

Revit to IFC Scheduler – User Guide



AUTODESK
FORGE®

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1 Introduction

1.1 Purpose

This document provides usage and configuration instructions for the code sample, Revit to IFC Scheduler, developed by the Autodesk Consulting team and maintained by the Autodesk Forge Help team.

1.2 Overview

This code sample demonstrates the usage of Model Derivative API, which allows you to convert a Revit `.rvt` file stored in BIM 360 Docs to `.ifc` format, on a scheduled or ad-hoc basis. It uses the Forge Model Derivative API to do so.

2 Usage

2.1 Login

When accessing the application, you will be asked to login using your Autodesk account. There are three levels of users of the application:

1. Application Admins:
 - a. These users may enable or disable BIM 360 Accounts, adjust account-level settings, and define default IFC Settings Set Names
 - b. These users are assigned in the Azure App Service Configuration Settings for online deployments, or `appsettings.Development.json` for local deployments.
2. BIM 360 Account Admins:
 - a. These users may see all projects in accounts of which they are admins, and of which have been activated by the Application Admin.
 - b. These users are assigned in BIM 360.
3. BIM 360 Project Admins:
 - a. These users may see all projects to which they have been given access, which is in accounts that have been activated by the Application Admin.
 - b. These users are assigned in BIM 360.

If the user logs in with an account that does not have the necessary access, they will see no data.

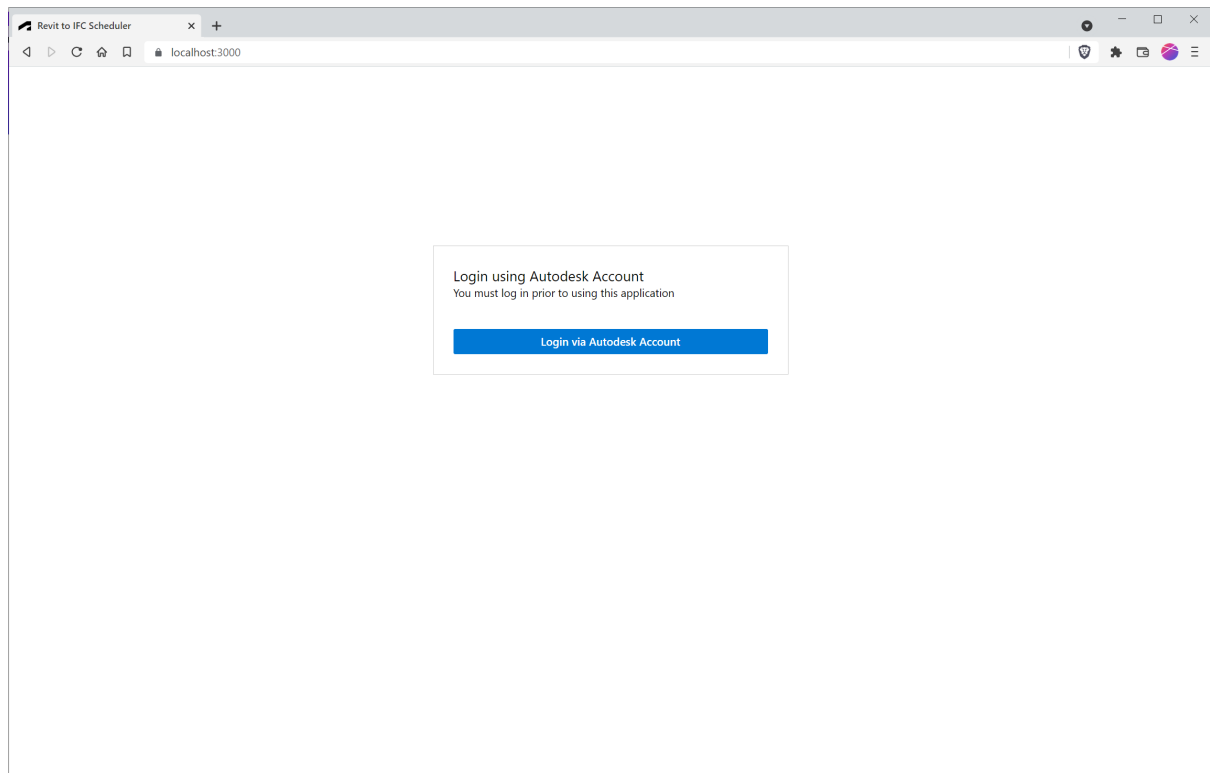


Figure 1 Login Page

2.2 IFC Settings Set Names

When creating an IFC file, Revit uses a group of predefined settings to control the specific IFC version, file type, phase to export, and more. These settings are called IFC Settings Sets. Revit provides nine default IFC Settings Sets by default, and Revit users can copy and edit these sets.

The Forge Model Derivative service will convert Revit files into IFC files using a named IFC Settings Set if provided or will use the default setting in the file if no name is specified. In addition, application Admins may predefine commonly used names on the Settings page, which will then show in all places throughout the application where input is required.

See [IFC Export Setup Options | Autodesk Knowledge Network](#) to learn more about IFC Settings Sets. Here is the name list of Revit built-in IFC export settings (since Revit 2017) of Forge Model Derivative service:

- IFC2x3 Coordination View 2.0
- IFC2x3 Coordination View
- IFC2x3 GSA Concept Design BIM 2010
- IFC2x3 Basic FM Handover View
- IFC2x2 Coordination View
- IFC2x2 Singapore BCA e-Plan Check
- IFC2x3 Extended FM Handover View
- IFC4 Reference View
- IFC4 Design Transfer View

2.2.1 Adding Default IFC Settings Set Names

1. Navigate to the 'Settings' page, via the link at the top of the page
2. Click 'Add IFC Settings Set Name'
3. Type in a name, and click 'Create Set Name'

