# What the heck is Forge?

Adam Nagy @adamthenagy

Senior Developer Advocate



Photo Credit



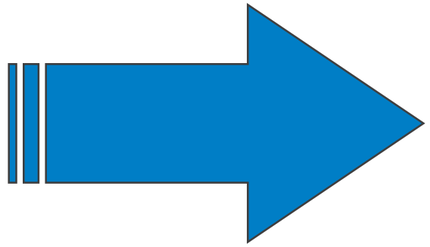


Photo Credit



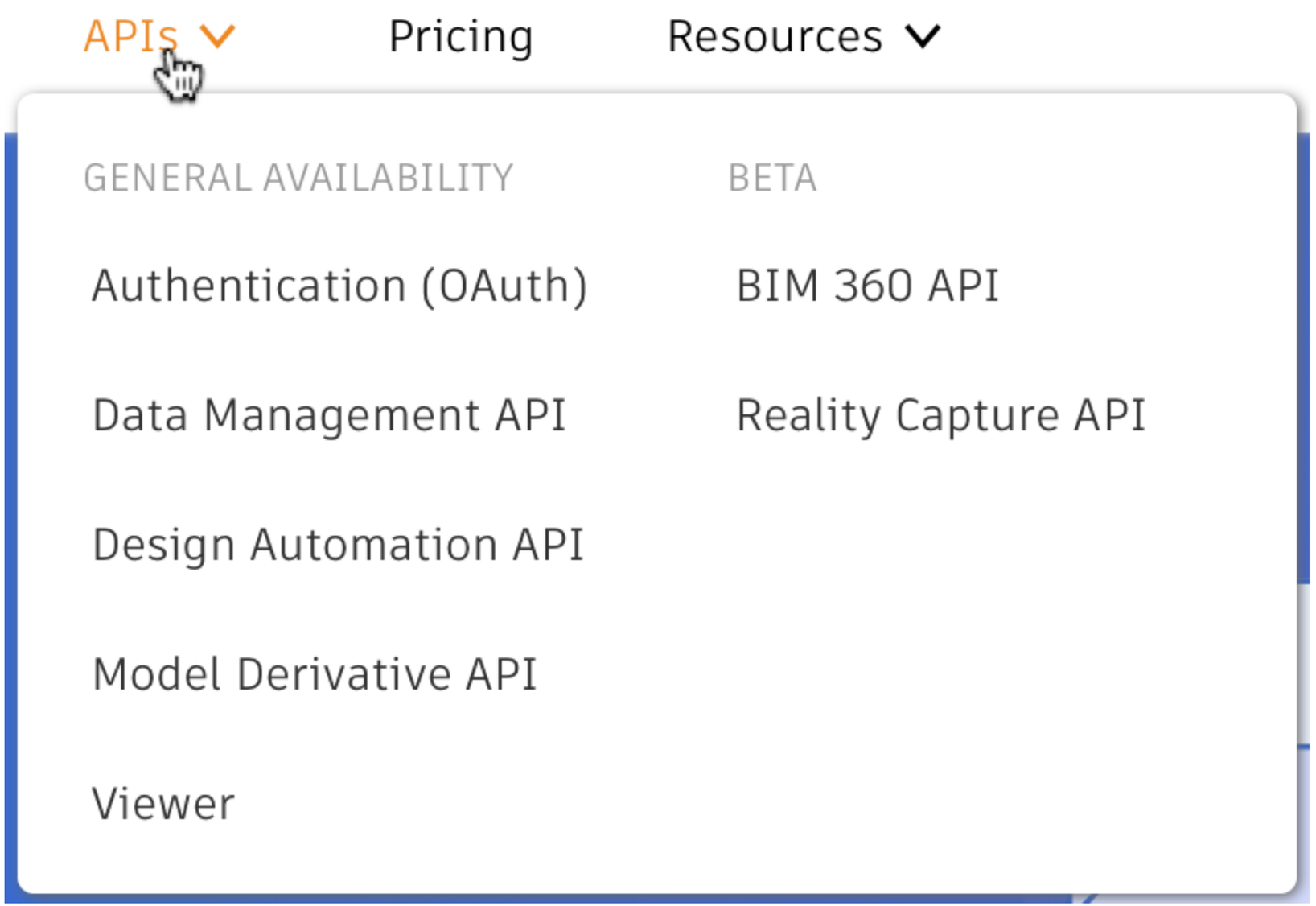
Autodesk founders in 1982





AUTODESK
FORGE

# Forge API's




https://developer.autodesk.com

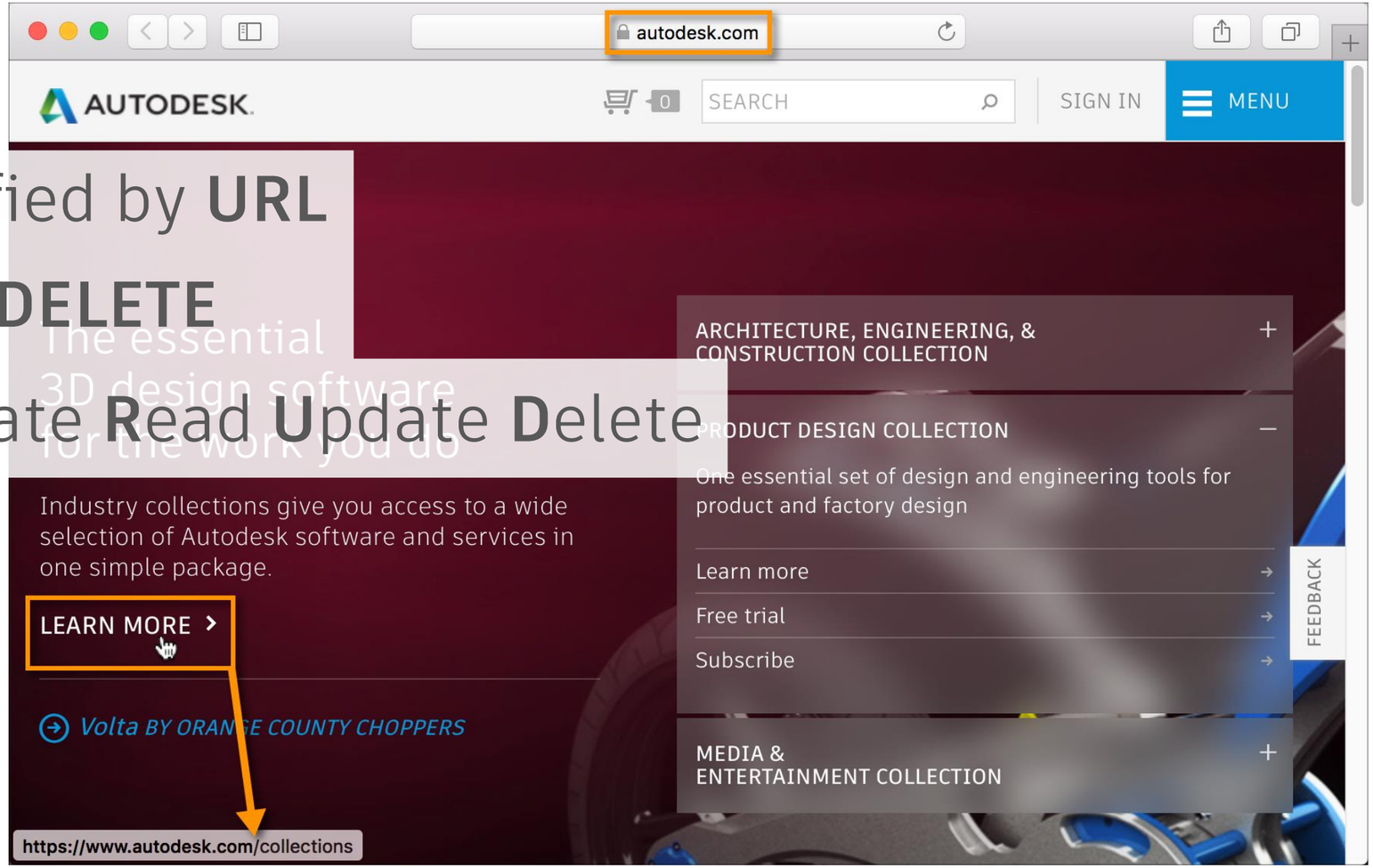
# RESTful

- **RE**presentational **S**tate **T**ransfer
- Interoparibility
- **HTTP** most common

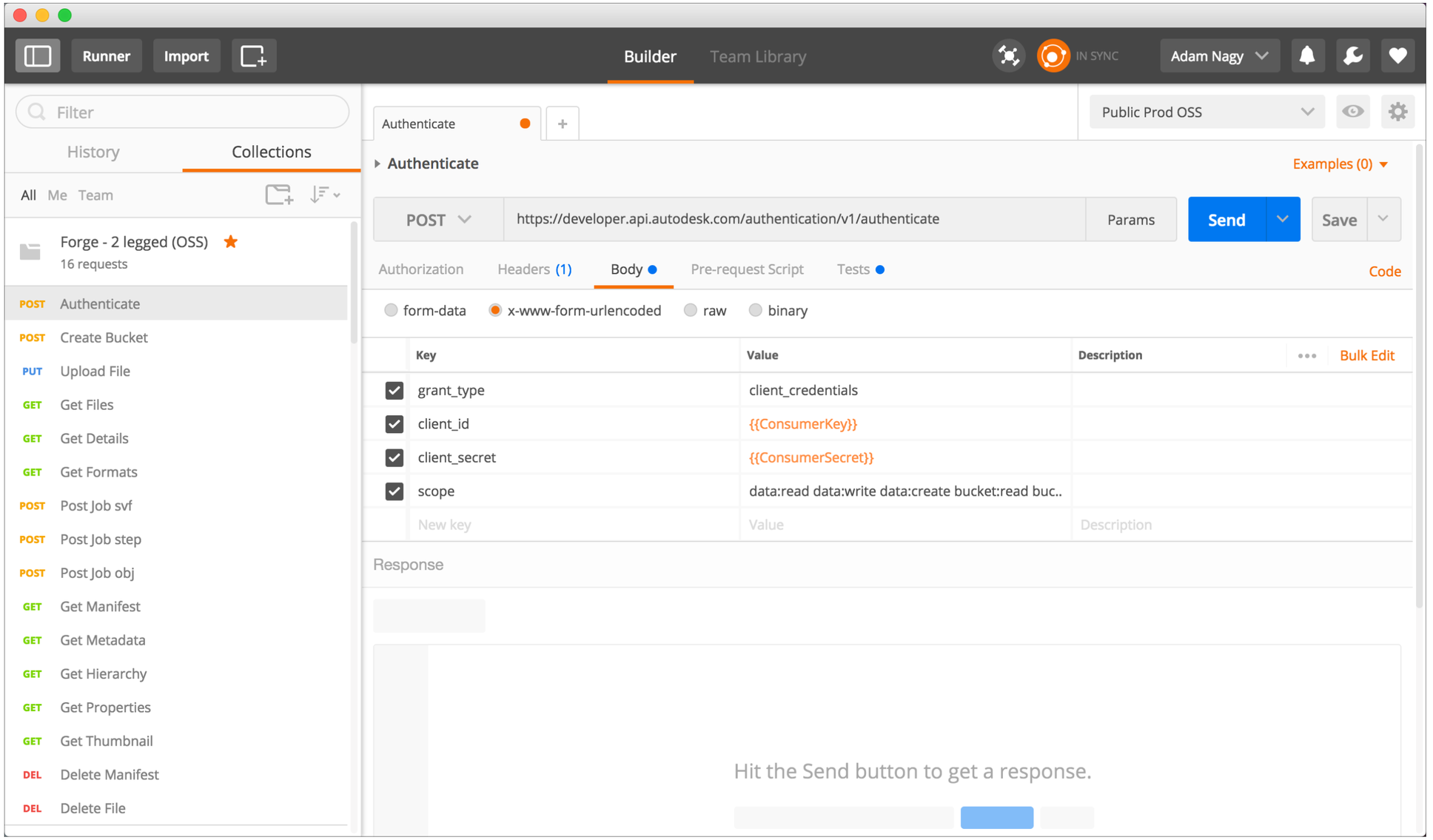
# HTTP requests

- Browser does **HTTP GET**

- Noun: Resources identified by **URL**
- Verbs: **PUSH**, **GET**, **PUT**, **DELETE**
  - **CRUD** operations: **C**reate **R**ead **U**pdate **D**elete

