

AS197836 - Everyday Dynamo: Deliver Better Projects with Process Automation

Presented by...

Justin Benjamin & Sol Amour



Presentation & Scripts Available via BOX Link

<https://perkinswill.box.com/s/8more7lw20g1d0pzuw9c1kyl4uaqlk7c>

INTRODUCTIONS

Huge Shout Out...

Josh Moore



Formerly at Perkins+Will...😢

He isn't dead. He is alive, just not with PW....

*Everyday Dynamo was his baby. The concept.
The scripts. All this guy...*



INTRODUCTIONS

The Infamous...

JUSTIN BENJAMIN Design Applications Manager, Associate



Perkins+Will for 5+ years
12+ yrs. total Architectural Experience
10+ yrs. Design Tech. Management Experience
Revit Architecture Certified Professional
Currently Learning Virtual & Augmented Reality
Office Implementation, Client Outreach, Innovation



@JBenjamin1930



INTRODUCTIONS

Fear Not!

Sol Amour Product Specialist: Generative BIM, Autodesk

Industry Experience in Software Architecture,
Landscaping, Industrial Design and the Construction
Sectors.

Now focusing upon Generative BIM at Autodesk.
Previously at designtech.io.

Passionate about leveraging technology to do laborious
and repetitive tasks in order to allow designers to design
again.



@solamour

CLASS OVERVIEW

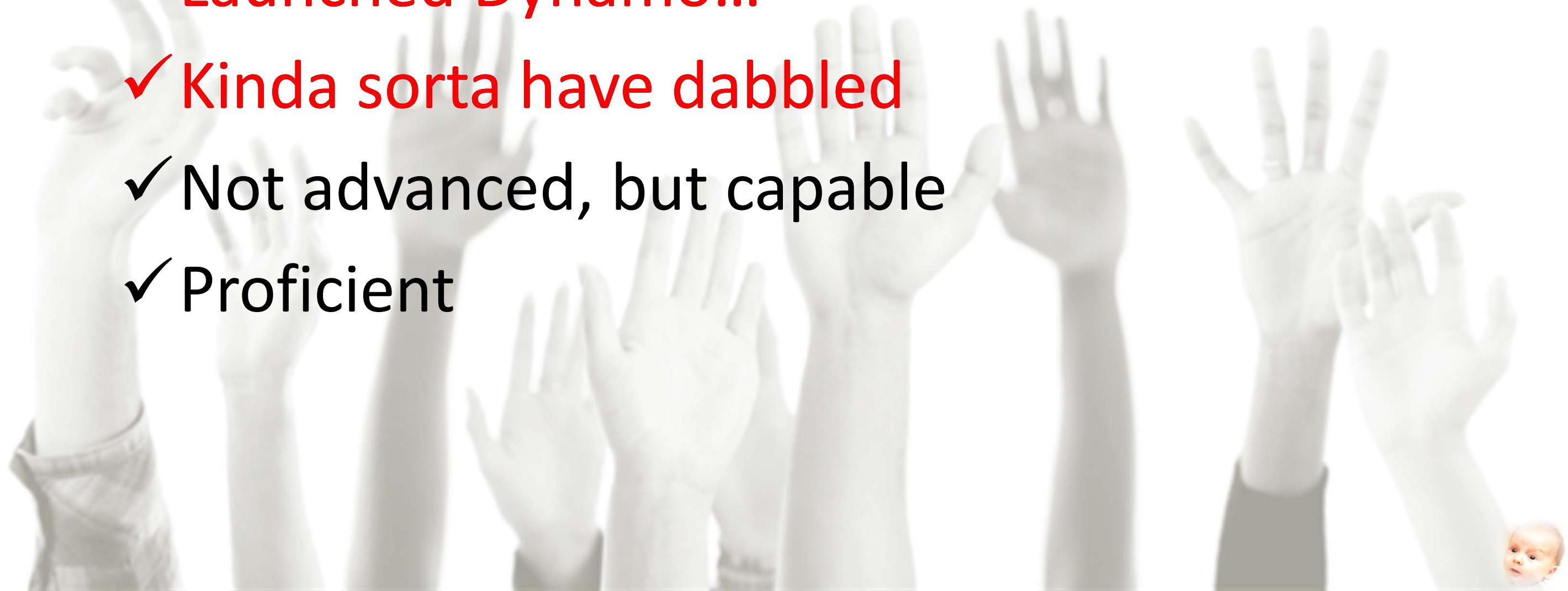
Learning Objectives

- Increase Familiarity with **various nodes and methods of combining them** to perform common tasks
- Learn how to **present a User Interface with Dynamo Player** to allow greater flexibility and script use
- Discover how to **automate Dynamo running on projects** and examples of how it can be useful
- Learn Tips & Tricks and **lessons learned when setting up dynamo for a company and deploying it** and scripts

QUICK POLL

DYNAMO UTILIZATION

- ✓ Launched Dynamo...
- ✓ Kinda sorta have dabbled
- ✓ Not advanced, but capable
- ✓ Proficient



Everyday Dynamo

The Prequel

Today is Yesterdays Tomorrow...



Everyday Dynamo “The Prequel”

The image shows a video player interface. In the top left, there is a thumbnail of a presentation slide with a green triangle graphic and the title "Everyday Dynamo: Automating Simple Solutions That Bridge Workflow Gaps Within Revit". To the left of the thumbnail, the text "JOSH MOORE" and "AR20422: Everyday Dynamo: Automating Simple Solutions That Bridge Workflow Gaps Within Revit" is displayed, along with "(Duration 01:28:05)". Below the thumbnail, the video player displays the first frame of the video, which shows a person speaking. A subtitle box contains the text "JOSH MOORE: Well good morning, everybody.". Below the video frame, there is a control bar with a play button, volume controls, a progress bar showing "00:01 - 01:28:05", and other video controls. At the bottom of the player, there are four buttons: "SHARE", "SAVE TO MY AU", "DOWNLOAD", and "TRANSCRIPT".

KEY LEARNING

- Increase awareness and familiarity with Dynamo visual programming nodes and packages
- Learn about basic troubleshooting when working with Dynamo scripts that fail
- Recognize when Dynamo can save you valuable time on projects
- Discover simple and innovative ways to bridge workflow gaps in Revit

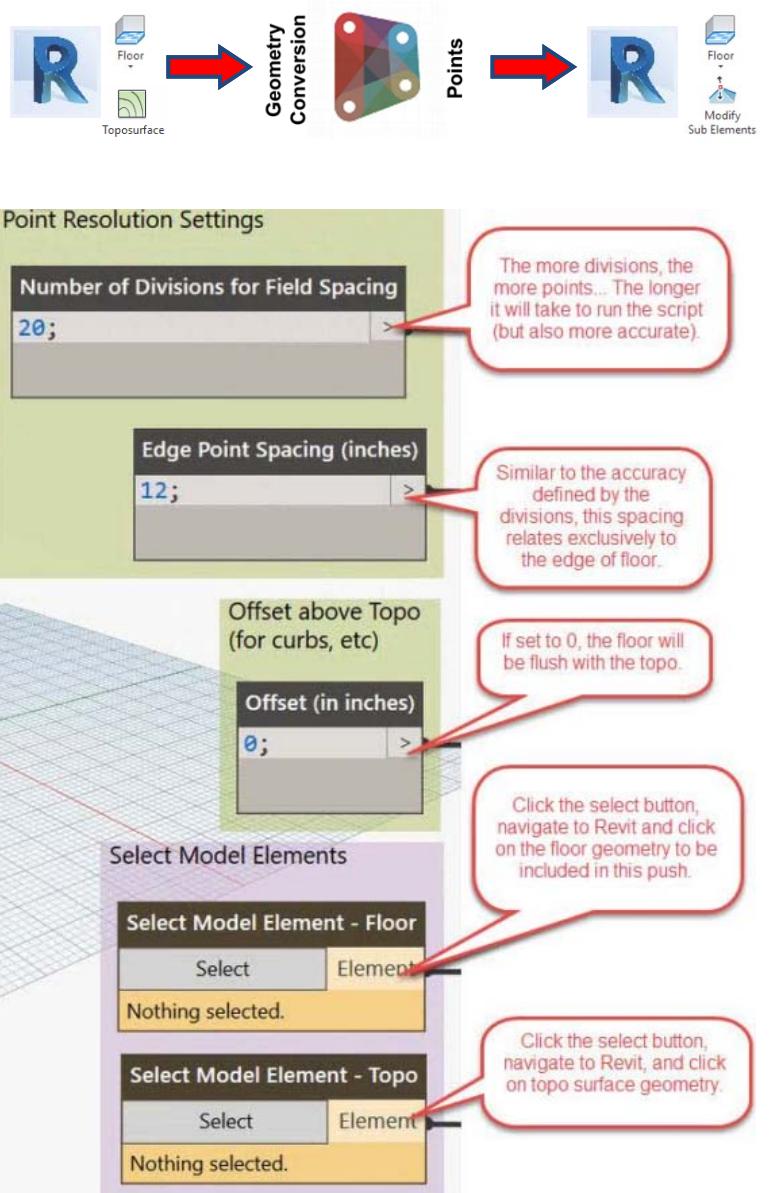
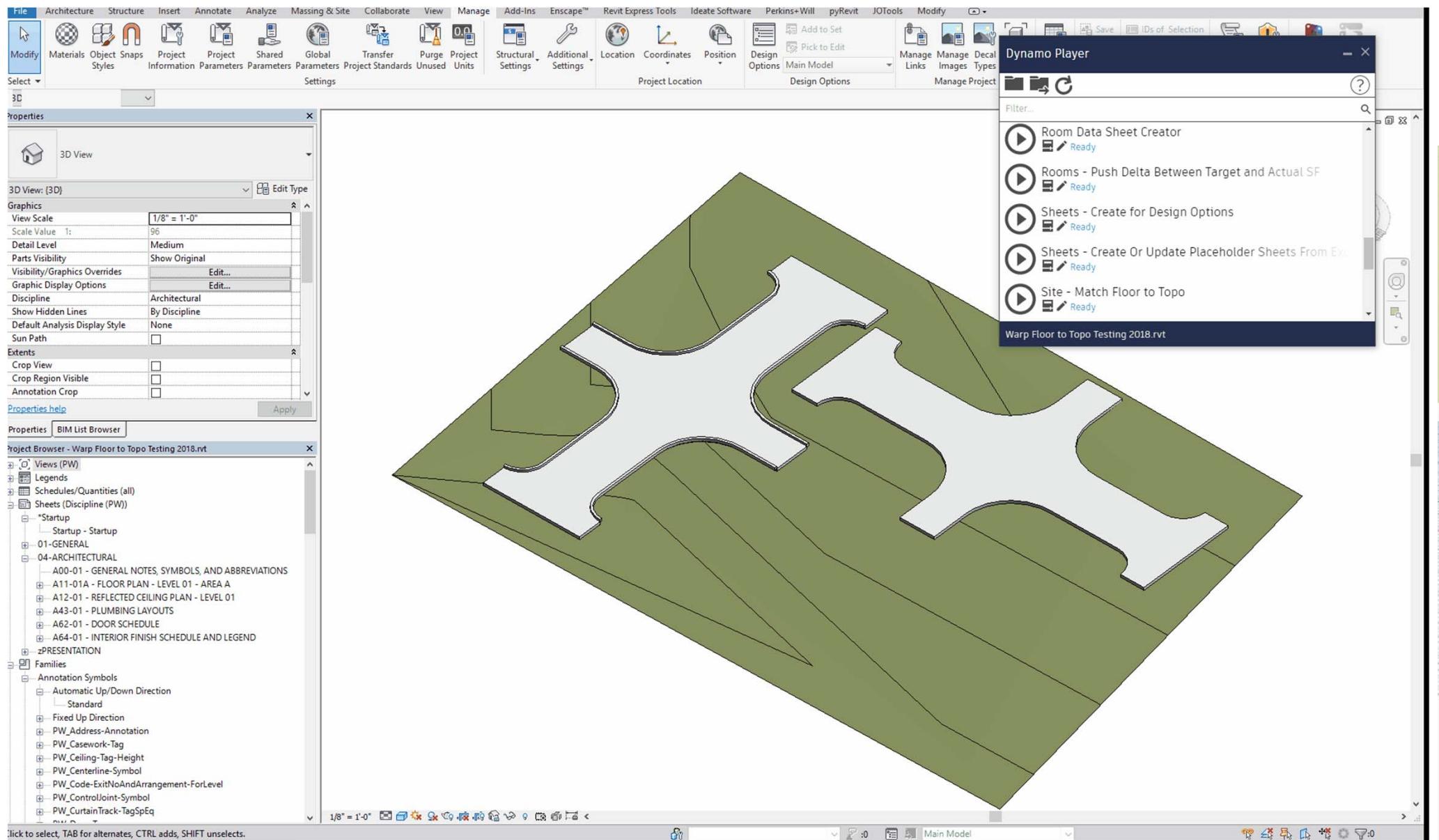
MATERIALS

	Additional Class Material
	Presentation
	Handout
	Full Transcript



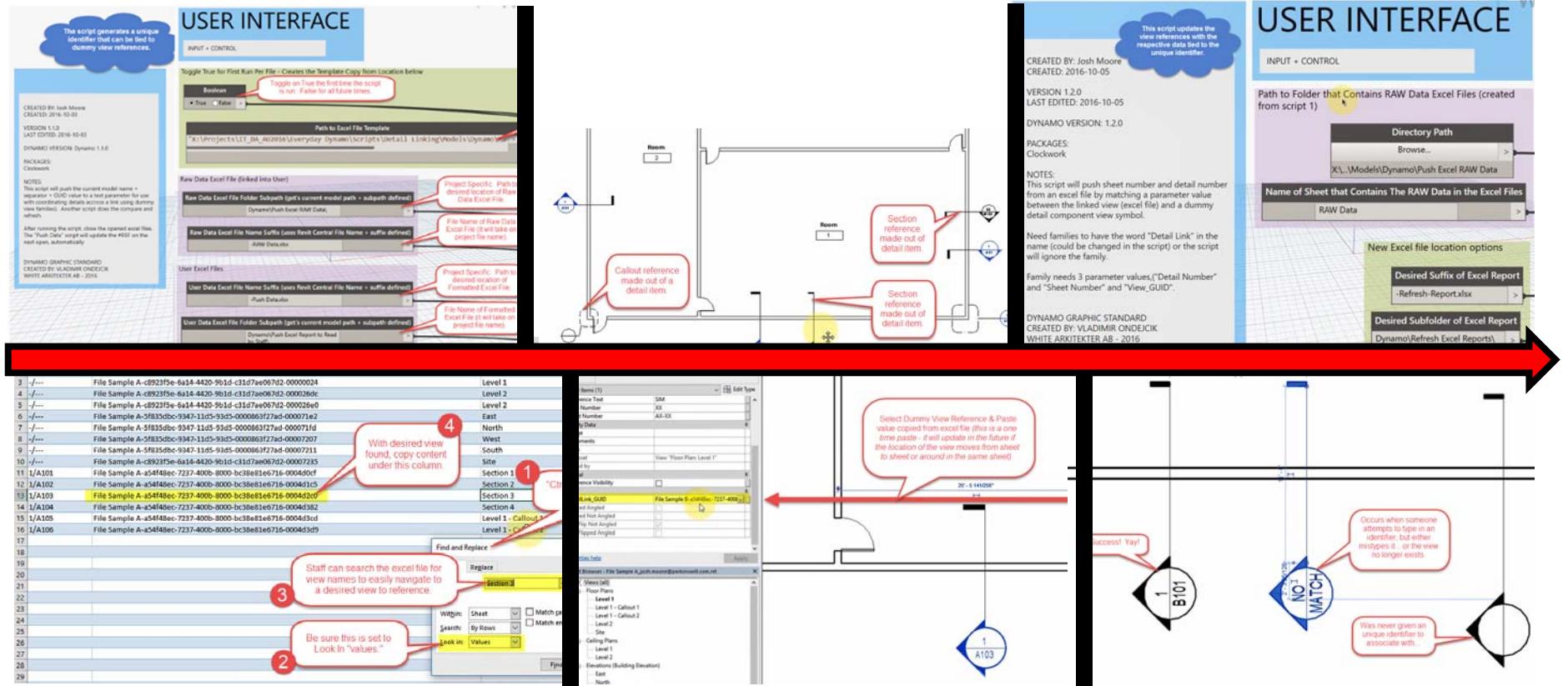
EVERYDAY DYNAMO: THE PREQUEL

Shape Edit Floor to Match Topography



EVERYDAY DYNAMO: THE PREQUEL

Coordinating Dummy View Tags Across Linked Models



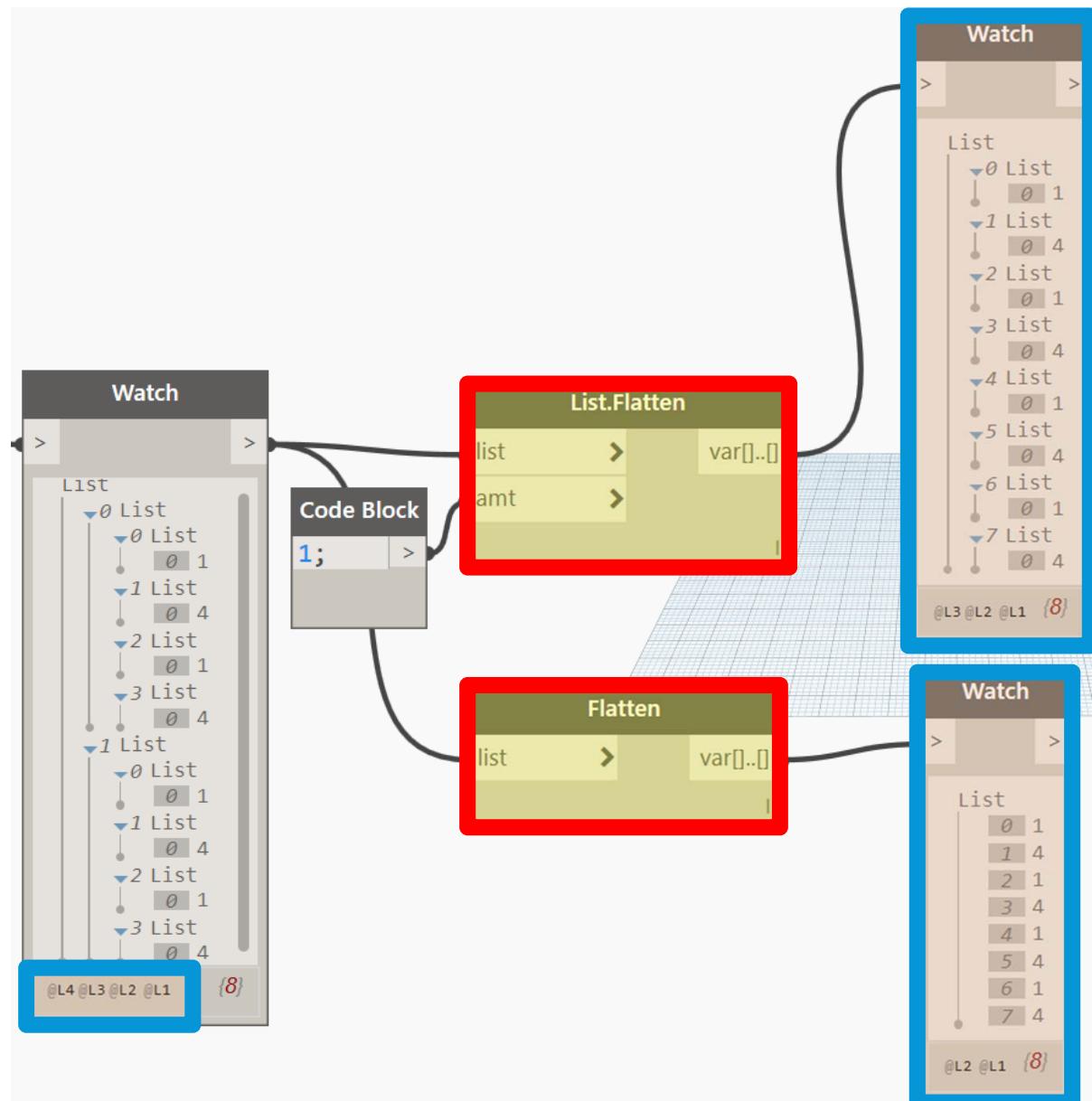
- 1. Script 1: Dynamo Exports View IDs**
- 2. Staff references excel file to copy View ID into dummy tag**
- 3. Script 2: Dynamo Reads Excel and compares View ID to update Sheet Information**



