

Tips & Tricks: what I learnt while supporting Design Automation for Inventor

Adam Nagy

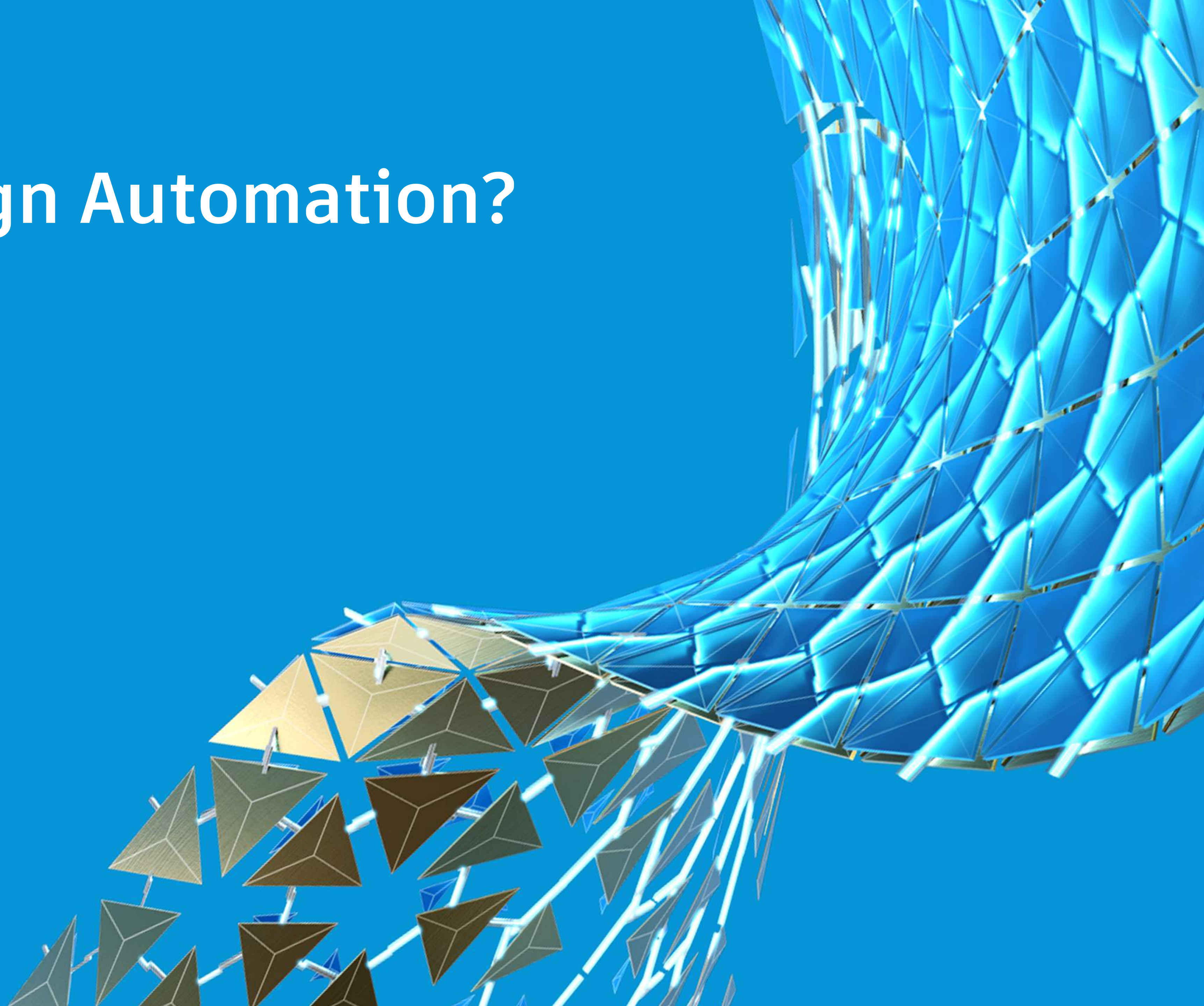
Principal Developer Advocate | @AdamTheNagy



About the speaker


Adam Nagy joined Autodesk back in 2005, and he has been providing programming support, consulting, training, and evangelism to external developers. He started his career in Budapest working for a civil engineering CAD software company. He then worked for Autodesk in Prague for 3 years, and now lives in South England, United Kingdom. Adam focuses on supporting Forge and the API's of our manufacturing products, Inventor and Fusion 360.

What is Design Automation?



Configurators

Object Storage Service

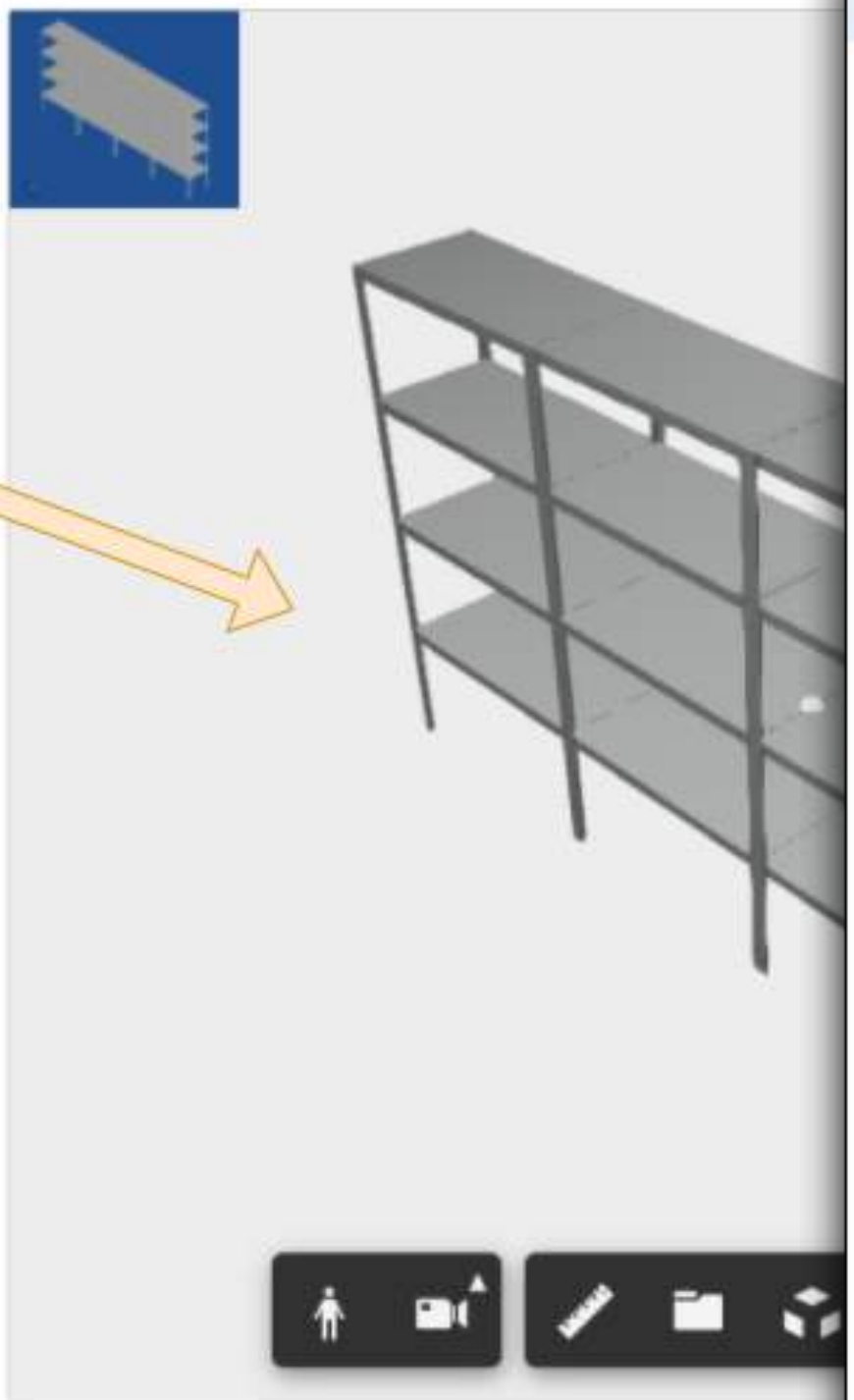


- gyufax9guclivu9nxxeqwiagdm3o9as
- corner180.ipt
- shelves.iam
- shelf90.ipt
- mid180.ipt
- shelf120.ipt
- mid90.ipt
- corner90.ipt
- shelves.ipj

☐ Use cache for storing and loading models

Start workitem

```
"stats": {
  "timeQueued": "2020-05-08T16:40:29",
  "timeDownloadStarted": "2020-05-08",
  "timeInstructionsStarted": "2020-0",
  "timeInstructionsEnded": "2020-05-",
  "timeUploadEnded": "2020-05-08T16:",
  "bytesDownloaded": 199,
  "bytesUploaded": 20363
},
"id": "5145b63a1bea4785b404ab528fd61"
}
https://developer.api.autodesk.com/oss
```



AUTODESK FORGE

Rim Style

Style - 1

Color

Titanium


Diameter

20

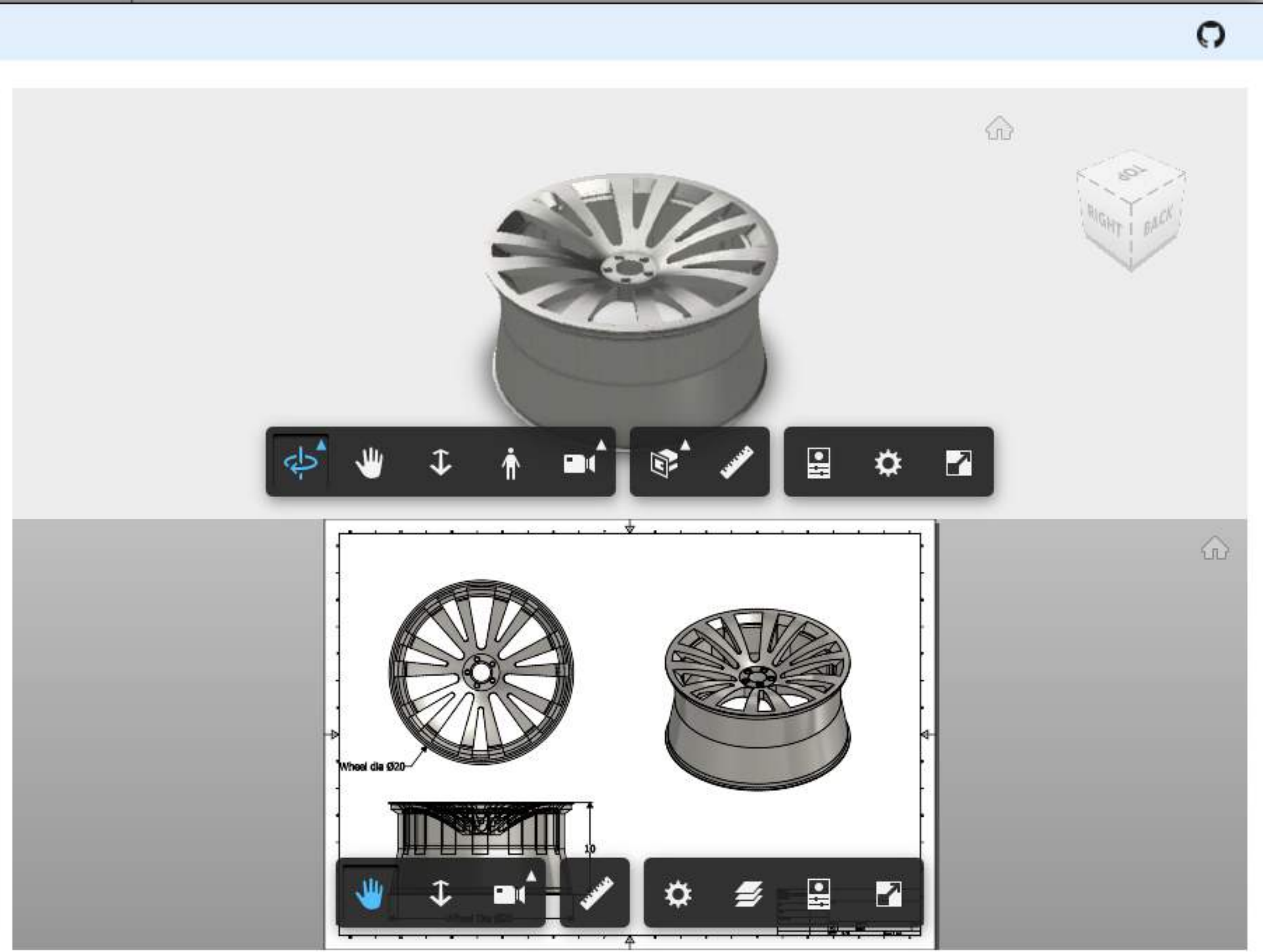
Width

10

Raster Image



Generate Download



Top

RIGHT BACK


Wheel dia 620

<https://forge-configurator.herokuapp.com/>

<https://forge-rimconfigurator-inventor.herokuapp.com/>

Configurators

Object Storage Service



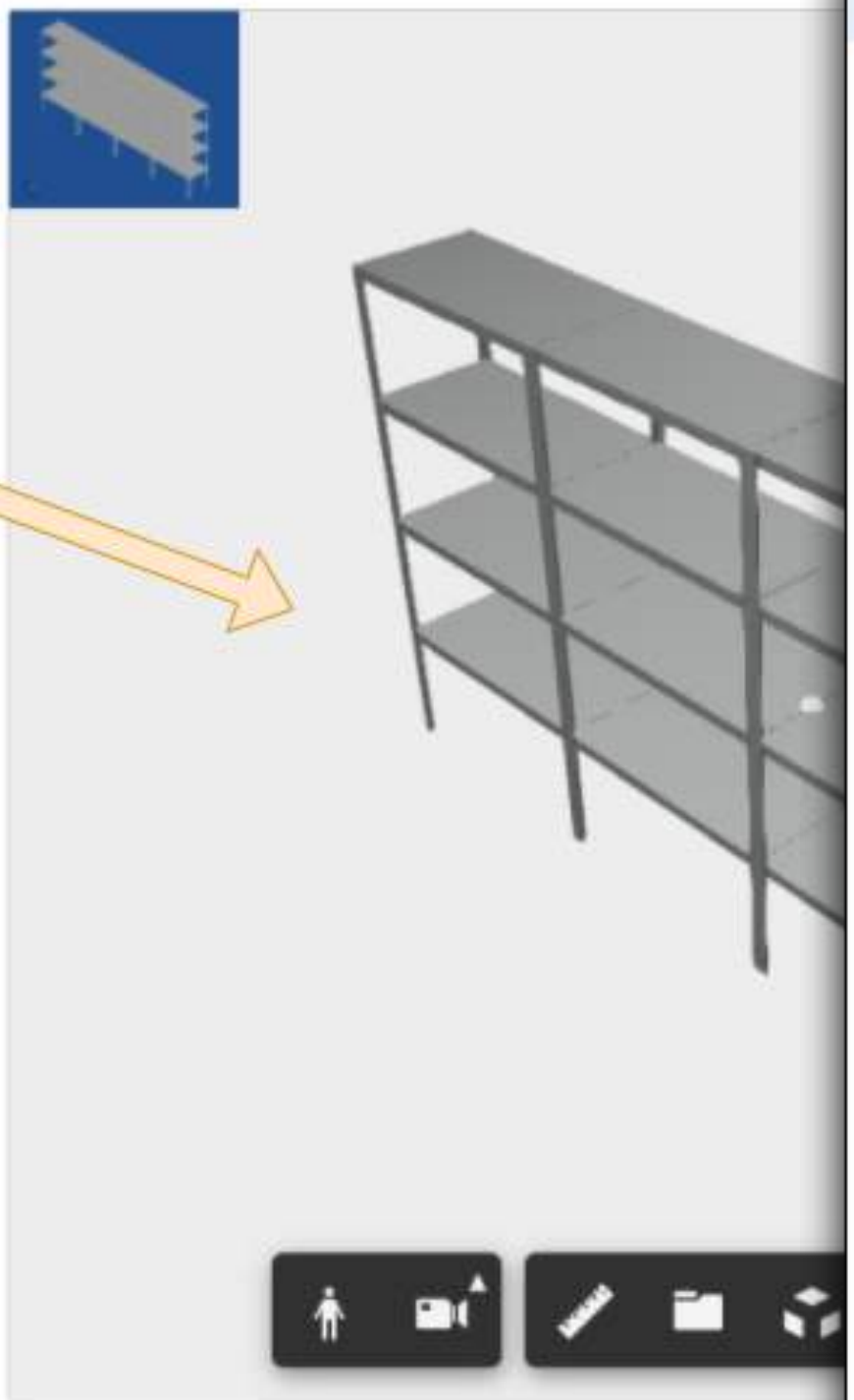
- gyufax9guclivu9nxxeqwiagdm3o9as
- corner180.ipt
- shelves.iam
- shelf90.ipt
- mid180.ipt
- shelf120.ipt
- mid90.ipt
- corner90.ipt
- shelves.ipj

☐ Use cache for storing and loading models

Start workitem

```
"stats": {
  "timeQueued": "2020-05-08T16:40:29",
  "timeDownloadStarted": "2020-05-08",
  "timeInstructionsStarted": "2020-05-08",
  "timeInstructionsEnded": "2020-05-08",
  "timeUploadEnded": "2020-05-08T16:40:29",
  "bytesDownloaded": 199,
  "bytesUploaded": 20363
},
"id": "5145b63a1bea4785b404ab528fd61"
}
```

<https://developer.api.autodesk.com/oss>



AUTODESK FORGE


Rim Style
Style - 1

Color
Titanium

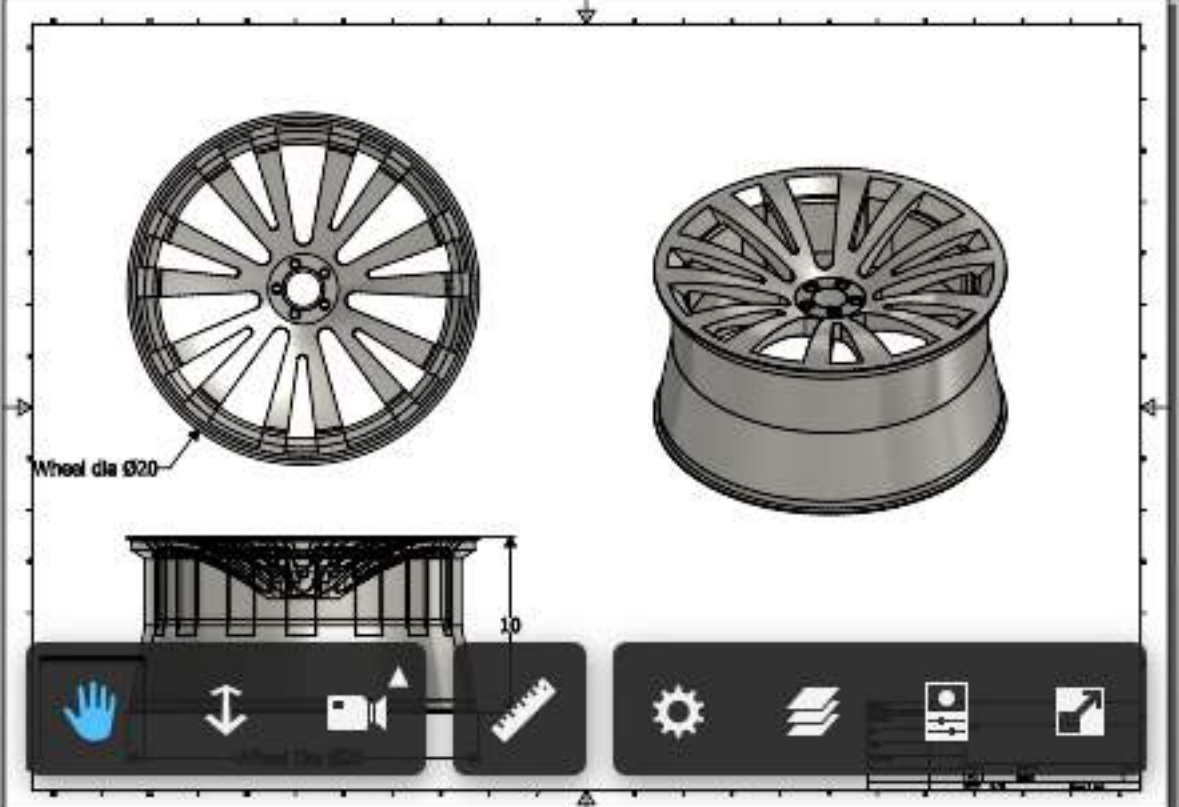

Diameter
20

Width
10

Raster Image



Generate Download



<https://forge-configurator.herokuapp.com/>

<https://forge-rimconfigurator-inventor.herokuapp.com/>

Configurators

Model View Configuration:

- WheelSize: 22 in
- NumberOfSpokes: 6 ul
- Slot: ☒
- WheelFinish: Chrome - Polished
- BrakeMaterial: Cast Iron
- CaliperFinish: Light Red
- TotalPrice: \$1085

BOM View Table:

Row Number	Part Number	Quantity	Description	Material
1	M-RS-0019-A OZ Racing Alleggerita Wheel (8.5 x 17i...	1		Aluminum 6061
2	M-BR-0003 5 Stud Disc bell	1		Aluminum 6061
3	cp4456-104-1-4	1		Iron, Cast

Drawing View: Technical drawings of the wheel, including front, side, and cross-sectional views.

