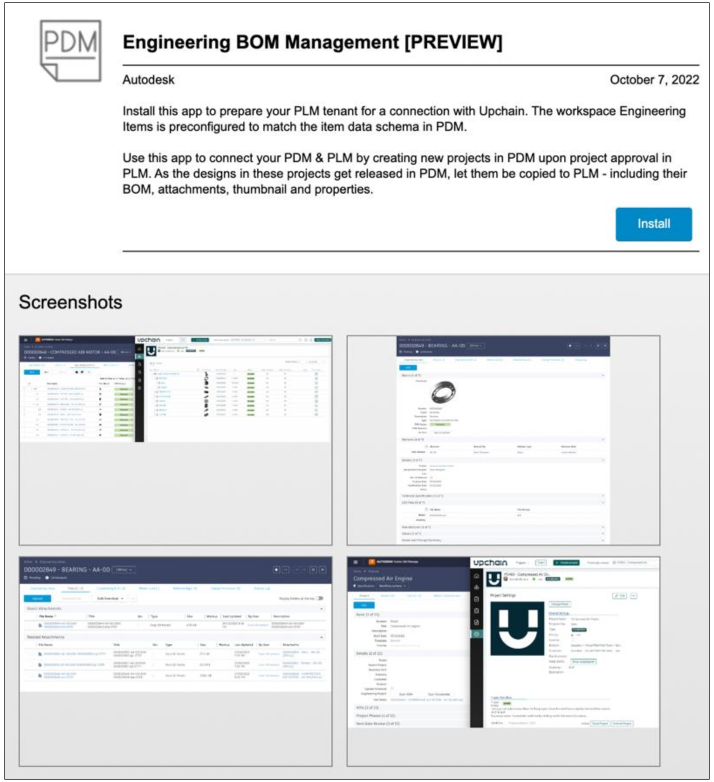
As part of this request, you will have to provide your Upchain tenant‘s name.



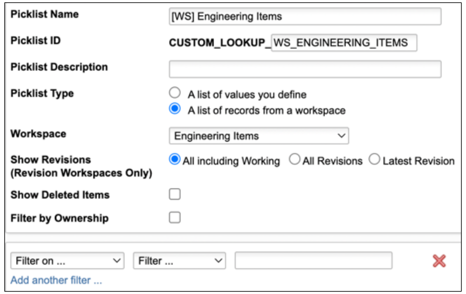
You can find this tenant name in the Division field in the settings of any project within Upchain.

Upchain Connector Setup

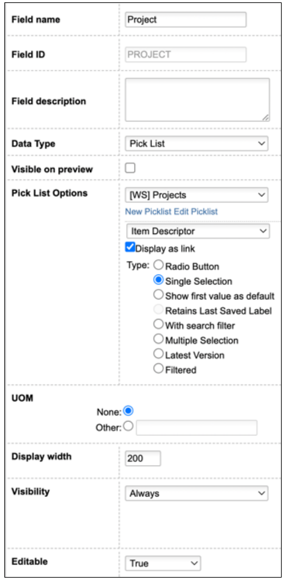
Step #2 : Download Engineering BOM Management app from App Store



Download the given app from the store and perform the following tasks afterwards:

- Grant the given permission for this workspace to the F3M connect user defined in `settings.js` to authorize creation and update of data.
- Change the field **Project** in workspace **Engineering Items** to be of type picklist, linking to the standard Project workspace (see image to the right)
- 

