Everyday Dynamo: Automating Simple Solutions That Bridge Workflow Gaps Within Revit

Josh Moore

Design Applications Manager, Perkins+Will
@joshmoore2911

Justin Benjamin

Design Applications Manager, Perkins+Will
@jbenjamin1930

Class summary

- Use **visual programming** in the Dynamo extension to bridge everyday workflow gaps within Revit software.

- **Brief overview of Dynamo** and the many available packages that the Dynamo community has already created that can be used to automate many tasks.

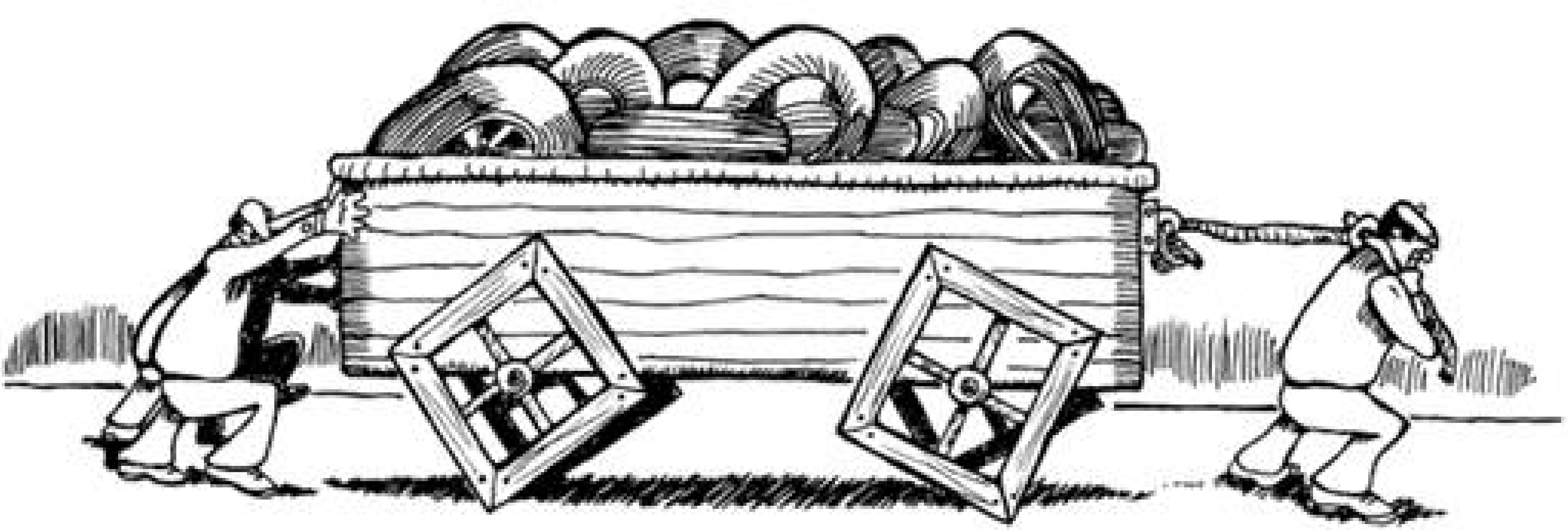
- **Specific examples** that bridge workflow gaps and/or increase automation within Revit software.

- **Tips and tricks** you can use when setting up Dynamo, and we'll go over basic troubleshooting tips.

Key learning objectives

- Have Increased awareness and familiarity with Dynamo visual programming nodes and packages
- Learn some tips and tricks when working with Dynamo and troubleshooting techniques on scripts that fail
- Recognize when Dynamo can save you valuable time on projects
- Discover simple and innovative ways to bridge workflow gaps in Revit

Ever feel like this?



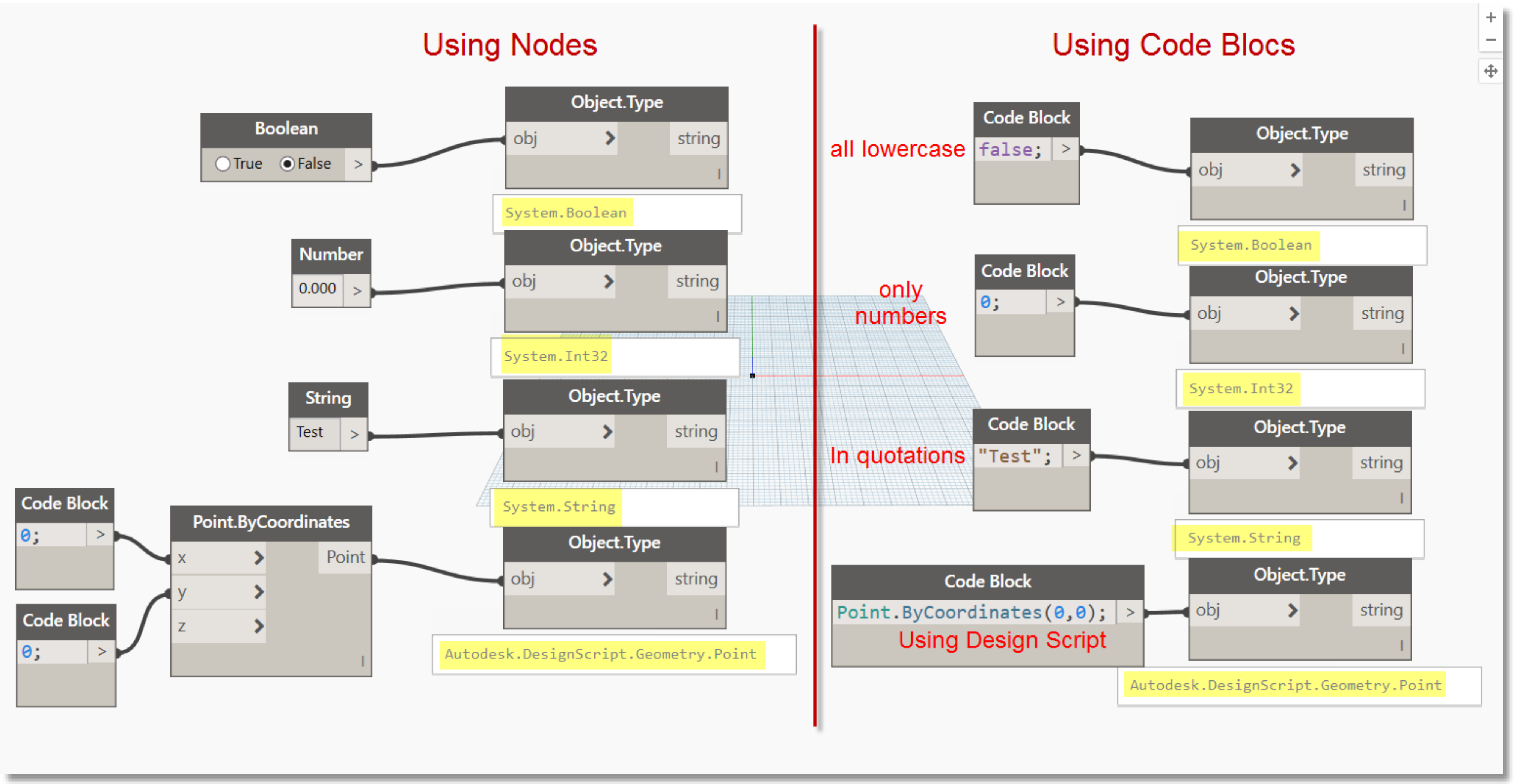
we don't have time to change the wheels, push harder Harry

Core Dynamo

Data

Type Basics

- String
- Number
- Integer
- Boolean
- Nulls
- Lists
- Geometry



Boolean
○ True ● False
Number
0.000
String
Test
Code Block
Point.ByCoordinates
x
y
z
Point
Object.Type
obj
string

Using Nodes

```
0;
0;
```

```
System.Boolean
System.Int32
System.String
Autodesk.DesignScript.Geometry.Point
```

Using Code Blocs

all lowercase

```
false;
```

only numbers

```
0;
```

In quotations

```
"Test";
```

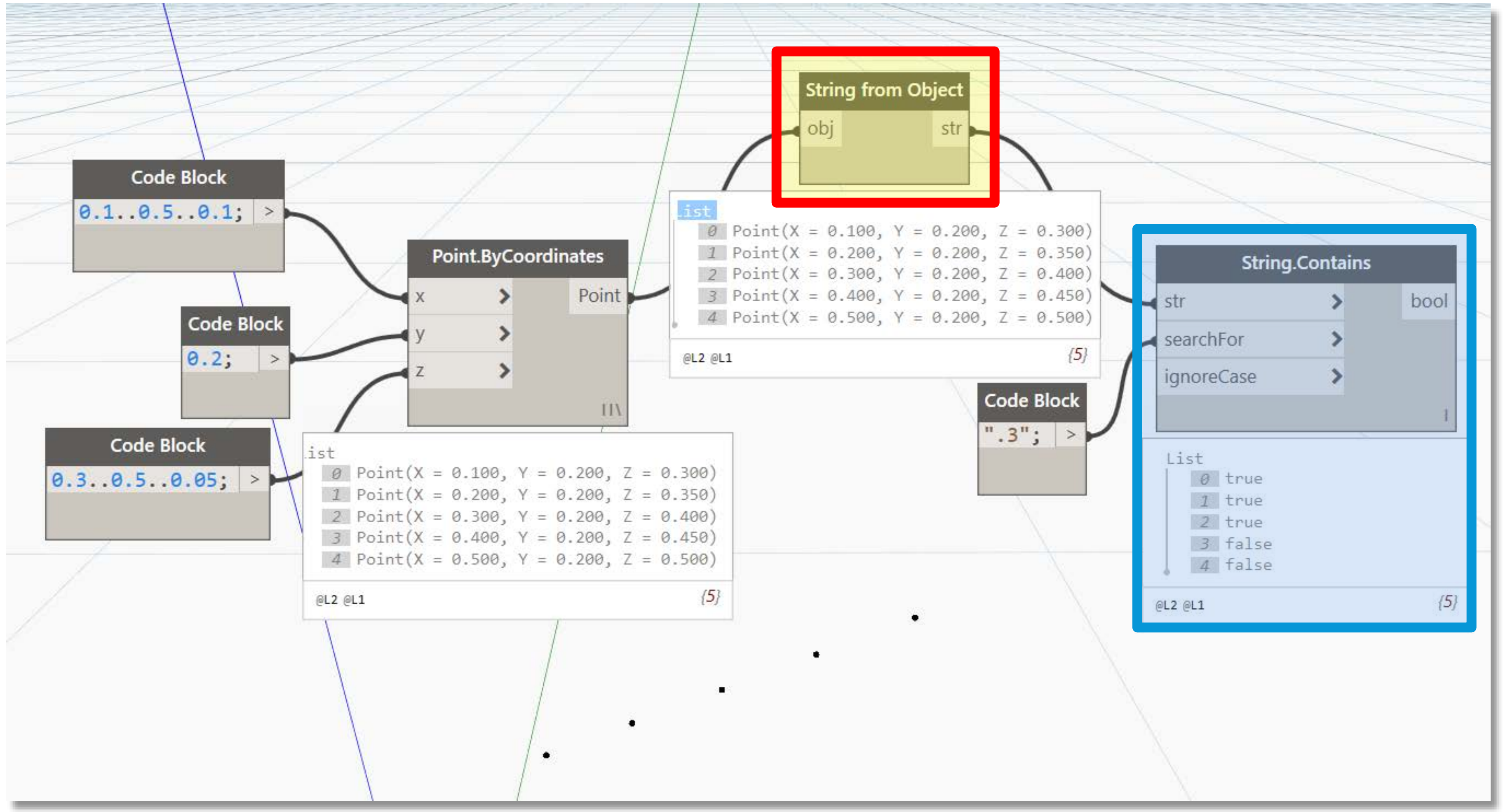
```
Point.ByCoordinates(0,0);
```

Using Design Script

```
System.Boolean
System.Int32
System.String
Autodesk.DesignScript.Geometry.Point
```

Data

Converting Types


Code Block
Code Block
Code Block
Point.ByCoordinates
x
y
z
Point
String from Object
obj
str
Code Block
String.Contains
str
searchFor
ignoreCase
bool

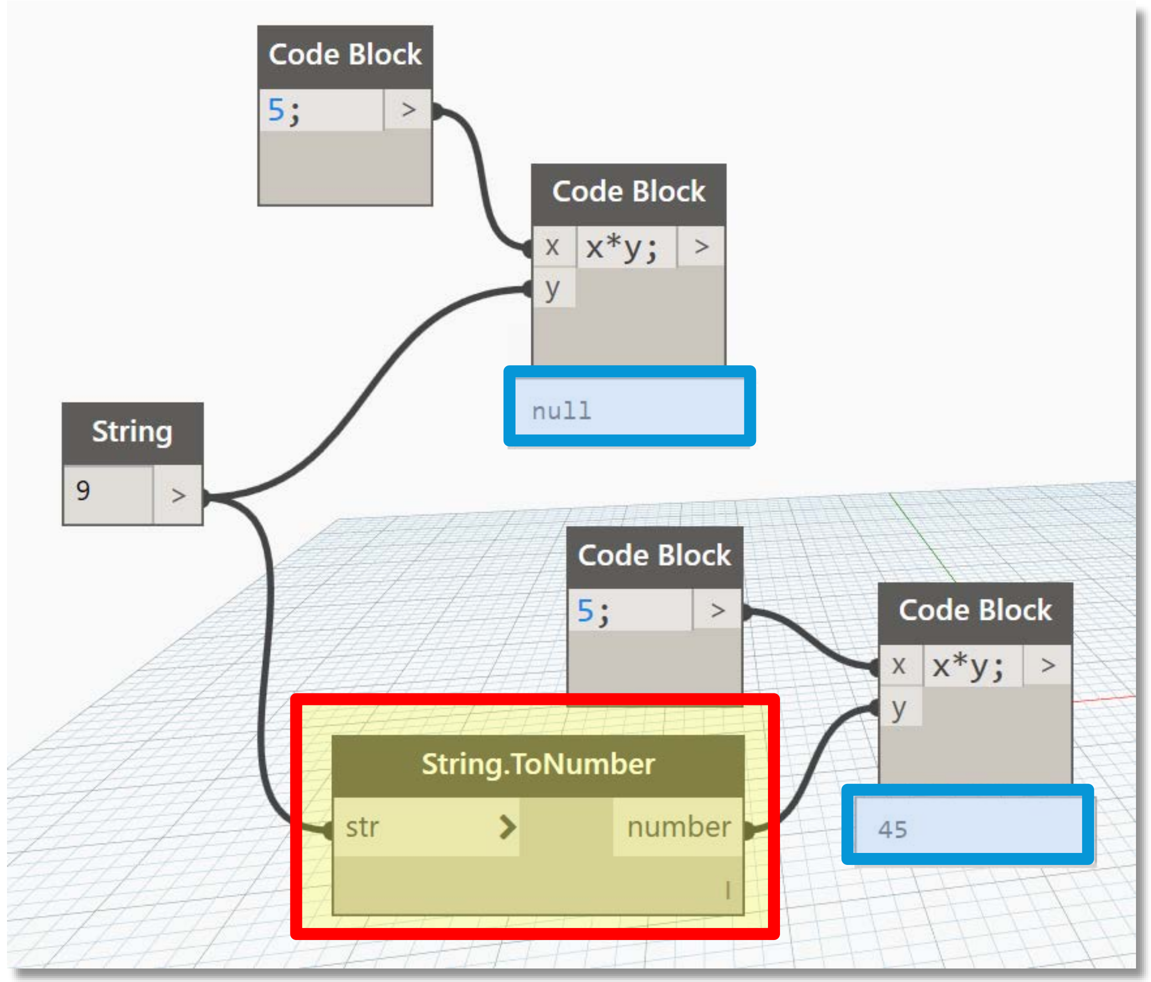
```
0.1..0.5..0.1;
0.2;
0.3..0.5..0.05;
".3";
```

```
List
  0 Point(X = 0.100, Y = 0.200, Z = 0.300)
  1 Point(X = 0.200, Y = 0.200, Z = 0.350)
  2 Point(X = 0.300, Y = 0.200, Z = 0.400)
  3 Point(X = 0.400, Y = 0.200, Z = 0.450)
  4 Point(X = 0.500, Y = 0.200, Z = 0.500)
@L2 @L1                                  {5}
```

```
List
  0 Point(X = 0.100, Y = 0.200, Z = 0.300)
  1 Point(X = 0.200, Y = 0.200, Z = 0.350)
  2 Point(X = 0.300, Y = 0.200, Z = 0.400)
  3 Point(X = 0.400, Y = 0.200, Z = 0.450)
  4 Point(X = 0.500, Y = 0.200, Z = 0.500)
@L2 @L1                                  {5}
```

```
List
  0 true
  1 true
  2 true
  3 false
  4 false
@L2 @L1                                  {5}
```

Convert Point to String for Search


Code Block
Code Block
x
y
String
Code Block
Code Block
x
y
String.ToNumber
str
number

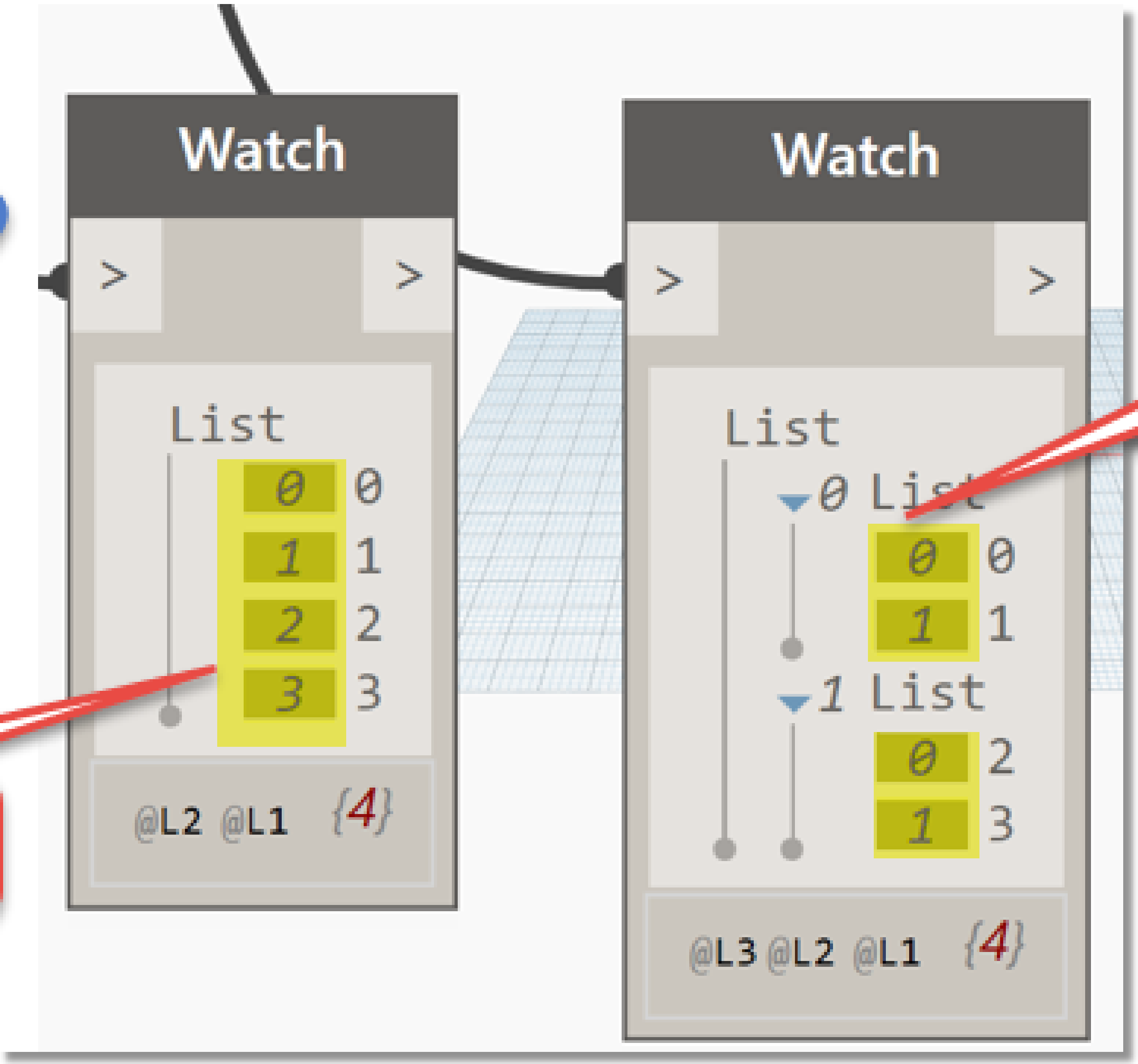
```
5;
x*y;
null
9
5;
x*y;
45
```

Convert a String to a Number for Data Match

Managing Data

Structure

The same data sorted in two different ways…



```
Watch
List
  0 0
  1 1
  2 2
  3 3
@L2 @L1 {4}
```

