AS463668

Dynamo isn't Magic but these Tips and Tricks might seem Magical

Carl Storms
BIM Track

Version 2.1

Learning Objectives

- Learn some new tips for your everyday Dynamo workflows and graphs
- Find out what some of the new features of the latest version of Dynamo
- Learn about some great Dynamo packages and extensions available for Dynamo 2.x
- Learn some new tricks to improve your graph efficiencies within Dynamo 2.x

Description

In this session we will explore some Dynamo tips and tricks to improve your workflow, add efficiency to you graphs and maybe even add a little fun to your day.

We will look at some simple tips that you can be easily added to your everyday workflow to add automation and increase efficiency. We will also explore some more complicated tips and tricks, that are less general, and designed for specific AECO workflows. We will also spend some time looking at tricks that take advantage of the latest Dynamo updates, including Dynamo extensions for Dynamo 2.x Then we will wrap it all up by looking at some of the packages that make these tips and tricks possible.

While the general flow of this class will be exploratory and fun, the tips and tricks reviewed will be able to help increase efficiency and productivity within your everyday Dynamo workflow.

QR Code to access the latest version of this handout and presentation

Speaker

Carl Storms – Technical Solutions Lead
BIM Track

Drawing on his 20+ years of experience in architecture, engineering, and construction, Carl shares a practical and well-rounded understanding of BIM with clients. He has worked in residential and commercial architecture, as well as construction, with 10 years of teaching experience at both the collegiate and industry level. This experience aids him in providing the business case for BIM and how it makes the most of collaboration, coordination, design tools, and processes.

Through implementations, instruction, mentoring, webinars, and global speaking engagements, Carl assists the AECO community with the adoption of design technology and BIM processes. As someone who truly enjoys the process of building information modeling, Carl spreads his love of all things BIM via Twitter @theBIMsider, on his Blog thebimsider.com, or as a co-host on AECO Industry Podcasts: BIMThoughts, The BILT Academy Podcast, The Simply Complex Podcast, and BluePrints.

Session Handout and Presentation

Get the most current PDF version of this handout and presentation using the Dropbox link below:

https://www.dropbox.com/sh/t37yhhqqnpnfkc3/AABL0nCB0WlGkZACz-qj-urYa?dl=0

Table of Contents

Introductions 6

Tailored Expectations 8

What's New 9

Dynamo for Revit 2.6.1 9

DynamoCoreRuntime (Sandbox) 2.8.0 12

More Integrations 14

More Info 14

Learning and Sharing 15

Try It 15

Speaking of the Dynamo Forum 15

Use the Most Current Version 16

Learning 16

Teaching 17

Use a Template 18

List @ Level 19

Lacing 20

Naming Convention 21

Learn a Little DesignScript 22

Wise Words from the Aussie BIM Guru 23

Have Fun 24

No Work is Ever Wasted 24

DynaThanos 24

Code Block Fun 25

Emojis 26

Quick and Dirty 27

Resize Notes 27

Comment Your Code 28

Shift + Left Click 29

Play in the Sandbox 29

Node to Code 30
Make use of Dynamo Player 31
Dynamo Player Trick 31
Store Pics with Your DYNs 32
Keyboard Shortcuts 32
Mixed Bag 33
Links in Code Blocks 33
Links with Python 33
Category.ByName 34
Category.ByName & Code Block 35
Library Canvas 36
Dynamo Resources 37
Data.Remember 43
If Statement Hack 43
Dynamo Hack for In-Place Families 44
Whoops 45
Packages and Extensions 46
Essential Packages 46
Monocle 47
Monocle to the Rescue 47
DynaStandard 48
26 Dynamo Packages You Should Check Out 49
Orkestra 50
bimbeats 50
Final Thoughts 51
The Steps 51
Beware of Reality 52
Is it Worth it? 53
Dynamo is Not Always the Answer 54
Bonus Tips & Tricks 55
List.AddItemToFront 55

The Value of a Dictionary 56
YourDesk University Video Tips 58
Resources 60
Past Labs and Presentations 60
Blogs & Websites 61
Courses & Training 62
Free Graphs 63
Podcasts & Videos 64

Introductions

I've had some help from some **Dynamo AllStars** with some of the Tips & Tricks.

When you see a badge like this, the tip or trick came from a Dynamo AllStar

John Pierson

Before we even get started, I would like to give a **HUGE** thanks to all the **Dynamo AllStars** that shared some of their Tips & Tricks for this session!

Zach Kron

Lisa-Marie Mueller

John Pierson

Jason Boehning

Dana De Filippi

Marcello Sgambelluri

Sean Fruin

Sol Amour

Gavin Crump

Paul Aubin

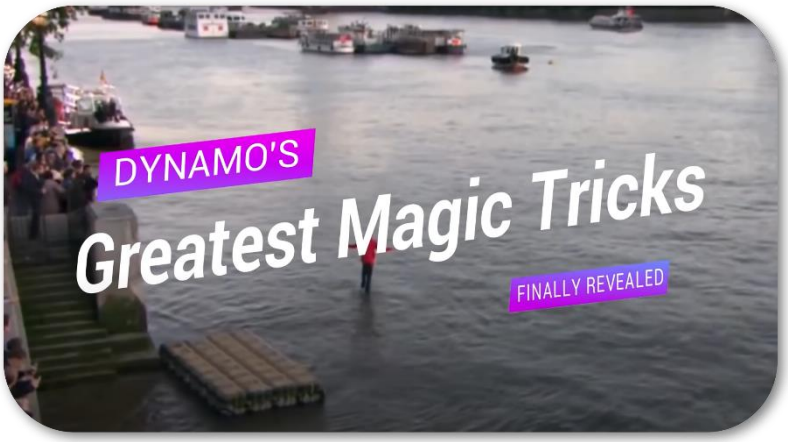
Jacob Small

Colin McCrone

Adam Sheather

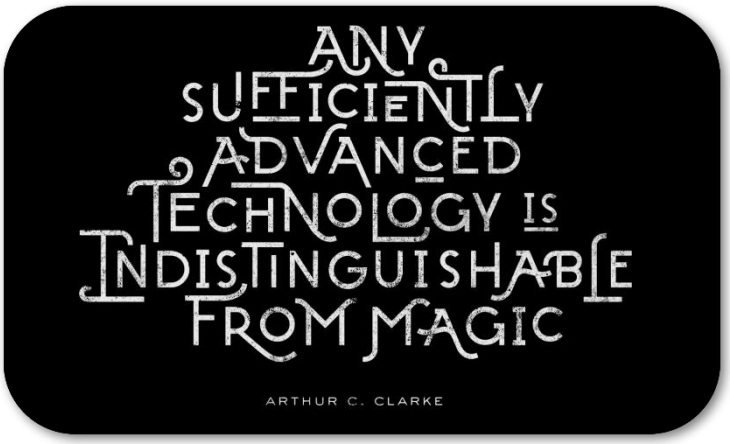
Tailored Expectations

To begin we will get it on the record that Dynamo is **NOT** magic. Wait scratch that lets be clear DynamoBIM is **NOT** magic. Dynamo **IS** a magician, that had a famous television show *Dynamo: Magician Impossible,* but other just perfect to reveal his secrets.



YouTube Video: Dynamo's 7 Greatest Magic Tricks Finally Revealed | FactorFusion

However I think we can all agree that DynamoBIM **IS** an **Advanced Technology.**



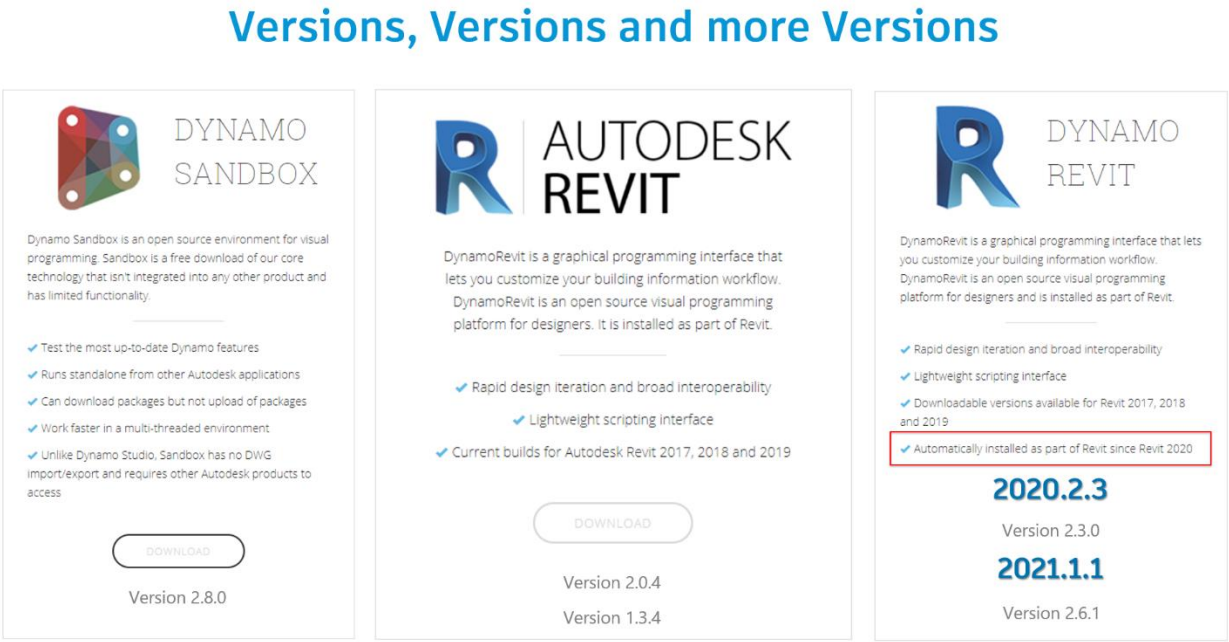
Famous Arthur C. Clarke Quote

Lets also agree that from here on we can just call it…

Dynamo

What's New

To start it is important to know what the latest version of Dynamo is, as it is constantly changing. You can find out all the latest info on what the current versions are of all the Dynamo flavors on the Dynamo website under the "Get Dynamo" button, or if you are brave you can also download a "Daily Build". For this session we will focus on some the key new features for the lasts Dynamo for Revit version (2.6.1) and the latest DynamoCoreRuntime (Sandbox) version 2.8.0.

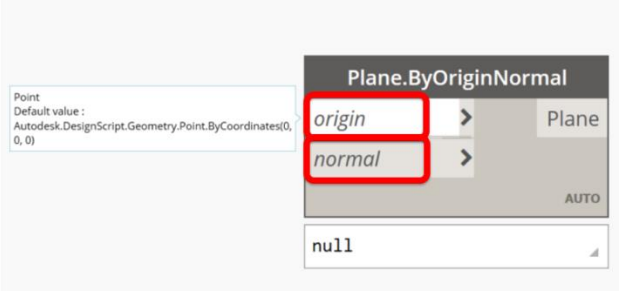


Dynamo Versions

Dynamo for Revit 2.6.1

- Inputs ports that have a default value noe show in ***italic*** font.

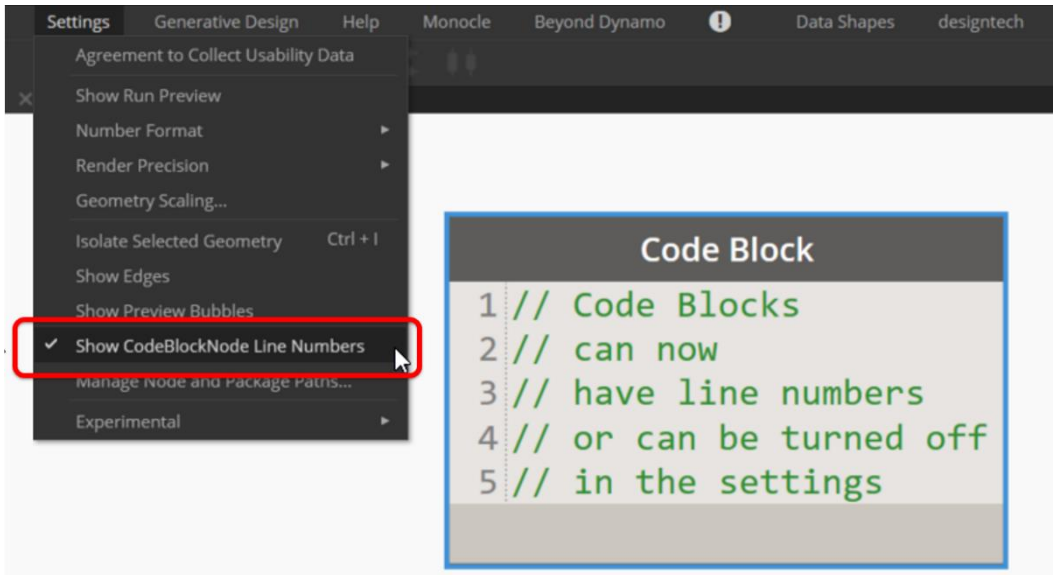
No Default Value



Default Value

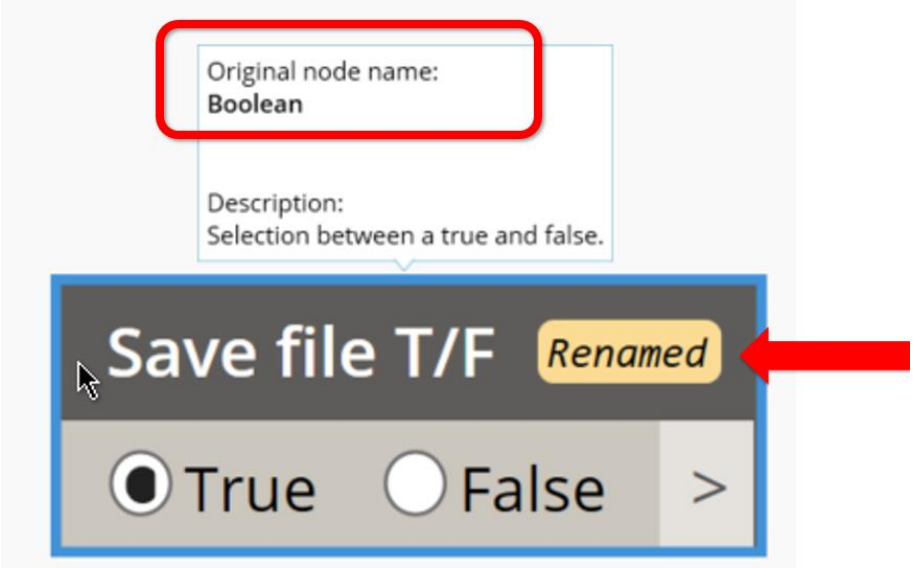
Italic font

- Code Blocks can now show **line numbers**, or be turned off in settings



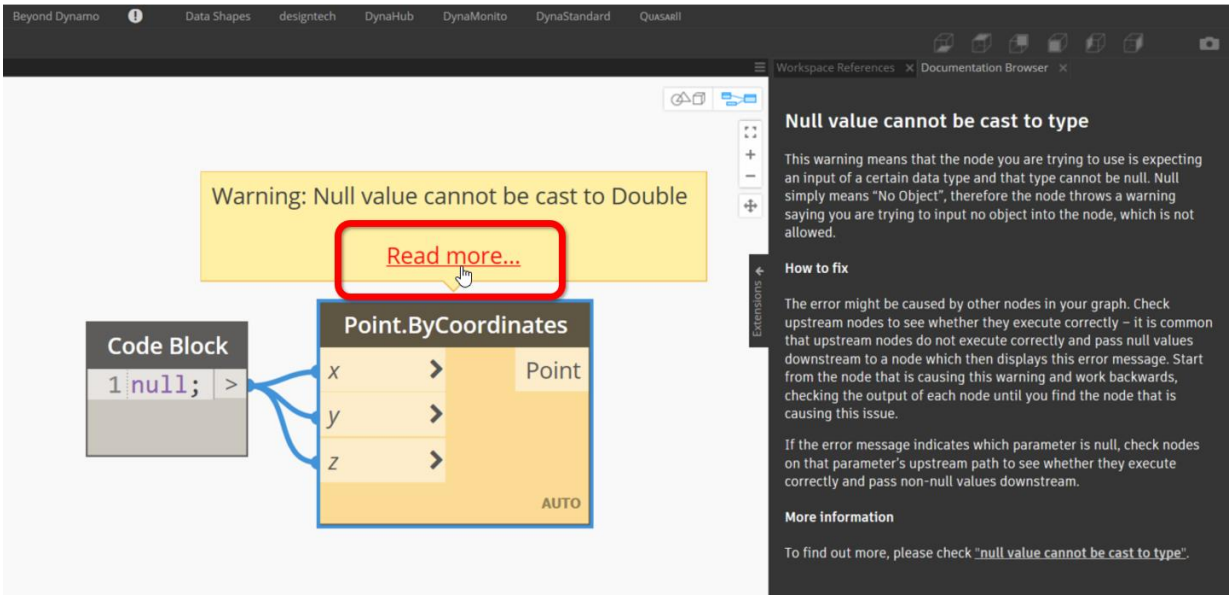
Line numbers

- New Rename Tag for all nodes that are manually renamed



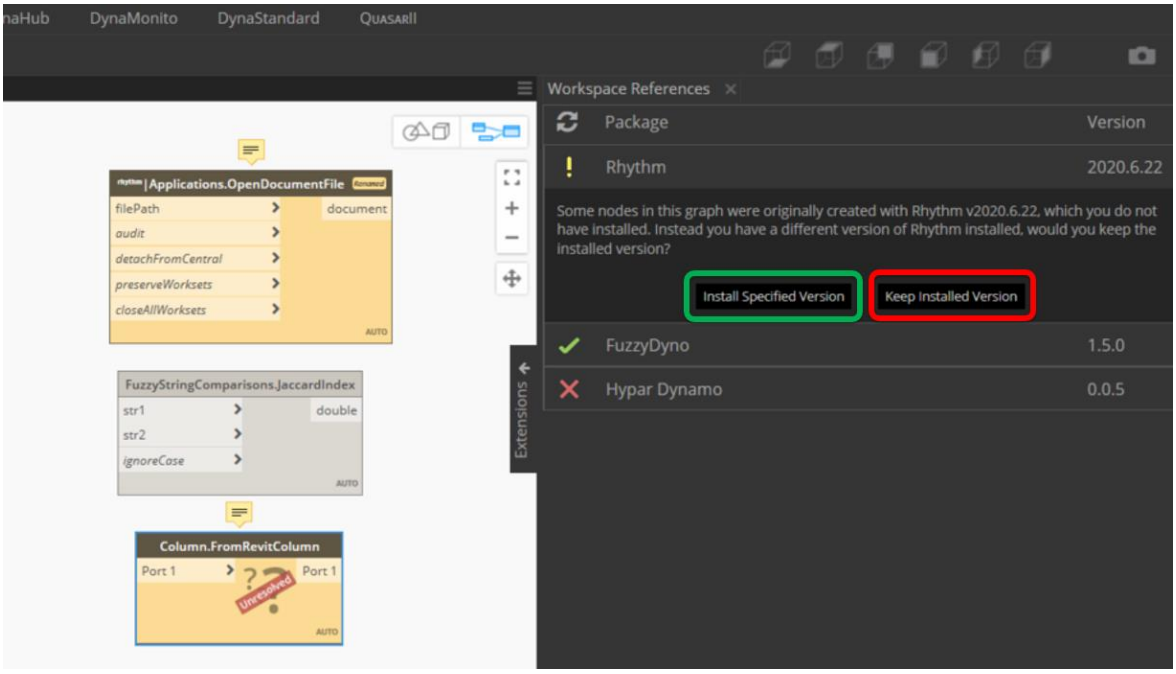
Rename Tag

- A **Documentation Browser** extension to show more info on **the 30 of the most common errors**



Documentation Browser

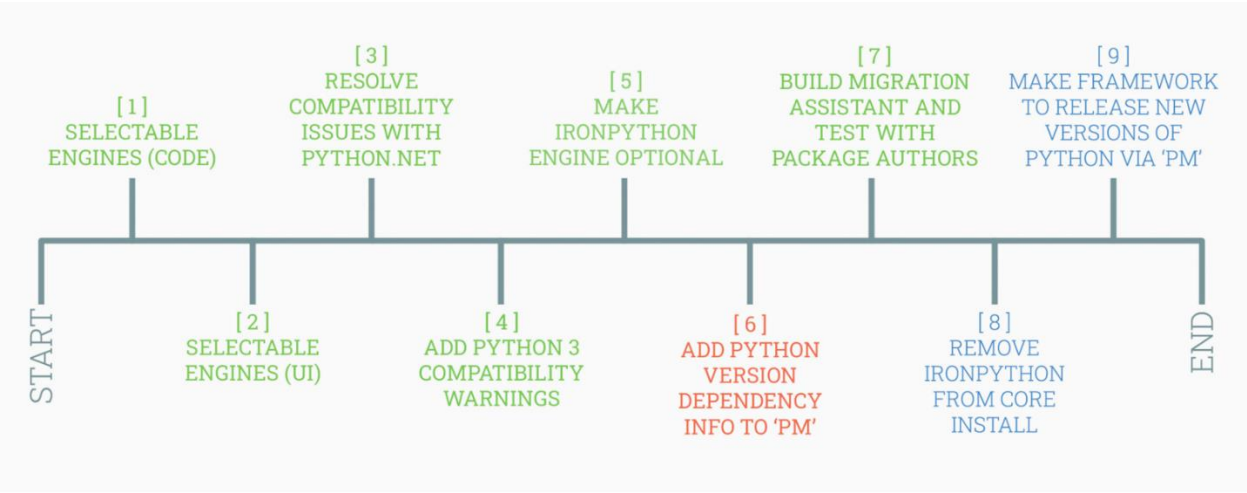
- A **Workspace Reference** extension to help you keep your graphs up to date (new in version 2.5)



Workspace Refernce

DynamoCoreRuntime (Sandbox) 2.8.0

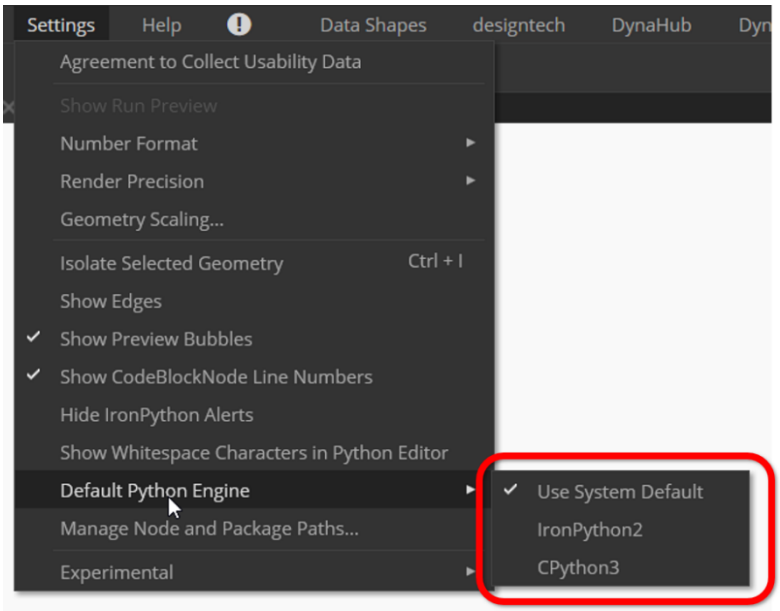
- All about the move to **CPython 3**



•Green are included in the Dynamo 2.8 release.
•Orange are currently being worked on – all at various stages of completion.
•Blue have not yet been started.