Create a new picklist as shown to the left to enable links to this new workspace

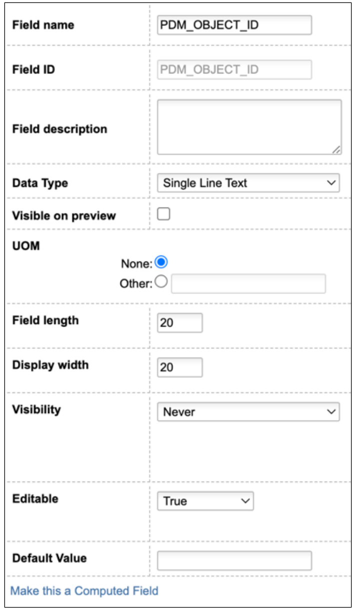


- Engineering Items are revision controlled. Add this workspace to the Managed Items of your **Change Order** processes using the Relationships Manager.
- Do the same for Quick Release processes (optional)
- You may want to move the new workspace **Engineering Items** to the main menu's category **Product Development**

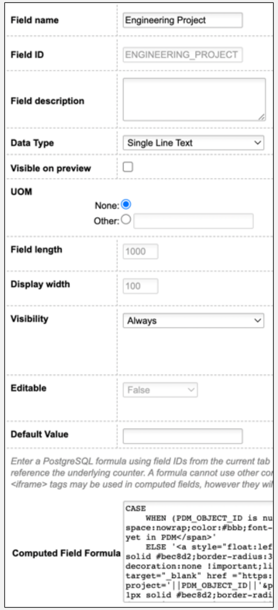
Upchain Connector Setup

Step #3: Extend workspace Projects

Add the field **PDM_OBJECT_ID** to your Projects workspace as Single Line Text with a length of 20. Set it editable and invisible.

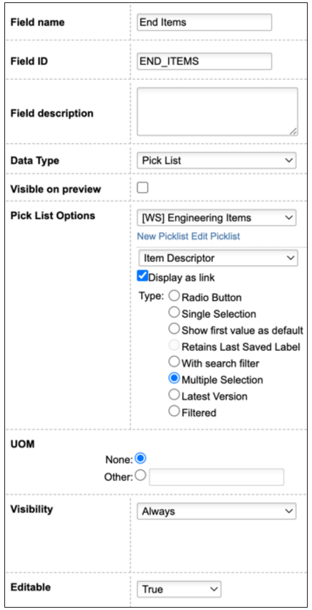


Add a computed field **Engineering Project** with the formula shown below. This will render the buttons to open the related Upchain project data after the sync.

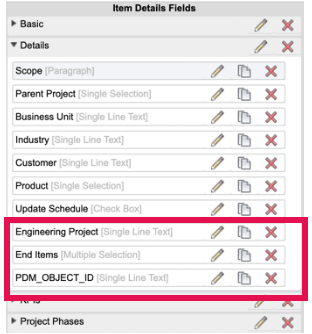



```
CASE
    WHEN (PDM_OBJECT_ID is null)
THEN '<span style="white-space:nowrap;color:#bbb;font-style:italic;">Engineering Project does not exist yet in PDM</span>'
    ELSE '<a style="float:left;margin-right:10px;color: #0a131c;border: 1px solid #bec8d2;border-radius:3px;padding:2px 20px;text-align:center;text-decoration:none !important;line-height:20px;white-space:nowrap;width:160px;" target="_blank" href="https://live.upchain.net/?project='||PDM_OBJECT_ID||'&page=4">Open BOM</a><a style="color: #0a131c;border: 1px solid #bec8d2;border-radius:3px;padding:2px 20px;text-align:center;text-decoration:none !important;line-height:20px;white-space:nowrap;width:160px;" target="_blank" href="https://live.upchain.net/?project='||PDM_OBJECT_ID||'&page=3">Open Documents</a>'
END
```

Add the field **End Items** as editable multiple linking pick list field using the new pick list **[WS] Engineering Items**