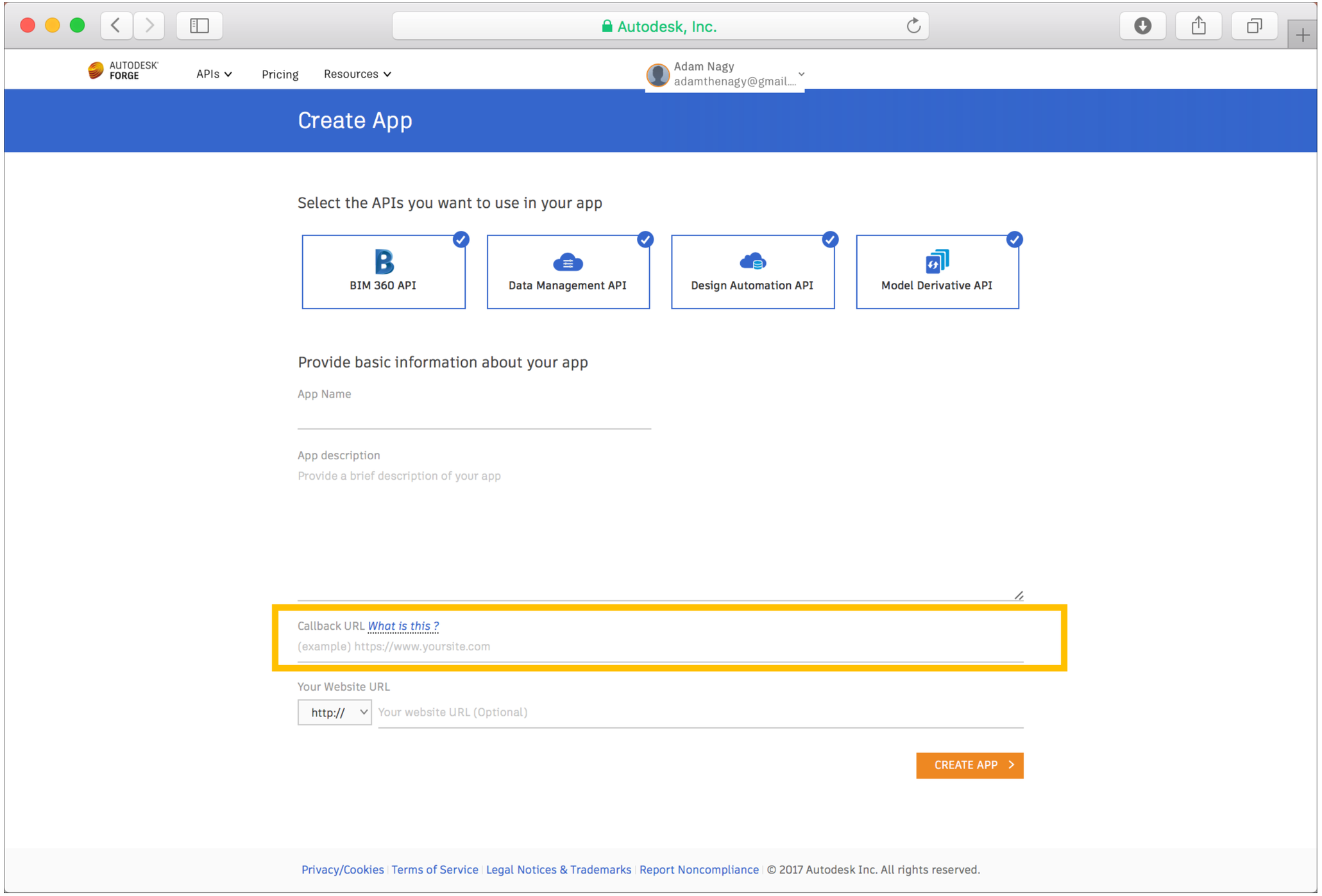


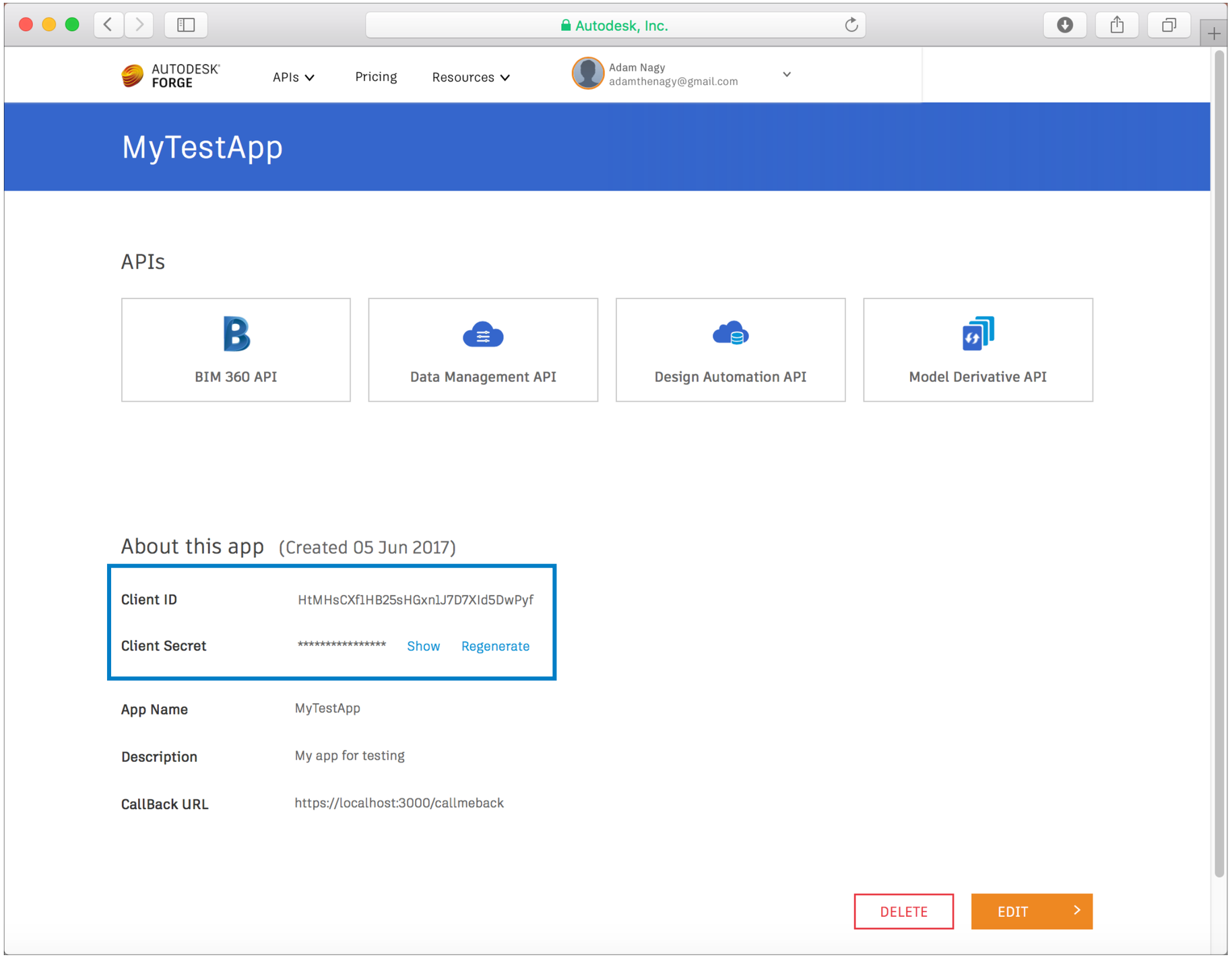
# Postman



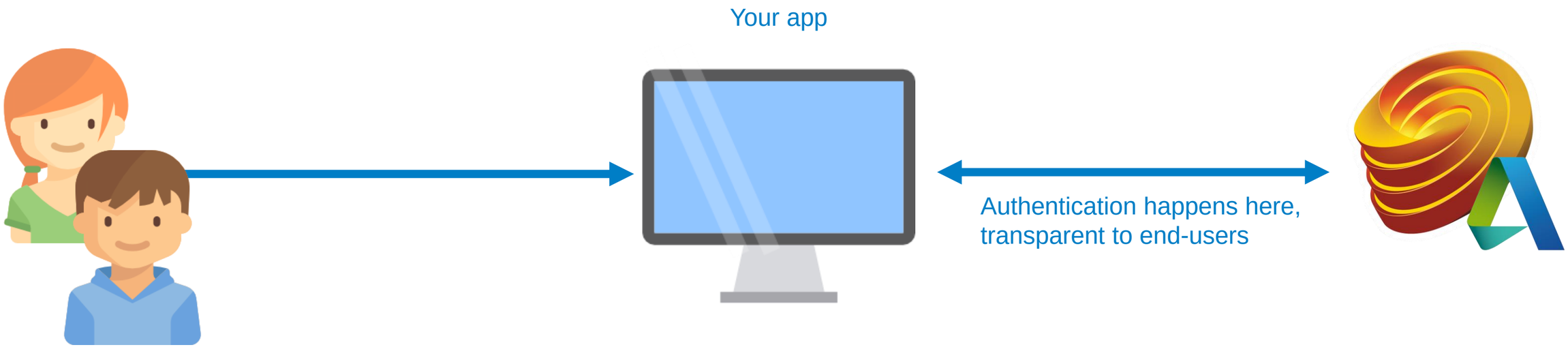

https://www.getpostman.com

# Authentication

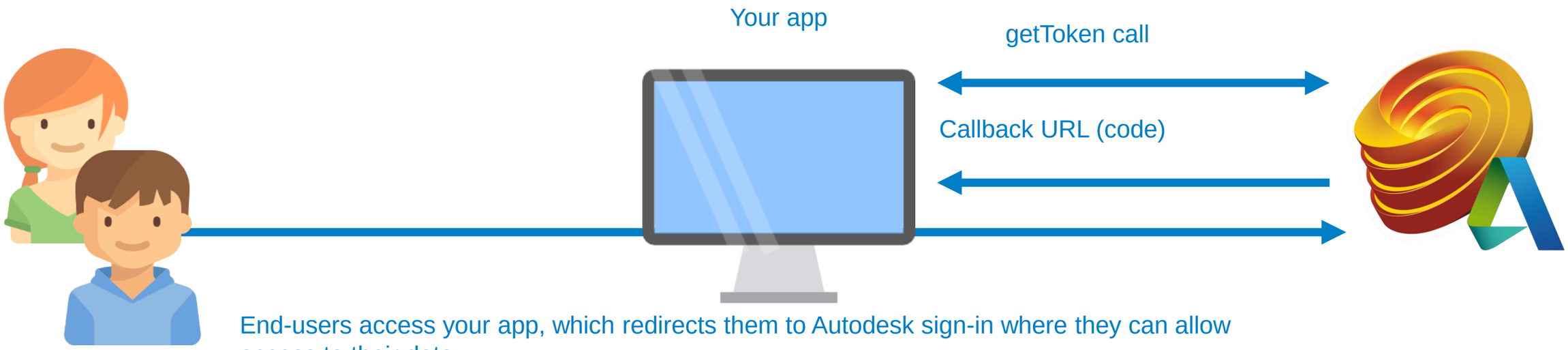

Autodesk, Inc.
AUTODESK FORGE
APIs
Pricing
Resources
Adam Nagy
adamthenagy@gmail....
Create App
Select the APIs you want to use in your app
BIM 360 API
Data Management API
Design Automation API
Model Derivative API
Provide basic information about your app
App Name
App description
Provide a brief description of your app
Callback URL What is this ?
(example) https://www.yoursite.com
Your Website URL
http://
Your website URL (Optional)
CREATE APP
Privacy/Cookies | Terms of Service | Legal Notices & Trademarks | Report Noncompliance | © 2017 Autodesk Inc. All rights reserved.


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APIs
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Resources
Adam Nagy
adamthenagy@gmail.com
MyTestApp
APIs