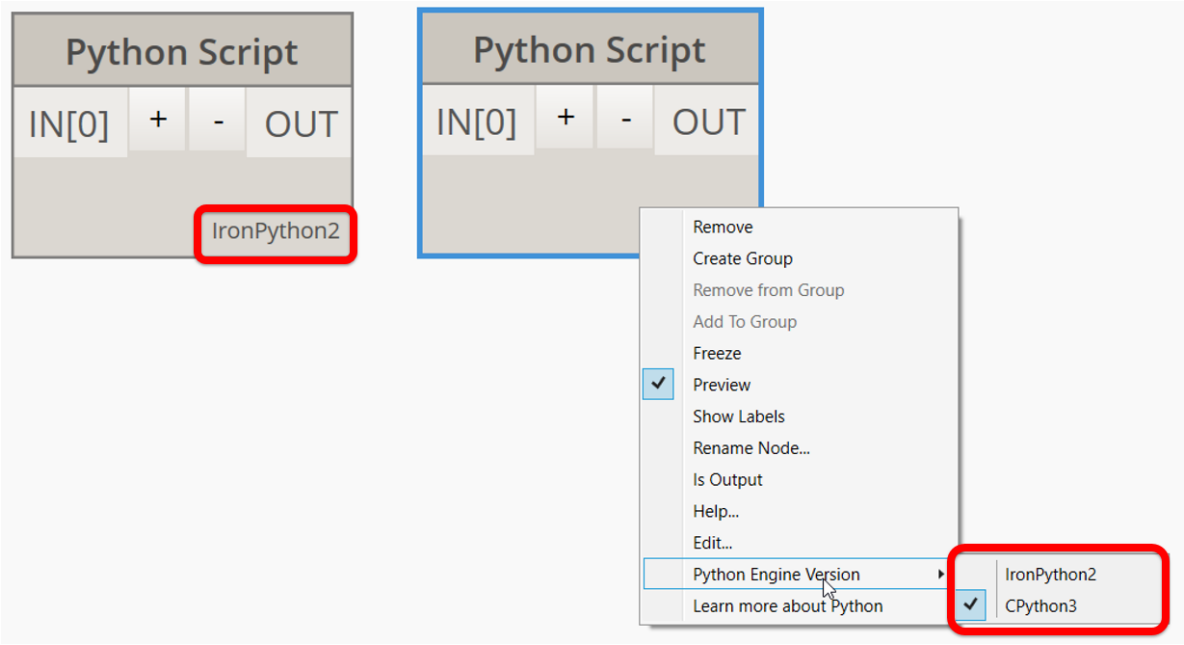
CPython 3 - Source

- Set the **Default Python Engine**



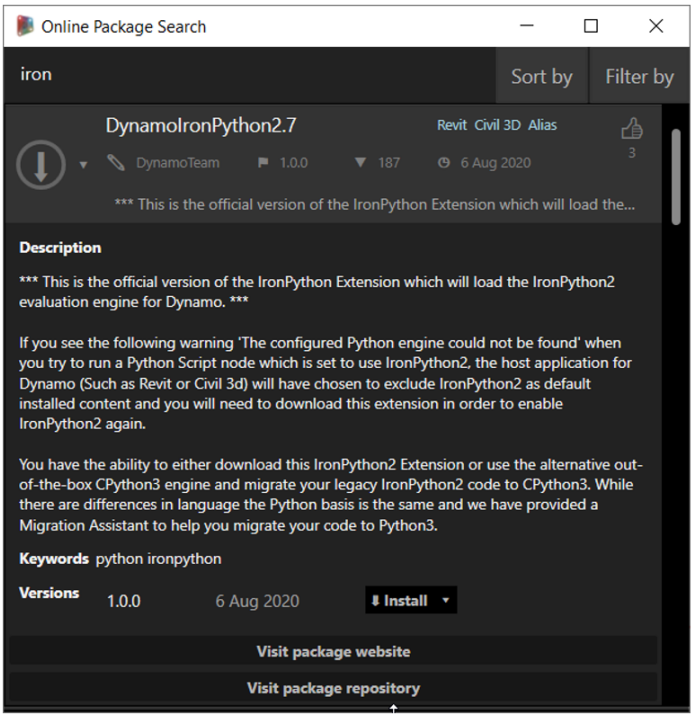
Default Python Engine

- Default Pythin engine selector using **Right Click** menu on the Python Script node (new in version 2.7)



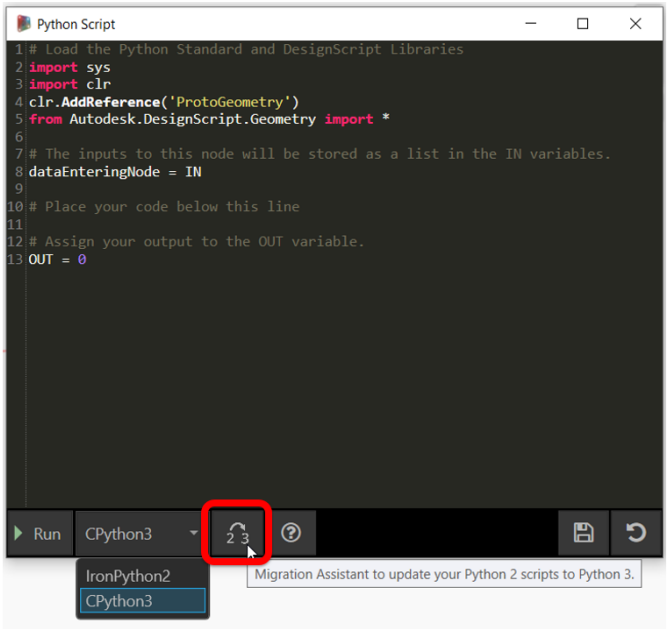
Right Click menu

- New Iron Pythin 2.7 Package on the package manager



Iron Python 2.7 Package

- Improved button layout on Pythin Script Editor & new button **Migration Asistant**



Migration Assistant

More Integrations

Civil 3D
Version
2.5.2

ADVANCE STEEL
Version
2.5.2

FORMIT
Version
2.5.2

ALIAS DESIGN
Version
2.7.0

Other Dynamo Integrations

More Info

- Dynamo Core 2.8 Release
- Dynamo Core 2.7 Release
- Dynamo Core 2.6 Release
- Dynamo Core 2.5 Release
- Dynamo Core 2.4 Release
- Dynamo Core 2.3 Release
- Dynamo Core 2.2 Release
- Dynamo Core 2.1 Release

Learning and Sharing

Try It

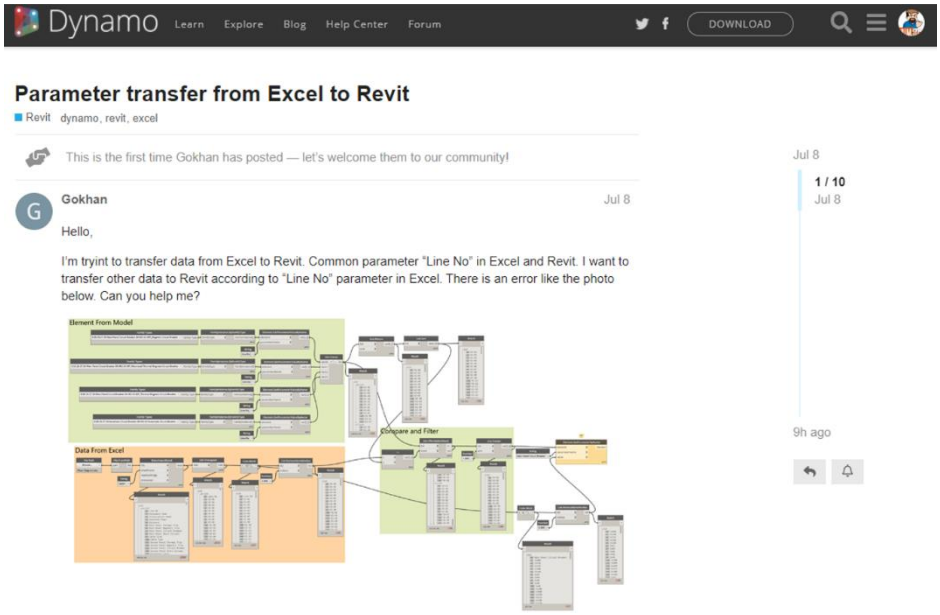
The first tip is the **Easiest** but might seem like the **Hardest!**

- Check out the getting started videos from DynamoBIM.org/learn
- Reading "The Dynamo Primer" the unofficial online user's manual
- Dynamo Dictionary an open source, searchable database for Dynamo functionality. (Out of the Box Nodes)
- Use and play with the out of the box stuff that comes with Revit/Dynamo
    - It can also be easier if you have a problem that **YOU** want to solve
- You can also find/give answers on the DynamoBIM.org Forum
    - https://forum.dynamobim.com/

Speaking of the Dynamo Forum

Lisa-Marie Mueller

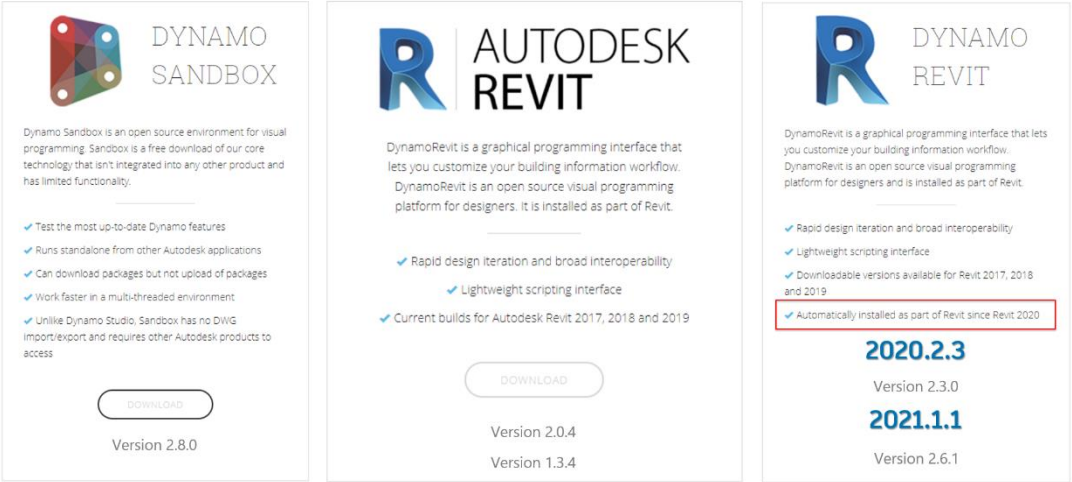
When you want to create a new script, **start by searching for the topic in the forums.** There may be a **similar script on the forums that you can use as a template** or there may be a **package that will make your task easier.**



Other Dynamo Integrations

Use the Most Current Version

Using the most current version Dynamo (that is available to you) will improve your workflow and graphs.



Current Dynamo Versions

Learning

Taking time to learn about Dynamo is a great tip, and there are may great options within the **Resources** section of this handout.

Handout Resources

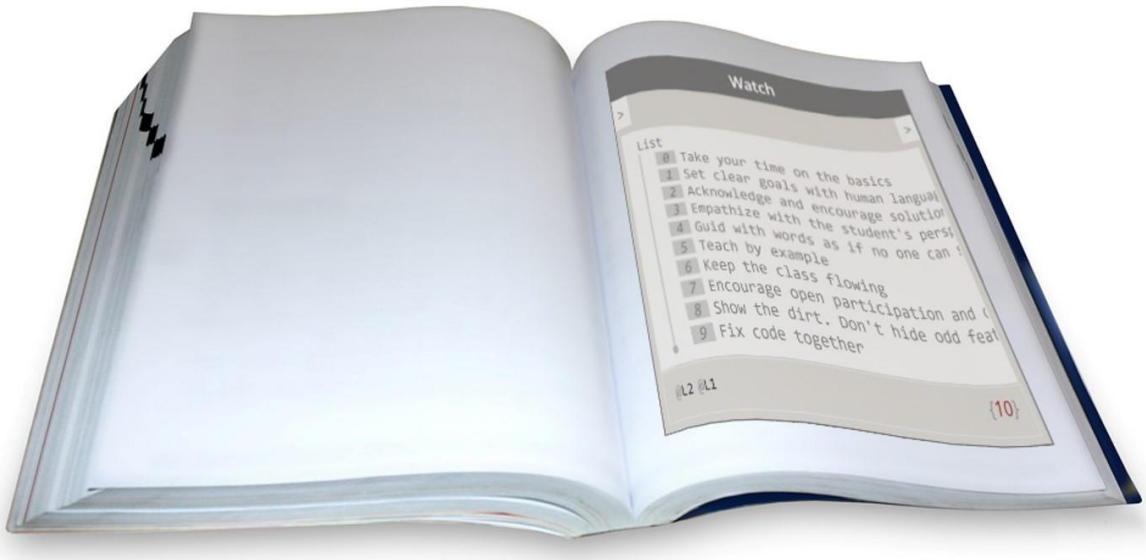
You can also take a **Dynamo Course.**

- Self-paced
- Lecture based
- Tutorial based
- Academic

Teaching

Colin McCrone

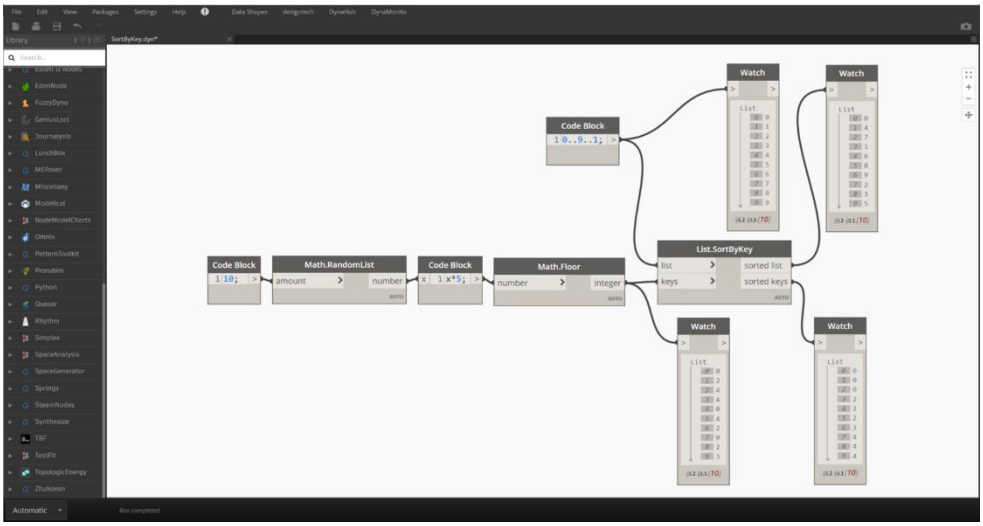
If you are teaching Dynamo, take your time on the basics.
This is one of 10 great tips for teaching Dynamo from Colin McCrone blog post called: *Ten Commandments for teaching Dynamo by a Former "Evangelist"*



10 Commandments for Teaching Dynamo

Zach Kron

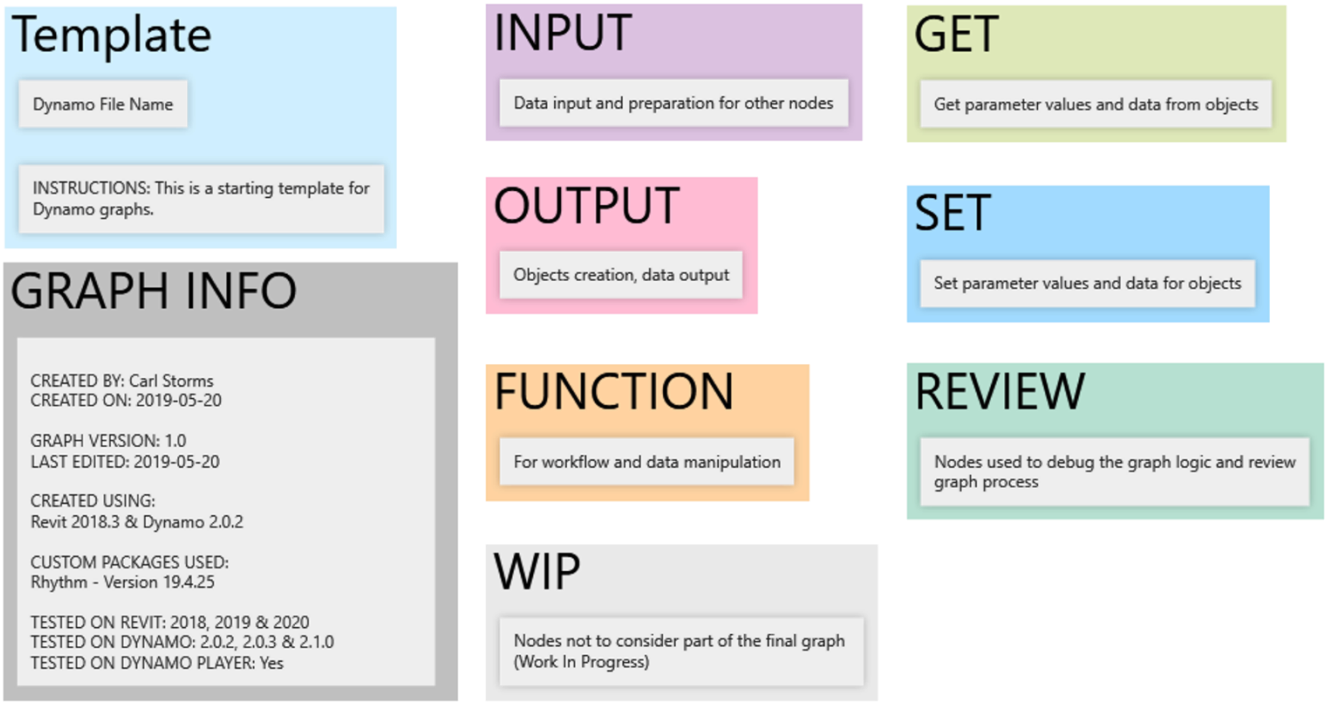
Learning content should be **small enough files** that you **can read it all on one screen.**



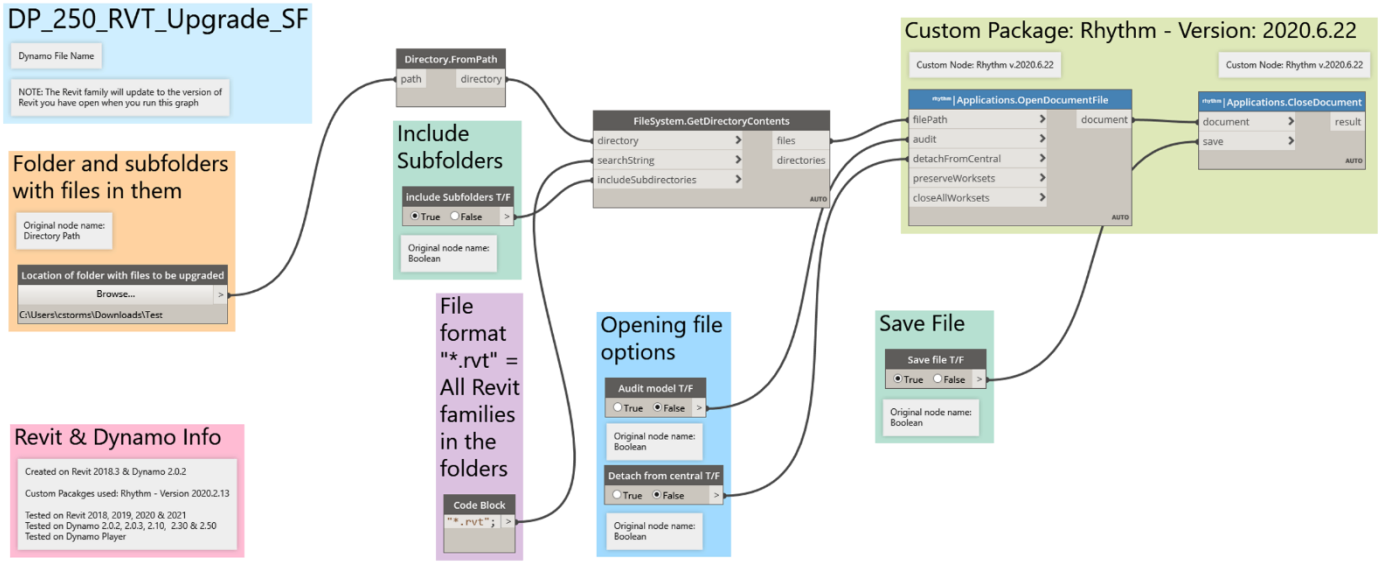
Small Learning File

Use a Template

Organize your Dynamo graphs **using a template**.



Example Template



Example Graph Made Using a Template

List @ Level

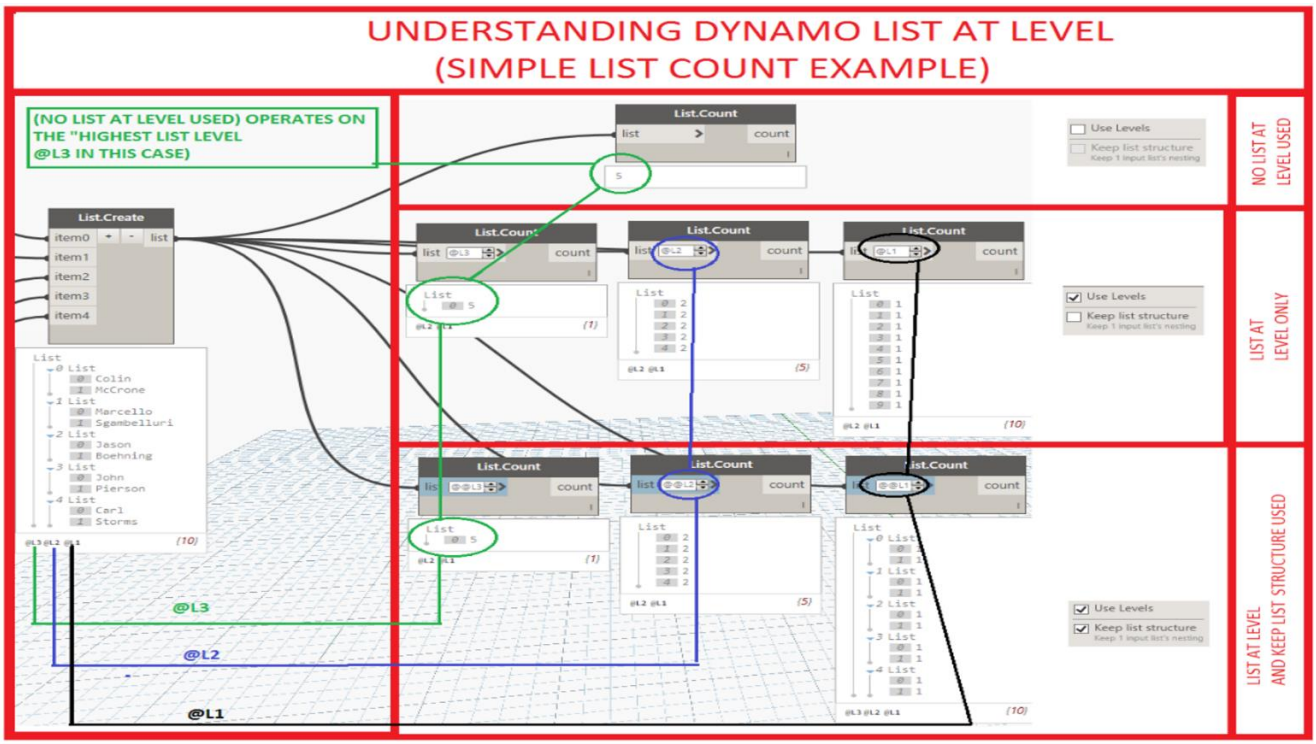
Learning and understanding **List at Level** will go a long wat towards improving your Dynamo experience. Below are some great resources for List @ Level.