Place these fields within the same section of our project item details page



Upchain Connector Setup

Final Step: Set connection & schema settings

options.js

TS F3M Extensions > upchain-connector > options.js > ...

```
1  // UPCHAIN CONNECTION SETTINGS
2  // ------------------------------------------------------------------------------------------
3  exports.upcClientId        = '';                                   // Upchain Client ID
4  exports.upcClientSecret    = '';                                   // Upchain Client Secret
5  exports.upcTenant          = '';                                   // Upchain Tenant Name
6  exports.upcUsername        = 'sven.dickmans@autodesk.com';         // Upchain Username
7  exports.upcPassword        = '';                                   // Password of Upchain user
8
9
10 // UPCHAIN SCHEMA SETTINGS
11 // ------------------------------------------------------------------------------------------
12 exports.projectType         = 'Engineering';        // Type of new projects to be created in Upchain
13 exports.workflowName        = 'Project activation'; // Workflow to use for new projects
14 exports.itemReleasedStatus  = 'Released';           // Status of items to be copied
15
16
17 // FUSION 360 MANAGE SCHEMA SETTINGS
18 // ------------------------------------------------------------------------------------------
19 exports.wsIdItems           = '110';           // Engineering Items Workspace ID
20 exports.wsIdProjects        = '86';            // Projects Workspace ID
21 exports.statusProjects      = 'Specification'; // Project status triggering the UPC project creation
22
23
24 // GENERAL SETTINGS
25 // ------------------------------------------------------------------------------------------
26 exports.folderDownloads    = 'Downloads';    // Local folder being used to download/upload files to F3M
27
28
29 // PROPERTY MAPPING
30 // ------------------------------------------------------------------------------------------
31 exports.mappings = [...
79 ];
80
```

Open file `options.js` and provide the required details to match to your environment

If you are using a new standard tenant, you should only have to set lines #3 through #7 – and to provide the Workspace ID of the **Engineering Items** workspace in line #19

In case you do not know your Upchain tenant's name, have a look at the settings of any project in Upchain and have a look at the **Division** property.

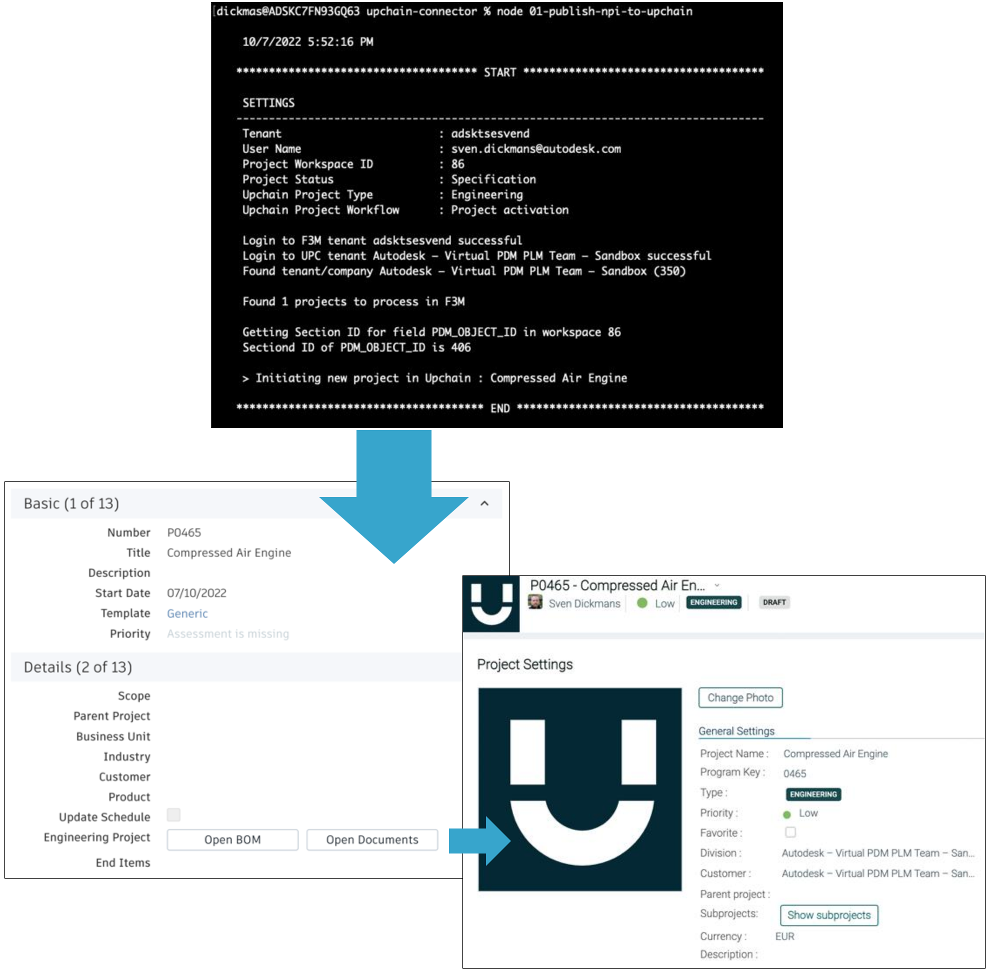
Do not modify the mappings at bottom of this file, they are aligned already with standard Upchain tenants and the **Engineering Items** workspace