<https://inventor-config-demo.autodesk.io/>

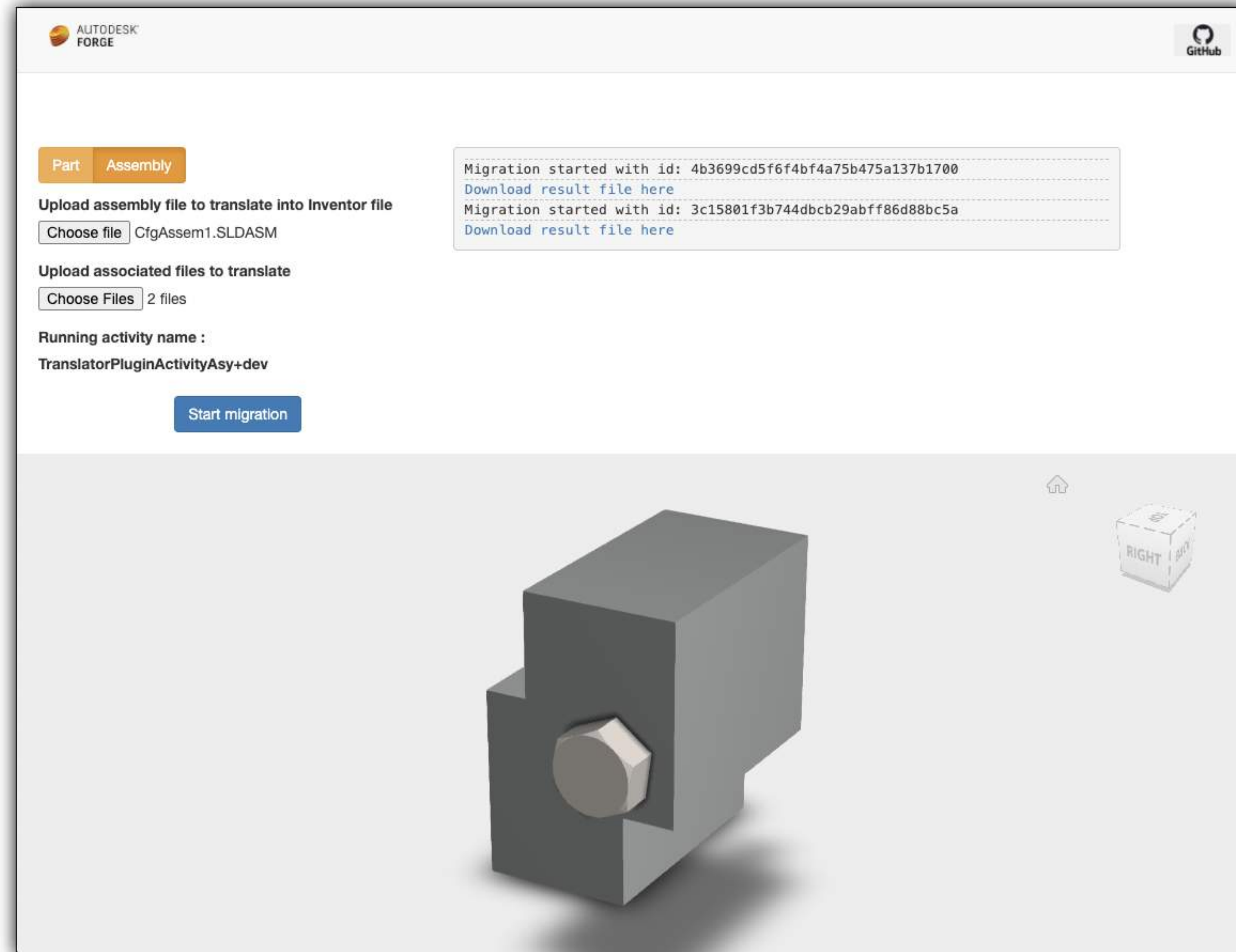
<https://github.com/Autodesk-Forge/forge-configurator-inventor>

Configurators

<https://inventor-config-demo.autodesk.io/>

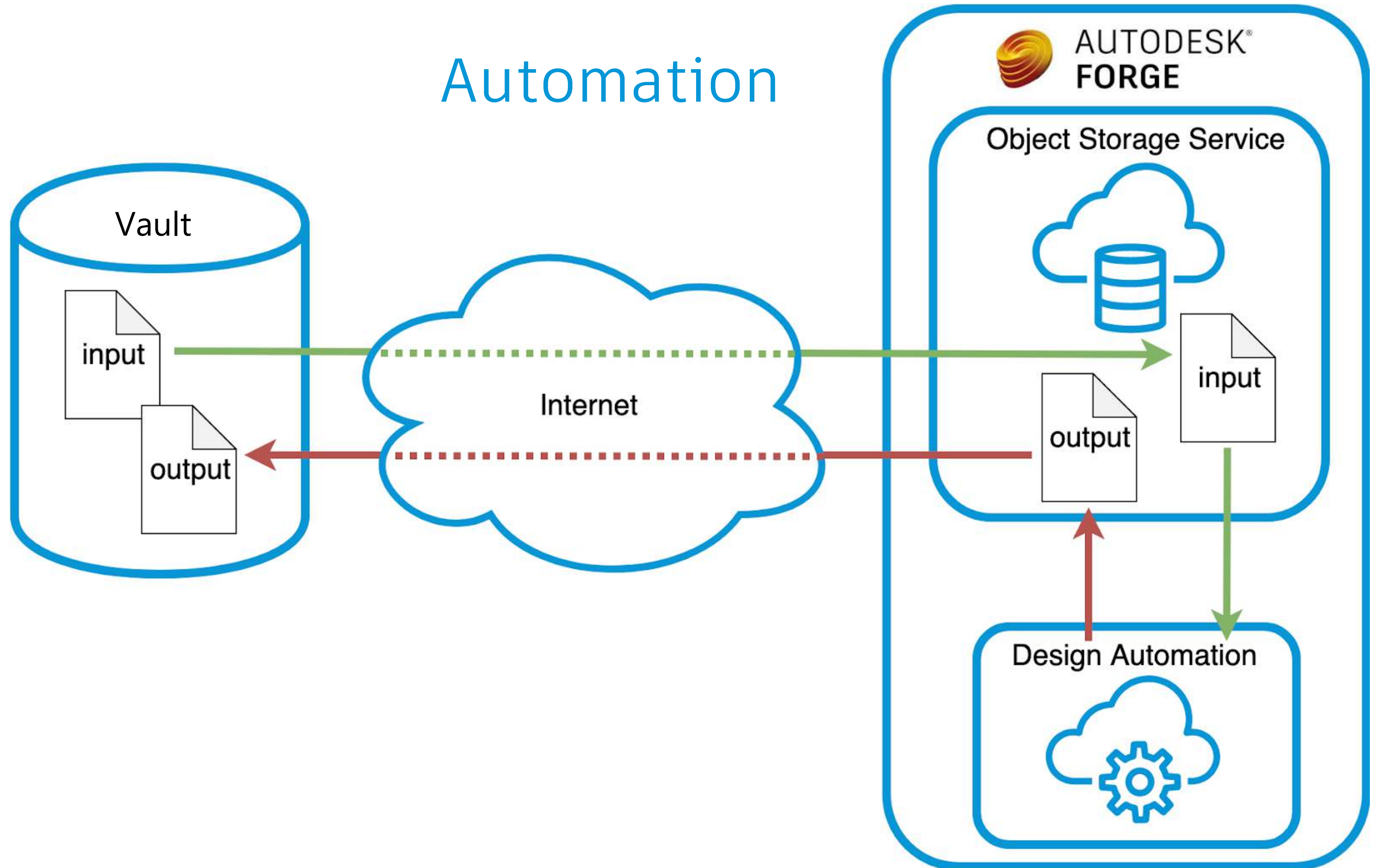
<https://github.com/Autodesk-Forge/forge-configurator-inventor>

Automation

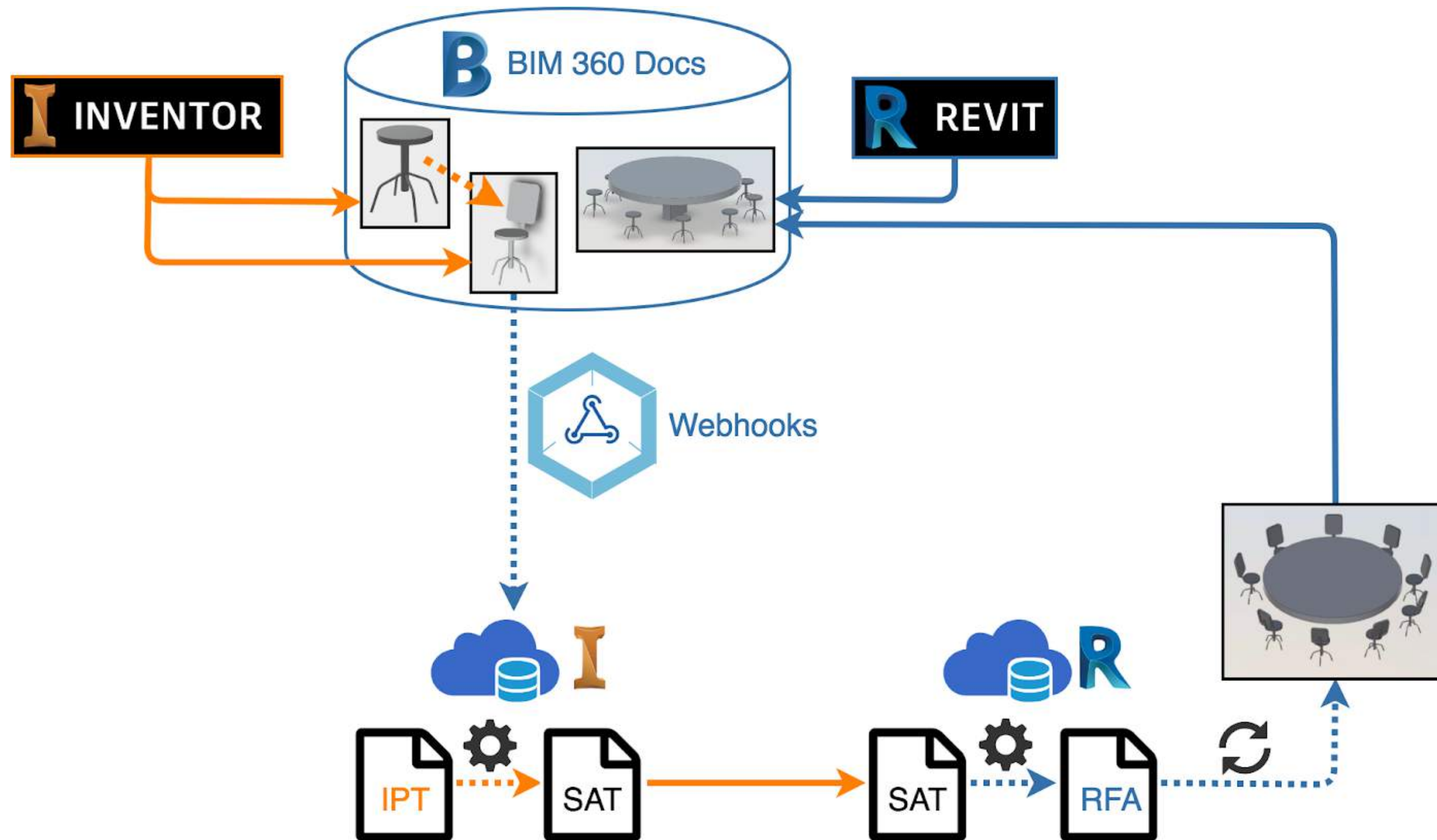


<https://design-migration.azurewebsites.net/>

Automation

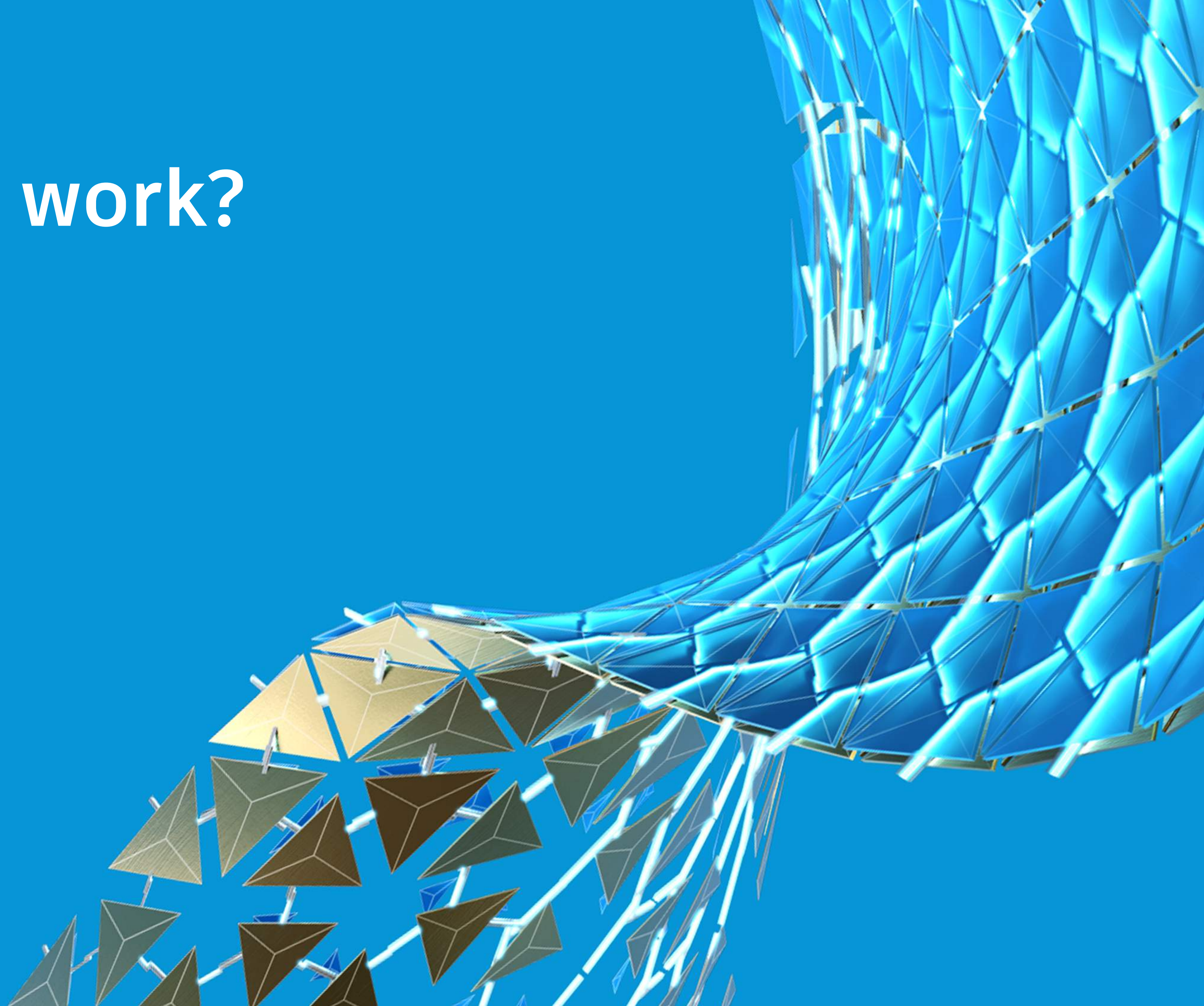


Automation



<https://github.com/Autodesk-Forge/forge-update-revitfamily-from-inventorpart>

How does it work?



Add-In Manager 2020

Applications Translators

Available Add-Ins	Load Behavior
DockableWindow	
Drag & Drop Interoperability	Automatic / Parts
DrawingTools	Automatic / Loaded
Electrical Catalog Browser	Automatic / Assemblies
ESKD Support	
Frame Generator	Automatic / Parts
GeneralTools	Automatic / Loaded
GetUserIdProject	
iCopy	Automatic / Assemblies
iLogic	Automatic / Loaded
ImpersonatorTest	Automatic / Loaded
Interactive Tutorial	Automatic / Loaded
Inventor Studio	Automatic / Parts
Mold Design	Automatic / Parts
Routed Systems: Cable & Harness	Automatic / Parts
Routed Systems: Tube & Pipe	Automatic / Parts
SampleAddIn	Automatic / Loaded
Shared Views	Automatic / Loaded
Simulation: Dynamic Simulation	Automatic / Assemblies
Simulation: Frame Analysis	Automatic / Assemblies
Simulation: Stress Analysis	Automatic / Parts



**AUTODESK®
FORGE**

Design Automation



AppBundle

SampleBundle.zip

Main API endpoints

V3 HTTP Endpoint	Programming concept	Product concept
/workitems	Function call	Product execution, session
/activities	Function definition	Script file command line parameters
/appbundles	Shared library	Plugin
/engines	Instruction set	Product (Revit, AutoCAD, Inventor, etc) to use

Main API endpoints

V3 HTTP Endpoint

/workitems

/activities

/appbundles

/engines

} execution – needs to be called from your web app

} setup – you can rely on tools to do this


Design Automation Tools

rGm0mO9jVSsD2yBEDk9MRtXQTwsa61y0

AppBundles

Activities


WorkItems



Autodesk Forge Tools `petrbroz.vscode-forge-tools`
Petr Broz | 1,848 | ★★★★★ | Repository | v2.1.0
Visual Studio Code extension for accessing Autodesk Forge services and content.
[Disable](#) [Uninstall](#) This extension is enabled globally.

Visual Studio | Marketplace

Visual Studio > Templates > Design Automation for Inventor



Design Automation for Inventor
Autodesk | 1,268 installs | 1,357 downloads | ★★★★★ (0) | Free
Design Automation for Inventor
[Download](#)

Create AppBundle & Alias

Buckets Tools

sZgG2sVY189dAVzCXm7TsQ7CUtEGaO

For a list of all the possible scopes that you can use, see the [Autodesk OSS API documentation](#).

Bad Request

FilesToViewer.png
SimplifyModel.bundle.zip

Delete file
Download file
Public URL

Info

Engine Autodesk.Inventor+2021

Description Simplify Model

App Bundle https://developer.api.autodesk.com/oss/v2/signedresources/27dcc36b

Id SimplifyModel

Create

Design Automation

sZgG2sVY189dAVzCXm7TsQ7CUtEGaO

AppBundles Activities

Personal

SimplifyModel

Shared

1

oss-manager.autodesk.io says
https://developer.api.autodesk.com/oss/v2/signedresources/3d12a9df-26e0-43cf-931e-8092c8e0db9f?region=US

OK

Design Automation

sZgG2sVY189dAVzCXm7TsQ7CUtEGaO

AppBundles Activities

Personal

SimplifyModel

Shared

2

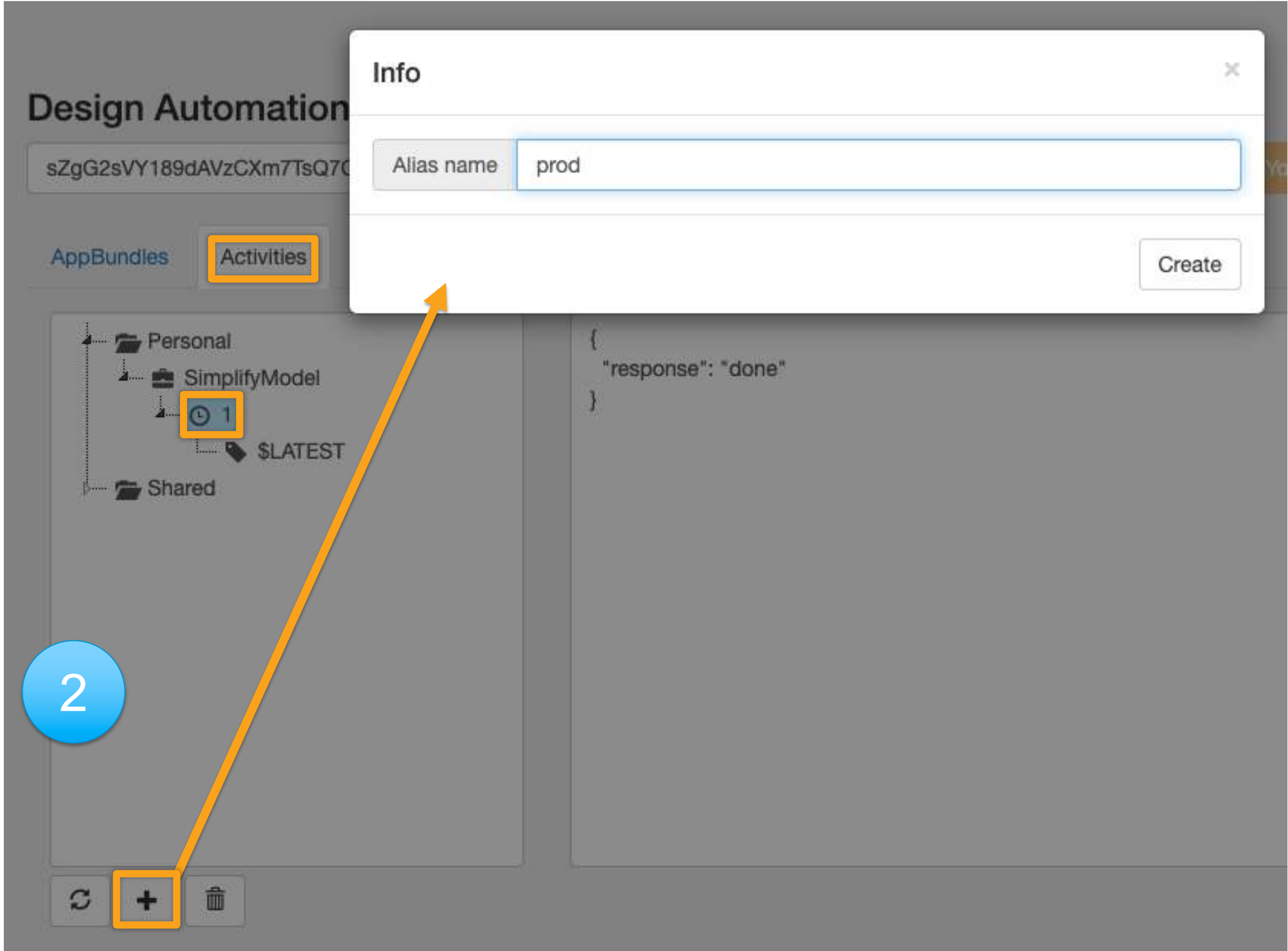
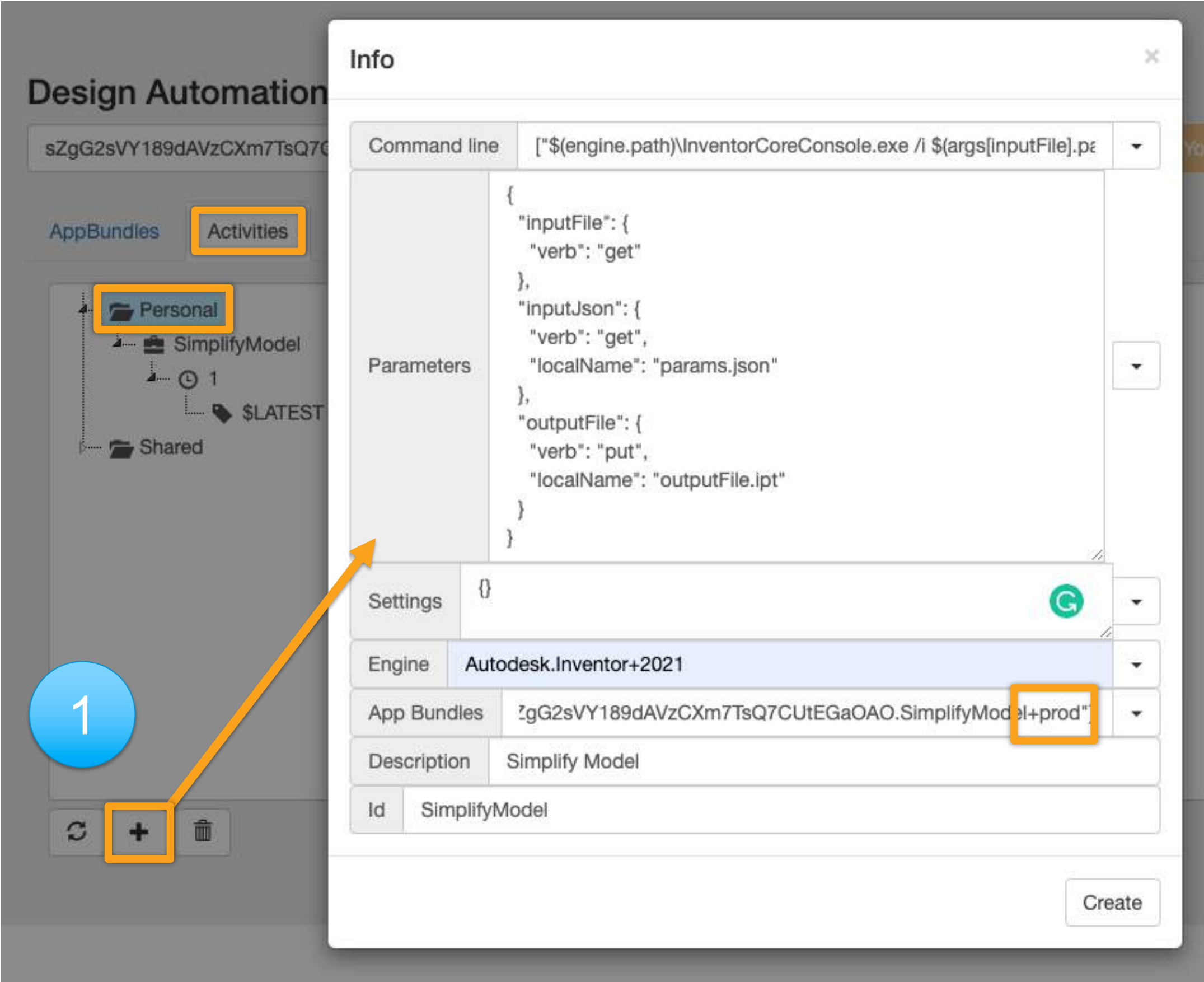
Info