Marcello Sgambelluri

Colin McCrone

List at Level Resources:

- List@Level blog post from the Dynamo Blog
- List@Level from the Dynamo Primer (starting on page 200 if looking at PDF V2.0)
- List@Level explained by Colin McCrone on the Simply Complex Podcast.
- List@Level sample image from Marcello Sgambelluri and The Simply Complex Blog



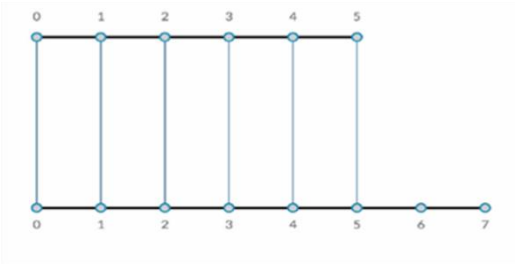
List @ Level Example from the Simply Complex Blog

Lacing

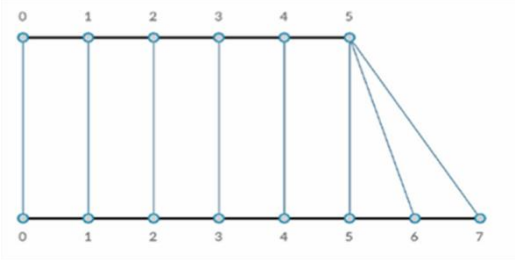
Learning how **Lacing works** in Dynamo is also a helpful skill.

Lacing Explained:

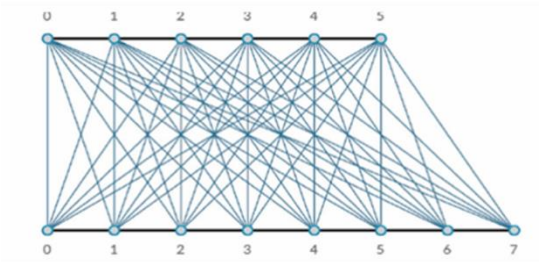
- **Shortest Lacing**
  - Use items from both sides until one side is done
- **Longest Lacing**
  - Reuse the last item in each list until all sides are done
- **Cross Product Lacing**
  - Make all possible connections
- **Auto Lacing**
  - Let Dynamo pick the best lacing for the task



Shortest Lacing



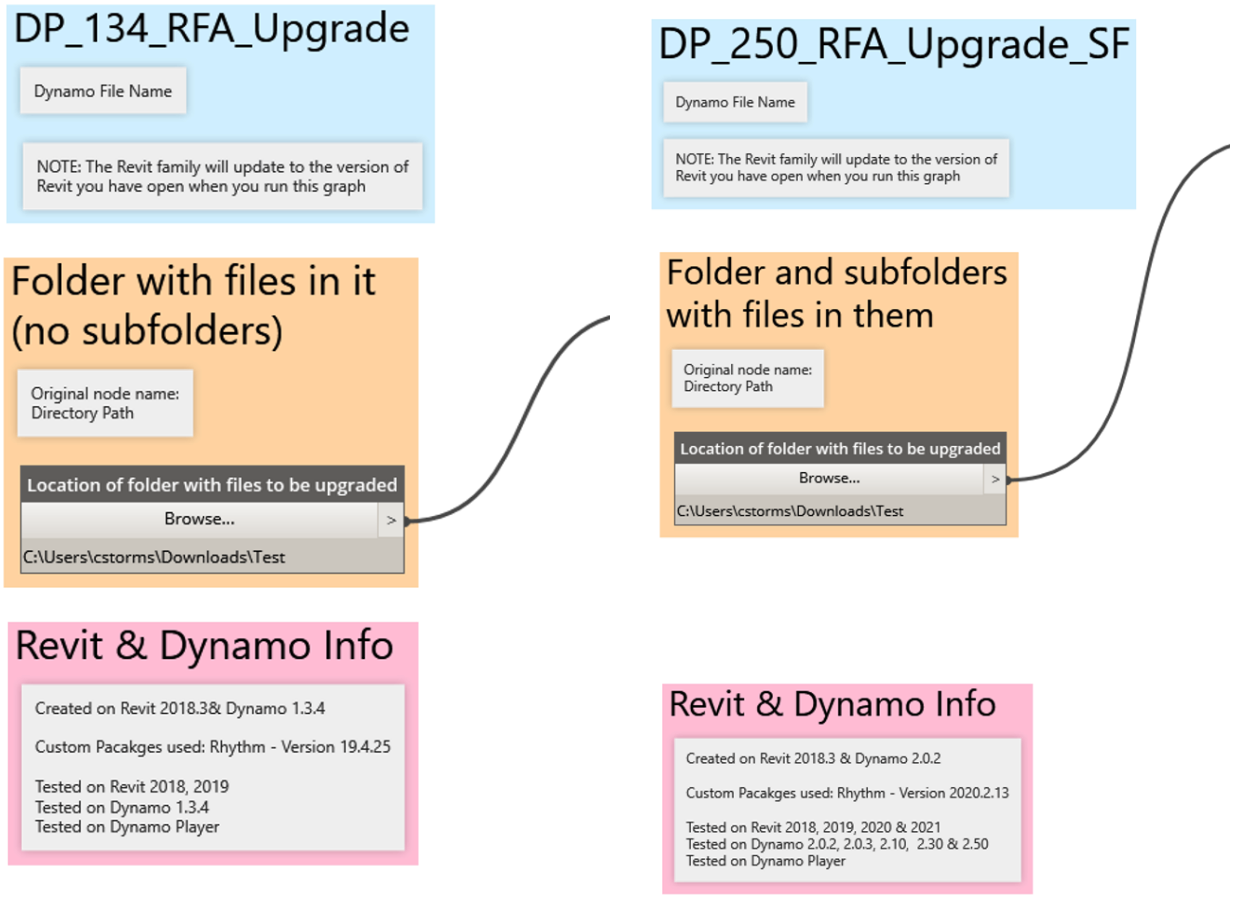
Longest Lacing



Cross Product Lacing

Naming Convention

Like your BIM Execution Plan and the naming convention you have for your models you should have **a naming convention for your Dynamo graphs**. This makes **it easier for others (and yourself)** to use them and **understand what they do in the future**.



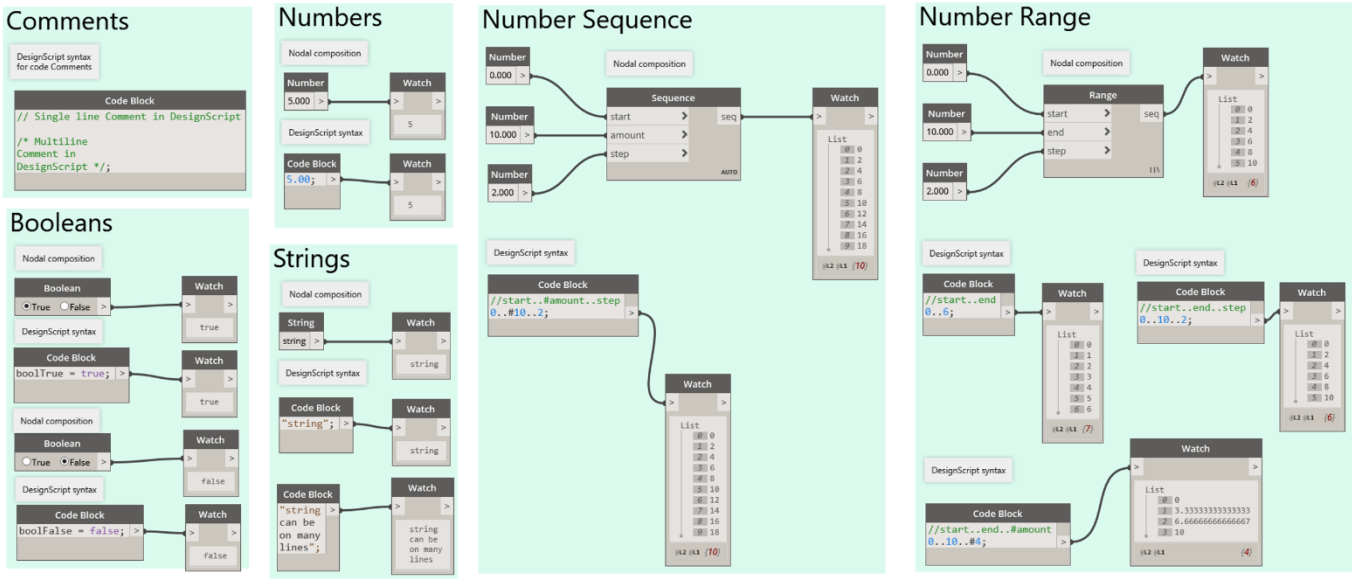
Naming Convention Examples

Learn a Little DesignScript

Like List at Level, learning even a little Design Script will expand what you can do with Dynamo. Below are some great resources for learning DesignScript.

DesignScript Resources:

- **DesignScript Language Summary:**
  - http://designscript.io/DesignScript_user_manual_0.1.pdf
- **DesignScript Language Guide:**
  - https://dynamobim.org/wp-content/links/DesignScriptGuide.pdf
- **DesignScript presentation by Sol Amour:**
  - https://github.com/Amoursol/dynamoDesignScript



DesignScript Examples

Wise Words from the Aussie BIM Guru

Gavin Crump

- **Apply your learning progress to real world problems** you need to solve wherever possible
- Try not to focus on preview geometry, at least at first. **Focus on data such as numbers, strings, and Revit elements**
- Avoid copying blocks of your code, **learn about lists, levels and lacing early**
- Take the time to read warnings, and research what they mean. **A large amount of time in Dynamo is typically related to troubleshooting**
- **Walk before you run.** Target basic workflows to begin with, then move your way towards the complex ones

Have Fun

No Work is Ever Wasted

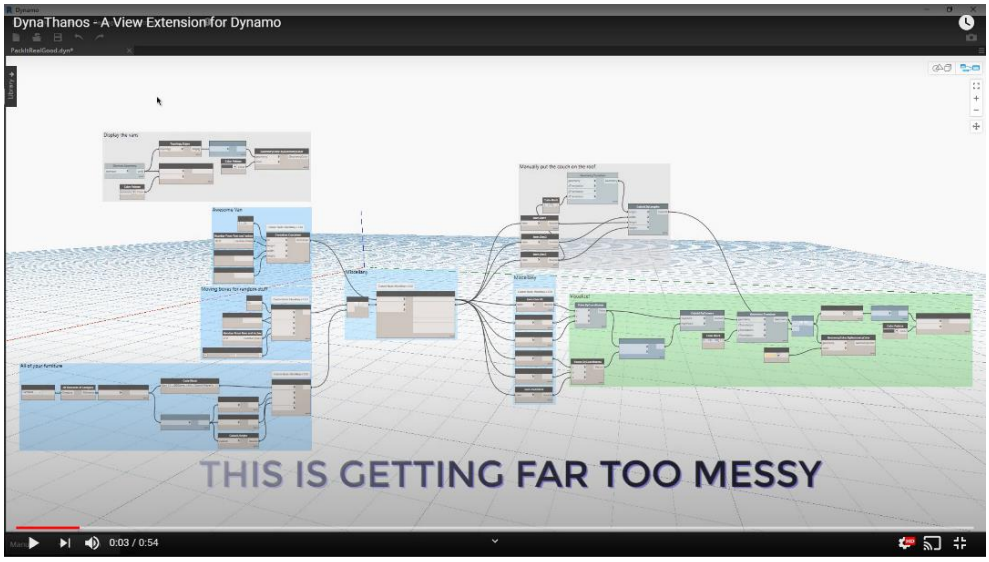
John Pierson

John has a **great blog post** about how **having fun** and doing things that might “seem like a waste of time” can in fact be the exact opposite!

Have Fun

DynaThanos

John always has fun with his Dynamo graph, while learning a great deal along the way. A great example of this would be his “April Fools” YouTube video from 2019: **DynaThanos**. If you are daring you can even get the install and code from John’s GitHub.

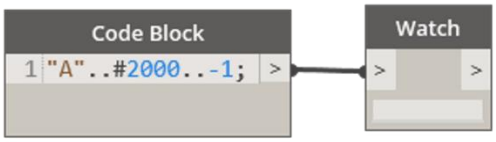


DynaThanos

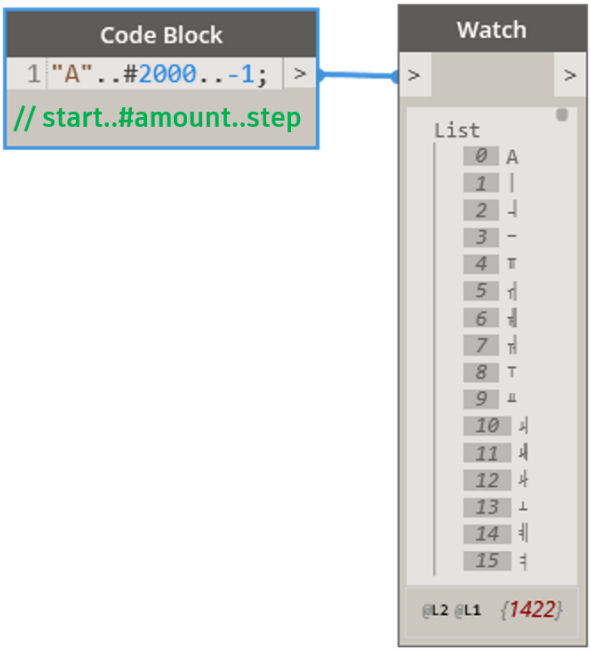
Code Block Fun

Zach Kron

How well do you know your alphabet?



Before Ran

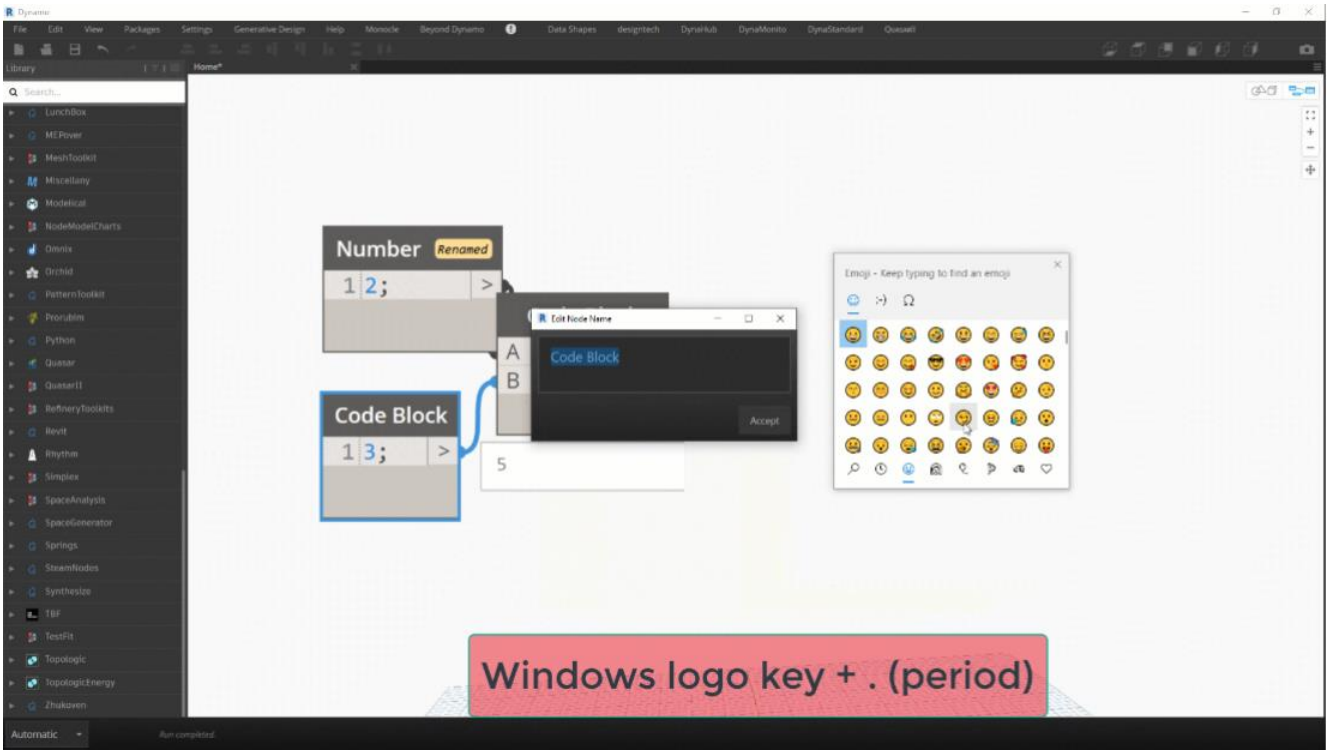


After Ran

Emojis

Who said you can't add some emojis to your Dynamo graphs 😁. You can learn how this "magic" was done in this post [Windows 10 keyboard tips and tricks.]

Sean Fruin

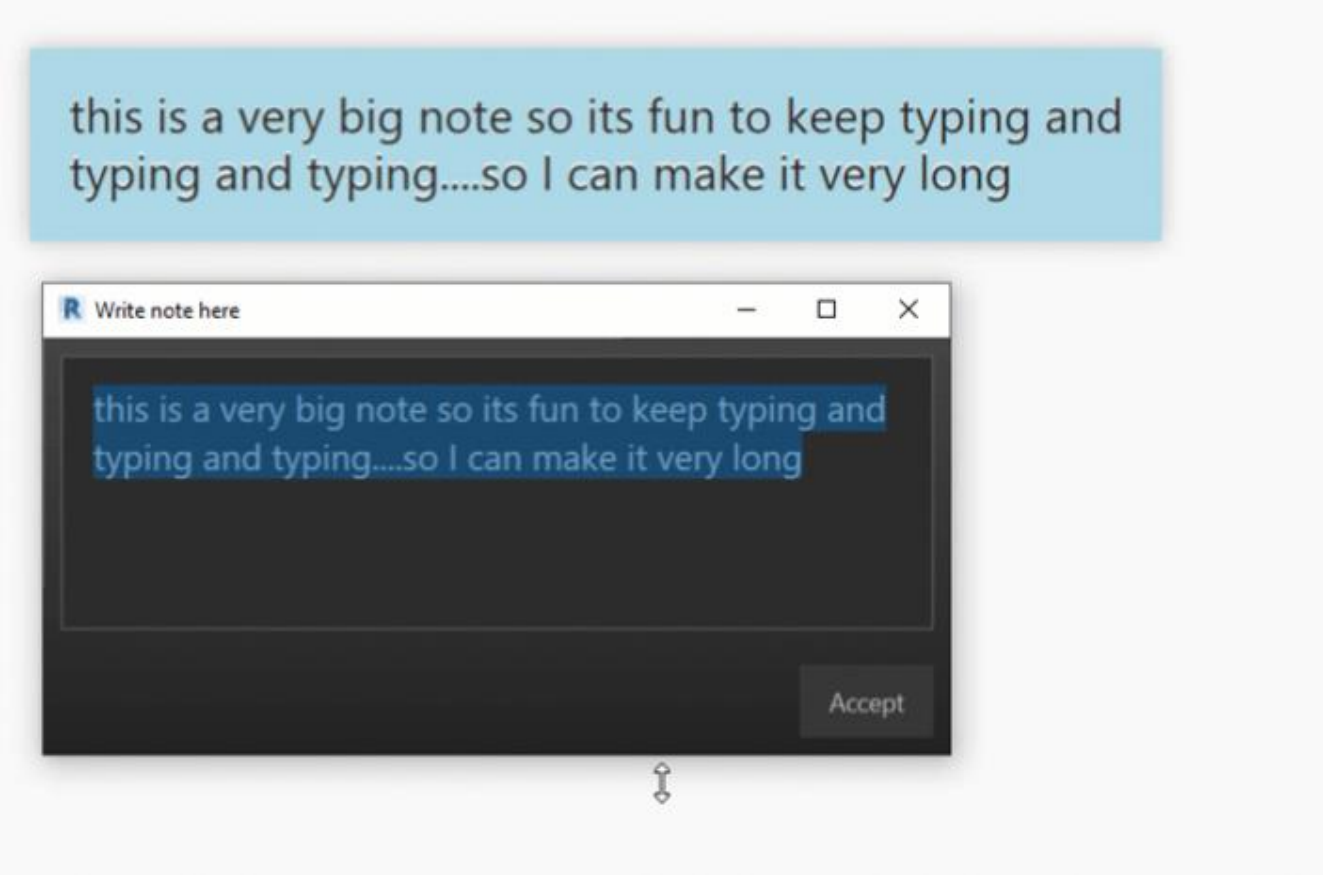


Emojis

Quick and Dirty

Resize Notes

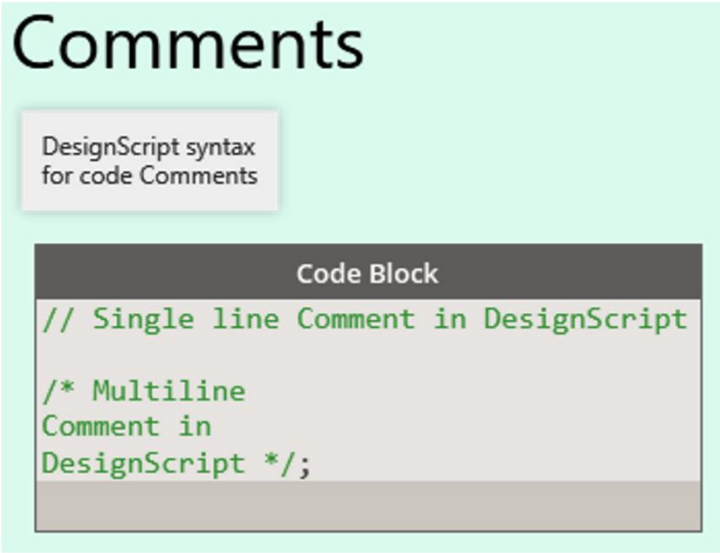
You can resize the notes dialog box while creating a note (2.3 and on)



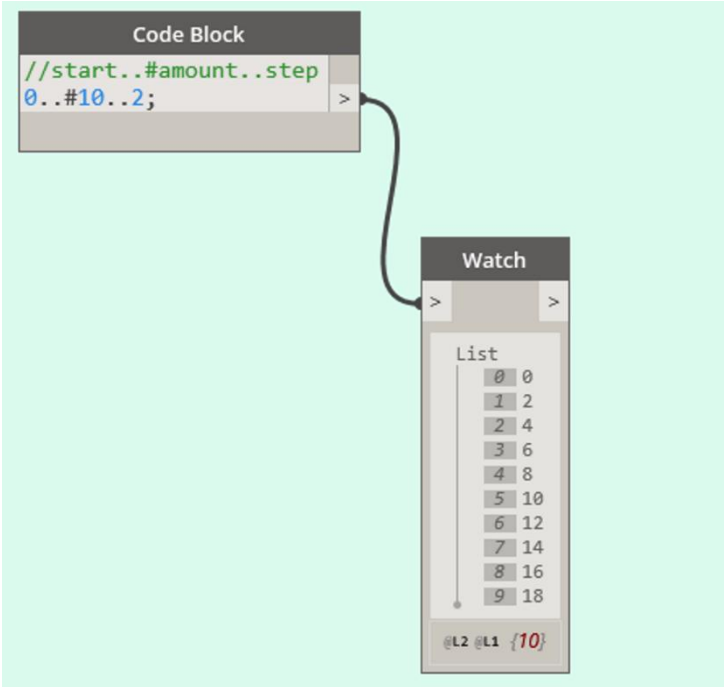
Resize Notes

Comment Your Code

It is always best practice to **comment your code**, and **this goes for Dynamo too!**
A couple slashes (//) and **a few words** can be **a game changer in a few months** when you open the graph again.