Upchain Connector Usage

Let the integration create Upchain projects

1. Create a new project in Fusion Manage
2. Submit the project to status Specification (according to line #21 in options.js)
3. In a command prompt, navigate to folder `upchain-connector` of this package
4. Invoke the project creating in UPC by running `node 01-publish-npi-to-upchain.js`
5. In case of success, the project in F3M will now provide buttons to open the given project in Upchain – which will share the number and title of your project.

The connector will store the Upchain project's id in the hidden field PDM_OBJECT_ID. Therefore, this project will be ignored in the next run of this program as it not only filters project by status, but also for projects not having a PDM_OBJECT_ID set.



Upchain Connector Usage

Upload released engineering data to PLM

1. Activate the new project to make it accessible from the CAD Plugin

2. Use the CAD Plugin to upload a design to the new project
   (as end item)

3. Release this given design using a **Change Request**

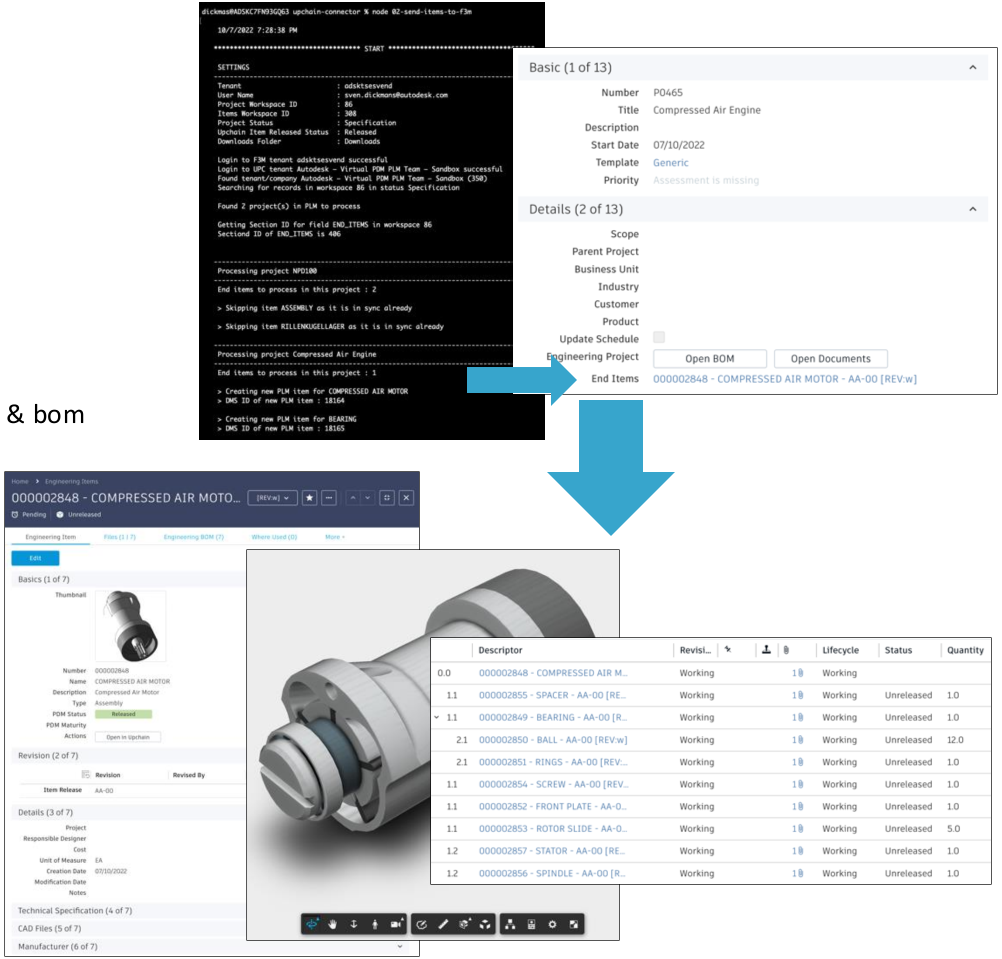
4. Once the CR is complete and the design is released, Invoke the item & bom upload by running
   `node 02-send-items-to-f3m.js`

