8 Years’ Worth of Dynamo and Revit Classes from 1 Speaker in 60 Minutes

Marcello Sgambelluri S.E.
Director of Advanced Technology

Twitter: @marcellosgamb
Blog/Podcast/Comic: simplycomplex.org
Learning Objectives

• Learn helpful tips on how to push Revit to its limits
• Learn helpful tips on how to push Dynamo to its limits
• Learn eight years’ worth of Revit classes in just one session
• Learn eight years’ worth of Dynamo classes in just one session
Summary

present a summary of each class in a high-speed format that’s guaranteed to be fun, fast, and entertaining—from modeling a cow in Revit software to modeling complex structure to using Dynamo. So sit back and enjoy the ride of eight years’ worth of classes.
an inspirational presentation

My Journey thru a Summary of Each Class since 2019… a Best of!

Thank you I would never have accomplished without everyone in the industry

Never Dreamed I would be Giving Successful Presentations at a Tech Conference

So Never Give up on your Dreams

If I could do it. You could do it too!
About the speaker

Marcello Sgambelluri S.E.
Director of Advanced Technology

Marcello has worked on many BIM projects over the last 20 years and continually speaks at Autodesk University and has received the 1st place speaker award a record 6 times between 2012 thru 2018. Marcello Sgambelluri is a licensed civil and structural engineer and helps the AEC Community thru Training, Conferences, Blog, Podcast, Youtube, and Comics

https://www.simplycomplex.org/
About Me

Marcello Sgambelluri S.E.
Director of Advanced Technology
at
John A. Martin Structural Engineers
Los Angeles, CA
For 21 years

Past Projects

Sharing Knowledge to AEC Via Blog, Podcast, Comic Book, Youtube Simplycomplex.org
First Revit Family
Revit Zoo Families
Marcello’s 2012 thru 2019 (8 Years) of Conference Presentation Statistics

15 - 1st Place Speaker Awards

25+ UNIQUE CLASSES
200+ EXAMPLES
1000+ PAGES OF HANDOUTS
15+ GB OF DATASETS

https://a360.co/361XgcN
## Unique Conference Classes By Marcello Sgambelluri 2012-2019

<table>
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<tr>
<th>Year</th>
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<td>Game Engines for Engineers</td>
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<td>Connecting Dynamo with RAM via API</td>
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Today’s Outline

• Give Brief Overview of the Class
• Then one Example
- In CheatSheet Format
HARDSCAPE FOLLOW TOPO USING DWG

STEPS

1. OPEN THE FILE "STRAIGHT_WALL_START.RVT" OR CREATE A NEW TOPO SURFACE.

2. GO TO THE SITE PLAN AND ADD A RECTANGULAR BUILDING PAD BOUNDARY BETWEEN GRIDS 1 TO 2 AND A TO B AS SHOWN.

3. SELECT THE "NEW TOPOGRAPHY" ELEMENT ISOLATE AND EXPORT THAT NEW TOPOGRAPHY ELEMENT AS A DWG.

4. CREATE AN IN-PLACE MASS.

5. INSERT THE NEWLY EXPORTED .DWG

6. GO BACK TO THE SITE PLAN AND ADD A STRAIGHT WALL IN PLAN. EDIT THE PROFILE AND PICK THE EDGE OF THE INPLACE MASS. DWG UNTIL THE ALL THE EDGES ON GRID A OF THE DWG ARE PICKED.

7. RESHAPE THE WALL PROFILE. SELECT THE TOP OF THE WALL AND COPY IT VERTICALLY. THE WALL PROFILE SHOULD LOOK LIKE THE FIGURE SHOWN.

NOTE: THE BUILDING PAD IS SACRIFICIAL GEOMETRY TO CREATE THE STRAIGHT WALL AND YOU WILL BE USING ITS UPPER EDGE TO LOCATE THE WALL. IF A DWG IS NOT PREFERRED TO BE LEFT IN REVIT THEN DELETE IT, NOT USING THIS METHOD IS ALSO AN OPTION.
At AU2012
Advanced Autodesk® Revit®…Complex Geometry
By Marcello Sgambelluri

1st Place Speaker Award at AU 2012
THANK YOU!!!!!!
At AU2013
How to Make Topography in Revit Follow Hardscape
By Marcello Sgambelluri

1st Place Speaker Award at AU 2013
THANK YOU!!!!!!
At AU2014
Practical Dynamo
By Marcello Sgambelluri

1st Place Speaker Award at AU 2014
THANK YOU!!!!!!
1st Place Speaker Award at AU 2015

THANK YOU!!!!!!
1st Place Speaker Award at AU 2017

THANK YOU!!!!!!
Customizing Dynamo Using C#
By Marcello Sgambelluri

1st Place Speaker Award at AU 2018
THANK YOU!!!!!!
Other 1st Place Speaker Awards

BILT North America 2018
BILT Europe 2016
BILT North America 2016
BILT ANZ 2016
BILT North America 2015
BILT North America 2014
BILT North America 2013
BILT ANZ 2013
BILT ANZ 2012
Customizing the Graphical Column Schedule: Create Smart Tags (GCS) 2012

CREATE SMART TAGS AT BOT OF GRAPHICAL COLUMN SCHEDULES

STEP 1
CREATE A COLUMN TAG FAMILY WITH BOUNDARY AND GRAPHICS AS SHOWN.