DYNAMO NODE LOGIC EXAMPLES & TERMINOLOGY

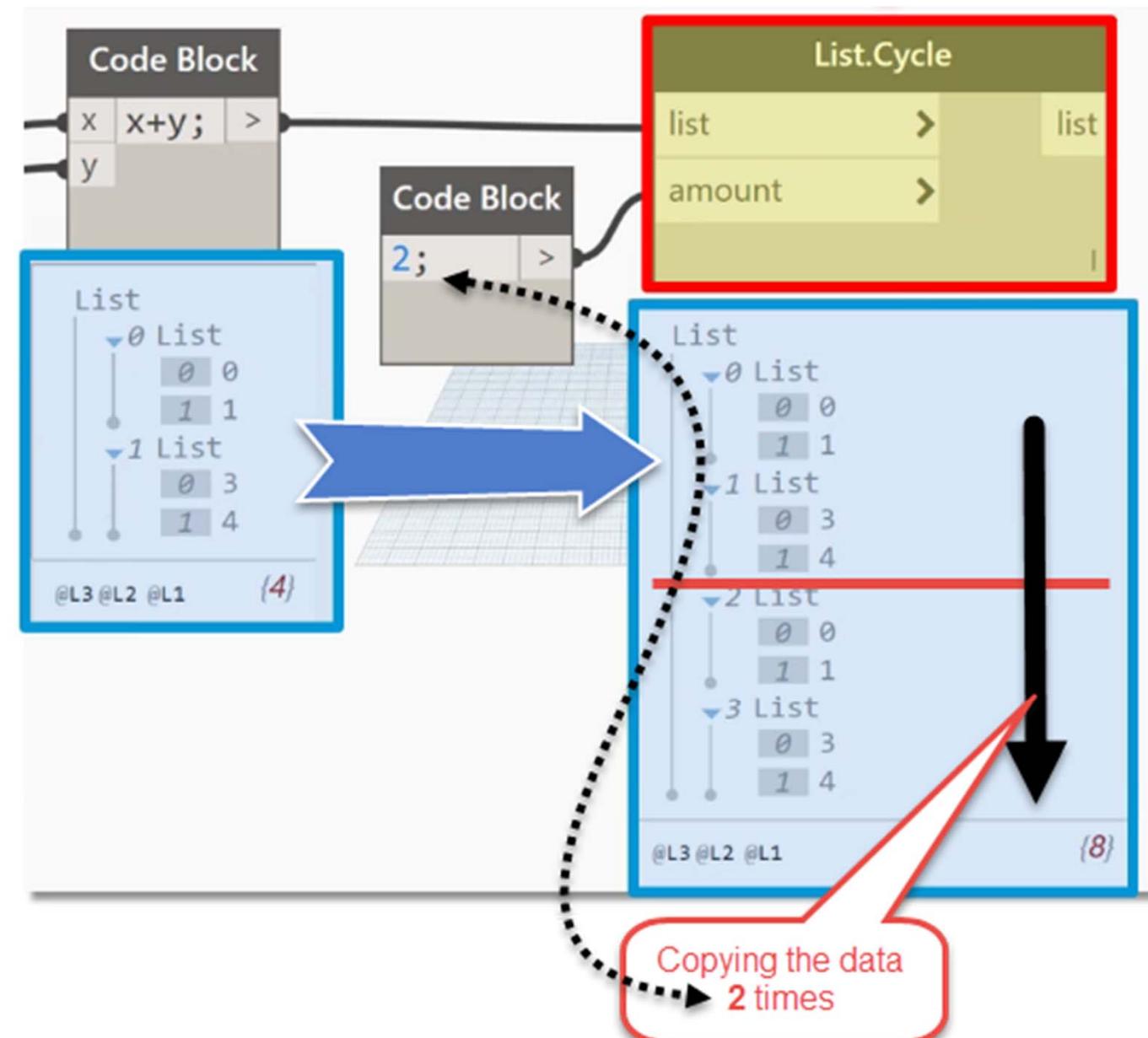
Managing Data

List.Flatten vs. Flatten



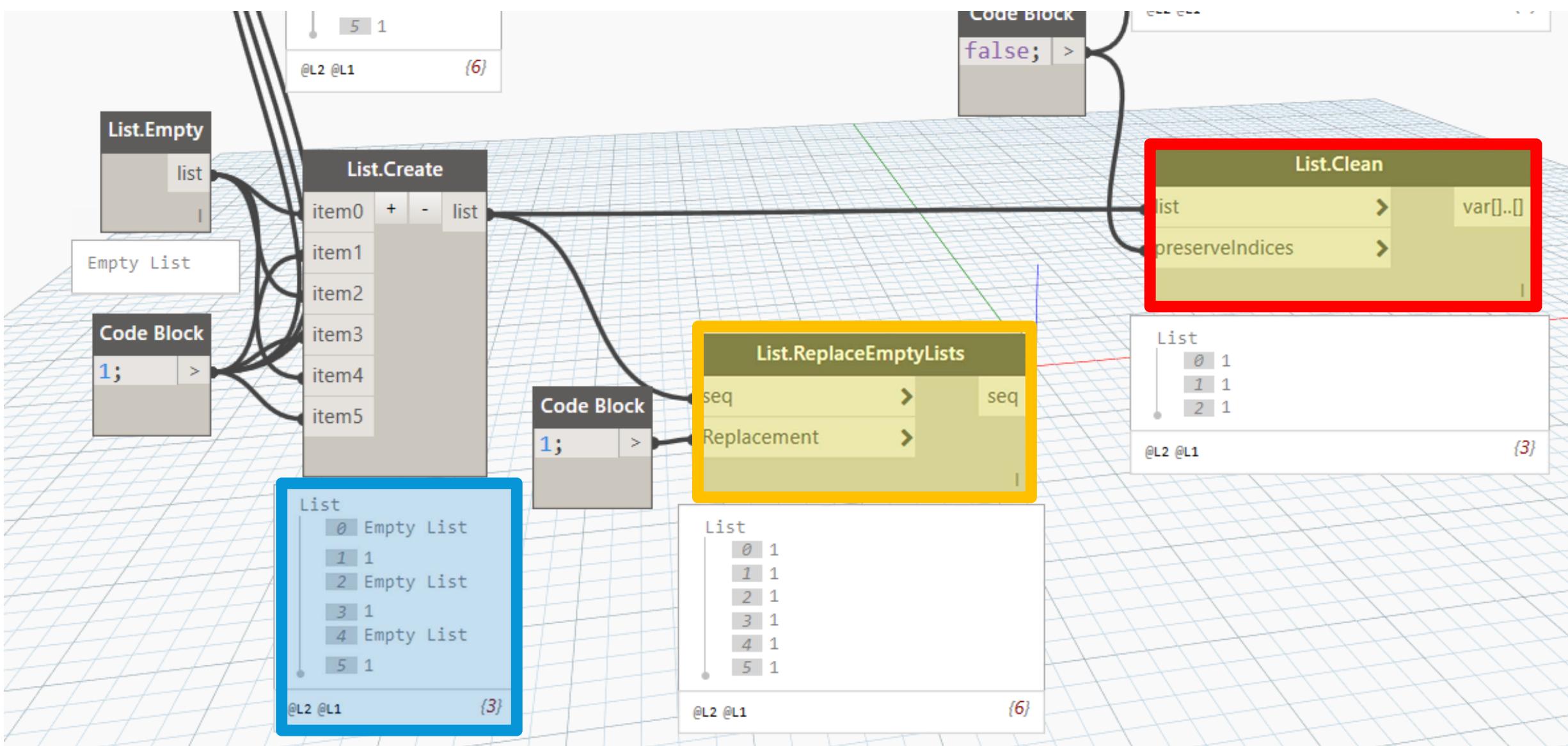
Managing Data

List.Cycle



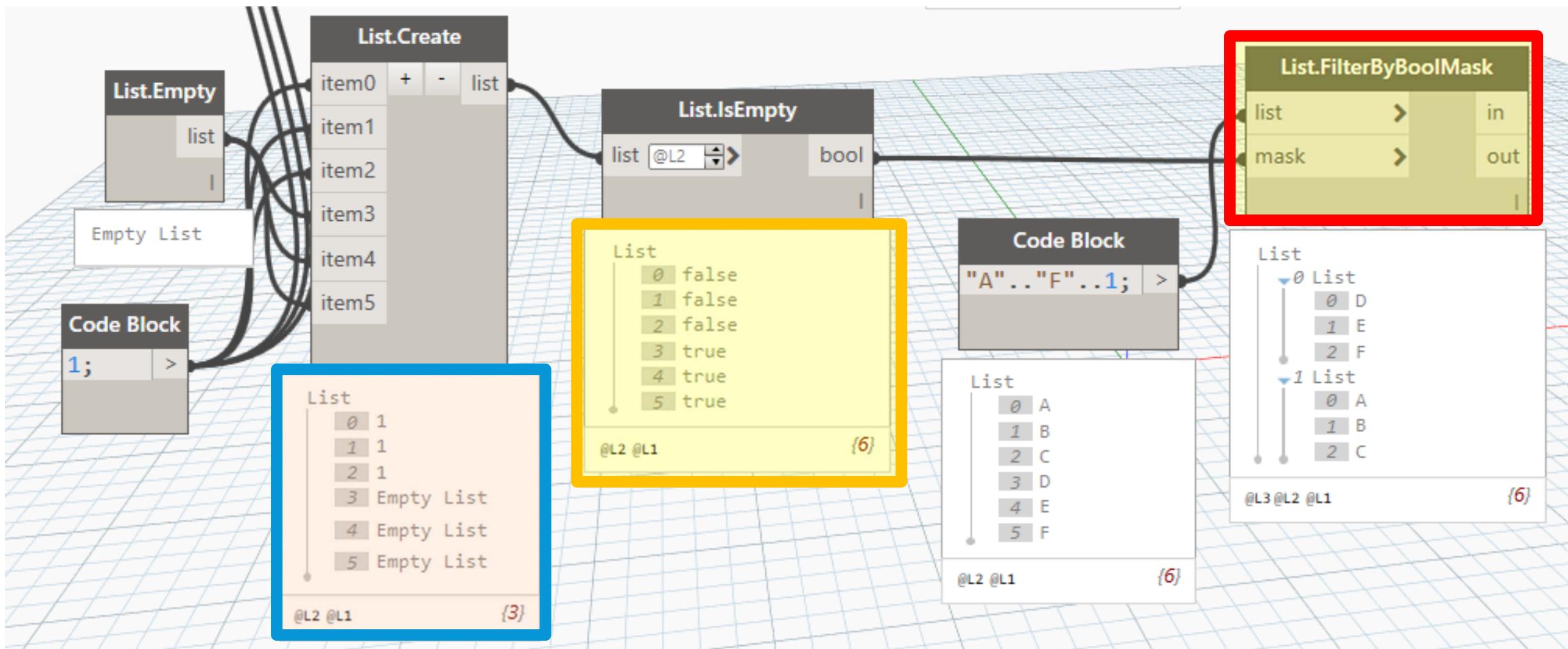
Managing Data

Dealing with Empty Lists

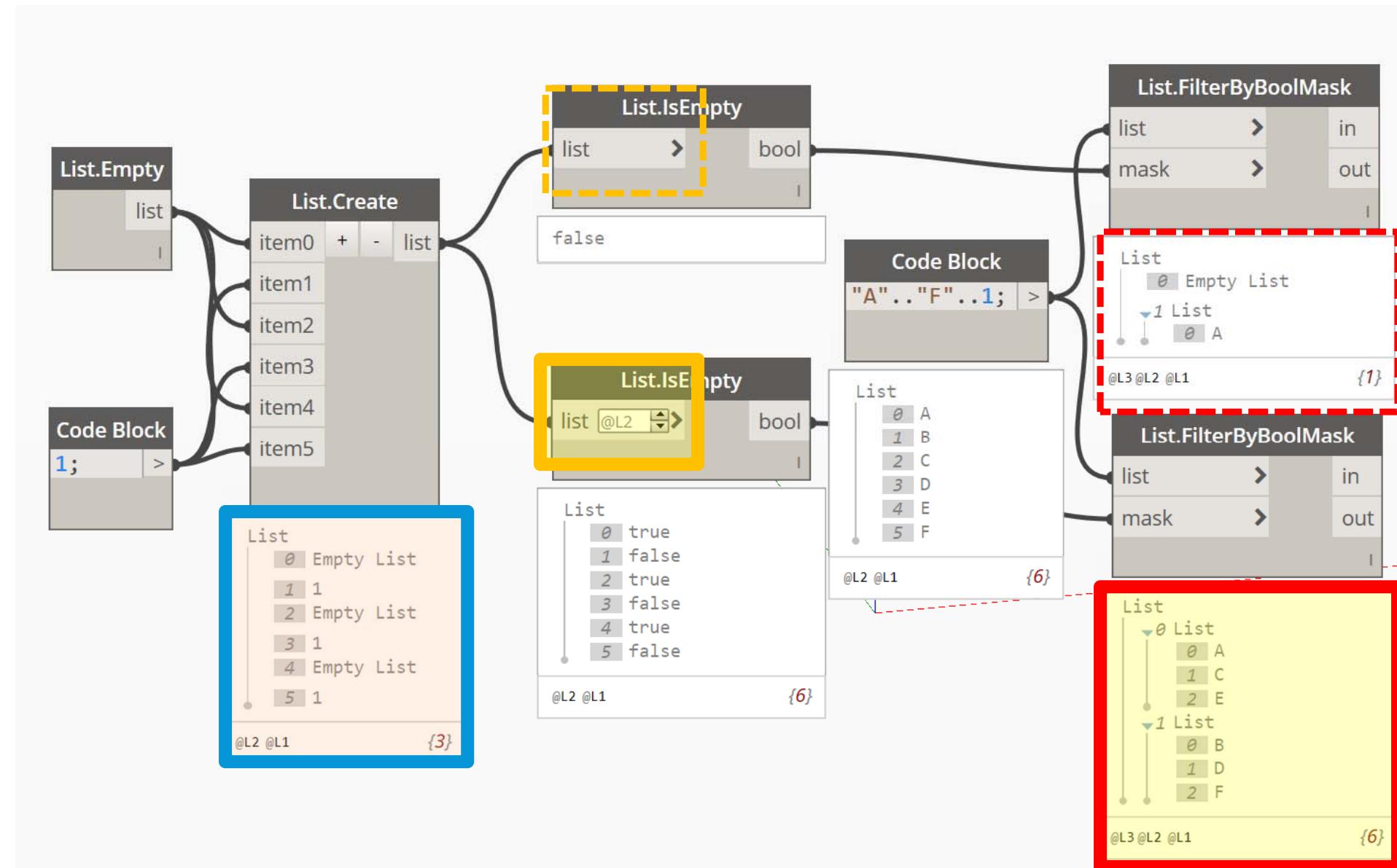


Managing Data

Dealing with Empty Lists

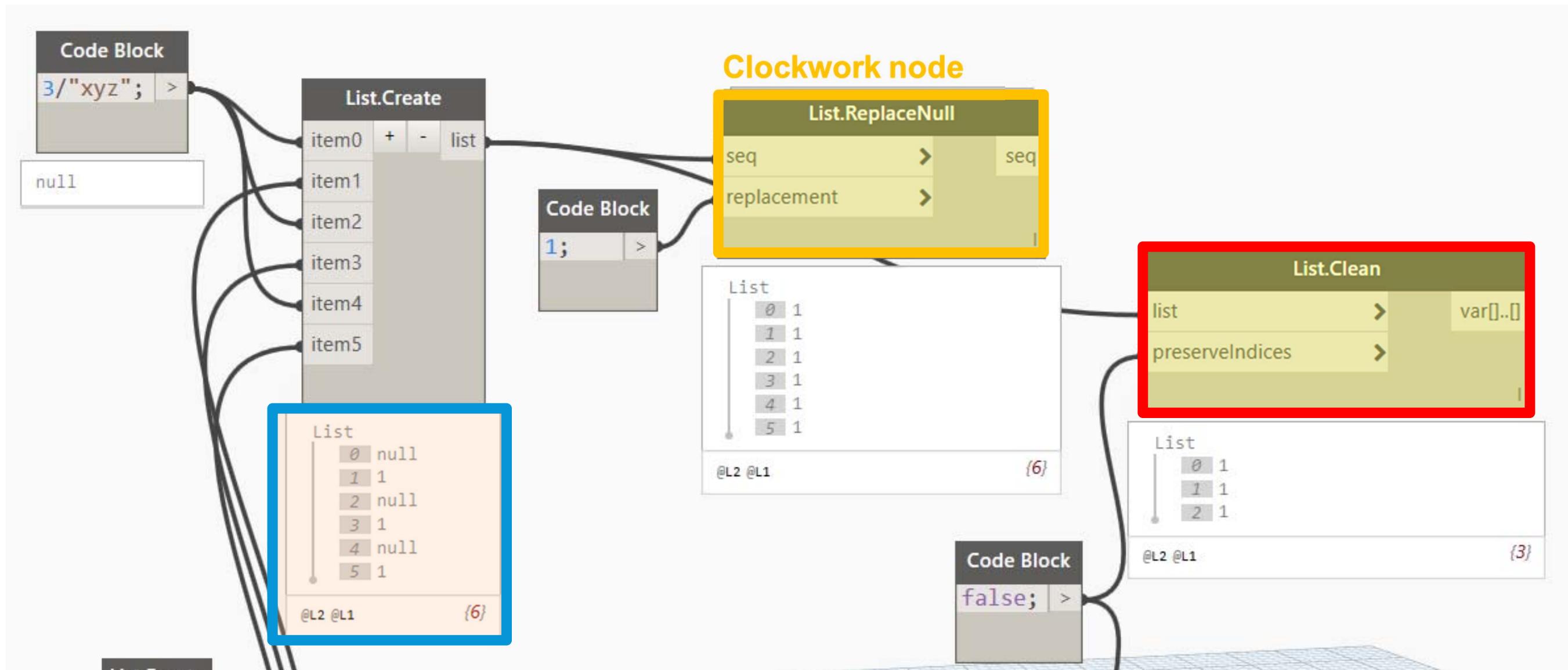


Managing Data Using List Levels



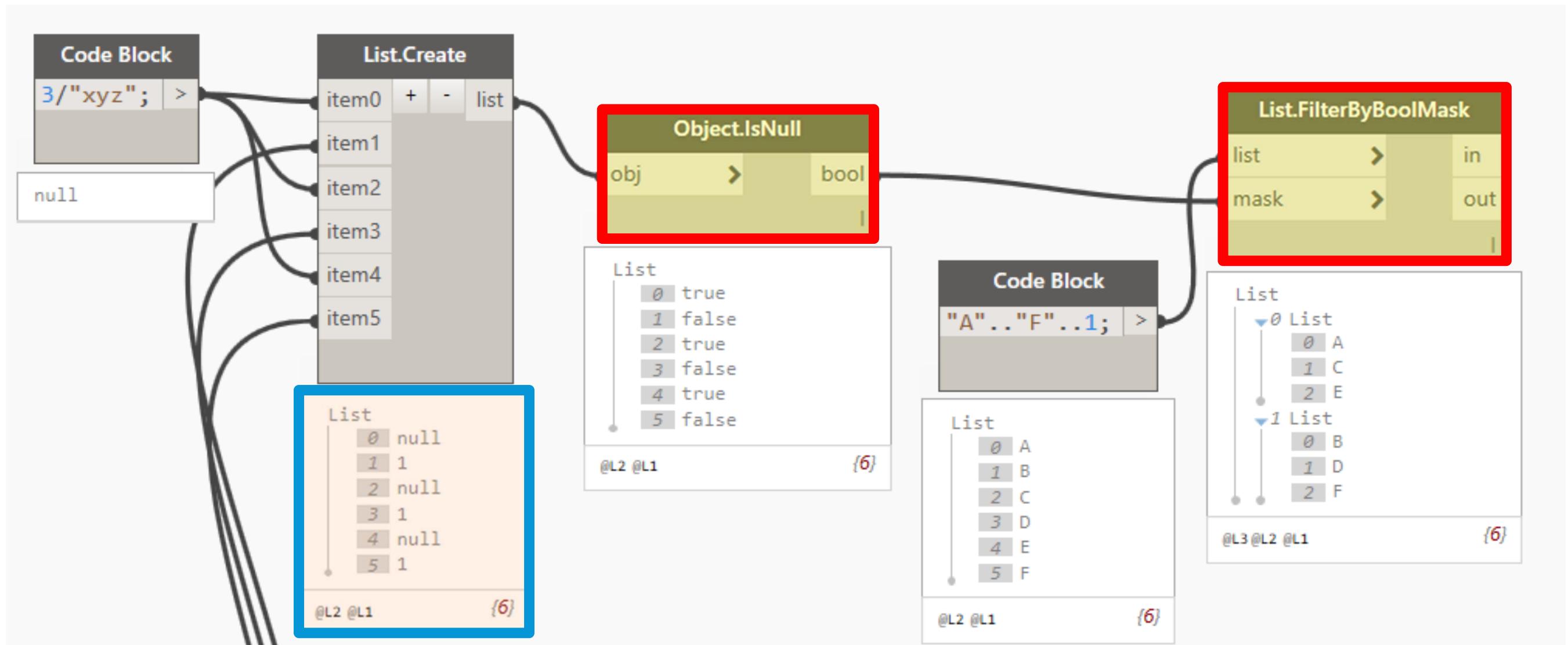
Managing Data

Dealing with Null Values



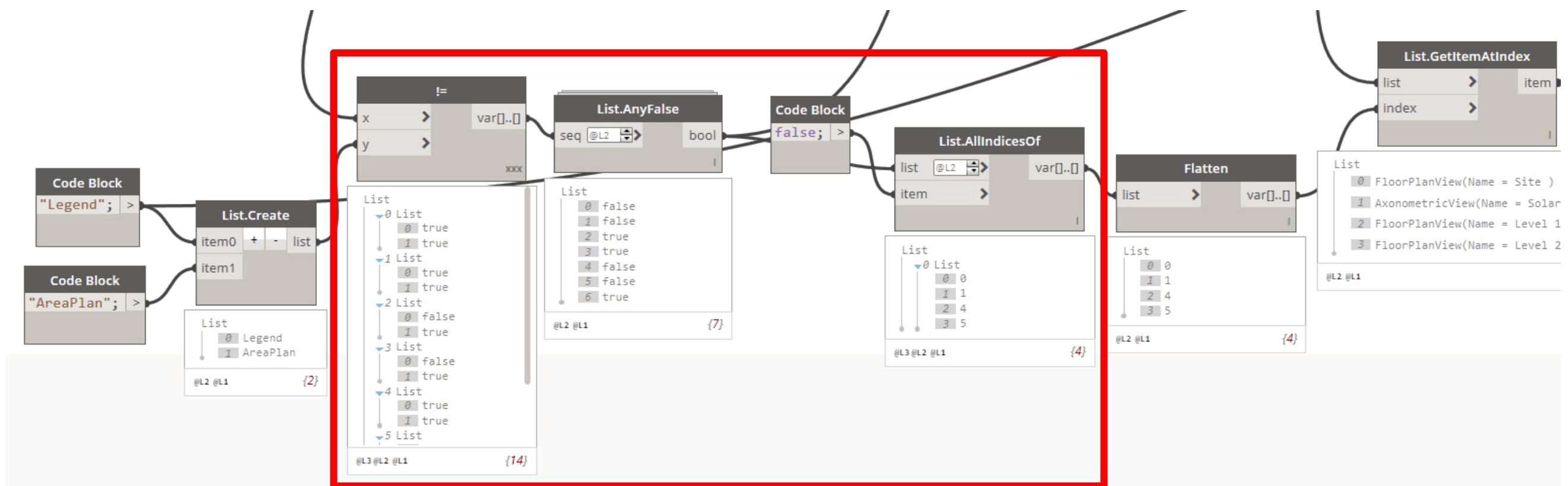
Managing Data

Dealing with Null Values



Managing Data

Filtering One List by Another