// Comments

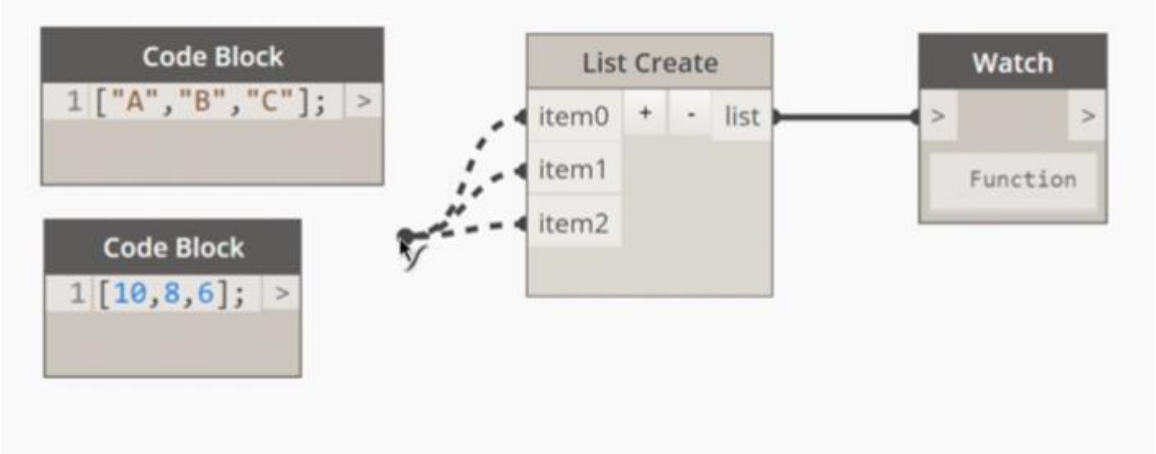


// Comments Example

Shift + Left Click

Use **Shift + Left Click** to remove **all wires** from a node port at once.

Paul Aubin



Shift + Left Click

Play in the Sandbox

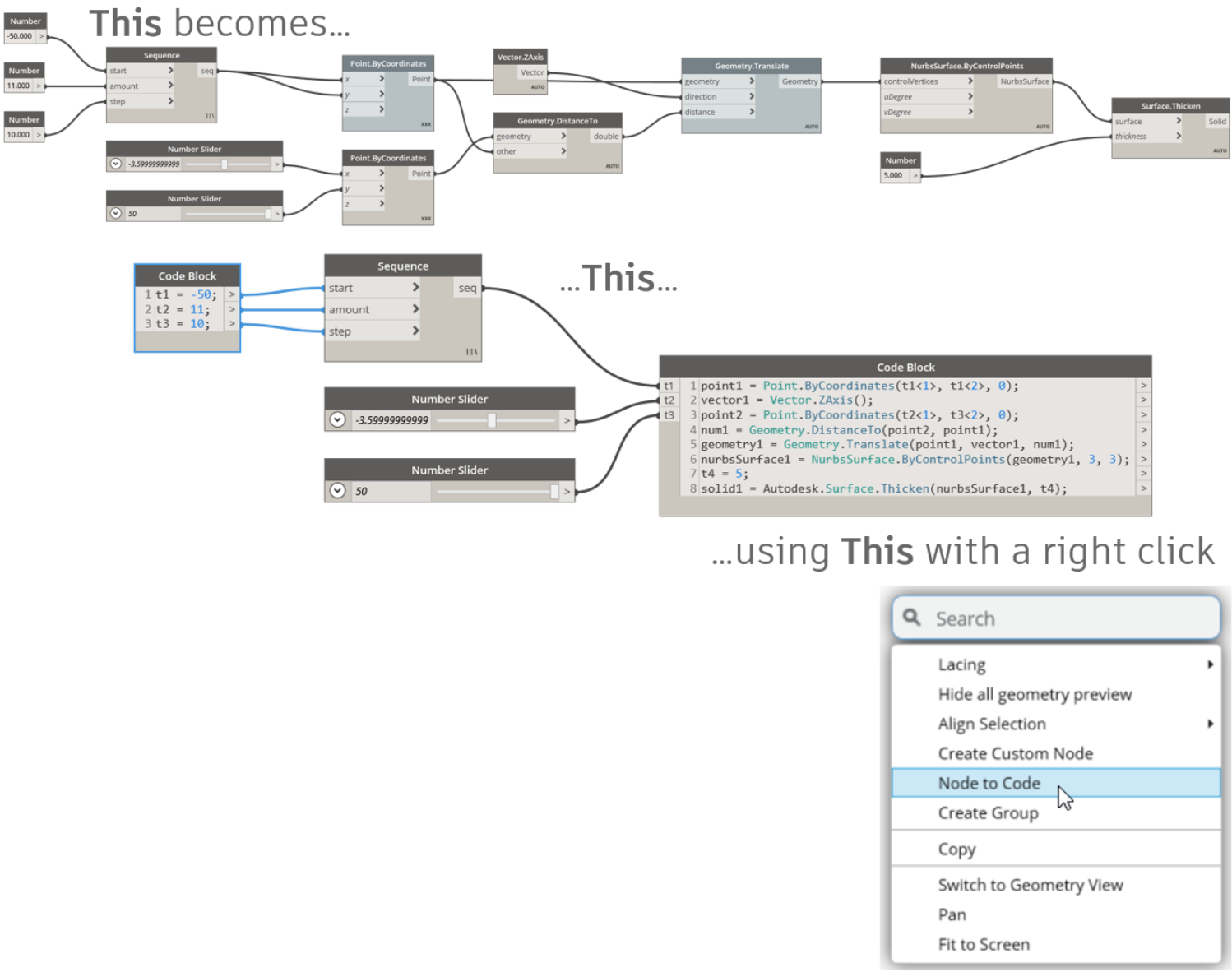
Use the **Dynamo Sandbox** (DynamoCoreRuntime) to work out **little ideas** without having to go through Revit, Civil3D, Advance Steel, FormIt, or Alias.

Zach Kron

Dynamo Sandbox

Node to Code

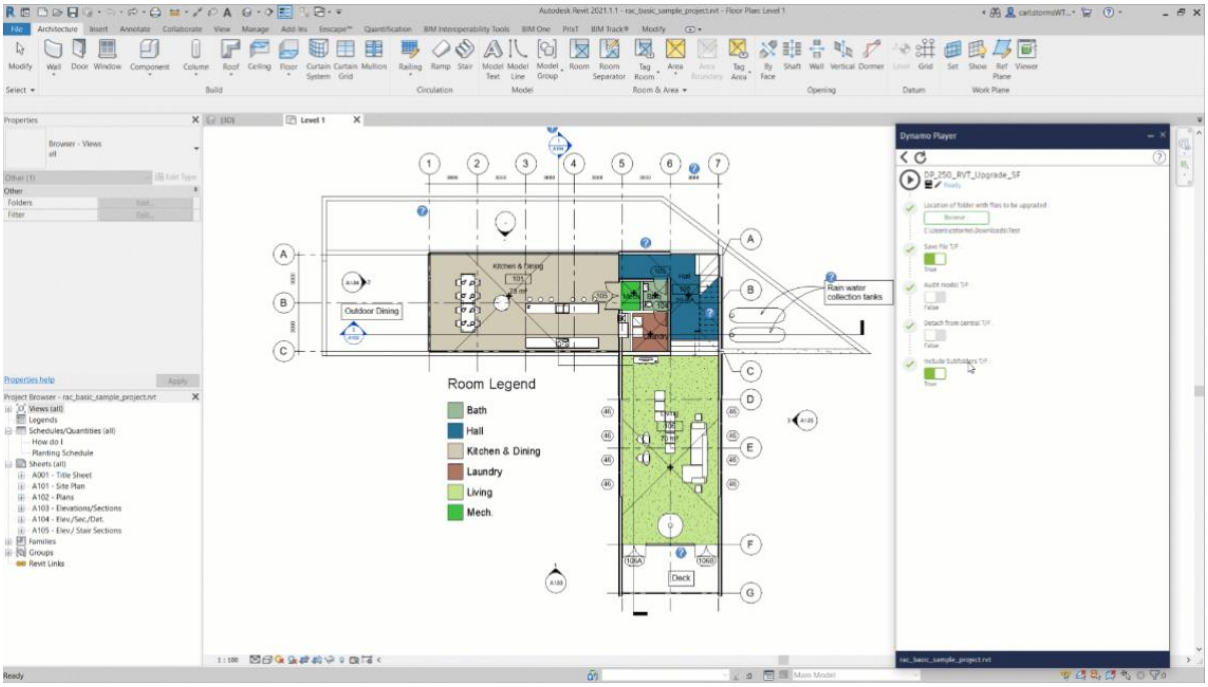
Turn **Dynamo** nodes into **DesignScript code** using the **Node to Code** feature.



Node to Code

Make use of Dynamo Player

Grow the base of Dynamo users in your office by making **graphs that work on Dynamo Player.**



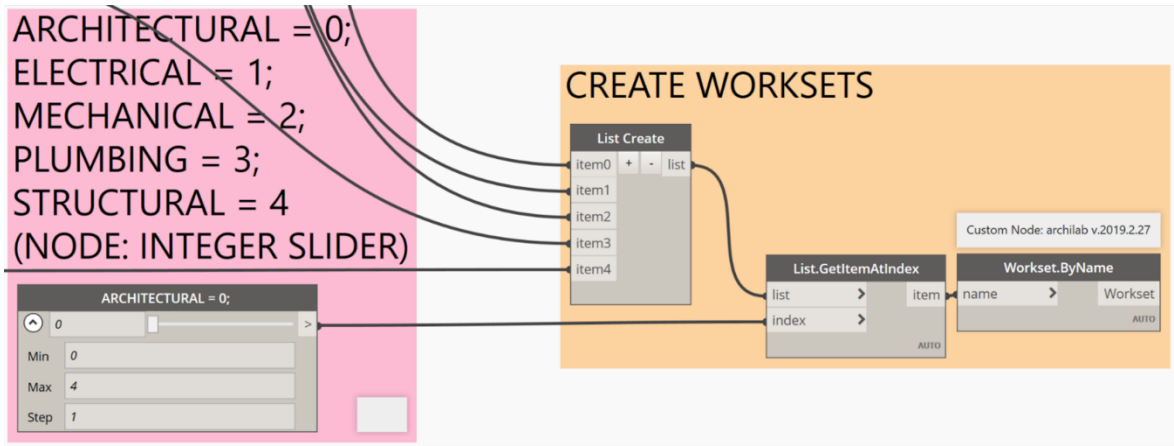
Dynamo Player

Dynamo Player Trick

Dana

De Filippi

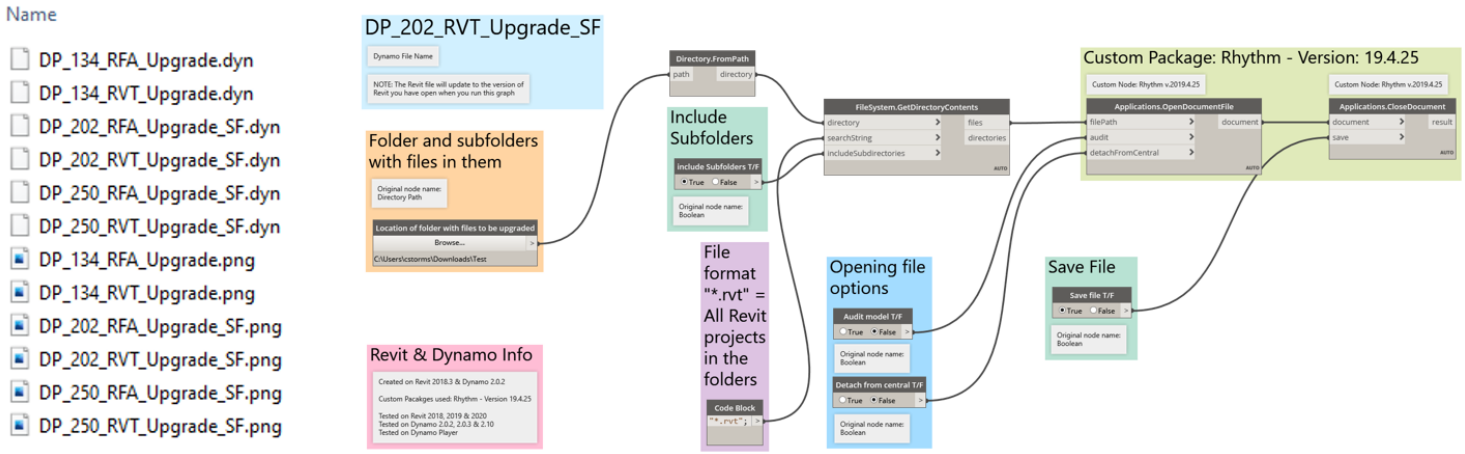
Utilizing **Dynamo player** an input for users to specify between **more than 2** options by **creating a list and getting the item of the list with a number slider as the input!**



More Than 2 options

Store Pics with Your DYNs

Store a **screen shot of the finished graph** in the same folder, with the same name as the graph **for easy reference when not in Dynamo**.

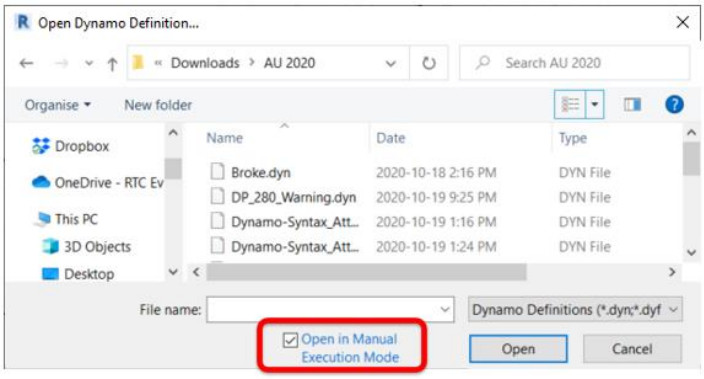


Store Pics With DYNs

Keyboard Shortcuts

Knowing a **few** Dynamo **Keyboard shortcuts** can **speed up** the **creation of graphs**.

- **F5** = Run the Graph
- **Right Click** = Orbit in background preview mode
- **ESC + Right Click** = Hold down esc + right click to orbit the background preview **while** in graph view
- **CTRL + G** = Create a new group
- **CTRL + L** = Cleanup nodelayout
- **CTRL + W** = Make a new note
- **CTRL + SHIFT + P** = Package usage boring mode (Monocle)
- **Open in Manual Execution Mode** = Check box to check before opening a Dynamo dyn

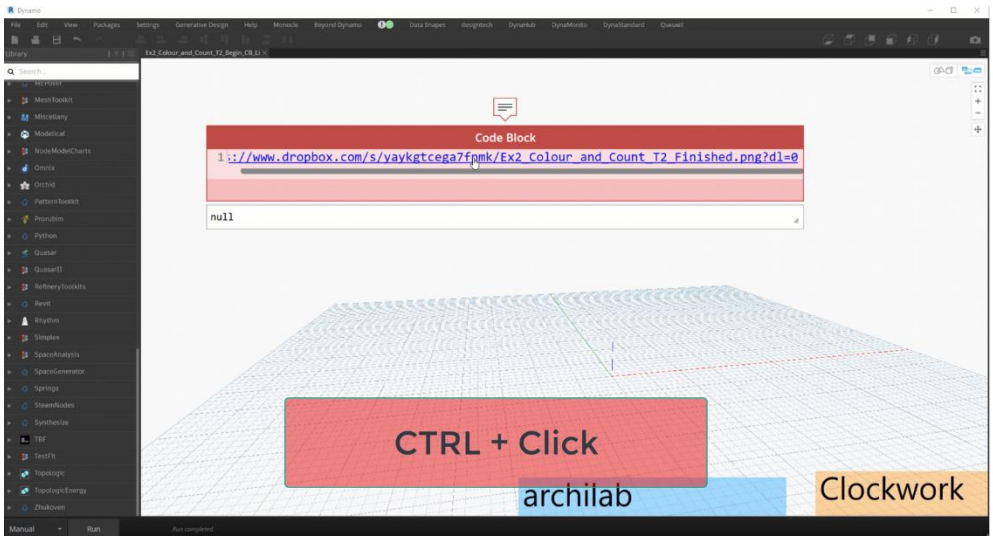


Open in Manual Execution Mode

Mixed Bag

Links in Code Blocks

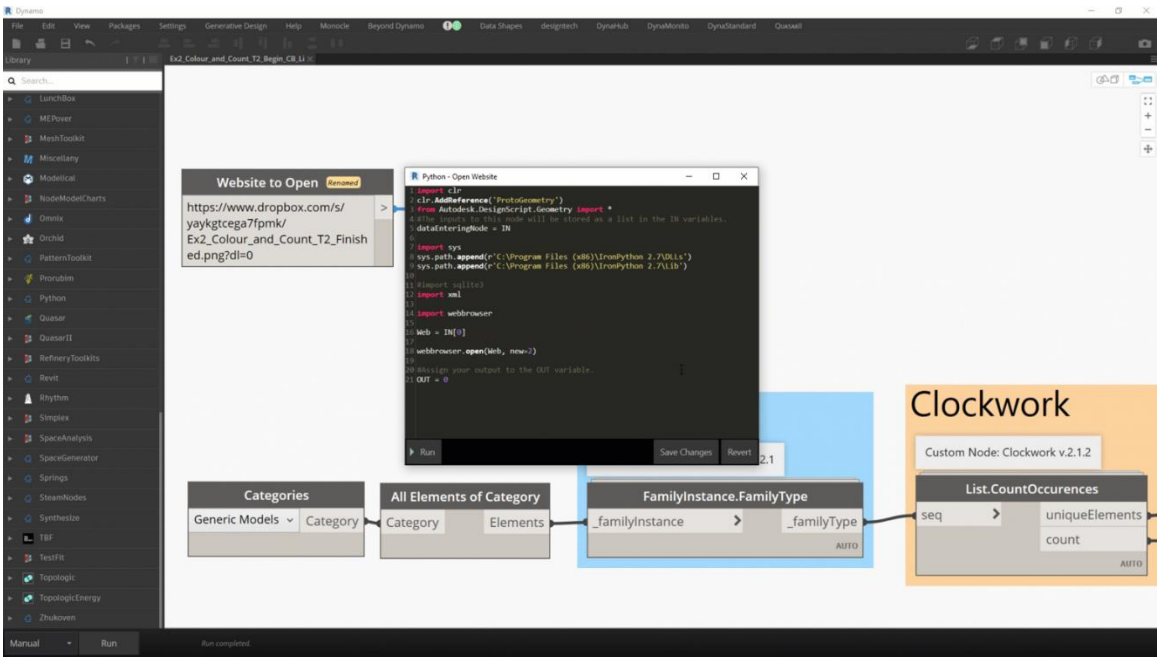
You can store links (url's) inside Code Blocks, then access them using CTRL + Click.



Links in Code Blocks

Links with Python

You can store links (url's) using a Python script too, then access when you run the graph.

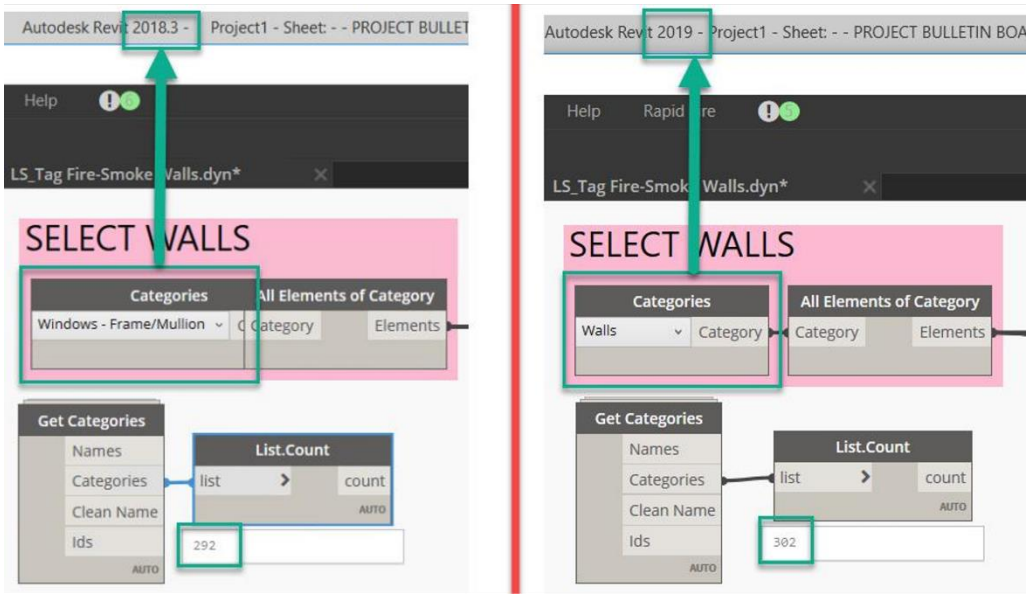


Links with Python

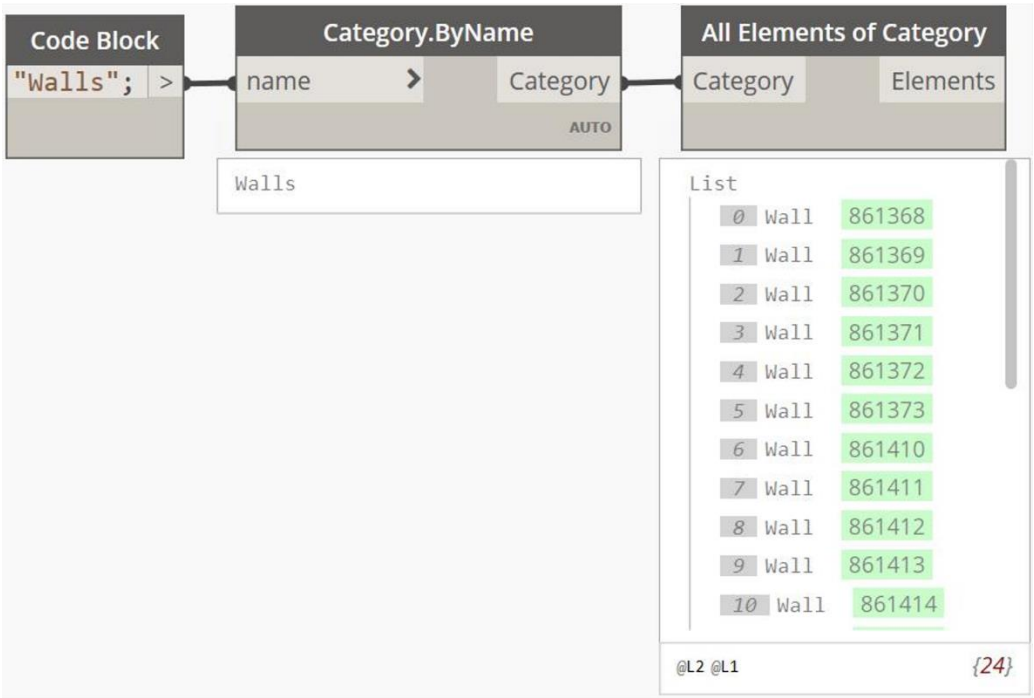
Category.ByName

Dana De Filippi

There are **differing numbers of categories** in **differing version of Revit**. This can cause issues when using the **Categories** node in graphs from version to version.