BIM 360 API
Data Management API
Design Automation API
Model Derivative API
About this app (Created 05 Jun 2017)
Client ID
HtMHsCXf1HB25sHGxn1J7D7XId5DwPyf
Client Secret
**********
Show
Regenerate
App Name
MyTestApp
Description
My app for testing
CallBack URL
https://localhost:3000/callmeback
DELETE
EDIT

# 2-legged authentication



# 3-legged authentication



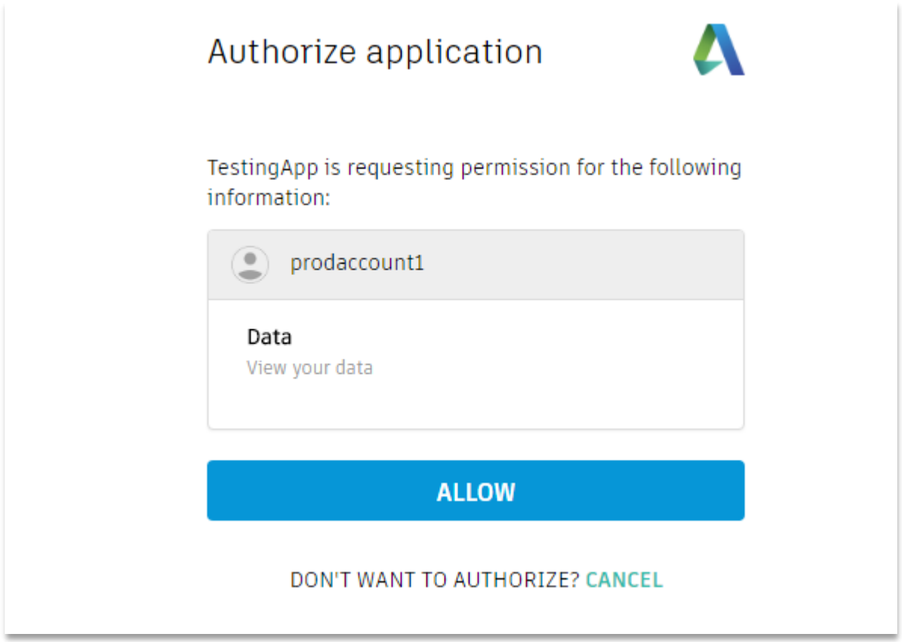

End-users access your app, which redirects them to Autodesk sign-in where they can allow access to their data

# OAuth scopes

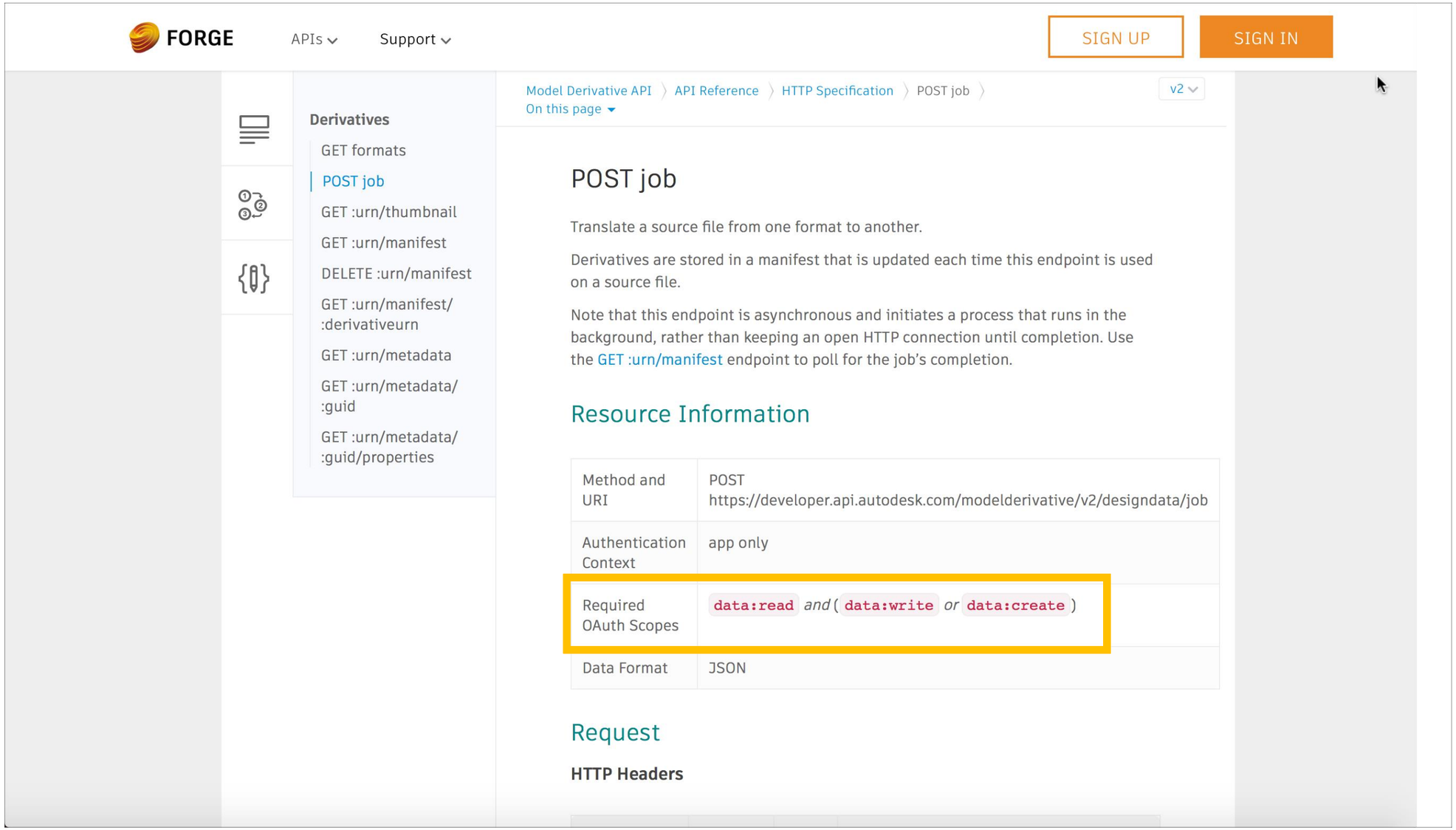
- Define which data is accessible for the token (both 2- or 3-legged)
- On 3-legged, the scope define the permissions the end-user will need to approve on the consent page

**IMPORTANT:** if client app needs access to the token (viewing)

- You need create a token with restricted access (e.g. read-only)
  - Malicious end-user with a write-enabled token could
    modify data directly on the account