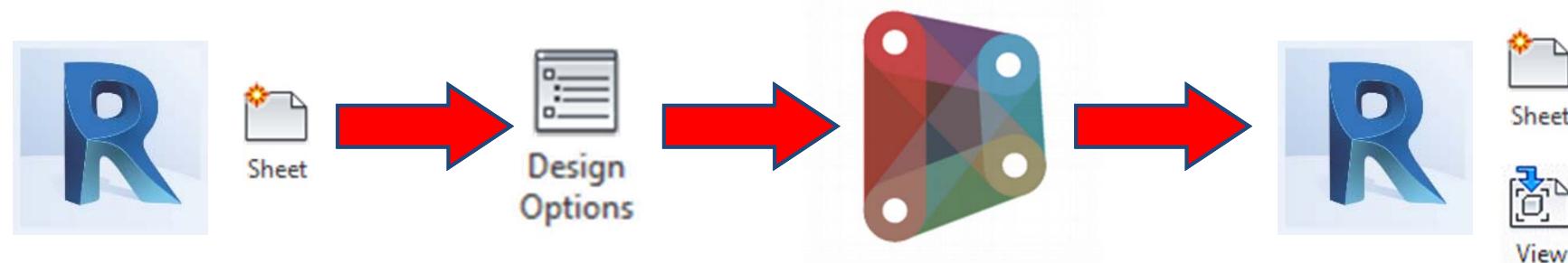
LOGIC COMPARISON

List.AllIndicesOf vs. List.FilterByBoolMask



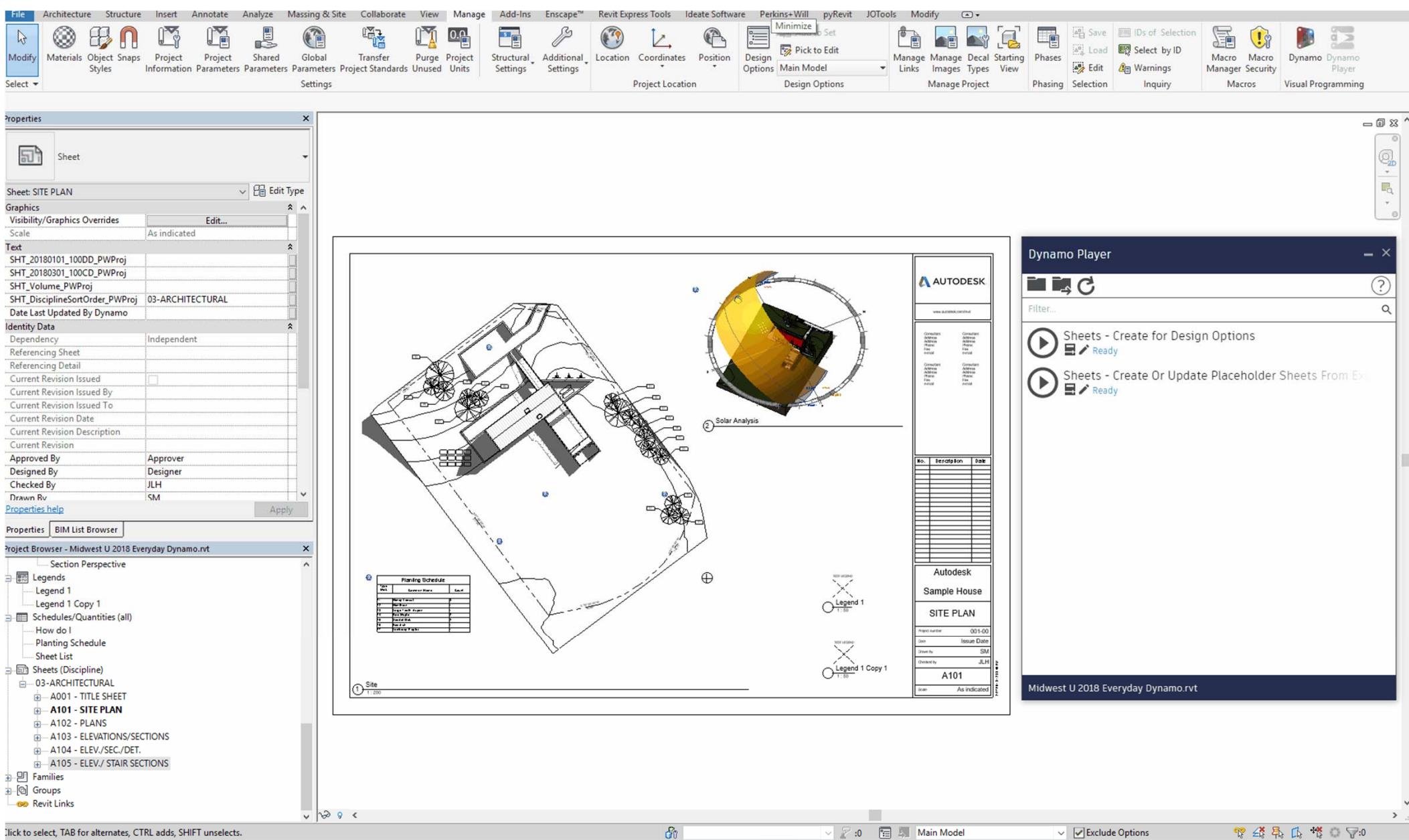
Script Example 1

Duplicate Sheets For Design Options



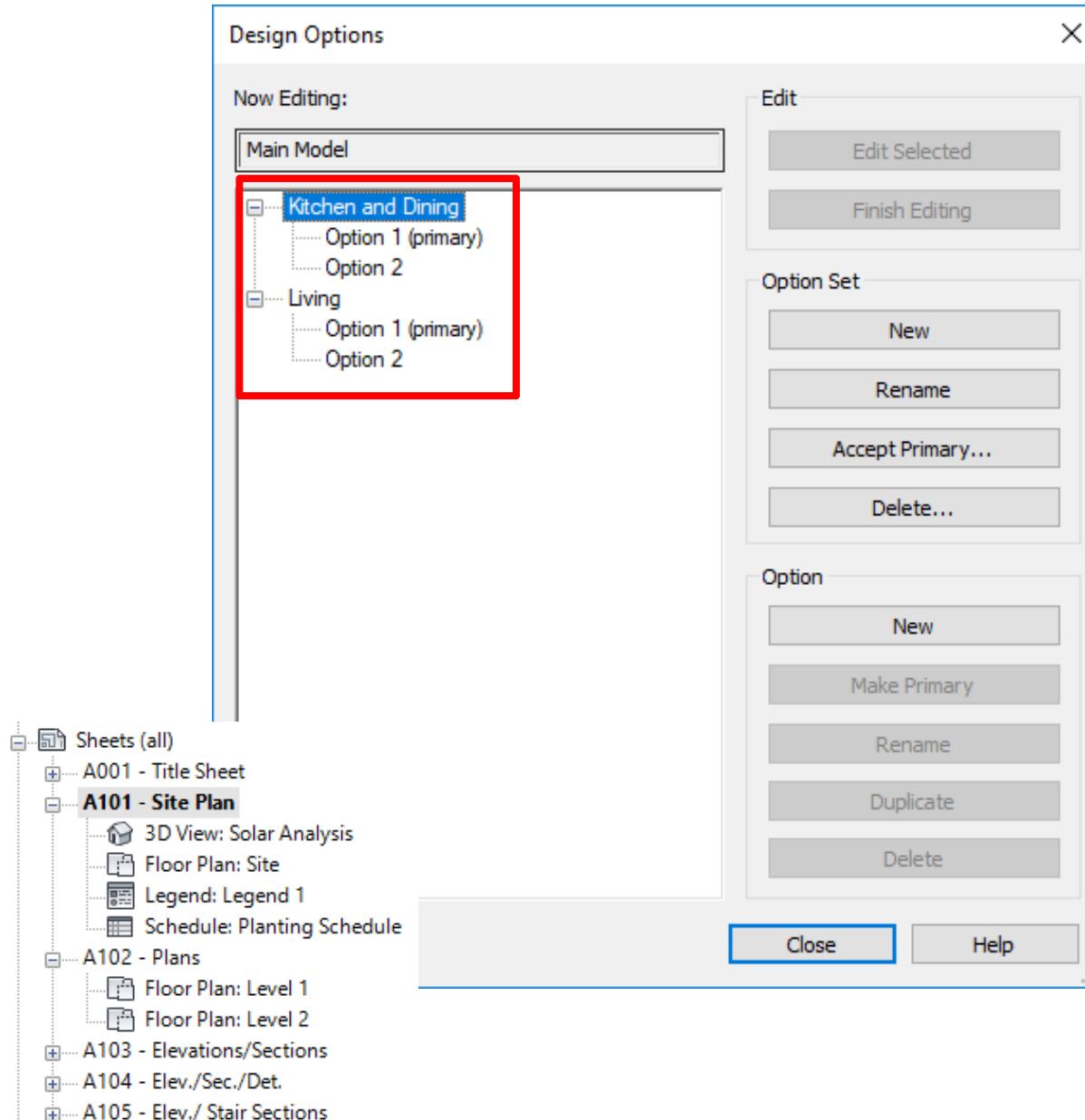
DUPLICATE SHEETS FOR DESIGN OPTIONS

Quick Video Overview



DUPLICATE SHEETS FOR DESIGN OPTIONS

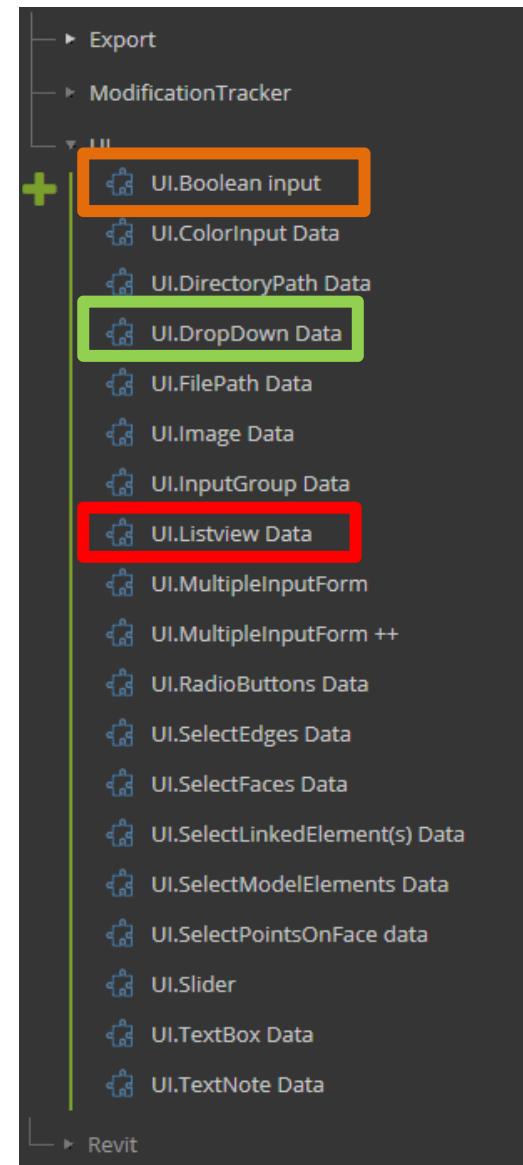
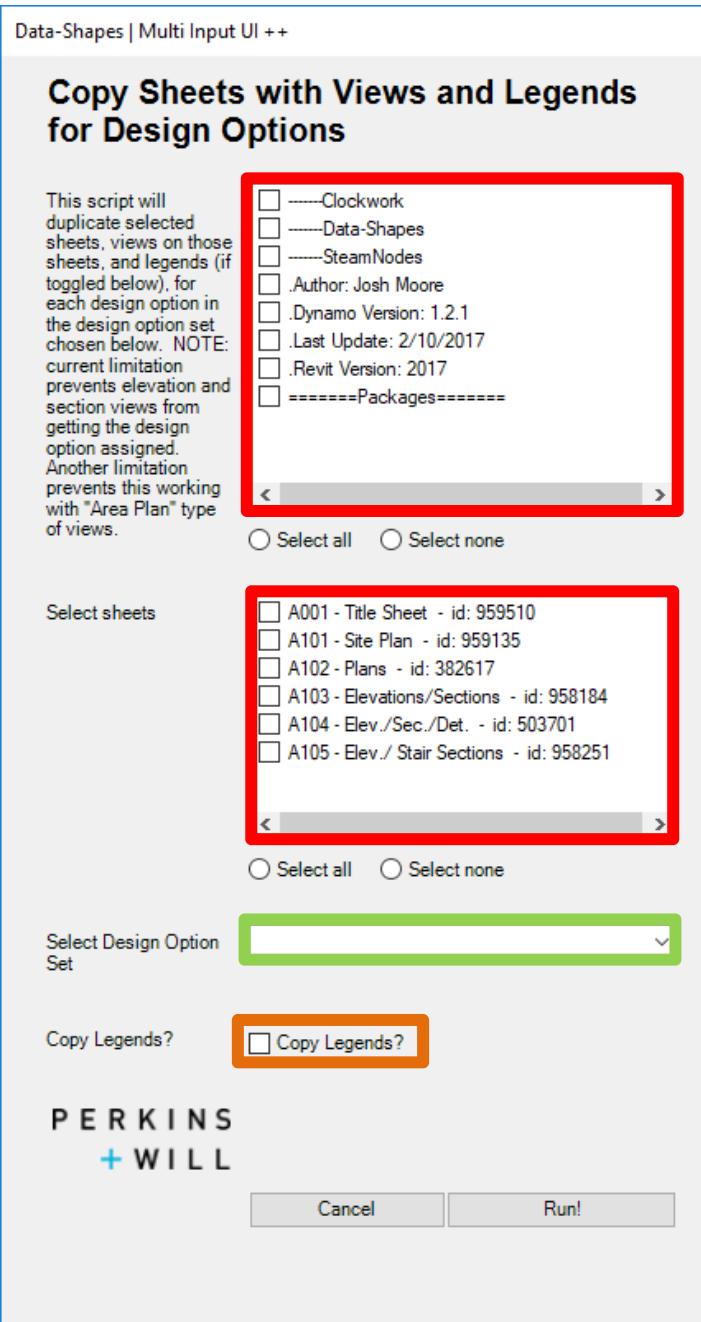
Script Prerequisites



- **Design Options created.** Script runs on all options within one chosen Option Set
- **Starting Sheet(s) with views setup as desired.** Currently limitations using “Duplicate As Dependent” can break script for certain views such as 3D views.