Different Revit Versions – Different Numbers of Categories



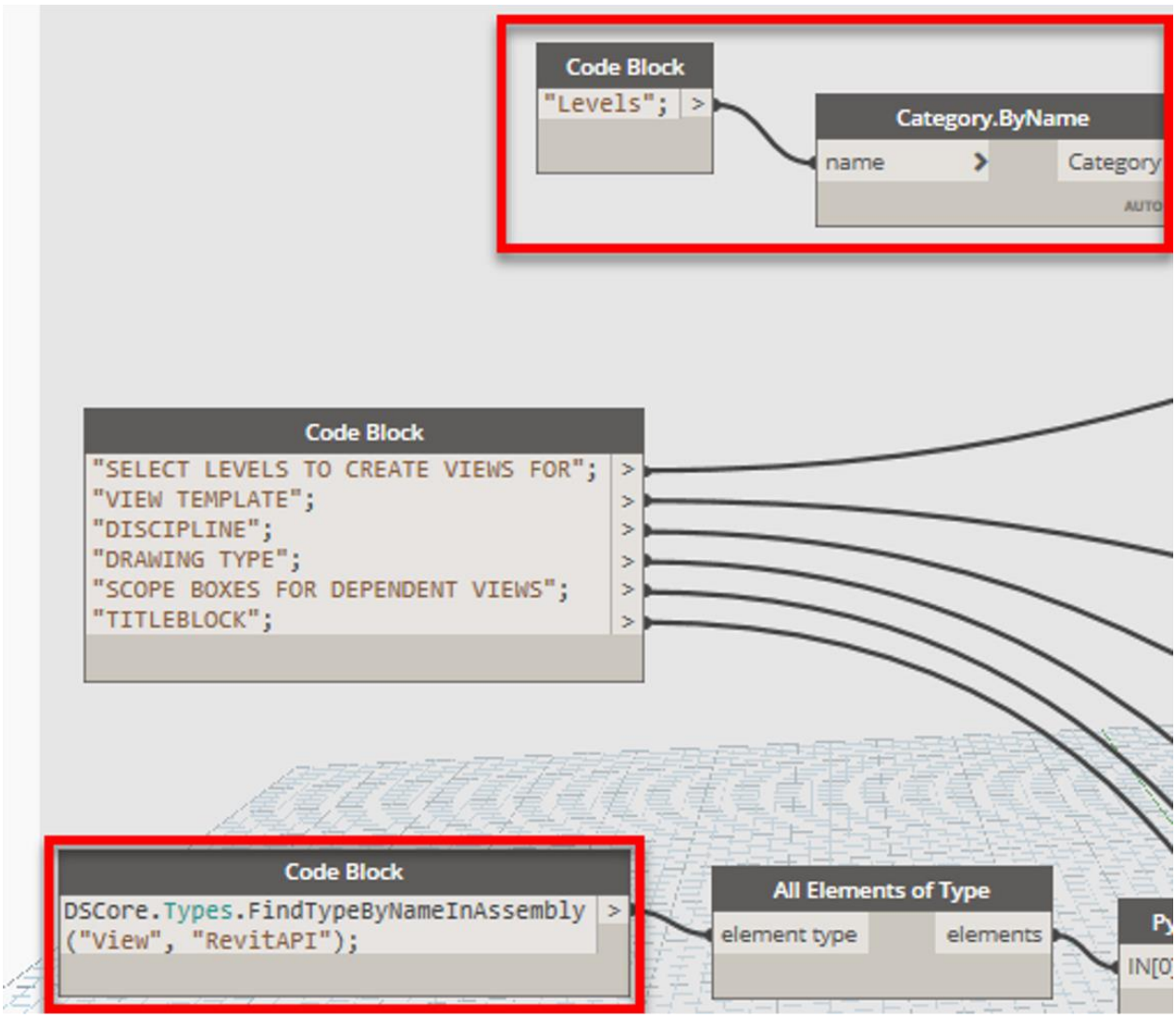
Category.ByName

Category.ByName & Code Block

Jason said he learned this from **John**. He doesn't ever send a client a script with a drop-down. I use the **Category.ByName** node for **categories** and a **Code Block** for **element types and family types.**

Jason Boehning

John Pierson



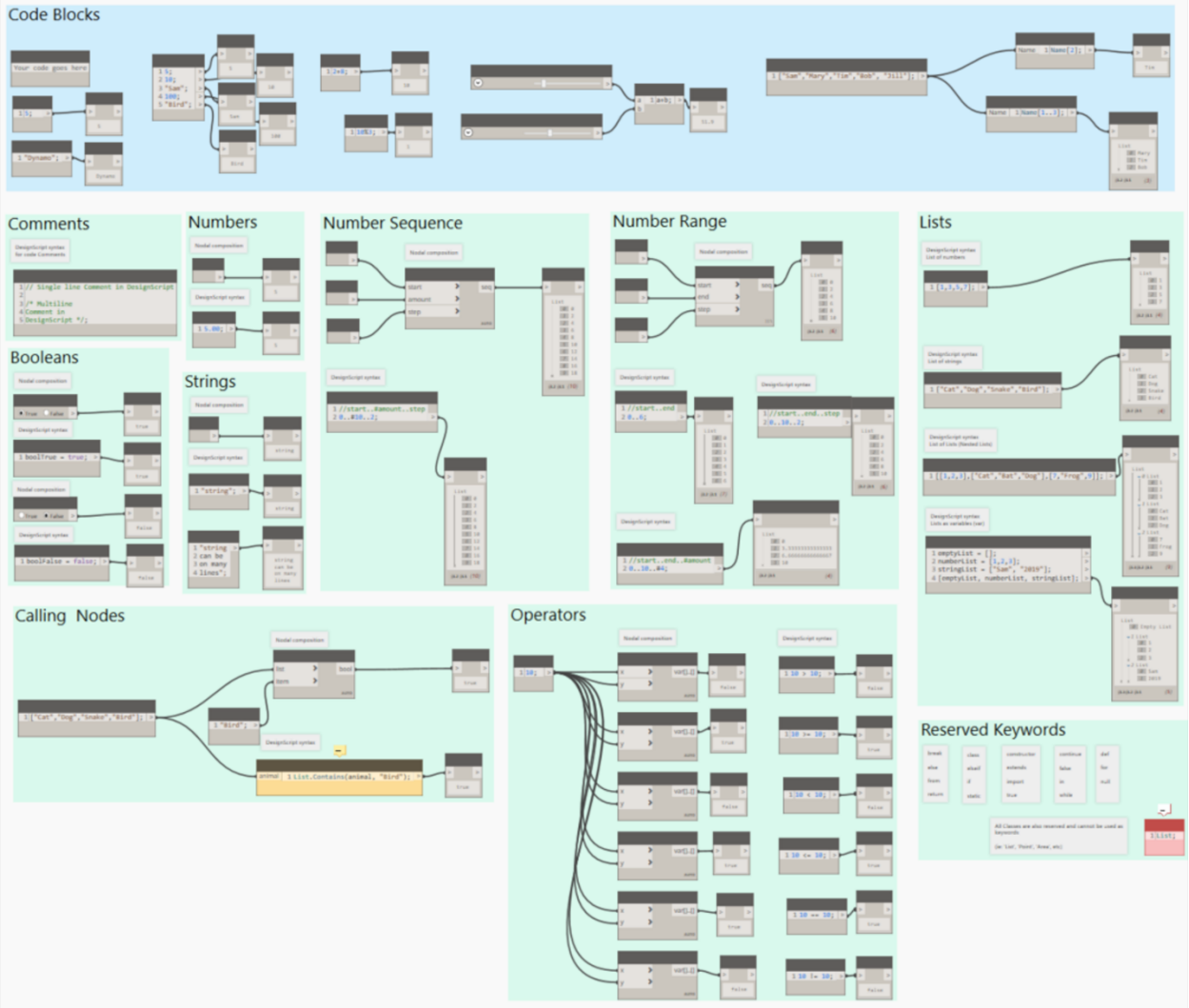
Category.ByName & Code Block

Library Canvas

[Lisa-Marie Mueller]

If you find yourself using **certain groupings of nodes together frequently**, keep a **"library canvas"** with those **groups saved for easy reference.**

Yes, that does mean you can copy nodes from a graph, then close it and open another (or new) graph and paste those nodes you just copied.



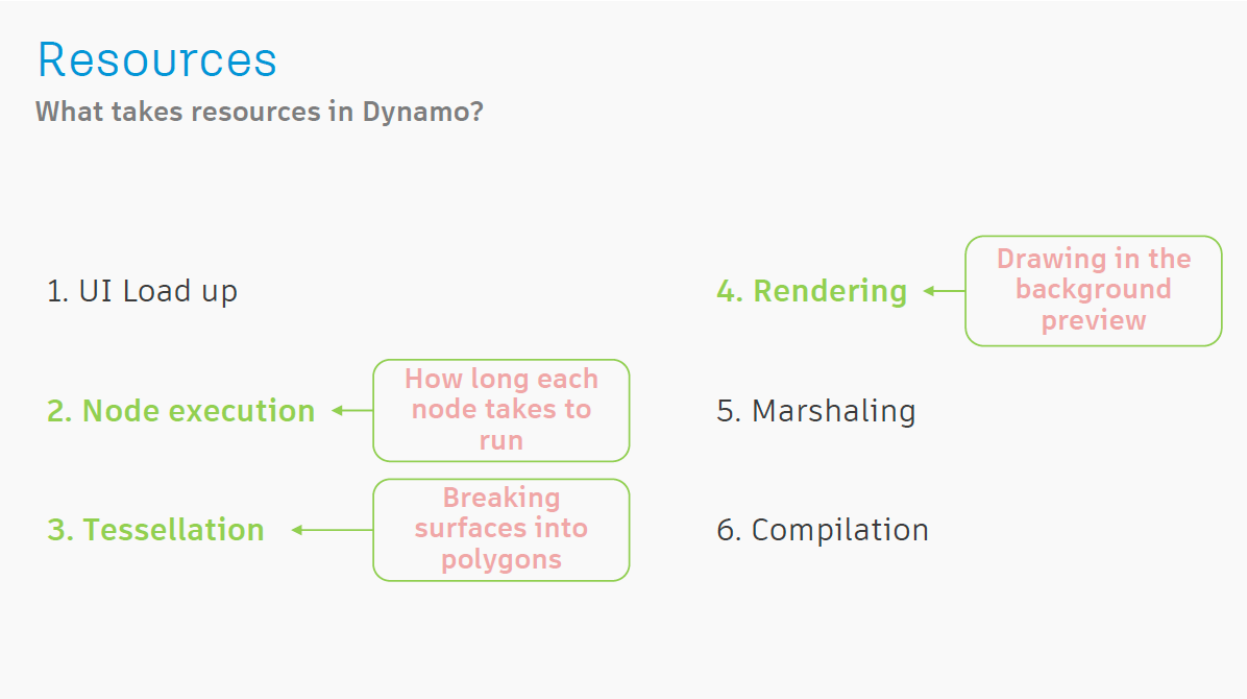
Library Canvas

Dynamo Resources

Sol Amour

You can control **3 of the 6** things when it comes to lower resource usage in Dynamo, and subsequently improve the graph execution time. Those are **Node Execution, Tessellation and Rendering.**

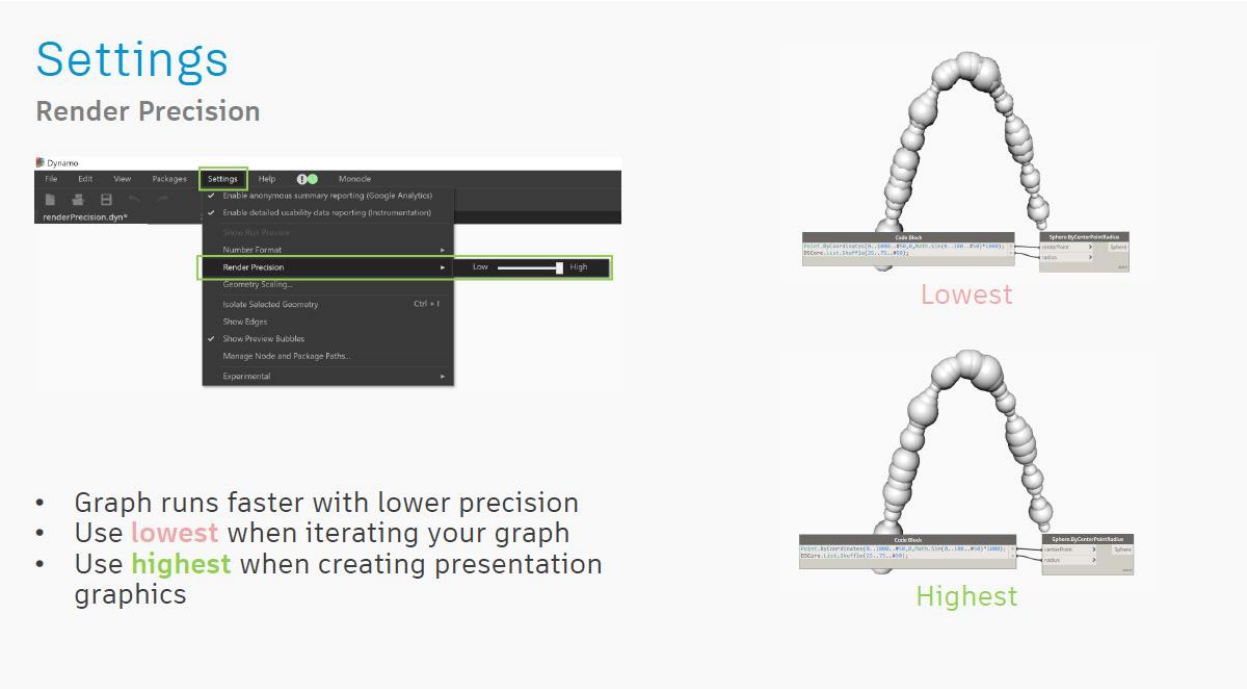
Sol has provided lots of additional information to accompany this tip with some great pictures to explain it.



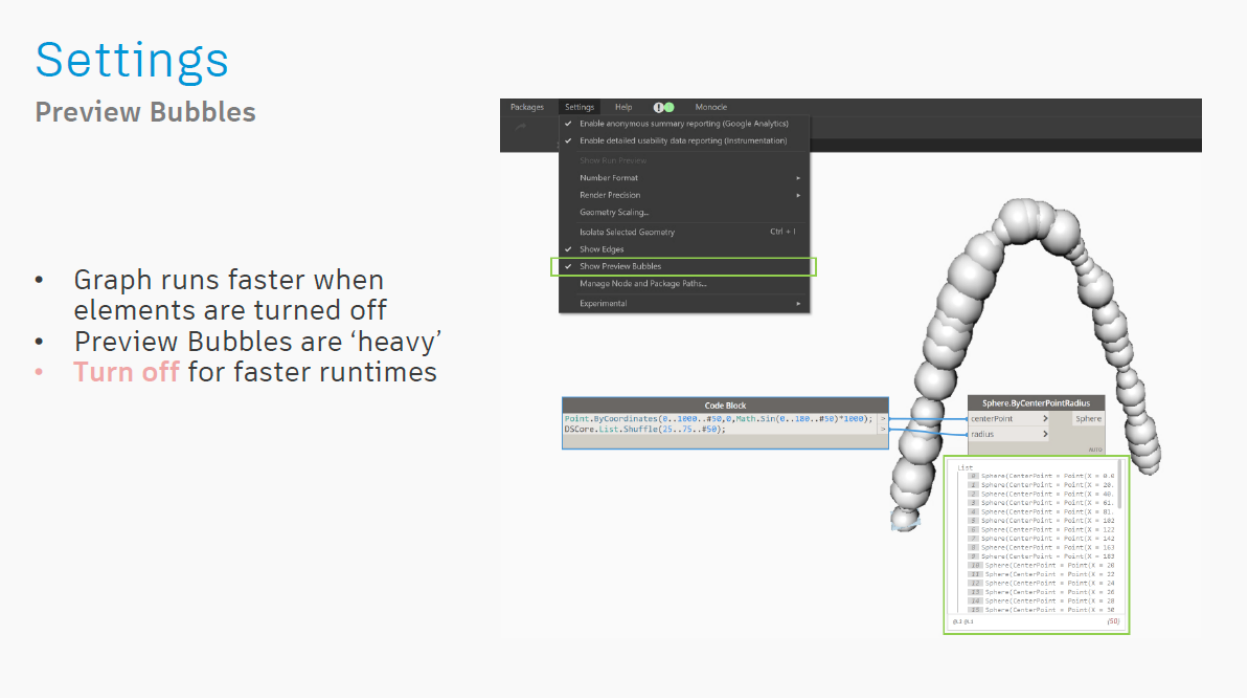
Resources

Rendering:

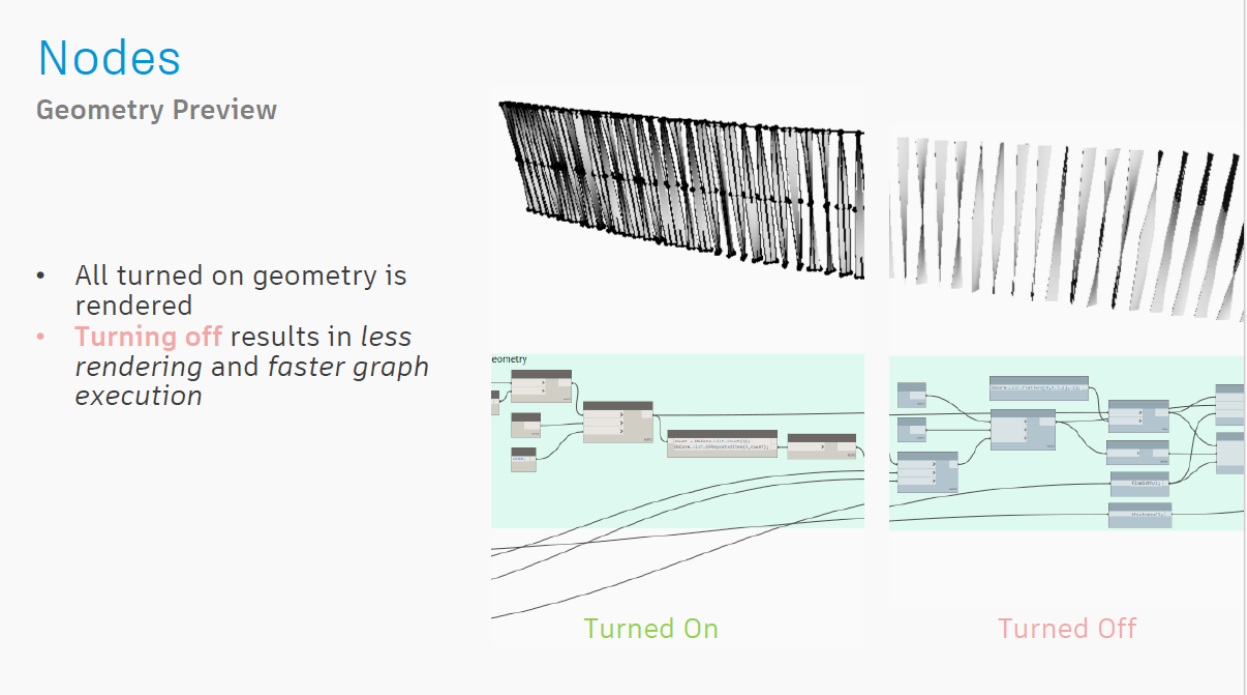
- **Will be faster if you change Precision settings**
- **Will be faster if you turn off Preview Bubbles**
- **Will be faster if you turn off Node Preview**
- **Will be faster if you Freeze off bits of your graph that don't need to be ran**



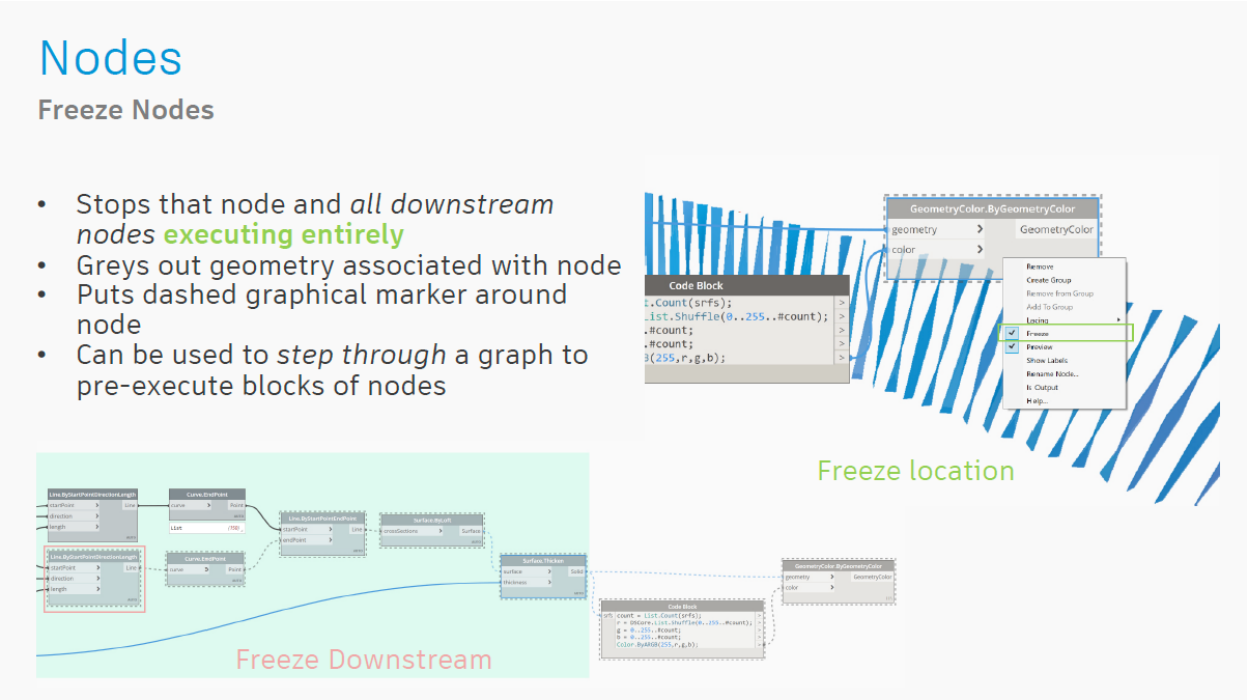
Rendering Precision



Preview bubbles



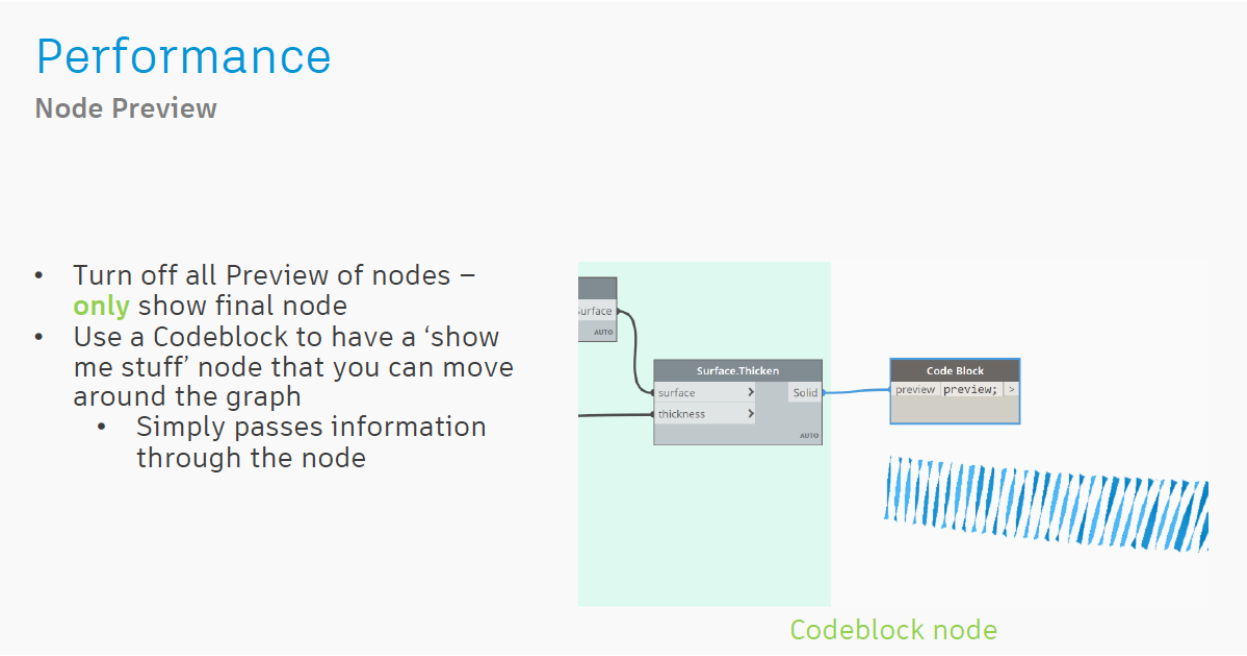
Geometry Preview



Freeze Nodes

Performance:

- **Revit + Civil 3d = Single Threaded, Sandbox = Multi-threaded (i.e. you can still use the UI when you are executing something)**
- **Don't tessellate if you don't need to**
- **Avoid heavy cost geometry operations if you don't need them (Math is fastest!)**

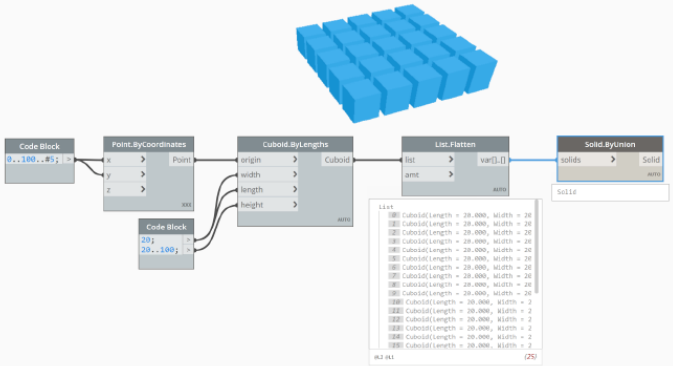


Node Preview

Performance

Booleans

- **Avoid** doing Booleans - if possible
- Boolean one element then translate it
- You can do **Solid Unions** on disconnected objects to have them behave as a single object
  - Can use as a single cutter element
  - Run operations across multiple objects (i.e filleting)
- Construct geometry rather than creating via Booleans where possible



25 vs. 1 Element(s)

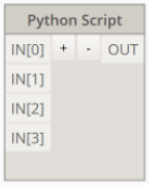
Booleans

Performance

Geometry generation vs. Tessellation

- Creating a piece of geometry and drawing it are two different events: **Creating is much quicker**
- Removing the tessellation (drawing) steps in your graph can speed it up
- Geometry nodes in Dynamo are **always tessellated**
- *Untessellated* geometry can be achieved with ZeroTouch (C#) or Python nodes only

ZeroTouch node (DynaMaps)



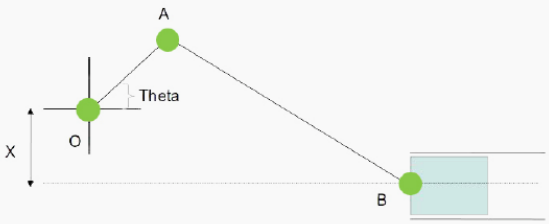
Python Node

Geometry Generation vs. Tessellation

Performance

Memory Use

- You can run into a memory bottleneck from excess geometry accumulation: *Restart your machine*
- Use **mathematical** operations in lieu of geometrical operations
- Leverage *MeshToolkit*
- Don't use Solids or Meshes until you need to
- Use ZeroTouch (C#) or Python nodes and dispose geometry



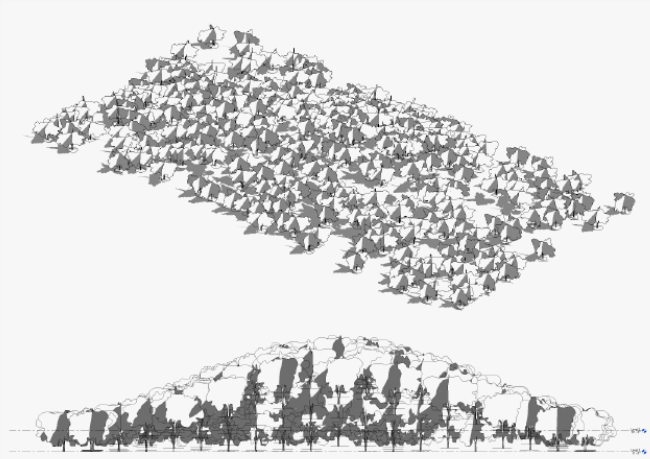
Vector Math

Memory Use

Performance

Revit Geometry

- Use the Revit geometrical operations as they will be faster (DB.XYZ etc.) than Dynamo's **in the context of Revit**
- Leverage *instancing* to populate large amounts of the same object
- Restart Revit periodically as the cache will fill up



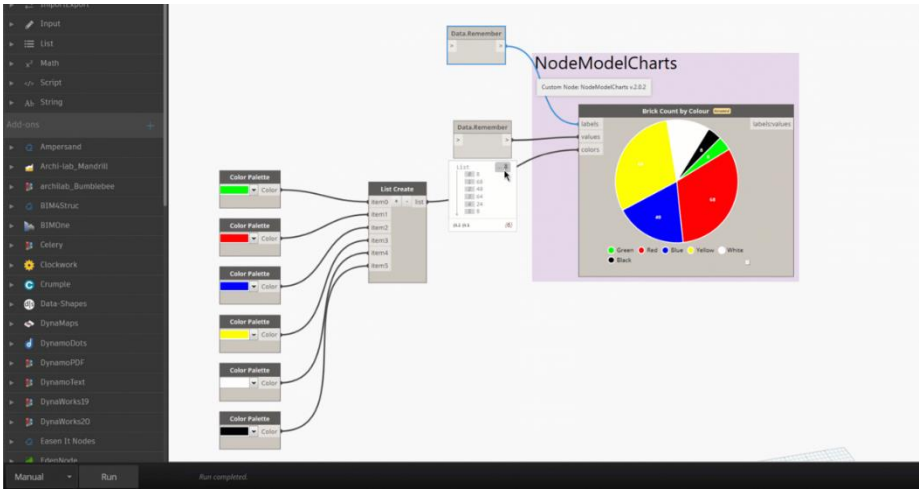
Revit Geometry

Data.Remember

Zach Kron

Use **Data.Remember** nodes to move Revit data out into **Sandbox** files for playing. You can learn more about this in the Dynamo Fourm post using the lin below, check out Gavin Crump's comment halfway down.

Generative Design Data.Remember node is missing

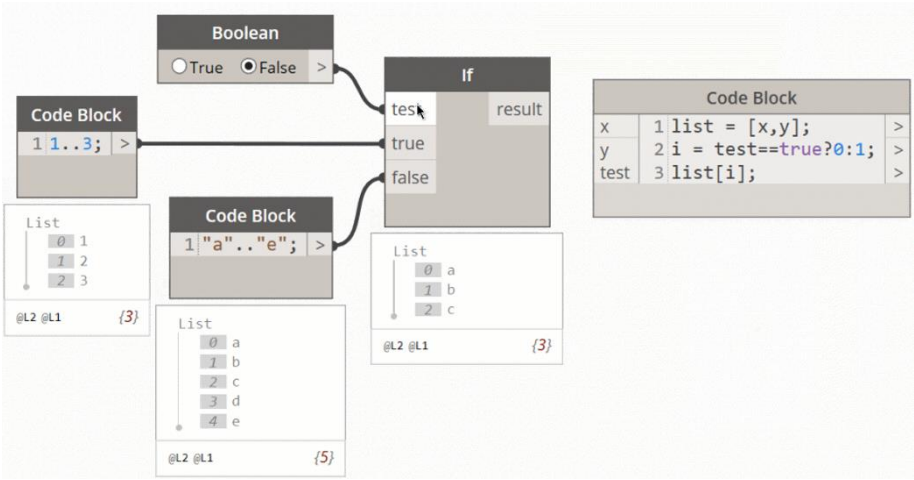


Revit Data Being Used in Dynamo Sandbox

If Statement Hack

The native If statement node has odd behavior which lead to this trick. The trick is using DesignScript in a Code Block and some simple indexing. You can also click the link below for a quick video from Sean on this hack.

Sean's Quick Video



If Statement Hack

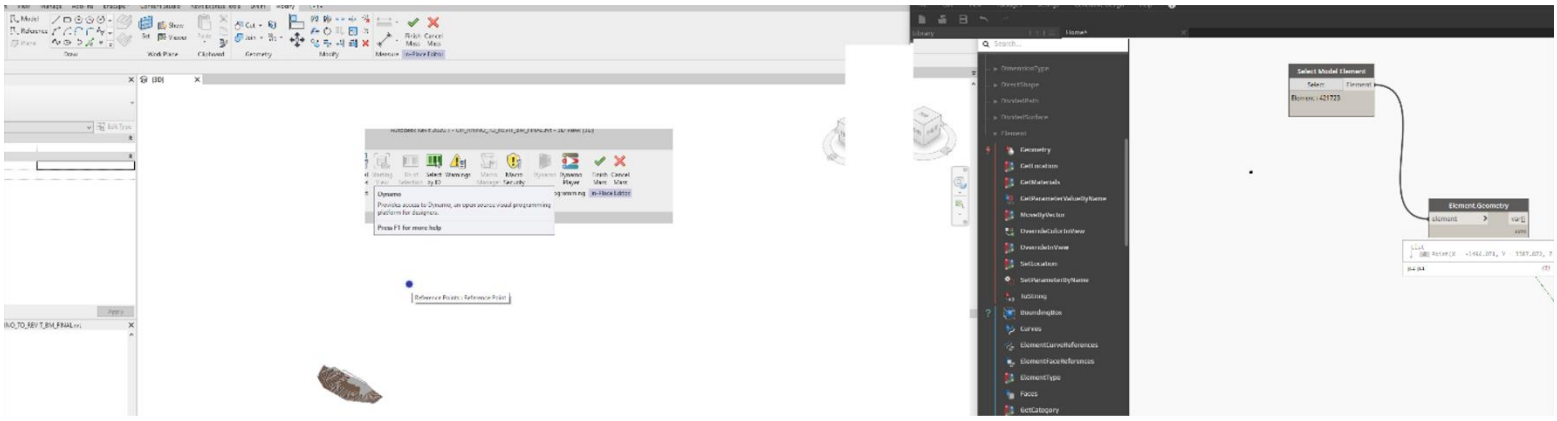
Dynamo Hack for In-Place Families

Using Dynamo for in-place families **IS possible** even though the Revit API does not allow it (or not easily).

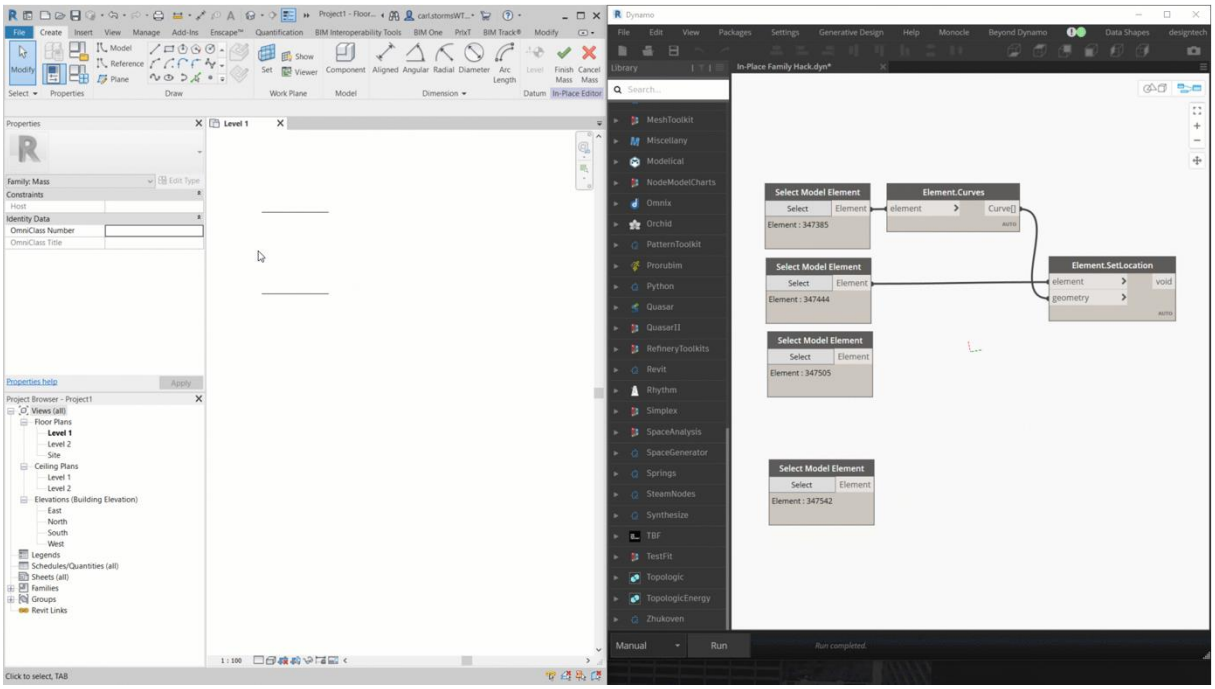
You open an in-place family and launch Dynamo, then select or do whatever, then close the family editor. Then edit the in-place family and you will see that Dynamo will now interact with the in-place family.

Marcello Sgambelluri

Adam Sheather



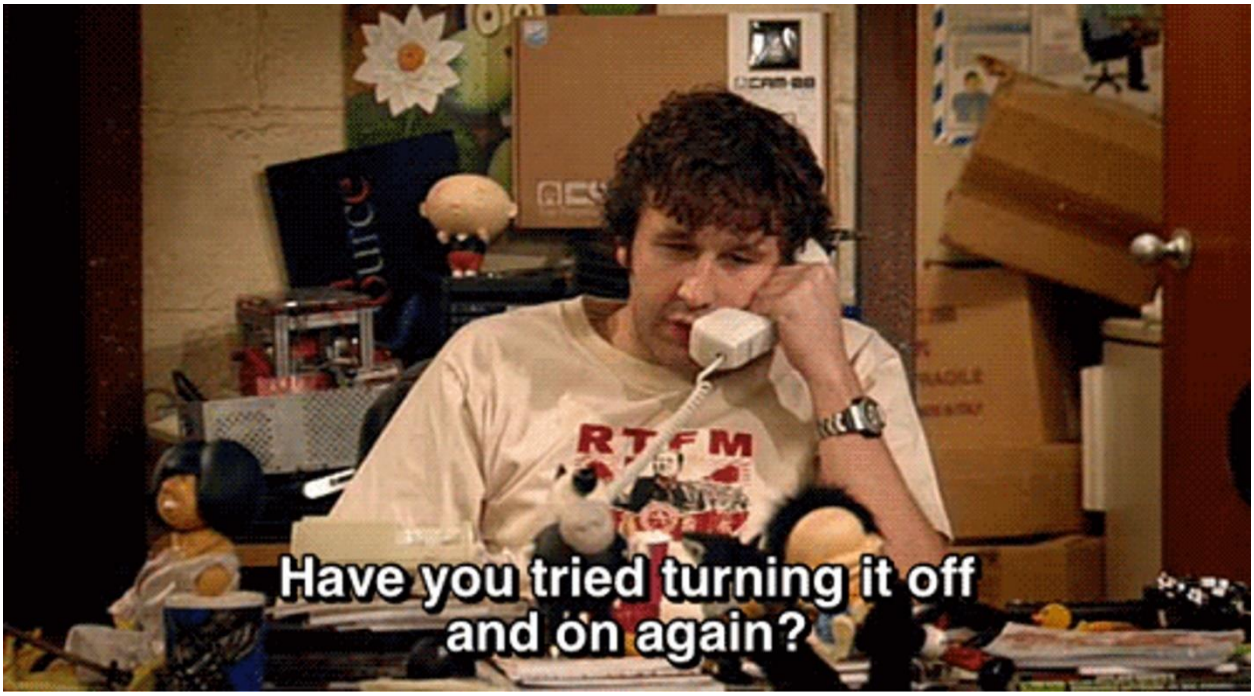
Dynamo Hack for In-Place Families



Dynamo Hack for In-Place Families Example

Whoops

Never assume that just because a graph works for you it will always work for someone else

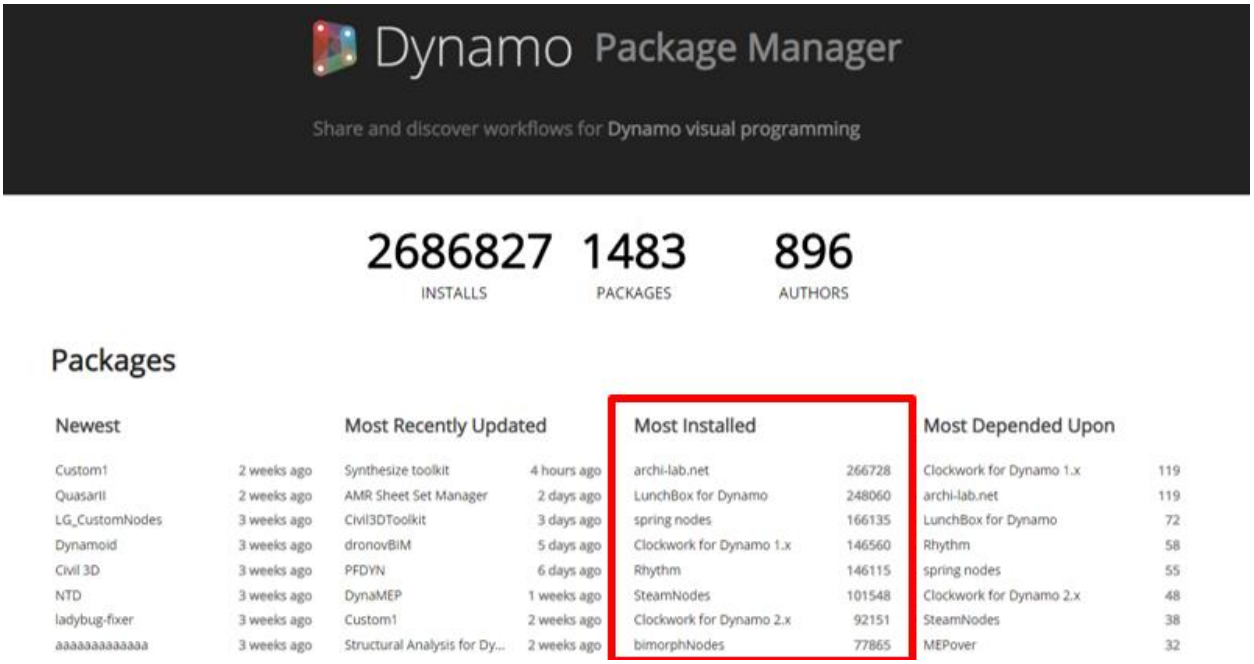


Off and On Again?

Packages and Extensions

Essential Packages

Everyone has their own idea of what custom Dynamo packages are “Essential”, and I think everyone would agree you can’t go wrong with any of the ones on the “Most Installed” list from the Dynamo Package Manager website.



Dynamo Package Manager

Of course, I have my own list of “Essential” packages, here are my 5 must haves.

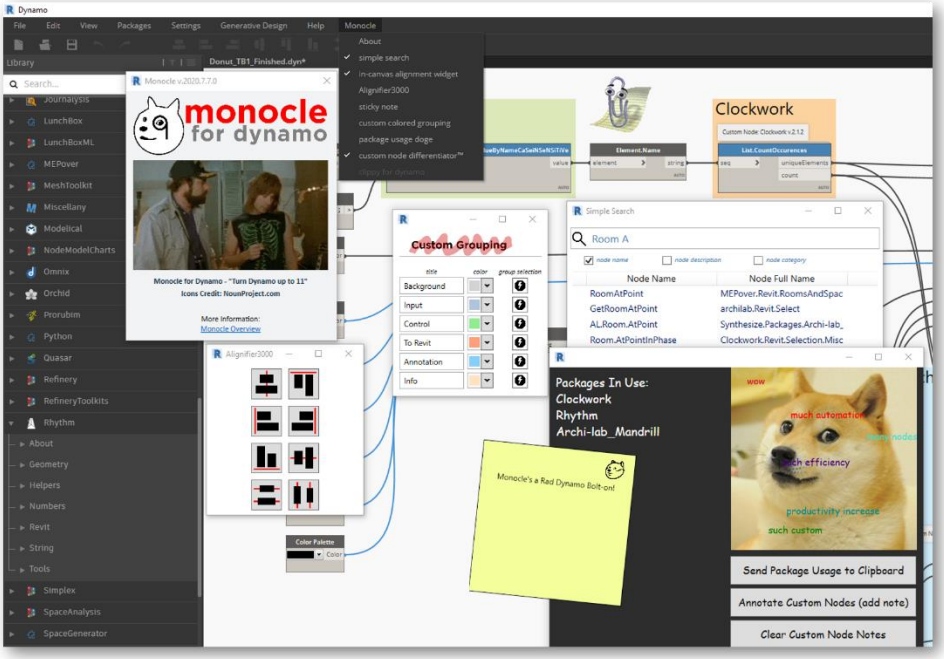
Package	Author	Current Version*
archi-lab.net	Konrad Sobon (https://archi-lab.net/)	2021.25.18
Clockwork for Dynamo 2.x	Andreas Dieckmann (https://www.badmonkeys.net/)	2.3.0
Data-shapes	Mostafa El Ayoubi (https://data-shapes.io/)	2021.2.91
Monocle	John Pierson (https://sixtysecondrevit.com/)	2020.10.1
Rhythm	John Pierson (https://sixtysecondrevit.com/)	2020.9.8

My 5 Essential Dynamo Packages

*As of Oct. 13th, 2020

Monocle

If I could only have one package or extension it would be [Monocle]() hands down!

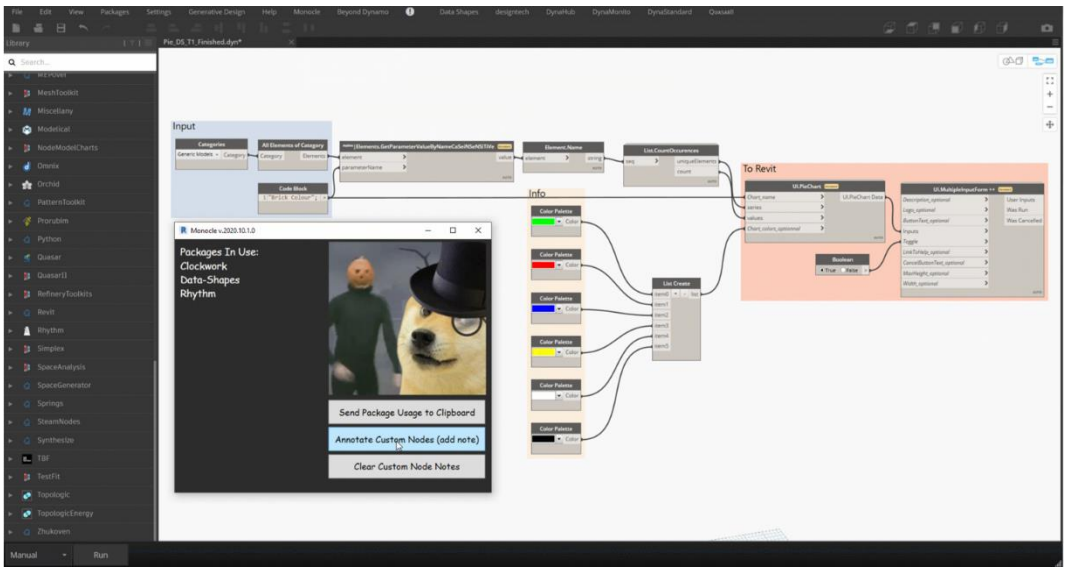


Monocle

Monocle to the Rescue

[Lisa-Marie Mueller]()

Determine a standard for annotating graphs **with group colors and names**. You can utilize the **Monocle extension** to **quickly annotate** and **clean up your graphs**.