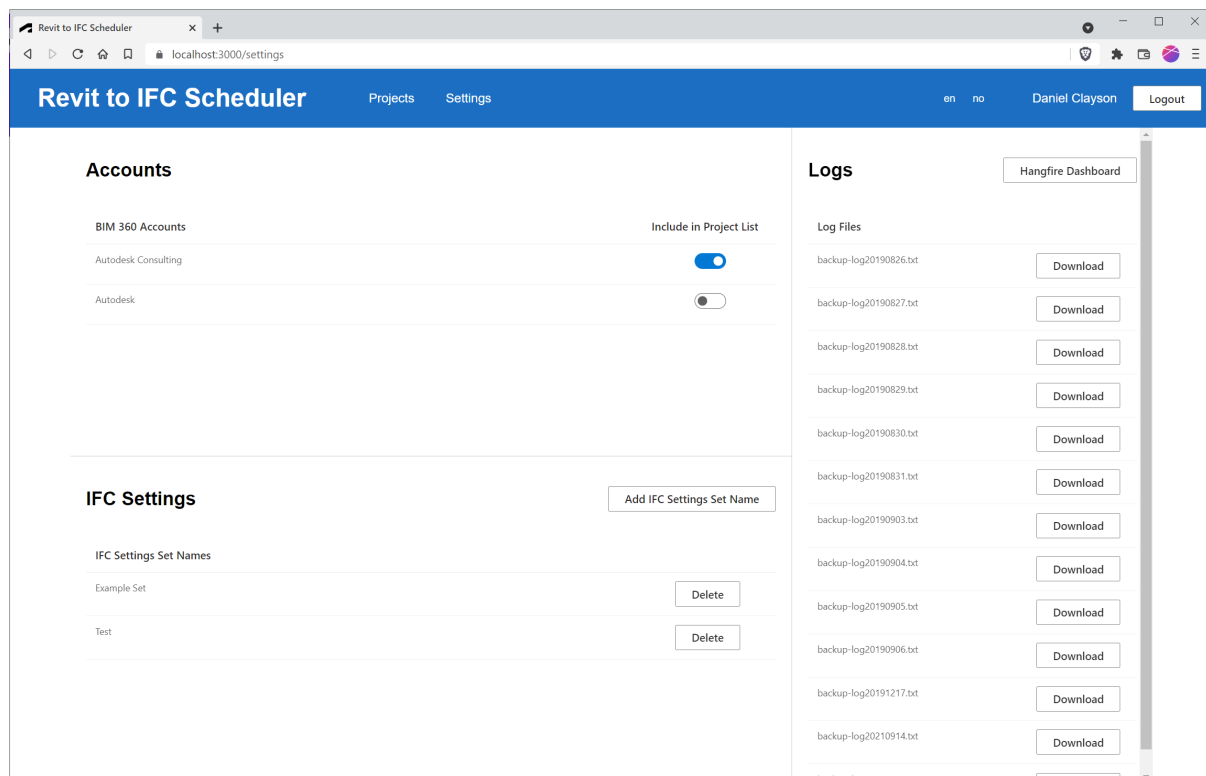


Figure 2 Settings Page

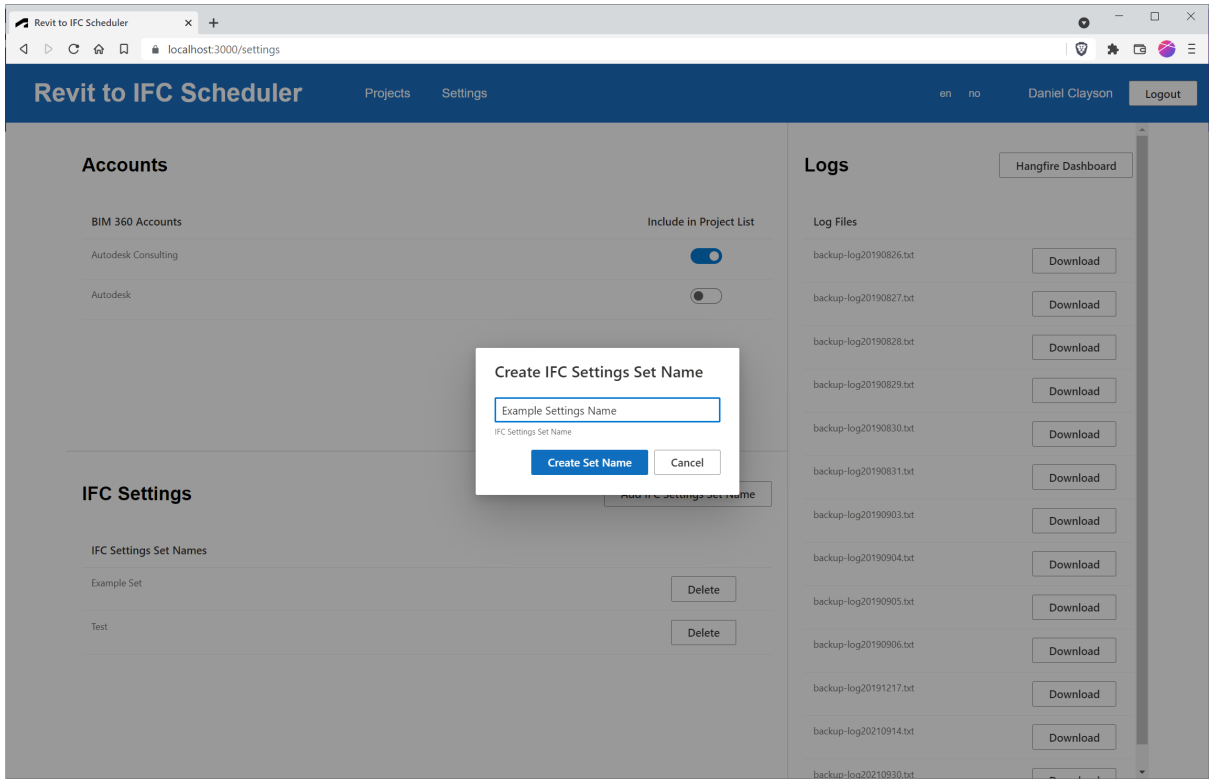


Figure 3 Adding an IFC Settings Set Name

2.2.2 Removing Default IFC Settings Set Names

1. Navigate to the 'Settings' page, via the link at the top of the page
2. Click 'Delete' next to the desired IFC Settings Set Name
3. Click 'Delete Set Name'