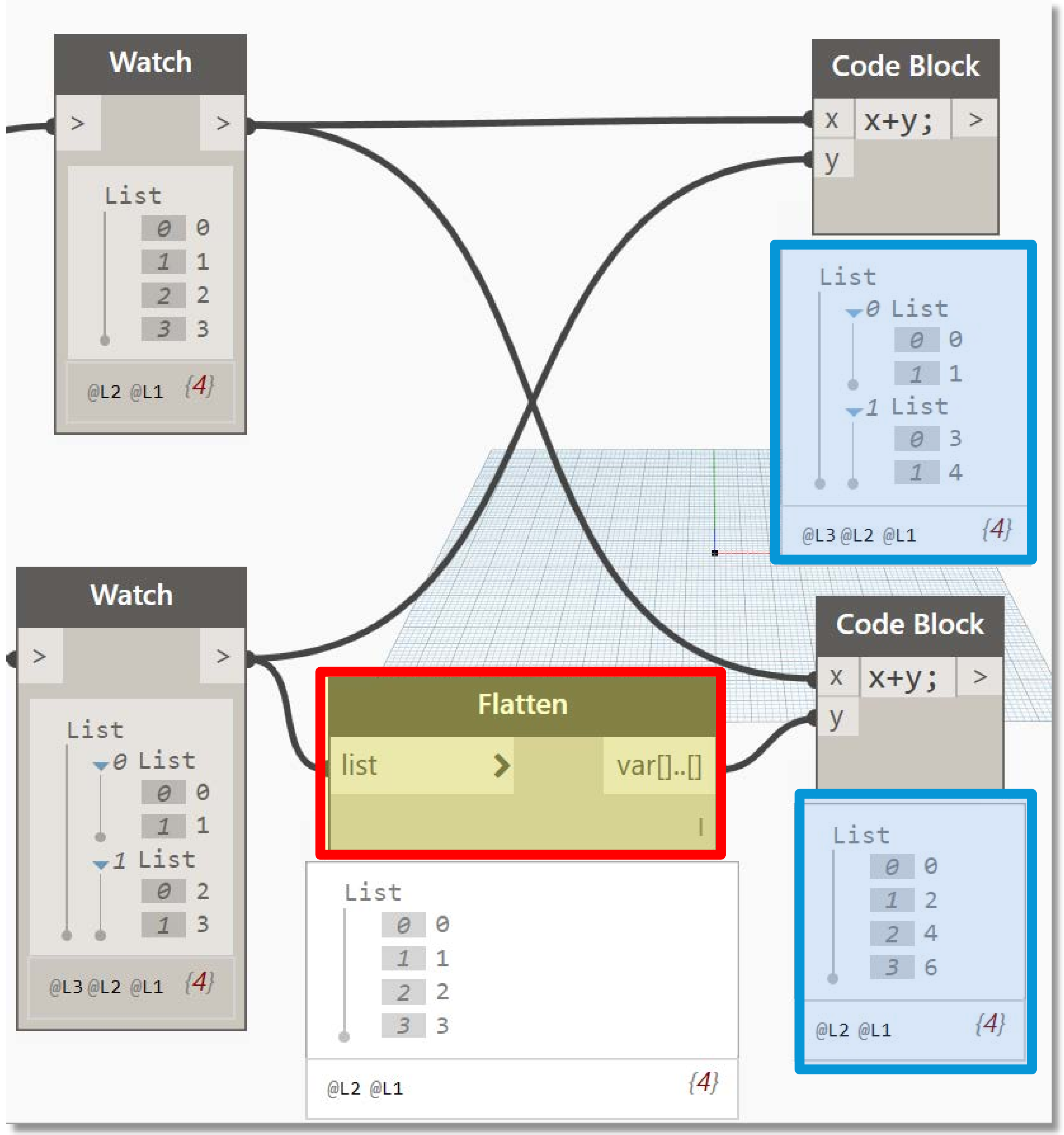
```
Watch
List
  0 List
    0 0
    1 1
  1 List
    0 2
    1 3
@L3 @L2 @L1 {4}
```

Data sorted as a single List.

Data sorted as a List of Lists.

Managing Data

Calculation Variations


Watch
Code Block
x
y
x+y;
Watch
Flatten
list
var[]..[]
Code Block
x
y
x+y;

```
List
  0 0
  1 1
  2 2
  3 3
@L2 @L1 {4}
```

```
List
  0 List
    0 0
    1 1
  1 List
    0 2
    1 3
@L3 @L2 @L1 {4}
```

```
List
  0 List
    0 0
    1 1
  1 List
    0 3
    1 4
@L3 @L2 @L1 {4}
```

```
List
  0 0
  1 1
  2 2
  3 3
@L2 @L1 {4}
```

```
List
  0 0
  1 2
  2 4
  3 6
@L2 @L1 {4}
```

Structure Variations

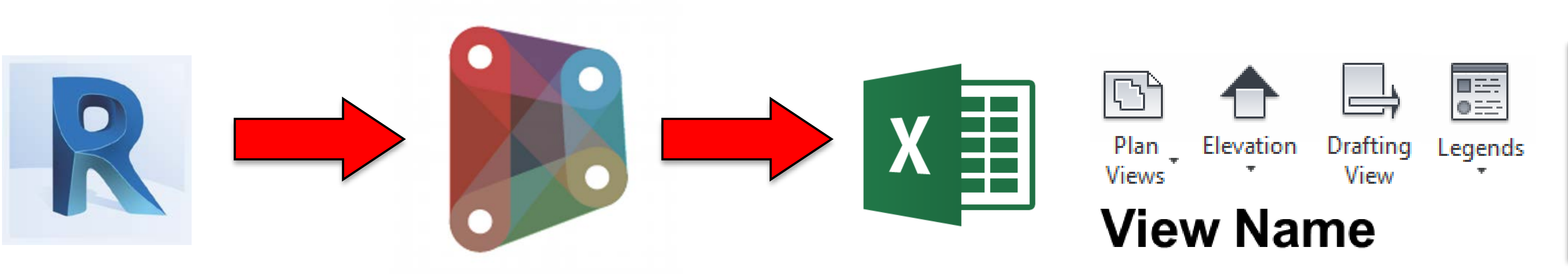
Process Automation Examples

When might one use Dynamo?

- Keyplan Setter
- Place Face Hosted Light Based on Ceiling Hosted Light
- Replace Carriage Returns in Room names
- Push Object Level to Parameter Value
- Transferring a project from one file to another
- Add dots to sheet index based on revision clouds placed on sheets
- Align Views on Sheets from Template Sheet Series
- Create Curtain Wall Systems based on Design Criteria
- Create Finish Floor objects from a Room Object and it's properties

Script Example #1

Exports Views to Excel Containing Category


Plan Views
Elevation
Drafting View
Legends

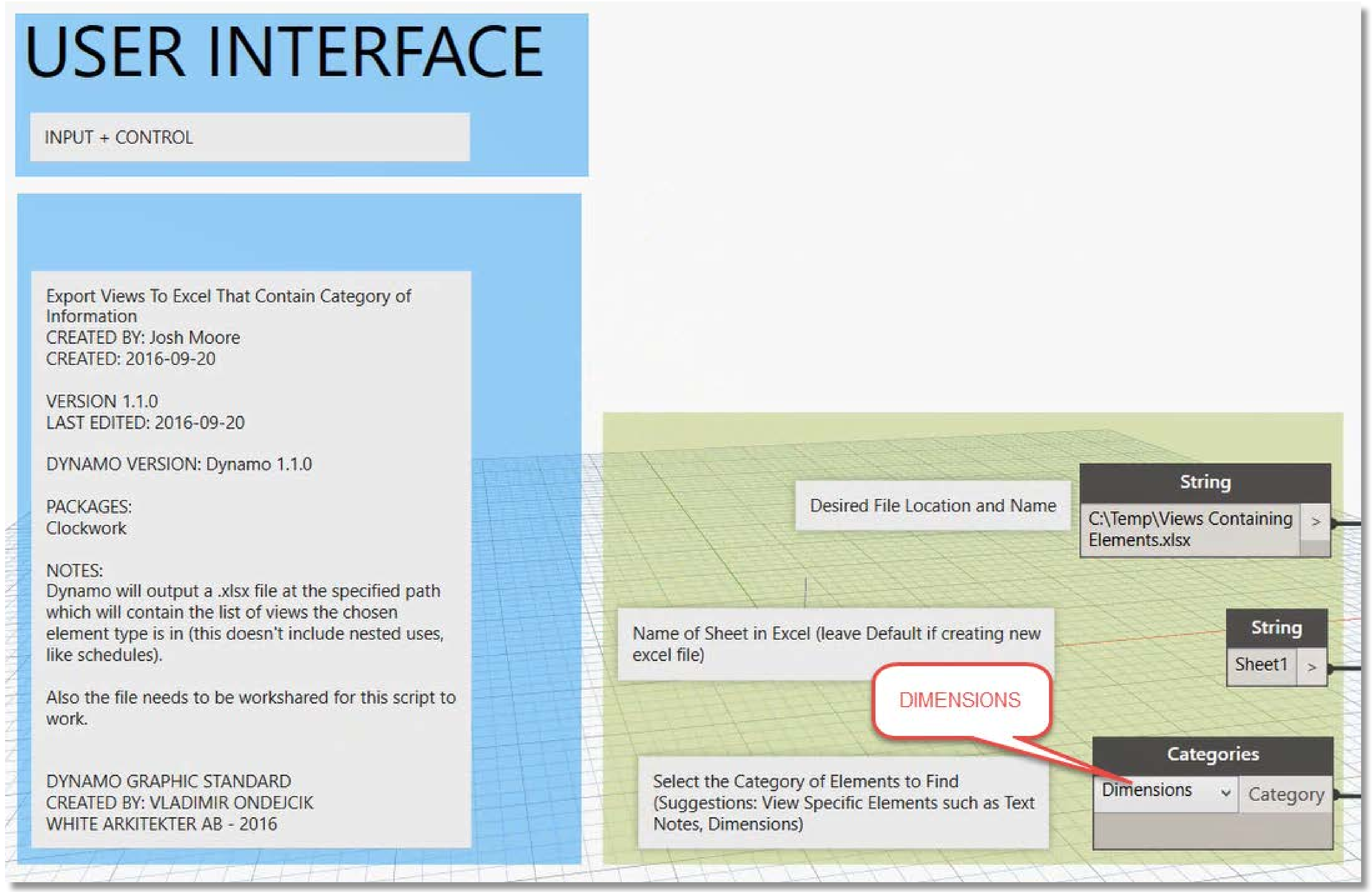
View Name

Type Name

Export Views to Excel Containing Category

User Interface & Sample Output - Dimensions

R
X
Plan Views
Elevation
Drafting View
Legends
View Name
Type Name



USER INTERFACE

INPUT + CONTROL

Export Views To Excel That Contain Category of Information
CREATED BY: Josh Moore
CREATED: 2016-09-20

VERSION 1.1.0
LAST EDITED: 2016-09-20

DYNAMO VERSION: Dynamo 1.1.0

PACKAGES:
Clockwork

NOTES:
Dynamo will output a .xlsx file at the specified path which will contain the list of views the chosen element type is in (this doesn't include nested uses, like schedules).

Also the file needs to be workshared for this script to work.

DYNAMO GRAPHIC STANDARD
CREATED BY: VLADIMIR ONDEJCIK
WHITE ARKITEKTER AB - 2016

Desired File Location and Name

String: C:\Temp\Views Containing Elements.xlsx

Name of Sheet in Excel (leave Default if creating new excel file)

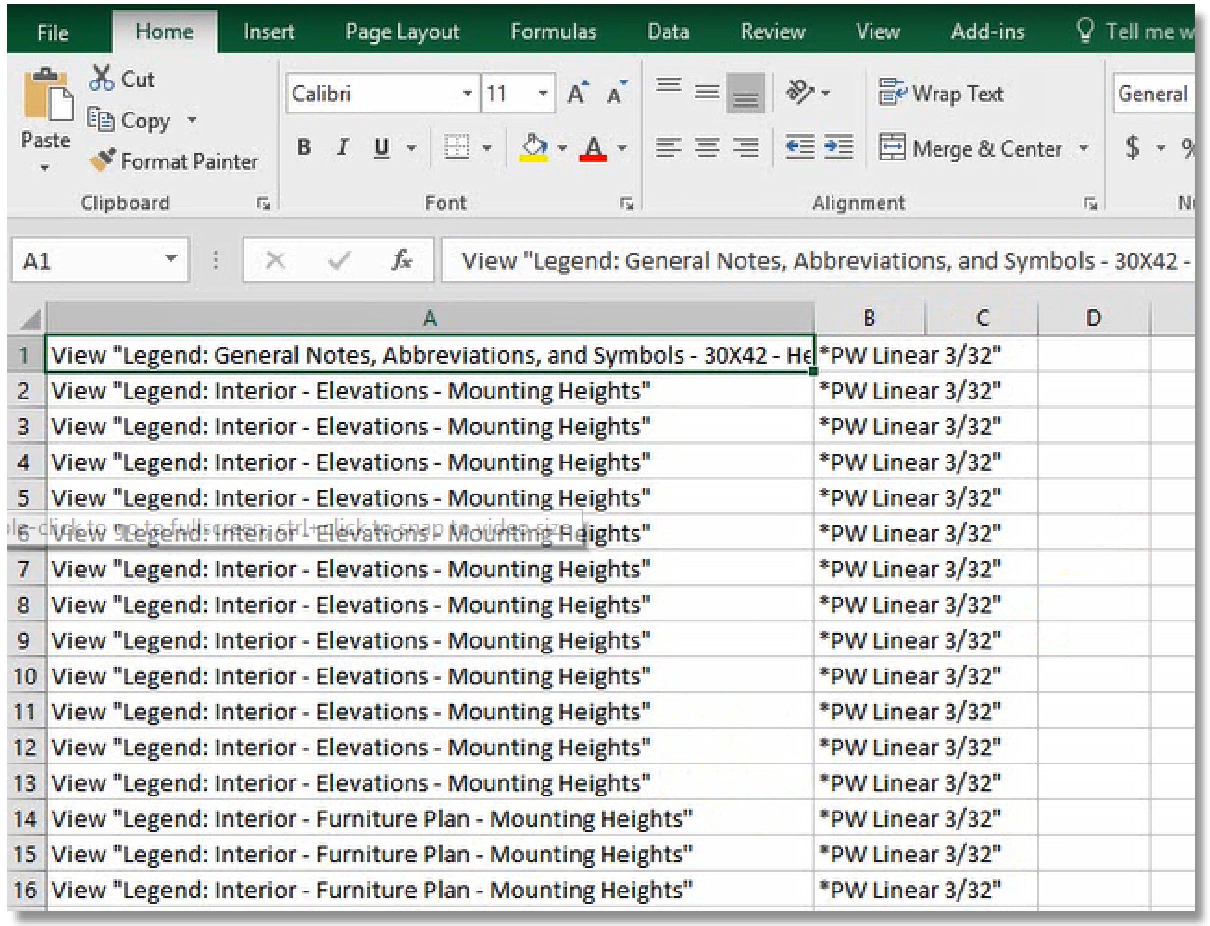
String: Sheet1

DIMENSIONS

Select the Category of Elements to Find (Suggestions: View Specific Elements such as Text Notes, Dimensions)

Categories: Dimensions

String
>
Categories
Category


File
Home
Insert
Page Layout
Formulas
Data
Review
View
Add-ins
Tell me w
Paste
Cut
Copy
Format Painter
Clipboard
Calibri
11
B
I
U
Font
Wrap Text
Merge & Center
Alignment
General
$
%
N

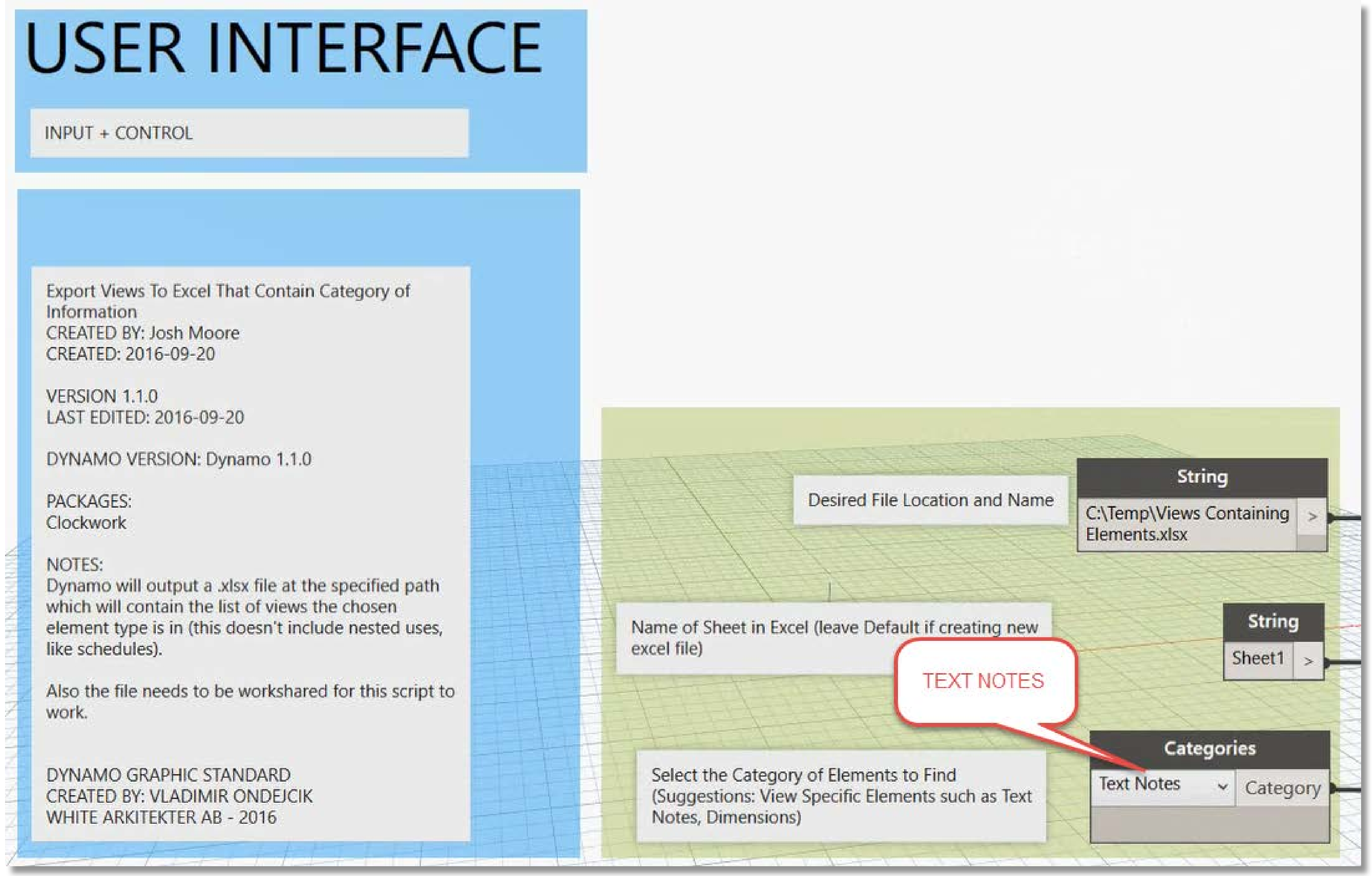
A1: View "Legend: General Notes, Abbreviations, and Symbols - 30X42 -