DUPLICATE SHEETS FOR DESIGN OPTIONS

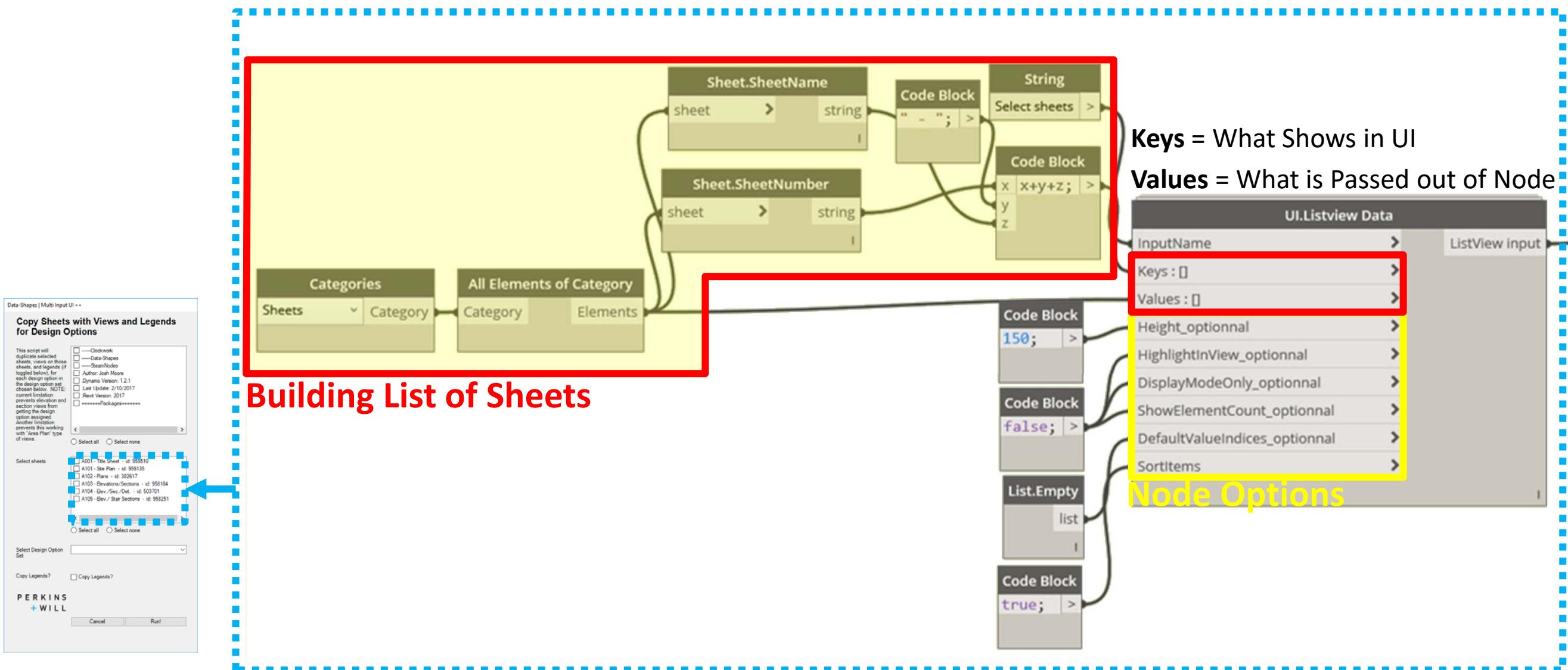


Introduction to DataShapes

- **Custom Package for creating a UI Popup during a Dynamo Script Run. This can be paired with dynamo player.**

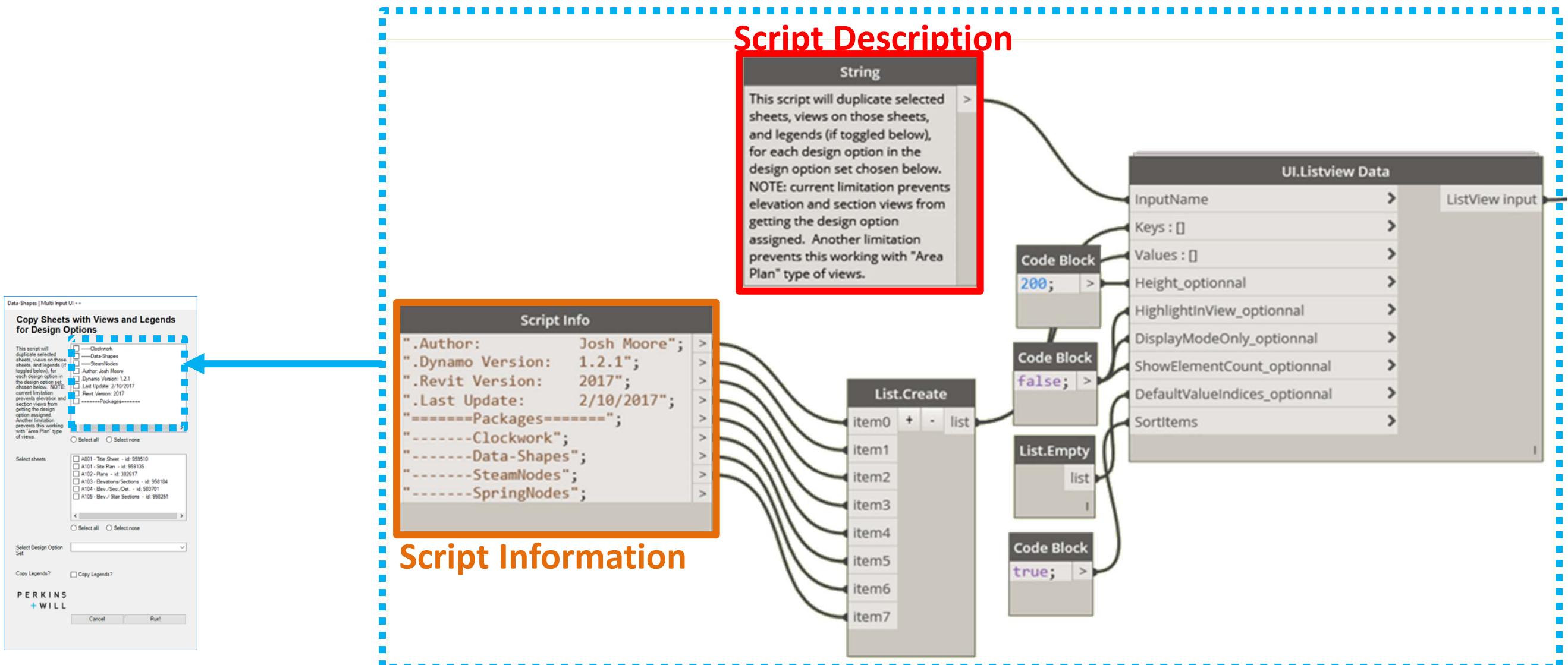
DUPLICATE SHEETS FOR DESIGN OPTIONS

DataShapes – ListView – Multiple Selections



DUPLICATE SHEETS FOR DESIGN OPTIONS

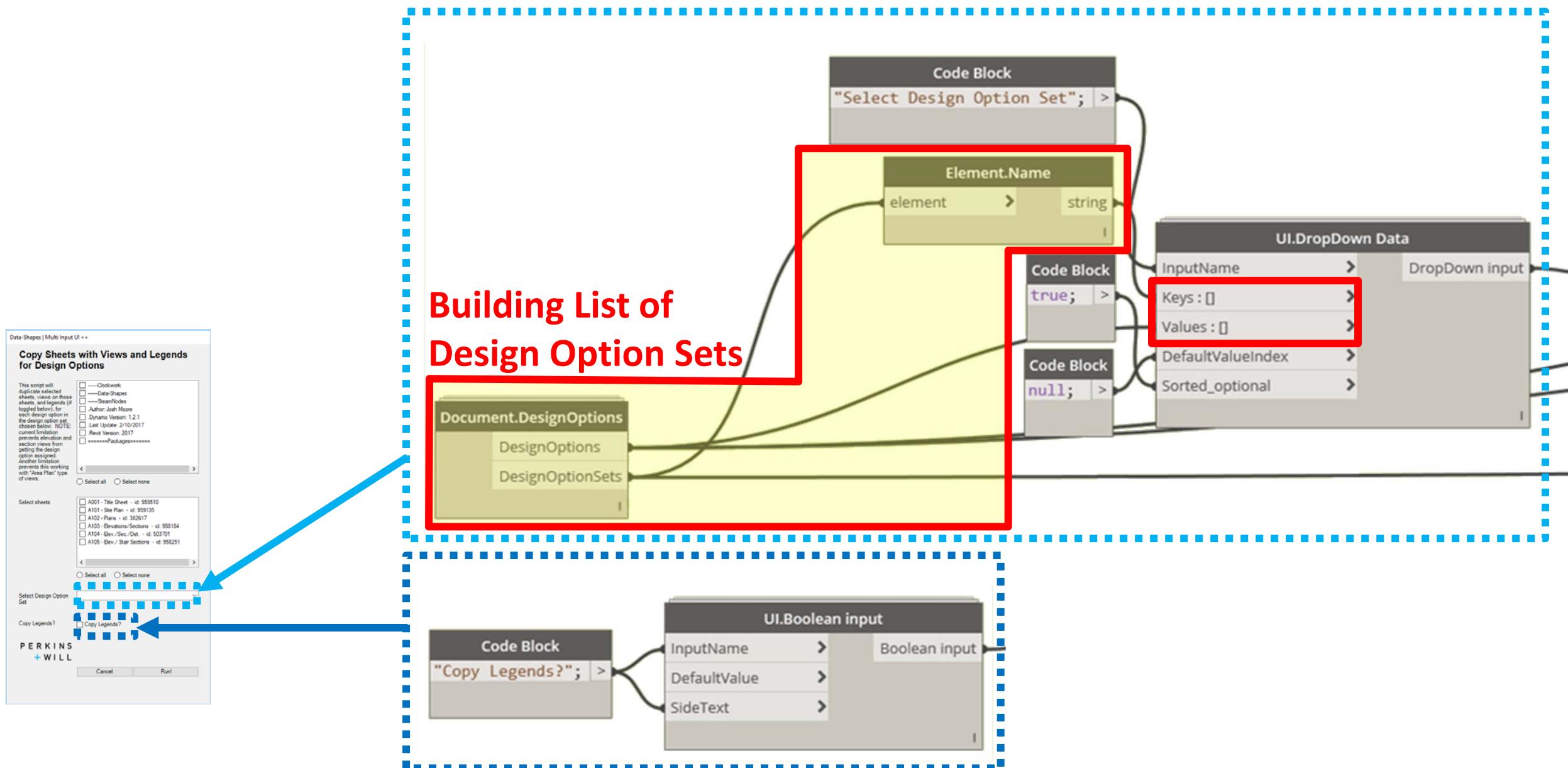
DataShapes – ListView



**This section provides information only and doesn't affect the script run.

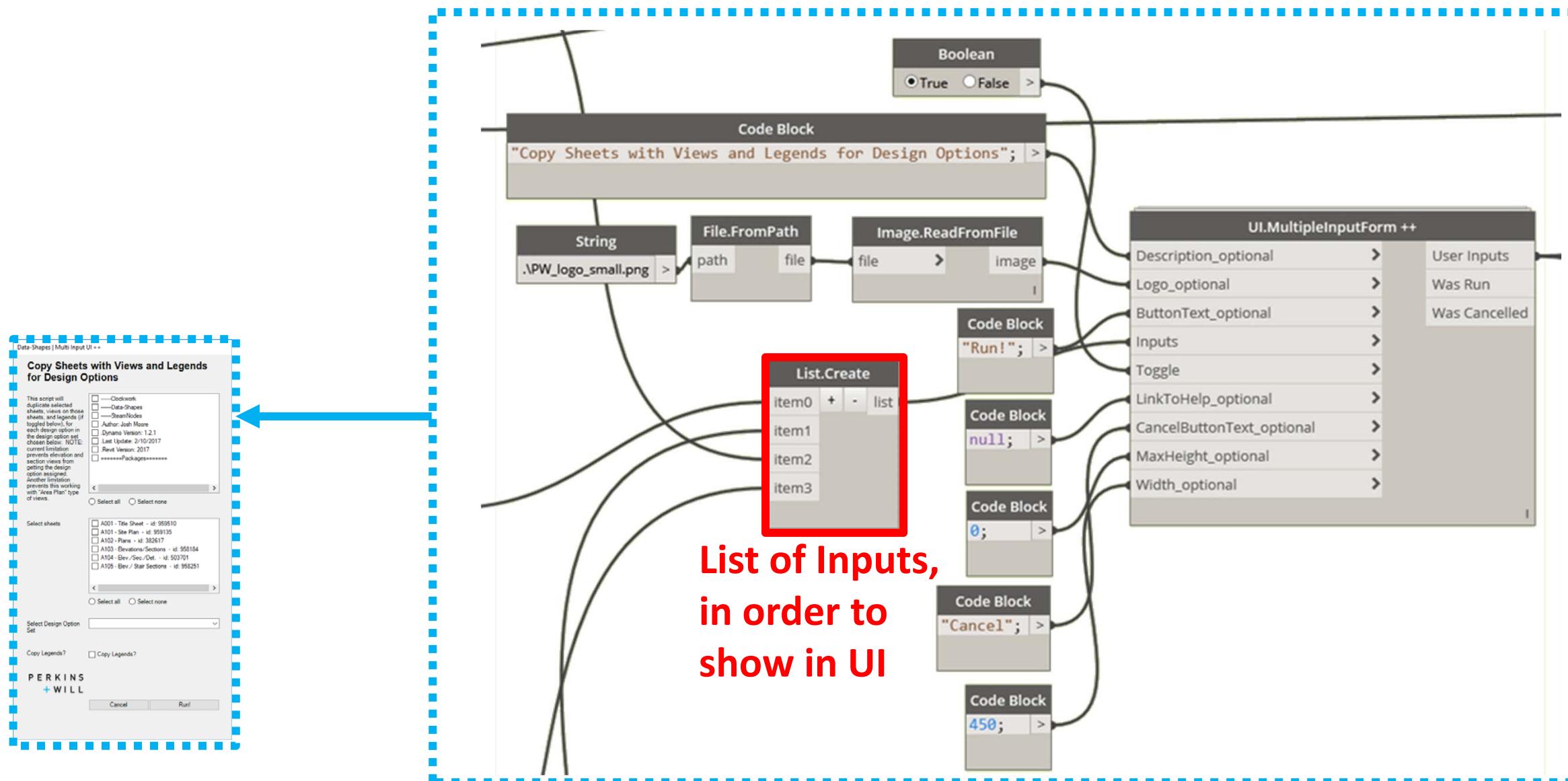
DUPLICATE SHEETS FOR DESIGN OPTIONS

DataShapes – DropDown – Single Selection



DUPLICATE SHEETS FOR DESIGN OPTIONS

DataShapes – Combining Into UI



**List of Inputs,
in order to
show in UI**

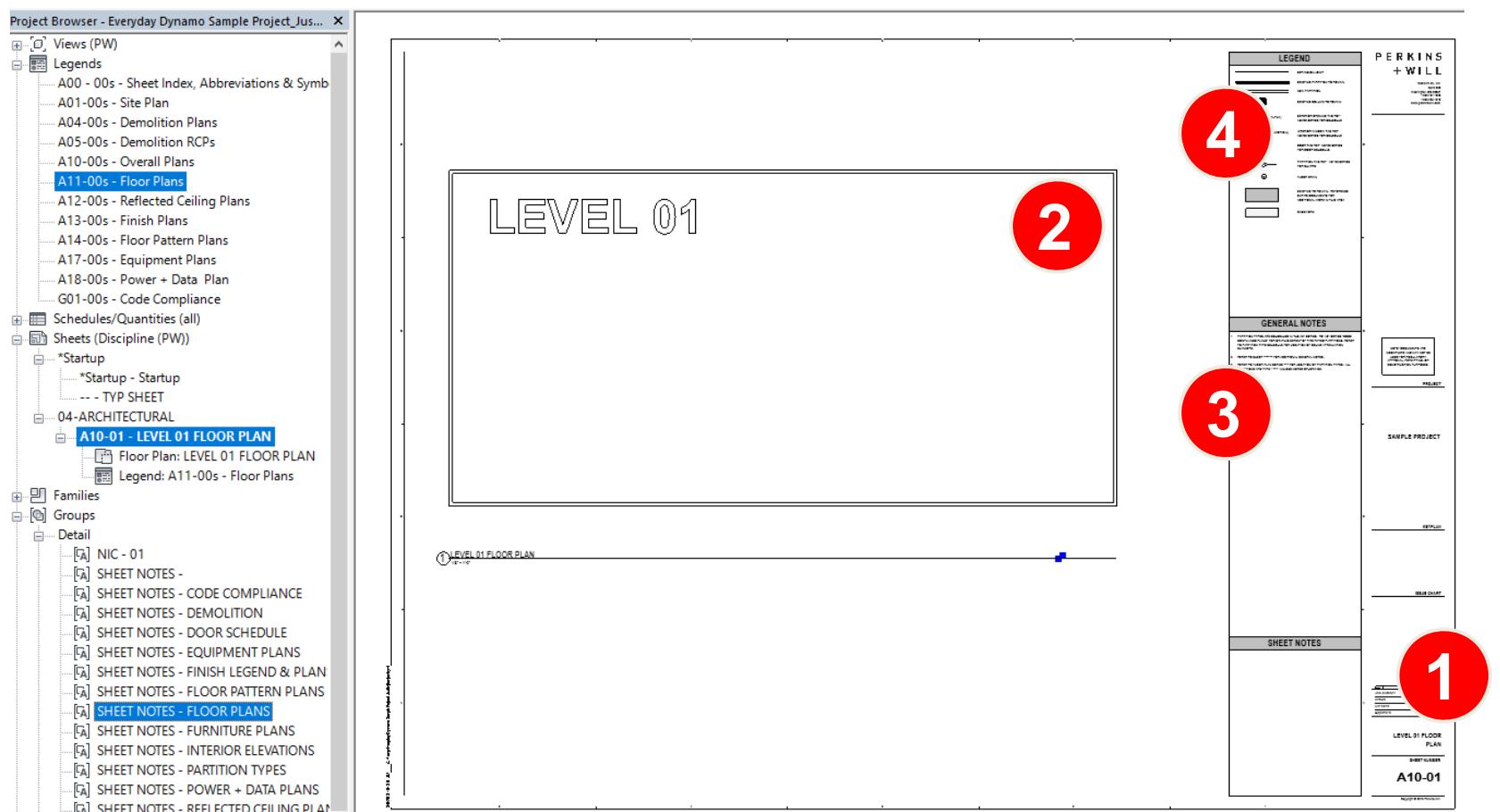
Script Example 2

Sheet Genie



Sheet Genie Script Capabilities

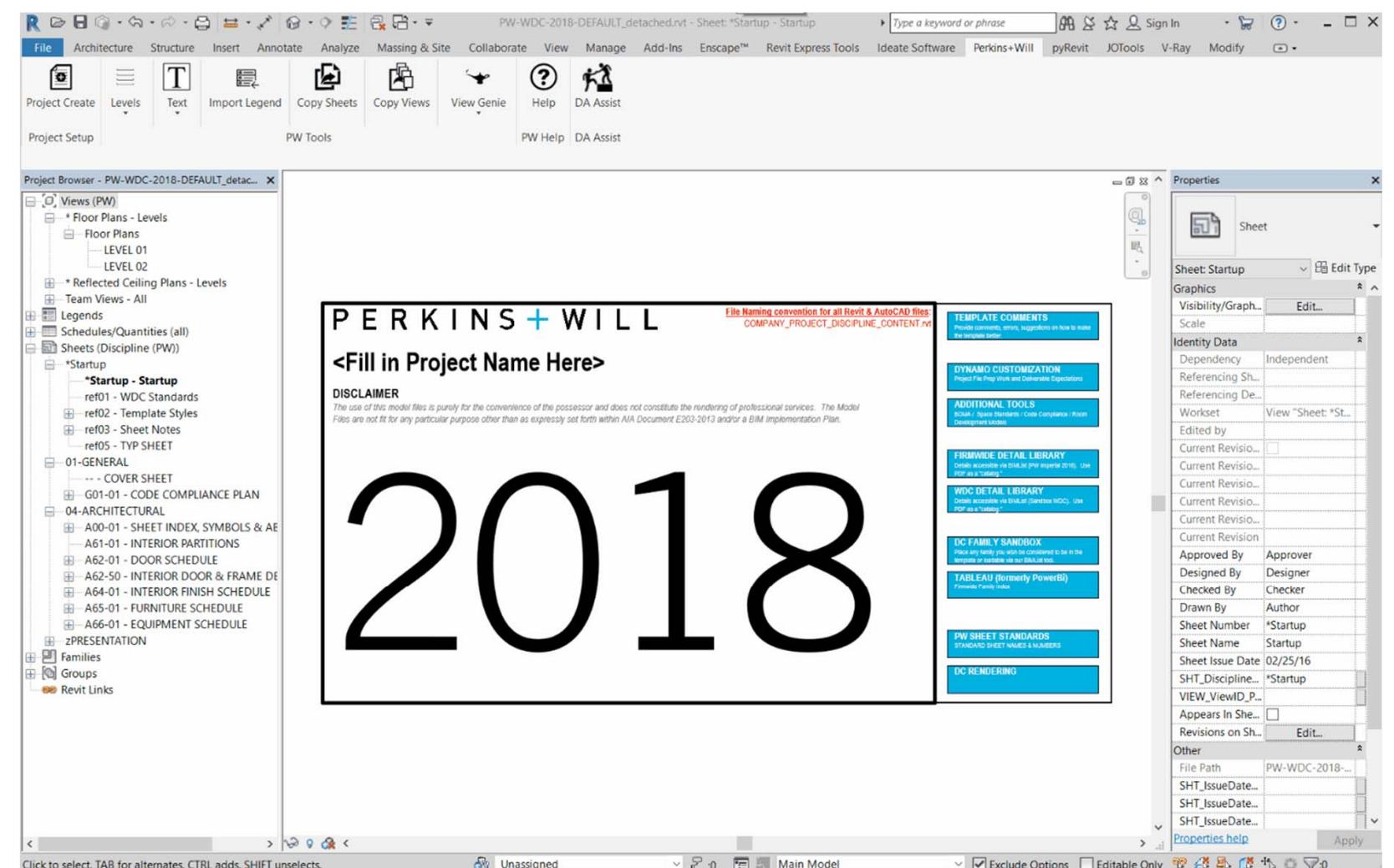
1. Create sheets *reflecting naming & numbering standards.*
2. Placement of view consistent among all newly created sheets.
3. *Optional Placement of Detail Group (Sheet Notes).*
4. *Optional Placement of Legend.*