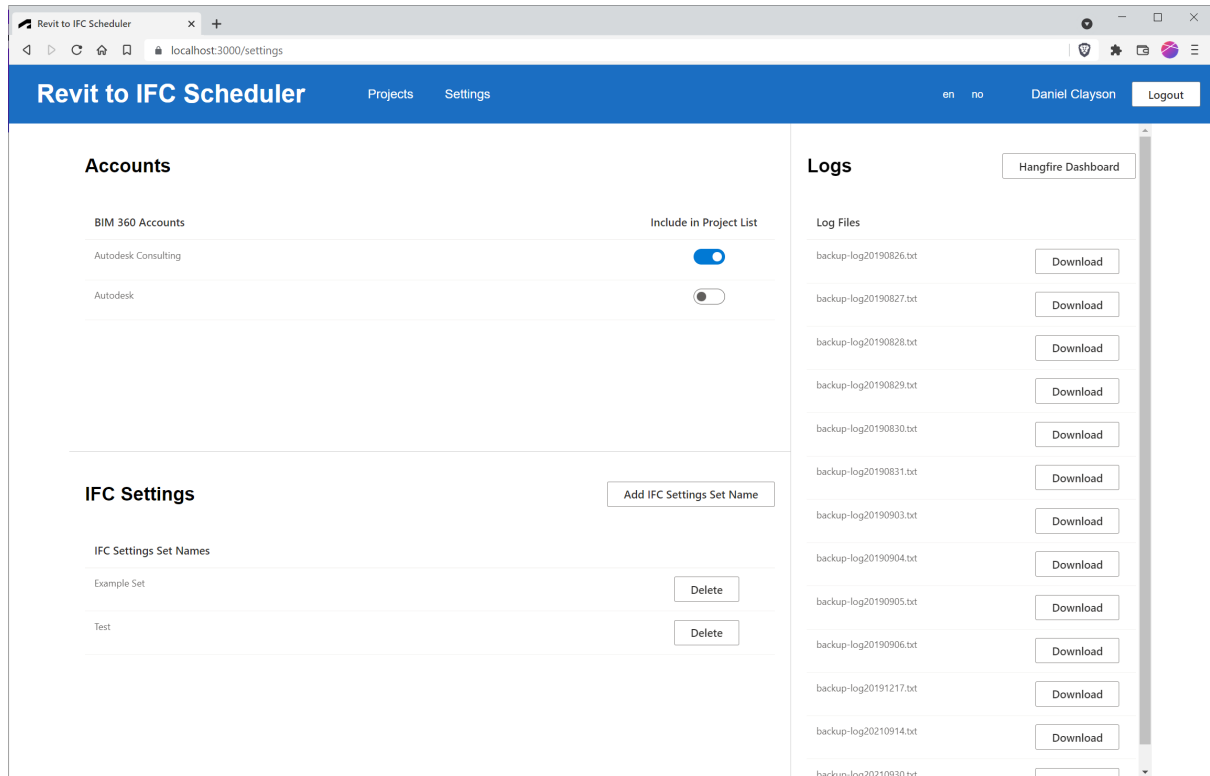


Figure 4 Settings Page

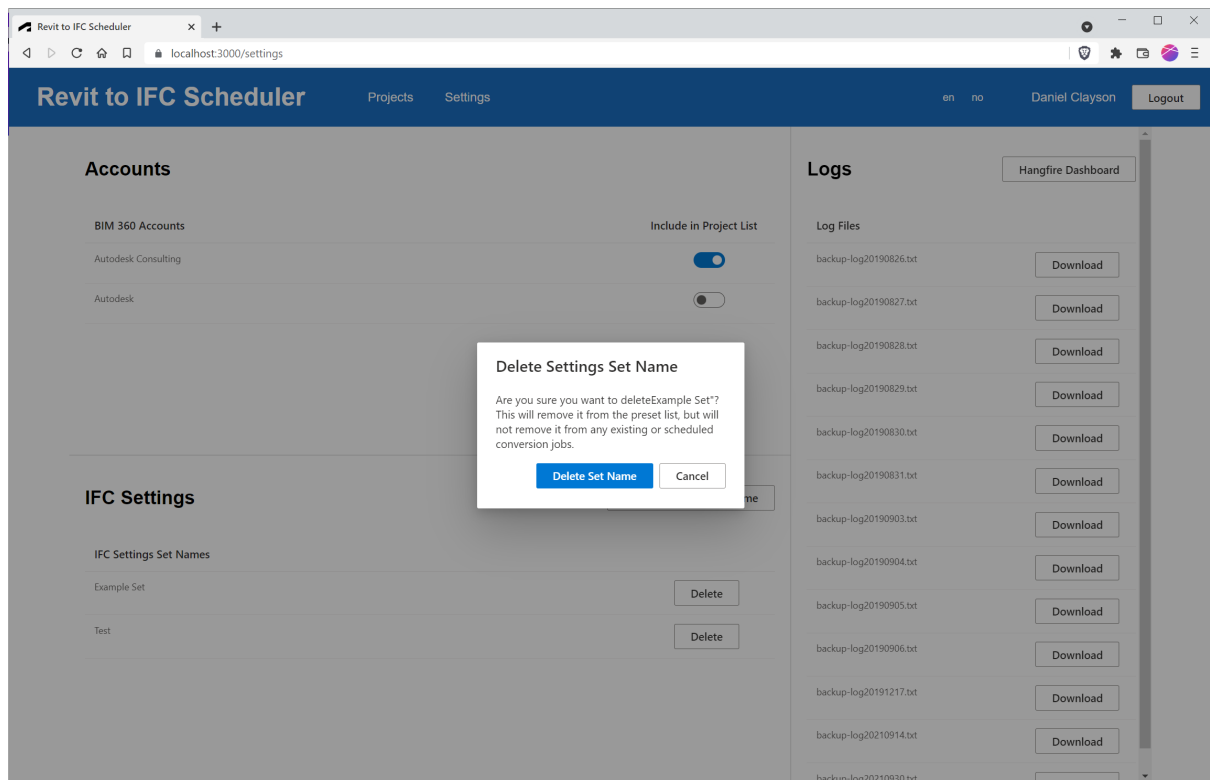


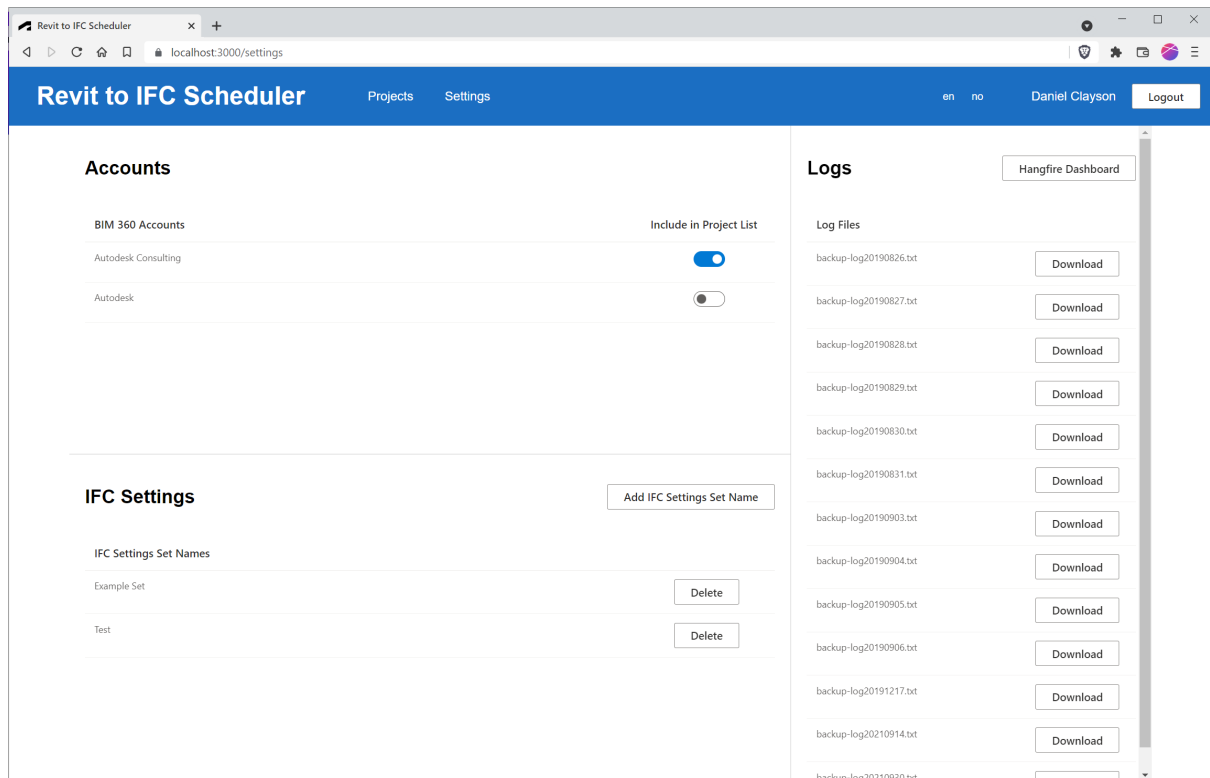
Figure 5 Delete Set Name Popup

2.3 BIM 360 Accounts

2.3.1 Enabling a BIM 360 Account

To enable a BIM 360 Account, an Application Admin must do the following:

1. Click on 'Settings' on the starting page
2. Toggle the 'Include in Project List' switch in the 'Accounts' list.



The screenshot displays the 'Revit to IFC Scheduler' application interface. The top navigation bar includes 'Projects' and 'Settings' tabs, with the 'Settings' tab currently active. The user is logged in as 'Daniel Clayson' and can click 'Logout'. The main content area is divided into two columns. The left column contains 'Accounts' and 'IFC Settings' sections. The 'Accounts' section, titled 'BIM 360 Accounts', lists 'Autodesk Consulting' (with a toggle switch turned on) and 'Autodesk' (with a toggle switch turned off). The 'IFC Settings' section has an 'Add IFC Settings Set Name' button and a table with two rows: 'Example Set' and 'Test', each with a 'Delete' button. The right column is titled 'Logs' and features a 'Hangfire Dashboard' button. Below it, the 'Log Files' section lists 15 backup log files with dates ranging from 20190826 to 20210930, each accompanied by a 'Download' button.

Accounts	
BIM 360 Accounts	
Autodesk Consulting	<input checked="" type="checkbox"/>
Autodesk	<input type="checkbox"/>

IFC Settings	
IFC Settings Set Names	
Example Set	Delete
Test	Delete

Logs	
Hangfire Dashboard	
Log Files	
backup-log20190826.txt	Download
backup-log20190827.txt	Download
backup-log20190828.txt	Download
backup-log20190829.txt	Download
backup-log20190830.txt	Download
backup-log20190831.txt	Download
backup-log20190903.txt	Download
backup-log20190904.txt	Download
backup-log20190905.txt	Download
backup-log20190906.txt	Download
backup-log20191217.txt	Download
backup-log20210914.txt	Download
backup-log20210930.txt	Download

Figure 6 Settings Page

2.4 BIM 360 Projects

2.4.1 Viewing the Project List

Account and Project Admins may see the list of all projects to which they have access by clicking the Projects link at the top of the page.

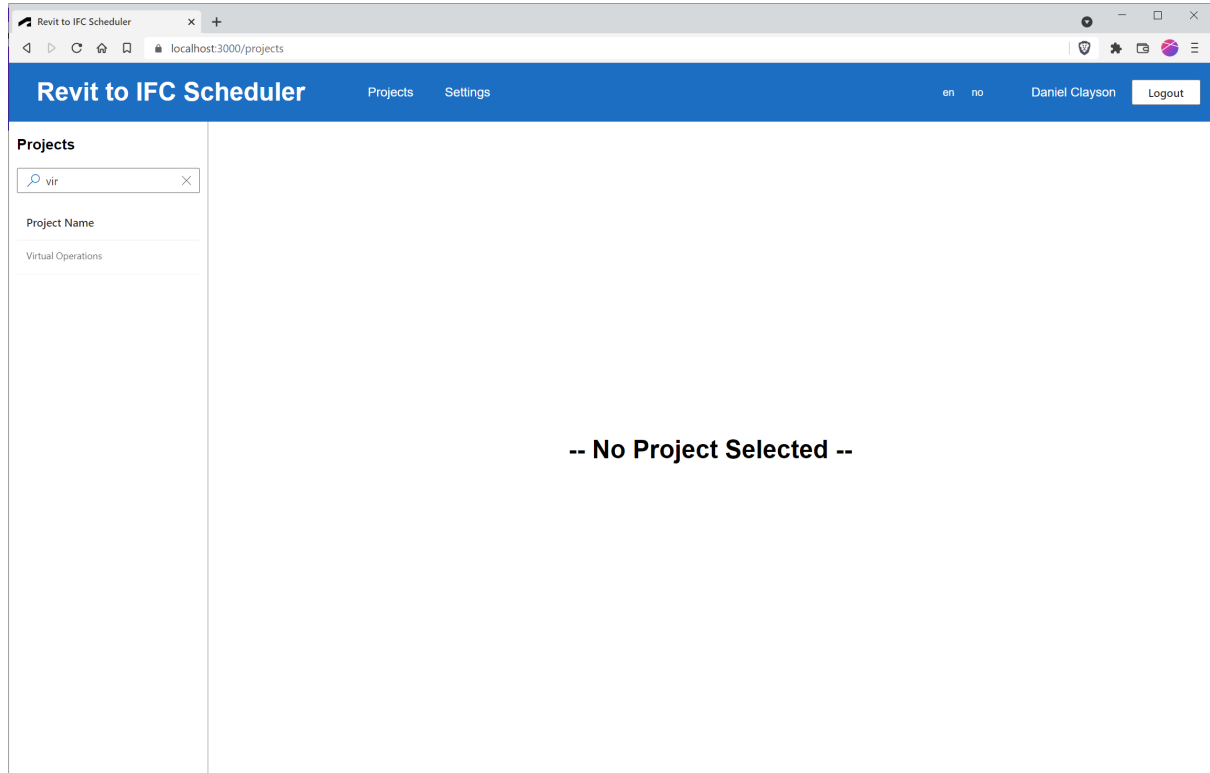


Figure 7 Projects page

2.4.2 View a Single Project

Both Account and Project Admins may view projects to which they have access by selecting the desired project from the Project List on the left-hand side.