	A	B	C	D
1	View "Legend: General Notes, Abbreviations, and Symbols - 30X42 - He	*PW Linear 3/32"		
2	View "Legend: Interior - Elevations - Mounting Heights"	*PW Linear 3/32"		
3	View "Legend: Interior - Elevations - Mounting Heights"	*PW Linear 3/32"		
4	View "Legend: Interior - Elevations - Mounting Heights"	*PW Linear 3/32"		
5	View "Legend: Interior - Elevations - Mounting Heights"	*PW Linear 3/32"		
6	View "Legend: Interior - Elevations - Mounting Heights"	*PW Linear 3/32"		
7	View "Legend: Interior - Elevations - Mounting Heights"	*PW Linear 3/32"		
8	View "Legend: Interior - Elevations - Mounting Heights"	*PW Linear 3/32"		
9	View "Legend: Interior - Elevations - Mounting Heights"	*PW Linear 3/32"		
10	View "Legend: Interior - Elevations - Mounting Heights"	*PW Linear 3/32"		
11	View "Legend: Interior - Elevations - Mounting Heights"	*PW Linear 3/32"		
12	View "Legend: Interior - Elevations - Mounting Heights"	*PW Linear 3/32"		
13	View "Legend: Interior - Elevations - Mounting Heights"	*PW Linear 3/32"		
14	View "Legend: Interior - Furniture Plan - Mounting Heights"	*PW Linear 3/32"		
15	View "Legend: Interior - Furniture Plan - Mounting Heights"	*PW Linear 3/32"		
16	View "Legend: Interior - Furniture Plan - Mounting Heights"	*PW Linear 3/32"		

Export Views to Excel Containing Category

User Interface & Sample Output – Text Notes

Plan Views
Elevation
Drafting View
Legends
View Name
Type Name


USER INTERFACE
INPUT + CONTROL

Export Views To Excel That Contain Category of Information
CREATED BY: Josh Moore
CREATED: 2016-09-20

VERSION 1.1.0
LAST EDITED: 2016-09-20

DYNAMO VERSION: Dynamo 1.1.0

PACKAGES:
Clockwork

NOTES:
Dynamo will output a .xlsx file at the specified path which will contain the list of views the chosen element type is in (this doesn't include nested uses, like schedules).

Also the file needs to be workshared for this script to work.

DYNAMO GRAPHIC STANDARD
CREATED BY: VLADIMIR ONDEJCIK
WHITE ARKITEKTER AB - 2016

Desired File Location and Name

String: C:\Temp\Views Containing Elements.xlsx

Name of Sheet in Excel (leave Default if creating new excel file)

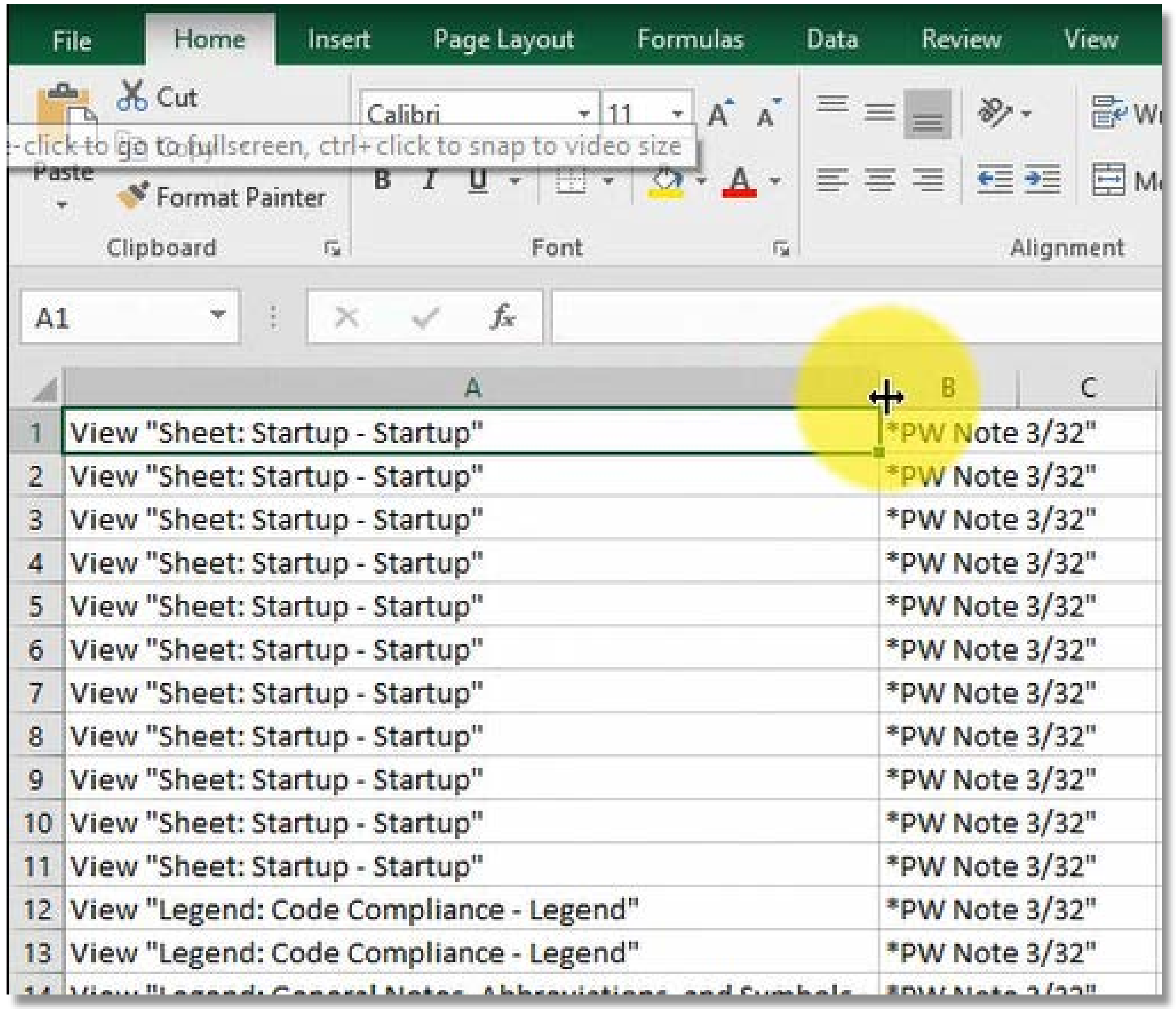
String: Sheet1

TEXT NOTES

Select the Category of Elements to Find (Suggestions: View Specific Elements such as Text Notes, Dimensions)

Categories: Text Notes

Category

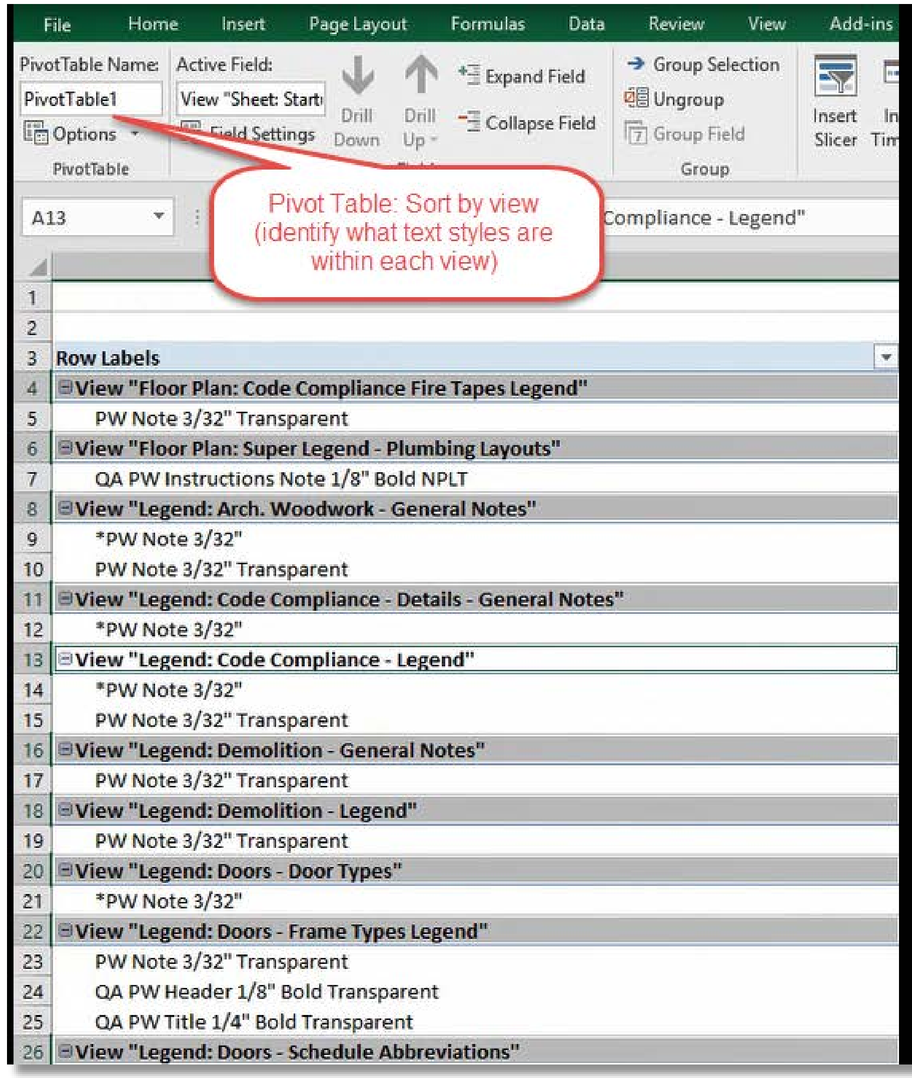

File
Home
Insert
Page Layout
Formulas
Data
Review
View
Cut
Paste
Format Painter
Clipboard
Calibri
11
B
I
U
Font
Alignment
-click to go to fullscreen, ctrl+click to snap to video size
A1
fx

	A	B	C
1	View "Sheet: Startup - Startup"	*PW Note 3/32"	
2	View "Sheet: Startup - Startup"	*PW Note 3/32"	
3	View "Sheet: Startup - Startup"	*PW Note 3/32"	
4	View "Sheet: Startup - Startup"	*PW Note 3/32"	
5	View "Sheet: Startup - Startup"	*PW Note 3/32"	
6	View "Sheet: Startup - Startup"	*PW Note 3/32"	
7	View "Sheet: Startup - Startup"	*PW Note 3/32"	
8	View "Sheet: Startup - Startup"	*PW Note 3/32"	
9	View "Sheet: Startup - Startup"	*PW Note 3/32"	
10	View "Sheet: Startup - Startup"	*PW Note 3/32"	
11	View "Sheet: Startup - Startup"	*PW Note 3/32"	
12	View "Legend: Code Compliance - Legend"	*PW Note 3/32"	
13	View "Legend: Code Compliance - Legend"	*PW Note 3/32"	

Export Views to Excel Containing Category

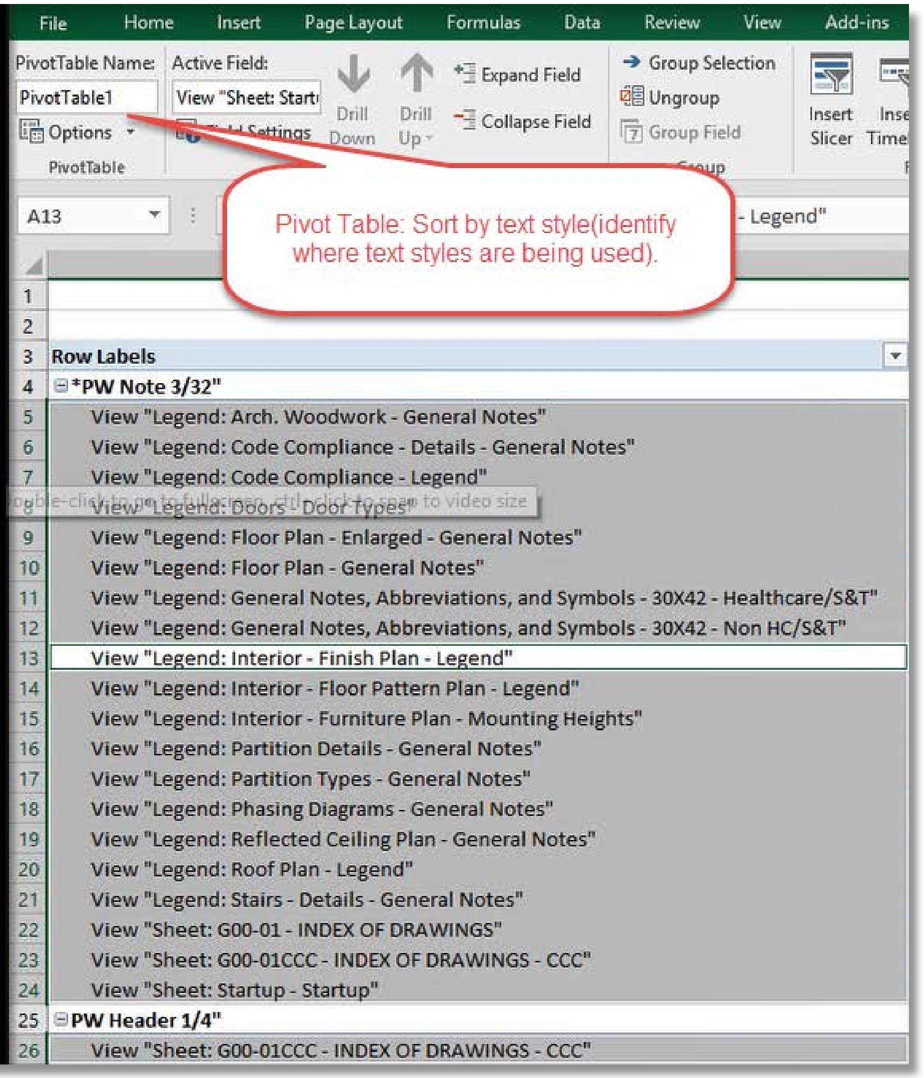
Organizing the Data with Excel Pivot Tables

View Name
Type Name
Plan Views
Elevation
Drafting View
Legends


File
Home
Insert
Page Layout
Formulas
Data
Review
View
Add-ins
PivotTable Name:
PivotTable1
Options
PivotTable
Active Field:
Field Settings
Drill Down
Drill Up
Expand Field
Collapse Field
Group Selection
Ungroup
Group Field
Group
Insert Slicer
A13

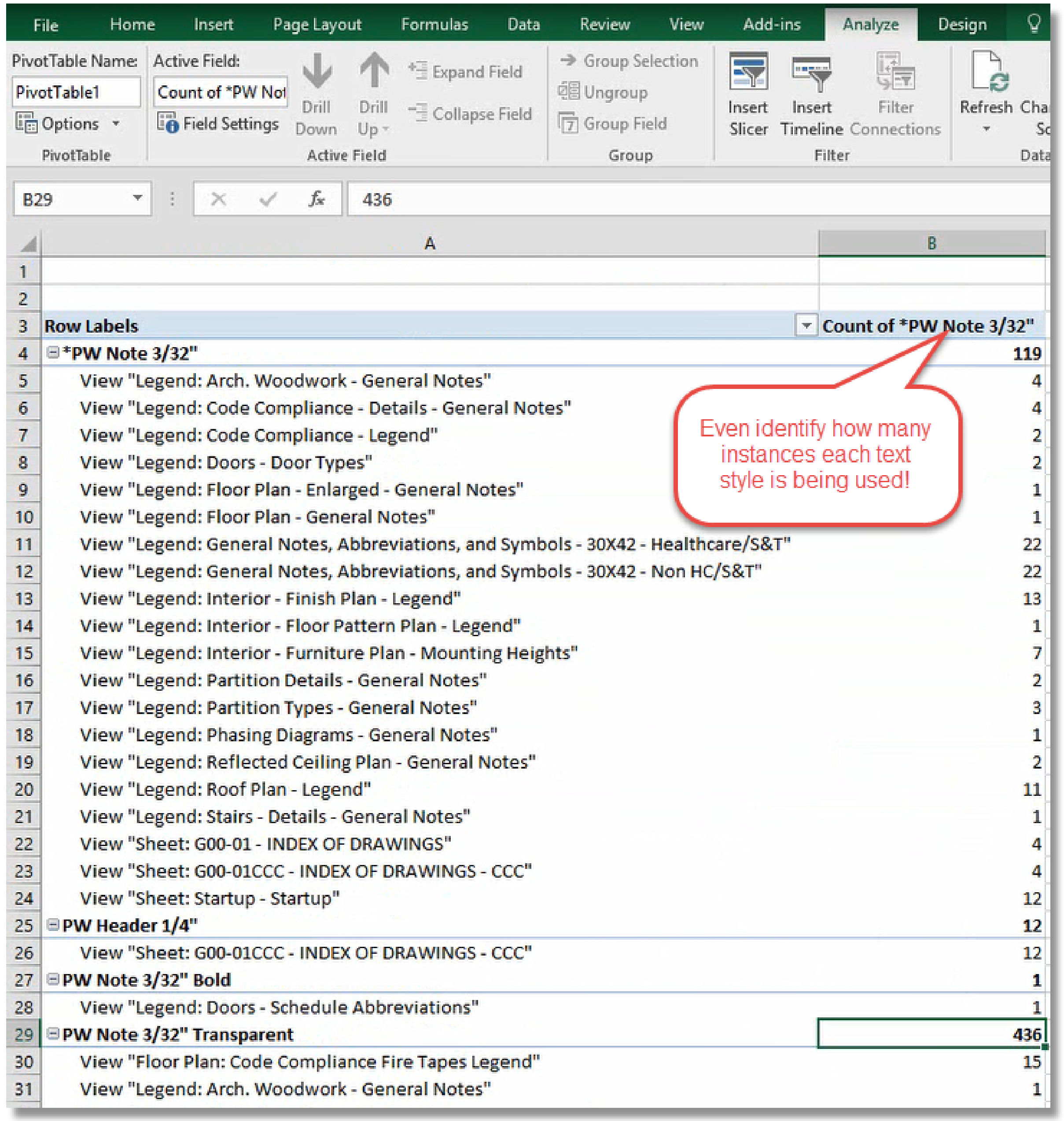
Pivot Table: Sort by view (identify what text styles are within each view)

1	
2	
3	**Row Labels**
4	⊟**View "Floor Plan: Code Compliance Fire Tapes Legend"**
5	PW Note 3/32" Transparent
6	⊟**View "Floor Plan: Super Legend - Plumbing Layouts"**
7	QA PW Instructions Note 1/8" Bold NPLT
8	⊟**View "Legend: Arch. Woodwork - General Notes"**
9	*PW Note 3/32"
10	PW Note 3/32" Transparent
11	⊟**View "Legend: Code Compliance - Details - General Notes"**
12	*PW Note 3/32"
13	⊟**View "Legend: Code Compliance - Legend"**
14	*PW Note 3/32"
15	PW Note 3/32" Transparent
16	⊟**View "Legend: Demolition - General Notes"**
17	PW Note 3/32" Transparent
18	⊟**View "Legend: Demolition - Legend"**
19	PW Note 3/32" Transparent
20	⊟**View "Legend: Doors - Door Types"**
21	*PW Note 3/32"
22	⊟**View "Legend: Doors - Frame Types Legend"**
23	PW Note 3/32" Transparent
24	QA PW Header 1/8" Bold Transparent
25	QA PW Title 1/4" Bold Transparent
26	⊟**View "Legend: Doors - Schedule Abbreviations"**


File
Home
Insert
Page Layout
Formulas
Data
Review
View
Add-ins
PivotTable Name:
PivotTable1
Options
PivotTable
Active Field:
Field Settings
Drill Down
Drill Up
Expand Field
Collapse Field
Group Selection
Ungroup
Group Field
Group
Insert Slicer
A13

Pivot Table: Sort by text style(identify where text styles are being used).