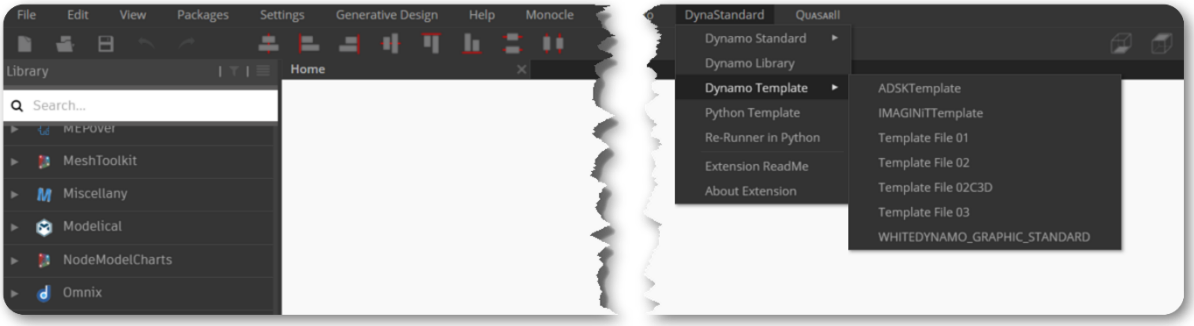


Monocle To The Rescue

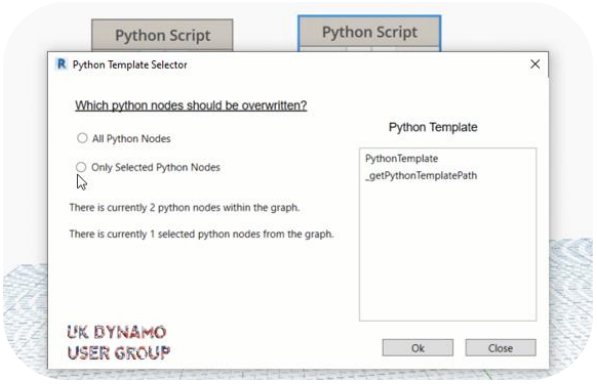
DynaStandard

Not all packages can be in the “Top 5” or must have “Essential Packages”, but I’m finding more and more that I’m also always using and telling people about the DynaStandard extension!

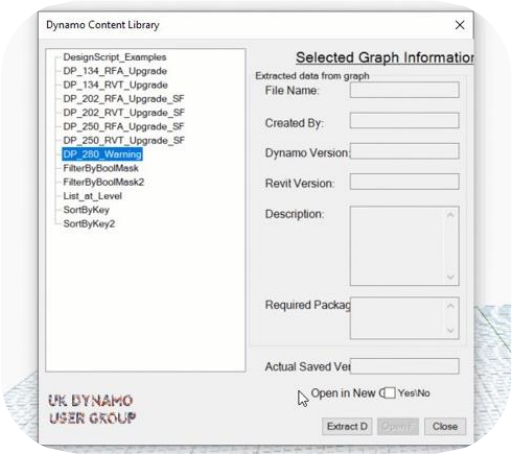
DynaStandard is a content library extension that can help a select a few or a company to distribute scripts, access templates (dynamo or python) and allow for easy access to dynamo standards documentation.



DynaStandard – Menu



DynaStandard – Python Template



DynaStandard – Dynamo Content Library

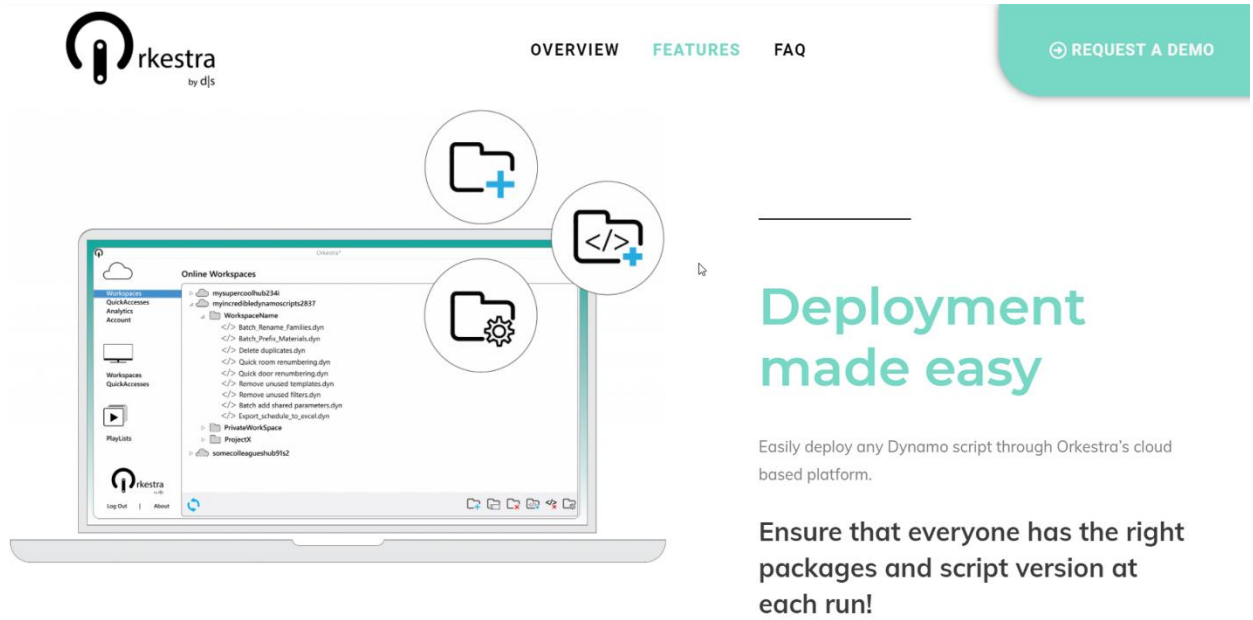
26 Dynamo Packages You Should Check Out

Number	Dynamo Package Name	Latest Version*
0	Ampersand	2019.12.31
1	archi-lab.net	2021.25.18
2	Archi-lab_Mandrill	2020.2.1
3	Bang!	2020.5.7
4	BIM4Struc.Productivity	2.2.2
5	bimorphNodes	3.0.3
6	BumbleBee	2021.25.3
7	Civil3DToolkit	1.1.13
8	Clockwork for Dynamo 2.x	2.3.0
9	Data-Shapes	2021.2.91
10	DynaMEP	1.2.5
11	DynaMonito	2.1.1
12	DynaStandard	1.1.0
13	Genius Loci	2020.9.28
14	MEPover	2020.6.2
15	Monocle	2020.10.1
16	NodeModelCharts	2.0.2
17	**Orchid** (download here)	7584
18	Pattern Toolkit	0.0.5
19	Rhythm	2020.9.8
20	Simplex	2020.2.19
21	spring nodes	204.1.0
22	SteamNodes	1.2.4
23	Topologic	1.4.0
24	TuneUp	1.0.7
25	Warnamo	0.1.3

*As of October 13th, 2020

Orkestra

Orkestra is from the folks that brough us Data|Shapes a platform to create, deploy & scale Dynamo scripts like never before.



Orkestra

bimbeats

Use bimbeats to find out what custom packages are used, and their most used nodes.

bimbeats – Visual from Mark Rainville tweet

Final Thoughts

Typically speaking those of us working in the AEC industry don't have computer science degrees, and don't spend all day everyday writing code. However, it has become clear that in the ever-evolving AEC industry having an understanding of how to code, even at a high level, can be a real plus. It is my hope that with these tips and tricks you have learned you can level up your visual coding using Dynamo.

The Steps

These are the **steps** to create **a Dynamo Graph** as a **solution** to **YOUR** problem.

Step 1 = The Problem

Step 2 = Solve the problem

Step 2a = Research (google/forum) if you don't know how to solve the problem

Step 3 = Create the graph

Step 4 = Test the Graph

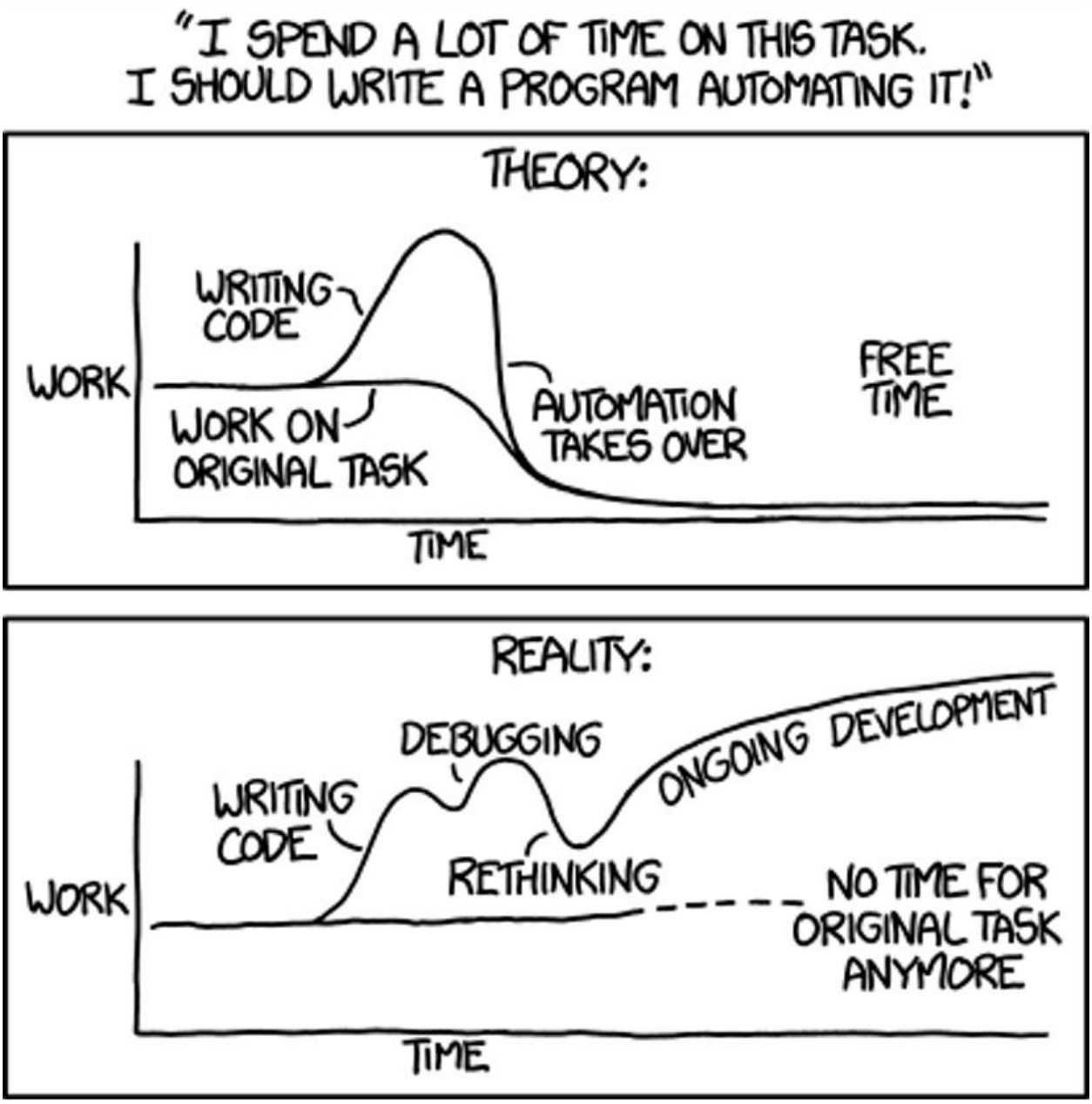
Step 5 = Working Solution Graph!

Step 5a = repeat steps 1 – 4 until a solution is reached

The Steps

Beware of Reality

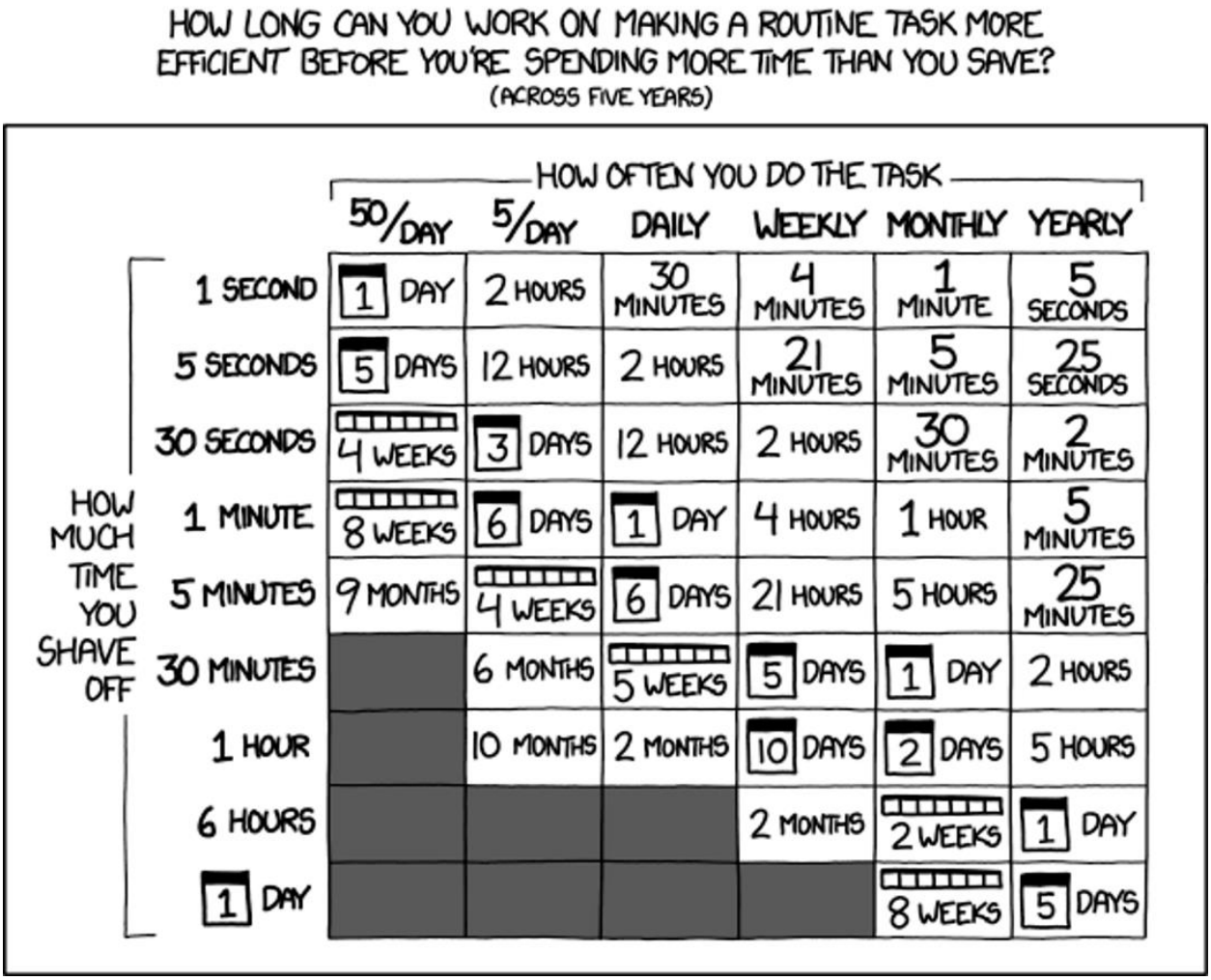
This is one of my favorite comics from Randall Munroe of xkcd fame, and it fits in here perfectly.



Automation – By xkcd

Is it Worth it?

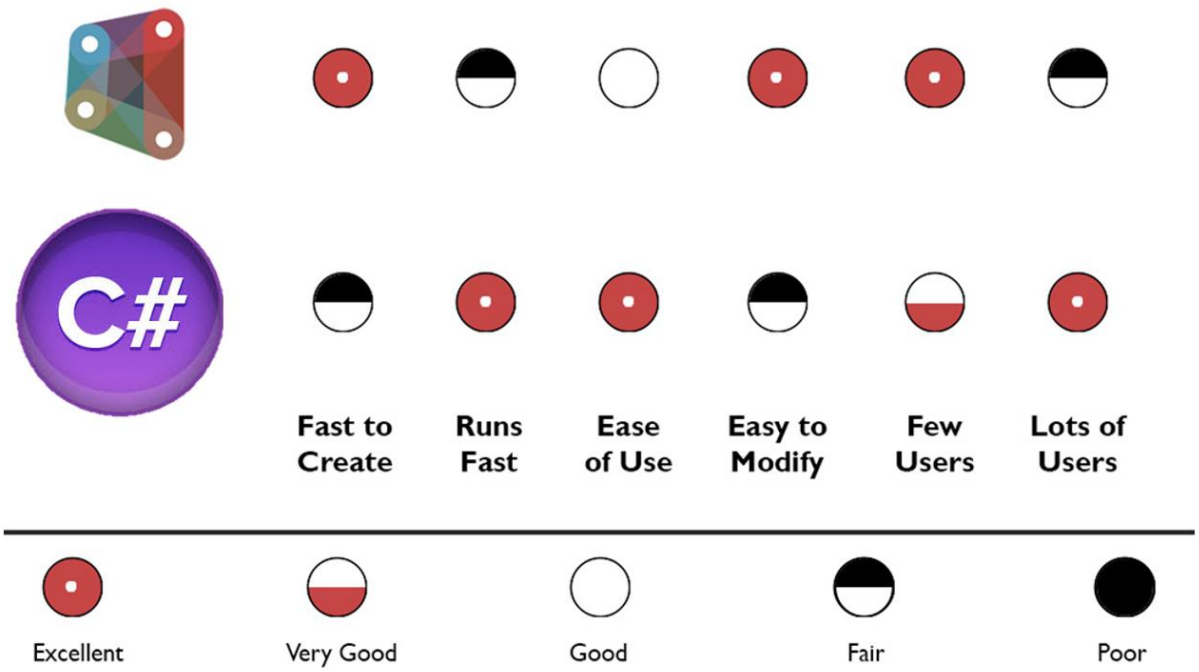
This is another of my favorite comics from Randall Munroe of xkcd fame, this one is truly helpful.



Is It Worth The Time – By xkcd

Dynamo is Not Always the Answer

Dynamo is a great for **prototyping, quick fixes**, and one-off solutions. But if you find **you are using a graph a lot**, that might mean it's time to **transition** it into a **full-on add-in or program** using something like C#. This is a broad generalization of course, but Michael Kilkelly has a great blog post, and a few conference talks about this topic called "Code vs Node" which is where the image below came from. I highly recommend checking them out.



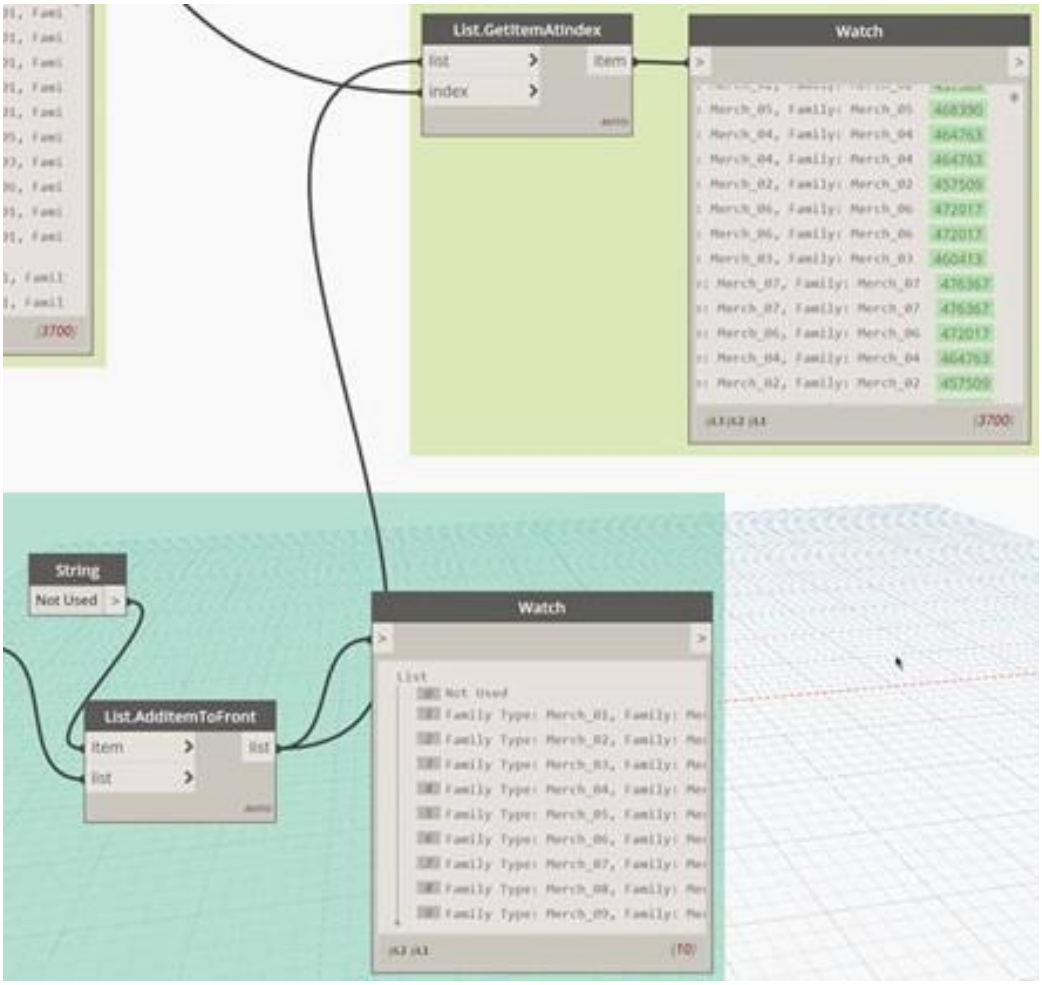
Code vs Node

Bonus Tips & Tricks

List.AddItemToFront

Paul Aubin

Paul has a ginormous list of randomly generated numbers from Excel (about 3,700). They range from 1 – 9. He wanted to use them with List.GetItemAtIndex. Trouble is, as you know, Dynamo is zero based. So, he was facing having to subtract one from 3,700 numbers. Not hard to do in Excel or even in Dynamo, but then it occurred to him, if he just add a dummy item to the front of the list, the numbers he had would work fine since he would never want to pull the dummy (which is now index zero). All the other numbers move down one. Problem solved. And with fewer nodes than adding one to all the numbers.