5. Once complete, you can find the End Item(s)
   in the given Item Details field of your project

6. When you click the item, you will find the Upchain
   item with preview, status, viewable (STEP) and BOM

7. You can click the action button to open the
   matching item in Upchain

The integration will locate the items to be copied by using the projects: It browses all F3M projects which have a match in UPC and check for End Items of these projects in Upchain. If these End Items are in Released state, their latest version will be copied.



Upchain Connector

Process Flow for Use Case #1: Project Creation

upchain
AN AUTODESK. COMPANY

node JS

Fusion 360 Manage

Get Relevant Projects

GET

Query for projects in defined status not having an Upchain ID yet
Include details like Number, Title and Description

For each project ...

Create new Project

POST

Use details of given Fusion Manage project to create a new matching project in Upchain (Number is used as Unique Identifer, Titel becomes the Name and description is matched)

Update Project

PATCH

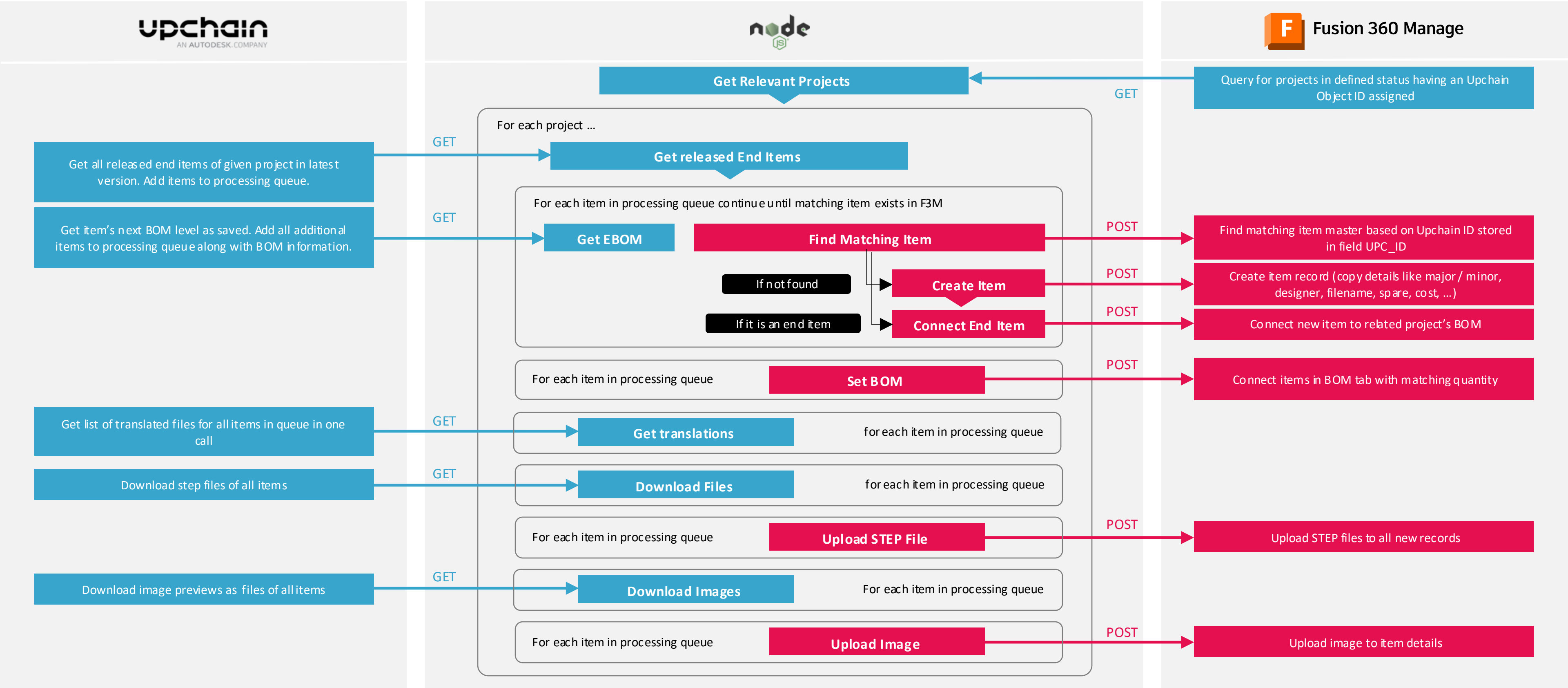
Store Upchain's Object ID in defined property of the matching project