Alias name prod

Create

2

Create Activity & Alias

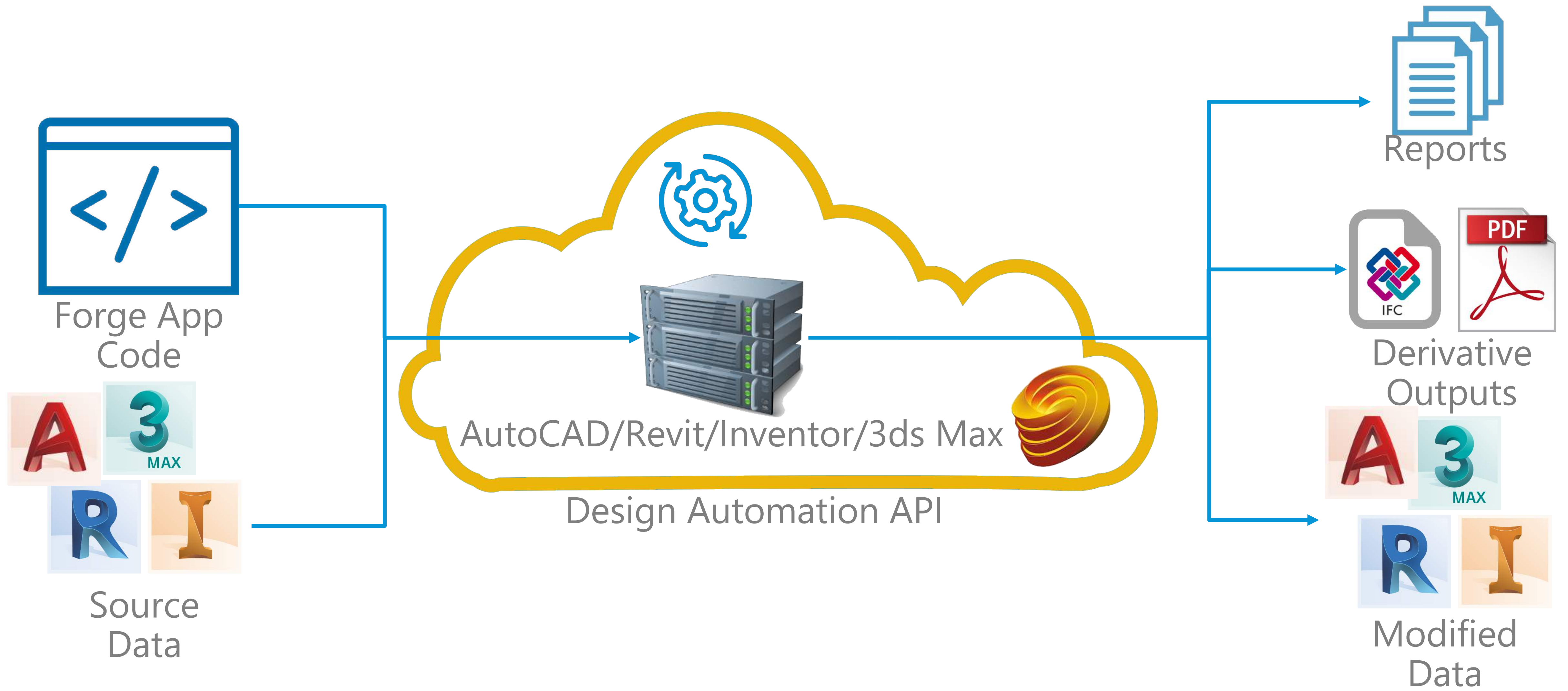


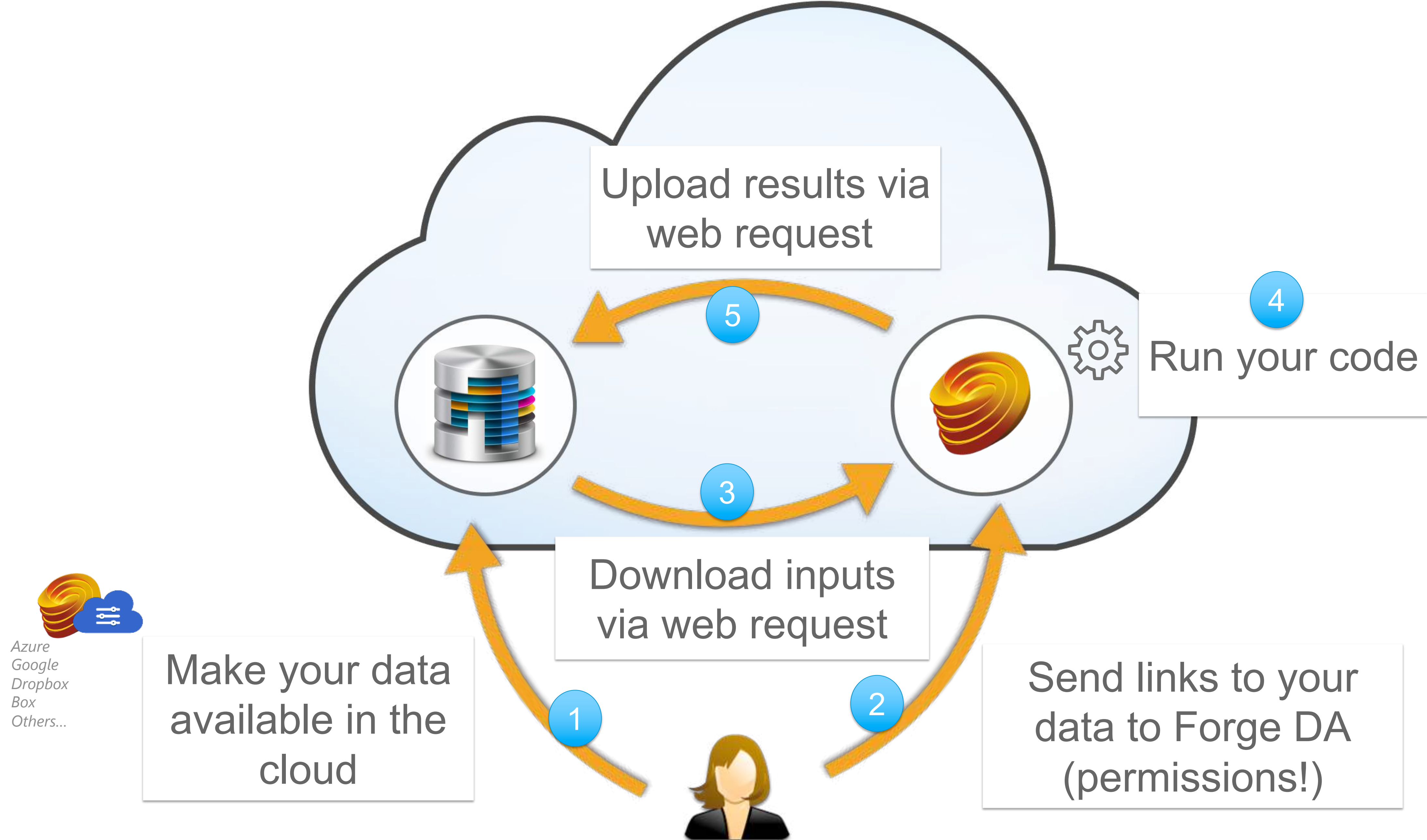
Create WorkItem

The image illustrates the steps to create a WorkItem in the Autodesk Design Automation environment. It features three main components:

- Buckets Tools Panel:** Located on the left, it shows a list of files under the bucket `szgg2svy189davzcxm7tsq7cut`. The file `Engine MKII.iam.zip` is selected, and the **Public URL** option is highlighted in the context menu. An orange arrow points from this option to the notification box.
- Notification Box:** A dark box at the top left displays the message: `oss-manager.autodesk.io says` followed by the URL `https://developer.api.autodesk.com/oss/v2/signedresources/b197bf89-ec86-4319-ad32-cff376b301fe?region=US`. An orange arrow points from this URL to the `url` field in the Info dialog.
- Design Automation Workspace:** The central workspace shows a hierarchy of folders: `Personal` (containing `SimplifyModel`), `Shared`, and `$LATEST`. The `prod` folder under `$LATEST` is highlighted with an orange box. An orange arrow points from this folder to the `inputZip` field in the Info dialog. At the bottom, a play button icon is highlighted with an orange box.
- Info Dialog:** A white dialog box on the right titled "Info" displays the JSON configuration for the WorkItem. The `url` field for `inputJson` is highlighted with an orange box, containing the value: `"url": "data:application/json,{\"height\": \"16 in\", \"width\": \"10 in\"}"`. The dialog also shows fields for `inputZip` and `outputZip`. A **Create** button is at the bottom right.

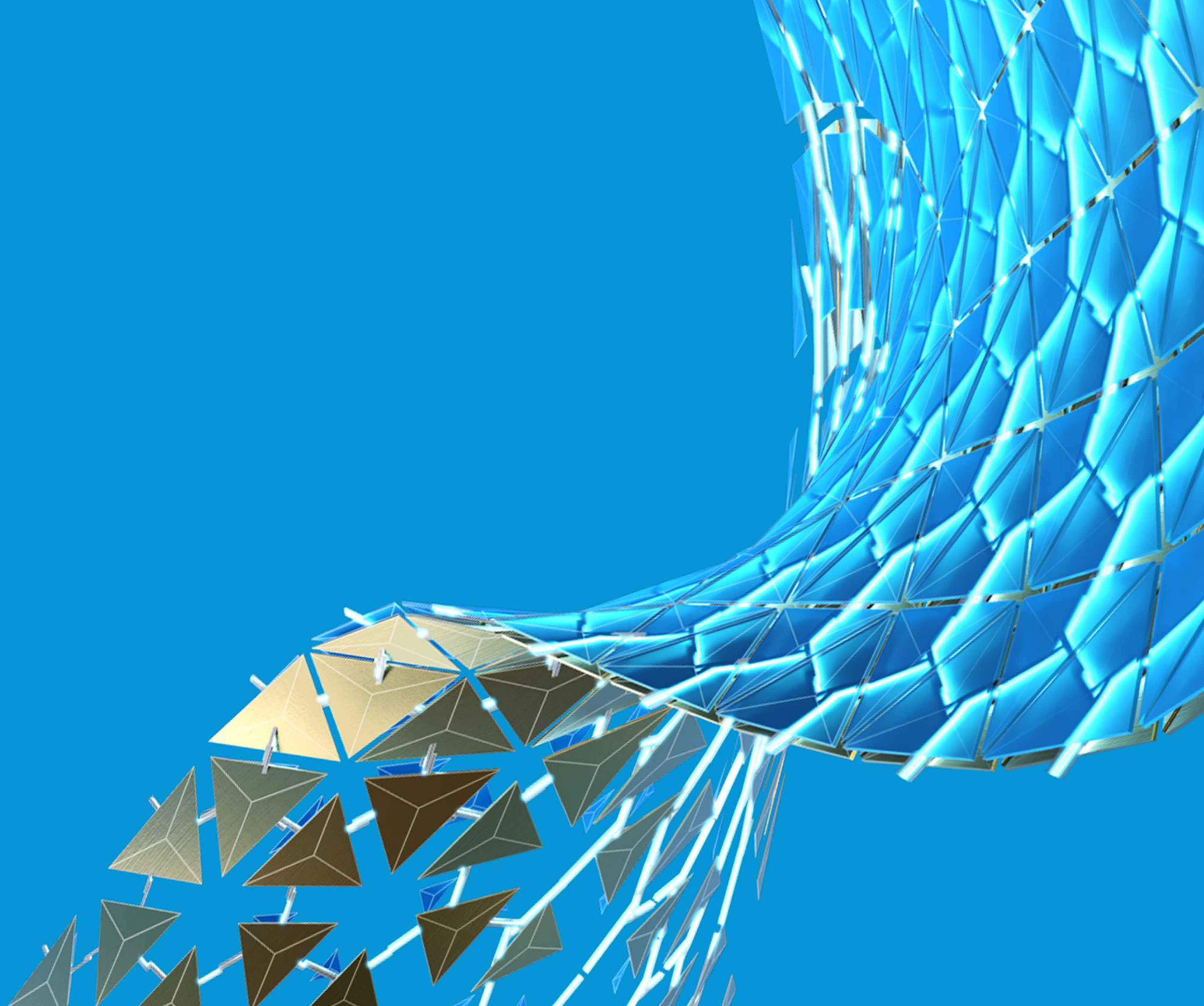
```
{  "inputZip": {    "zip": true,    "verb": "get",    "description": "input zip",    "required": true,    "localName": "files",    "url": ""  },  "inputJson": {    "verb": "get",    "description": "input json",    "required": true,    "localName": "input.json",    "url": "data:application/json,{\"height\": \"16 in\", \"width\": \"10 in\"}"  },  "outputZip": {    "zip": true,    "verb": "put",    "description": "output zip file",    "localName": "files",    "url": ""  }}
```



❗ Input/outputs are **NOT** stored, they are downloaded/processed and **DISCARDED**

Aliases



Aliases

Design Automation Tools

rGm0mO9jVSsD2yBEDk9MRtXQTwsa61y0

.....

You're logged in

AppBundles

Activities

WorkItems

SampleBundle

104

105

106

107

108

109

prod

110

stg

111

\$LATEST

alpha

ShrinkWrap

Test

↺

+

🗑

```
{
  "package": "https://dasprod-
store.s3.amazonaws.com/apps/rGm0mO9jVSsD2yBEDk9MRtXQTwsa61y0/SampleBundle/109?
AWSAccessKeyId=ASIATGVJZKM3BF3AOHWZ&Expires=1599684547&x-amz-security-
token=IQoJb3JpZ2luX2VJEEMaCXVzLWVhc3QtMSJGMEQCIG1Hwba%2BkPWkgu3wN%2FbndG
QQYhLrHhcPQYsf9ldhVoQCAiBr9c0Xi%2BG171hKz7oUFgXJTBNPS8tiyDuY%2BmdDlupl%2BCrV
AQhMEAlaDDIyMDQ3MzE1MjMxMCIM%2B%2BvOOMi8UkVF%2FdYiKrIB%2FB84AbYSEJyGqOo
ai6pndcE1%2B3yl89FPn6ZIMajx5HjFgedmX7yzcLbTsvEdvO%2BG0SXHAih09R7SOlgDNCEi80C5
A%2BZttP2iQZxqfaPTIV3a8dcyiUNStjQP%2BPG1%2FWteEOQUOihEX3ZtTol19dmUCmcTJfOzl0j
HYwwQiubUNqEozkvxLzwWXyu8fWj7t3%2Bj%2Fre9PD%2Bdf1CEt6CNotD0elEatmMGerXESPVR
qvK98pqXqTCayOT6BTrhAfNYBf9IFPAbf8wE4hyDD32v2fq%2FW3IF3Nm%2BR%2BDkU8mhZl3t
irXCSuWrsCoStIS36kP16yIYoKTJ%2Fd%2BoYTl8fuEVgby8moM1U8oI0LJtLeXQBCHg0ANnfJxd8
85NvsZB86F82in5AFZ%2FtSsL3281cAstCalvVZegpnQbuilVAIAvJRSaxzRUXuASd5FEYsyYNU7P8s
qJ4KEbf2uYz0%2Briqrxniq65bFd7D1DbCak4tbH%2FMW%2FOM8NMa6QUDRIGMyi4ZlrASKAb5
2l1Vx%2BBxAOTiFmgJF5FLY0DoOYgMiNBFLg%3D%3D&Signature=XxlpqLBG4s4voHHY6ATgJP
K4RPU%3D",
  "id": "rGm0mO9jVSsD2yBEDk9MRtXQTwsa61y0.SampleBundle+prod",
  "engine": "Autodesk.Inventor+24".
}
```


Aliases

Design Automation Tools

- rGm0mO9jVSsD2yBEDk9MRtXQTwsa61y0.SampleBundle+\$LATEST ❌
- rGm0mO9jVSsD2yBEDk9MRtXQTwsa61y0.SampleBundle+111 ❌
- rGm0mO9jVSsD2yBEDk9MRtXQTwsa61y0.SampleBundle+alpha ✅

stg

111

\$LATEST

alpha

ShrinkWrap

Test

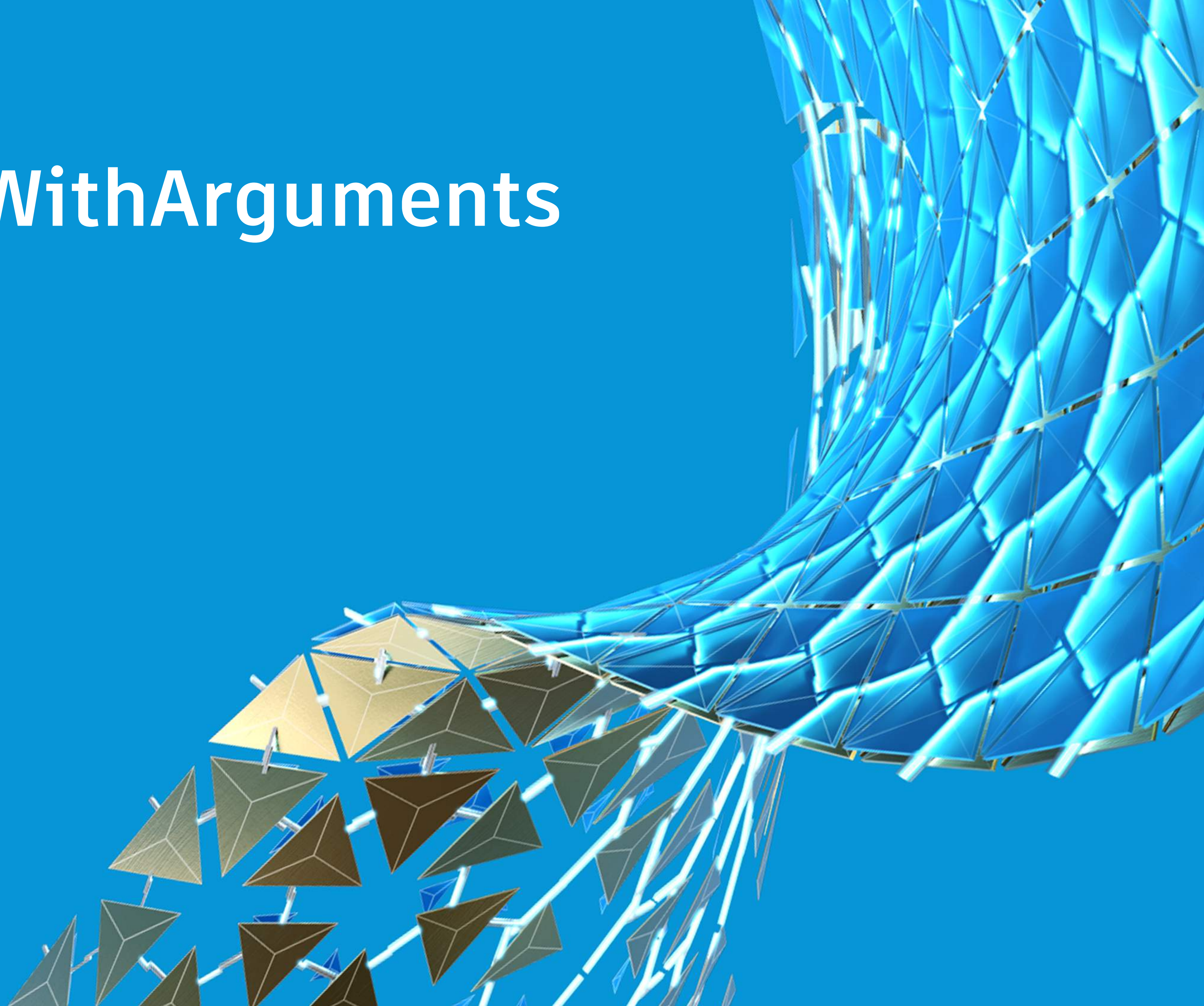
Refresh

+

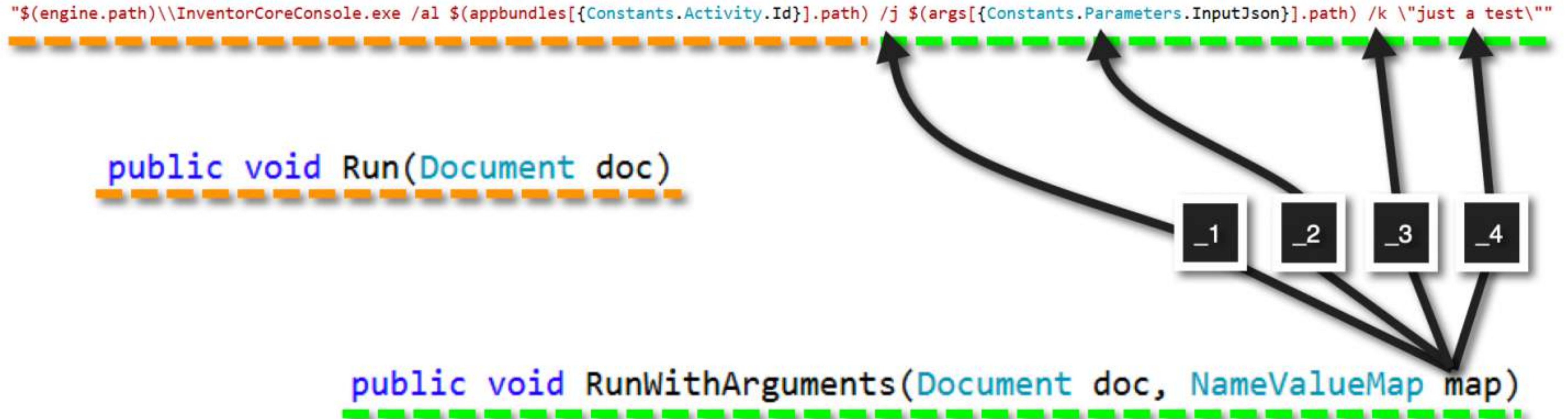
Trash

```
irXCSuWrsCoStIS36kP16yIYoKTJ%2Fd%2BoYTl8fuEVgby8moM1U8ol0LJtLeXQBCHg0ANnfJxd8
85NvsZB86F82in5AFZ%2FtSsL3281cAstCalvVZegpnQbuilVAIAvJRSaxzRUXuASd5FEYsyYNU7P8s
qJ4KEbf2uYz0%2Briqrxniq65bFd7D1DbCak4tbH%2FMW%2FOM8NMa6QUDRIGMyi4ZlrASKAb5
2l1Vx%2BBxAOTiFmgJF5FLY0DoOYgMiNBFLg%3D%3D&Signature=XxlpqLBG4s4voHHY6ATgJP
K4RPU%3D",
  "id": "rGm0mO9jVSsD2yBEDk9MRtXQTwsa61y0.SampleBundle+prod",
  "engine": "Autodesk.Inventor+24".
```