List.AddItemToFront

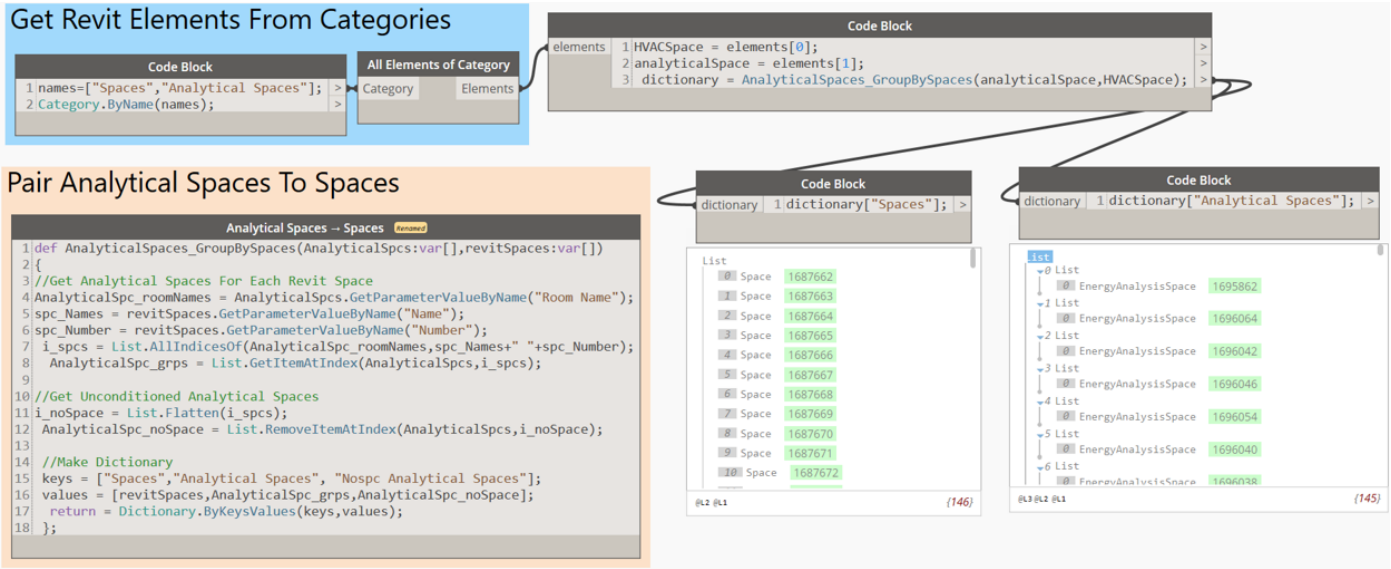
The Value of a Dictionary

Sean Fruin

It is not really a trick but using "**Definitions**" is clean and fast!
The idea behind this tip is to combine chucks of code into a definition that does some function. For function that output sublets of data make a dictionary the output. After building a definition tend to place the code Block into a custom node for safe keeping.
The example below shows a definition pairs Analytical Space and Spaces and puts Analytical Spaces that has no Space pair in a separate list. The output is a dictionary whit three entries. List of Spaces, sub list of Analytical Spaces pairs and no Space Analytical Spaces.

Benefits:

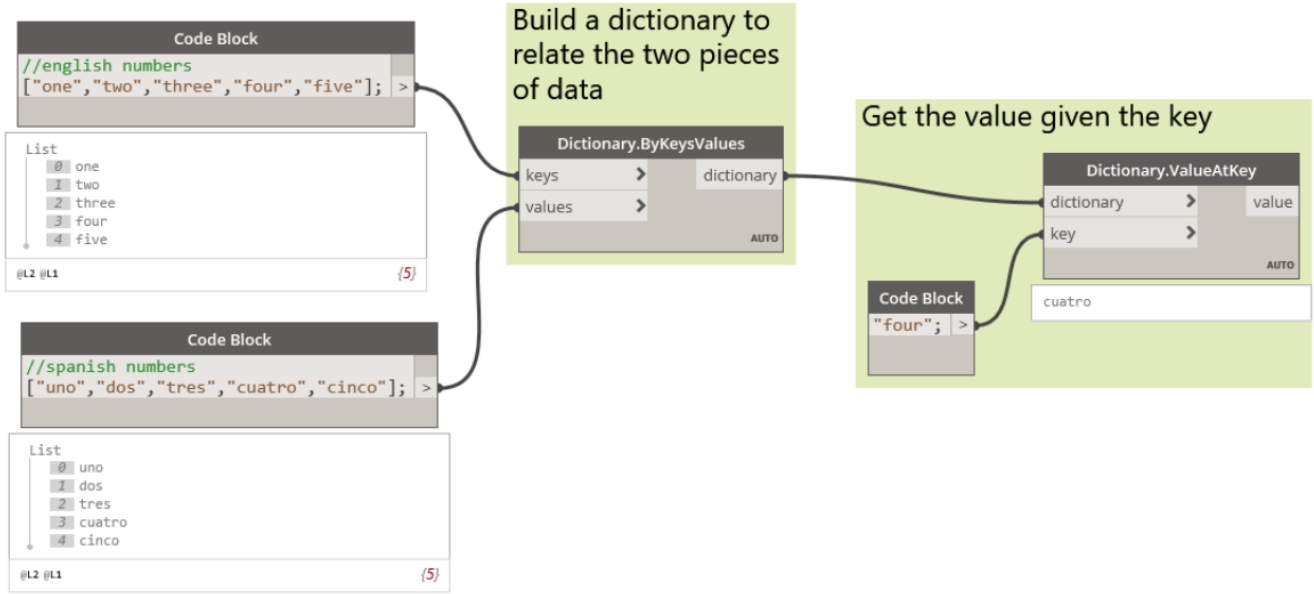
- Clean with clear inputs and out puts.
- No need to track list index of variables.
- Faster computation times.
- Hinds noncritical let inevitable errors.



Definitions + Dictionaries Example

Jacob Small

Jacob shared this: Complex data sets with nested information such as what is often involved with space planning or multi-relational systems, are usually better to manage with dictionaries than lists. There is no compute wasted on the geometry preview (which will likely be hidden in all but the last node); they process faster as data can finish at the rate it comes rather than wait to process them in sequence; and they allow you as a computational designer to focus on the task at hand rather than trying to remember if the room location point was index four or if that is the door location point. As each dictionary is its own object things become more like a "model you can read" rather than an abstract though. **Remember though: you cannot iterate over data in a dictionary**.

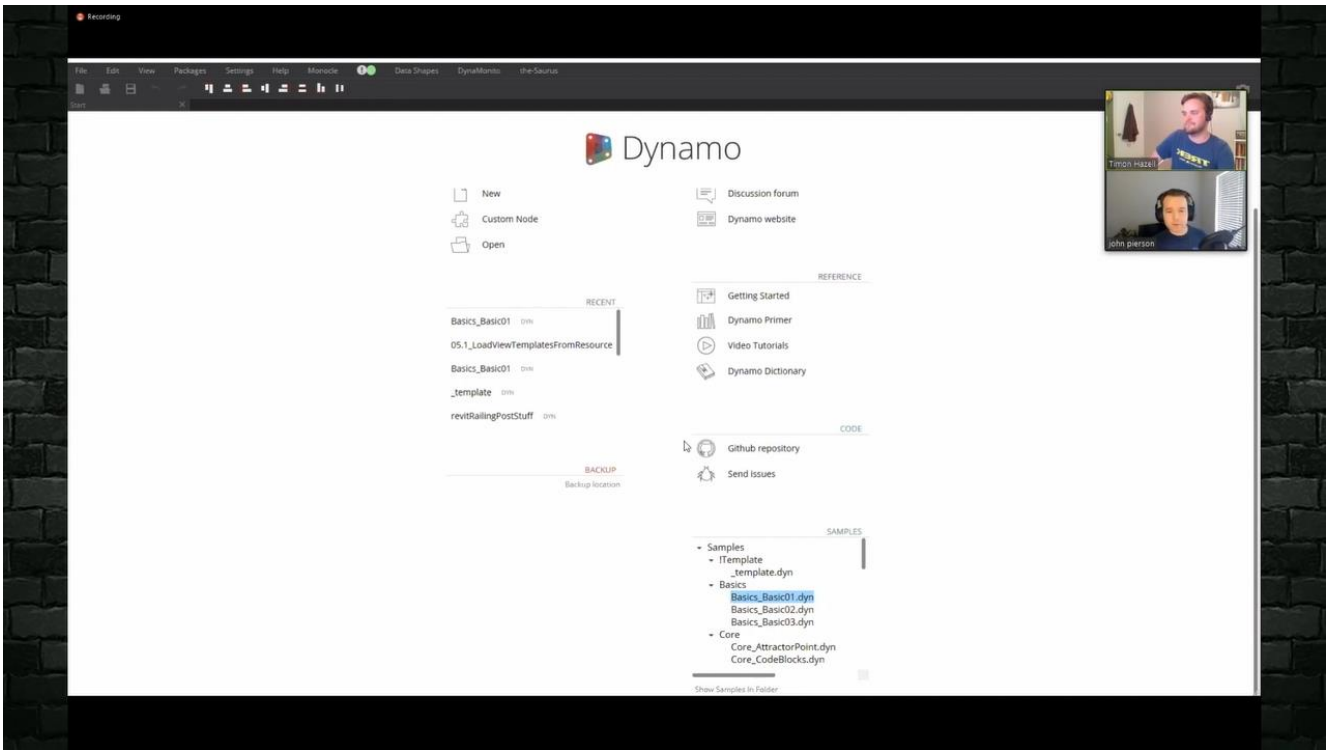


Dictionaries in Dynamo – Dynamo Primer Example 9.1

YourDesk University Video Tips

John Pierson

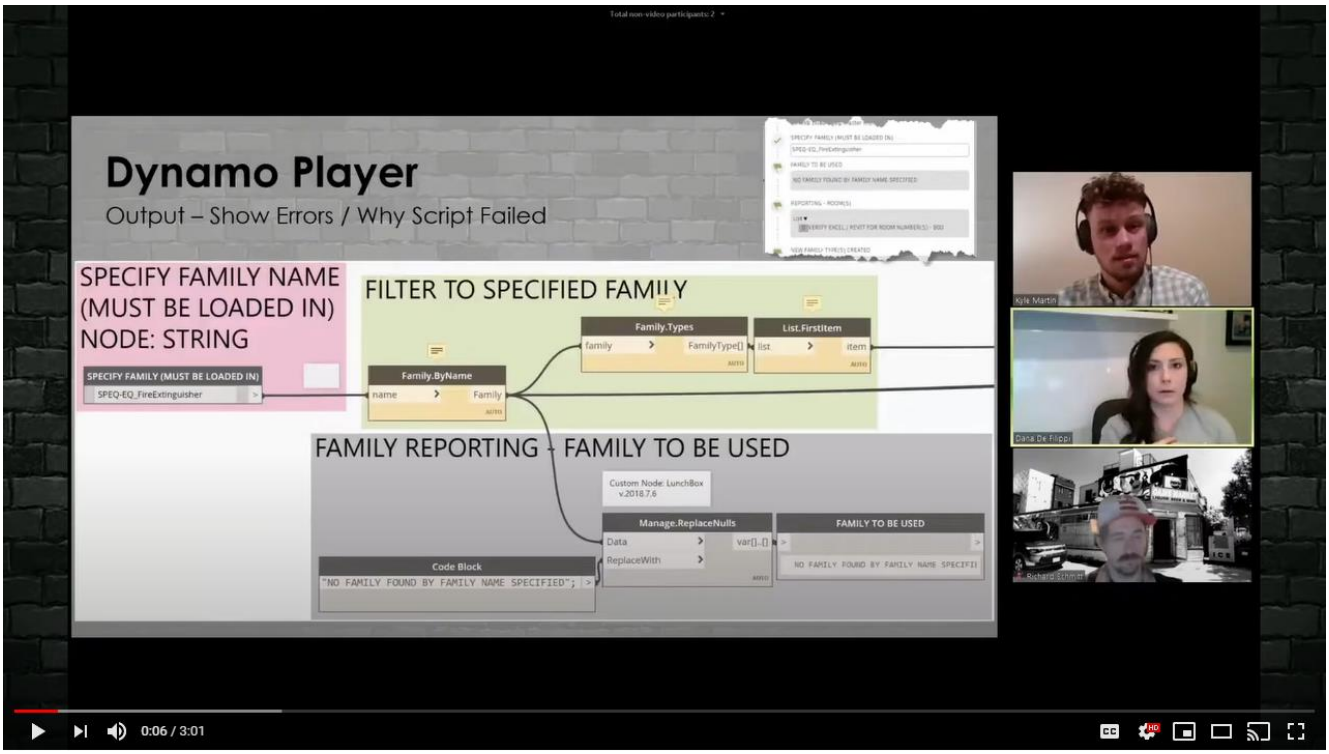
YourDesk University has put out a couple helpful Dynamo tips videos recently on their YouTube channel and I though they are worth sharing here. The first on is from John Pierson: Can you set up Templates in Dynamo? Don't give your users messy dynamo graphs. Learn some best practices for making your graphs cleaner with templates and automatic colors in monocle?



Can you set up Templates in Dynamo?

Dana De Filippi

YourDesk University has put out a couple helpful Dynamo tips videos recently on their YouTube channel and I though they are worth sharing here. The Second on is from Dana De Filippi: How to Handle Errors with Dynamo Player. A top issue with using Dynamo Players is lacking the ability to report errors. But not anymore! Watch this highlight from our video if you want to help your users engage with dynamo player.



How to Handle Errors with Dynamo Player

Resources

Past Labs and Presentations

2020 Presentation

- Here is a link to the presentation, handout & video from **YourDesk University 2020.**
    - Dynamo Packages That will ROCK your world!
    - Dynamo Packages That will ROCK your world – YouTube Video

2019 Lab

- Here is a link to the presentation, handout & video on from **AU 2019.**
    - Revit Data Visualized with Dynamo

2018 Presentation

- Here is a link to the presentation, handout & video on Dynamo Packages from **AU 2018.**
    - Dynamo Packages: Have You Tried These Yet?

2018 Lab

- Here is link to the lab handout, presentation & dataset from **Data Day 2018**.
    - Dynamo: Everyone's Doing It – Vol. 3 – Attack of the Data!
- Here is link to the lab handout, presentation & dataset from **BILT ANZ 2018**.
    - Dynamo: Everyone's Doing It – Vol. 3 – Attack of the Data!

2017 Presentation

- Here is a link to a presentation, dataset & video on Dynamo Packages for **PDUG** (this was also done at **BILT NA 2017)**.
    - Dynamo Packages – Have You Tried These Yet?
    - Dynamo Packages – Have You Tried These Yet? (BILT NA 2017 version)

2017 Lab

- Here is link to the lab handout, presentation & dataset from **BILT NA 2017**.
    - Dynamo: Everyone's Doing It – Again!

2016 Lab

- Here is link to the lab handout, presentation & dataset from **RTC NA 2016**.
    - Dynamo: Everyone's Doing It!
- Here is link to the lab handout, presentation & dataset from **AU 2016.**
    - Dynamo: Everyone's Doing It!

Blogs & Websites

- AEC, you and me – Julien Benoit's Blog, also the maker of the SteamNodes package
- ArchSmarter – Michael Kilkelly's blog about Revit, Dynamo, and Architecture
- archi+lab – Konrad Sobon's blog with lots of great Dynamo content, examples and packages
- Autodesk Revit Structure – A great blog for structural Dynamo users
- Bad Monkeys – A website for a great group of Dynamo cool cats
- BattleBIM – blog, lots of good Dynamo and Revit content, maker of the BattleBIM package
- BIM 42 – Simon Moreau's blog, lots of good Dynamo and Revit content
- BIM Extension – blog with Dynamo content
- Bimorph – website with Dynamo content, maker of the Bimorph package
- Danimosite – blog with Dynamo content
- DATA|SHAPES – Mostafa El Ayoubi's blog, maker of the Data-Shapes package
- Designtech - makers of the Zebra package & Designtech extension for Dynamo
- Dynamaniacs of Calgary – Dynamo user group
- Dynamo Blog – The official DynamoBIM.org blog
- Dynamo Dictionary an open source, searchable database for Dynamo functionality.
- Dynamo Learning Resources – An ongoing post in the Revit Forum about Dynamo
- Dynamo Primer the unofficial online user's manual
- DynamoNodes – A blog about Dynamo nodes, great place to learn standard & custom nodes
- Enjoy Revit – A blog with some good dynamo content, it's a little older but still helpful
- Github – Where the open source Dynamo fun is
- Havard Vasshaug – Havard's blog with good (and cool) Dynamo content
- Just Shut Up and do BIM – blog with Dynamo content
- KM – Kyle Martin's blog with some Dynamo content and uses
- landarchBIM – Lauren Schmidt's blog, Dynamo and Revit content for landscape architecture
- Matterlab – Thought-pieces, articles, and comments, including Dynamo
- Parametric Monkey – A website about computational design with Dynamo (and other) tutorials
- Revit AU – blog about Dynamo, C#, Revit & Revit API and lots more.
- Revit Dynamite and Ammo – blog about Dynamo and Python
- Revit Forum – Dynamo Learning Resources
- Simply Complex – Marcello Sgambelluir's blog about Dynamo, Revit & the AECO+
- sixtysecondrevit – John Pierson's blog about Dynamo and Revit, also make of Rhythm package
- Stuff and BIMs – Adam Sheather's blog (creator of DynaWorks) with good Dynamo content
- The Livingroomcraftz – Lots of interesting posts with Dynamo graphs, & maker of LRCZ package
- The Building Coder – A ton of Dynamo and Coding content
- The Orchid Project – blog, maker of the Orchid package
- The Revit Saver – Brian Nickel's blog about Revit and Dynamo from a MEP perspective
- WC BIM – blog with Dynamo content
- What Revit Wants – Luke Johnson's site tons of Revit &Dynamo info & maker of Bakery package
- zhukoven – blog, maker of the zhukoven package

Courses & Training

- ArchSmarter – Learning Dynamo – This is a paid course by Michael Kilkelly
- ArchSmarter – Managing Building Data With Dynamo– This is a paid course by Michael Kilkelly
- ArchSmarter – Dynamo for Busy People – This is a paid course by Michael Kilkelly
- ArchSmarter – Dynamo Dojo – This is a paid course by Michael Kilkelly
- BIMHIVE – This is a site with free Dynamo tutorials
- CADLearning Dynamo 2016 – This is a paid course by Jason Boehning & Marcello Sgambelluri
- CADLearning Dynamo 2017 – This is a paid course by Jason Boehning
- CADLearning Dynamo 2018 – This is a paid course by Jason Boehning
- Diving Deeper: A beginners look at Python in Dynamo by Sol Amour
- DiRoots – Dynamo Revit | Basic Free course
- DiRoots – Dynamo Revit | Advanced Free course
- Learning Dynamo – This is a site with free Dynamo tutorials created by Jeremy Graham
- Lynda.com – Dynamo for Revit: Python Scripting – This is a paid course by Jeremy Graham
- Lynda.com – Dynamo 1.x Essential Training – This is a paid course by Ian Siegal
- Lynda.com – Dynamo for Revit Workflow – This is a paid course by Ian Siegal
- Lynda.com – Dynamo for Revit Project Setup – This is a paid course by Ian Siegal
- Lynda.com – Dynamo 2.x Essential Training – This is a paid course by Ian Siegal
- Lynda.com – Paneling with Dynamo for Revit – This is a paid course by Colin McCrone
- Lynda.com – Dynamo: Practical – This is a paid course by Paul F Aubin
- Lynda.com – Revit and Dynamo for Interior Design – This is a paid course by Bill Carney
- Lynda.com –Advanced Revit and Dynamo for Interior Design – This is a paid course by Bill Carney
- Plurasight – An Introduction to Dynamo for Daily Use Within Revit – A paid course by John Pierson
- Plurasight – Exploring Dynamo Geometry – This is a paid course by Sol Amour
- ThinkParametric – Dynamo 101 Fundamentals – This is a paid course by Konrad Sobon
- ThinkParametric – Create Custom View Filters using Dynamo– A paid course by Konrad Sobon
- Udemy – Dynamo for Beginners – This is a paid course by Niko Gamsakhurdiya
- Udemy – Dynamo. Advance. Part 1 – This is a paid course by Niko Gamsakhurdiya
- Udemy – Quantity take-off using Revit, Navisworks and Dynamo – This is a paid course by AulaGEO Academy
- Udemy – #CODE – Starting with Dynamo for BIM engineering projects – This is a paid course by AulaGEO Academy
- Udemy – DY01: Learn to use Dynamo BIM with Spreadsheets – Paid course by KIT To
- Udemy – DY02: Learn to use Dynamo BIM with Spreadsheets and Lists – This is a paid course by KIT To
- Udemy – Dynamo BIM from Zero to Hero – This is a paid course by Viktor Kuzev
- Udemy – Paid Dynamo courses by Enrique Galicia – Currently 21 to choose from

Free Graphs

- BIMOne – First Dynamo Script Pack by BIM One for Settings
- BIMOne – 2nd pack of Dynamo scripts for model maintenance
- BIMOne – Third pack of free Dynamo Scripts
- BIMOne – 4th pack of free Dynamo scripts to take control of Revit
- BIMOne – 5th pack of free Dynamo scripts to make your life easier in Revit MEP

Podcasts & Videos

- ArchSmarter Video – How to Create a Project Dashboard using Revit, Dynamo, and Excel
- ArchSmarter's YouTube Channel – there are a few good getting started Dynamo videos here
- Aussie BIM Guru YouTube Channel – Lots of great Dynamo videos and tutorials
- BIMHIVE YouTube Channel – Dynamo Tutorials
- Danny Bentley's YouTube Channel – Revit API and Dynamo Videos
- Dynamo – Autodesk's Dynamo YouTube Channel
- Dynamo Chicago YouTube Channel
- Dynamo-litia Vimeo Page – Boston Dynamo User Group
- Dynamo Thoughts – A Vodcast about teaching & learning Dynamo by Bill Debevc and Ian Siegel
- EvolveLab – YouTube Channel – Dynamo Tutorials and more
- John Pierson's YouTube Channel – Lots of great Dynamo videos from the maker of the Rhythm package and sixtysecondrevit blog
- Konrad Sobon's YouTube Channel – Creator of archi+lab and 4 helpful dynamo packages
- Philadelphia Dynamo User Group – YouTube Channel
- RoMBIS YouTube Channel
- Ryan Cameron YouTube Channel
- SF Computational Design Institute YouTube Channel
- Sean Fruin YouTube Channel
- The BIM Coordinator YouTube Channel
- The Simply Complex Podcast – A Dynamo podcast by Marcello with help from Jason and John
- YourDeskUniversity: "Dynamo, Why So Serious?!" – John Pierson Video - This class will demonstrate awesome ways to have fun and learn while leveraging computational thinking in Dynamo
- YourDeskUniversity: Increase your office Dynamo usage!!! – Dana De Filippi Video - Utilizing Dynamo Player and customizing the script inputs will provide general Revit users a workflow that is much more streamlined and less scary.
- YourDeskUniversity: "Dynamo, Python, and Git: A Tale of Two Weeks" - Courtney Dugan AECOM, Jeff Rynes AECOM Video - Collaborating through GitLab across Virginia, teams from the Roanoke and Arlington offices of AECOM developed a solution to update furniture family parameters
- YourDeskUniversity: "Dynamo Packages That Will Rock Your World" – Carl Storms of BIM Track Video - In this session, we will explore some of the many great Dynamo packages, and amazing extensions that are available to improve your Dynamo 2.x experience
- YourDeskUniversity: "Dynamo: Things you May Have Missed Along The Way..."Jacob Small, Sol Amour, Autodesk Video - If you have been using dynamo for a while and wonder if you are using it right? Should you dig deeper, or move in a different direction