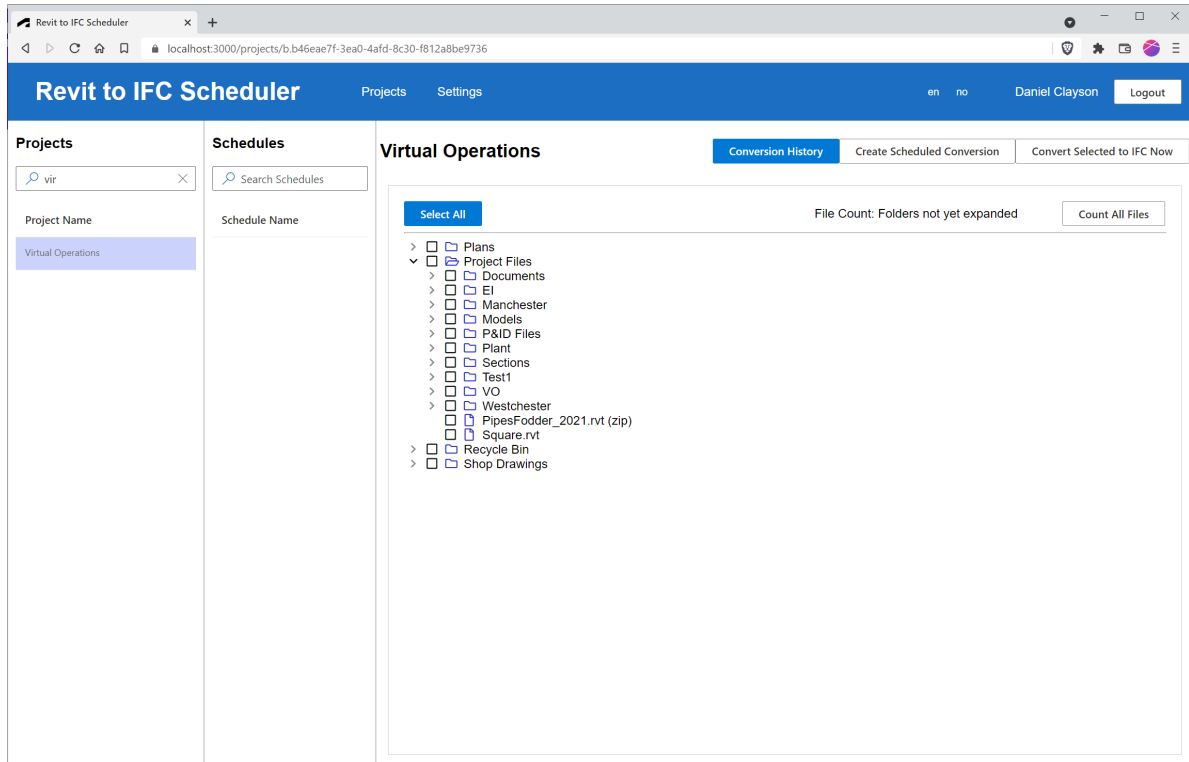


Figure 8 Single Project Page

2.5 Conversions

The primary application of this tool is to convert Revit models to IFC using the Forge Model Derivative API. Note that this action has a token cost associated with it, as described at <https://forge.autodesk.com/pricing>

If a model has not changed since the last conversion to IFC, it will not be converted again.

2.5.1 Ad-hoc Conversions

A single model, or multiple models, may be converted to IFC on-demand:

1. Select the files or folders to be converted in the folder tree
2. Press the 'Convert Selected to IFC Now' button.
3. Choose or type the desired IFC Settings Set Name. If left blank or the file does not have the selected set name, the Model Derivative system will use the default settings in that individual Revit file.