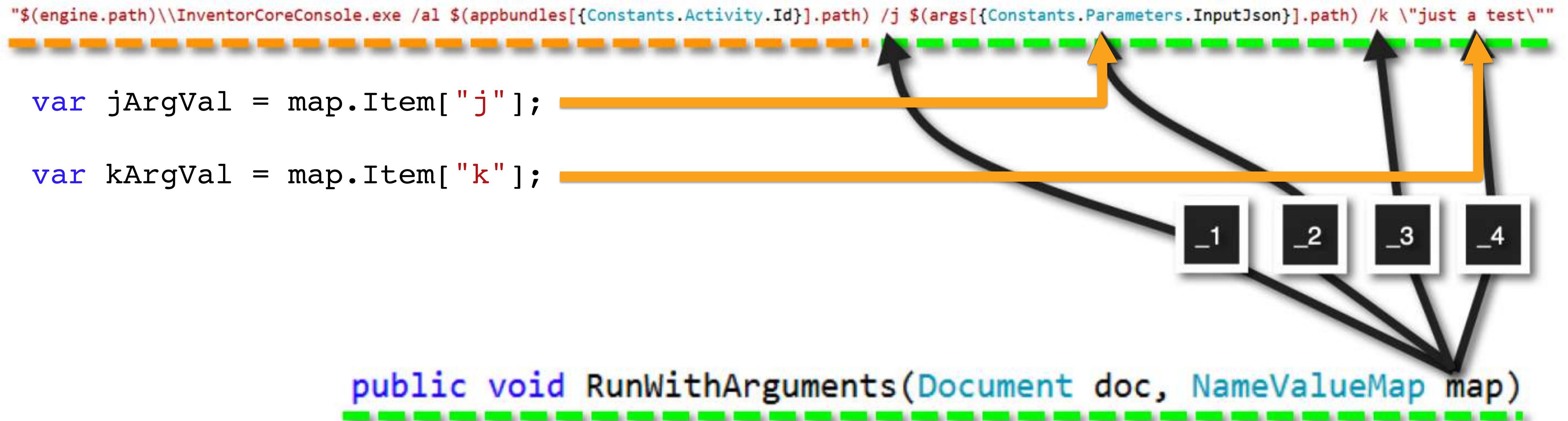

Run vs RunWithArguments



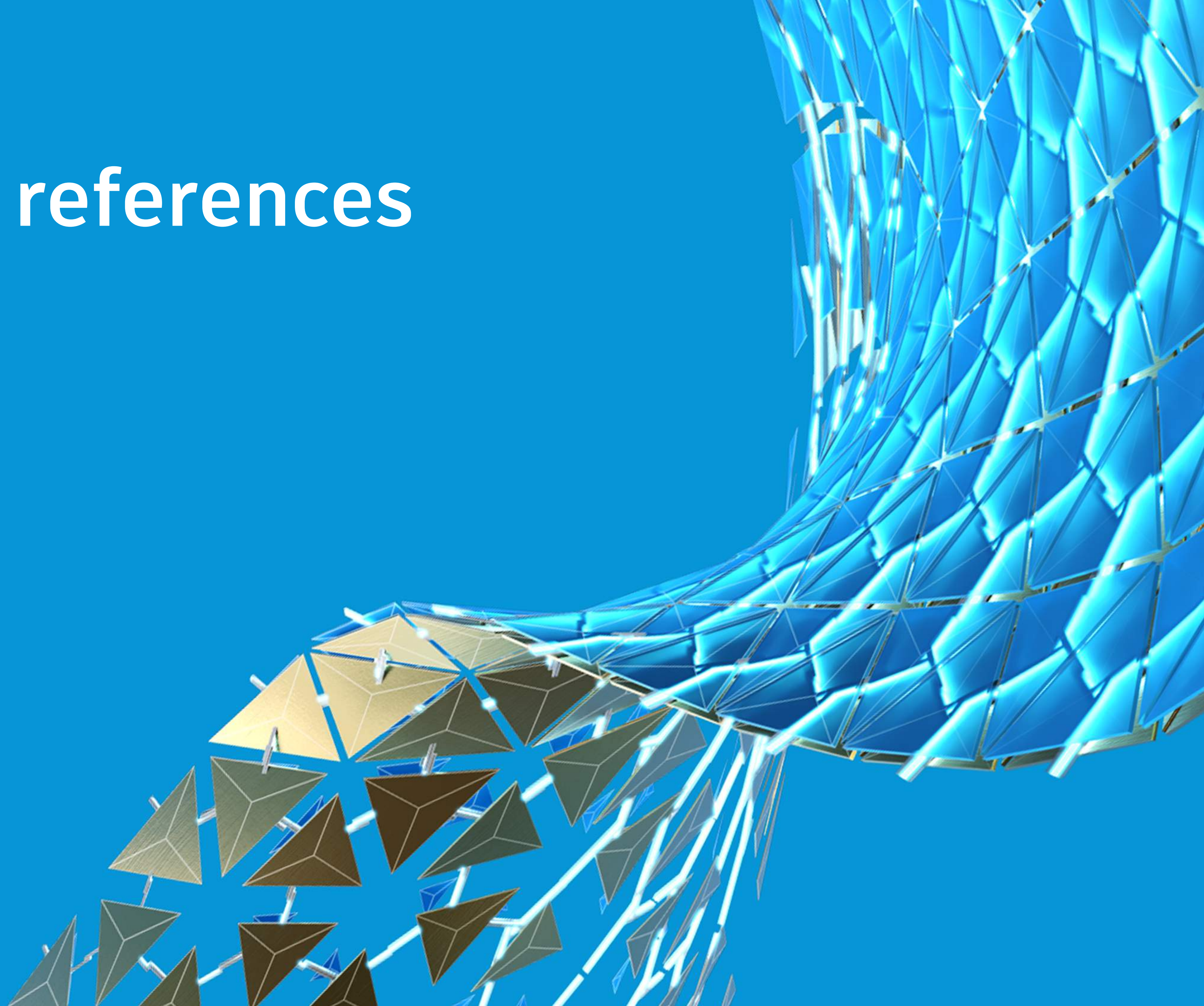
Run vs RunWithArguments



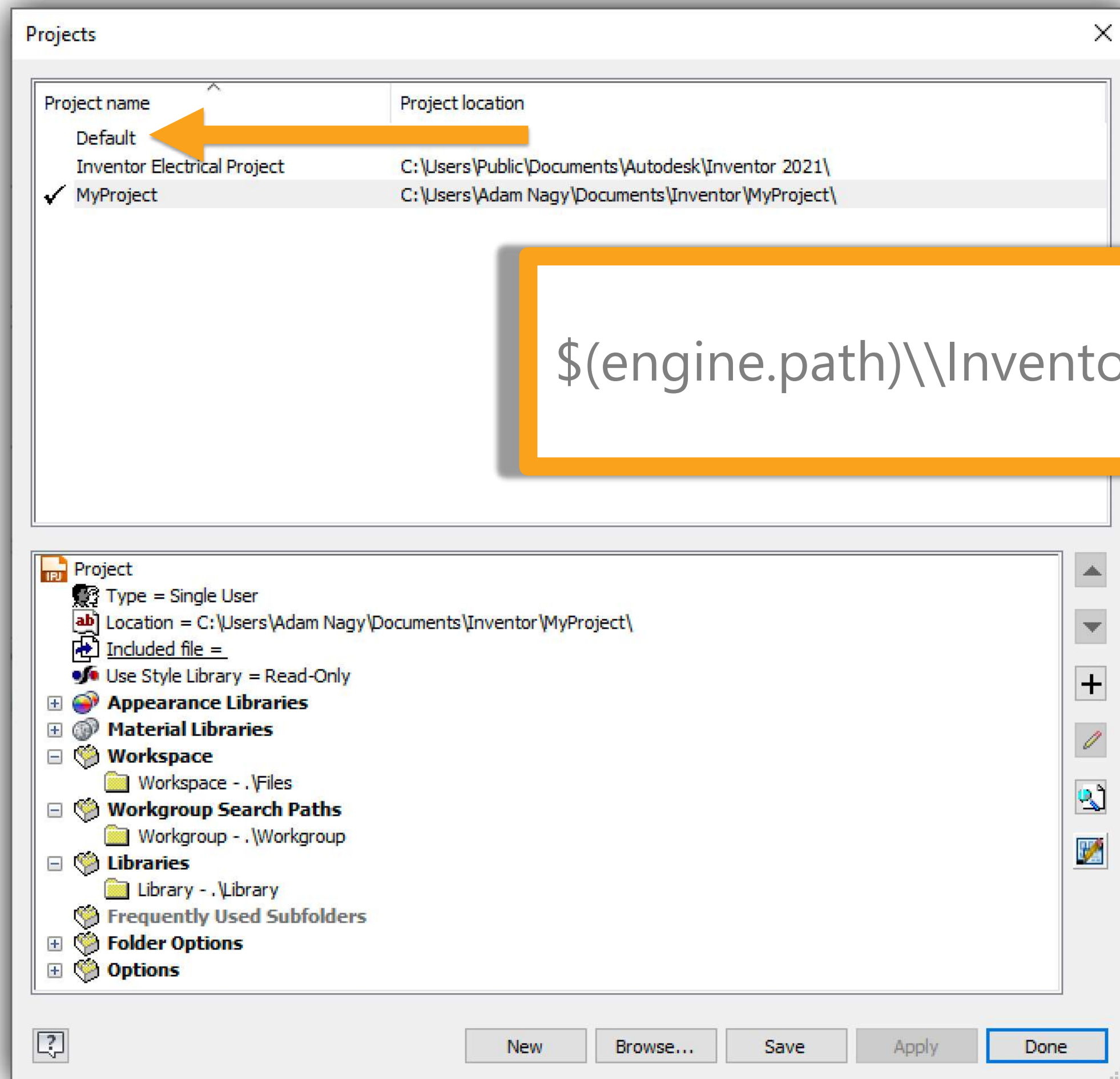
Run vs RunWithArguments



Resolve file references



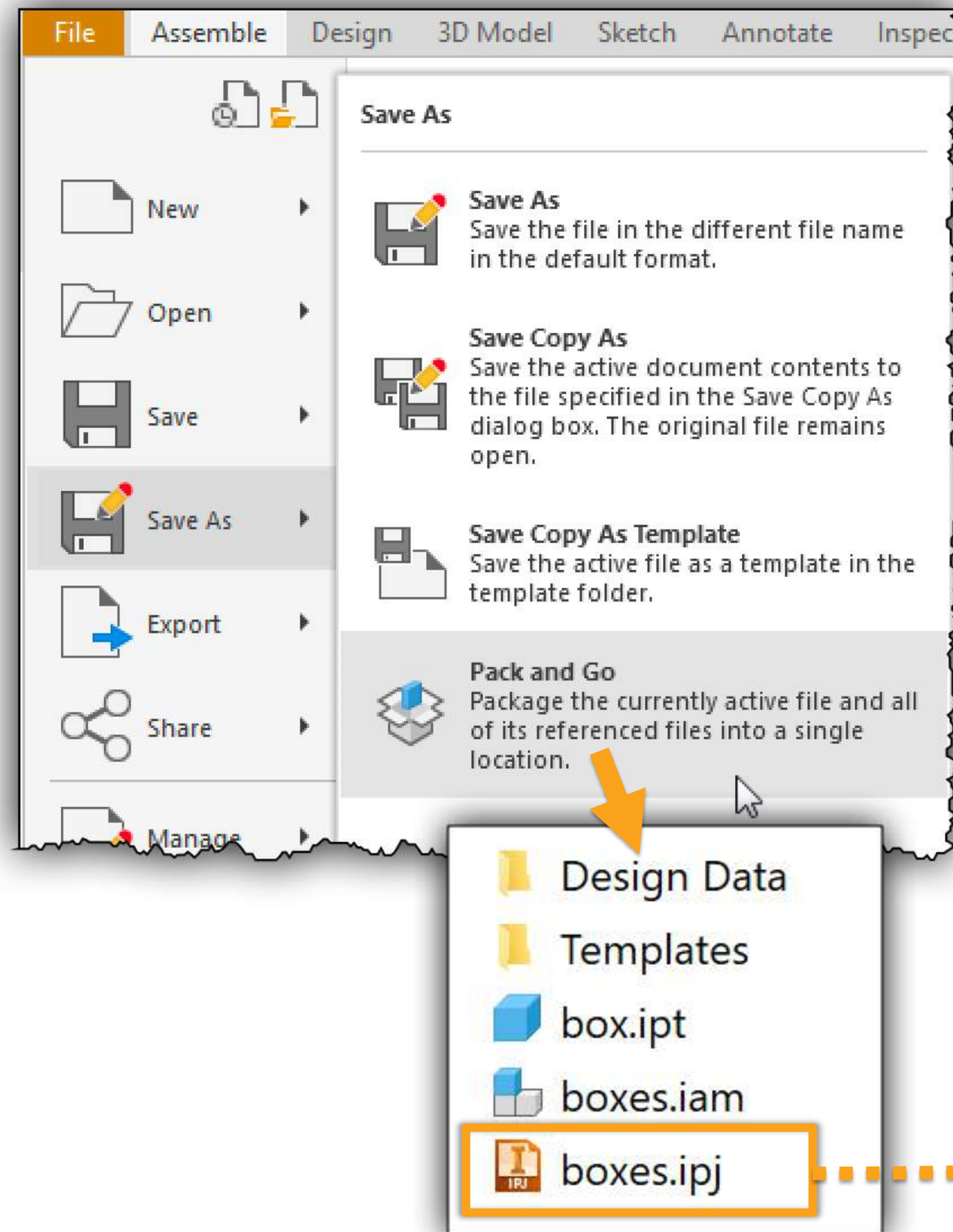
Resolve file references



`$(engine.path)\\InventorCoreConsole.exe /al \"$(appbundles[SampleBundle].path)\" /p`

<https://forge.autodesk.com/blog/resolving-referenced-inventor-files>

Resolve file references



```
public void Run(Document doc)
{
    // Set Active Project
    // Note: localName of input assembly zip is set to "assembly"
    string curDir = System.IO.Directory.GetCurrentDirectory();
    string asmDir = System.IO.Path.Combine(curDir, "assembly");
    string projFile = System.IO.Path.Combine(asmDir, "boxes.ipj");
    DesignProject proj = inventorApplication.DesignProjectManager.
        DesignProjects.AddExisting(projFile);
    proj.Activate();

    // Open the assembly
    string asmFile = System.IO.Path.Combine(asmDir, "boxes.iam");
    doc = inventorApplication.Documents.Open(asmFile, false);

    // etc.
}
```

<https://forge.autodesk.com/blog/resolving-referenced-inventor-files>

Resolve file references

```
// Make sure you keep a reference to events objects otherwise the events won't fire
FileAccessEvents fae = inventorApplication.FileAccessEvents;
fae.OnFileResolution += Fae_OnFileResolution;

// etc

private void Fae_OnFileResolution(
    string RelativeFileName,
    string LibraryName,
    ref byte[] CustomLogicalName,
    EventTimingEnum BeforeOrAfter,
    NameValueMap Context,
    out string FullFileName,
    out HandlingCodeEnum HandlingCode)
{
    // It's best practice to first say we didn't handle the event
    // and then change it later on if needed
    HandlingCode = HandlingCodeEnum.kEventNotHandled;

    // Let's say all my parts will be in this specific folder
    string partsFolder = System.IO.Path.Combine(g_bundlePath, "SampleBundlePlugin.bundle");

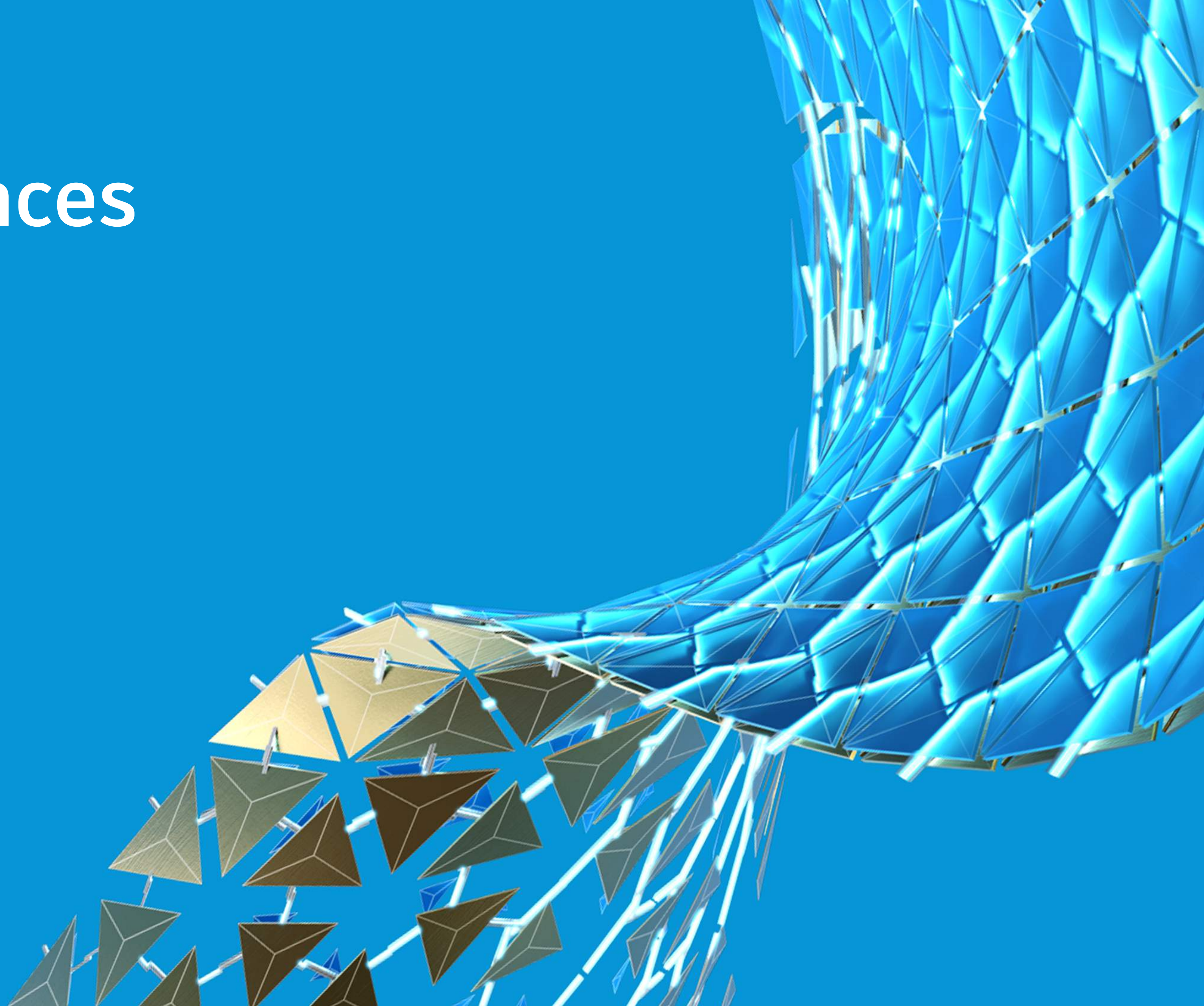
    // Get the file name without the path
    string fileName = System.IO.Path.GetFileName(RelativeFileName);

    // Combine it with our folder
    FullFileName = System.IO.Path.Combine(partsFolder, fileName);

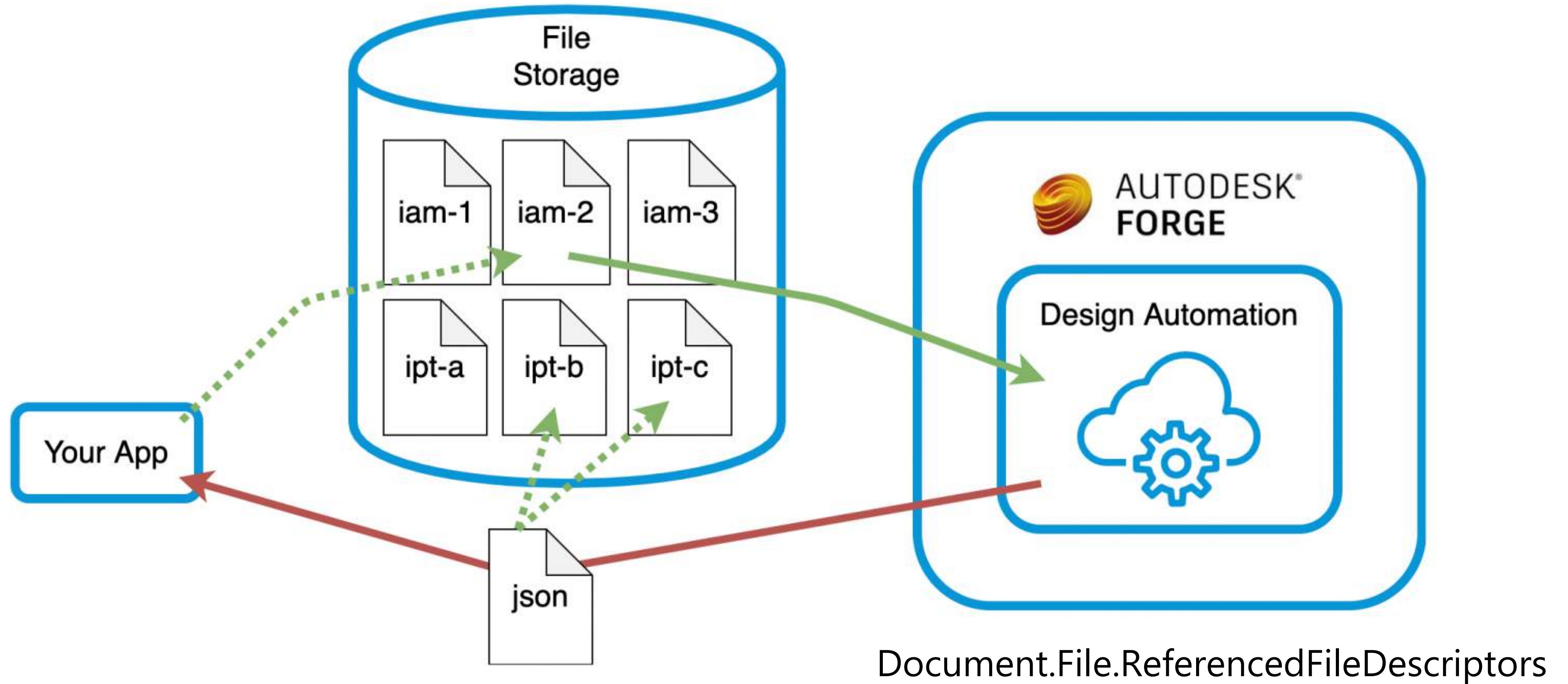
    if (System.IO.File.Exists(FullFileName))
    {
        HandlingCode = HandlingCodeEnum.kEventHandled;
    }
}
```