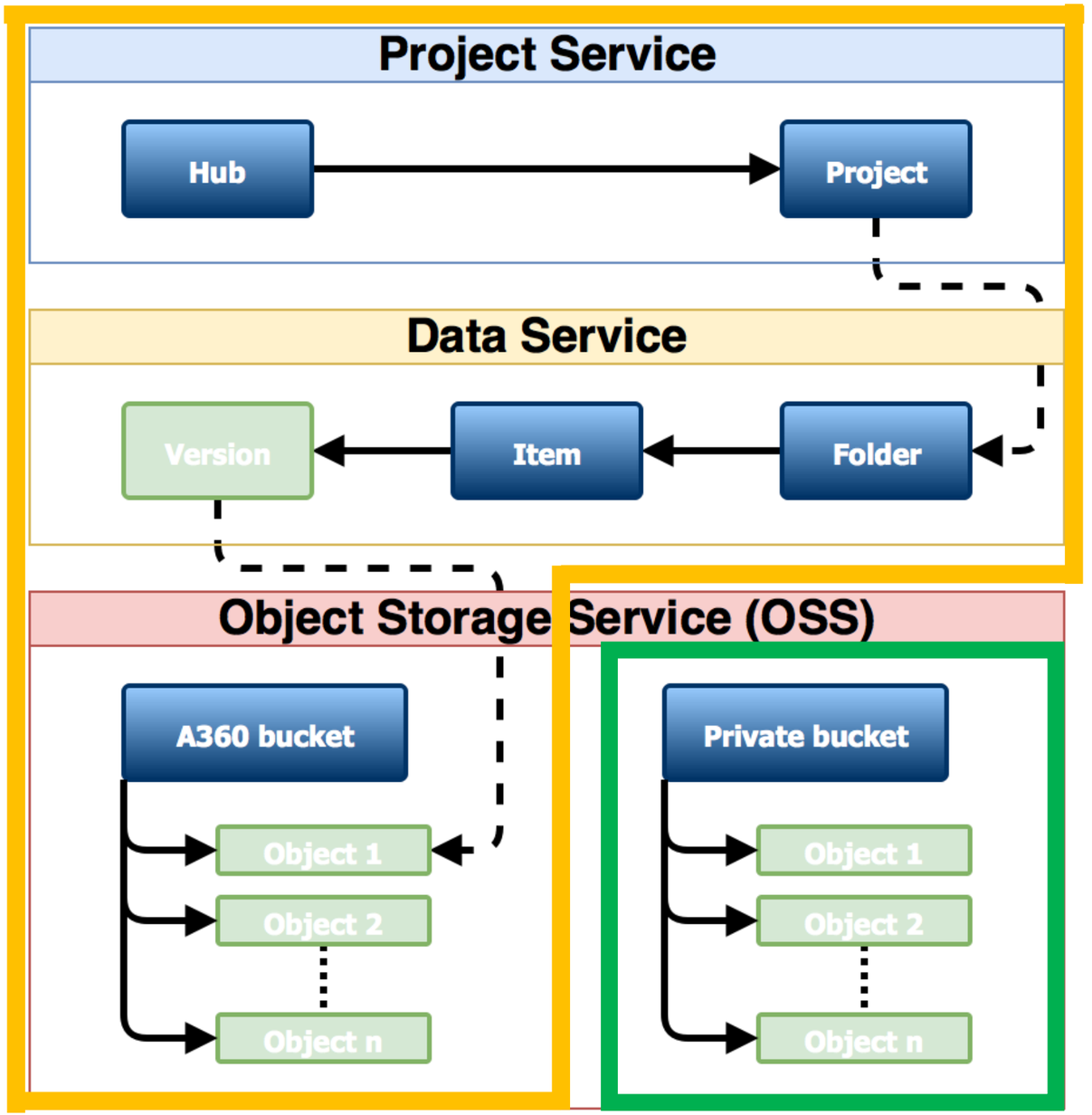
# OAuth scopes



# Data Management API

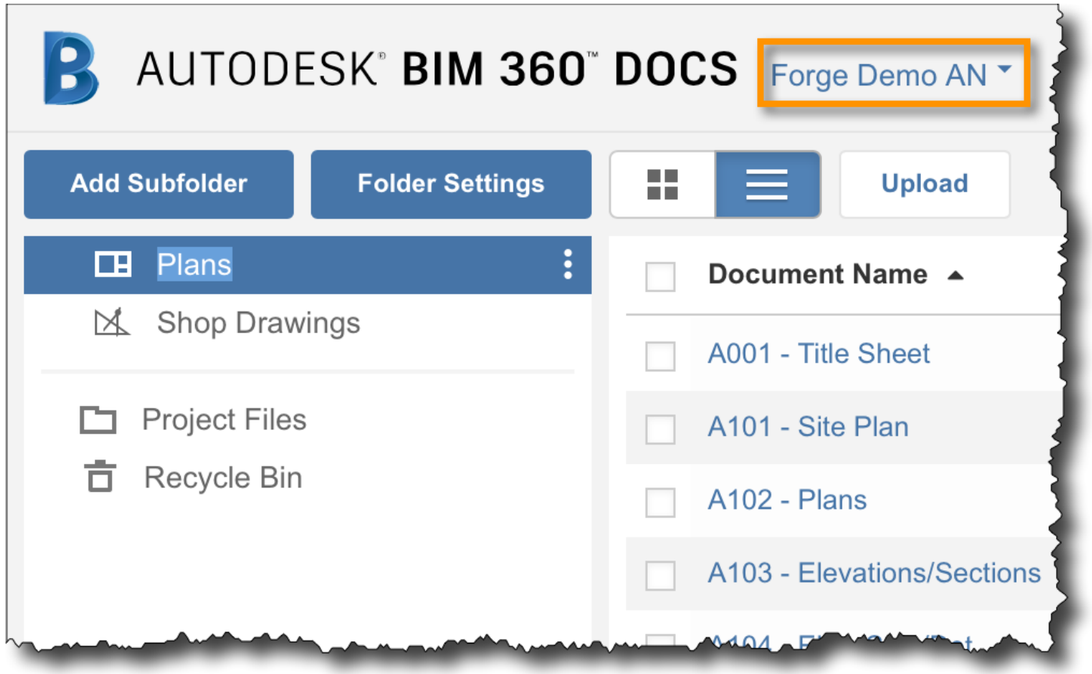
# Data Management API - Services

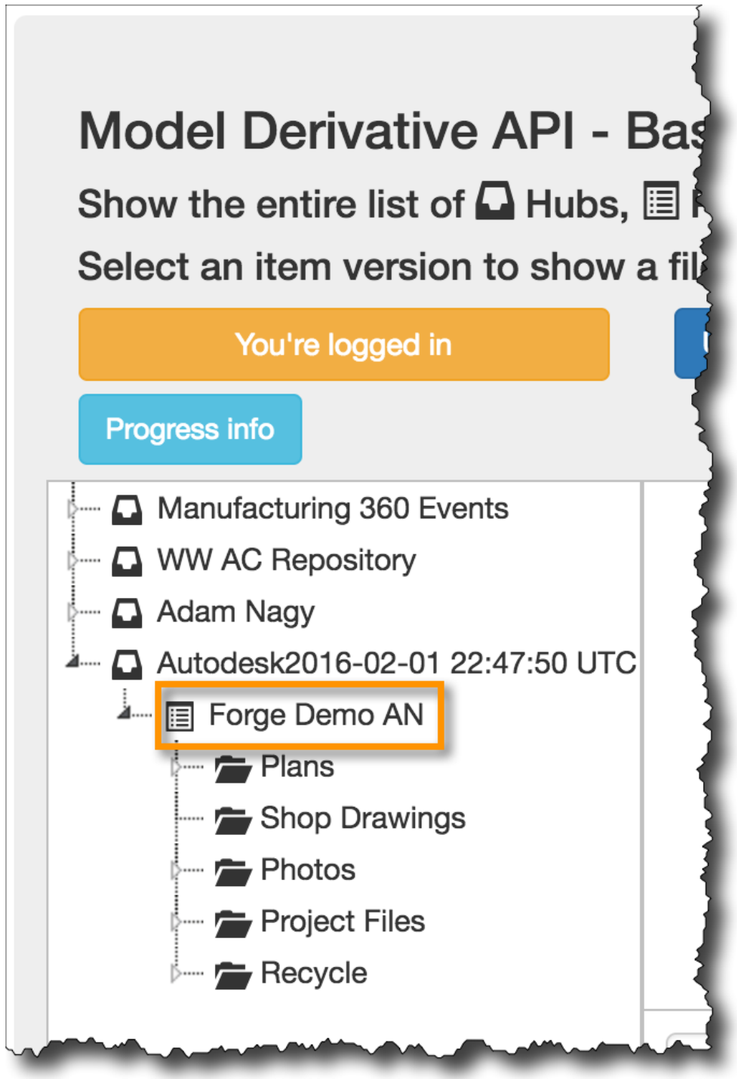
3-legged




2-legged

# BIM 360 Docs



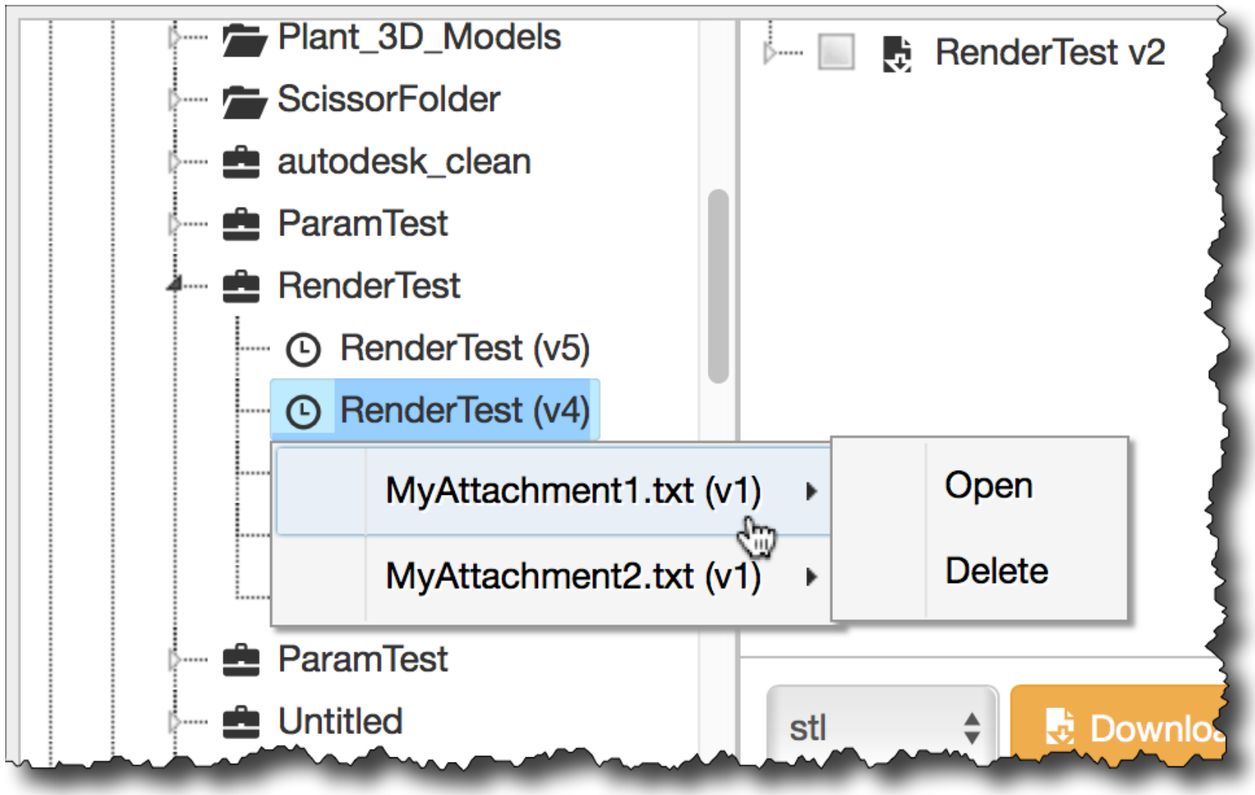




- Hubs listed just like A360 hubs
- No special API needed

# Relationships

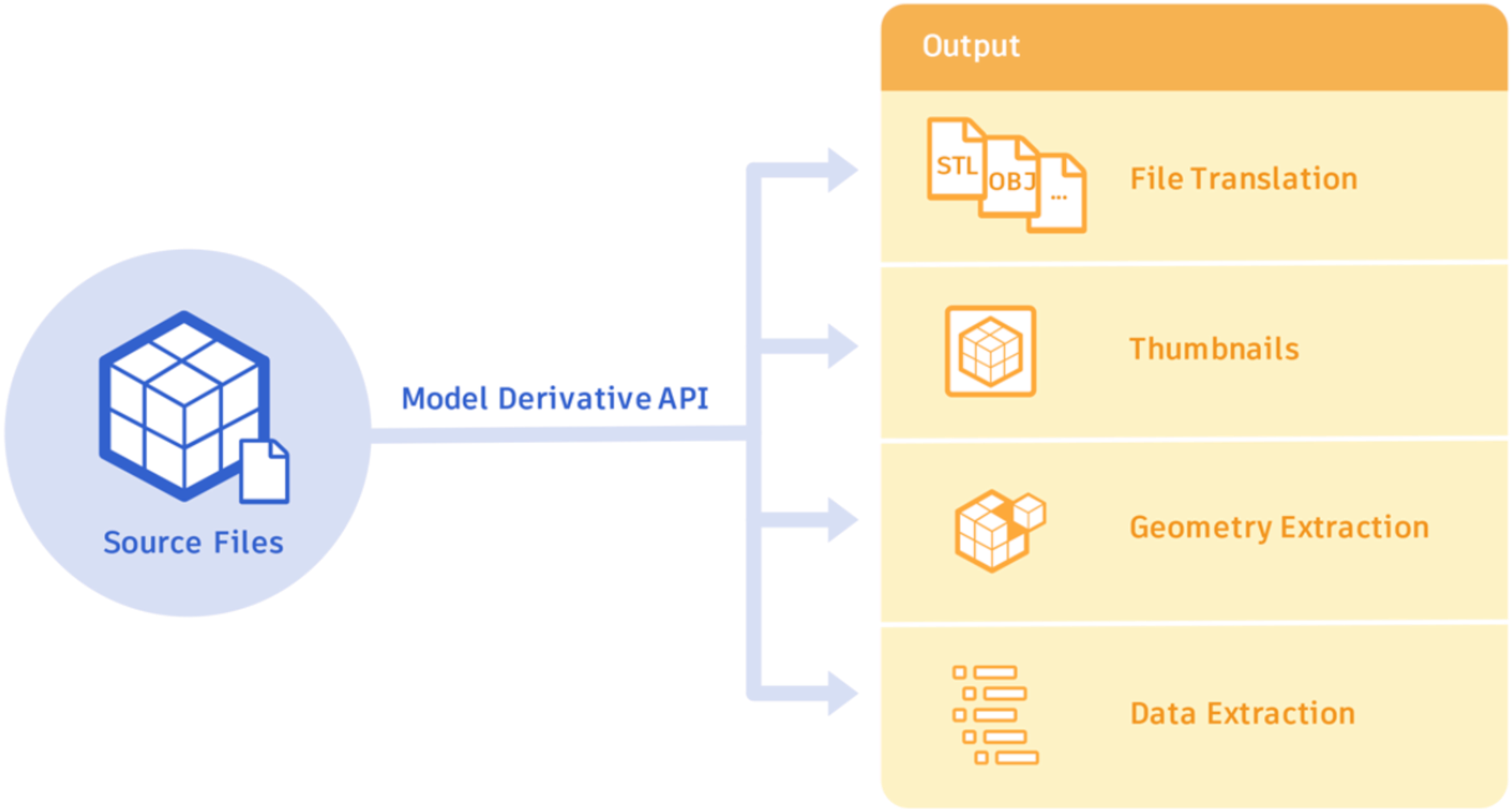
- Add attachment to item version

```
var attachmentSpec = {
    "jsonapi": {
        "version": "1.0"
    },
    "data": {
        "type": "versions",
        "id": versionId,
        "meta": {