A computed field now provides access to the given projects once the upchain object ID is available

Engineering Data | Open BOM | Open Documents

Upchain Connector

Process Flow for Use Case #2: End Item Sync



Projects - Fusion 360® Manag… | Upchain

adsktsesvend.autodeskplm360.net/plm/workspaces/86/items

AUTODESK® FUSION 360® MANAGE

Home > Projects

Compact View | All Projects (11)

Priority	ID	Title	Progress ↓	Days to next Gate	Customer	Project Stat…	Total Actual Effort	Planned Completion Gate 5	Expected Completio…
★★★★	0001	Steering Wheel	G1 G2 G3 G4 G5		BAC	S R B R	400	14.06.2021	
★★★★★	0067	Blower Unit Variant	G1 G2 G3 G4 G5	-133		S R B R	0	07.12.2021	
★★★★	0005	Multi Purpose Conveyer Drier	G1 G2 G3 G4 G5	-294	Alistair Farms	S R B R	98	29.07.2021	
★★★★	0101	New Order	G1 G2 G3 G4 G5	-84		S R B R	0	26.01.2022	21.02.2022
★★	0265	NPI GS3	G1 G2 G3 G4 G5	12		S R B R	8	23.06.2022	
★	0167	Smart Modular Sensors	G1 G2 G3 G4 G5	-68		S R B R	220	05.04.2022	05.04.2022
★★★★	0035	Ember Printer	G1 G2 G3 G4 G5	-295	In House	S R B R	32	09.08.2021	
★★★	0199	New Product Development	G1 G2 G3 G4 G5	-56		S R B R	10	18.04.2022	18.04.2022
★★	0133	Torque Motor	G1 G2 G3 G4 G5	-91		S R B R	9	03.03.2022	
★★	0004	50 Litre 3HP Industrial Air Compressor (230V)	G1 G2 G3 G4 G5	-322	Commercial	S R B R	116	15.07.2021	15.07.2021
★★★	0003	70 Litre 4HP Industrial Air Compressor (230V)	G1 G2 G3 G4 G5		Commercial	S R B R	120	14.07.2021	

11 out of **11** total records in this view being displayed.