<https://forge.autodesk.com/blog/resolving-referenced-inventor-files>

Find references

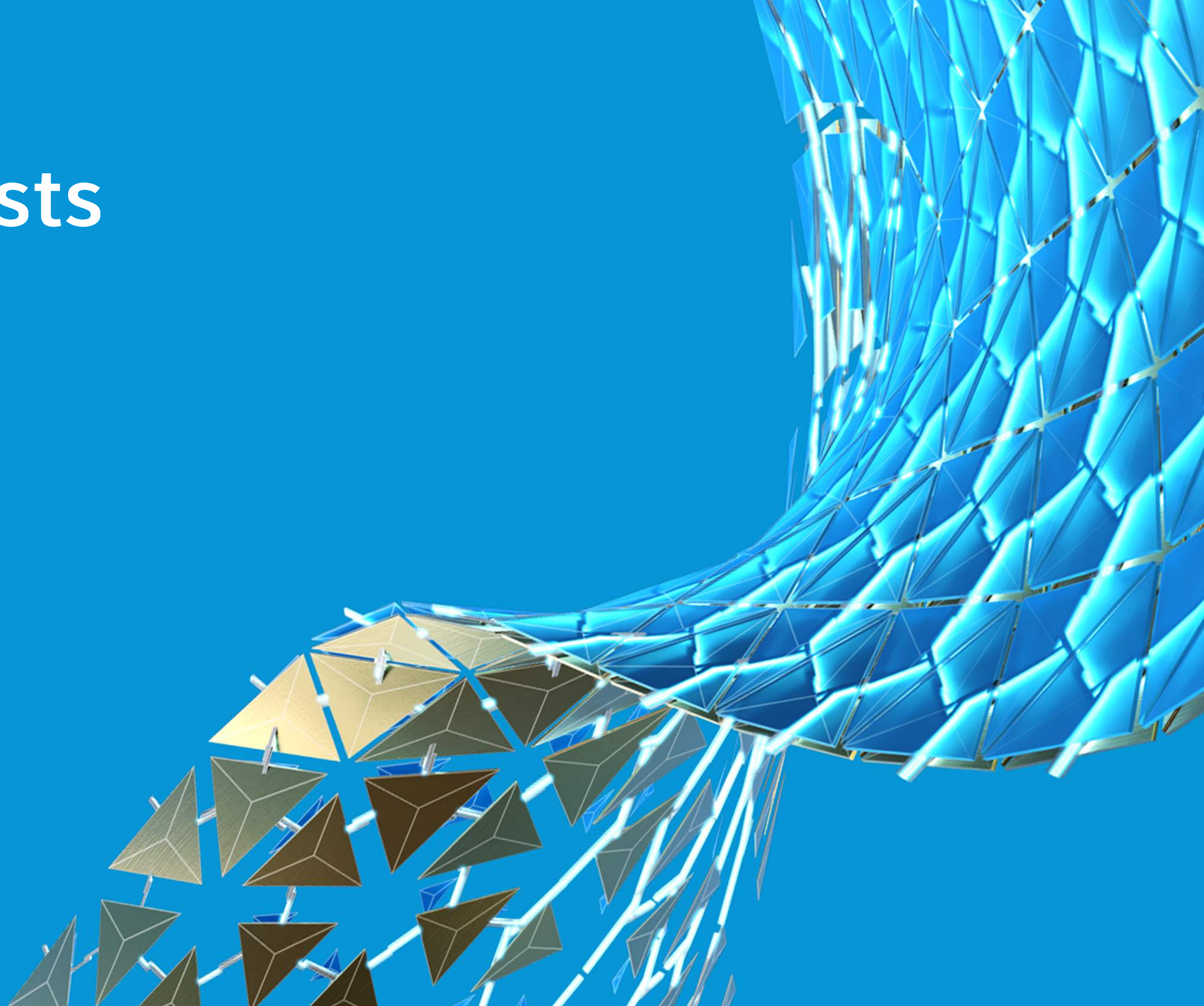


Find references

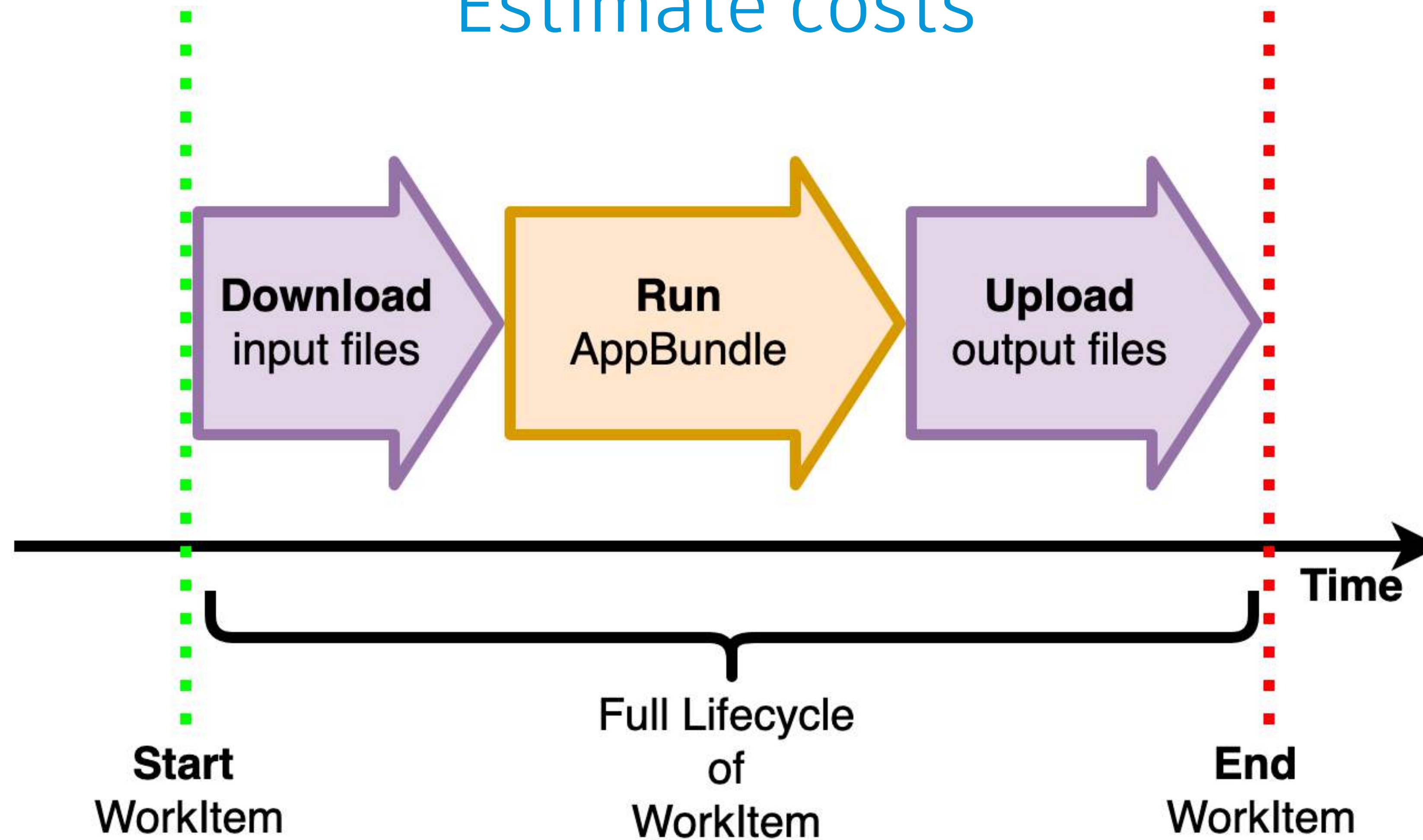


<https://forge.autodesk.com/blog/get-list-referenced-files>

Estimate costs



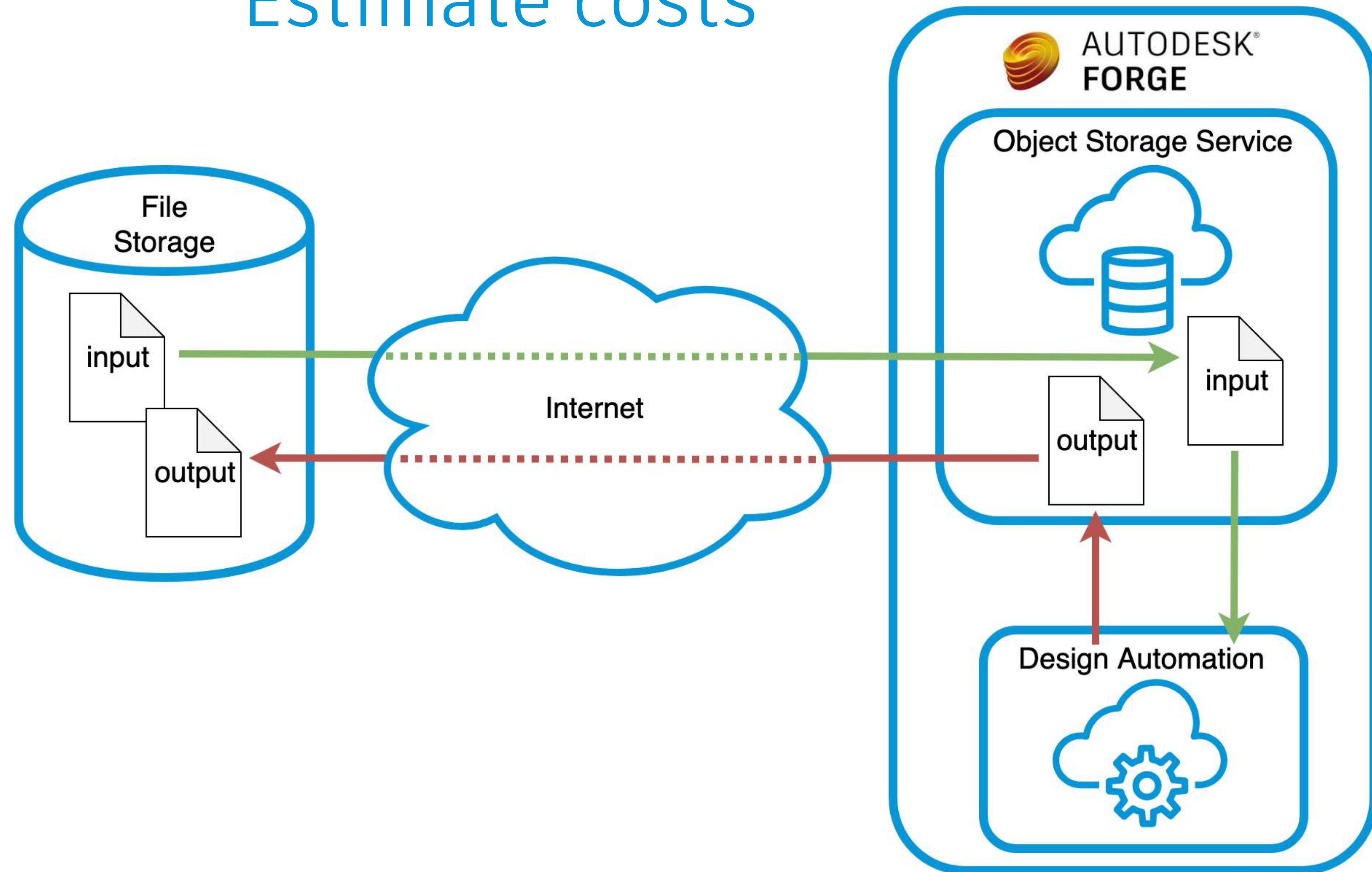
Estimate costs



<https://forge.autodesk.com/blog/estimate-design-automation-costs>

<https://forge.autodesk.com/blog/optimize-design-automation-process>

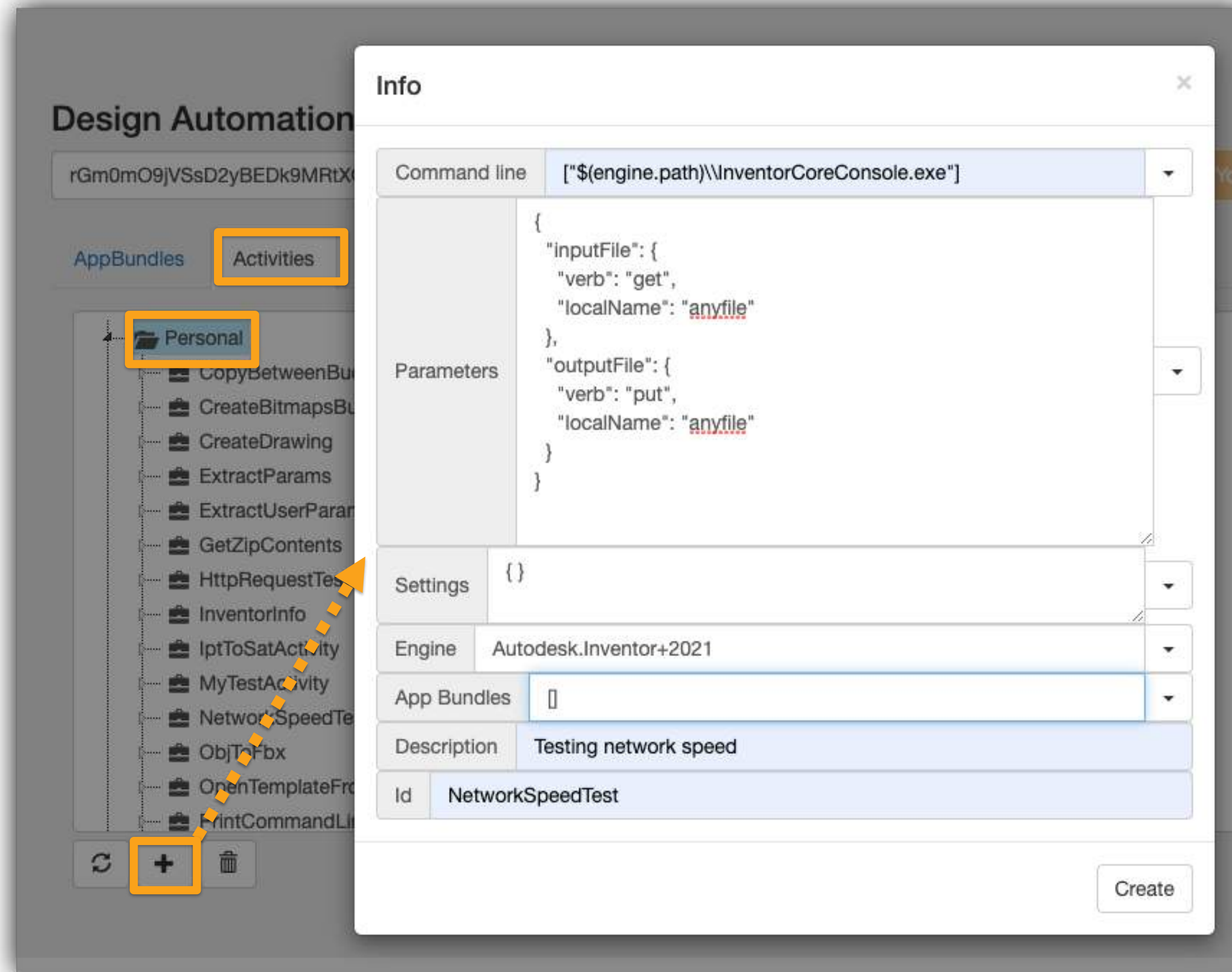
Estimate costs



<https://forge.autodesk.com/blog/estimate-design-automation-costs>

<https://forge.autodesk.com/blog/optimize-design-automation-process>

Estimate costs



<https://da-manager.autodesk.io/>

<https://oss-manager.autodesk.io/>

Estimate costs

Buckets Tools

rGm0mO9jVSsD2yBEDk9MRtXQ

For a list of all the possible scopes

Retrieved hierarchy

adam_201903072 [persistent]

atlantis-zoombackground

autocad sample file.dwg

MultiLevel.iam.zip

son

Classification.obj.zip

Quote_001.dwg

Classification_2.obj.zip.iam

Delete file

Download file

Public URL

oss-manager.autodesk.io says

https://developer.api.autodesk.com/oss/v2/signedresources/cf2d0f64-8de5-47b6-9fca-6ae4d4b1f285?region=US

OK

Design Automation

rGm0mO9jVSsD2yBEDk9MRtXQ

AppBundles Activities WorkItems

05be8e3f8ccb4ed7946079dd4ad1f8a5

0.31 seconds

0.00 cloud credits

Queueing

Download

Running

Upload

Stopping

Overall

{

"status": "success",

"reportUrl": "https://dasprod-store.s3.amazonaws.com/workitem/rGm0mO9jVS946079dd4ad1f8a5/report.txt?

AWSAccessKeyId=ASIATGVJZKM3DRNDKR7U&F

token=IQoJb3JpZ2luX2VjEFQaCXVzLWVhc3QtM?

z85IZSCBr6WLJbP4RAIEA5%2FdIivTt1NIC1UDK2

GgwyMjA0NzIxMTIzMTAiDKCwkDWQYusIZPYN4

4%2FyNKVz8UFBz6oOx4HKjWj0L6dKShoaQ%2B

Zcni8s0KBzZtJIKmPnOvluz%2BiQUV4zHoKS4Zc

CLACbiHikrSOqOXnHdRMixbHQ9vyBF%2Bhsok

%2BgU64AFrSAlsuTnvY6IPmaU2XZeZfWP3zfi0

PXQE%2BLUdWWGB1CmA2ZzN8ZXIUfVUveDU

O6I1yP0luTaCVQnqmI3kv5A9FcCHq0W1TIMzHG

W0nkovsWISJ%2BygAvWWLLzTFCdL3r4pWx1X

9O019v75RgchFIR9BXowknY4BxA%3D%3D&Sig

.

Design Automation

rGm0mO9jVSsD2yBEDk9MRtXQ

AppBundles Activities

test

Info

{

"inputFile": {

"verb": "get",

"localName": "anyfile",

"url":

"https://developer.api.autodesk.com/oss/v2/signedresources/cf2d0f64-8de5-47b6-9fca-6ae4d4b1f285?region=US"

},

"outputFile": {

"verb": "put",

"localName": "anyfile",

"url":

"https://developer.api.autodesk.com/oss/v2/signedresources/cf2d0f64-8de5-47b6-9fca-6ae4d4b1f285?region=US"

}

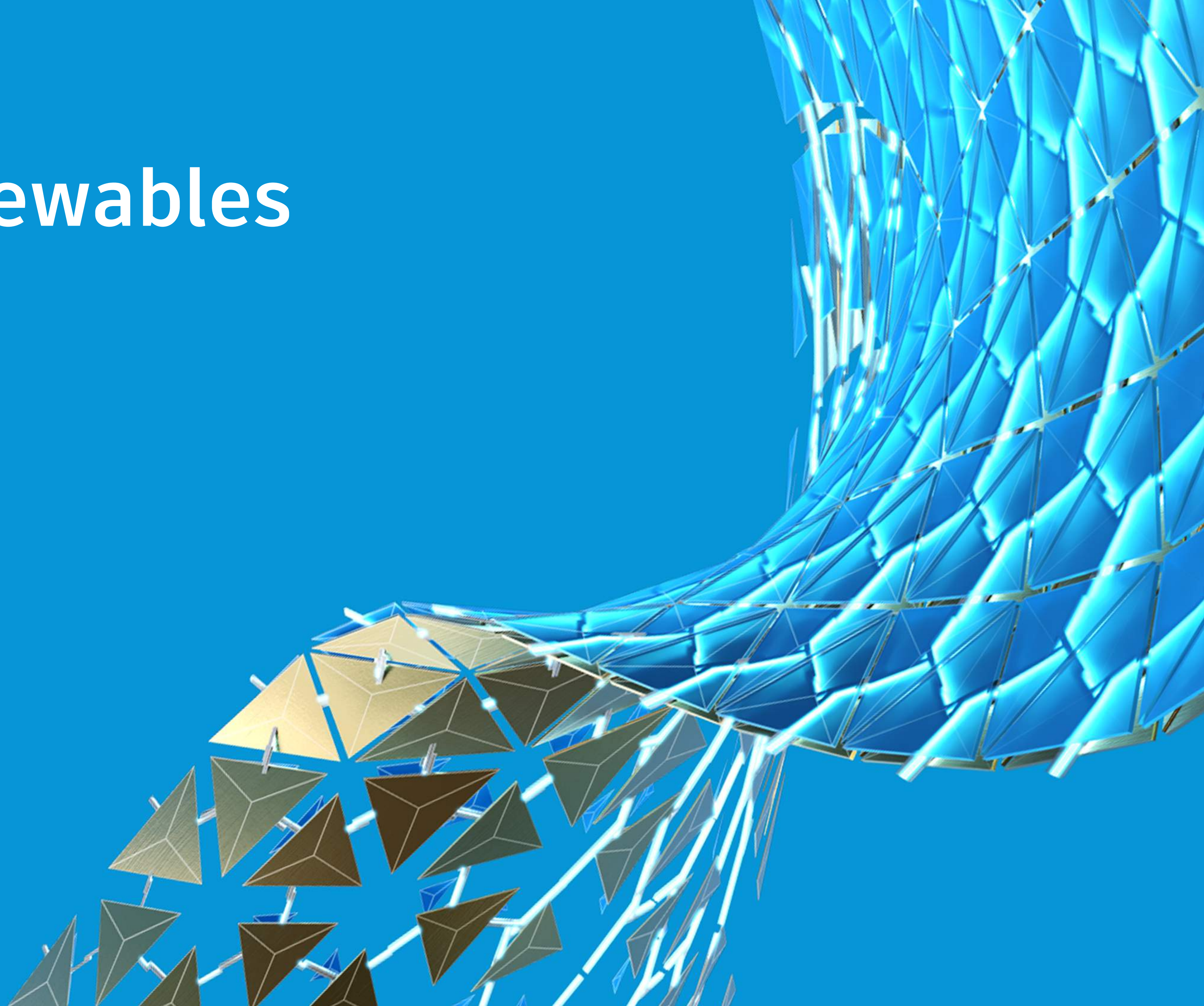
}

Create

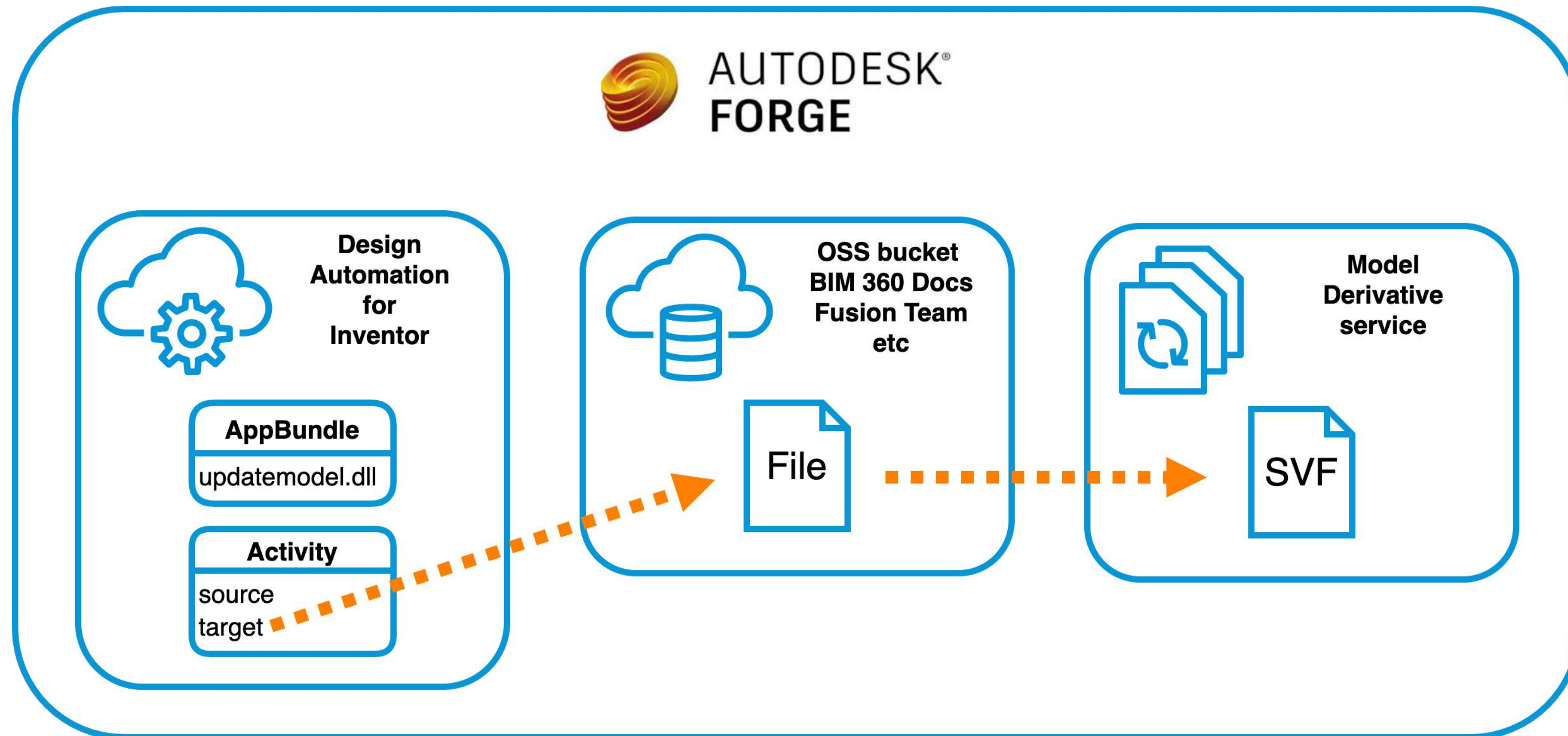
350KB -> 0.31 second -> 8Mbps
310MB -> 13 seconds -> 190Mbps