            "extension": {
                "type": "auxiliary:autodesk.core:Attachment",
                "version": "1.0"
            }
        }
    }
}
```




- Set reference

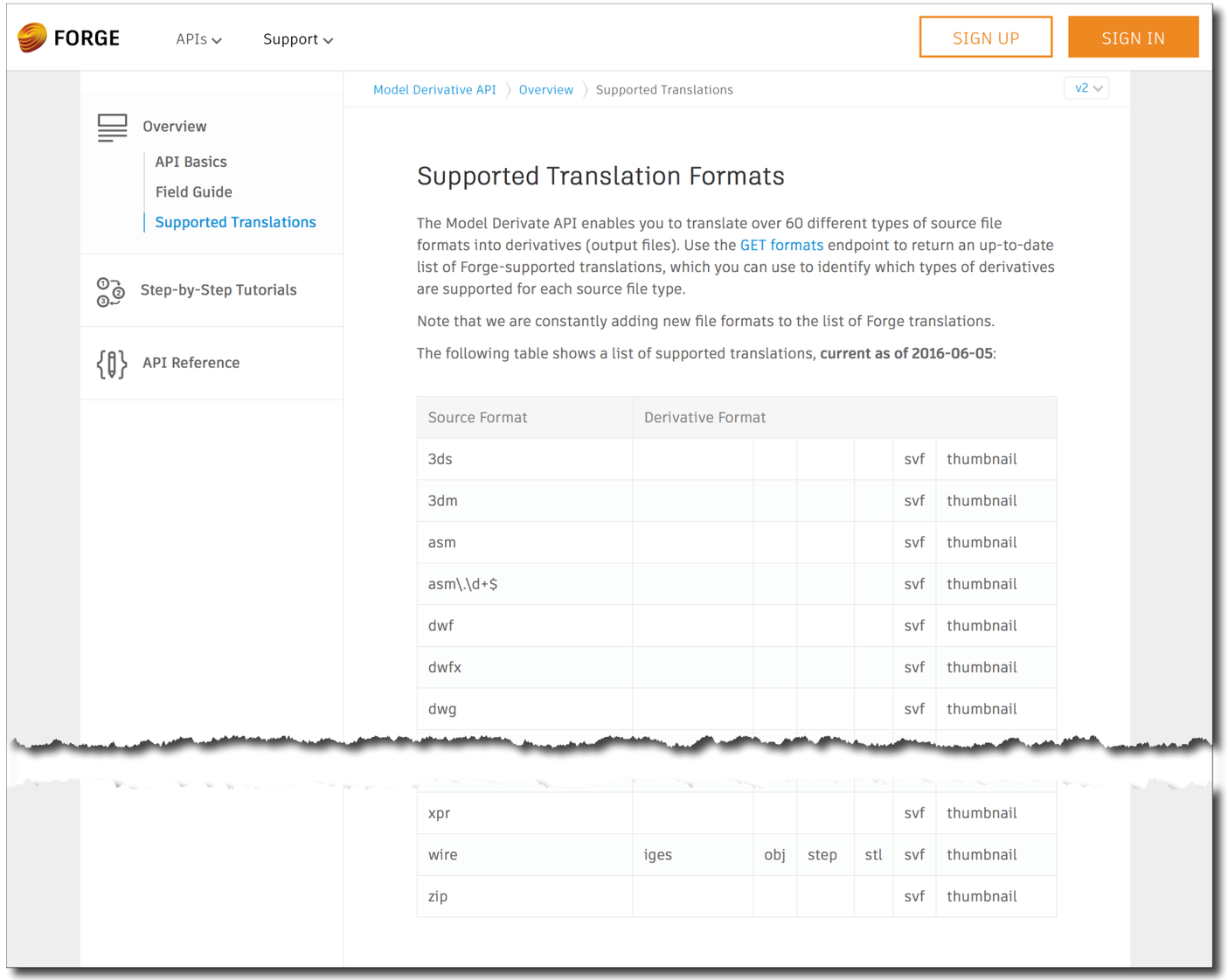
# Model Derivative API



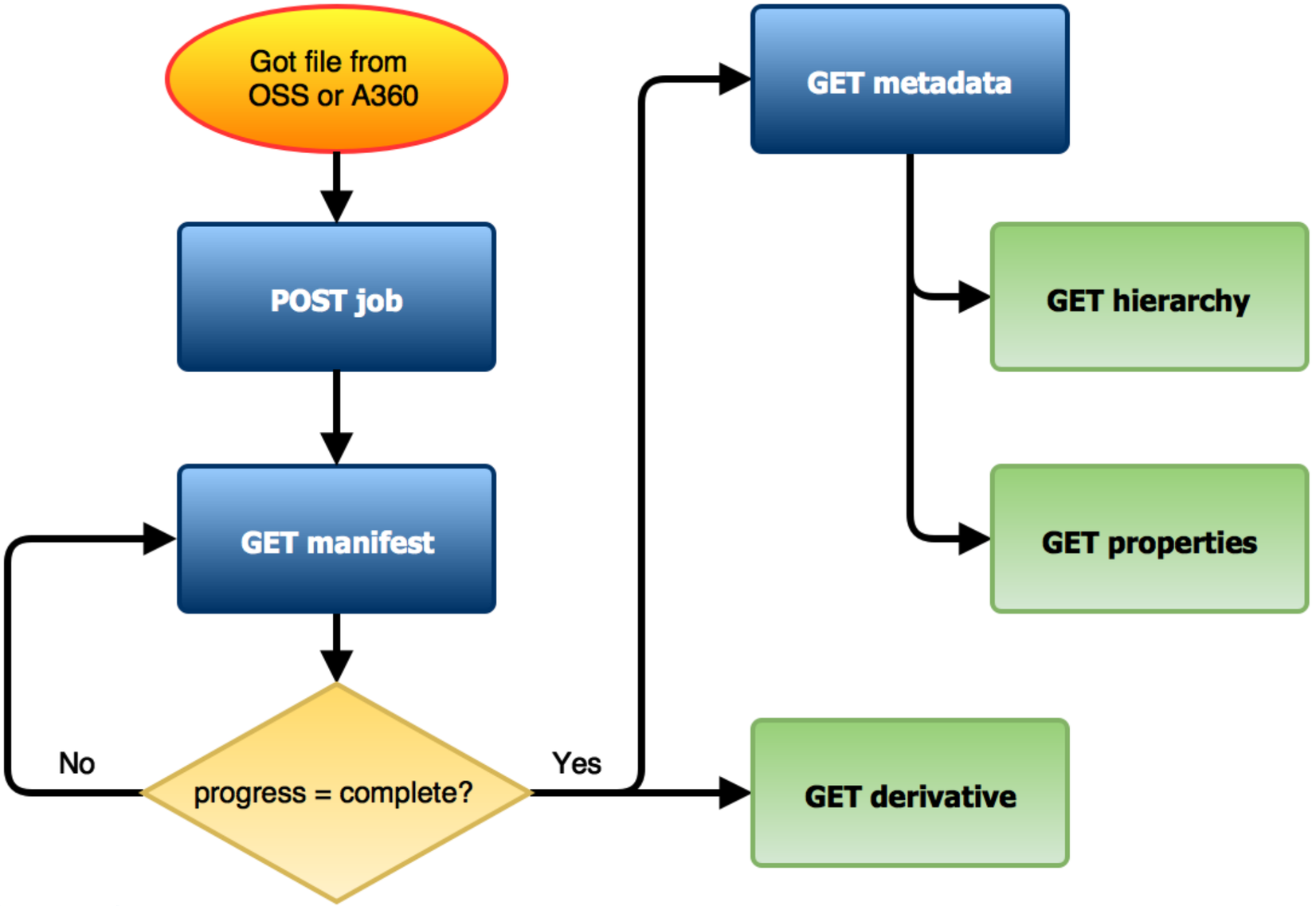

https://developer.autodesk.com/en/docs/model-derivative/v2/overview/

# Translation

- Viewing/Data extraction:
  60+ file formats
- **OBJ** export:
  All formats at file level
  & at component level
- **STEP, IGES, STL** export:
  File level



# Workflow




(OSS = Object Storage Service)