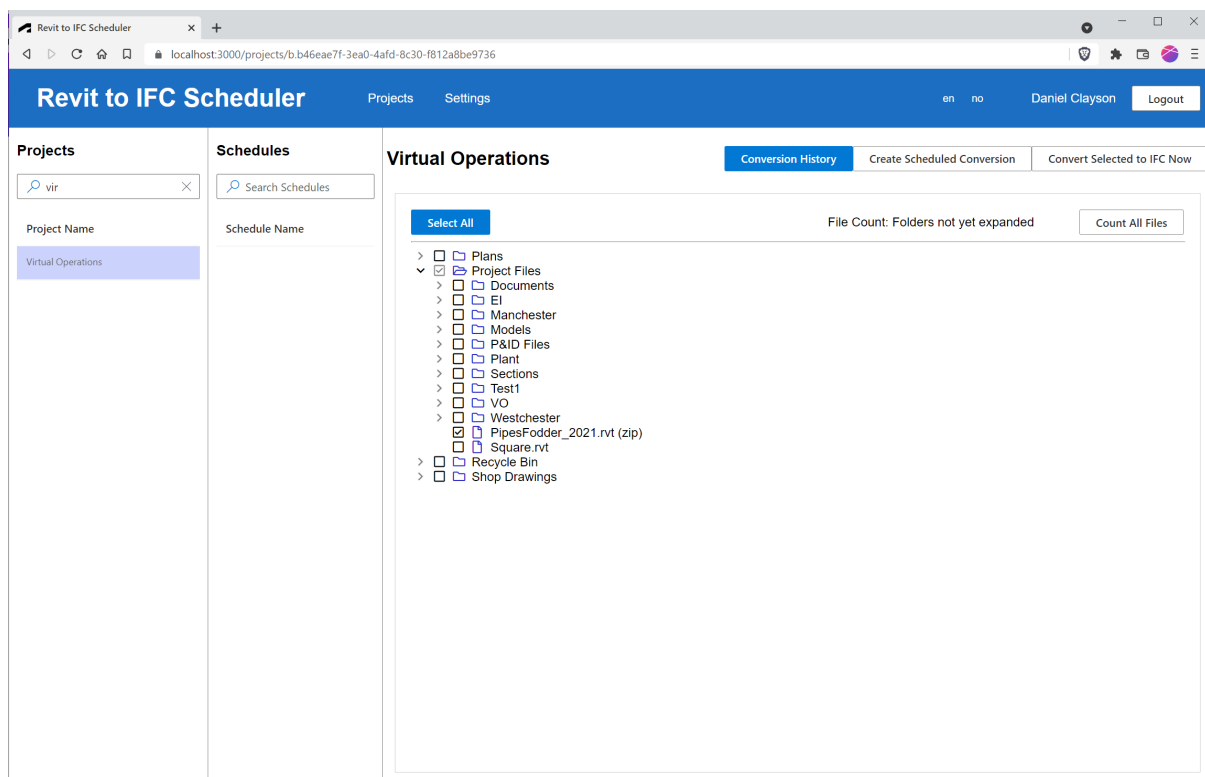


Figure 9 Project Tree View

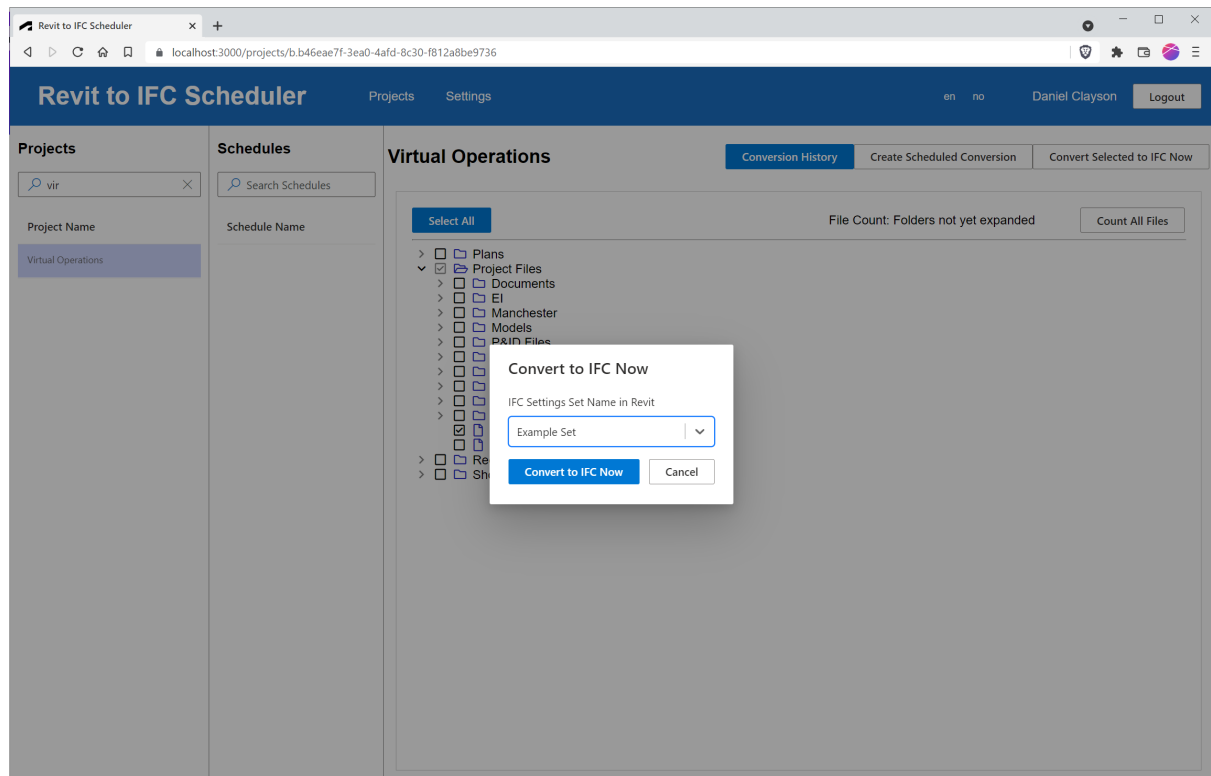


Figure 10 'Convert Selected to IFC Now' popup

2.5.2 Create new Scheduled Conversion

A single model, or multiple models, may be scheduled to convert on a user-defined schedule.

1. Select the files and folders to be converted from the folder tree.
2. Press the 'Create Scheduled Conversion' button.
3. Edit the Schedule Name
4. Choose from the 'IFC Settings Set Name in Revit' dropdown, or type in a custom value.
5. Set the schedule as desired.
6. Press 'Save Changes'

Note. If a folder is selected, and new models are added to this folder of step 1, they will be included in the next scheduled conversion.

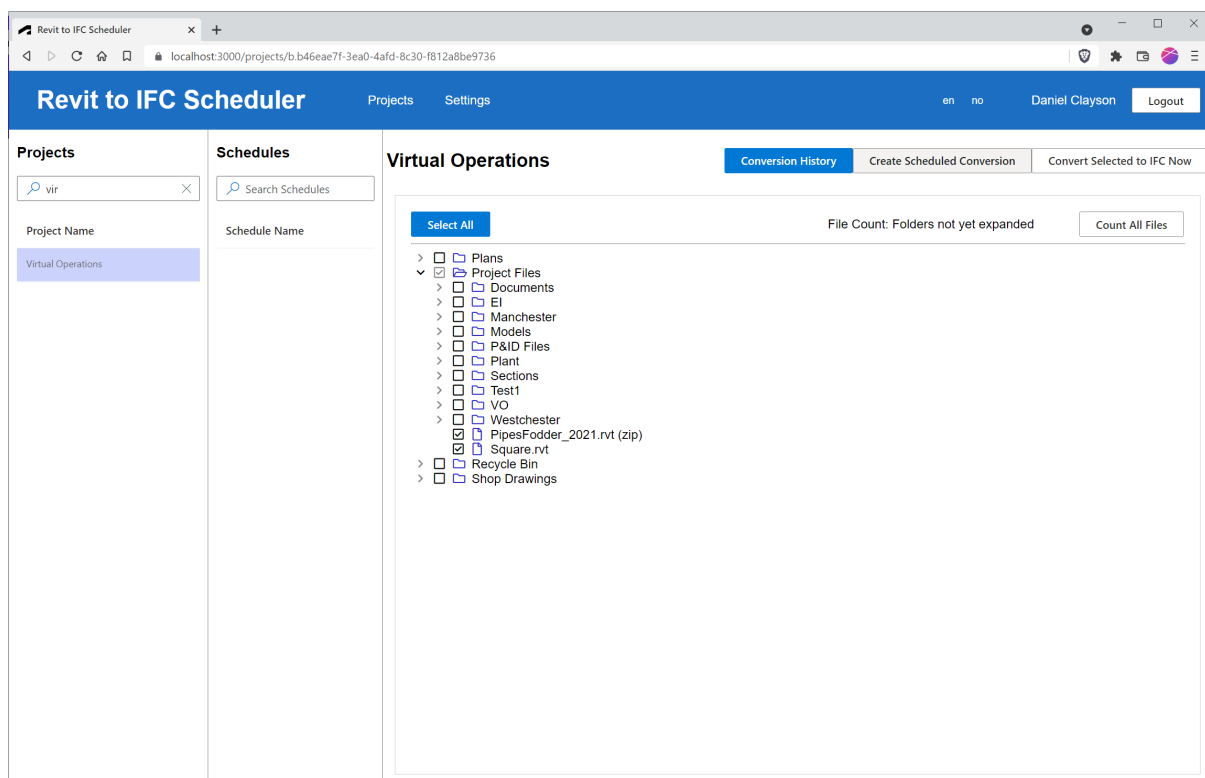
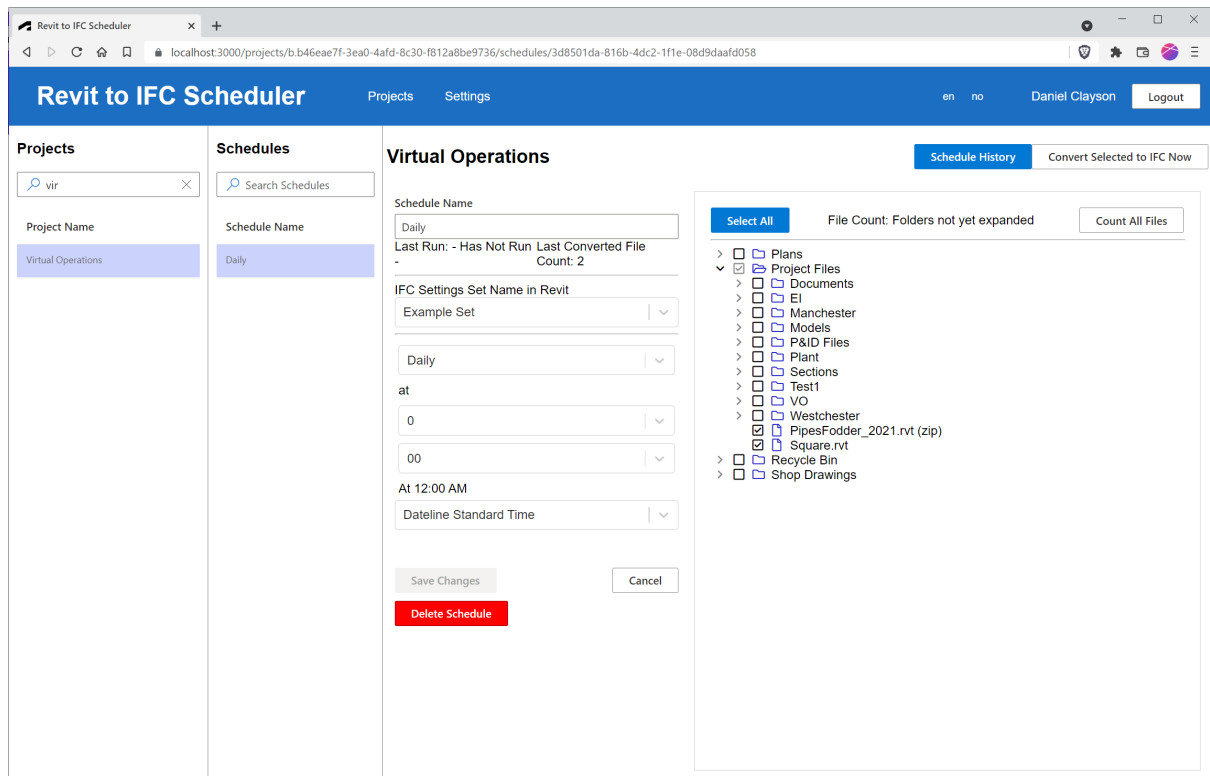


Figure 11 Single Project Page



The screenshot displays the 'Revit to IFC Scheduler' web application. The interface is divided into three main sections: Projects, Schedules, and Virtual Operations. The 'Projects' section on the left shows a search bar with 'vir' and a list of projects including 'Virtual Operations'. The 'Schedules' section in the middle shows a search bar and a list of schedules including 'Daily'. The 'Virtual Operations' section on the right is the active area, showing a form for creating a new schedule. The form includes fields for 'Schedule Name' (set to 'Daily'), 'Last Run' status, 'Last Converted File Count' (2), 'IFC Settings Set Name in Revit' (set to 'Example Set'), a frequency dropdown (set to 'Daily'), a time dropdown (set to 'at 00'), and a 'Dateline Standard Time' dropdown (set to 'At 12:00 AM'). There are 'Save Changes', 'Cancel', and 'Delete Schedule' buttons. On the far right, there is a 'Schedule History' tab and a 'Convert Selected to IFC Now' button. Below these is a file selection tree with a 'Select All' button and a 'File Count: Folders not yet expanded' indicator. The tree lists various folders and files, including 'Plans', 'Project Files', 'Documents', 'EI', 'Manchester', 'Models', 'P&ID Files', 'Plant', 'Sections', 'Test1', 'VO', 'Westchester', 'PipesFodder_2021.rvt (zip)', 'Square.rvt', 'Recycle Bin', and 'Shop Drawings'.