1	
2	
3	**Row Labels**
4	⊟***PW Note 3/32"**
5	View "Legend: Arch. Woodwork - General Notes"
6	View "Legend: Code Compliance - Details - General Notes"
7	View "Legend: Code Compliance - Legend"
8	View "Legend: Doors - Door Types"
9	View "Legend: Floor Plan - Enlarged - General Notes"
10	View "Legend: Floor Plan - General Notes"
11	View "Legend: General Notes, Abbreviations, and Symbols - 30X42 - Healthcare/S&T"
12	View "Legend: General Notes, Abbreviations, and Symbols - 30X42 - Non HC/S&T"
13	View "Legend: Interior - Finish Plan - Legend"
14	View "Legend: Interior - Floor Pattern Plan - Legend"
15	View "Legend: Interior - Furniture Plan - Mounting Heights"
16	View "Legend: Partition Details - General Notes"
17	View "Legend: Partition Types - General Notes"
18	View "Legend: Phasing Diagrams - General Notes"
19	View "Legend: Reflected Ceiling Plan - General Notes"
20	View "Legend: Roof Plan - Legend"
21	View "Legend: Stairs - Details - General Notes"
22	View "Sheet: G00-01 - INDEX OF DRAWINGS"
23	View "Sheet: G00-01CCC - INDEX OF DRAWINGS - CCC"
24	View "Sheet: Startup - Startup"
25	⊟**PW Header 1/4"**
26	View "Sheet: G00-01CCC - INDEX OF DRAWINGS - CCC"

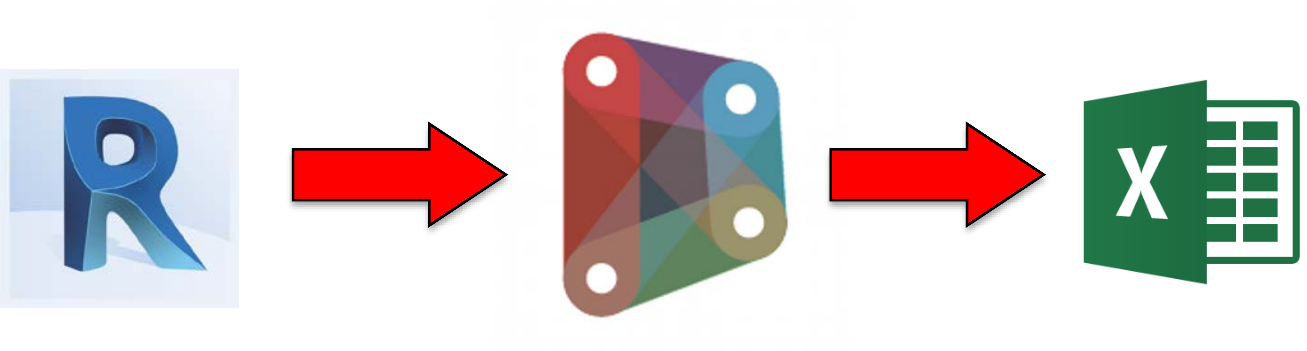

File
Home
Insert
Page Layout
Formulas
Data
Review
View
Add-ins
Analyze
Design
PivotTable Name:
PivotTable1
Options
PivotTable
Active Field:
Count of *PW Not
Field Settings
Drill Down
Drill Up
Expand Field
Collapse Field
Active Field
Group Selection
Ungroup
Group Field
Group
Insert Slicer
Insert Timeline
Filter Connections
Filter
Refresh
B29
436

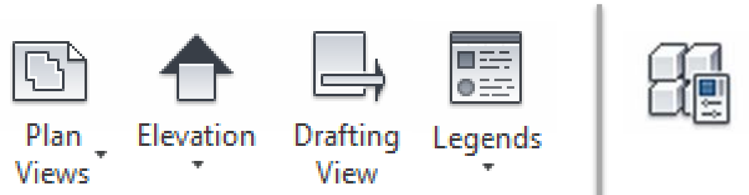
	A	B
1		
2		
3	**Row Labels**	**Count of *PW Note 3/32"**
4	⊟***PW Note 3/32"**	**119**
5	View "Legend: Arch. Woodwork - General Notes"	4
6	View "Legend: Code Compliance - Details - General Notes"	4
7	View "Legend: Code Compliance - Legend"	2
8	View "Legend: Doors - Door Types"	2
9	View "Legend: Floor Plan - Enlarged - General Notes"	1
10	View "Legend: Floor Plan - General Notes"	1
11	View "Legend: General Notes, Abbreviations, and Symbols - 30X42 - Healthcare/S&T"	22
12	View "Legend: General Notes, Abbreviations, and Symbols - 30X42 - Non HC/S&T"	22
13	View "Legend: Interior - Finish Plan - Legend"	13
14	View "Legend: Interior - Floor Pattern Plan - Legend"	1
15	View "Legend: Interior - Furniture Plan - Mounting Heights"	7
16	View "Legend: Partition Details - General Notes"	2
17	View "Legend: Partition Types - General Notes"	3
18	View "Legend: Phasing Diagrams - General Notes"	1
19	View "Legend: Reflected Ceiling Plan - General Notes"	2
20	View "Legend: Roof Plan - Legend"	11
21	View "Legend: Stairs - Details - General Notes"	1
22	View "Sheet: G00-01 - INDEX OF DRAWINGS"	4
23	View "Sheet: G00-01CCC - INDEX OF DRAWINGS - CCC"	4
24	View "Sheet: Startup - Startup"	12
25	⊟**PW Header 1/4"**	**12**
26	View "Sheet: G00-01CCC - INDEX OF DRAWINGS - CCC"	12
27	⊟**PW Note 3/32" Bold**	**1**
28	View "Legend: Doors - Schedule Abbreviations"	1
29	⊟**PW Note 3/32" Transparent**	**436**
30	View "Floor Plan: Code Compliance Fire Tapes Legend"	15
31	View "Legend: Arch. Woodwork - General Notes"	1

Even identify how many instances each text style is being used!

Script Example #1

Live Demo



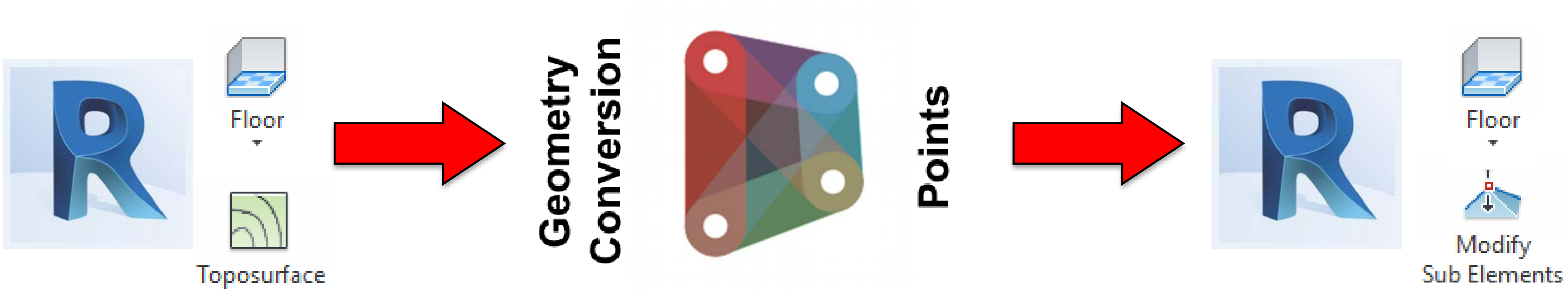

Plan Views
Elevation
Drafting View
Legends

View Name

Type Name

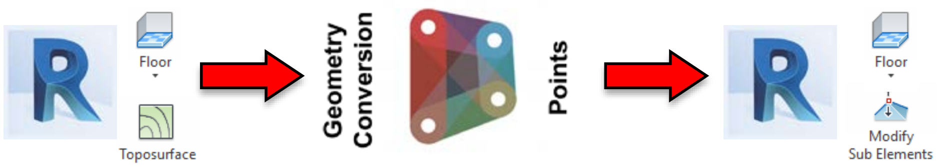
Script Example #2

Slab Edit Floor to Match Topography

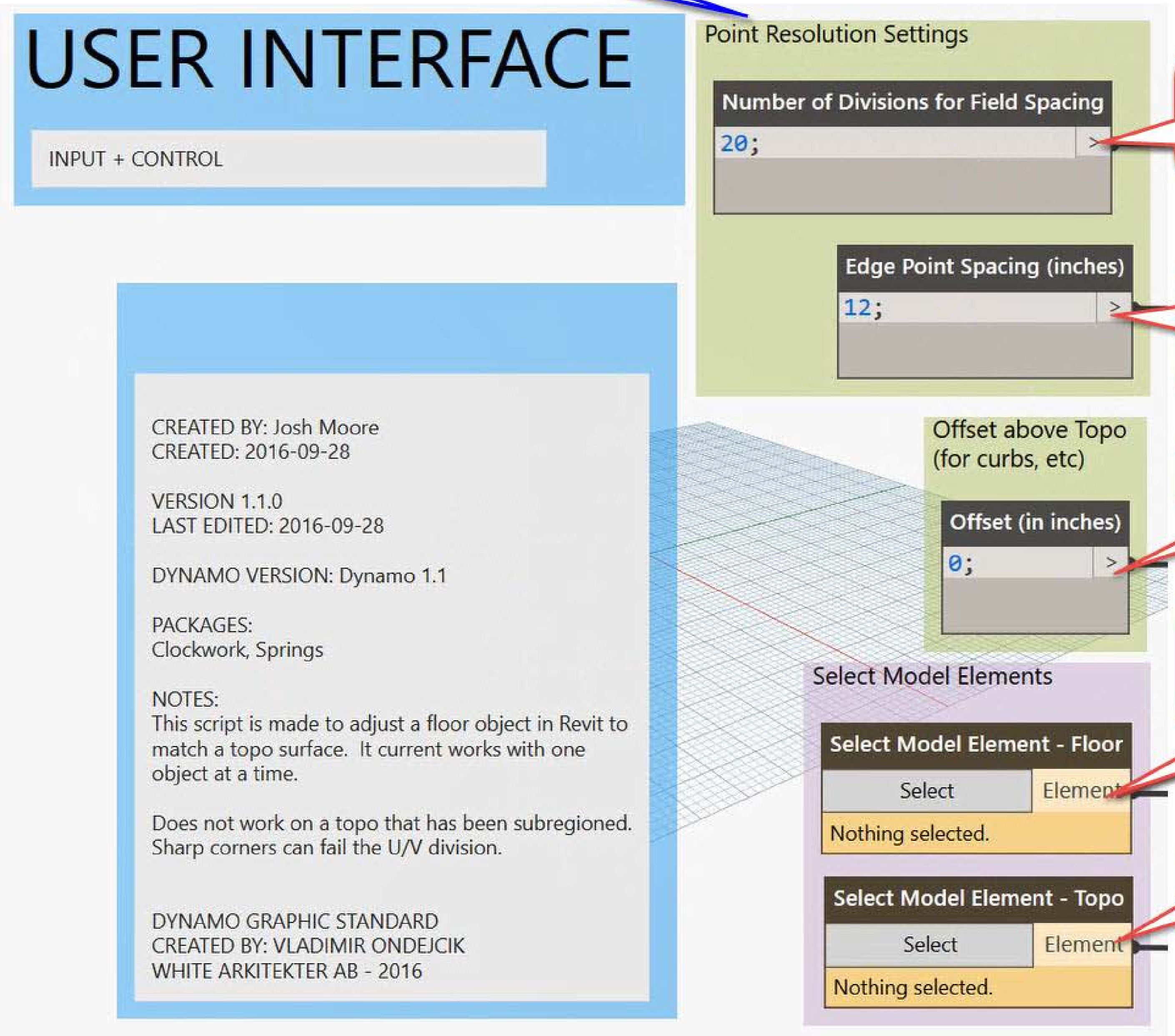

Floor
Toposurface
Geometry Conversion
Points
Floor
Modify
Sub Elements

Slab Edit Floor to Match Topography

User Interface – Point Resolution and Select



Effectively, you are adding points to an existing floors to match the contours of a topo surface



USER INTERFACE

INPUT + CONTROL

CREATED BY: Josh Moore
CREATED: 2016-09-28

VERSION 1.1.0
LAST EDITED: 2016-09-28

DYNAMO VERSION: Dynamo 1.1

PACKAGES:
Clockwork, Springs

NOTES:
This script is made to adjust a floor object in Revit to match a topo surface. It current works with one object at a time.

Does not work on a topo that has been subregioned. Sharp corners can fail the U/V division.

DYNAMO GRAPHIC STANDARD
CREATED BY: VLADIMIR ONDEJCIK
WHITE ARKITEKTER AB - 2016

Point Resolution Settings

Number of Divisions for Field Spacing: `20;`

Edge Point Spacing (inches): `12;`

Offset above Topo (for curbs, etc)

Offset (in inches): `0;`

Select Model Elements

Select Model Element - Floor

Nothing selected.

Select Model Element - Topo

Nothing selected.

The more divisions, the more points... The longer it will take to run the script (but also more accurate).

Similar to the accuracy defined by the divisions, this spacing relates exclusively to the edge of floor.

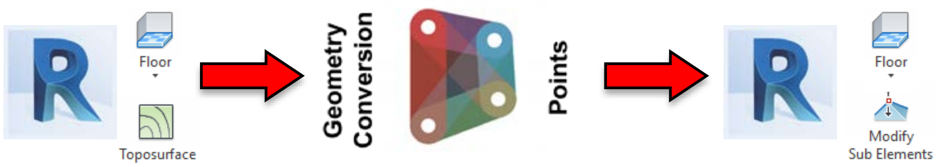
If set to 0, the floor will be flush with the topo.

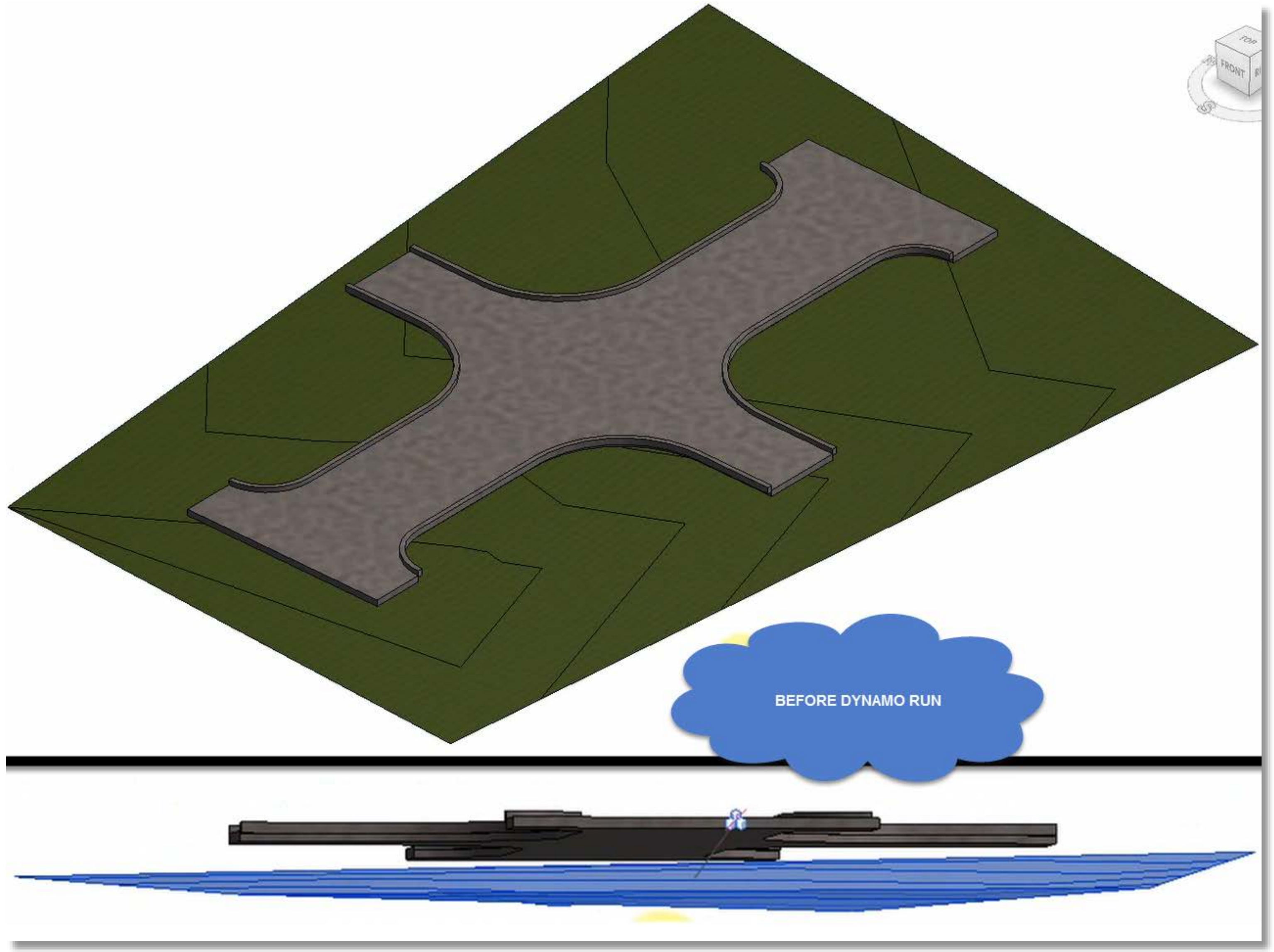
Click the select button, navigate to Revit and click on the floor geometry to be included in this push.