# POST job

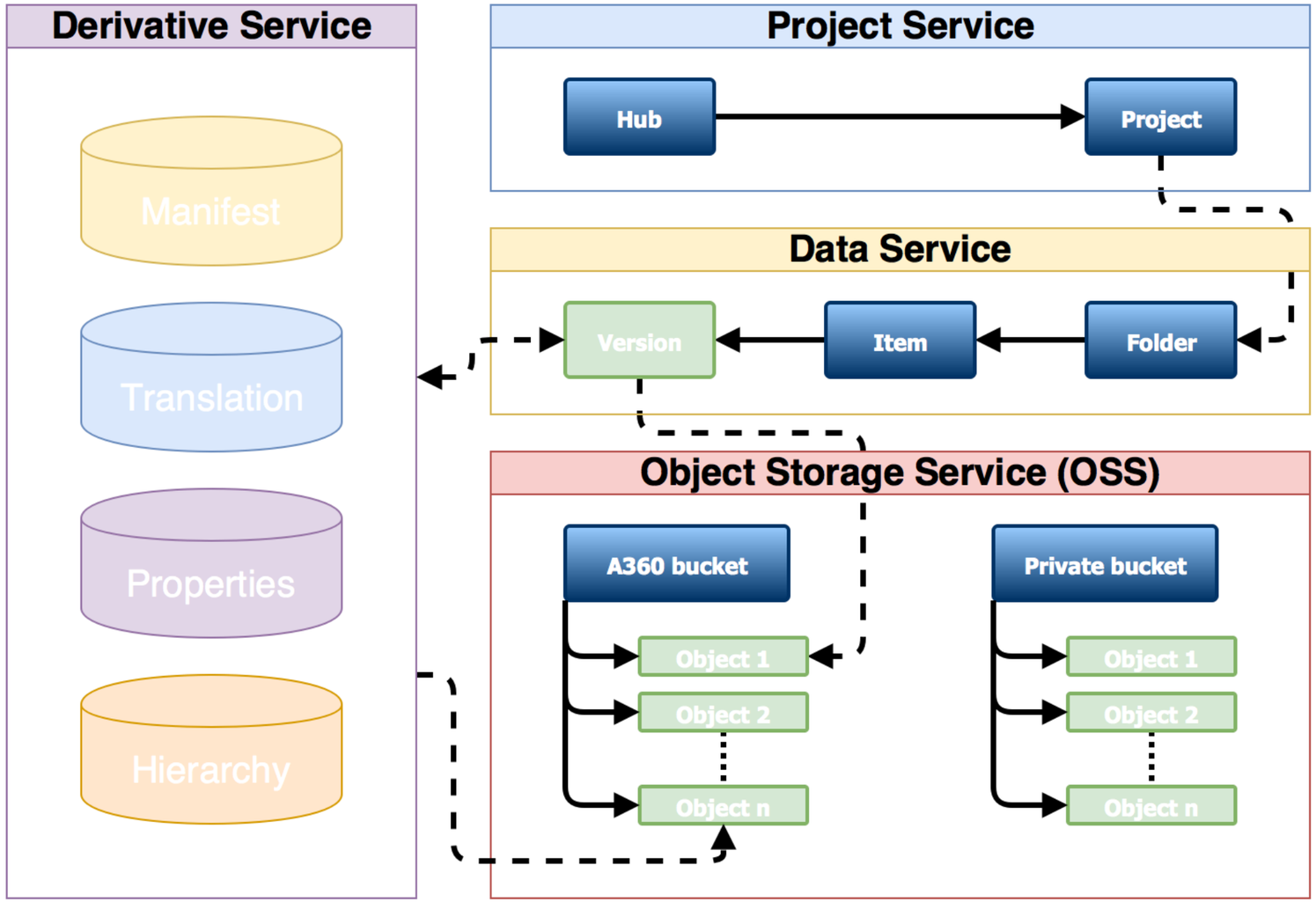
- Composite models can be uploaded as a zip
  - e.g. **main.iam**, **part1.ipt**, **part2.ipt** >> **main.zip**
  - automatic reference resolution
  - input.**compressedUrn** = **true**
  - input.**rootFilename = main.iam**
- Single files are uploaded in their own file format
  - e.g. **part1.ipt**

```
var job = {
  input:{
    urn: 'dXjhsjkagJHFkjhfgv...akjhfakljfh',
    rootFilename: 'main.iam',
    compressedUrn: true
  },
  output:{
    formats: [{
      type: 'svf',
      views: ['2d', '3d']
    }],
      destination: {
      region: 'us'
    }
  }
}
```

**Important:** keep the extension! – needed by the extractor to identify the file type

- Part1.ipt > **Part1.ipt** (OK)
- Part1.ipt > **a4c7d-e64a-85bc.ipt** (OK)
- Part1.ipt > **a4c7d-e64a-85bc (Wrong!)**

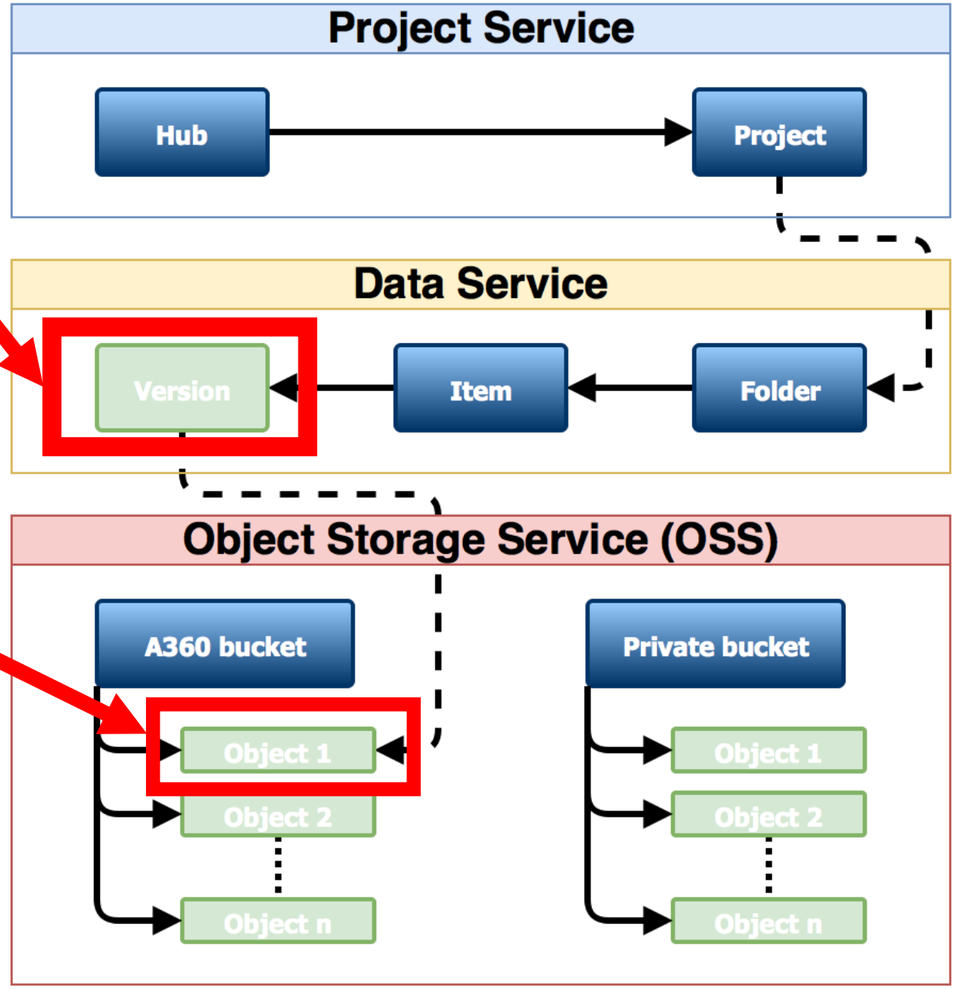
# GET manifest, hierarchy, properties

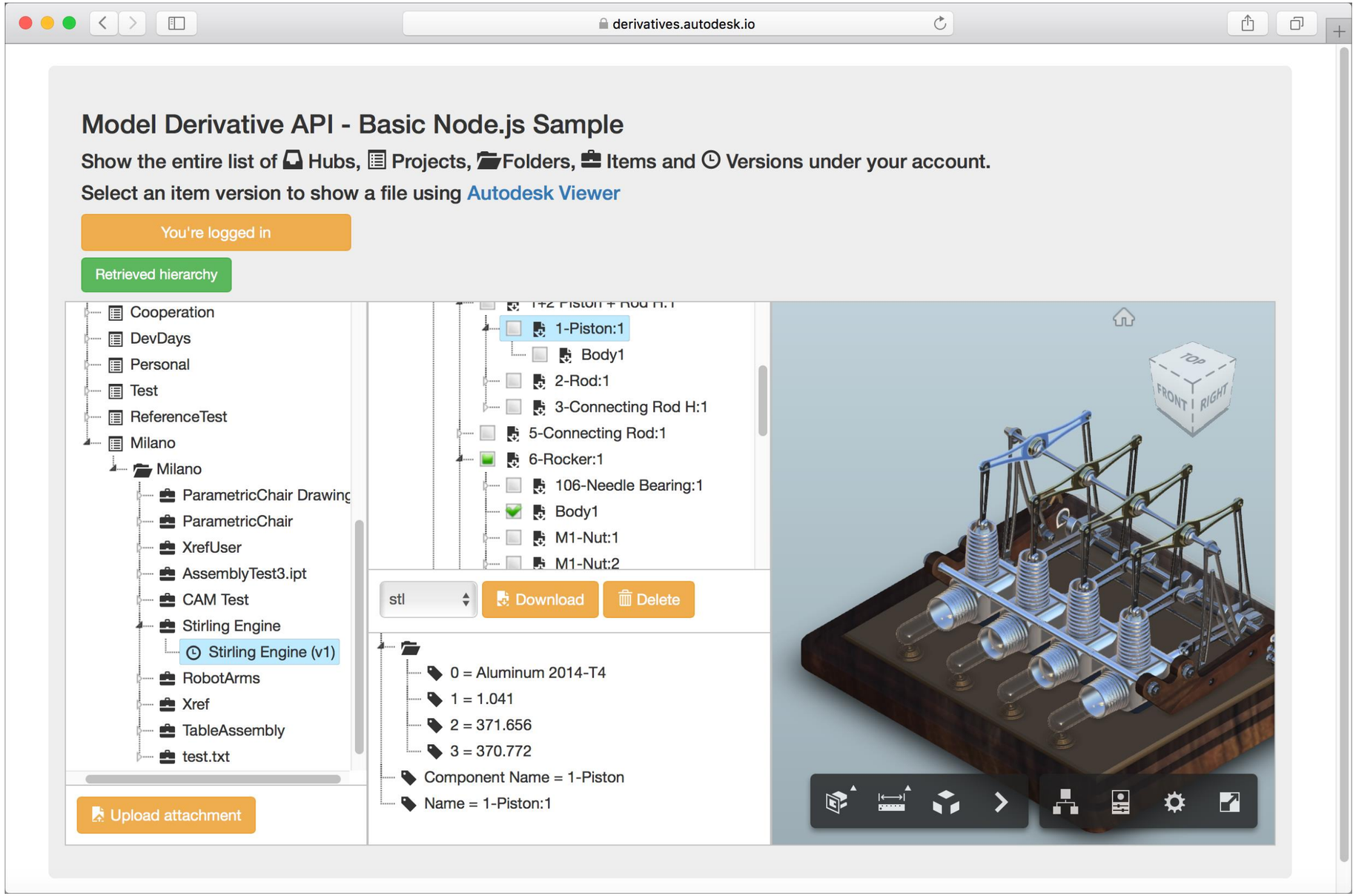



The Green items can be used by the Model Derivative API

# Work with Item version id

- Use derivative on Item version id
- Or drill down to the file on OSS






https://derivatives.autodesk.io

# Viewer

# Viewer

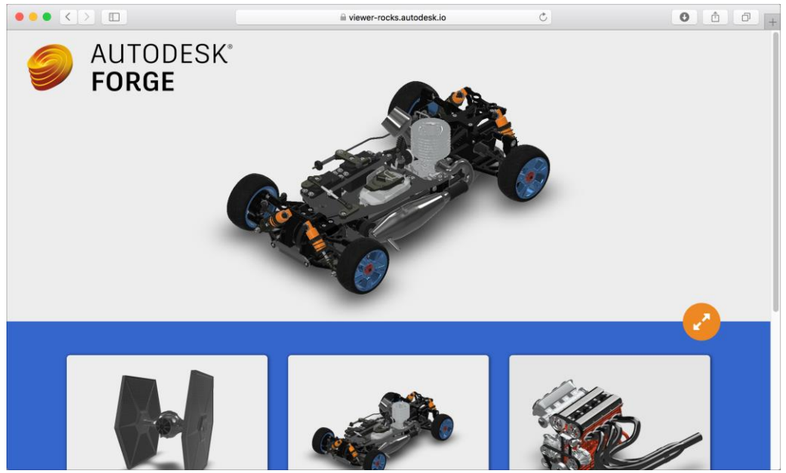
- **WebGL** based using **Three.js**

- **JavaScript** API
  - Access **Functions** and **Properties**
  - Subscribe to **Events**