Figure 12 New Schedule Page

2.5.3 Edit Existing Schedule

Any admin may edit all portions of an existing schedule with access to the project:

1. Select the project from the 'Schedules' panel.
2. To change the name, edit the 'Schedule name' text box.
3. To change the IFC Settings set name, choose from the IFC Settings Set Name dropdown, or type in a custom value.
4. To change the schedule, select from the various schedule values.
5. To change the included folders and files, select the desired folders and files from the folder tree.
6. Press the 'Save Changes' button.

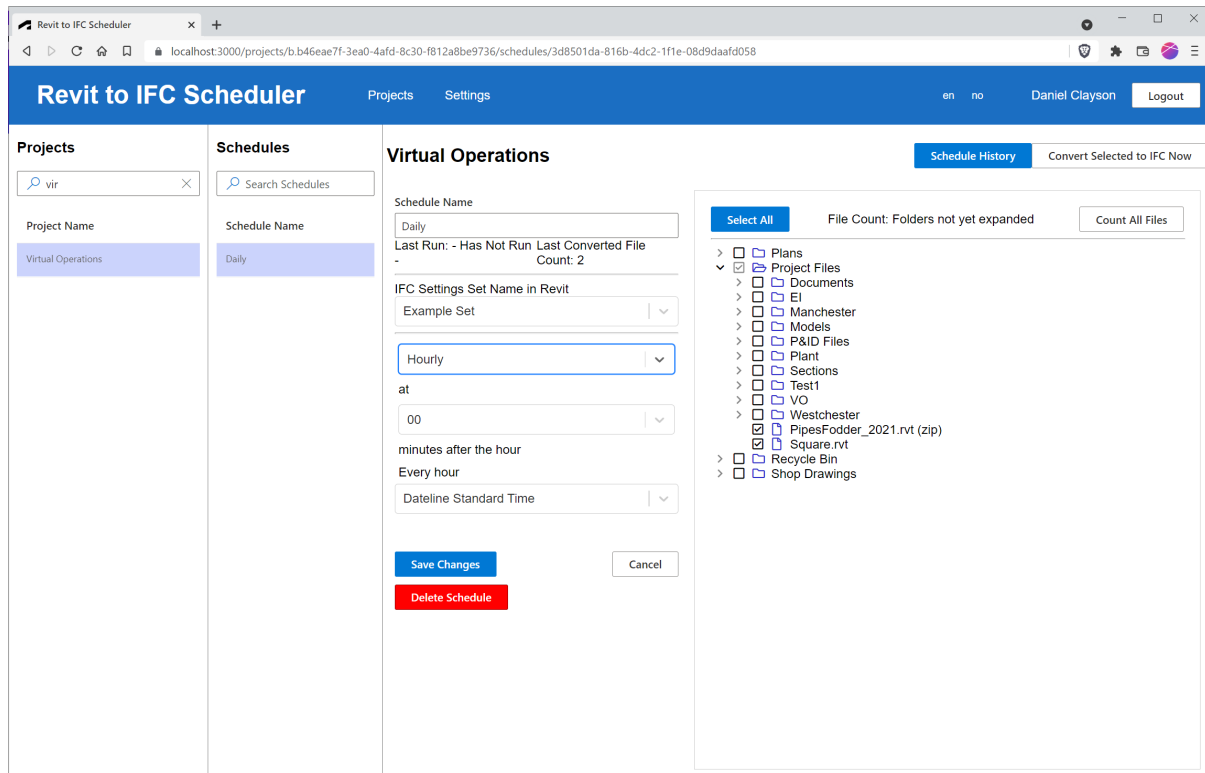


Figure 13 Existing Schedule Page

2.5.4 Delete Existing Schedule

Any admin may delete existing schedules with access to the project.

1. Select the project from the 'Schedules' panel.
2. Press the 'Delete Schedule' button.
3. Confirm by pressing the 'Delete' button in the popup.