<https://da-manager.autodesk.io/>

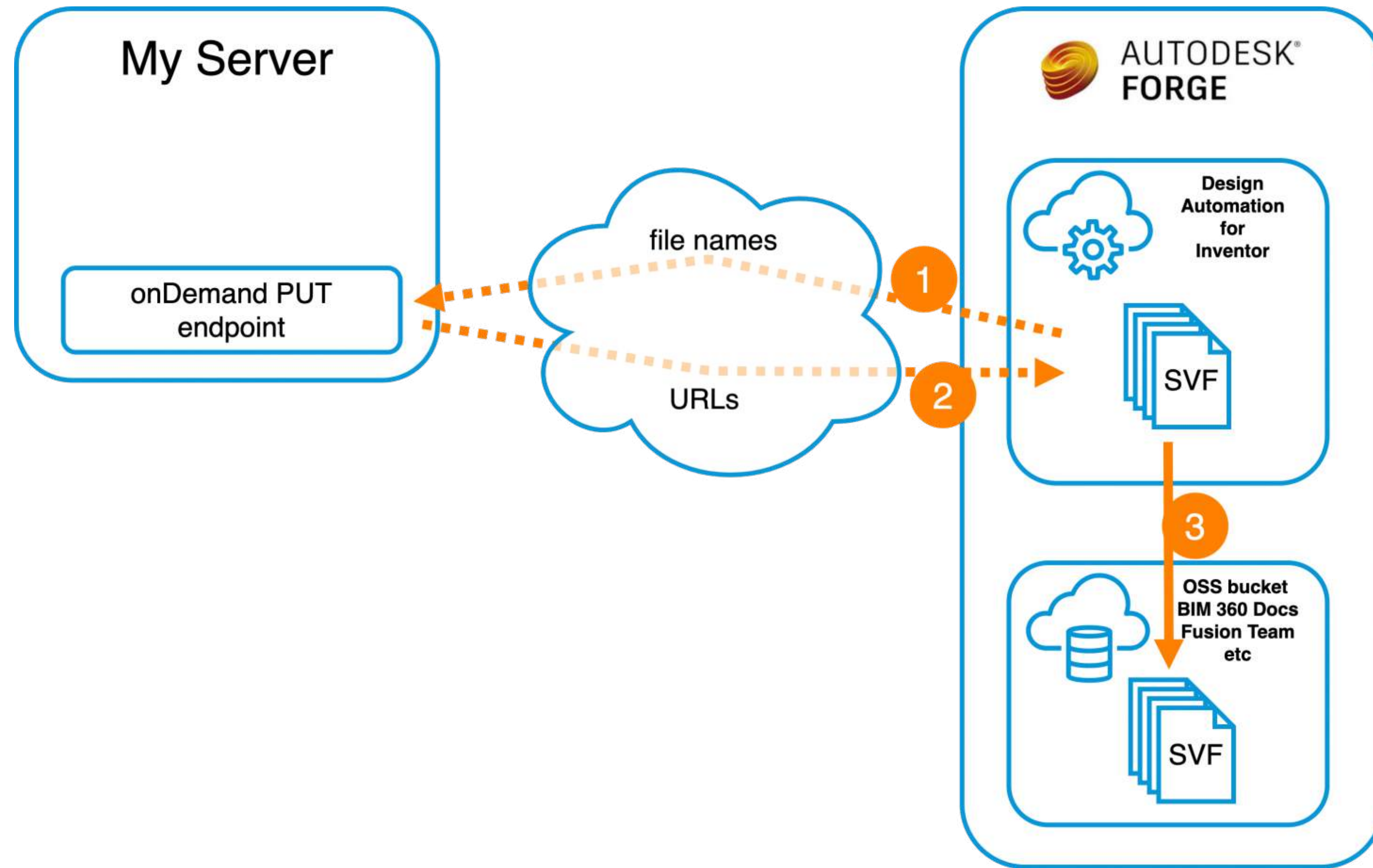
Generate viewables



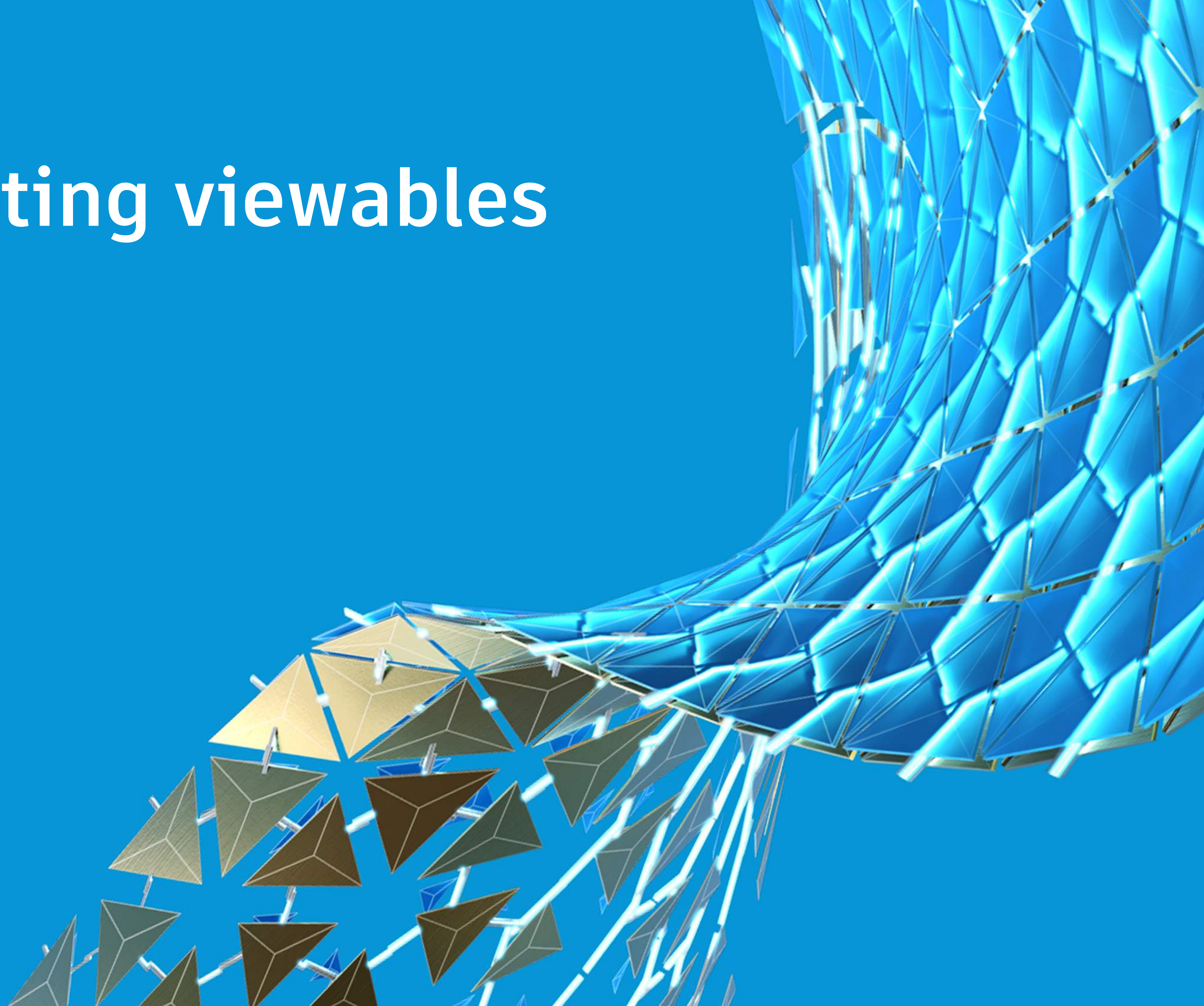
Generate viewables



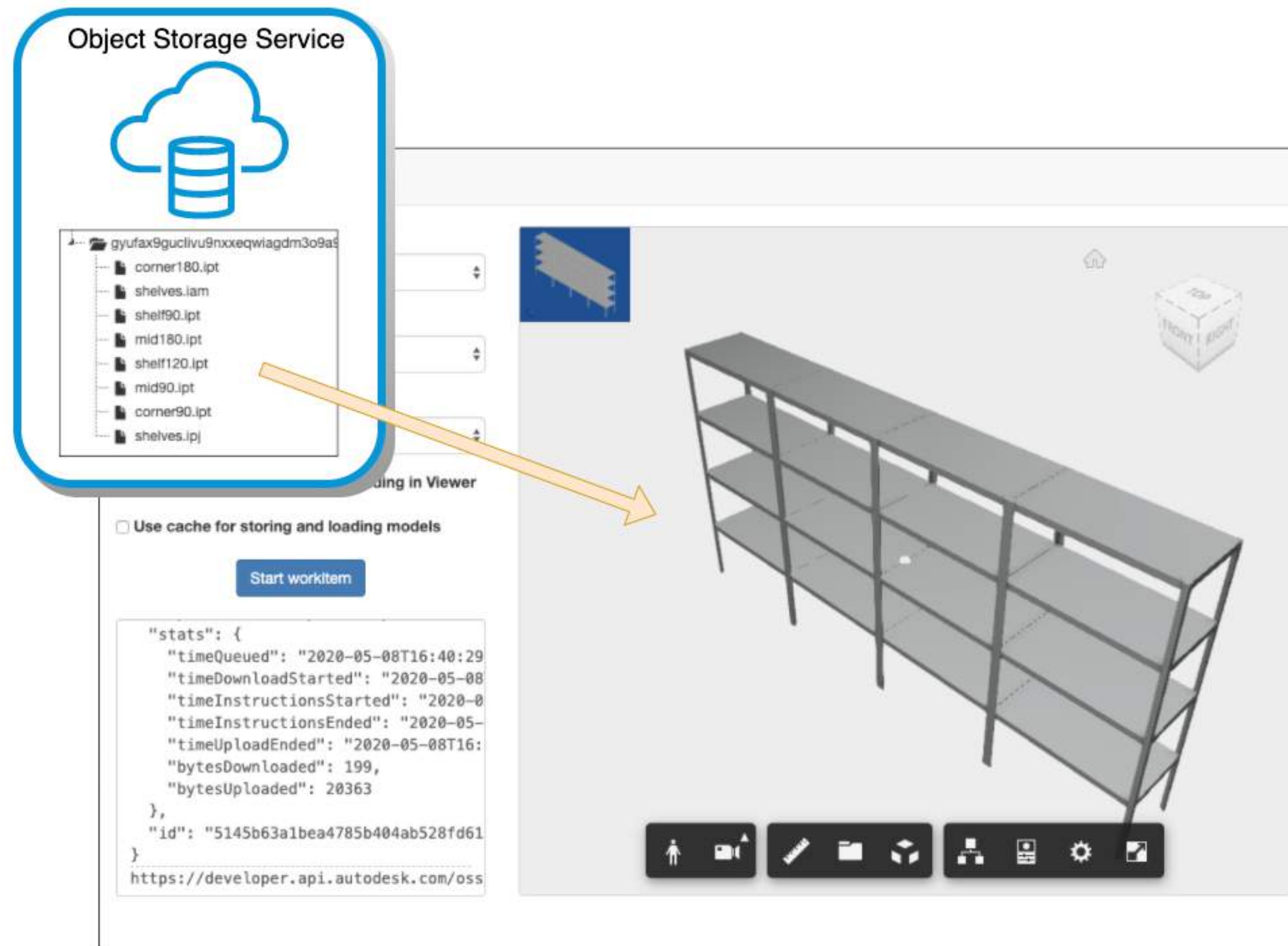
Generate viewables



Skip generating viewables



Skip generating viewables

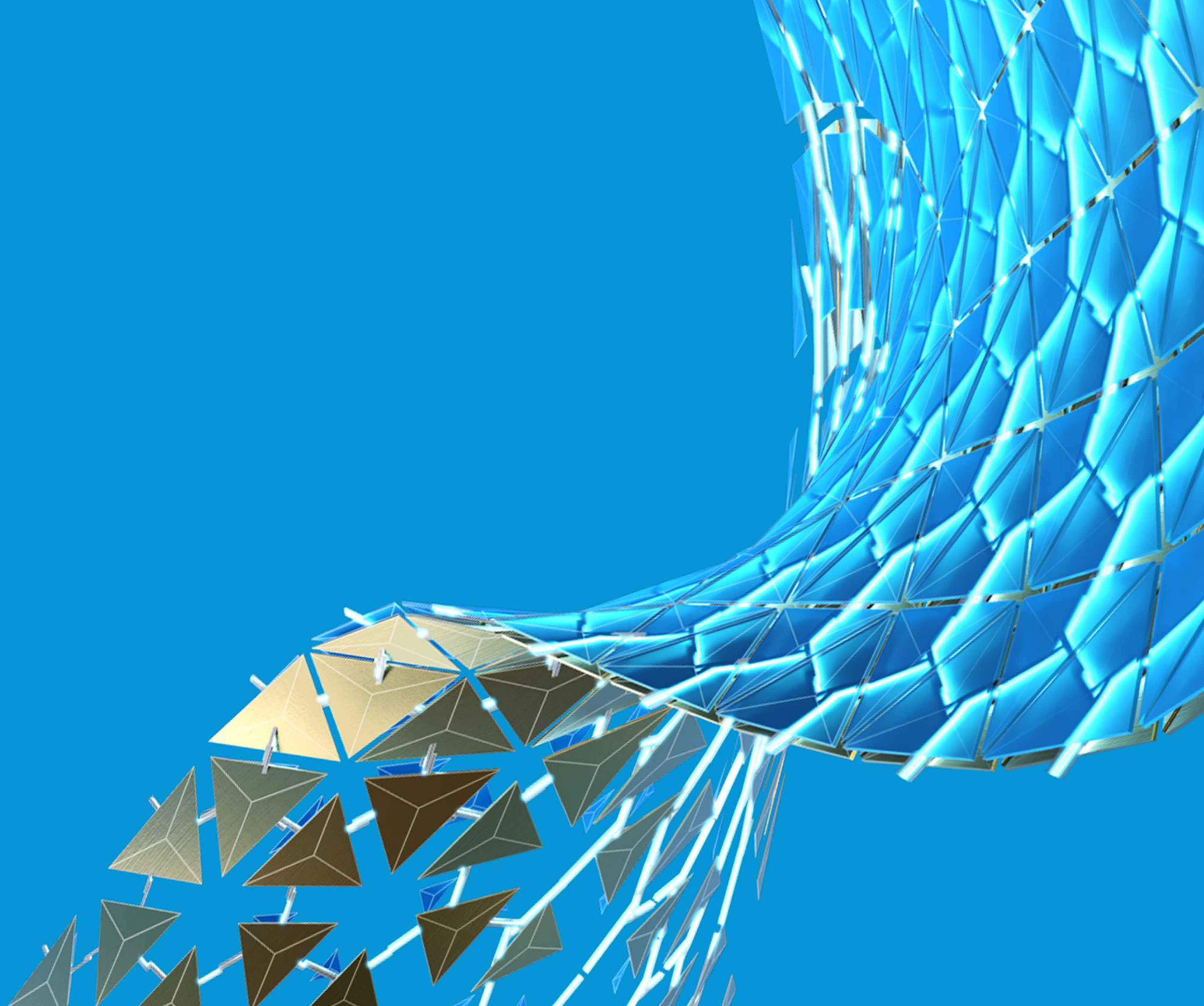


<https://forge.autodesk.com/blog/faster-configuration-results>

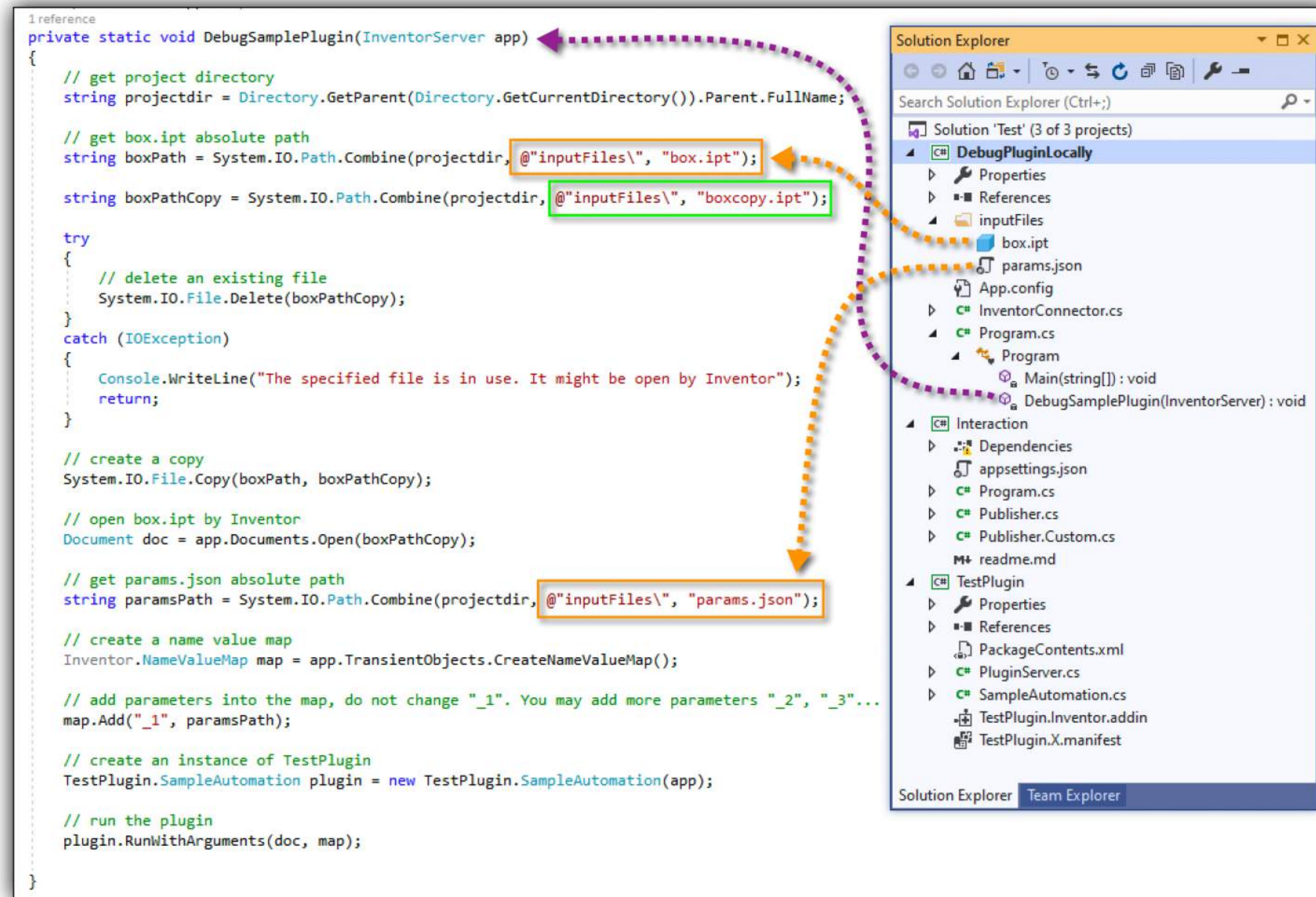
Skip generating viewables

<https://forge-configurator.herokuapp.com/>

Debugging



Debugging - local



Debugging - server

The diagram illustrates the debugging process for a server application. It features three main components: a code editor for **AppBundle**, a code editor for an **iLogic Rule**, and a console window displaying the **report.txt** output. Orange arrows indicate the flow of data and execution between these components.

AppBundle Code:

```
2 references
public void RunWithArguments(Document doc, NameValueMap map)
{
    LogTrace("RunWithArguments called");
    OnSaveRule(doc);
}

1 reference
public void OnSaveRule(Document doc)
{
    using (new HeartBeat())
    {
        LogTrace("Setting BoxWidth");
        AssemblyDocument asm = doc as AssemblyDocument;
        AssemblyComponentDefinition cd = asm.ComponentDefinition;
        cd.Parameters.UserParameters["BoxWidth"].Expression = "4 in";
    }
}
```

iLogic Rule Code:

```
Trace.WriteLine("1")
Components.Add("MyBlock", "myblock.ipt", position := Nothing)
Trace.WriteLine("2")
Parameter("MyBlock", "Width") = BoxWidth
Parameter("MyBlock", "Height") = BoxHeight
Parameter("MyBlock", "Depth") = BoxDepth
Trace.WriteLine("3")
```

report.txt Console Output:

```
BundlePlugin.bundle\Contents\Parts\SampleAssembly.iam".
Standard output dump.
Information: 0 : InventorCoreConsole.exe: 25.0.18300.0
Information: 0 : Starting Inventor Server.
Information: 0 : Started Inventor Server 2020.3 (Build 243373000, 373)
Information: 0 : Loading plug-in: iLogic Plugin
Information: 0 : Activating plug-in: iLogic Plugin
...
Information: 0 : Opening document: T:\Aces\Applications\55eec6b6125d6e06ea
SampleBundle[110].package\SampleBundlePlugin.bundle\Contents\Parts\Sampl
Information: 0 : Opened
Information: 0 : Getting Inventor plug-in.
Information: 0 : Plug-in: SampleBundlePlugin
Information: 0 : Activating plug-in: SampleBundlePlugin
Information: 0 : : SampleBundlePlugin (1.2.0.0): initializing...
Information: 0 : Executing 'Run' method on Automation object.
1
2
3
4
5
Information: 0 : Calling Save()
Information: 0 : Calling Save2()
Information: 0 : Done
Information: 0 : Ending HeartBeat
```

Orange arrows show the following connections:

- From **AppBundle** `LogTrace("RunWithArguments called");` to the console output `Information: 0 : RunWithArguments called`.
- From **AppBundle** `LogTrace("Setting BoxWidth");` to the console output `Information: 0 : Setting BoxWidth`.
- From **iLogic Rule** `Trace.WriteLine("1")` to the console output `1`.
- From **iLogic Rule** `Trace.WriteLine("2")` to the console output `2`.
- From **iLogic Rule** `Trace.WriteLine("3")` to the console output `3`.

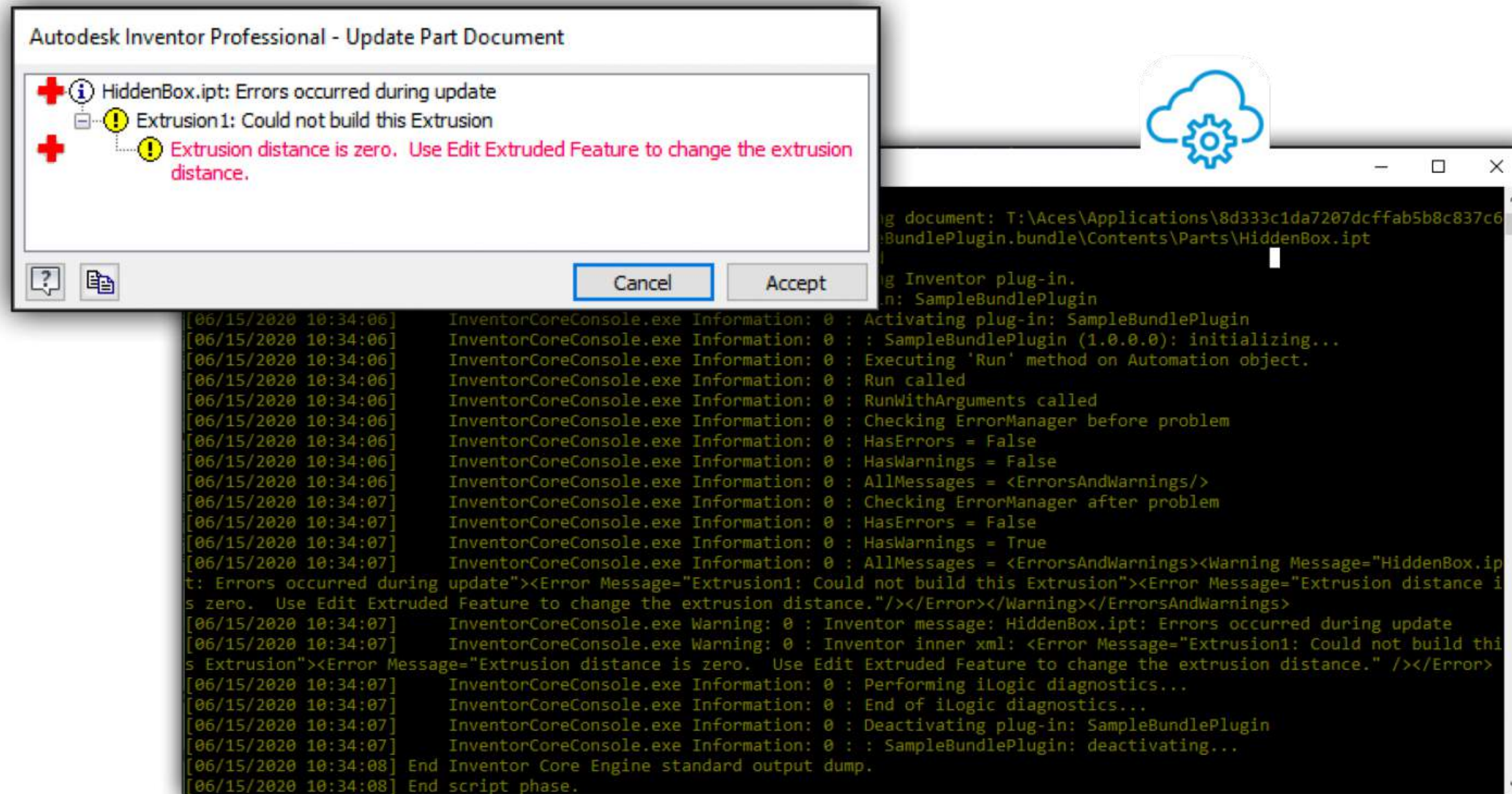
Debugging - server

The screenshot shows the iLogic Rule Editor interface. The main rule editor displays the code `Logger.Trace("My message")`. A purple dashed arrow points from this code to the iLogic Log window, which shows the message: `INFO| 8: >>-----
TRACE|My message`. The iLogic Log window also has buttons for `[Go to beginning]` and `[Show earlier messages]`. The Log Level is set to `Trace`. A red 'X' icon with a cloud and gear is shown in the top right corner, and a green checkmark icon with a cloud and gear is shown in the bottom right corner. A box on the right contains the code `Trace.WriteLine("message")`.

Trace.WriteLine("message")

<https://forge.autodesk.com/blog/prepare-ilogic-rules-design-automation>

Debugging - ErrorManager



Debugging - ErrorManager

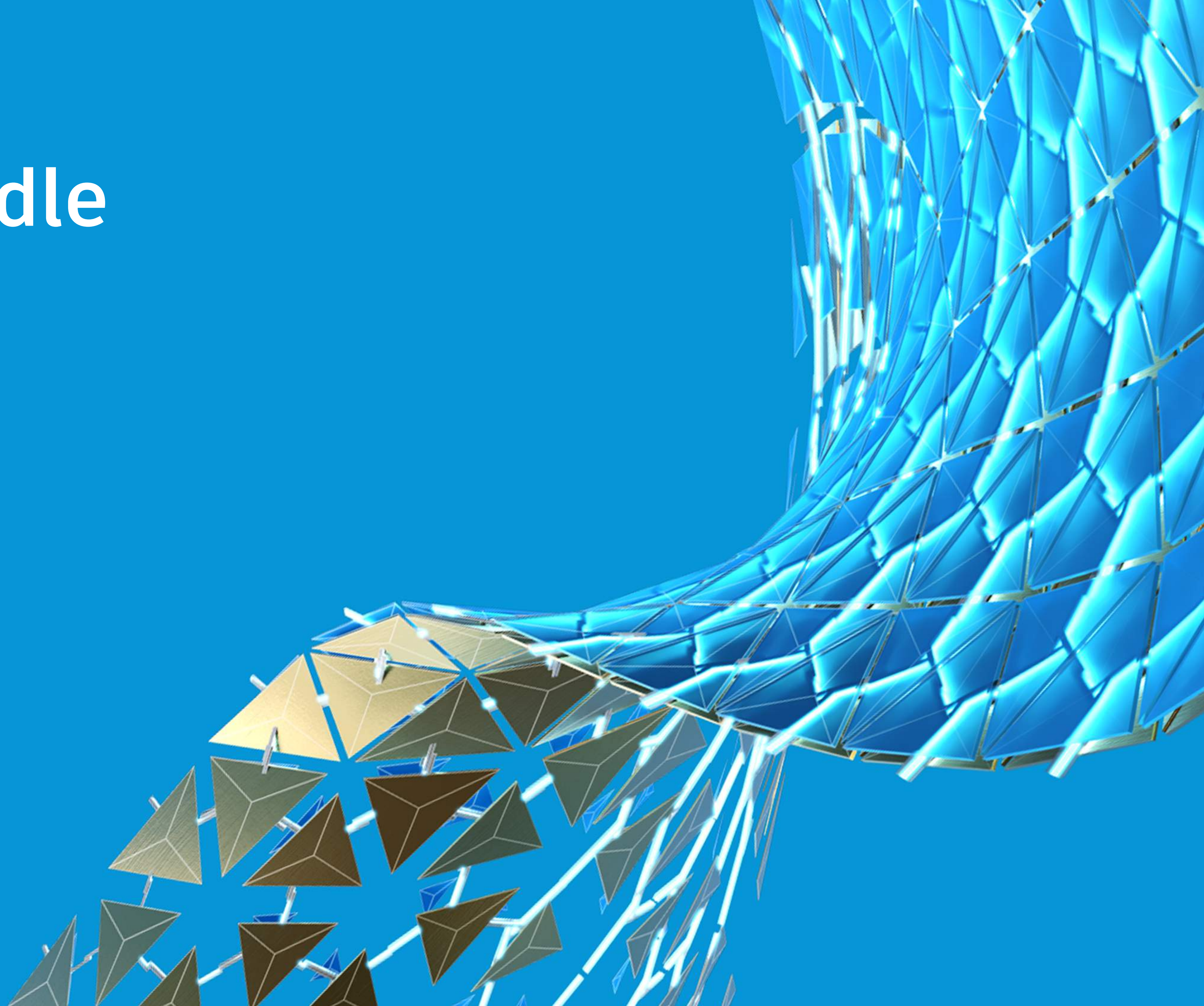
```
public void RunWithArguments(Document doc, NameValueMap map)
{
    var em = inventorApplication.ErrorManager;
    LogTrace($"Checking ErrorManager before problem");
    LogTrace($"HasErrors = {em.HasErrors}");
    LogTrace($"HasWarnings = {em.HasWarnings}");
    LogTrace($"AllMessages = {em.AllMessages}");

    PartDocument pd = doc as PartDocument;
    pd.ComponentDefinition.Parameters["height"].Expression = "0";
    pd.Update2();

    LogTrace($"Checking ErrorManager after problem");
    LogTrace($"HasErrors = {em.HasErrors}");
    LogTrace($"HasWarnings = {em.HasWarnings}");
    LogTrace($"AllMessages = {em.AllMessages}");
}
```

```
[06/15/2020 10:34:07] InventorCoreConsole.exe Information: 0 :
Checking ErrorManager after problem [06/15/2020 10:34:07]
InventorCoreConsole.exe Information: 0 : HasErrors = False
[06/15/2020 10:34:07] InventorCoreConsole.exe Information: 0 :
HasWarnings = True [06/15/2020 10:34:07] InventorCoreConsole.exe
Information: 0 : AllMessages = <ErrorsAndWarnings> <Warning
Message="HiddenBox.ipt: Errors occurred during update"> <Error
Message="Extrusion1: Could not build this Extrusion"> <Error
Message="Extrusion distance is zero. Use Edit Extruded Feature to
change the extrusion
distance." /> </Error> </Warning> </ErrorsAndWarnings> [06/15/2020
10:34:07] InventorCoreConsole.exe Warning: 0 : Inventor message:
HiddenBox.ipt: Errors occurred during update [06/15/2020 10:34:07]
InventorCoreConsole.exe Warning: 0 : Inventor inner xml: <Error
Message="Extrusion1: Could not build this Extrusion"> <Error
Message="Extrusion distance is zero. Use Edit Extruded Feature to
change the extrusion distance." /> </Error>
```