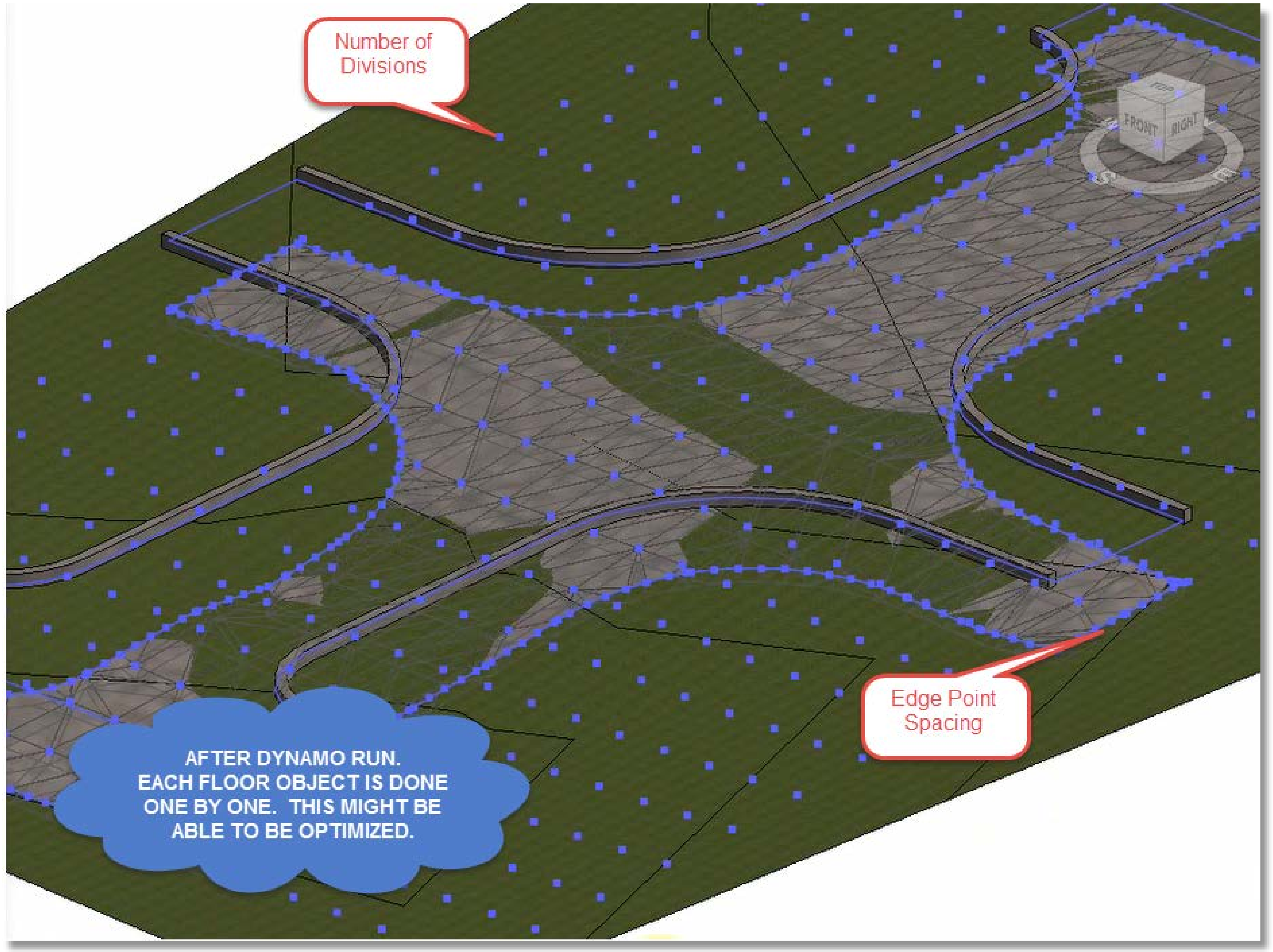
Click the select button, navigate to Revit, and click on topo surface geometry.

Slab Edit Floor to Match Topography

View In Revit – Before and After Dynamo Run


Floor
Toposurface
Geometry Conversion
Points
Floor
Modify Sub Elements

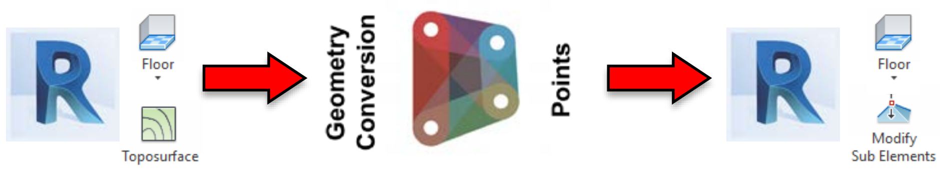

BEFORE DYNAMO RUN

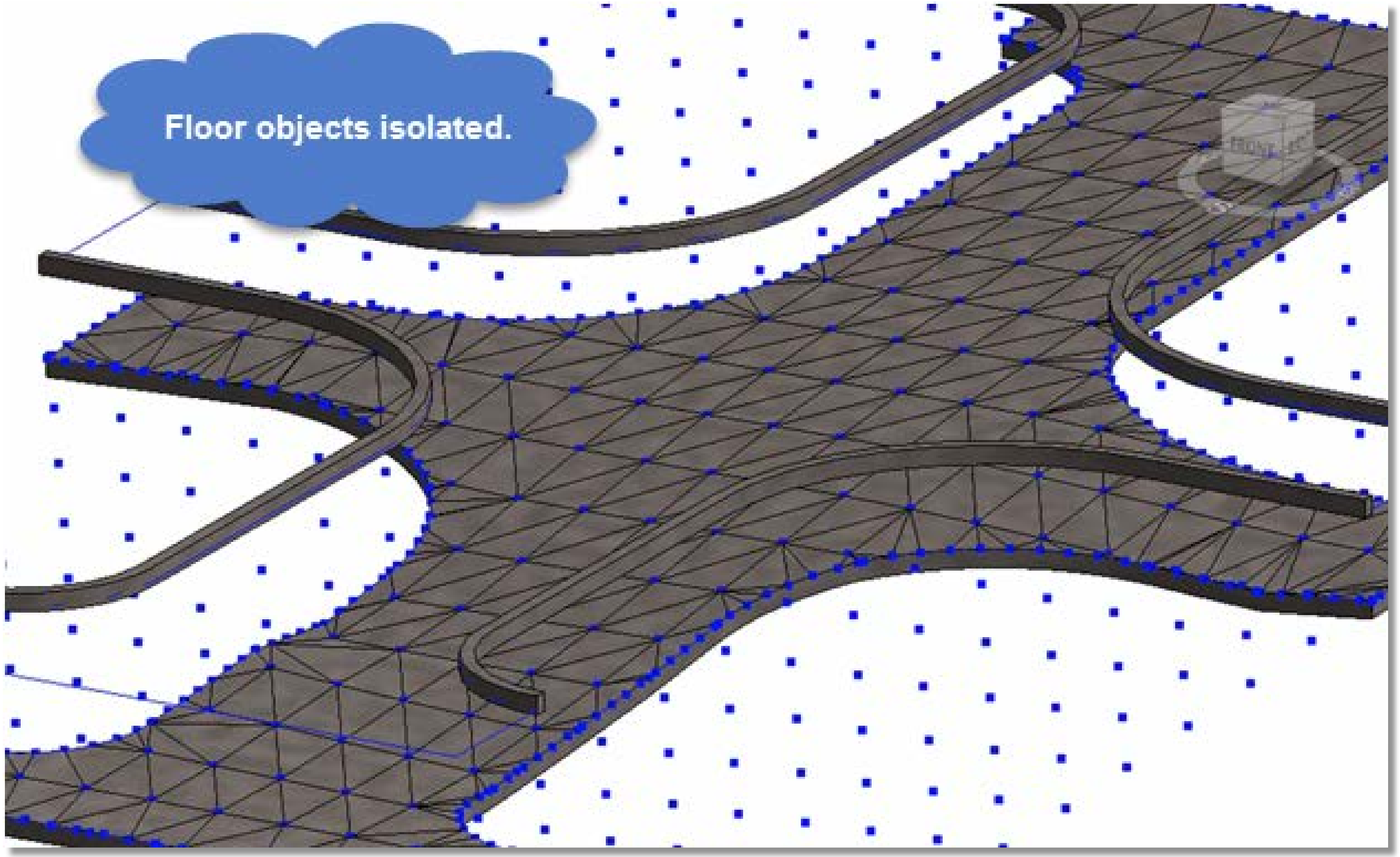

Number of Divisions
Edge Point Spacing

AFTER DYNAMO RUN. EACH FLOOR OBJECT IS DONE ONE BY ONE. THIS MIGHT BE ABLE TO BE OPTIMIZED.

Slab Edit Floor to Match Topography

Floor Isolated – Showing Sub Element Mods

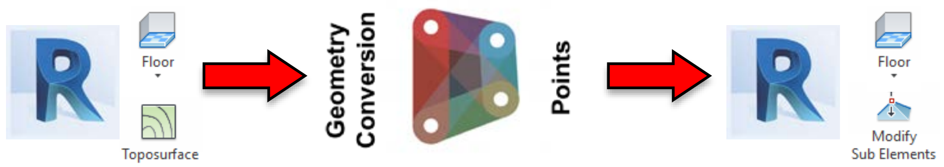

Floor
Toposurface
Geometry Conversion
Points
Floor
Modify Sub Elements

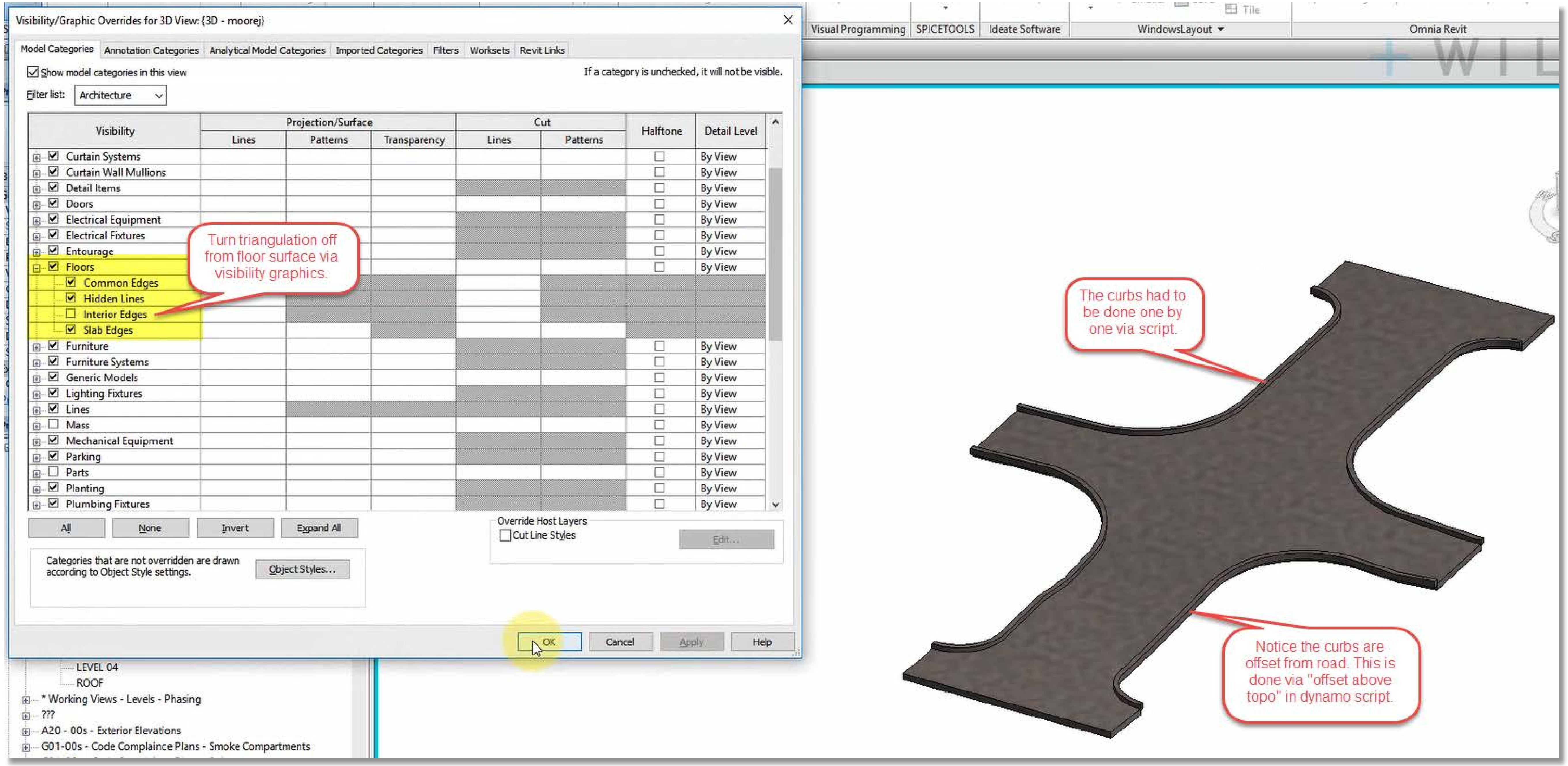


Floor objects isolated.

Slab Edit Floor to Match Topography

In Revit – Cleaning up the Graphics of the Floor


Floor
Toposurface
Geometry Conversion
Points
Floor
Modify Sub Elements


Visual Programming
SPICETOOLS
Ideate Software
WindowsLayout
Omnia Revit
Tile
All
None
Invert
Expand All
Object Styles...
Edit...
OK
Cancel
Apply
Help

Visibility/Graphic Overrides for 3D View: {3D - moorej}

Model Categories | Annotation Categories | Analytical Model Categories | Imported Categories | Filters | Worksets | Revit Links

☑ Show model categories in this view

If a category is unchecked, it will not be visible.

Filter list: Architecture

Visibility	Projection/Surface			Cut		Halftone	Detail Level
	Lines	Patterns	Transparency	Lines	Patterns		
☑ Curtain Systems						☐	By View
☑ Curtain Wall Mullions						☐	By View
☑ Detail Items						☐	By View
☑ Doors						☐	By View
☑ Electrical Equipment						☐	By View
☑ Electrical Fixtures						☐	By View
☑ Entourage						☐	By View
☑ Floors						☐	By View
☑ Common Edges							
☑ Hidden Lines							
☐ Interior Edges							
☑ Slab Edges							
☑ Furniture						☐	By View
☑ Furniture Systems						☐	By View
☑ Generic Models						☐	By View
☑ Lighting Fixtures						☐	By View
☑ Lines						☐	By View
☐ Mass						☐	By View
☑ Mechanical Equipment						☐	By View
☑ Parking						☐	By View
☐ Parts						☐	By View
☑ Planting						☐	By View
☑ Plumbing Fixtures						☐	By View

Categories that are not overridden are drawn according to Object Style settings.

Override Host Layers

☐ Cut Line Styles

LEVEL 04
ROOF
* Working Views - Levels - Phasing
???
A20 - 00s - Exterior Elevations
G01-00s - Code Complaince Plans - Smoke Compartments

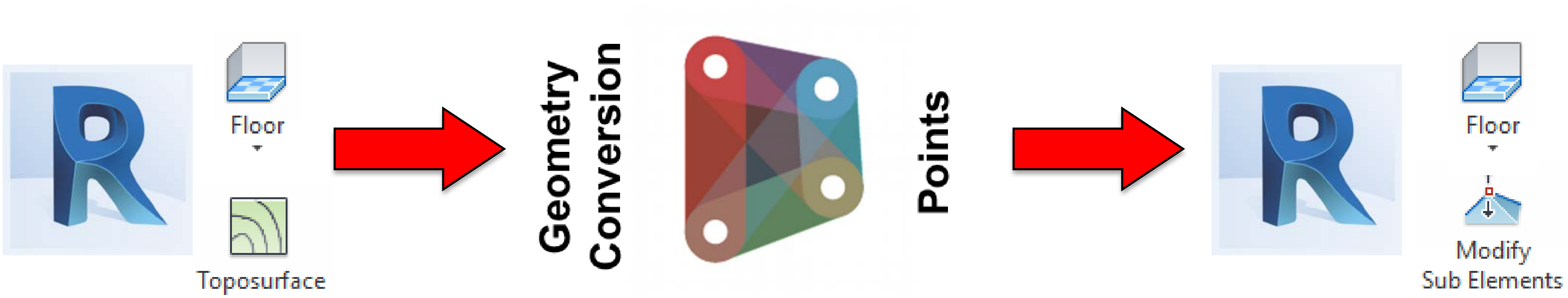
Turn triangulation off from floor surface via visibility graphics.

The curbs had to be done one by one via script.

Notice the curbs are offset from road. This is done via "offset above topo" in dynamo script.