Sheet Genie

Pre-Requisites: Revit File

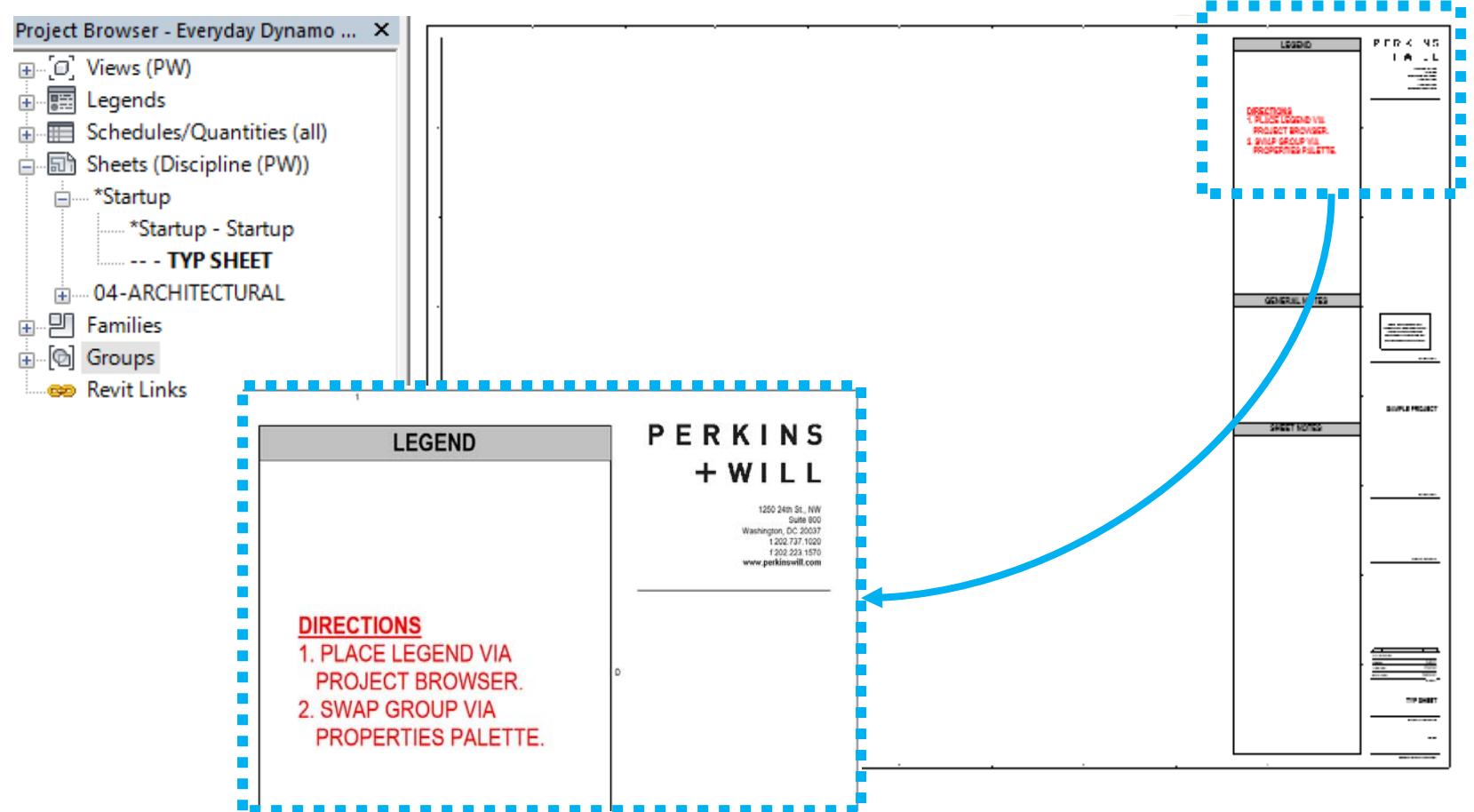
- 1. Create ALL plan views intended for sheet creation & placement prior to running script.**
- 2. Create a Sheet identifying the location of the Sheet Notes Detail Group.**



Sheet Genie

Pre-Requisites: Revit File

1. Create ALL plan views intended for sheet creation & placement prior to running script.
2. Create a Sheet identifying the location of the Sheet Notes Detail Group.



Sheet Genie

User Experience

1

SHEET GENIE

View Types

- 3D View
- Ceiling Plan
- Floor Plan
- Schedule

Select all Select none

+ CANCEL SELECT VIEWS

2

SHEET GENIE

View Selection

- LEVEL 01 - id: 1502
- LEVEL 01 DEMOLITION PLAN - id: 1645878
- LEVEL 01 FINISH PLAN - id: 1645908
- LEVEL 01 FURNITURE PLAN - id: 1645898
- LEVEL 01 POWER PLAN - id: 1645918
- LEVEL 01 WORKING - id: 1647619
- LEVEL 02 - id: 1375739
- LEVEL 02 DEMOLITION PLAN - id: 1645928
- LEVEL 02 FINISH PLAN - id: 1645958
- LEVEL 02 FURNITURE PLAN - id: 1645948
- LEVEL 02 POWER PLAN - id: 1645909

Select all Select none

Title Block

30x42 - Landscape

+ CANCEL NEXT

3

SHEET GENIE

SHEET NAME 1	LEVEL 01 DEMOLITION PLAN
SHEET NUMBER 1	A05-01
SHEET NAME 2	LEVEL 01 FINISH PLAN
SHEET NUMBER 2	A14-01
SHEET NAME 3	LEVEL 01 FURNITURE PLAN
SHEET NUMBER 3	A15-01
SHEET NAME 4	LEVEL 01 POWER PLAN
SHEET NUMBER 4	A16-01
SHEET NAME 5	LEVEL 02 DEMOLITION PLAN
SHEET NUMBER 5	A05-02
SHEET NAME 6	LEVEL 02 FINISH PLAN
SHEET NUMBER 6	A14-02
SHEET NAME 7	LEVEL 02 FURNITURE PLAN

+ CANCEL NEXT

4

SHEET GENIE

Discipline

04-ARCHITECTURAL

Legend

Viewport Selection

PW View Title

Sheet Notes

YES

+ CANCEL NEXT

- 1. Select View Type**
- 2. Select Views & Title Block**
- 3. Confirm/Modify Naming & Numbering**
- 4. Discipline Categorization, *Optional* Legend Selection, View Title & *Optional* Sheet Notes (detail group)**



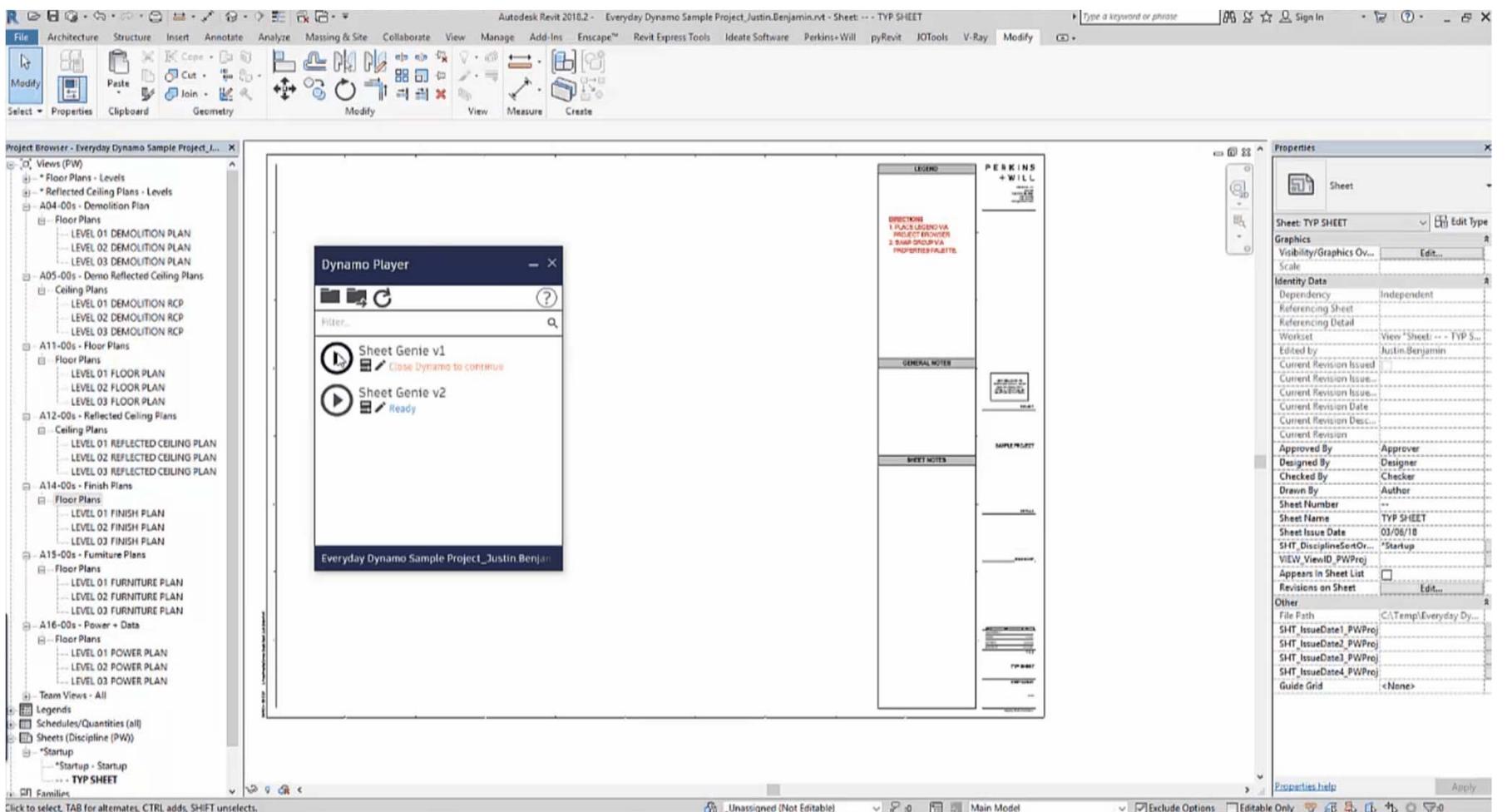
Sheet Genie Script Utilization

Run Script via Dynamo Player

- Select Common Plan Types for each Level (Finish, RCP, etc).
- Uncheck “Sheet Notes.”
- Select Legend applicable to Plan Type.
- *Run Dynamo Script Again (per each plan type).*

Upon script completion...

- Place “Sheet Notes” Detail Group specific to plan type.
- Copy Detail Group and Paste Aligned to Selected Views (isolate by view type).



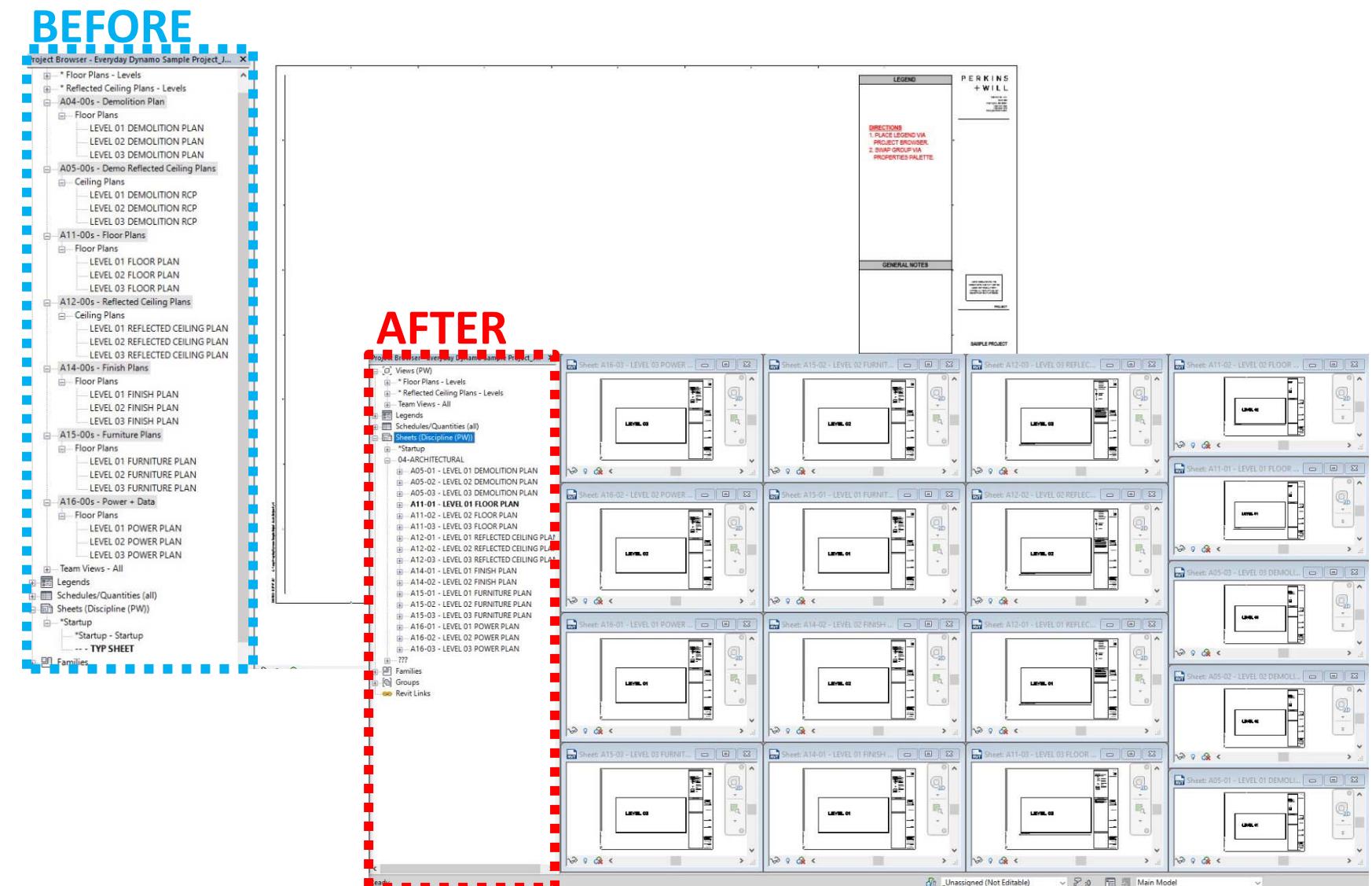
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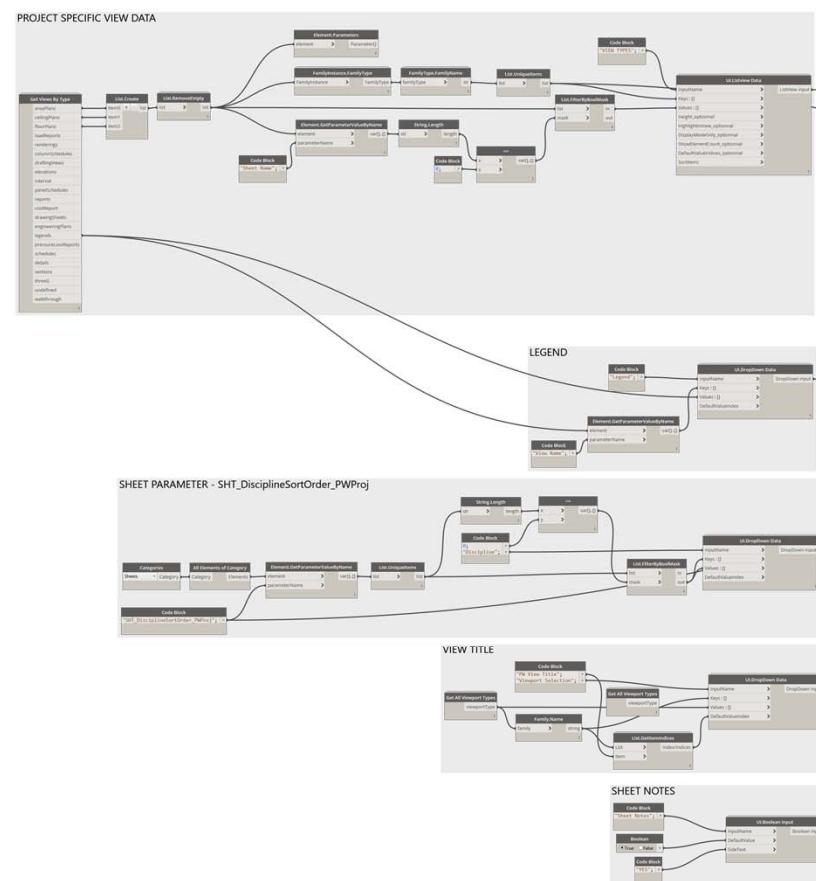
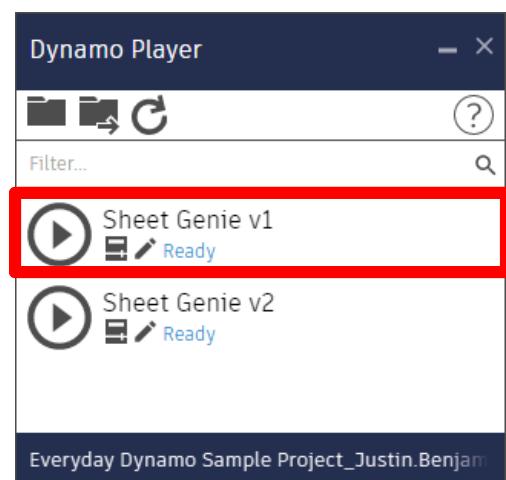
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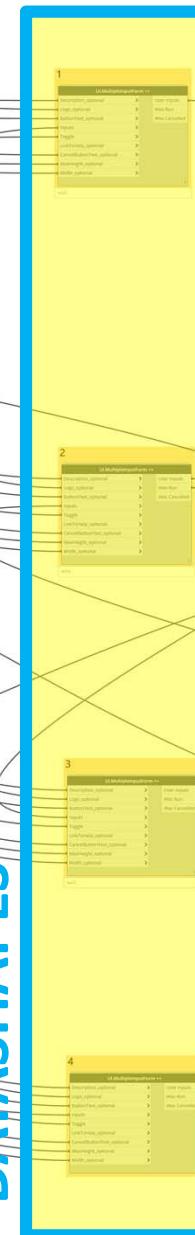