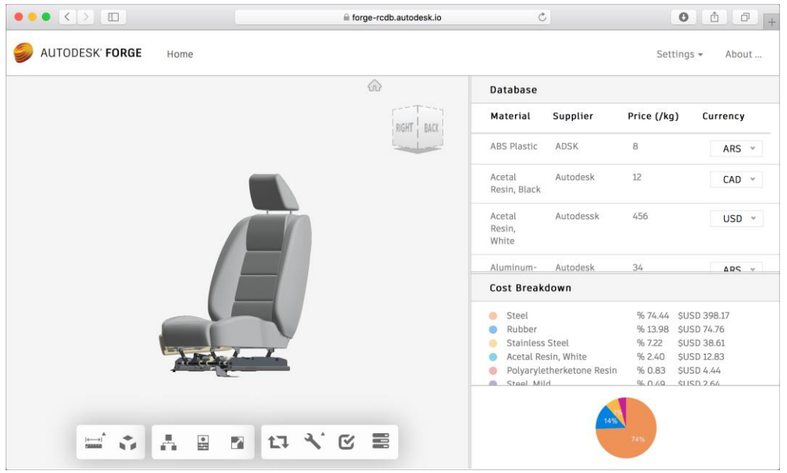
- Same used in **A360** products (**Fusion Team**, **BIM 360 Team**)

# Viewer

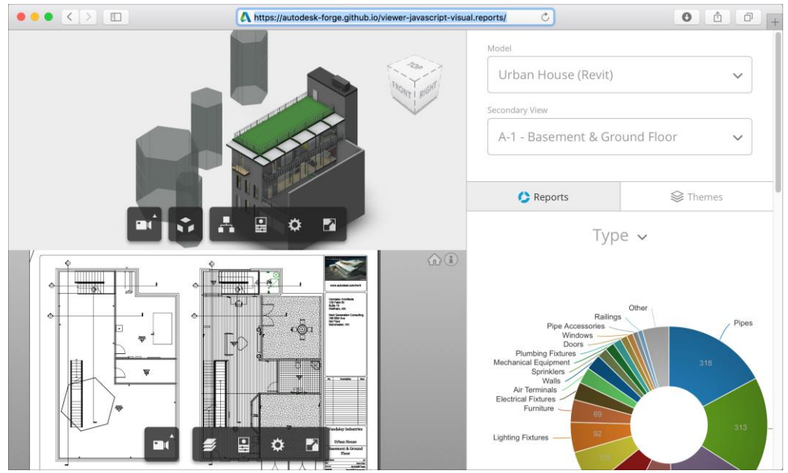
Three different instances of how Forge can share appropriate design information securely – while eliminating the need to share or duplicate your design files/IP.