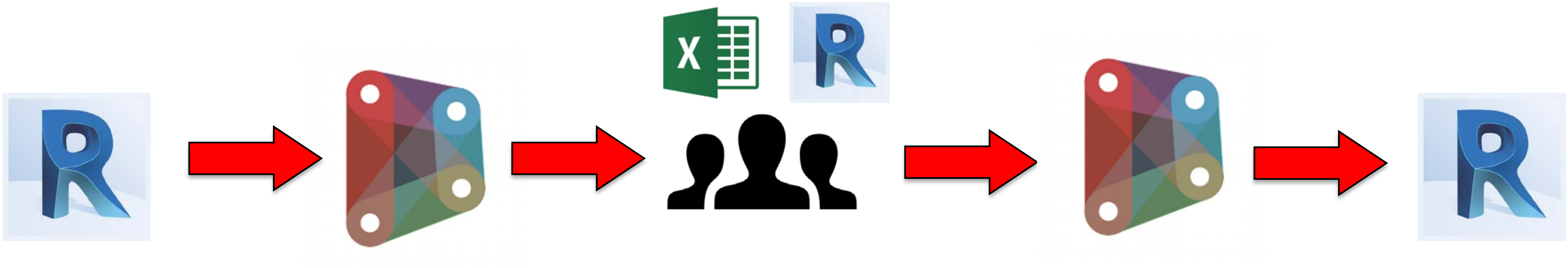
Script Example #2

Live Demo


Floor
Toposurface
Geometry Conversion
Points
Floor
Modify Sub Elements

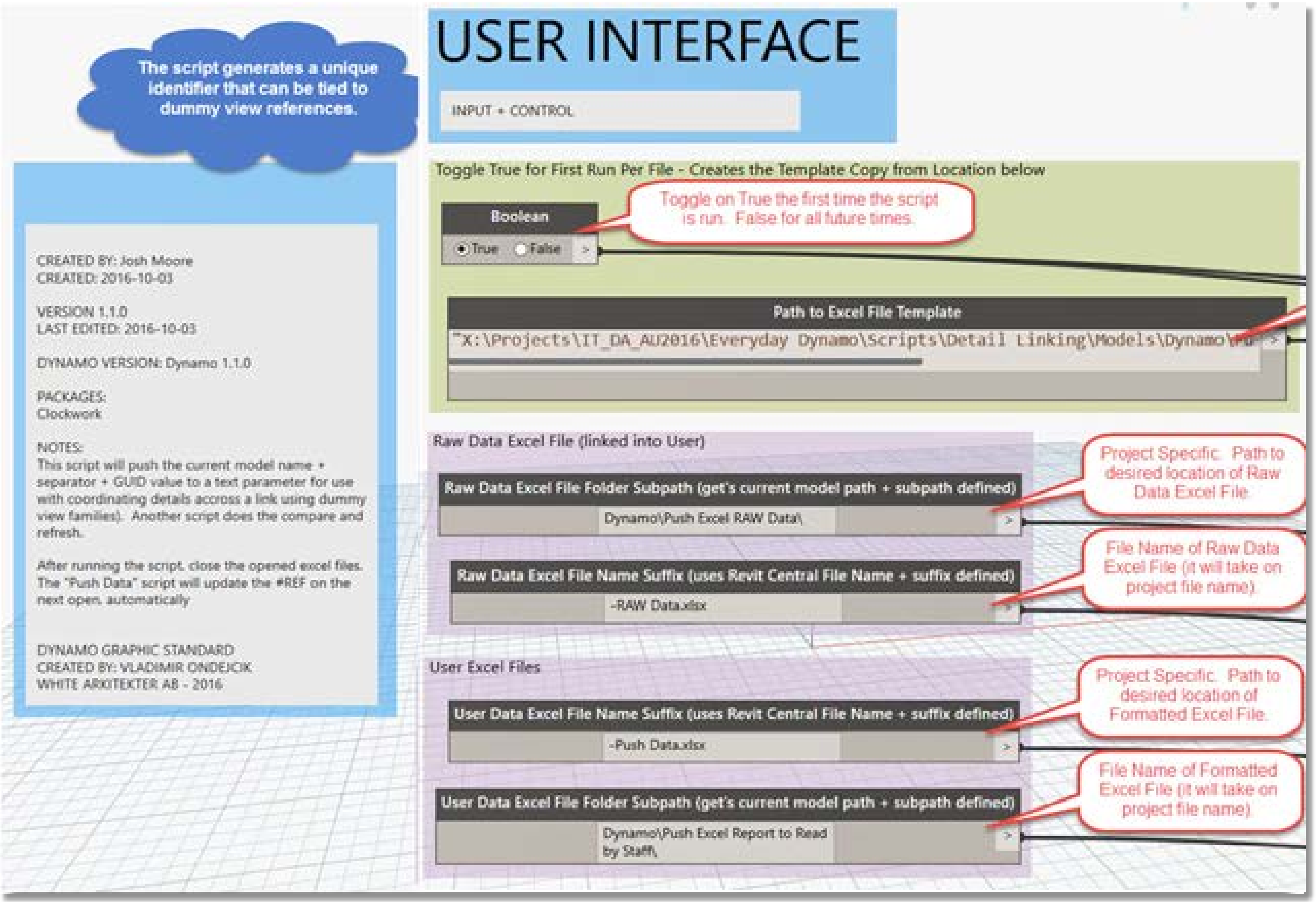
Workflow/Script Example #3

Coordinating Dummy View Tags Across Linked Models



Coordinating Dummy View Tags Across Linked Models

User Interface – Script 1



The script generates a unique identifier that can be tied to dummy view references.

CREATED BY: Josh Moore
CREATED: 2016-10-03

VERSION 1.1.0
LAST EDITED: 2016-10-03

DYNAMO VERSION: Dynamo 1.1.0

PACKAGES:
Clockwork

NOTES:
This script will push the current model name + separator + GUID value to a text parameter for use with coordinating details accross a link using dummy view families). Another script does the compare and refresh.

After running the script, close the opened excel files. The "Push Data" script will update the #REF on the next open, automatically

DYNAMO GRAPHIC STANDARD
CREATED BY: VLADIMIR ONDEJCIK
WHITE ARKITEKTER AB - 2016

USER INTERFACE

INPUT + CONTROL

Toggle True for First Run Per File - Creates the Template Copy from Location below

Boolean

● True ○ False

Toggle on True the first time the script is run. False for all future times.

Path to Excel File Template

`"X:\Projects\IT_DA_AU2016\Everyday Dynamo\Scripts\Detail Linking\Models\Dynamo\Pu`

Raw Data Excel File (linked into User)

Raw Data Excel File Folder Subpath (get's current model path + subpath defined)

Dynamo\Push Excel RAW Data\

Project Specific. Path to desired location of Raw Data Excel File.

Raw Data Excel File Name Suffix (uses Revit Central File Name + suffix defined)

-RAW Data.xlsx

File Name of Raw Data Excel File (it will take on project file name).

User Excel Files

User Data Excel File Name Suffix (uses Revit Central File Name + suffix defined)

-Push Data.xlsx

Project Specific. Path to desired location of Formatted Excel File.

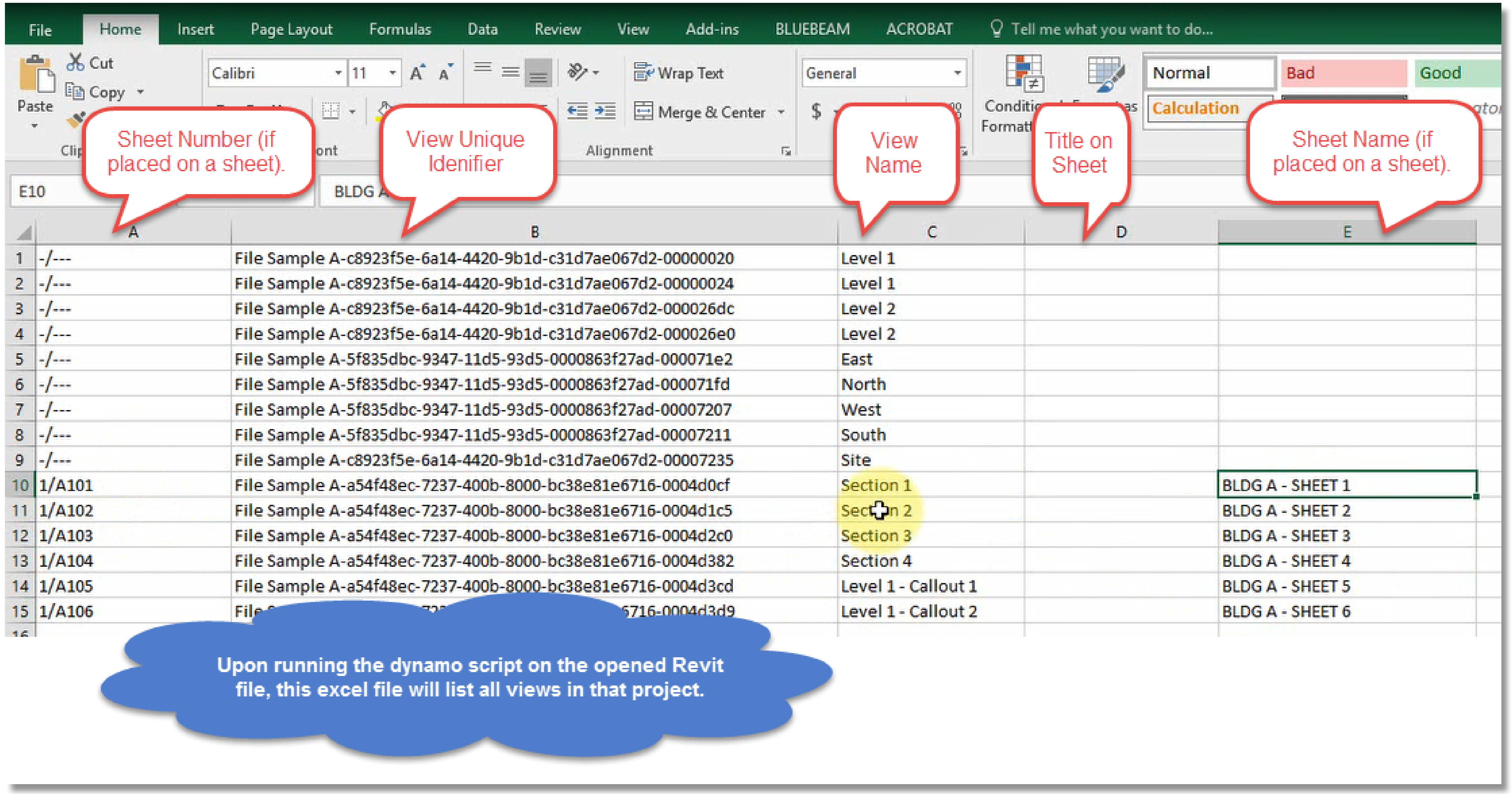
User Data Excel File Folder Subpath (get's current model path + subpath defined)

Dynamo\Push Excel Report to Read by Staff\

File Name of Formatted Excel File (it will take on project file name).

Coordinating Dummy View Tags Across Linked Models

Raw Excel Output – Script 1


File
Home
Insert
Page Layout
Formulas
Data
Review
View
Add-ins
BLUEBEAM
ACROBAT
Tell me what you want to do...
Paste
Cut
Copy
Calibri
11
Wrap Text
Merge & Center
Alignment
General
Normal
Bad
Good
Calculation
E10
BLDG A

Sheet Number (if placed on a sheet).

View Unique Idenifier

View Name

Title on Sheet

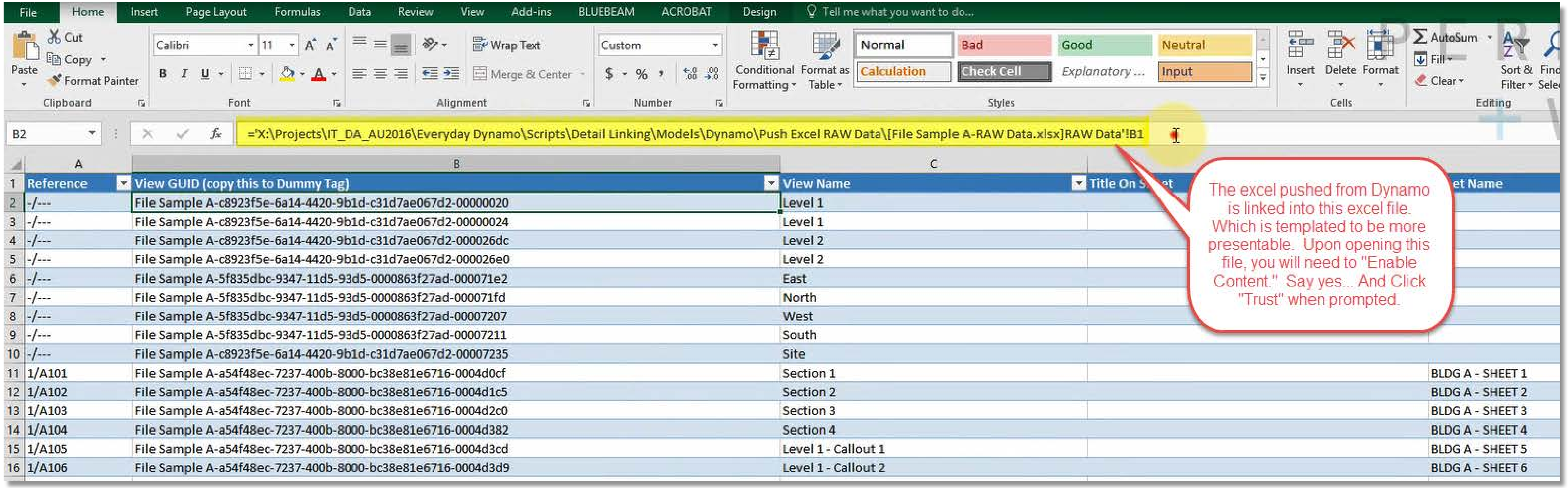
Sheet Name (if placed on a sheet).

	A	B	C	D	E
1	-/---	File Sample A-c8923f5e-6a14-4420-9b1d-c31d7ae067d2-00000020	Level 1		
2	-/---	File Sample A-c8923f5e-6a14-4420-9b1d-c31d7ae067d2-00000024	Level 1		
3	-/---	File Sample A-c8923f5e-6a14-4420-9b1d-c31d7ae067d2-000026dc	Level 2		
4	-/---	File Sample A-c8923f5e-6a14-4420-9b1d-c31d7ae067d2-000026e0	Level 2		
5	-/---	File Sample A-5f835dbc-9347-11d5-93d5-0000863f27ad-000071e2	East		
6	-/---	File Sample A-5f835dbc-9347-11d5-93d5-0000863f27ad-000071fd	North		
7	-/---	File Sample A-5f835dbc-9347-11d5-93d5-0000863f27ad-00007207	West		
8	-/---	File Sample A-5f835dbc-9347-11d5-93d5-0000863f27ad-00007211	South		
9	-/---	File Sample A-c8923f5e-6a14-4420-9b1d-c31d7ae067d2-00007235	Site		
10	1/A101	File Sample A-a54f48ec-7237-400b-8000-bc38e81e6716-0004d0cf	Section 1		BLDG A - SHEET 1
11	1/A102	File Sample A-a54f48ec-7237-400b-8000-bc38e81e6716-0004d1c5	Section 2		BLDG A - SHEET 2
12	1/A103	File Sample A-a54f48ec-7237-400b-8000-bc38e81e6716-0004d2c0	Section 3		BLDG A - SHEET 3
13	1/A104	File Sample A-a54f48ec-7237-400b-8000-bc38e81e6716-0004d382	Section 4		BLDG A - SHEET 4
14	1/A105	File Sample A-a54f48ec-7237-400b-8000-bc38e81e6716-0004d3cd	Level 1 - Callout 1		BLDG A - SHEET 5
15	1/A106	File [illegible] 716-0004d3d9	Level 1 - Callout 2		BLDG A - SHEET 6

Upon running the dynamo script on the opened Revit file, this excel file will list all views in that project.

Coordinating Dummy View Tags Across Linked Models

Formatted Excel Output – Script 1


File
Home
Insert
Page Layout
Formulas
Data
Review
View
Add-ins
BLUEBEAM
ACROBAT
Design
Tell me what you want to do...
Cut
Copy
Format Painter
Paste
Clipboard
Calibri
11
Font
Wrap Text
Merge & Center
Alignment
Custom
Number
Conditional Formatting
Format as Table
Normal
Bad
Good
Neutral
Calculation
Check Cell
Explanatory ...
Input
Styles
Insert
Delete
Format
Cells
AutoSum
Fill
Clear
Sort & Filter
Editing

B2

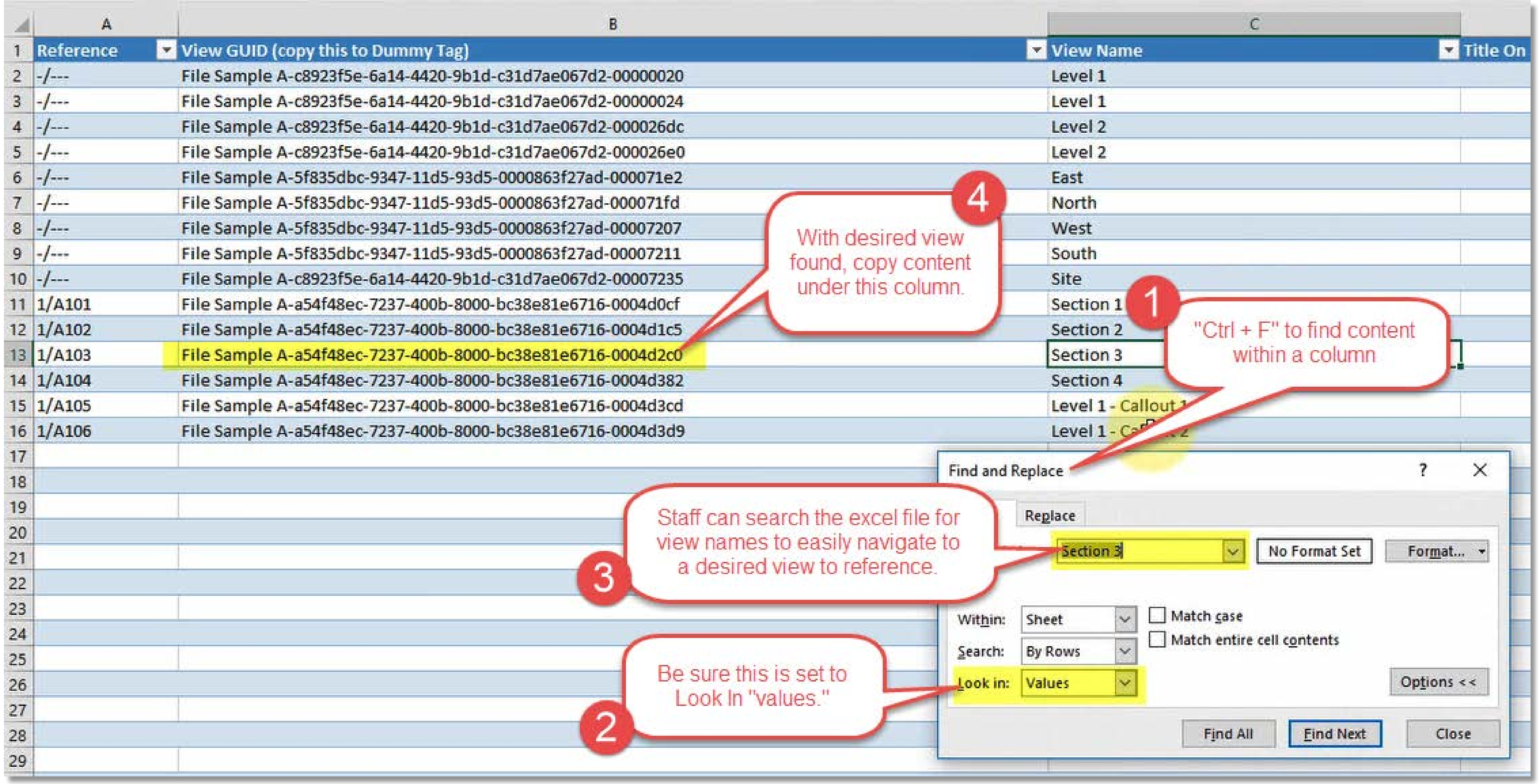
='X:\Projects\IT_DA_AU2016\Everyday Dynamo\Scripts\Detail Linking\Models\Dynamo\Push Excel RAW Data\[File Sample A-RAW Data.xlsx]RAW Data'!B1

	A	B	C		
1	Reference	View GUID (copy this to Dummy Tag)	View Name	Title On S et	et Name
2	-/---	File Sample A-c8923f5e-6a14-4420-9b1d-c31d7ae067d2-00000020	Level 1		
3	-/---	File Sample A-c8923f5e-6a14-4420-9b1d-c31d7ae067d2-00000024	Level 1		
4	-/---	File Sample A-c8923f5e-6a14-4420-9b1d-c31d7ae067d2-000026dc	Level 2		
5	-/---	File Sample A-c8923f5e-6a14-4420-9b1d-c31d7ae067d2-000026e0	Level 2		
6	-/---	File Sample A-5f835dbc-9347-11d5-93d5-0000863f27ad-000071e2	East		
7	-/---	File Sample A-5f835dbc-9347-11d5-93d5-0000863f27ad-000071fd	North		
8	-/---	File Sample A-5f835dbc-9347-11d5-93d5-0000863f27ad-00007207	West		
9	-/---	File Sample A-5f835dbc-9347-11d5-93d5-0000863f27ad-00007211	South		
10	-/---	File Sample A-c8923f5e-6a14-4420-9b1d-c31d7ae067d2-00007235	Site		
11	1/A101	File Sample A-a54f48ec-7237-400b-8000-bc38e81e6716-0004d0cf	Section 1		BLDG A - SHEET 1
12	1/A102	File Sample A-a54f48ec-7237-400b-8000-bc38e81e6716-0004d1c5	Section 2		BLDG A - SHEET 2
13	1/A103	File Sample A-a54f48ec-7237-400b-8000-bc38e81e6716-0004d2c0	Section 3		BLDG A - SHEET 3
14	1/A104	File Sample A-a54f48ec-7237-400b-8000-bc38e81e6716-0004d382	Section 4		BLDG A - SHEET 4
15	1/A105	File Sample A-a54f48ec-7237-400b-8000-bc38e81e6716-0004d3cd	Level 1 - Callout 1		BLDG A - SHEET 5
16	1/A106	File Sample A-a54f48ec-7237-400b-8000-bc38e81e6716-0004d3d9	Level 1 - Callout 2		BLDG A - SHEET 6

The excel pushed from Dynamo is linked into this excel file. Which is templated to be more presentable. Upon opening this file, you will need to "Enable Content." Say yes... And Click "Trust" when prompted.