Sheet Genie

DYNAMO: Datashape Key Map

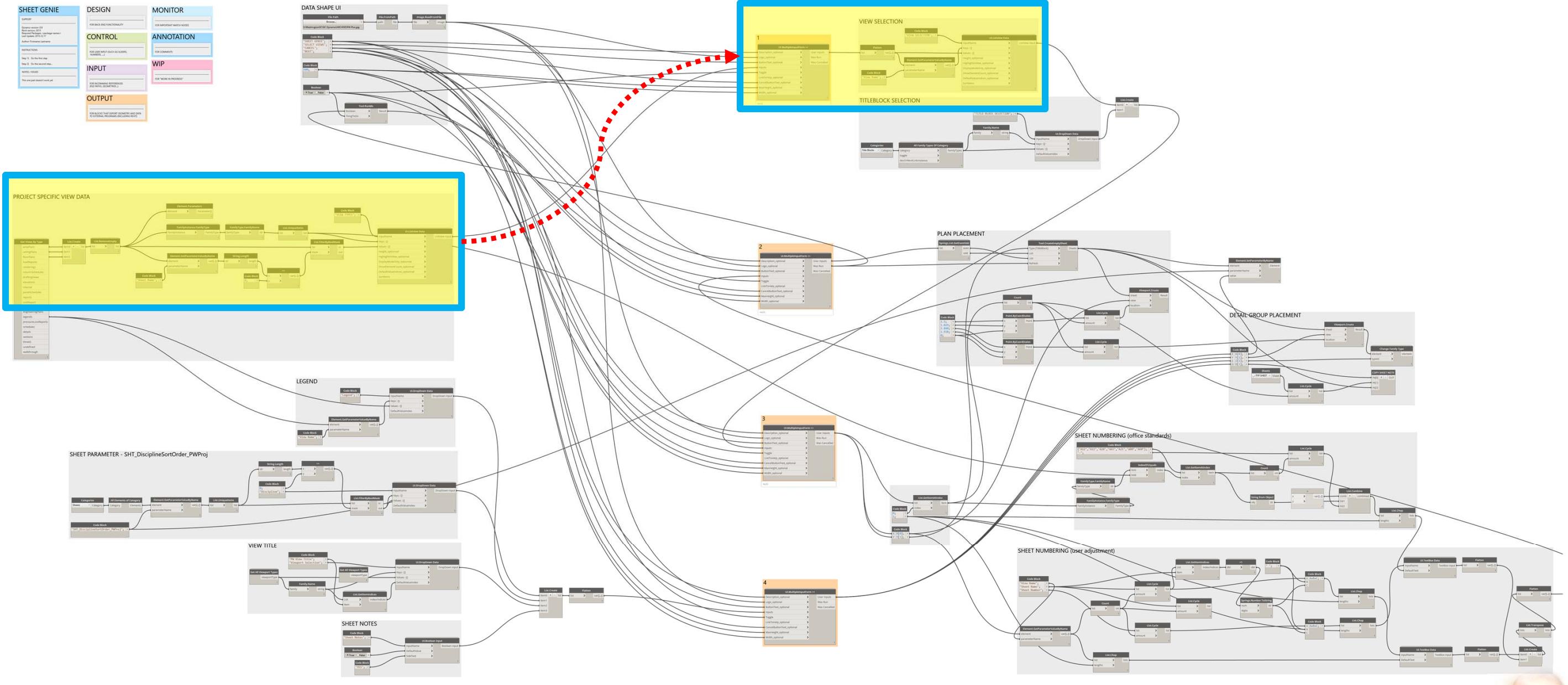


DATASHAPES



Sheet Genie

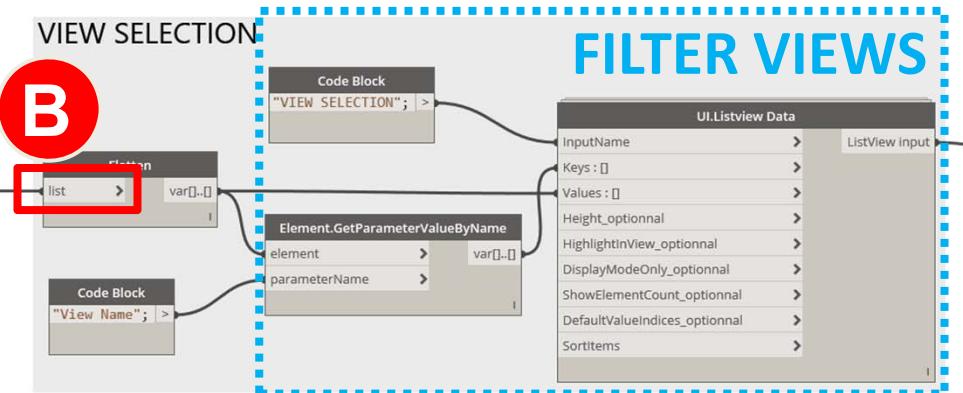
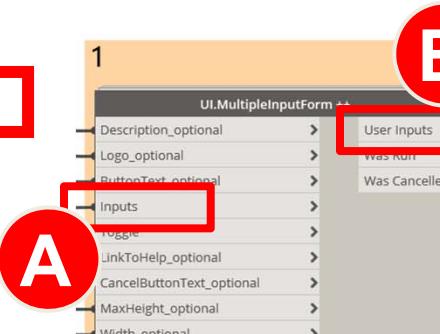
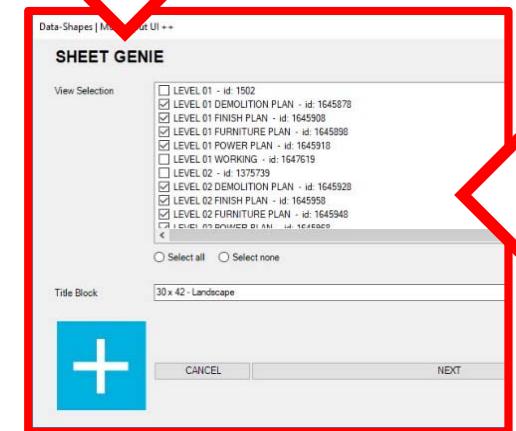
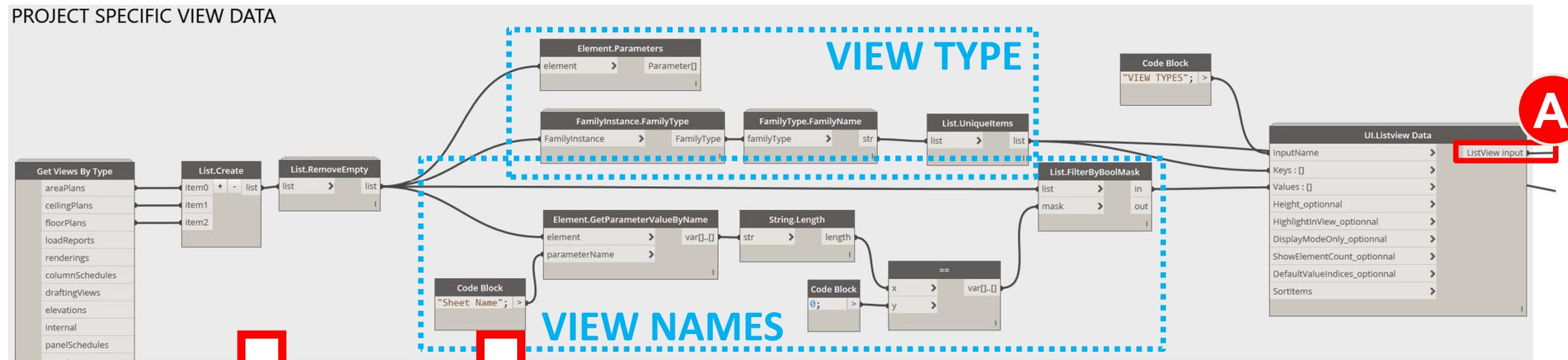
DYNAMO: Datashape Key Map