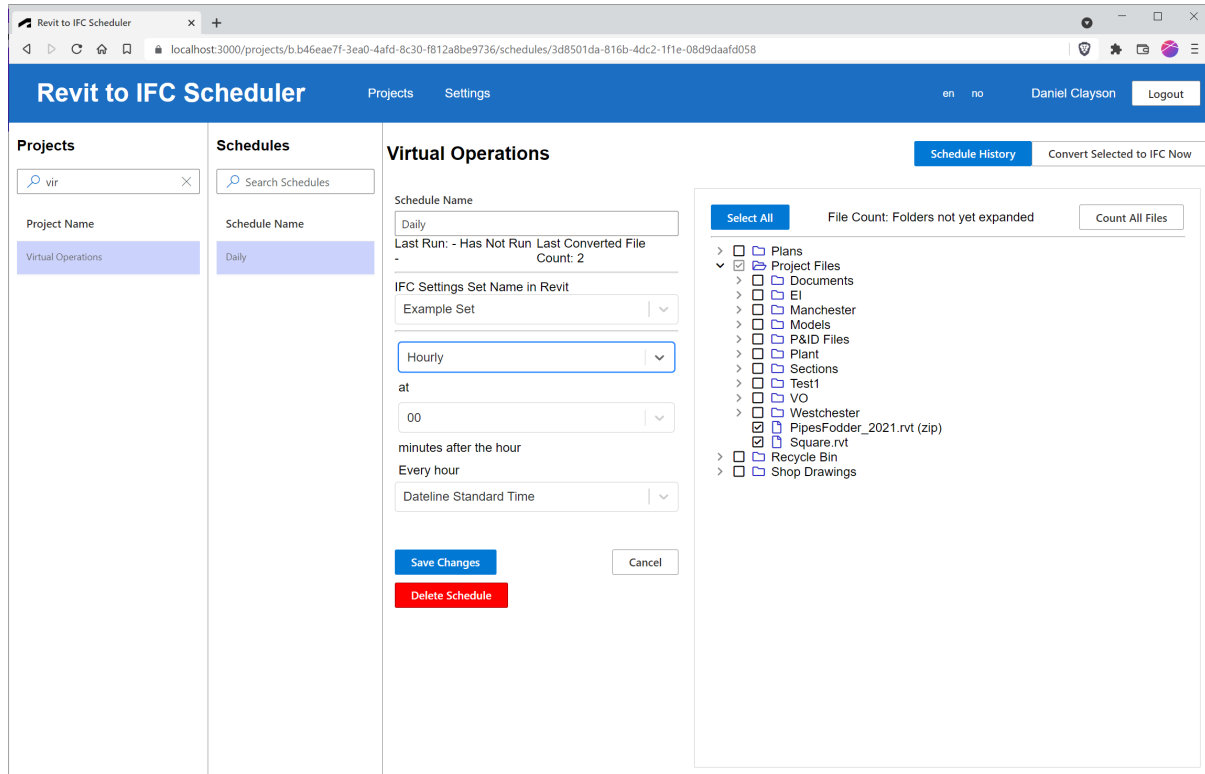


Figure 14 Existing Schedule Page

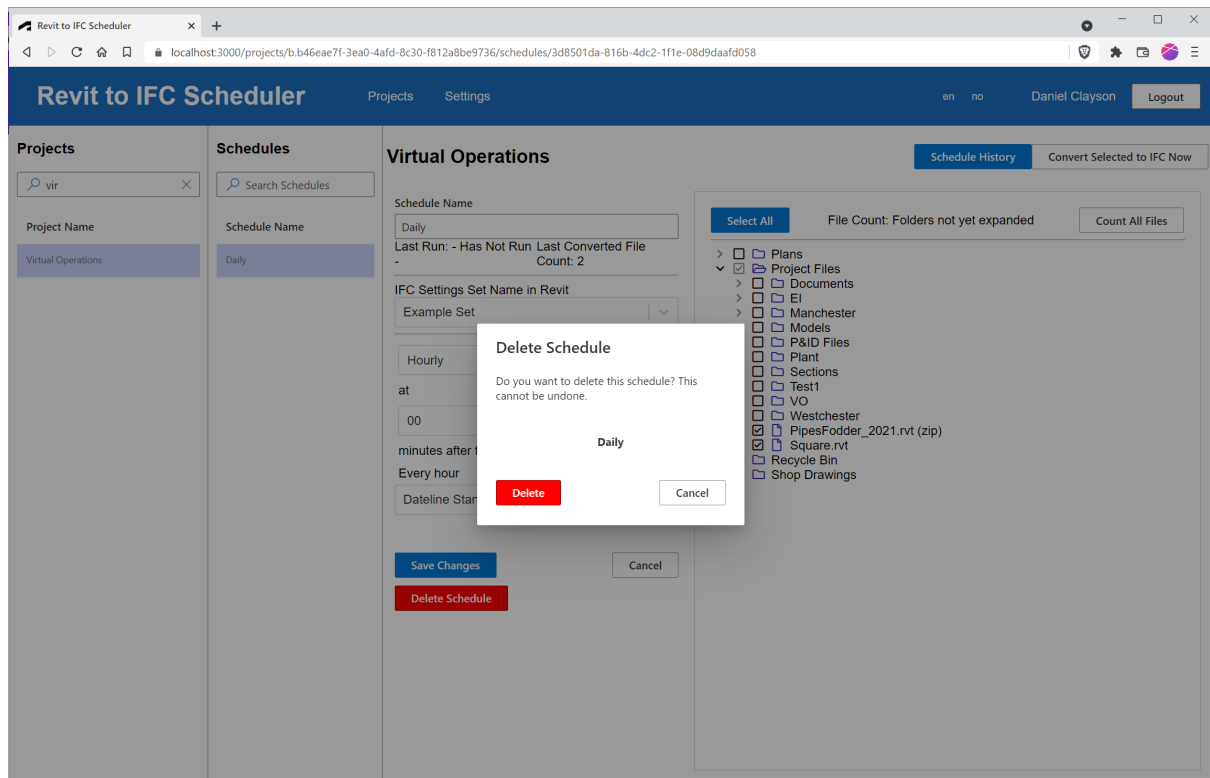


Figure 15 Delete Schedule popup

2.5.5 View Conversion history

With their status and details, all past conversions are available in a per-project list.

1. Navigate to the single project page
2. Press the 'Conversion History' button
3. To see details on a specific conversion, click on the row

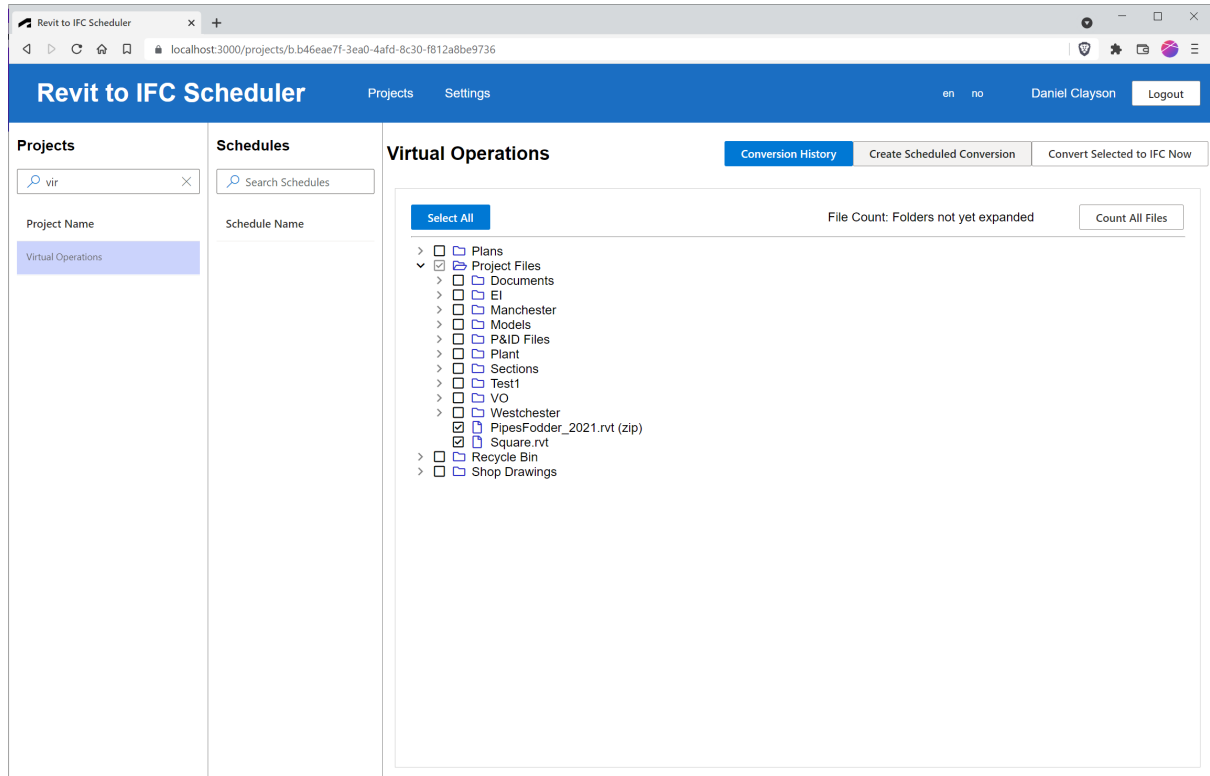
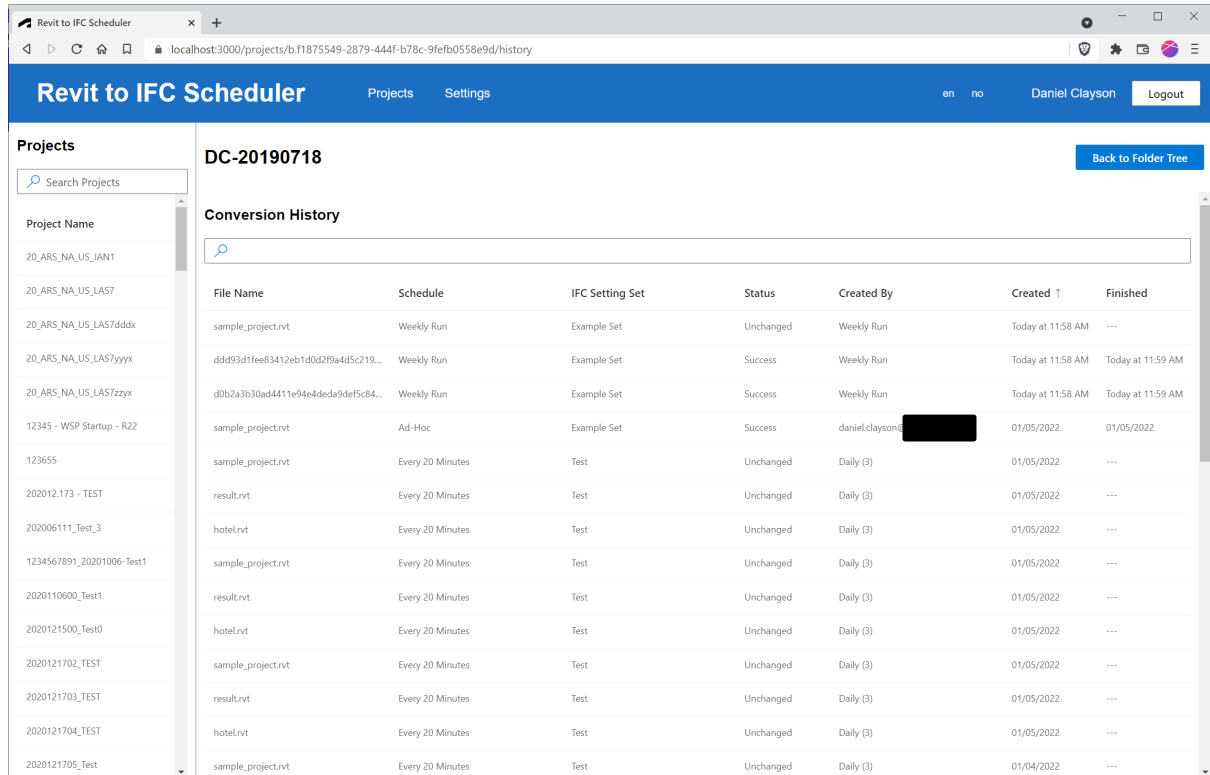