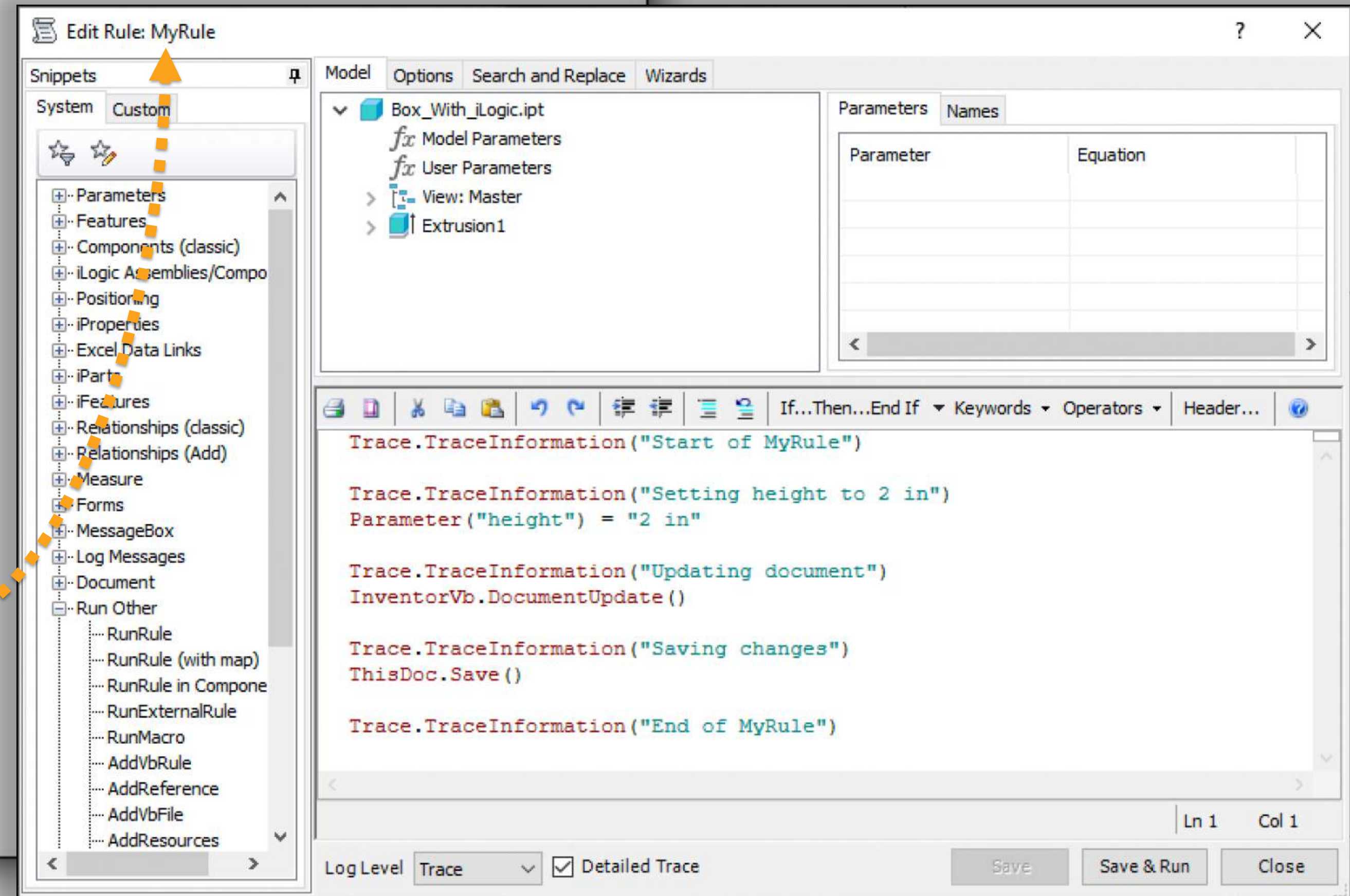

No App Bundle



No App Bundle

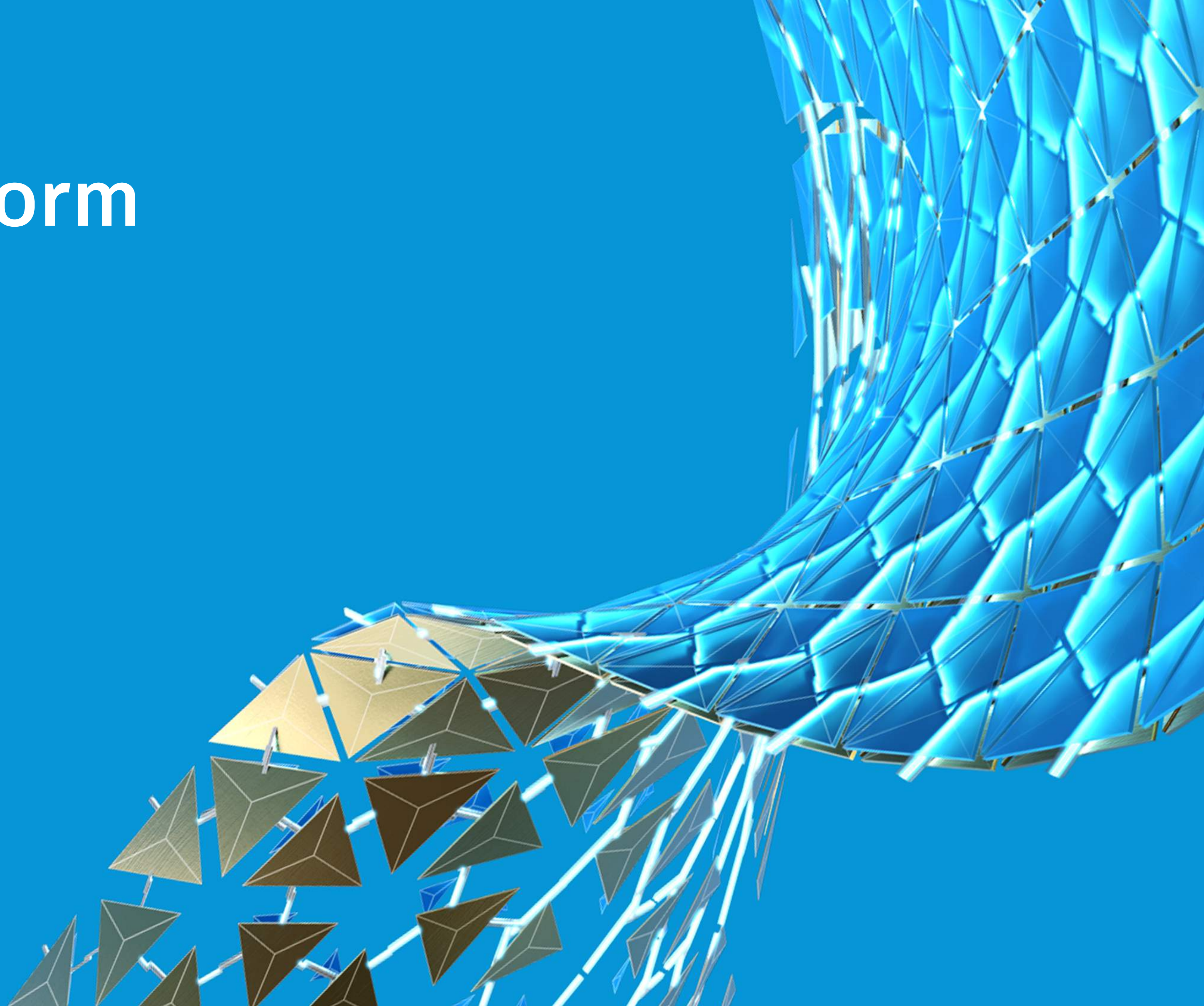
Activity

```
{
  "commandLine": [
    "$(engine.path)\\InventorCoreConsole.exe /i $(args[inputFile].path) /s $(settings[script].path)"
  ],
  "parameters": {
    "inputFile": {
      "verb": "get",
      "localName": "inputFile.ipt"
    },
    "outputFile": {
      "verb": "put",
      "localName": "inputFile.ipt"
    }
  },
  "id": "rGm0m09jVSsD2yBEDk9MRtXQTwsa6ly0.RunRule+prod",
  "engine": "Autodesk.Inventor+24",
  "appbundles": [],
  "settings": {
    "script": {
      "value": "iLogicVb.RunRule(\"MyRule\")"
    }
  },
  "description": "Running iLogic Rule",
  "version": 1
}
```



<https://forge.autodesk.com/blog/run-ilogic-rule-without-appbundle>

Get iLogic Form



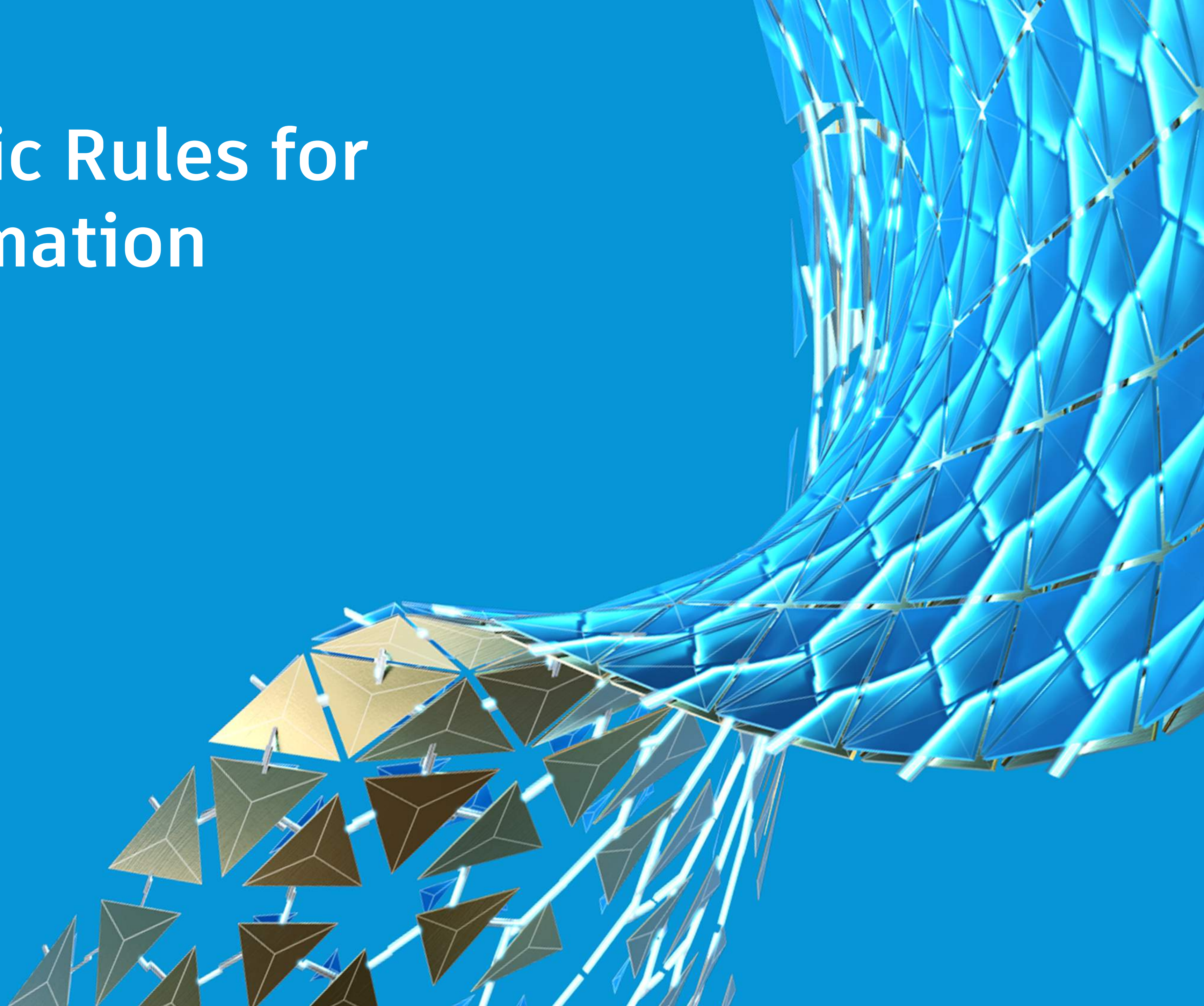
Get iLogic Form

The image illustrates the process of exporting iLogic form information. On the left, the 'Form Editor' window shows a form structure for 'TestForm'. The structure includes a 'Label' (Inventor Name), a 'Picture 1' (PictureFolderParam), a 'length' field, a 'Picture Folder 1' containing 'Picture1' and 'Picture2', a 'MyLabel', a 'Picture Folder 2' containing 'Picture1' and 'Picture2', a 'Group 1' containing 'width', 'height', and 'thickness' fields, and a 'Picture 4' (PictureFolderParam). The 'Properties' pane shows 'TestForm Form' with 'Show Item Borders' set to 'False' and 'Allow Control Resizing' checked. On the right, a preview of the 'TestForm' shows a form with a 'Test1' label, a 'length' field set to '24 in', a 'MyLabel', a 'Group 1' with 'width' (36 in), 'height' (16 in), and 'thickness' (0.5 in) fields, and a 'Test3' label. An orange arrow points from the preview to a collection of form icons. Below this, a JSON file named 'result.json' is shown, containing the exported form information. The JSON structure is as follows:

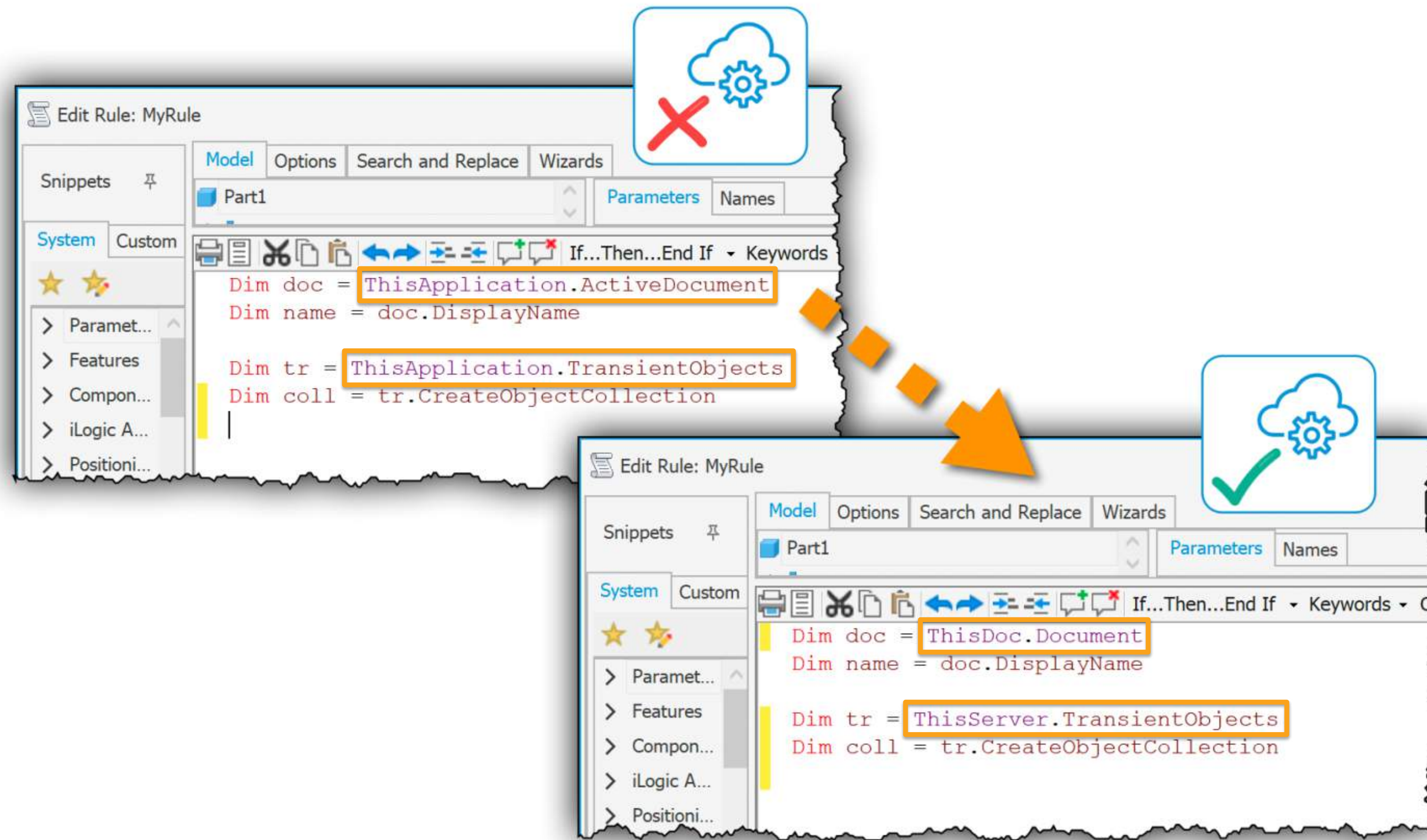
```
213 {
214   "displayName": "height",
215   "type": "NumericParameterControlSpec"
216 },
217 {
218   "alwaysReadOnly": false,
219   "readOnly": false,
220   "enablingParameterName": null,
221   "parameterName": "thickness",
222   "editControlType": "TextBox",
223   "name": "thickness",
224   "tooltip": "",
225   "displayName": "thickness",
226   "type": "NumericParameterControlSpec"
227 },
228 {
229   "name": "Group 1",
230   "tooltip": null,
231   "displayName": "Group 1",
232   "type": "ControlGroupSpec"
233 },
234 {
235   "pictureParameterName": "PictureFolderParam",
236   "file": "70615c76ddf77db54115251379f79868.png",
237   "name": "Picture 4",
238   "tooltip": null,
239   "displayName": "Picture 4",
240   "type": "PictureControlSpec"
241 },
242 {
243   "name": "TestForm"
244 }
```

<https://forge.autodesk.com/blog/get-ilogic-form-information-inventor-documents>

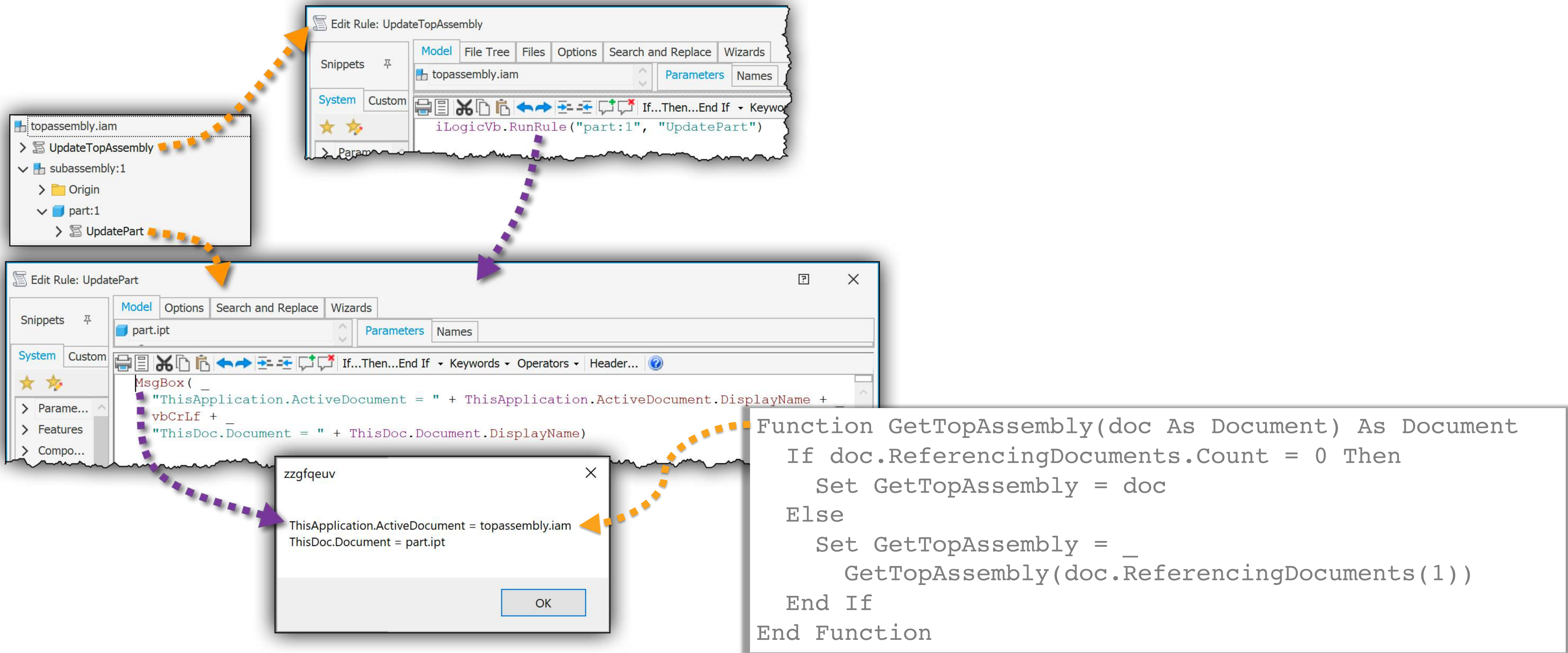
Prepare iLogic Rules for Design Automation



Prepare iLogic Rules for Design Automation



Prepare iLogic Rules for Design Automation



Prepare iLogic Rules for Design Automation

iLogic Rule Exporter

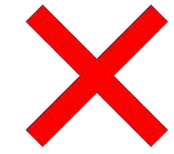
MessageBox.Show()



MsgBox()