Sheet Genie

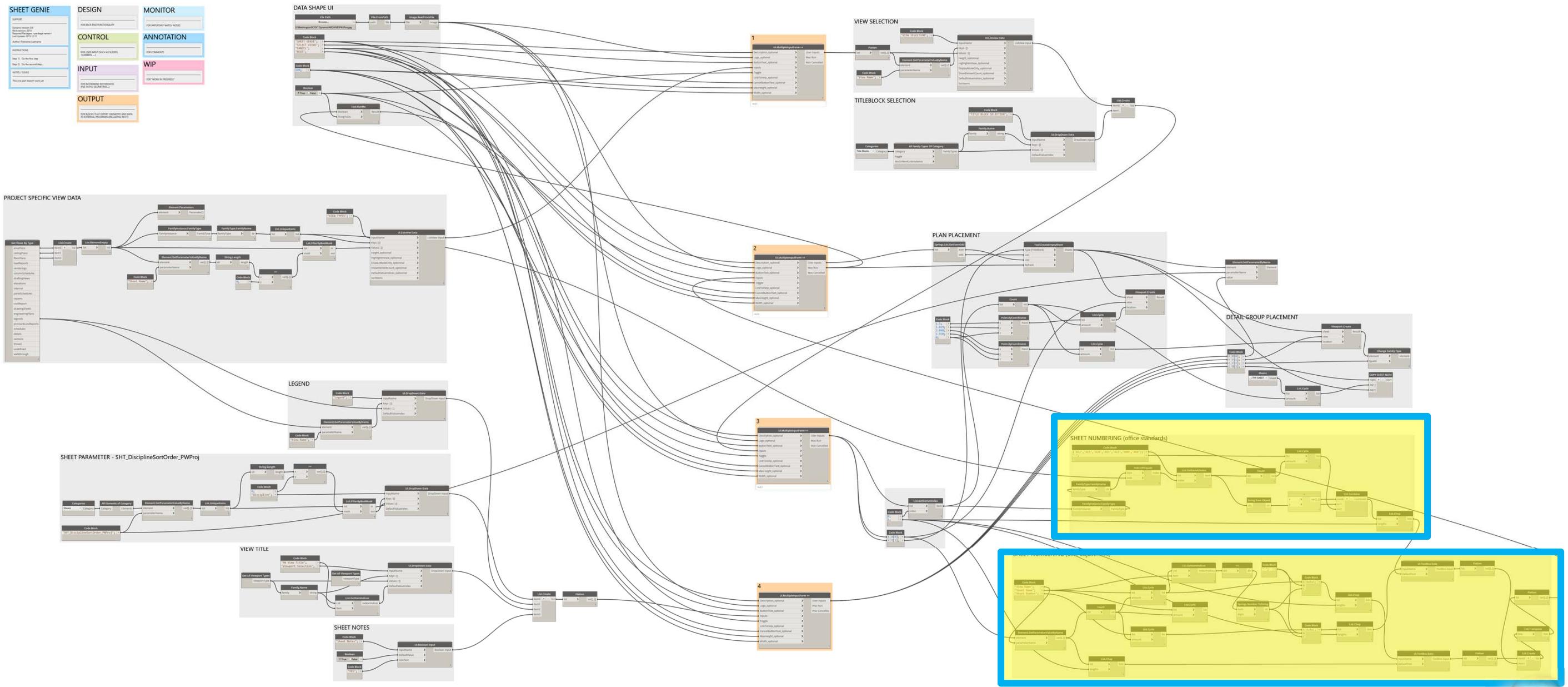
DYNAMO: View Isolation

PROJECT SPECIFIC VIEW DATA



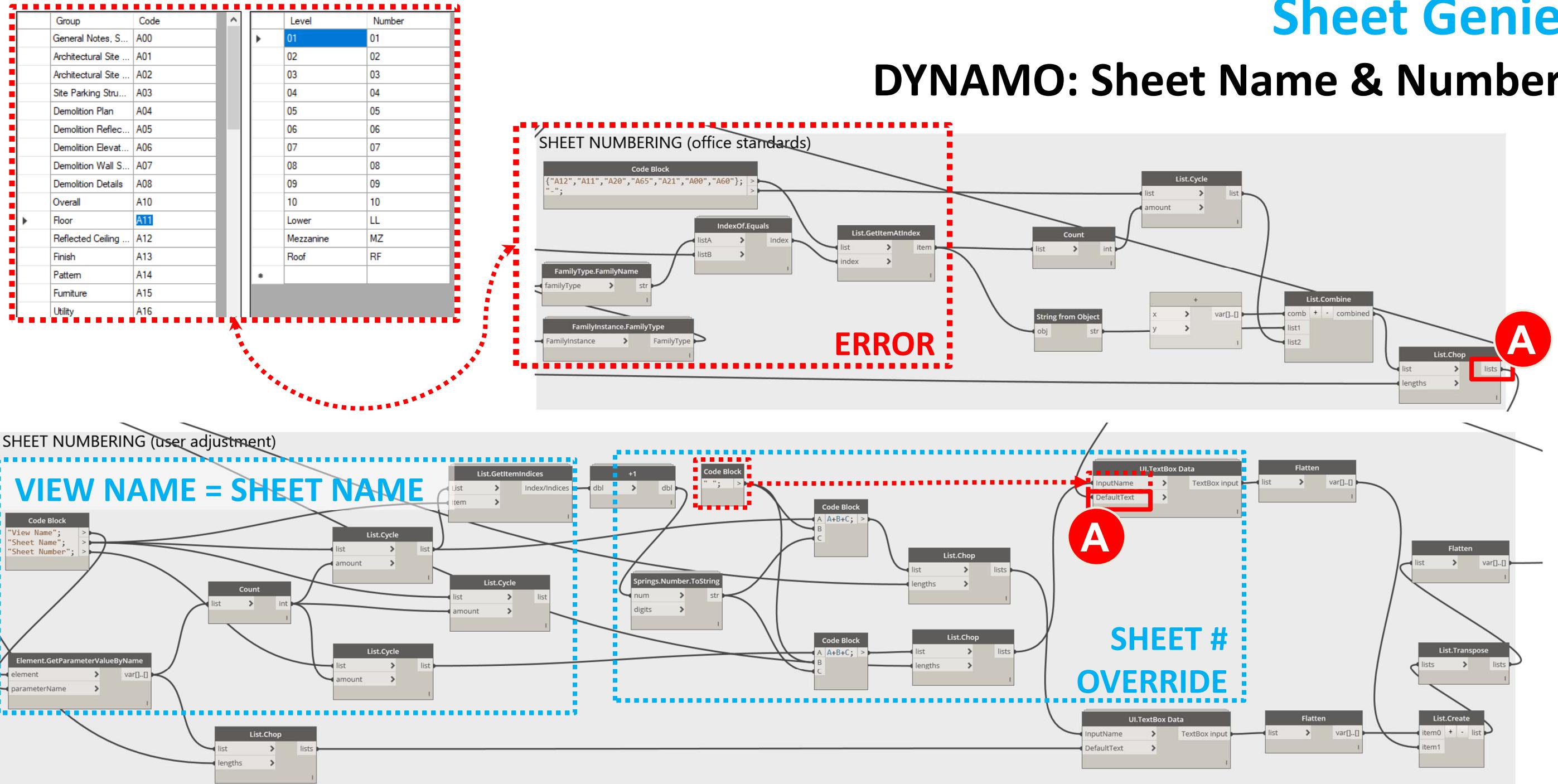
Sheet Genie

DYNAMO: Datashape Key Map



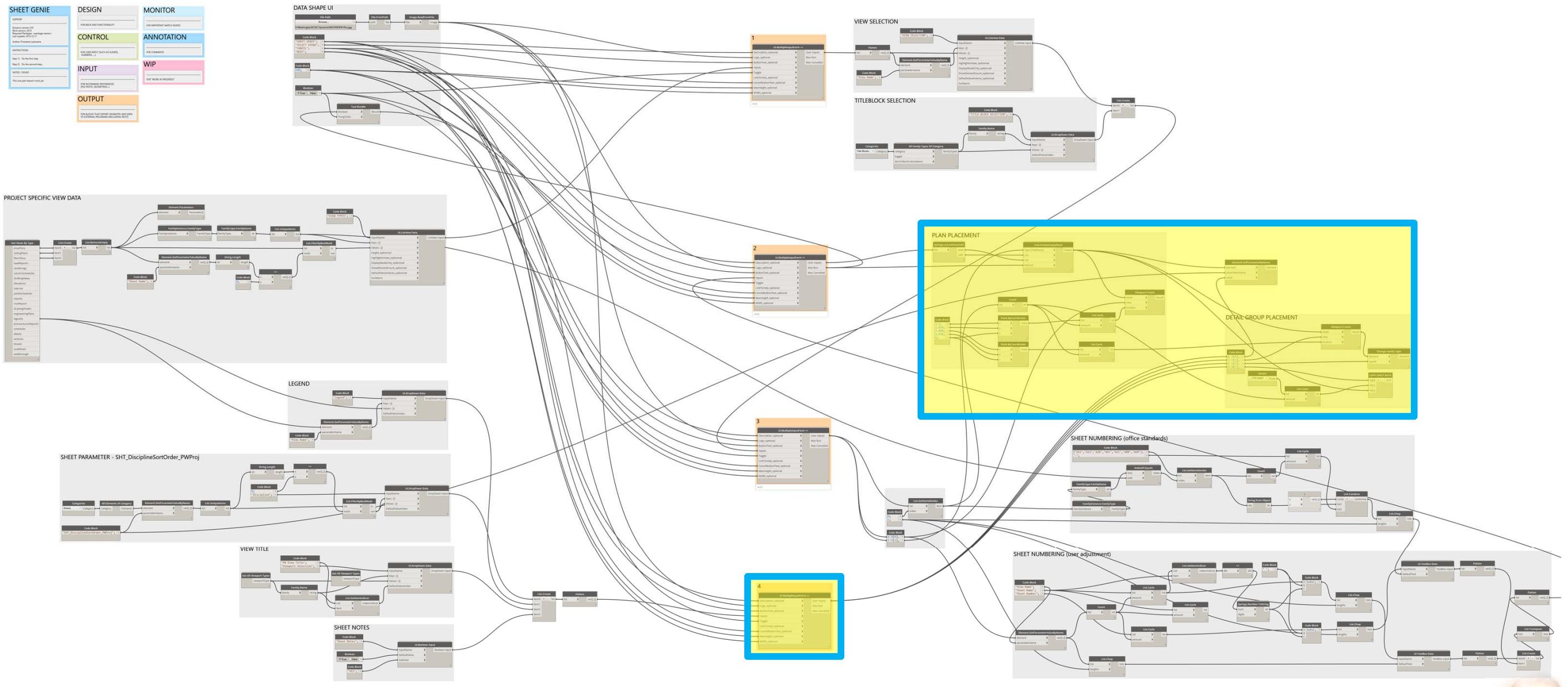
Sheet Genie

DYNAMO: Sheet Name & Number



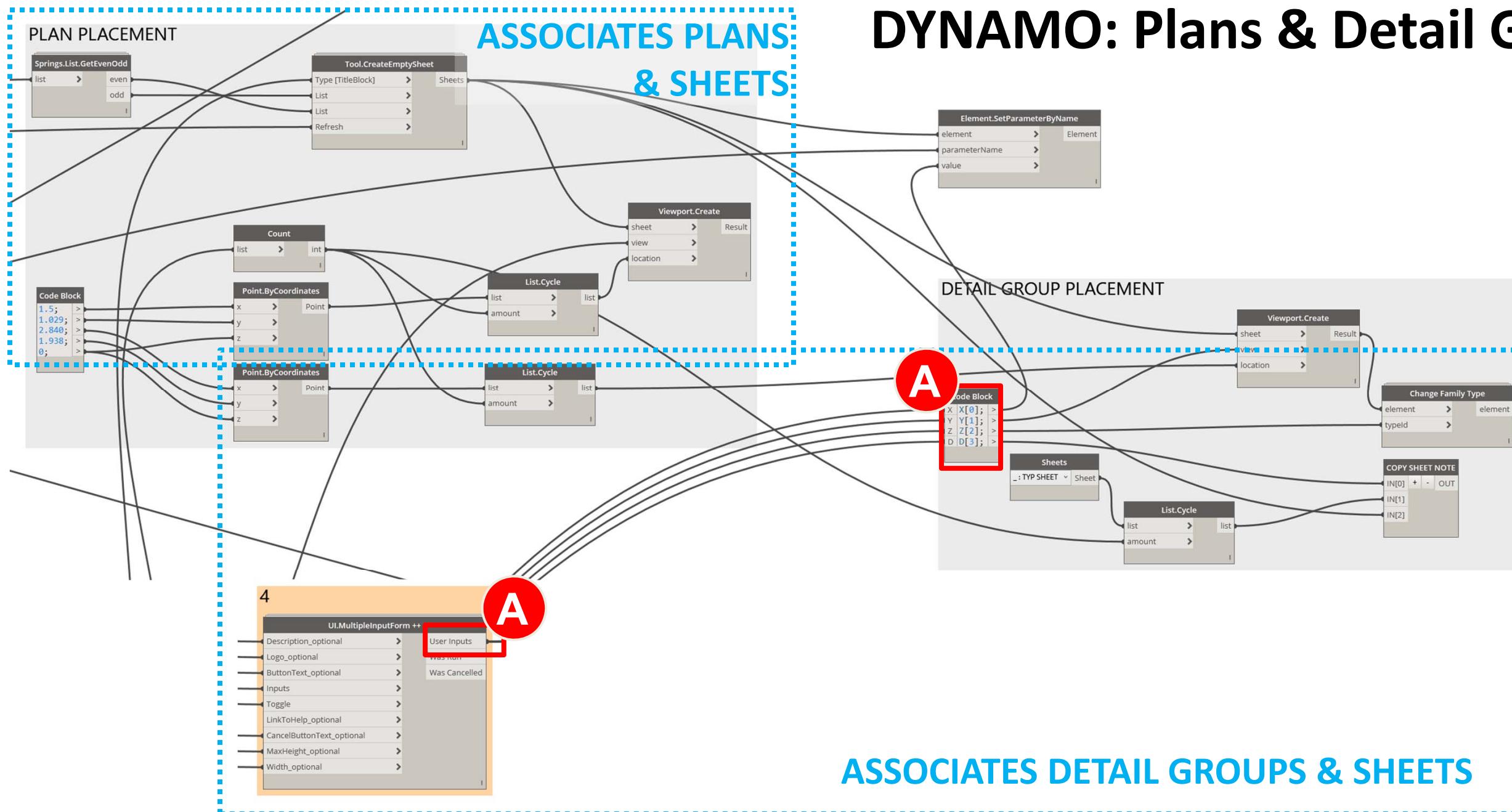
Sheet Genie

DYNAMO: Datashape Key Map



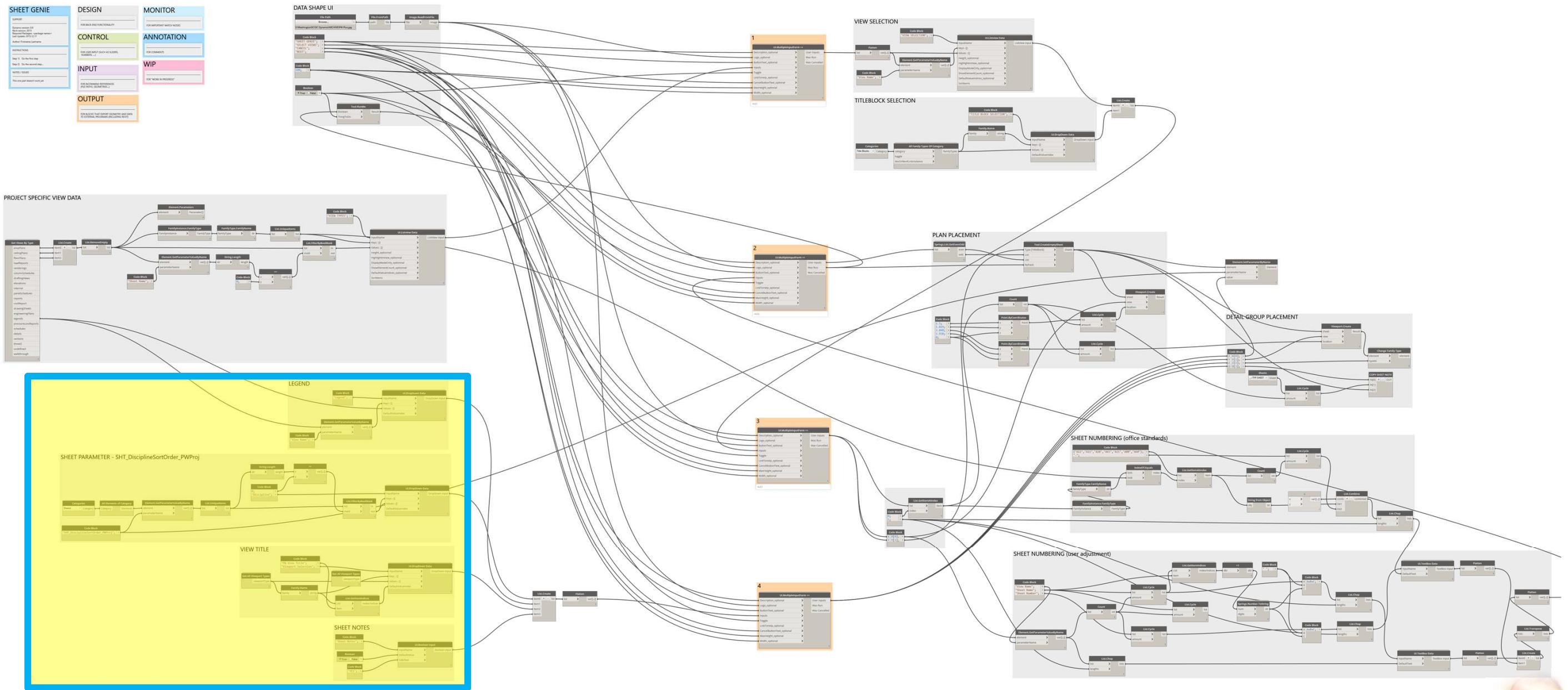
Sheet Genie

DYNAMO: Plans & Detail Groups



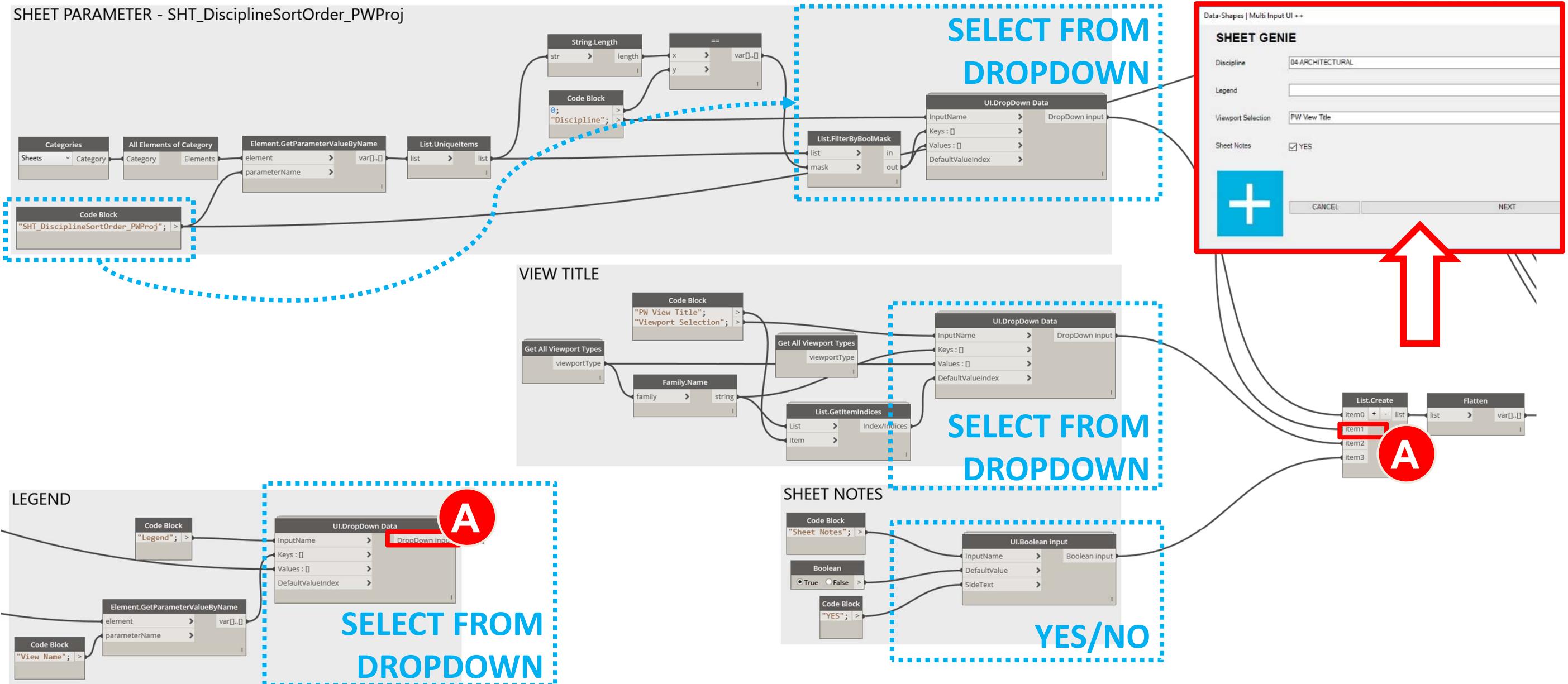
Sheet Genie

DYNAMO: Datashape Key Map



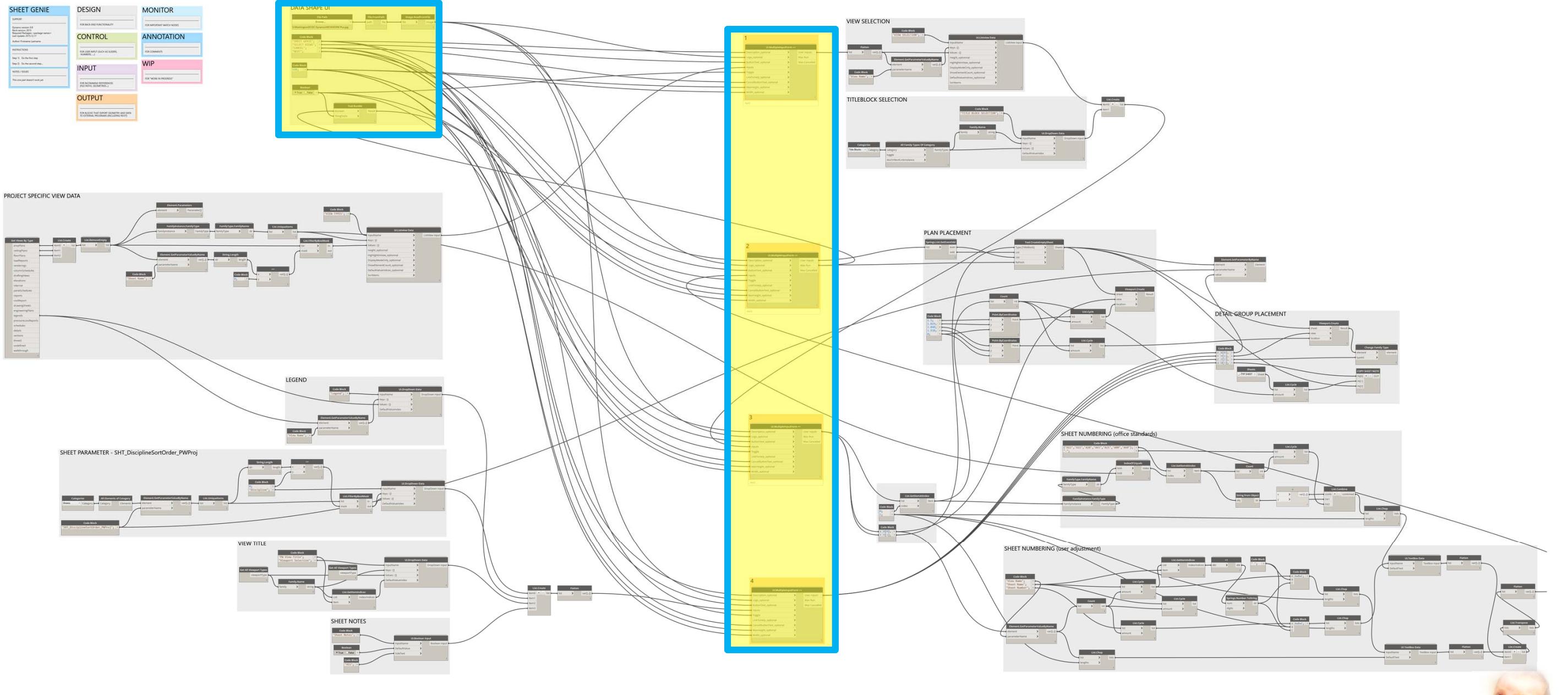
Sheet Genie

DYNAMO: Plans & Detail Groups



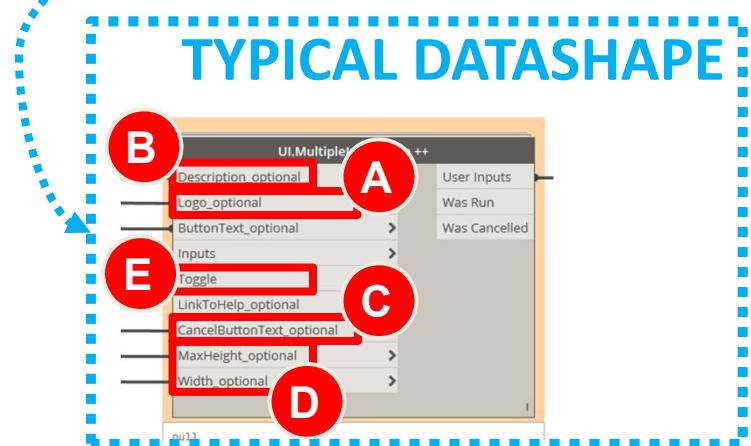
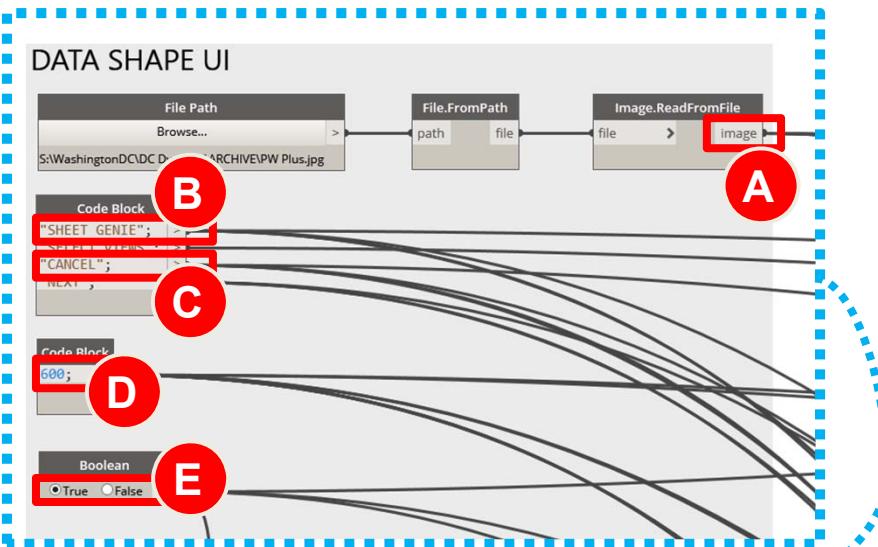
Sheet Genie