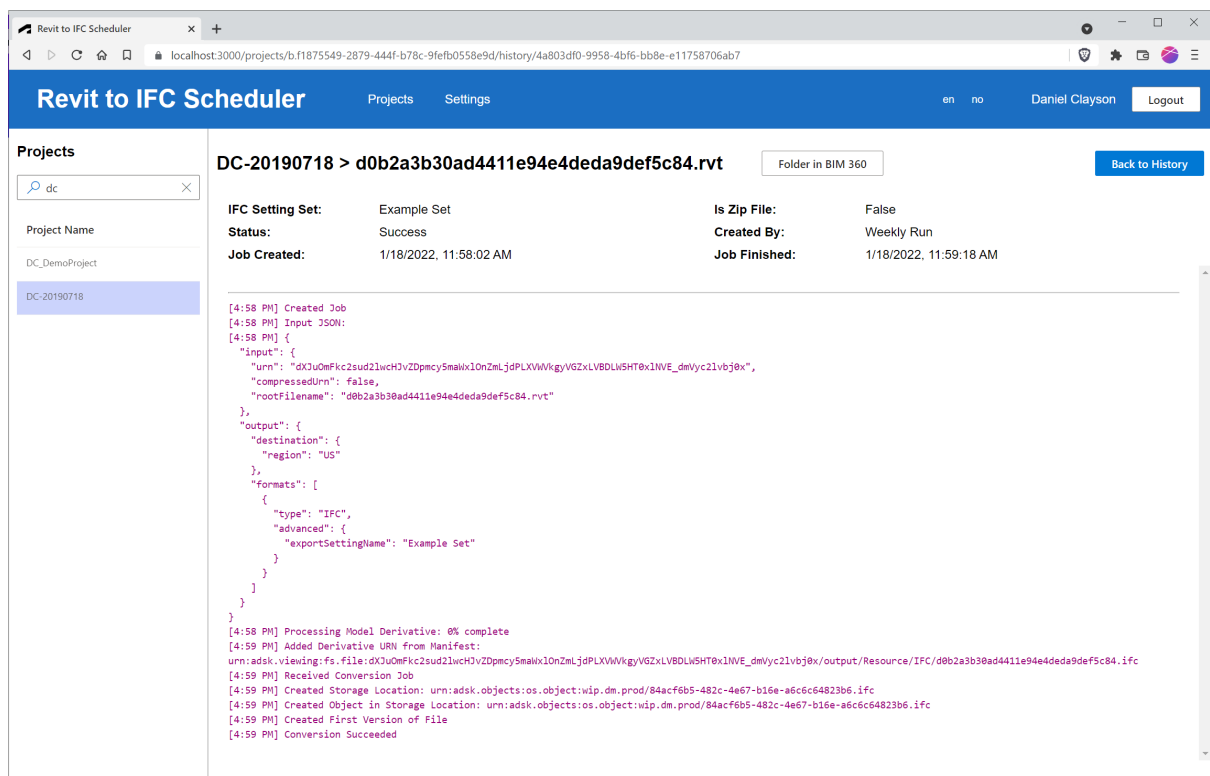
Figure 16 Single Project Page



The screenshot shows the 'Revit to IFC Scheduler' web application. The left sidebar contains a 'Projects' list with a search bar and a list of project names. The main content area is titled 'DC-20190718' and 'Conversion History'. It features a table with the following columns: File Name, Schedule, IFC Setting Set, Status, Created By, Created ↑, and Finished. The table lists multiple conversion jobs, including 'sample_project.rvt' and 'result.rvt', with various schedules like 'Weekly Run' and 'Ad-Hoc'. The status of these jobs is either 'Unchanged' or 'Success'.

File Name	Schedule	IFC Setting Set	Status	Created By	Created ↑	Finished
sample_project.rvt	Weekly Run	Example Set	Unchanged	Weekly Run	Today at 11:58 AM	---
ddd93d1fee83412eb1d0d2f9a4d5c219...	Weekly Run	Example Set	Success	Weekly Run	Today at 11:58 AM	Today at 11:59 AM
d0b2a3b30ad4411e94e4deda9def5c84...	Weekly Run	Example Set	Success	Weekly Run	Today at 11:58 AM	Today at 11:59 AM
sample_project.rvt	Ad-Hoc	Example Set	Success	daniel.clayson	01/05/2022	01/05/2022
sample_project.rvt	Every 20 Minutes	Test	Unchanged	Daily (3)	01/05/2022	---
result.rvt	Every 20 Minutes	Test	Unchanged	Daily (3)	01/05/2022	---
hotel.rvt	Every 20 Minutes	Test	Unchanged	Daily (3)	01/05/2022	---
sample_project.rvt	Every 20 Minutes	Test	Unchanged	Daily (3)	01/05/2022	---
result.rvt	Every 20 Minutes	Test	Unchanged	Daily (3)	01/05/2022	---
hotel.rvt	Every 20 Minutes	Test	Unchanged	Daily (3)	01/05/2022	---
sample_project.rvt	Every 20 Minutes	Test	Unchanged	Daily (3)	01/05/2022	---
result.rvt	Every 20 Minutes	Test	Unchanged	Daily (3)	01/05/2022	---
hotel.rvt	Every 20 Minutes	Test	Unchanged	Daily (3)	01/05/2022	---
sample_project.rvt	Every 20 Minutes	Test	Unchanged	Daily (3)	01/05/2022	---
result.rvt	Every 20 Minutes	Test	Unchanged	Daily (3)	01/05/2022	---
hotel.rvt	Every 20 Minutes	Test	Unchanged	Daily (3)	01/05/2022	---
sample_project.rvt	Every 20 Minutes	Test	Unchanged	Daily (3)	01/04/2022	---

Figure 17 Conversion List Page



The screenshot shows the 'Revit to IFC Scheduler' web application with the 'View a single model run' page. The left sidebar shows the 'Projects' list with 'DC-20190718' selected. The main content area displays details for the selected model run, including the IFC Setting Set, Status, Job Created, and Job Finished. Below this, there is a JSON log of the conversion process.

IFC Setting Set:	Example Set	Is Zip File:	False
Status:	Success	Created By:	Weekly Run
Job Created:	1/18/2022, 11:58:02 AM	Job Finished:	1/18/2022, 11:59:18 AM

```
[4:58 PM] Created Job
[4:58 PM] Input JSON:
[4:58 PM] {
  "input": {
    "urn": "dXJ0OmFkc2sudz1wch3vZDpmcy5maix1OnZmJdPLXWVkgYVGZxLVBDLWShT0x1WE_dmYyc21vbJ0x",
    "compressedUrn": false,
    "rootFilename": "d0b2a3b30ad4411e94e4deda9def5c84.rvt"
  },
  "output": {
    "destination": {
      "region": "US"
    },
    "formats": [
      {
        "type": "IFC",
        "advanced": {
          "exportSettingName": "Example Set"
        }
      }
    ]
  }
}
[4:58 PM] Processing Model Derivative: 0% complete
[4:59 PM] Added Derivative URN from Manifest:
urn:adsk.viewing:fs.file:dXJ0OmFkc2sudz1wch3vZDpmcy5maix1OnZmJdPLXWVkgYVGZxLVBDLWShT0x1WE_dmYyc21vbJ0x/output/Resource/IFC/d0b2a3b30ad4411e94e4deda9def5c84.ifc
[4:59 PM] Received Conversion Job
[4:59 PM] Created Storage Location: urn:adsk.objects:os.object:wip.dm.prod/84acf6b5-482c-4e67-b16e-a6c6c64823b6.ifc
[4:59 PM] Created Object in Storage Location: urn:adsk.objects:os.object:wip.dm.prod/84acf6b5-482c-4e67-b16e-a6c6c64823b6.ifc
[4:59 PM] Created First Version of File
[4:59 PM] Conversion Succeeded
```

Figure 18 View a single model run

2.6 Language

The application may be run in either English or Norwegian.

2.6.1 Change Language

Any user may change their language by selecting the 'en' or 'no' button at the top of the screen.

1. Press either 'en' or 'no' at the top of the screen.
2. Some text, such as column headers, will not update until the page is reloaded.

Change history

Date	Version	Author	Description
18-Jan-22	1.0	Daniel Clayson	Document Creation
23-Feb-22	1.1	Eason Kang	Logo & Footer Change, and consistency correction
01-Mar-22	1.2	Eason Kang	Add name list of Revit built-in IFC export settings

Distribution list

Name	Title	Organization

Approval history

Date	Version	Approver	Comments
Click here to enter a date.			

Document references

No.	Title	Version	Author

Abbreviations

Term	Description

Terminology

Term	Description

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