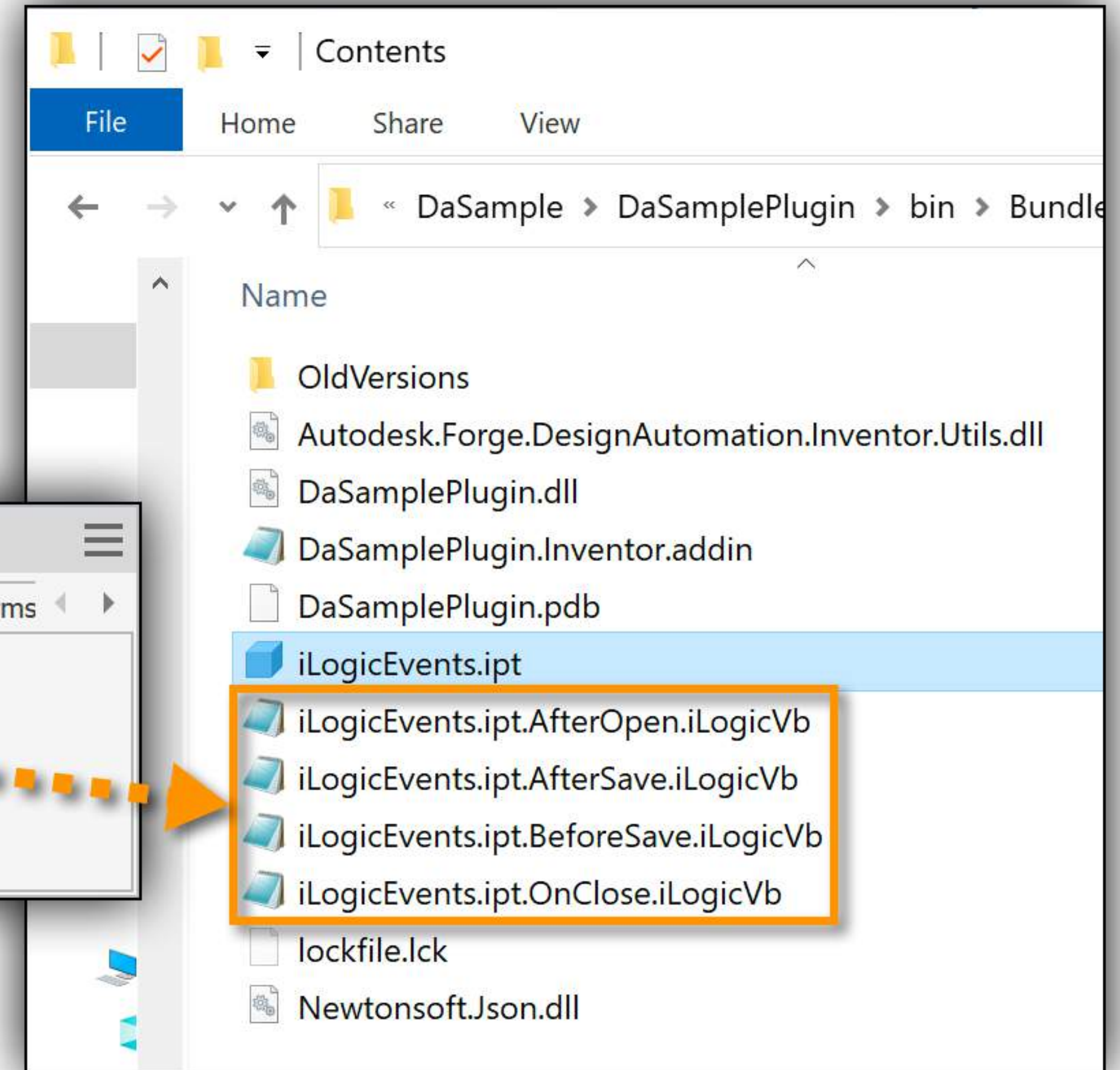
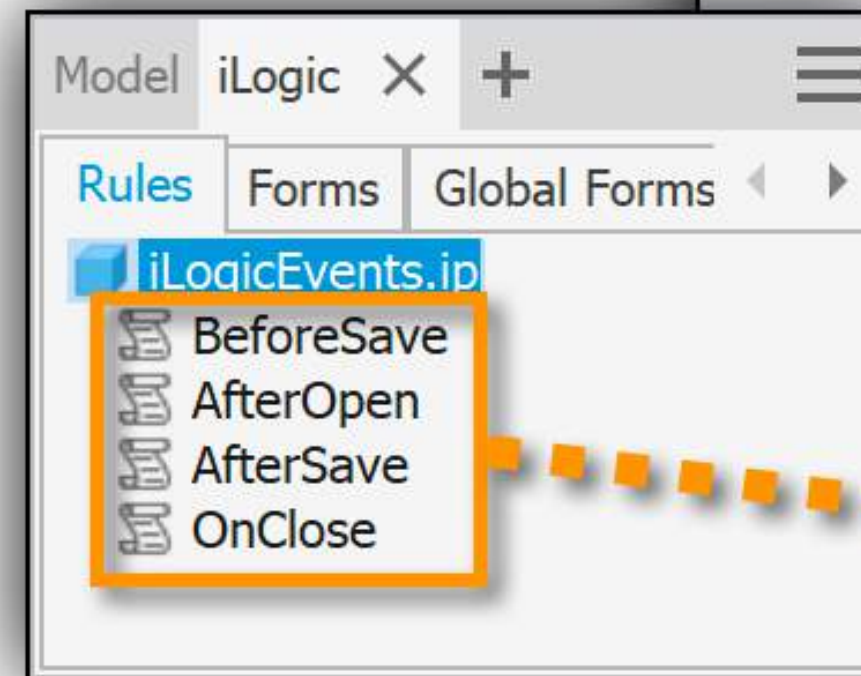
iLogicForm.Show()



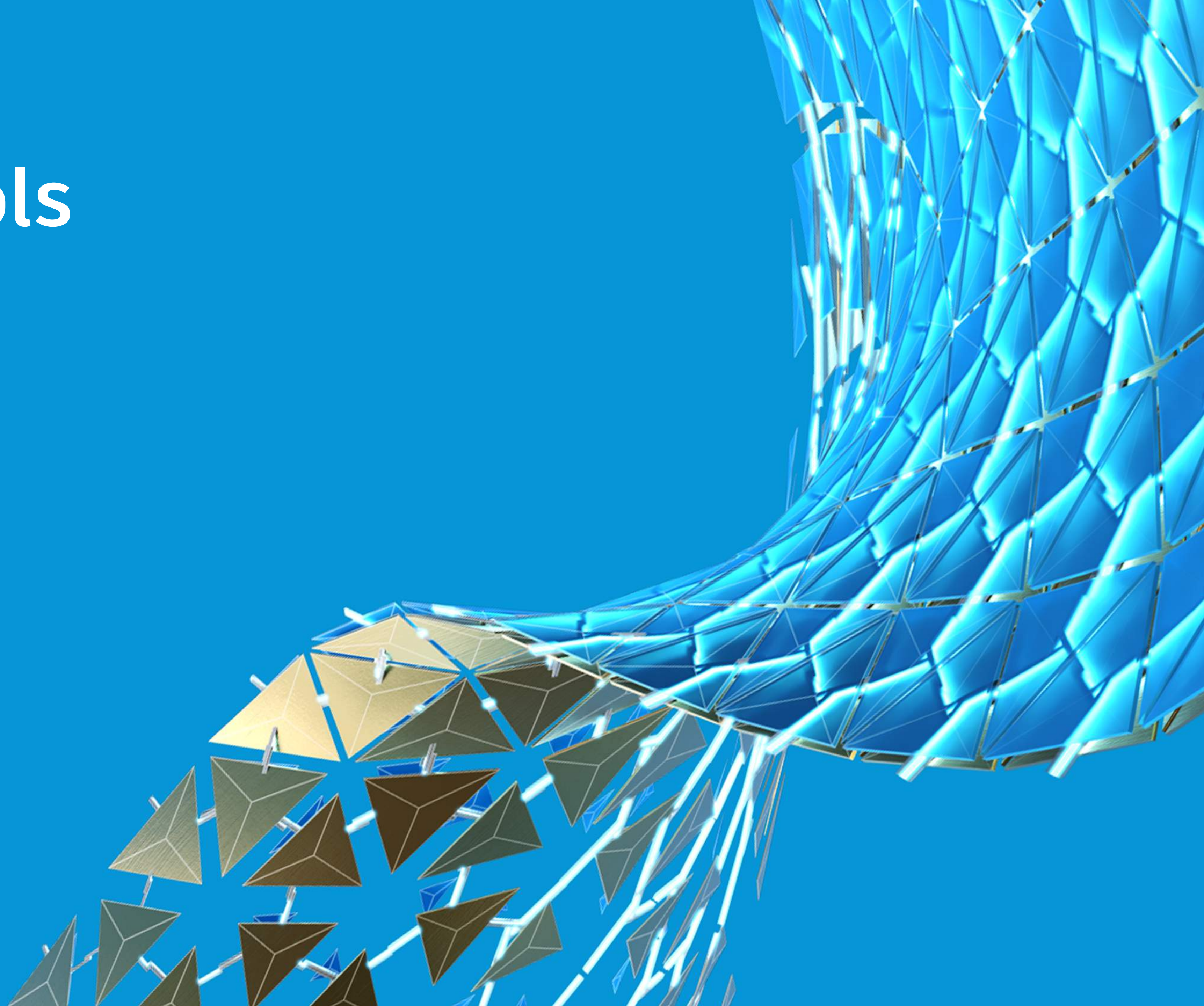
InputBox()



Etc



Buckets Tools



Buckets Tools

<https://forge.autodesk.com/blog/prepare-ilogic-rules-design-automation>

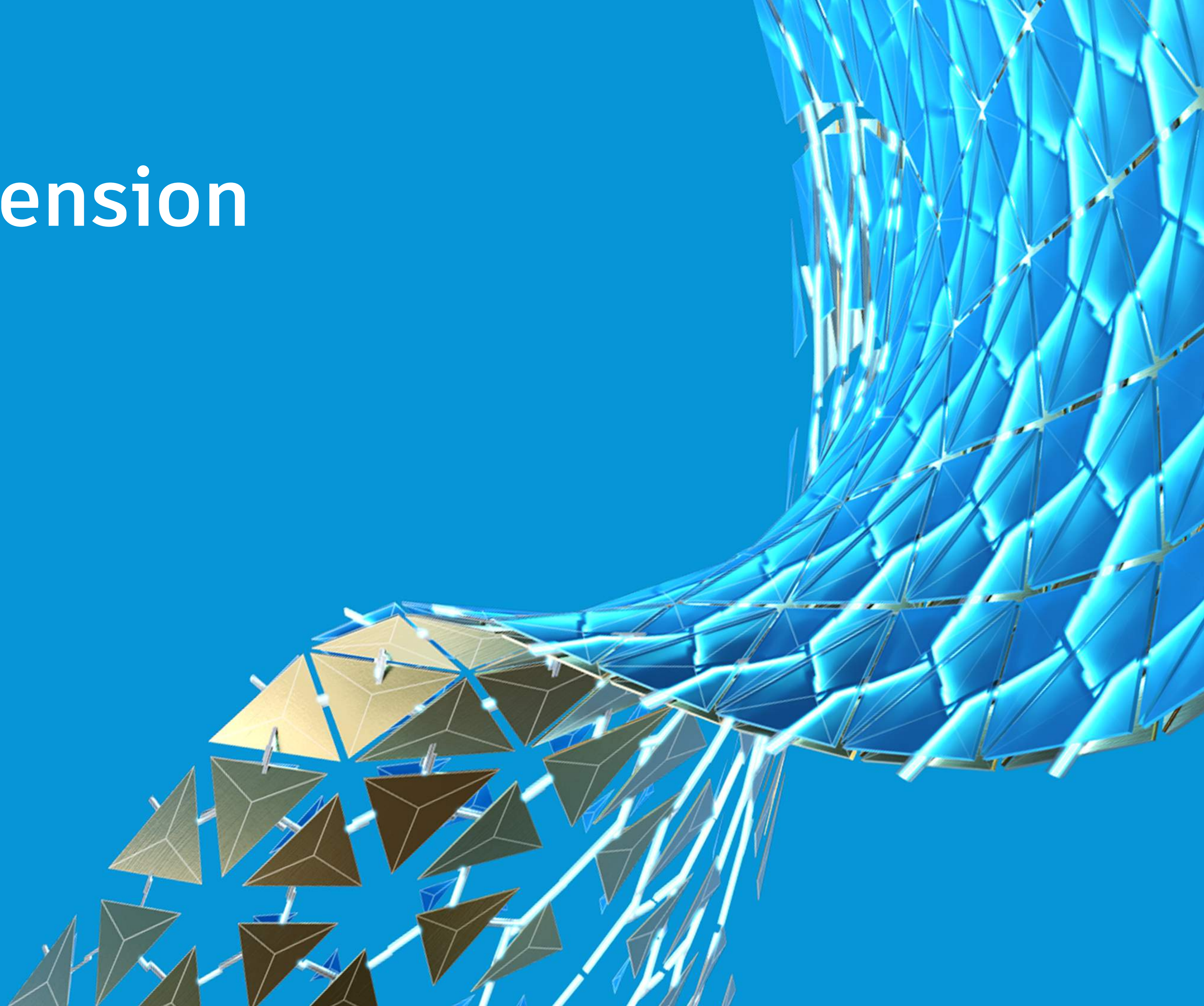
Design Automation Tools



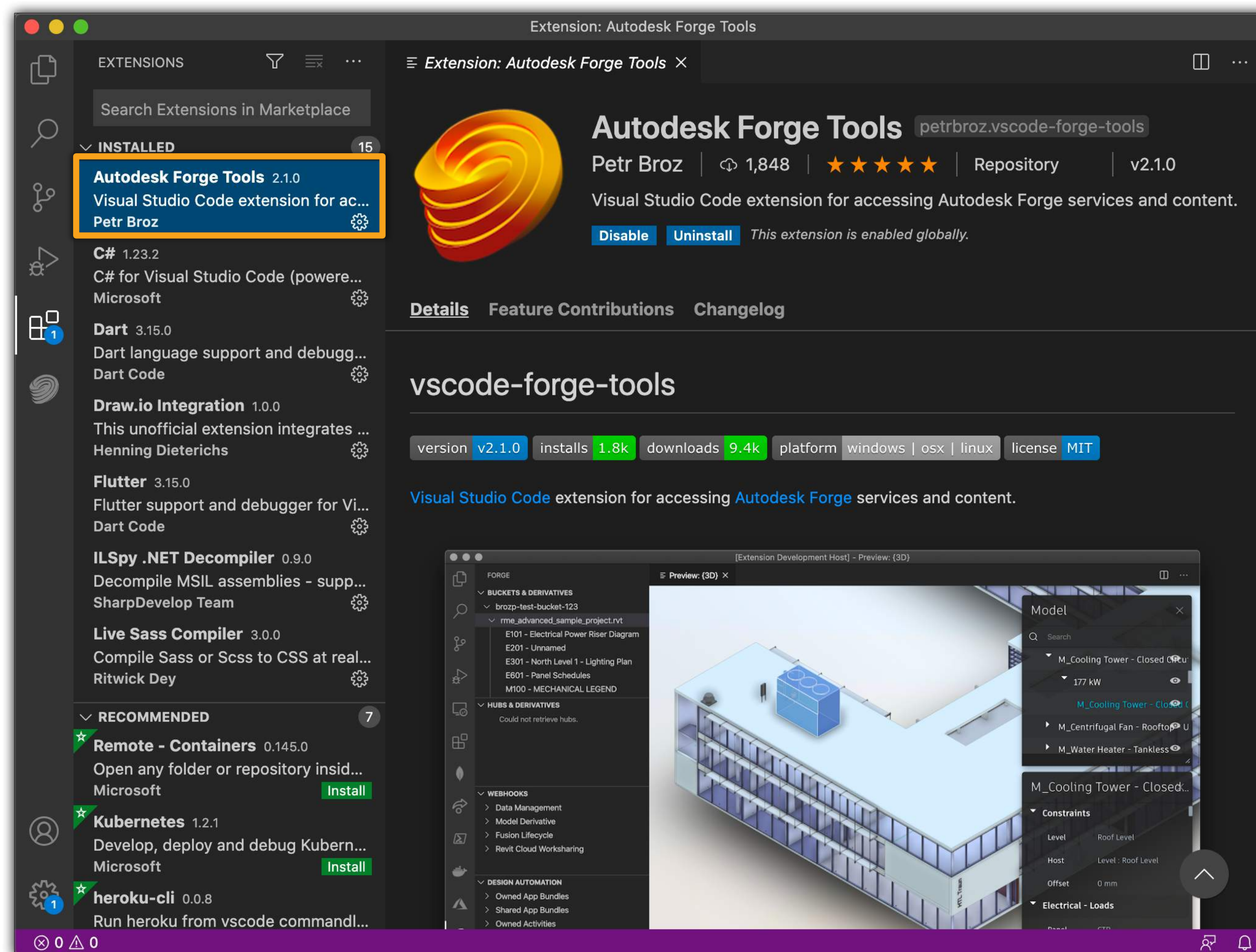
Design Automation Tools

<https://forge.autodesk.com/blog/prepare-ilogic-rules-design-automation>

VS Code Extension

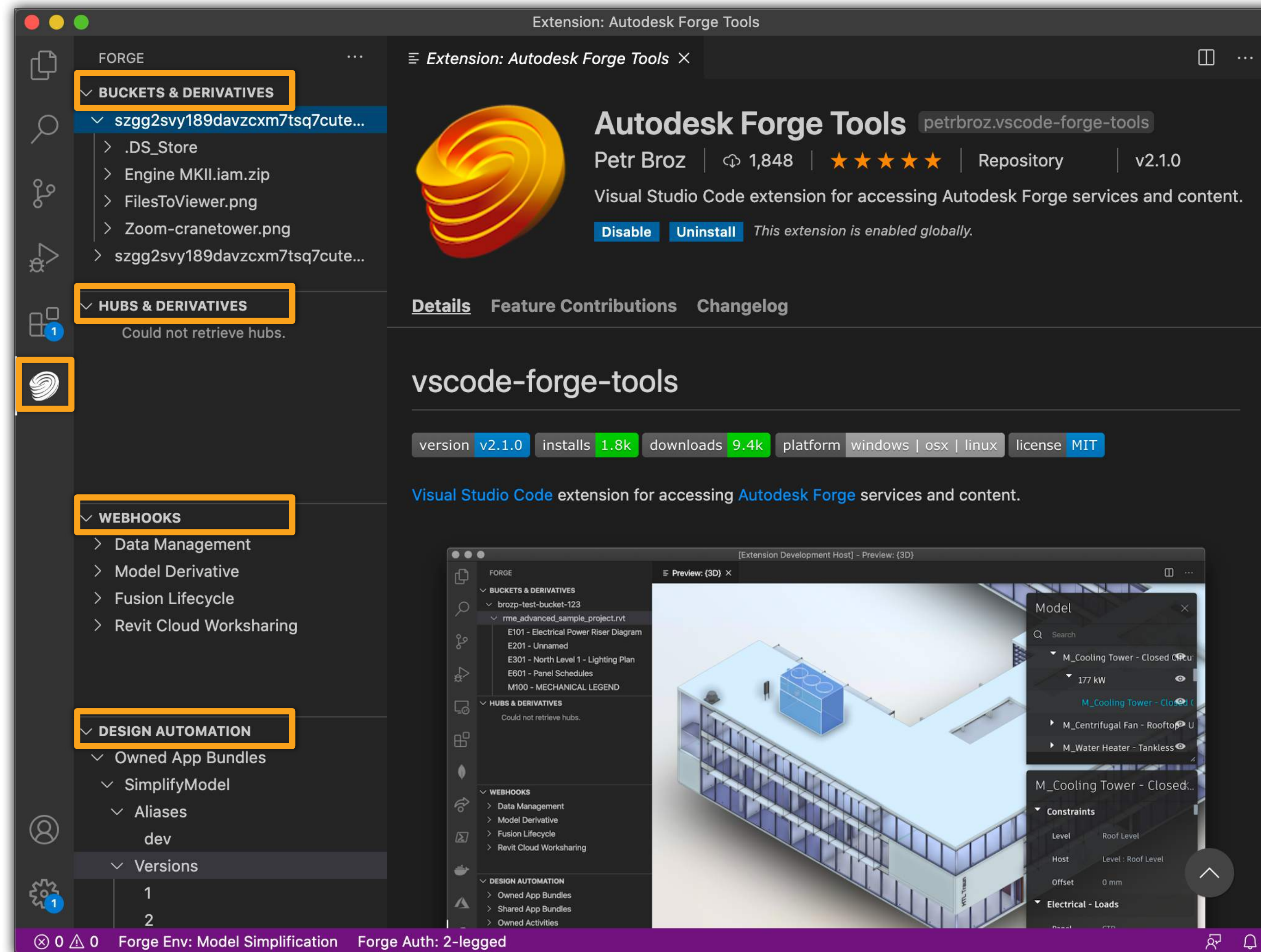


VS Code Extension



<https://forge.autodesk.com/blog/forge-visual-studio-code>

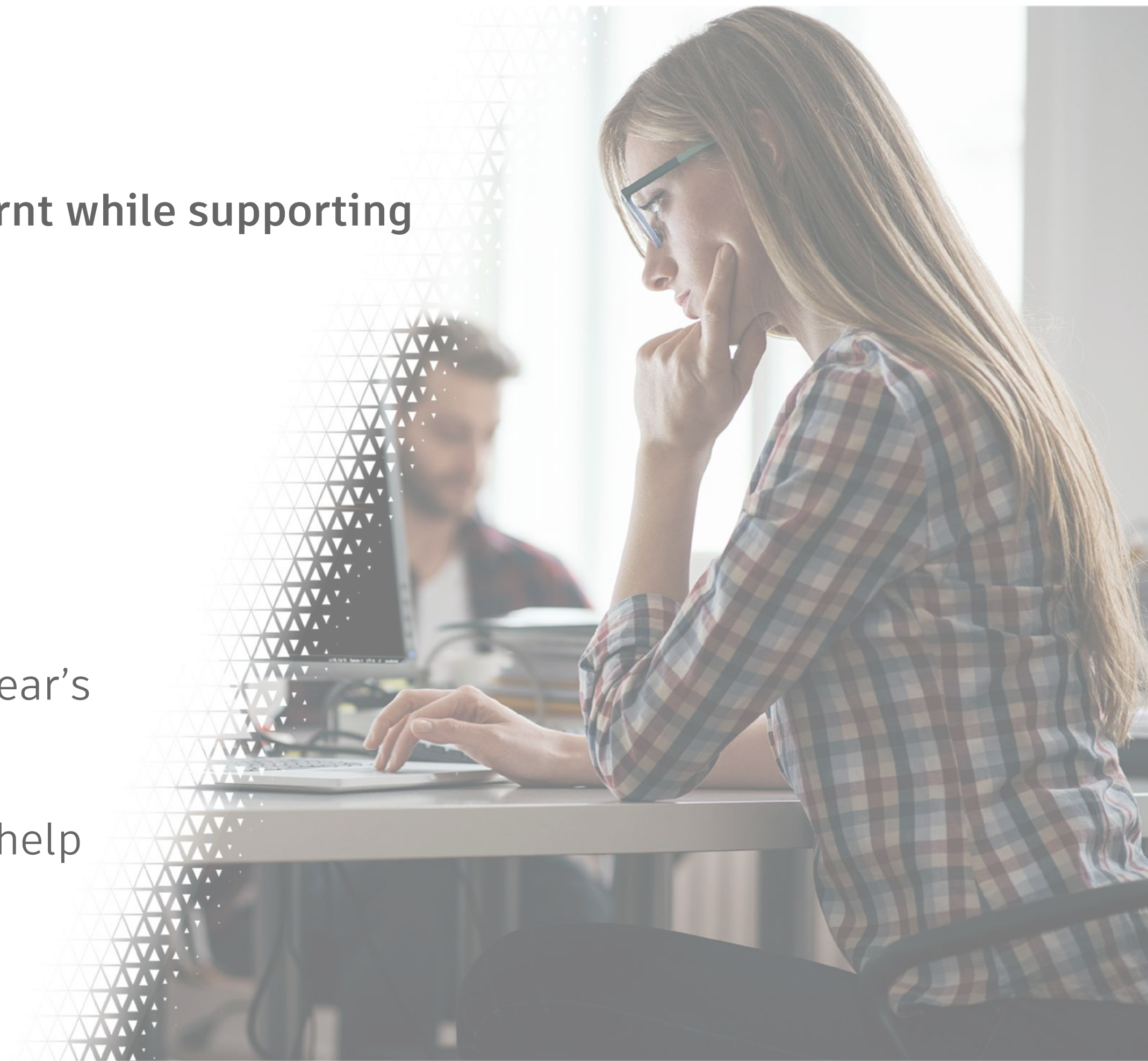
VS Code Extension



<https://forge.autodesk.com/blog/forge-visual-studio-code>

Questions?


- **During AU**
 - There will be a scheduled Q&A for this class
 - Check the class page for details
 - Class is identified as **SD473689 - Tips & Tricks: what I learnt while supporting Design Automation for Inventor**
 - Comments / Questions section on the Class page
 - Forge Answer Bar
 - Search for the Answer Bar from AU site, and then find the Forge specific one
 - Time slots will be available around the clock during this year's Virtual AU event!
 - Also languages and experts will be advertised, so we can help you as much as possible in a “live” setting



Questions?

- **Anytime**

- Look for related topics in the Forge blog, documentation and code samples:
 - https://forge.autodesk.com/en/docs/design-automation/v3/developers_guide/overview/
- Forge Help: <https://forge.autodesk.com/en/support/get-help>
- Have an idea for an awesome Forge App, but need help getting started?
 - Join an accelerator: <https://forge.autodesk.com/accelerator-program>

 Design Automation API v3
▼ Developer's Guide
Overview
API Basics
Field Guide
> Rate Limits and Quotas
Restrictions
Aliases and IDs
Troubleshooting
> Step-by-Step Tutorials
> Code Samples & Blog Posts
> API Reference
> Change History

FORGE

Accelerator Program

Benefit from dedicated time to develop your Forge application – with direct help from Forge engineering experts.



Autodesk and the Autodesk logo are registered trademarks or trademarks of Autodesk, Inc., and/or its subsidiaries and/or affiliates in the USA and/or other countries. All other brand names, product names, or trademarks belong to their respective holders. Autodesk reserves the right to alter product and services offerings, and specifications and pricing at any time without notice, and is not responsible for typographical or graphical errors that may appear in this document.

© 2020 Autodesk. All rights reserved.