DYNAMO: Datashape Key Map

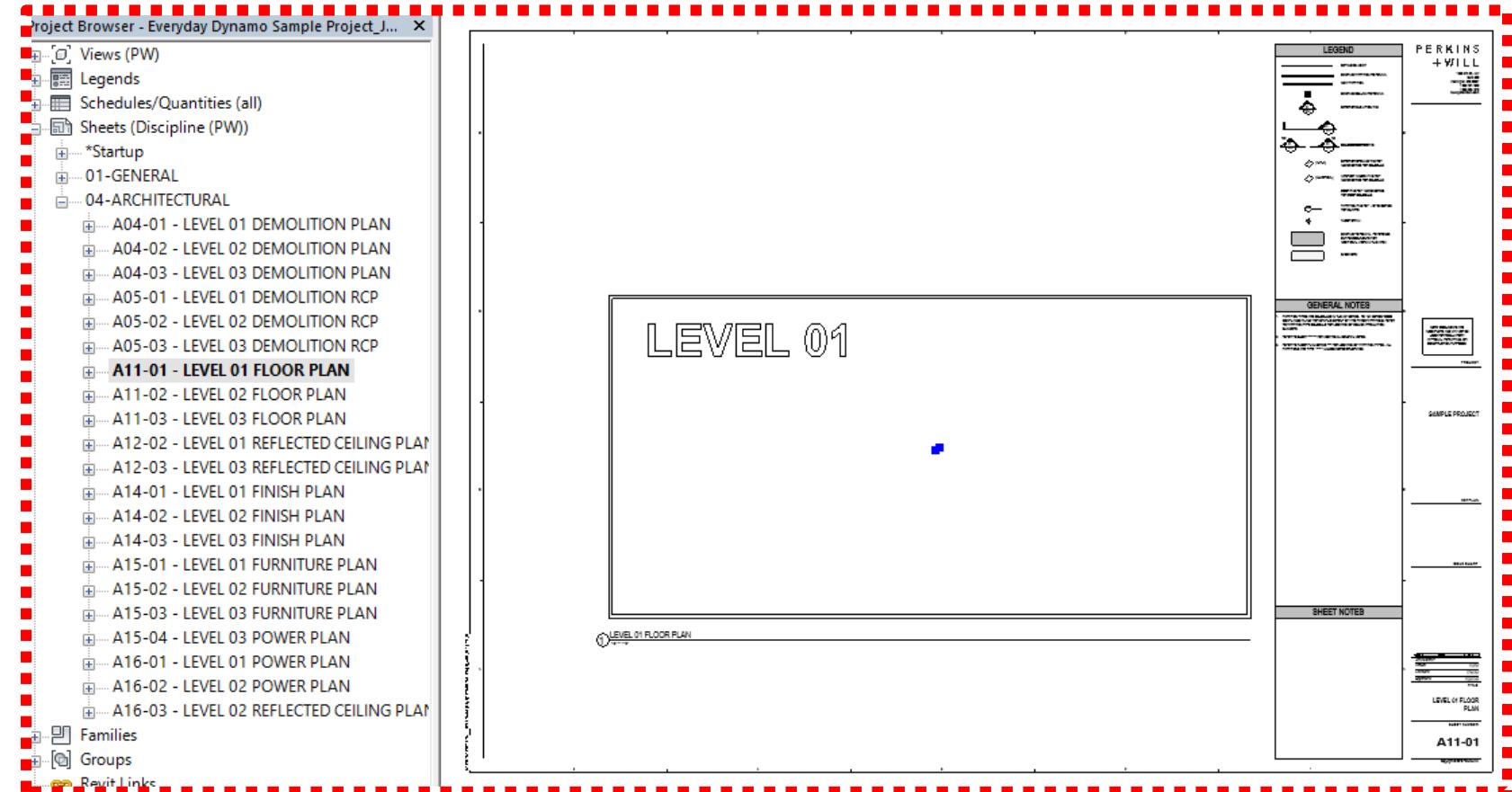


Sheet Genie

DYNAMO: Datashape User Interface



TYPICAL SCRIPT DELIVERABLE



Tips & Tricks

Tips & Tricks

Reference Websites

- dynamobim.org



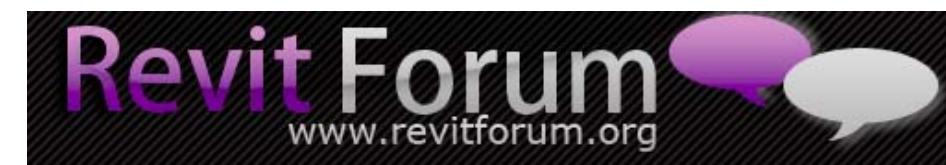
The Dynamo Primer

For Dynamo v1.0

- dynamoprimer.com

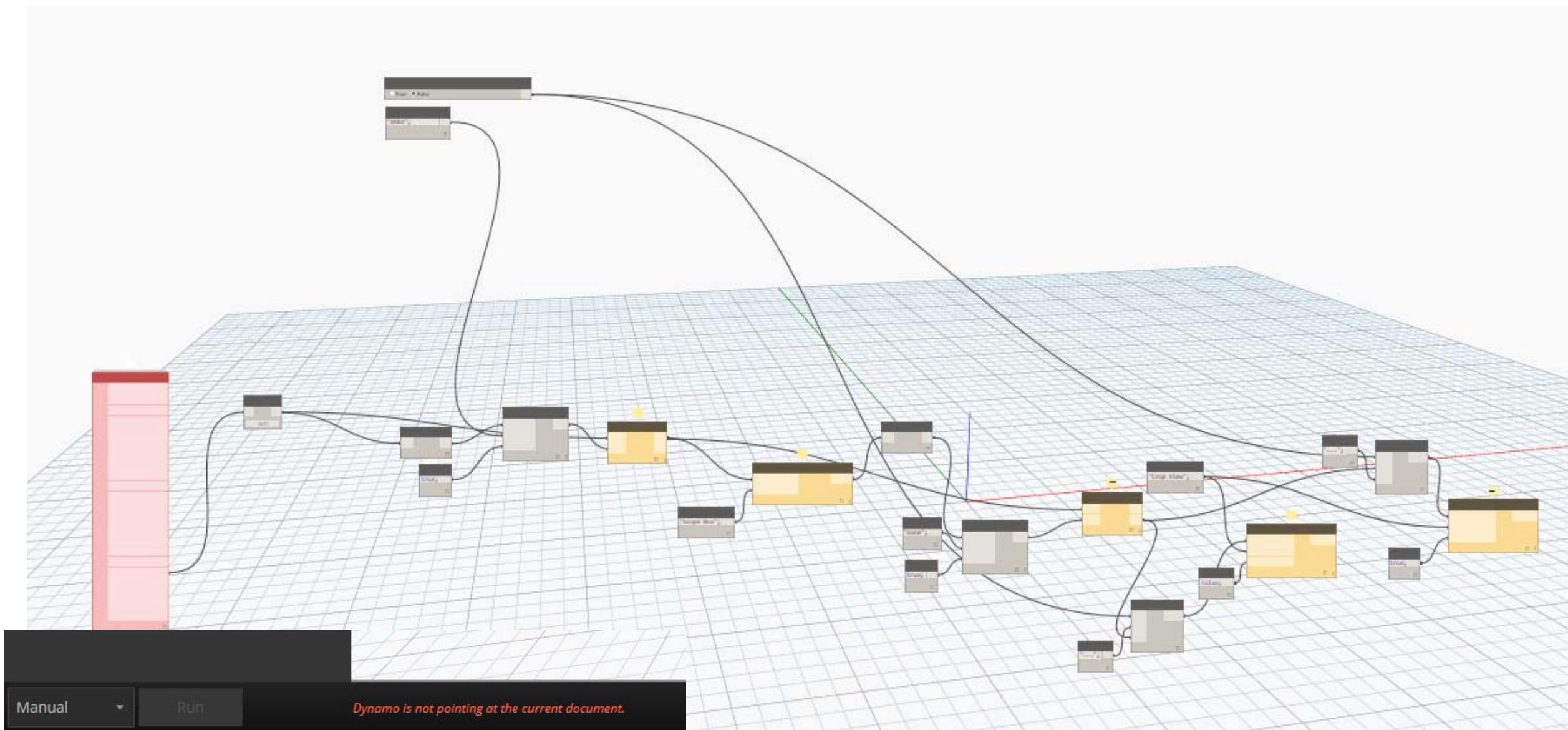


- revitforum.org/dynamo-bim/



Tips & Tricks

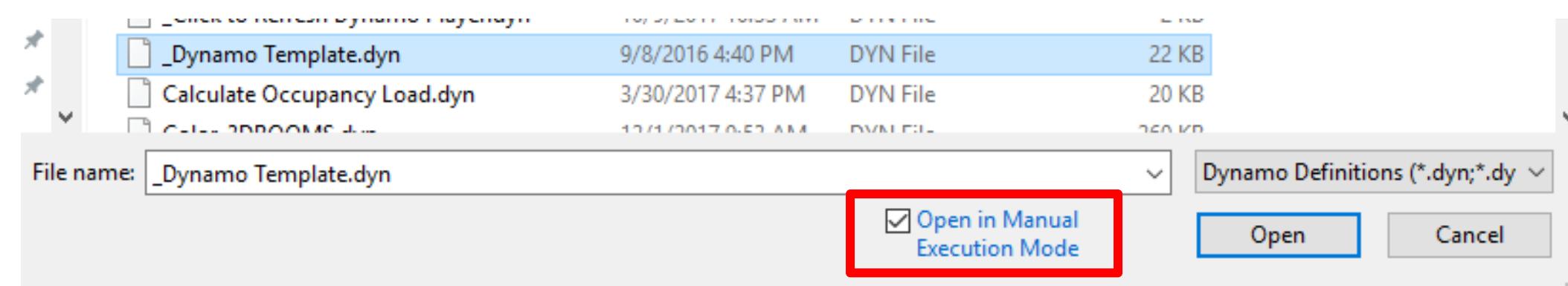
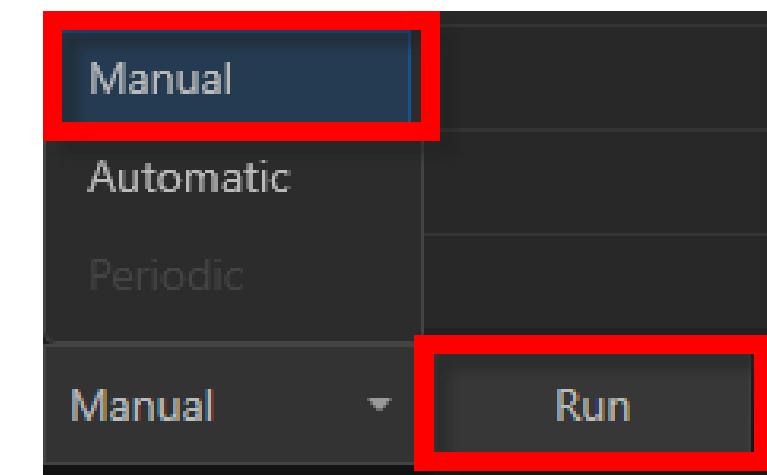
Look for Yellow and Red Nodes



Tips & Tricks

Run Manual Mode

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



Tips & Tricks

WTF Moments

Close and Reopen Script (Revit tethering)

- Critical, especially when Testing
- Process Example

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

No Commands Active in Revit

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

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

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.



CLOSING

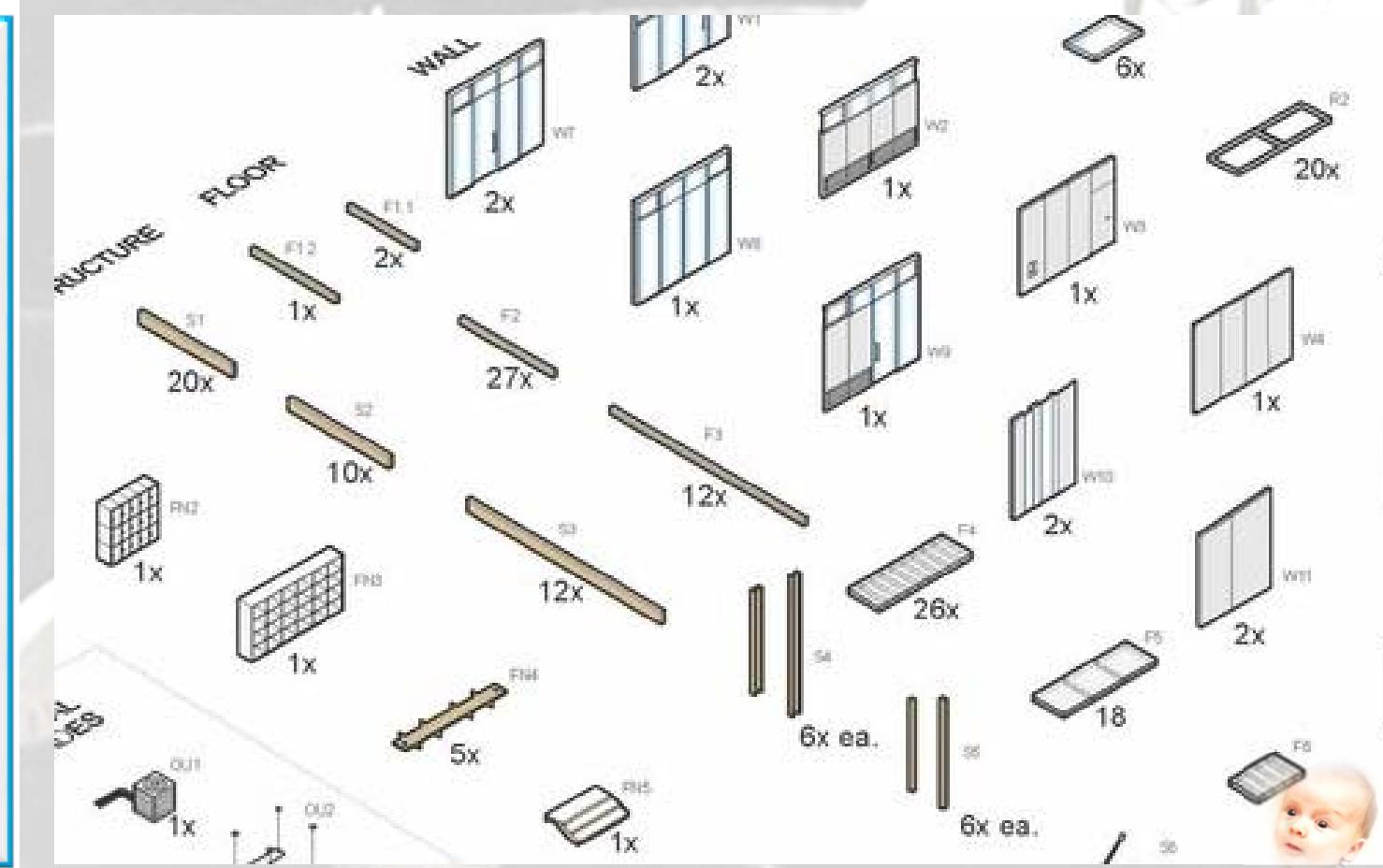
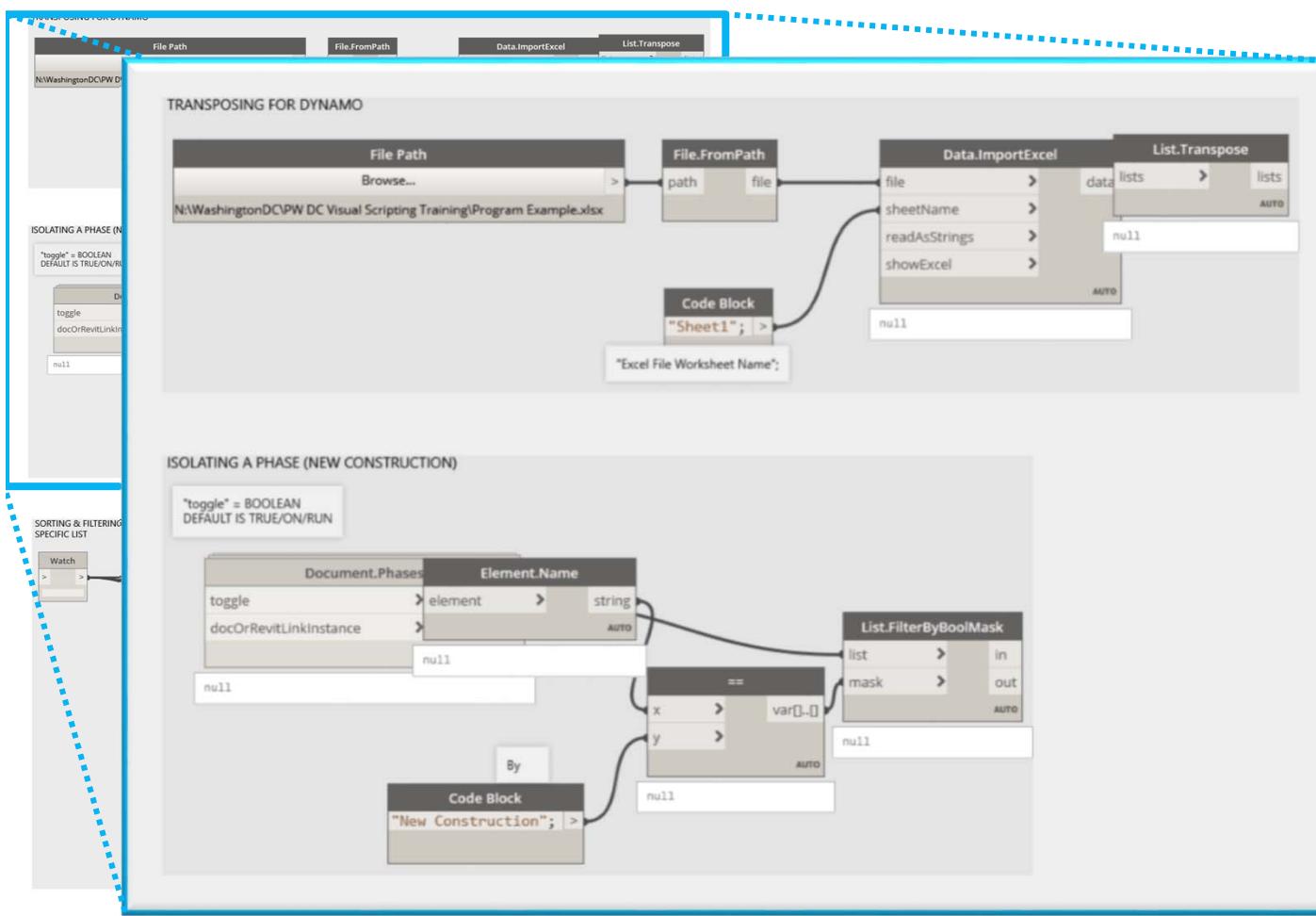
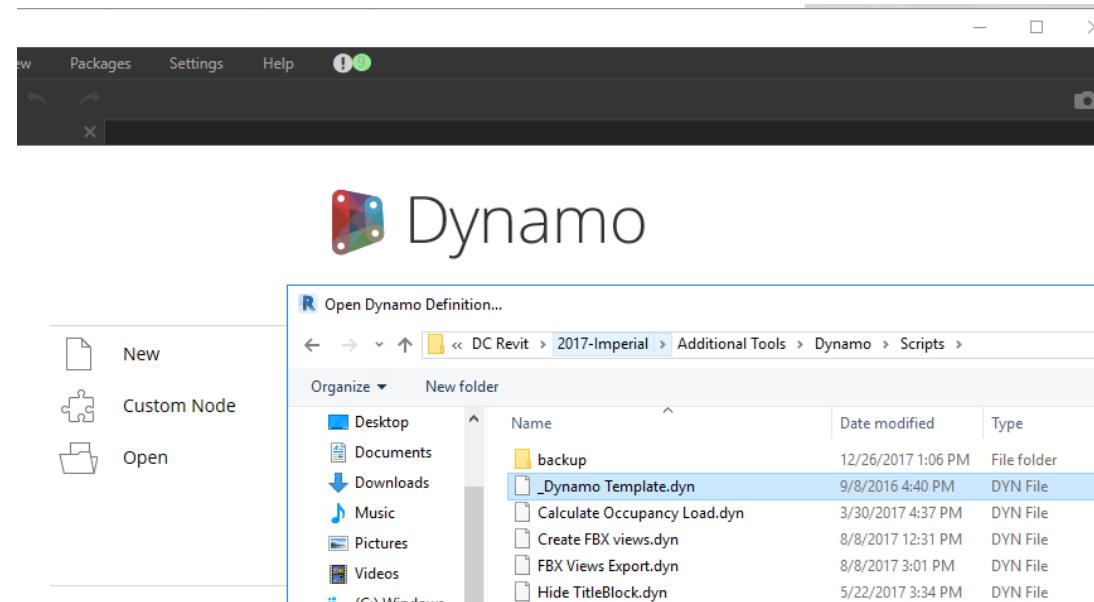
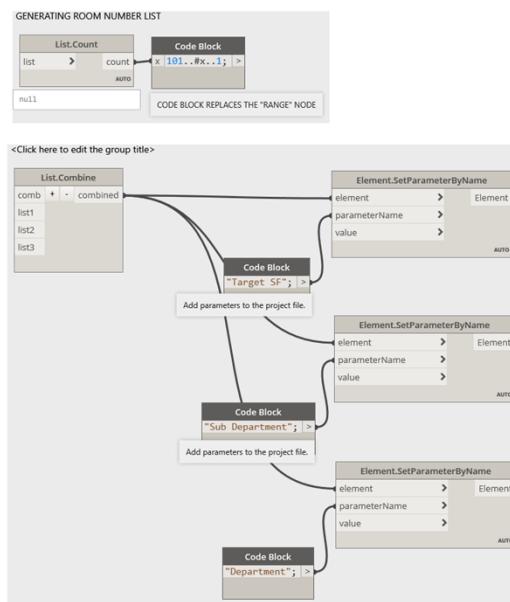
CLASS OVERVIEW

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- Increase Familiarity with **various nodes and methods of combining them** to perform common tasks
- Learn how to **present a User Interface with Dynamo Player** to allow greater flexibility and script use
- Discover how to **automate Dynamo running on projects** and examples of how it can be useful
- Learn Tips & Tricks and **lessons learned when setting up dynamo for a company and deploying it** and scripts

CLASS OVERVIEW

TAKE AWAY...



QUESTIONS???

The Twitter



@solamour

@JBenjamin1930



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.





Make anythingTM

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