Coordinating Dummy View Tags Across Linked Models

User Interaction with Excel – Post Script 1



	A	B	C	
1	Reference	View GUID (copy this to Dummy Tag)	View Name	Title On
2	-/---	File Sample A-c8923f5e-6a14-4420-9b1d-c31d7ae067d2-00000020	Level 1	
3	-/---	File Sample A-c8923f5e-6a14-4420-9b1d-c31d7ae067d2-00000024	Level 1	
4	-/---	File Sample A-c8923f5e-6a14-4420-9b1d-c31d7ae067d2-000026dc	Level 2	
5	-/---	File Sample A-c8923f5e-6a14-4420-9b1d-c31d7ae067d2-000026e0	Level 2	
6	-/---	File Sample A-5f835dbc-9347-11d5-93d5-0000863f27ad-000071e2	East	
7	-/---	File Sample A-5f835dbc-9347-11d5-93d5-0000863f27ad-000071fd	North	
8	-/---	File Sample A-5f835dbc-9347-11d5-93d5-0000863f27ad-00007207	West	
9	-/---	File Sample A-5f835dbc-9347-11d5-93d5-0000863f27ad-00007211	South	
10	-/---	File Sample A-c8923f5e-6a14-4420-9b1d-c31d7ae067d2-00007235	Site	
11	1/A101	File Sample A-a54f48ec-7237-400b-8000-bc38e81e6716-0004d0cf	Section 1	
12	1/A102	File Sample A-a54f48ec-7237-400b-8000-bc38e81e6716-0004d1c5	Section 2	
13	1/A103	File Sample A-a54f48ec-7237-400b-8000-bc38e81e6716-0004d2c0	Section 3	
14	1/A104	File Sample A-a54f48ec-7237-400b-8000-bc38e81e6716-0004d382	Section 4	
15	1/A105	File Sample A-a54f48ec-7237-400b-8000-bc38e81e6716-0004d3cd	Level 1 - Callout 1	
16	1/A106	File Sample A-a54f48ec-7237-400b-8000-bc38e81e6716-0004d3d9	Level 1 - Ca[illegible] 2	
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

Find and Replace

Replace

Section 3

No Format Set

Within: Sheet

Search: By Rows

Look in: Values

☐ Match case

☐ Match entire cell contents

1 "Ctrl + F" to find content within a column

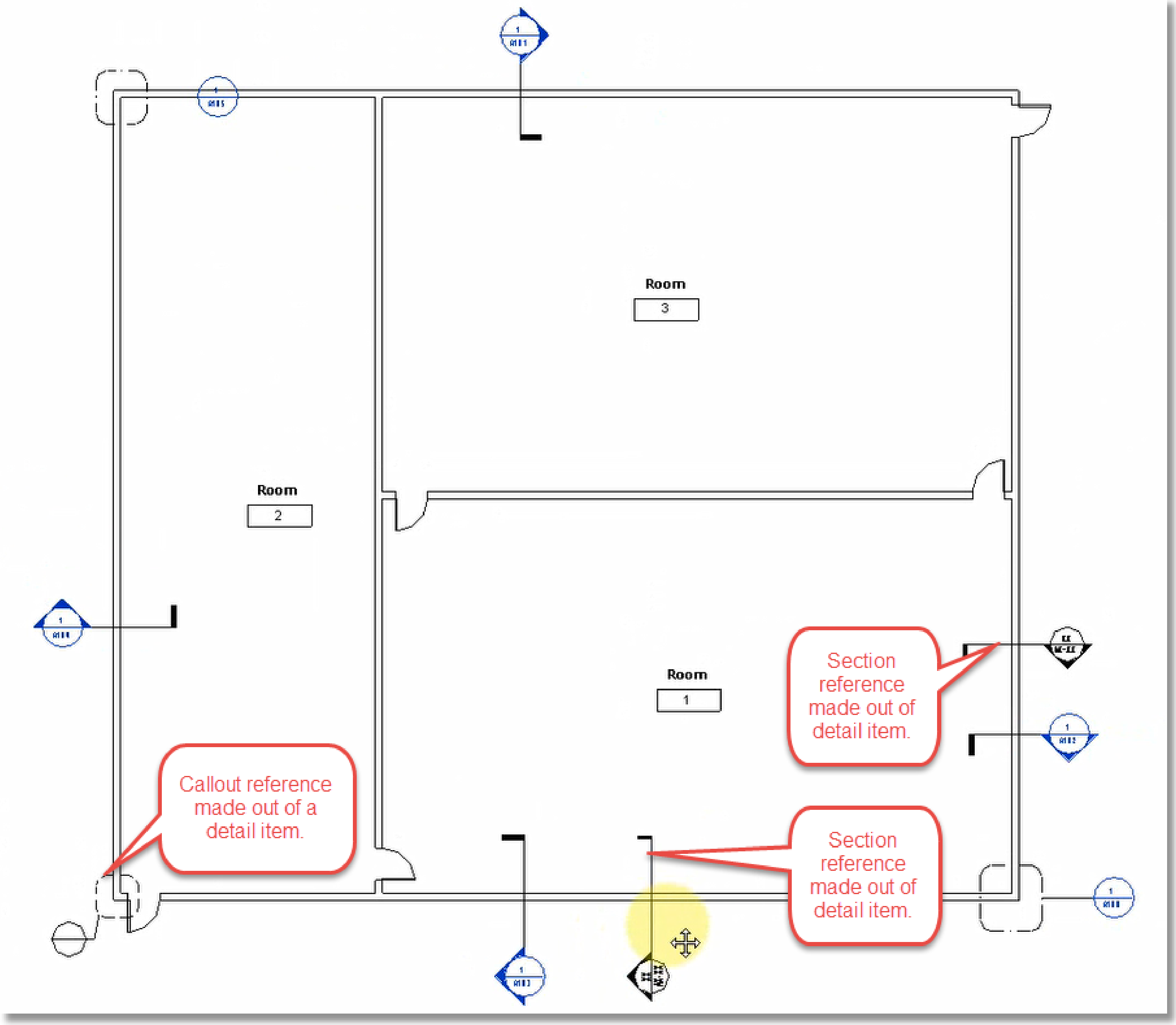
2 Be sure this is set to Look In "values."

3 Staff can search the excel file for view names to easily navigate to a desired view to reference.

4 With desired view found, copy content under this column.

Coordinating Dummy View Tags Across Linked Models

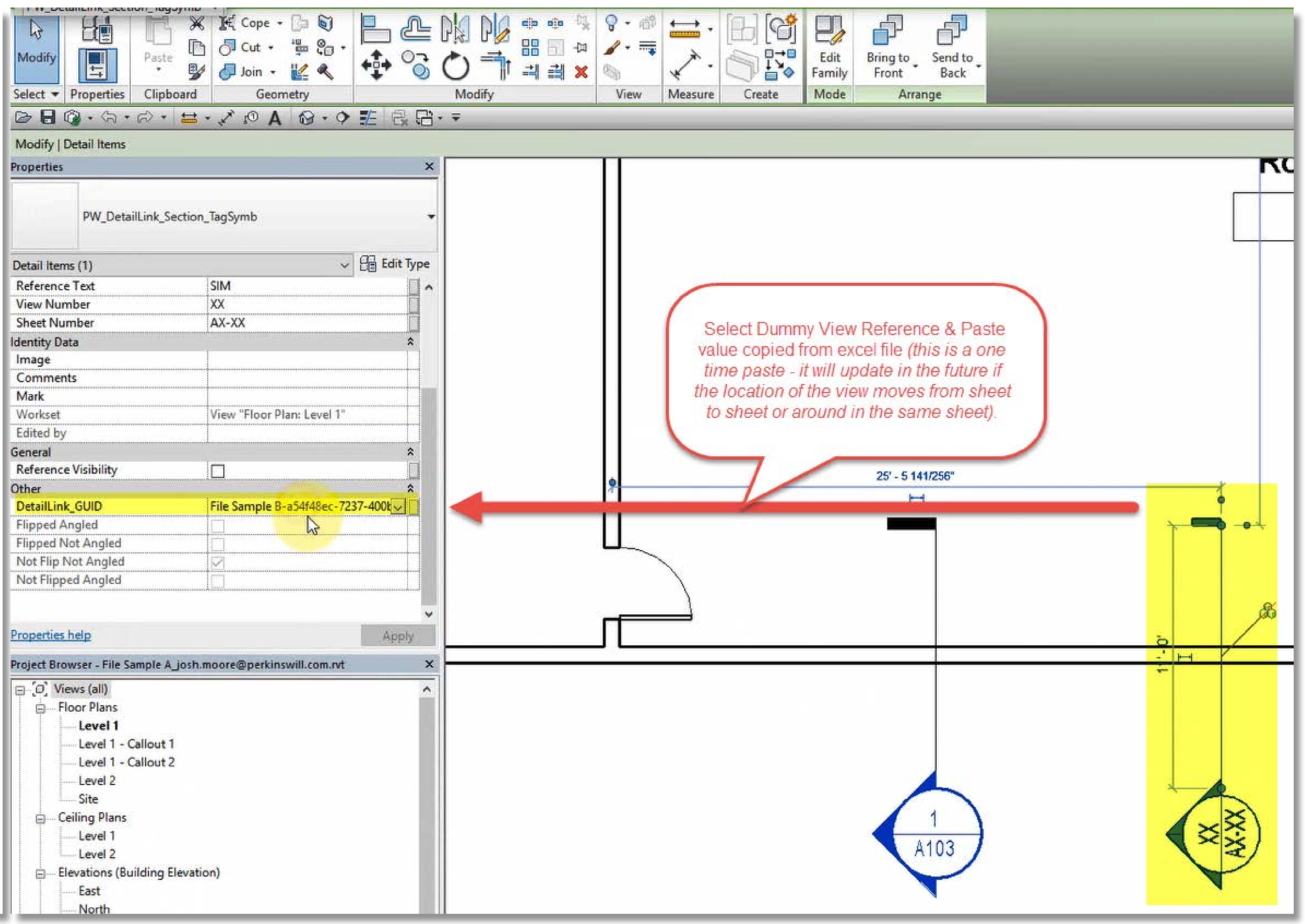
User Interaction with Revit – Post Script 1


Room
3
Room
2
Room
1

Section reference made out of detail item.

Callout reference made out of a detail item.

Section reference made out of detail item.


Modify
Paste
Cope
Cut
Join
Edit Family
Bring to Front
Send to Back
Select
Properties
Clipboard
Geometry
Modify
View
Measure
Create
Mode
Arrange
25' - 5 141/256"
1
A103
XX
AX-XX
11' - 0"

Modify | Detail Items

Properties

PW_DetailLink_Section_TagSymb

Detail Items (1) — Edit Type

Reference Text	SIM
View Number	XX
Sheet Number	AX-XX
Identity Data	
Image	
Comments	
Mark	
Workset	View "Floor Plan: Level 1"
Edited by	
General	
Reference Visibility	☐
Other	
DetailLink_GUID	File Sample B-a54f48ec-7237-400b
Flipped Angled	☐
Flipped Not Angled	☐
Not Flip Not Angled	☑
Not Flipped Angled	☐

Properties help — Apply

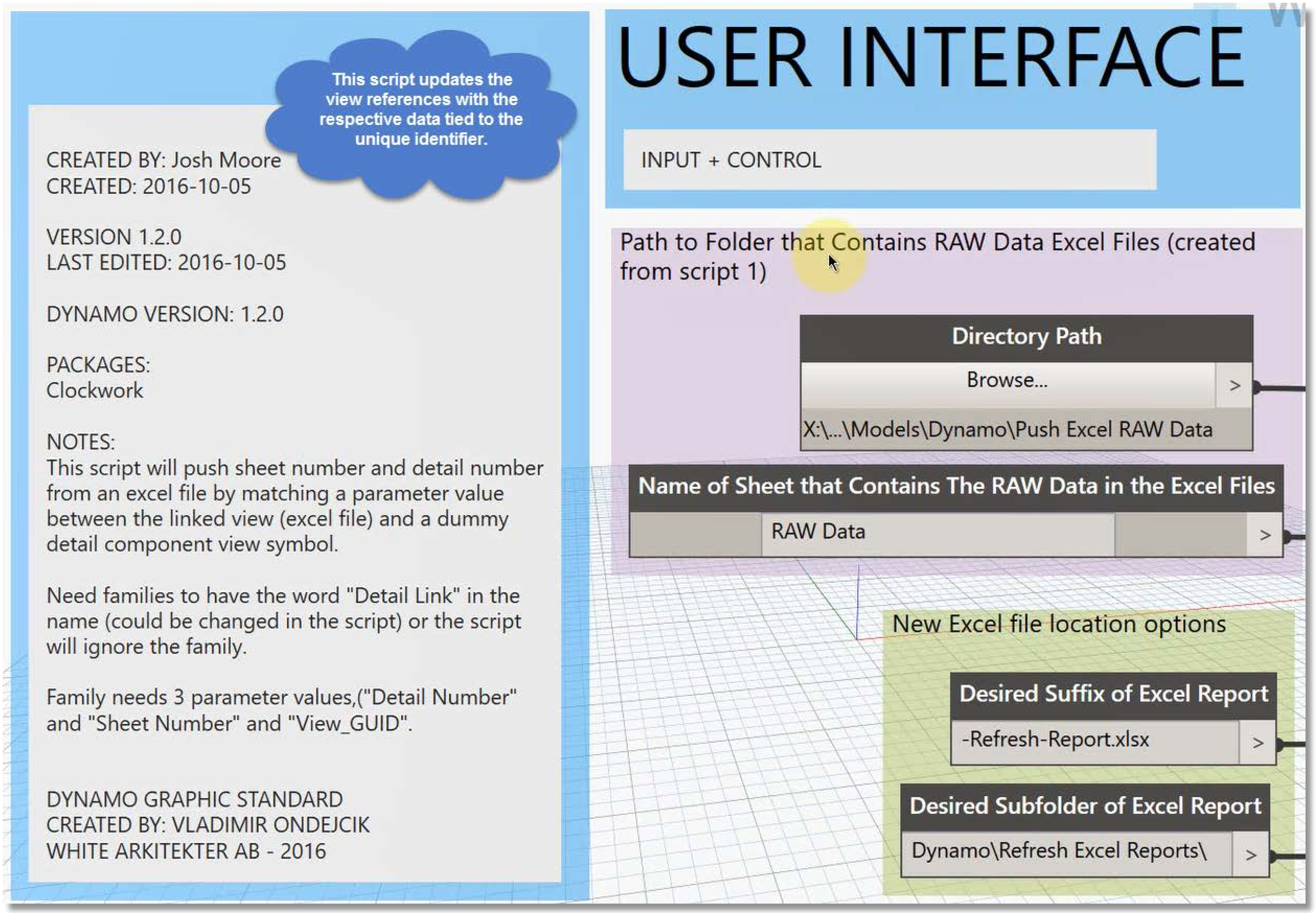
Project Browser - File Sample A_josh.moore@perkinswill.com.rvt

- Views (all)
  - Floor Plans
    - **Level 1**
    - Level 1 - Callout 1
    - Level 1 - Callout 2
    - Level 2
    - Site
  - Ceiling Plans
    - Level 1
    - Level 2
  - Elevations (Building Elevation)
    - East
    - North

Select Dummy View Reference & Paste value copied from excel file *(this is a one time paste - it will update in the future if the location of the view moves from sheet to sheet or around in the same sheet).*

Coordinating Dummy View Tags Across Linked Models

User Interface – Script 2



This script updates the view references with the respective data tied to the unique identifier.

CREATED BY: Josh Moore
CREATED: 2016-10-05

VERSION 1.2.0
LAST EDITED: 2016-10-05

DYNAMO VERSION: 1.2.0

PACKAGES:
Clockwork

NOTES:
This script will push sheet number and detail number from an excel file by matching a parameter value between the linked view (excel file) and a dummy detail component view symbol.

Need families to have the word "Detail Link" in the name (could be changed in the script) or the script will ignore the family.

Family needs 3 parameter values,("Detail Number" and "Sheet Number" and "View_GUID".