Marketing

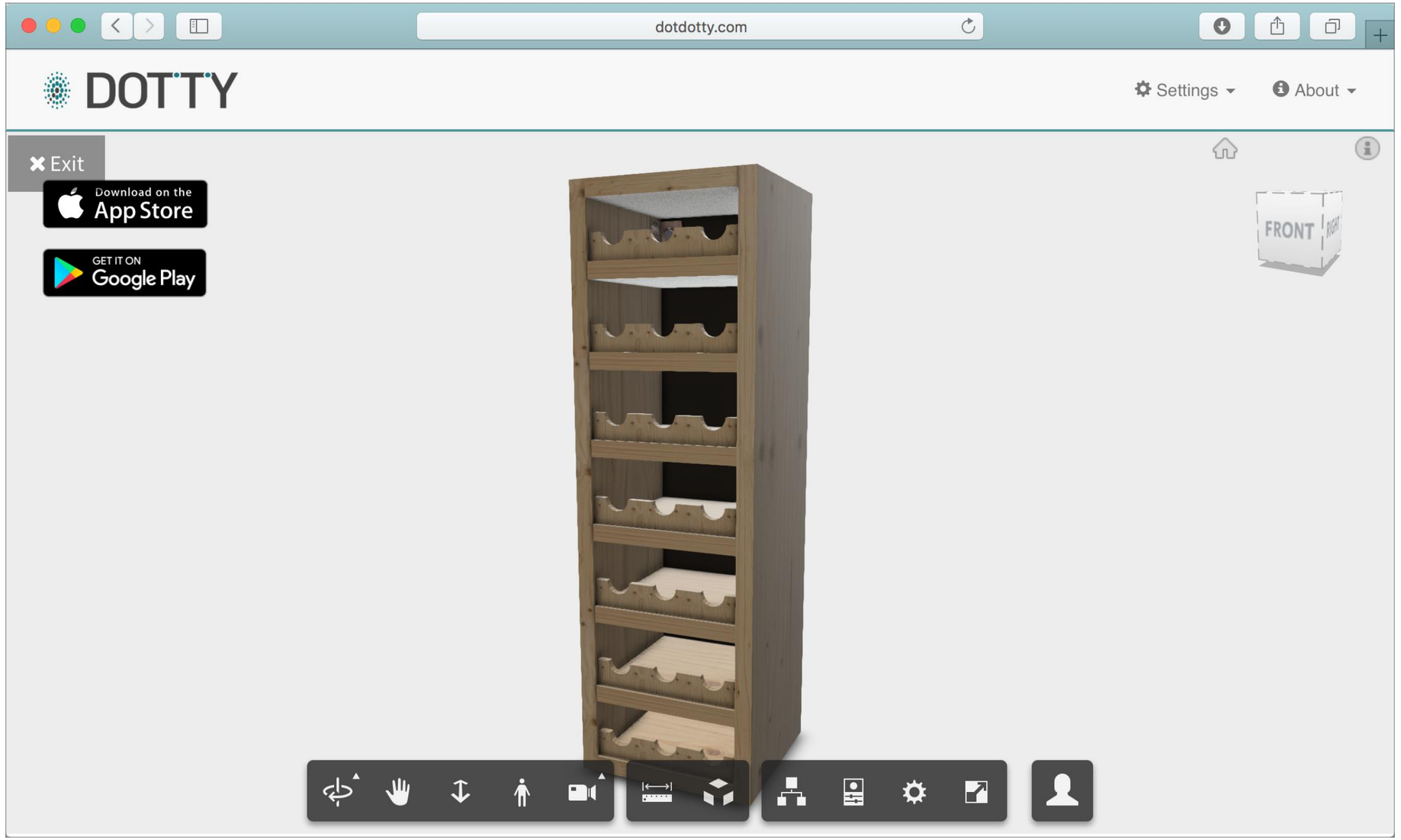



Manufacturing

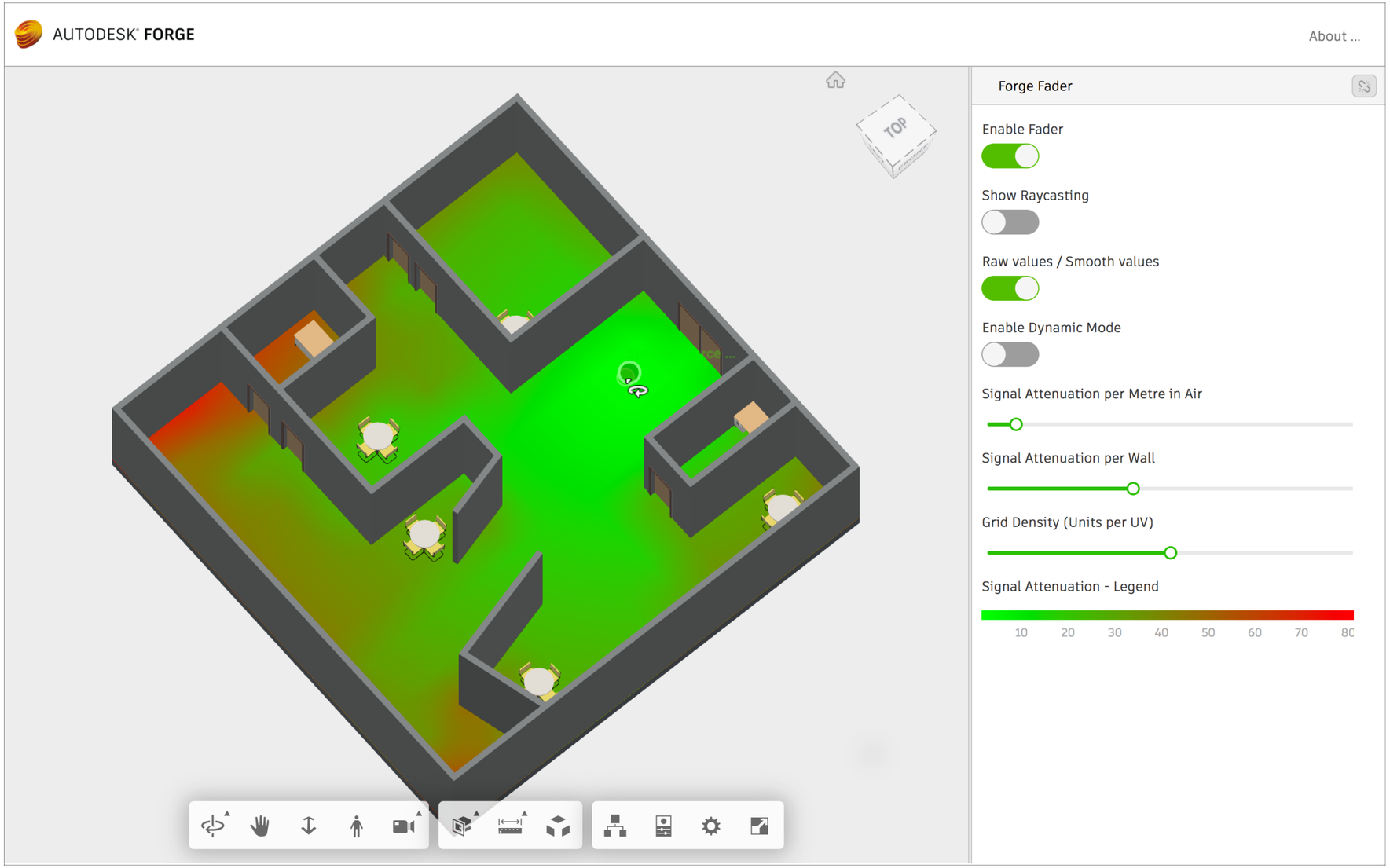



Maintenance

# Animations

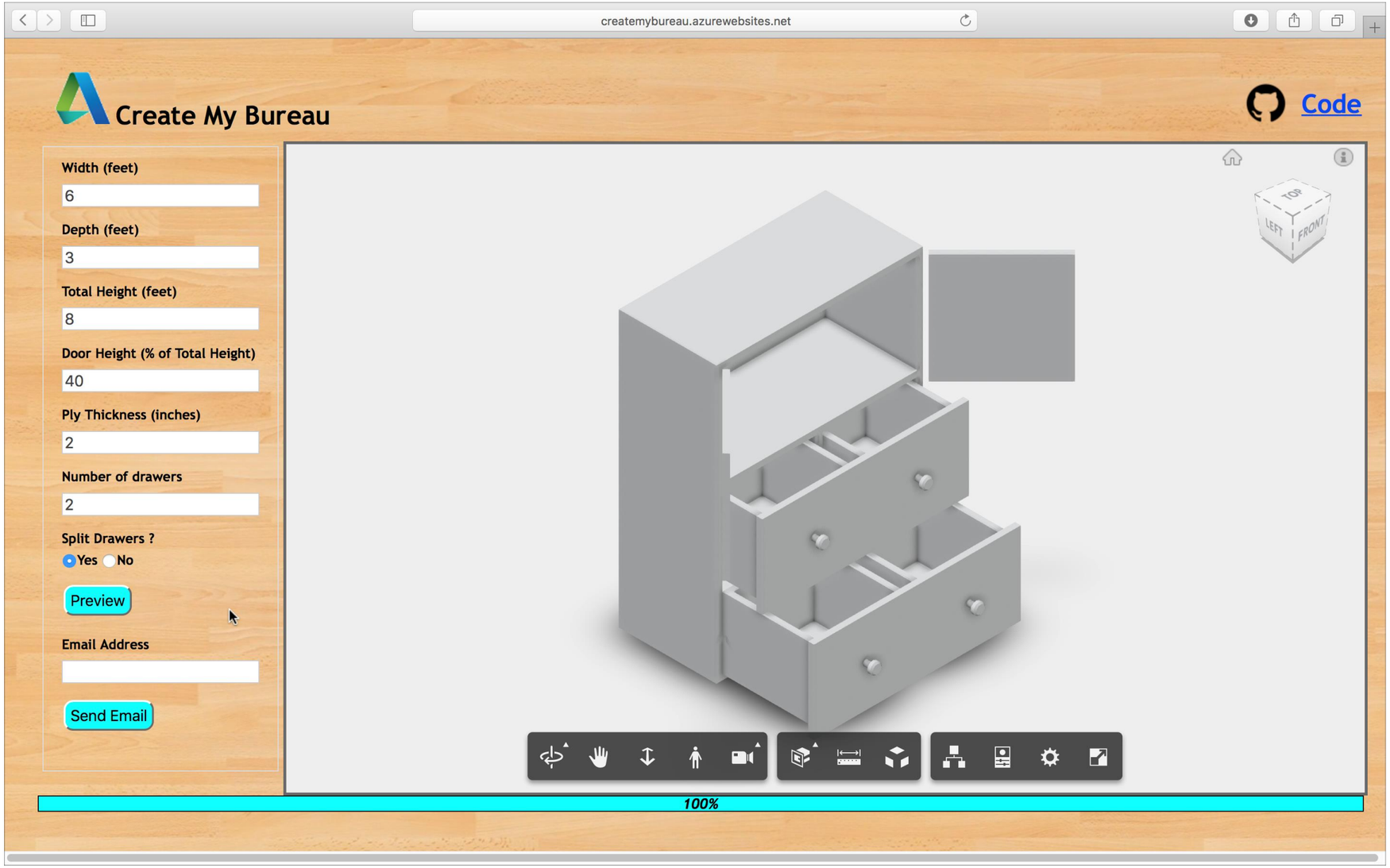

dotdotty.com
DOTTY
Settings
About
Exit
Download on the App Store
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FRONT

# Custom shaders



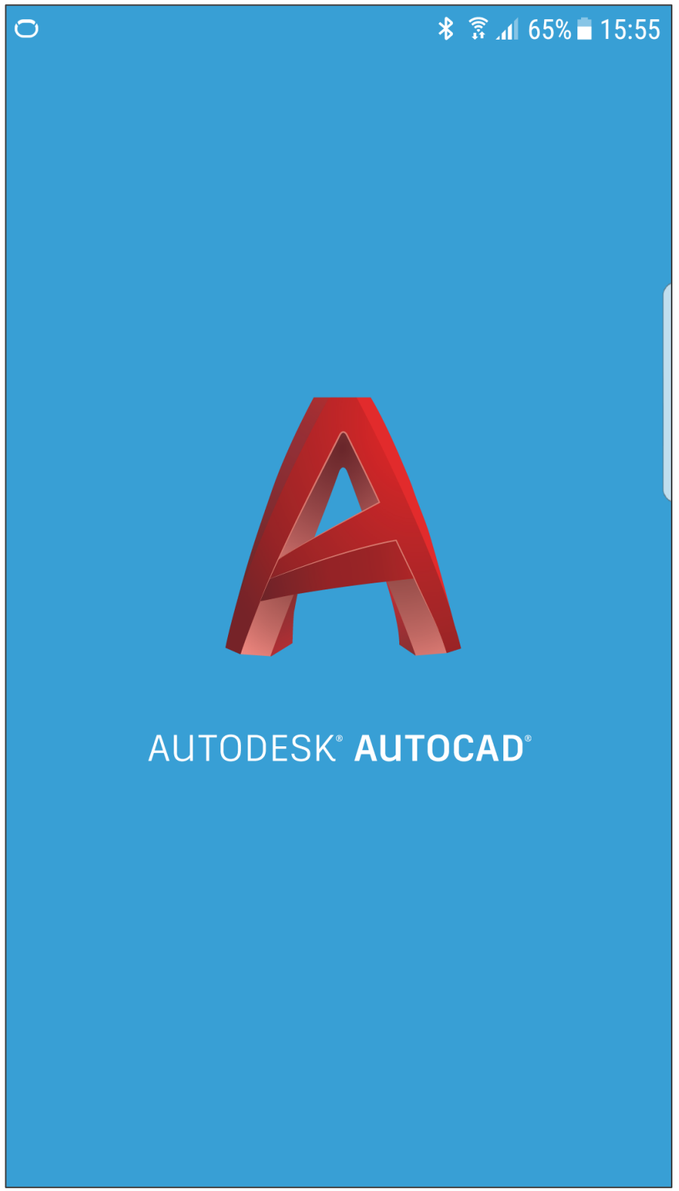
# Design Automation API

# Headless AutoCAD in the Cloud



# AutoCAD mobile app

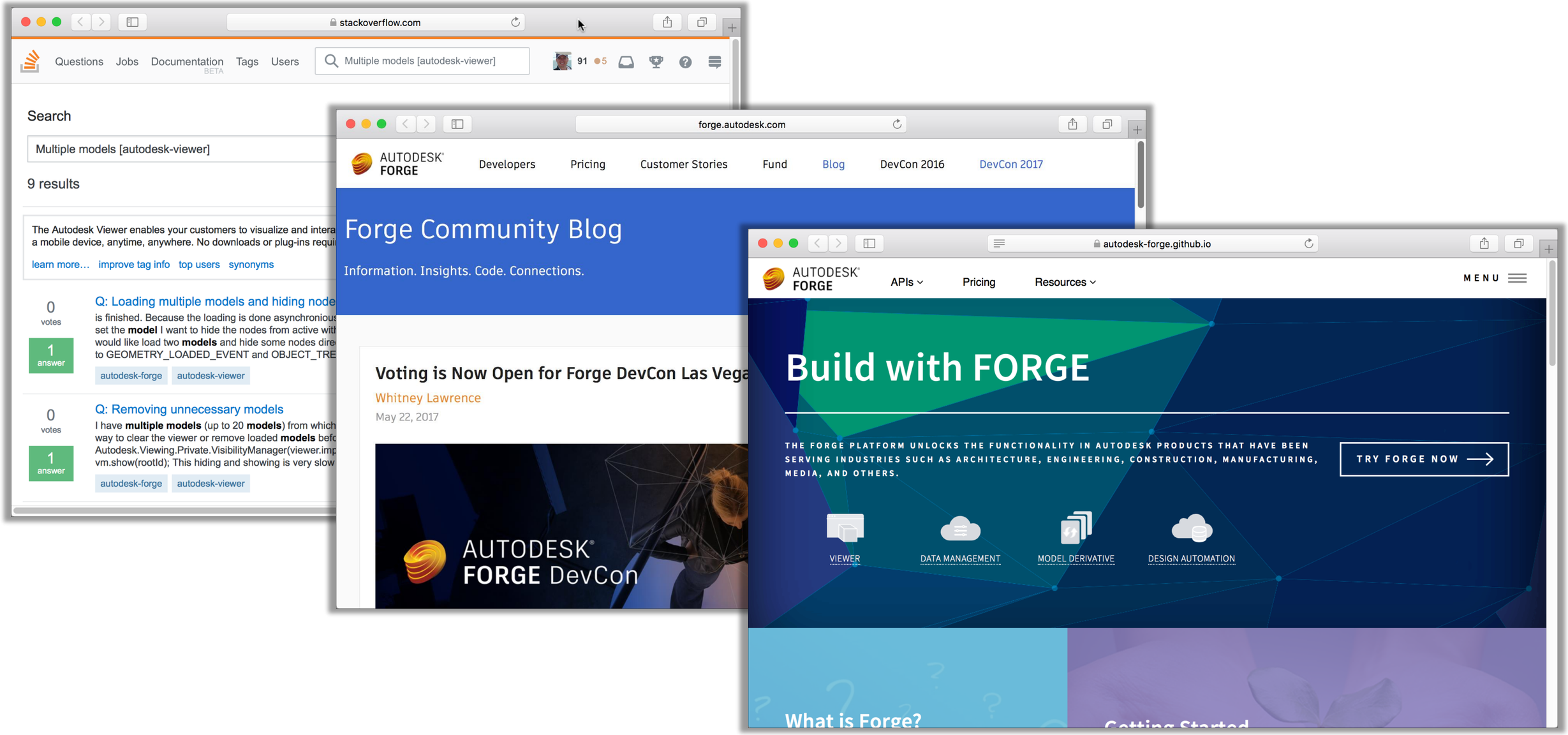
Also using **Design Automation API**



# Design Automation API

- AutoCAD: LIVE
- Revit: coming
- Inventor: coming

# Where to find help?



# Try out Forge today.

developer.autodesk.com



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