DYNAMO GRAPHIC STANDARD
CREATED BY: VLADIMIR ONDEJCIK
WHITE ARKITEKTER AB - 2016

USER INTERFACE

INPUT + CONTROL

Path to Folder that Contains RAW Data Excel Files (created from script 1)

Directory Path: X:\...\Models\Dynamo\Push Excel RAW Data

Name of Sheet that Contains The RAW Data in the Excel Files: RAW Data

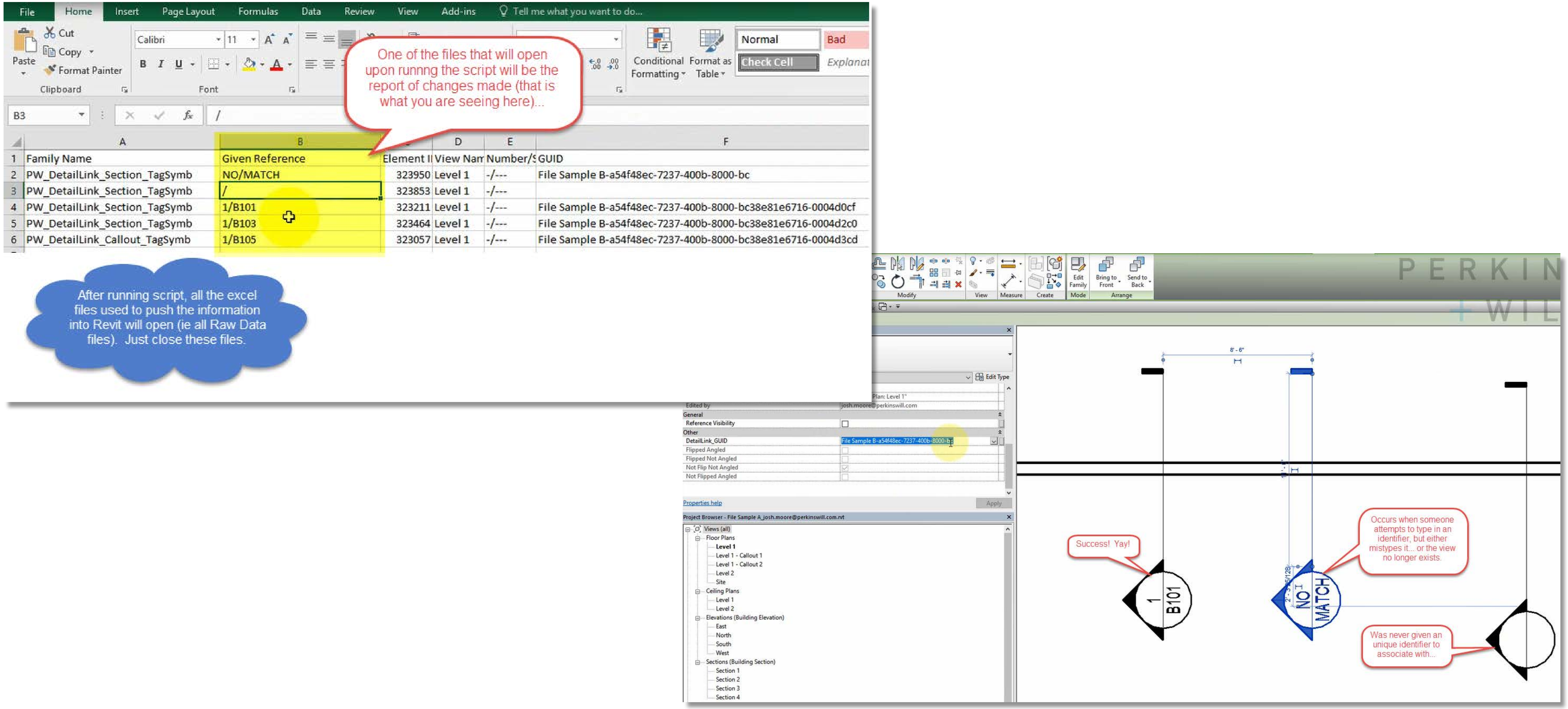
New Excel file location options

Desired Suffix of Excel Report: -Refresh-Report.xlsx

Desired Subfolder of Excel Report: Dynamo\Refresh Excel Reports\

Coordinating Dummy View Tags Across Linked Models

Updated Tags and Report – Script 2


File
Home
Insert
Page Layout
Formulas
Data
Review
View
Add-ins
Tell me what you want to do...
Cut
Copy
Format Painter
Paste
Clipboard
Calibri
11
Font
Conditional Formatting
Format as Table
Normal
Bad
Check Cell
Explanat
B3
Modify
View
Measure
Create
Edit Family
Mode
Bring to Front
Send to Back
Arrange
P E R K I N
+ W I L
Edit Type
8' - 6"
1
B101
NO
MATCH

B3 /

	A	B	C	D	E	F
1	Family Name	Given Reference	Element I	View Nam	Number/S	GUID
2	PW_DetailLink_Section_TagSymb	NO/MATCH	323950	Level 1	-/---	File Sample B-a54f48ec-7237-400b-8000-bc
3	PW_DetailLink_Section_TagSymb	/	323853	Level 1	-/---	
4	PW_DetailLink_Section_TagSymb	1/B101	323211	Level 1	-/---	File Sample B-a54f48ec-7237-400b-8000-bc38e81e6716-0004d0cf
5	PW_DetailLink_Section_TagSymb	1/B103	323464	Level 1	-/---	File Sample B-a54f48ec-7237-400b-8000-bc38e81e6716-0004d2c0
6	PW_DetailLink_Callout_TagSymb	1/B105	323057	Level 1	-/---	File Sample B-a54f48ec-7237-400b-8000-bc38e81e6716-0004d3cd

One of the files that will open upon runnng the script will be the report of changes made (that is what you are seeing here)...

After running script, all the excel files used to push the information into Revit will open (ie all Raw Data files). Just close these files.

Plan: Level 1"

Edited by	josh.moore@perkinswill.com
General	
Reference Visibility	☐
Other	
DetailLink_GUID	File Sample B-a54f48ec-7237-400b-8000-bc
Flipped Angled	☐
Flipped Not Angled	☐
Not Flip Not Angled	☑
Not Flipped Angled	☐

Properties help Apply

Project Browser - File Sample A_josh.moore@perkinswill.com.rvt

- Views (all)
  - Floor Plans
    - **Level 1**
    - Level 1 - Callout 1
    - Level 1 - Callout 2
    - Level 2
    - Site
  - Ceiling Plans
    - Level 1
    - Level 2
  - Elevations (Building Elevation)
    - East
    - North
    - South
    - West
  - Sections (Building Section)
    - Section 1
    - Section 2
    - Section 3
    - Section 4

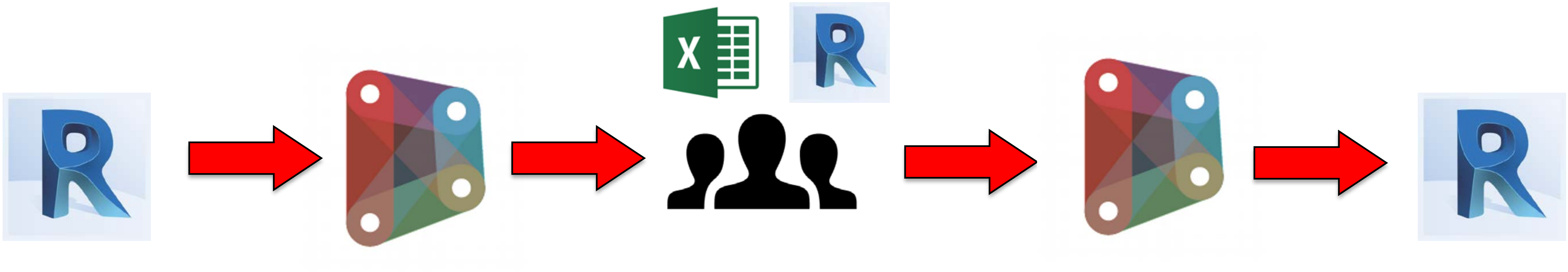
Success! Yay!

Occurs when someone attempts to type in an identifier, but either mistypes it... or the view no longer exists.

Was never given an unique identifier to associate with...

Workflow/Script Example #3

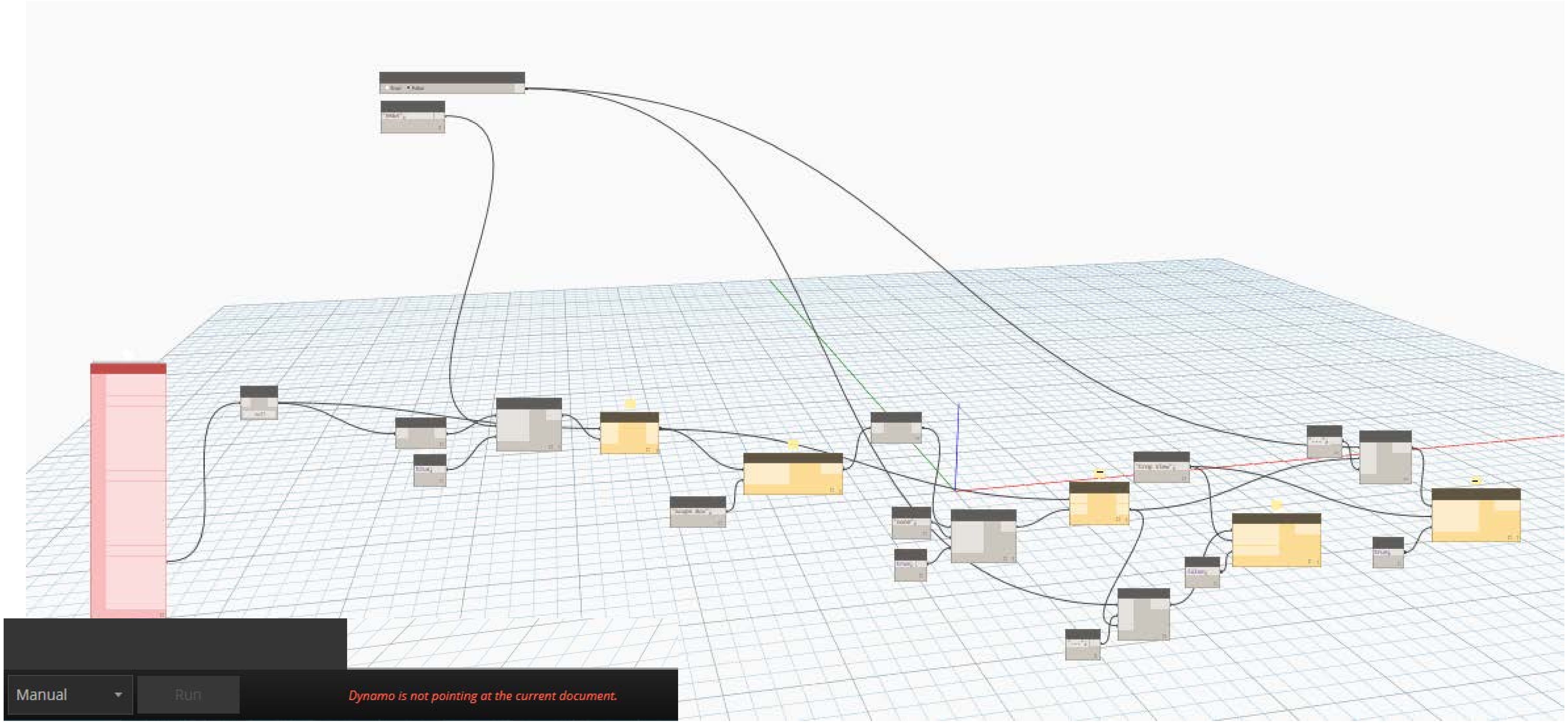
Live Demo



Tips & Tricks

Tips & Tricks

Look for Yellow and Red Nodes

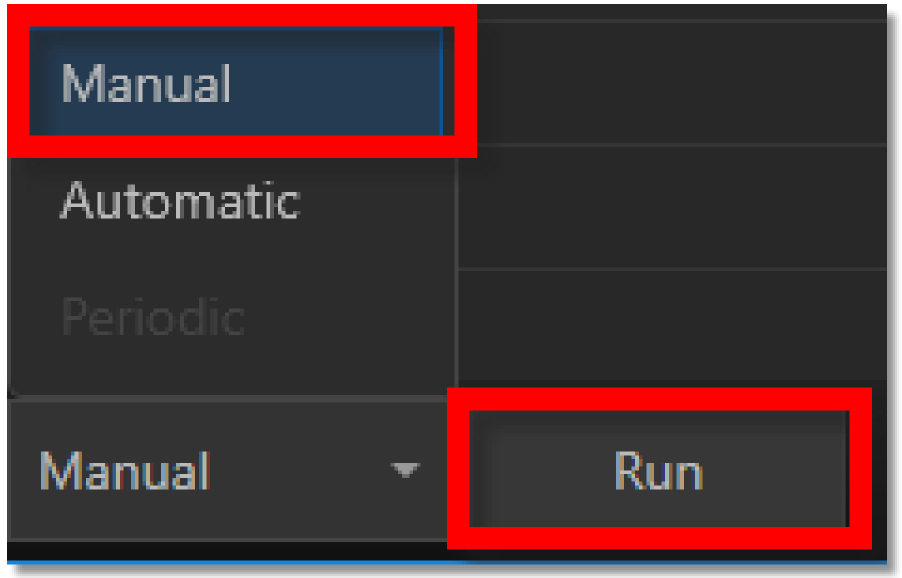


Dynamo is not pointing at the current document.

Tips & Tricks

Run Manual Mode

- Reduces issues from Unintentional “Wiring” Mistakes
- Saves Time, more specific control


Manual
Automatic
Periodic
Manual
Run

Tips & Tricks

Close and Reopen Script

- Critical, especially when Testing
- Process Example

  Run Script> Undo Dynamo Transaction in Revit> Close Script> Reopen> Repeat

Tips & Tricks

No Commands Active in Revit

- Not obvious, huge issue if you don’t realize it!!

Tips & Tricks

Pay Attention to Active View in Revit

- Certain scripts may rely on performing an operation on the active view
- Multiple Revit models open in the same Revit session can make Dynamo confused.

Tips & Tricks

Use Out of the Box Nodes as much as Possible

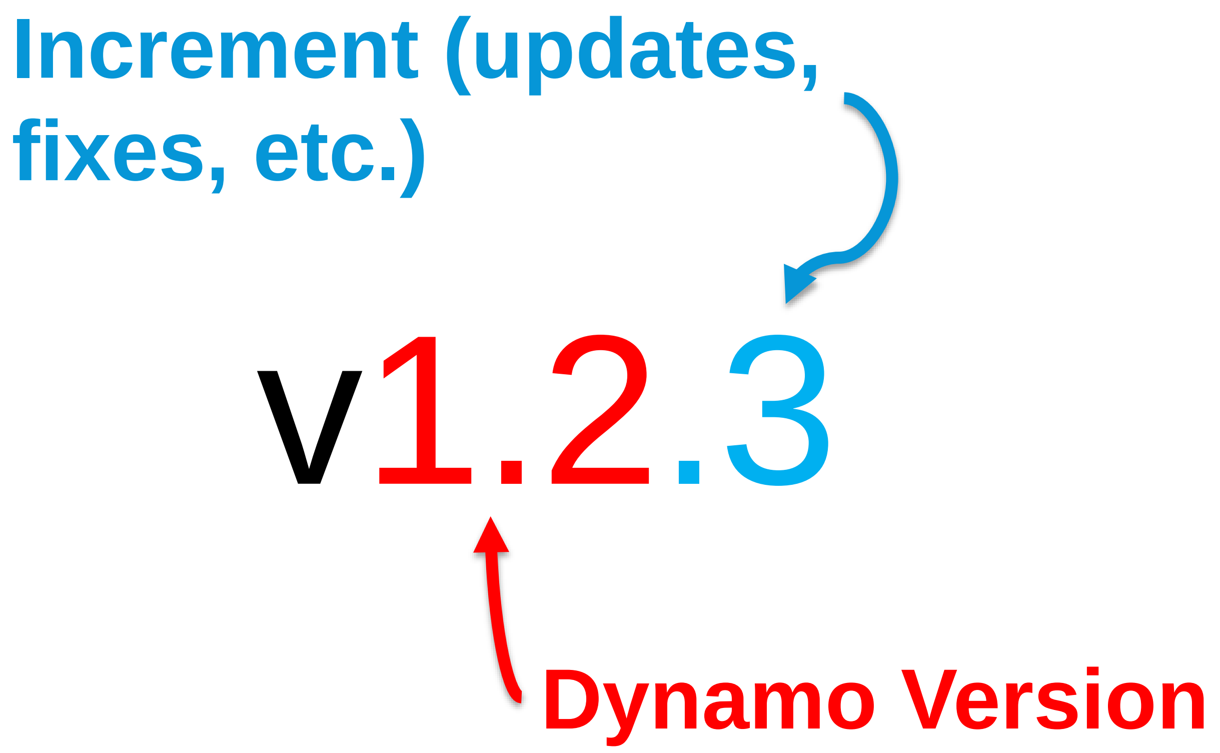
- We love what developers are doing!
- Issues can occur with updates, pointing to the right packages, etc.
- Use a couple OOTB nodes if you can instead of a “shortcut” third party node.
- Embed the Python script to ensure no dependencies and get better error messages

Tips & Tricks

Script Versioning

Example 1:
Push Scope Box Name to Element v1.2.0.dyn

Example 2:
Shape Edit Floor to Match Topo v1.1.0.dyn



Increment (updates, fixes, etc.)

v1.2.3

Dynamo Version

Tips & Tricks

Shared Location For Third Party Packages

- Reusability
- Scripts Failing from “New Features”
- Revit & Dynamo Changes
- Location Suggestions

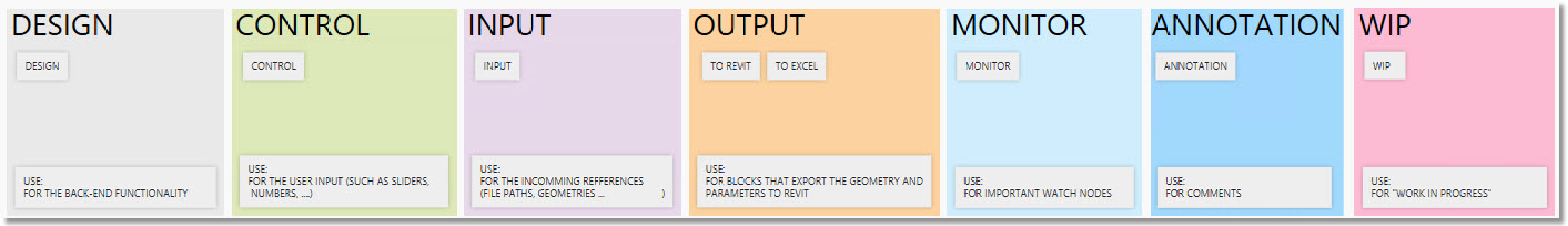
{mapped drive}:\Dynamo\Packages\{Dynamo Version}

For example: **O:\Dallas\Dynamo\Packages\1.2\**

Tips & Tricks

Script Organization, Graphics and Commenting

- There is a great method already suggested that we have used
- Group and Comment “logical” sections of the script
- Add additional information like Required Packages, Instructions, Author and Date.


DESIGN
DESIGN
CONTROL
CONTROL
INPUT
INPUT
OUTPUT
TO REVIT
TO EXCEL
MONITOR
MONITOR
ANNOTATION
ANNOTATION
WIP
WIP

USE:
FOR THE BACK-END FUNCTIONALITY

USE:
FOR THE USER INPUT (SUCH AS SLIDERS, NUMBERS, ...)

USE:
FOR THE INCOMMING REFFERENCES (FILE PATHS, GEOMETRIES ...)

USE:
FOR BLOCKS THAT EXPORT THE GEOMETRY AND PARAMETERS TO REVIT

USE:
FOR IMPORTANT WATCH NODES

USE:
FOR COMMENTS

USE:
FOR "WORK IN PROGRESS"

Third Party Packages

Top 5 Roundup

#5

Spring Nodes

DIMITAR VENKOV

@5devene

badmonkeys.net

Installed: +8,600

Most Used Node:

ElementType.Duplicate

#4

Steam Nodes

JULIEN BENOIT

@Jbenoit44

badmonkeys.net

Installed: +9,000

Most Used Node:

Tool.Eraser

#3

Lunchbox

NATHAN MILLER

@archinate

TheProvingGround.org

Installed: +35,000

Most Used Node:

Lunchbox Level Element Collector

#2

Archi-lab.net

archi+lab

KONRAD K SOBON
@arch_laboratory
Archi-lab.net
Badmonkeys.net
Installed: +23,000

Most Used Node:
Get All Views

#1

Clockwork

clockwork
for dynamo

ANDREAS DIECKMANN

@a_dieckmann

badmonkeys.net

Installed: +26,700

10 Most Used Nodes:

List.SortListOfLists
Element.Name (Universal)
List.RepeatItemsByLengths
List.SublistLengths
List.CountOccurences
List.SublistsContain
List.AnyTrue
Element.Location
Element.Type
All Family Types Of Category

MyDynamoJourney.com

How did we do?

- Your class feedback is critical. Fill out a **class survey** now.
- Use the AU mobile app or fill out a class survey online.
- Give feedback after each session.
- AU speakers will get feedback
  in real-time.
- **Your feedback results in better classes and a better AU experience.**

Strongly agree
Agree
Disagree
ly disagree

Autodesk is a registered trademark 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. © 2016 Autodesk, Inc. All rights reserved.

© 2016 Autodesk. All rights reserved.