STEP 2
CREATE SHARED PARAMETERS IN COLUMN FAMILY THAT SHOULD BE DISPLAYED IN COLUMN TAG (BASE PLATE DIMENSIONS AND BOLT INFO SHOWN)

STEP 3
ADD SHARED PARAMETERS OF COLUMN TO TAG

STEP 4
ADD TAG TO BASE OF COLUMN SCHEDULE

BASE PLATE DIM.
DETIAL INFORMATION
PARAMETRIC IN COLUMN SCHEDULE

NOTE:
THE GRAPHICAL COLUMN SCHEDULE IS NOT CUSTOMIZABLE THEREFORE ADDING A SMART TAG AT THE BASE OF THE COLUMN SCHEDULE ALLOWS FOR INFORMATION SUCH AS BASE PLATE SIZES AND DETAIL INFORMATION TO SHOW UP

C-2.9

25x400x400

4 - 250

EQ, EQ

25x 400x 400
CREATE A ROTATION RIG IN REVIT AC OR MASSING FAMILY

RIDE THE RAIL METHOD

STEPS
1. CREATE A REFERENCE CIRCLE.
2. PLACE TWO POINTS ANYWHERE ON THE CIRCLE.
3. CHANGE THE MEASUREMENT TYPE TO "ANGLE" IN THE PROPERTIES FOR BOTH POINTS.
4. CREATE PARAMETER TO THE FIRST POINT.
5. CREATE APPARAMETERS FOR THE SECOND POINT THAT IS ± 180 DEGREES OF THE FIRST.
6. SELECT BOTH POINTS AND CLICK "SPLINE THRU POINTS".
7. CHANGE NEW LINE TO "REFERENCE LINE" (THIS IS THE NEW HOSTING REFERENCE LINE.)
8. HOST WHATEVER YOU WANT TO THE REFERENCE LINE.
9. WHEN THE ANGLE PARAMETER IS CHANGED IT IS STABLE AT ANY PRACTICAL ANGLE INCLUDING 0 AND 90 AND 180.

REVIT ADAPTIVE COMPONENT OR MASSING ENVIRONMENT

NOTES: THIS METHOD USES THE MASSING OR ADAPTIVE COMPONENTS TO CREATE A STABLE FAMILY ROTATION RIG. THIS IS A GENERAL USE RIG AND COULD BE LINKED TOGETHER TO FORM MULTIPLE ROTATION RIGS.

Ride the Rails: New Ways to build Rotation Parameters: Mass Rig on Lift 2012
CREATE A DROPPED CEILING USING A DIVIDED PATH+AC

STEPS

1. OPEN POWER_POINT_POW
ER_PLAYS_2012_START/rd

2. SELECT ON BOTH LINES AND DIVIDE PATH

3. CHANGE THE PATH SETTINGS AS SHOWN

4. PLACE THE 3-PT ADAPTIVE COMPONENT
SINGLE COMPONENT" SUCH THAT PT 1 AND
PT 2 ARE AT THE ENDS OF THE DIVIDED
PATH AS SHOWN

5. CLICK ON ADAPTIVE COMPONENT AND
CLICK THE REPEATER COMMAND.

6. RESULTS ARE SHOWN BELOW

7. CHANGE THE PATH SETTINGS OUR
LINE GEOMETRY AND WATCH DYNAMIC
CHANGES

NOTES: THIS METHOD IS GOOD FOR PLACING FRAMING IN EARLY DESIGN.
THESE ARE NOT STRUCTURAL FRAMING ELEMENTS AND MAY NEED TO BE CHANGED AT A
LATER TIME AS THE DESIGN IS FINALIZED.
HOW TO BUILD A COW IN REVIT

STEPS

1. TAKE PICTURES OF A COW (YES A REAL COW) AND CREATE A 3D MESH MODEL USING 3DSCAPE OR SIMILAR SOFTWARE. IF YOU ALREADY HAVE A 3D MESH OF A COW THEN SKIP THIS STEP.

2. CLEAN UP THE MESH AND OPEN IN RHINO OR 3DS MAX. GO TO A SIDE VIEW AND REPLICATE BY ARRAY THE PLANES AS SHOWN. SELECT THE PLANES AND COW AND USE THE "INTERSECT" COMMAND. THIS WILL CREATE ALL THE PROFILES NECESSARY TO MAKE A FORM IN REVIT. NOTICE THAT THE PROFILES ARE RADIAL FROM THE BACK FEET TO THE MIDDLE OF THE COW.

3. EXPORT PROFILE LINES INTO REVIT MASSING OR AC FAMILY AND SELECT THE SPLINE "THRU POINTS" COMMAND AND CLICK THE ENDS OF EACH STRAIGHT-LINE SEGMENT TO CREATE REVIT SPLINES AS PROFILES.

4. WITH ALL THE REFERENCE LINES SELECTED CLICK THE "CREATE FORM" BUTTON. MIRROR THE OTHER SURFACE TO COMPLETE THE COW.

NOTE: MAKE SURE THAT THERE ARE SMOOTH TRANSITIONS BETWEEN EACH PROFILE CURVE. THIS HELPS TO GET THE BODY SURFACE CREATED IN ONE FORM. THIS METHOD ONLY EXPLAINS HOW TO CREATE THE MAIN BODY OF THE COW NOT THE HORNS ETC.
CREATE FLOOR THAT FOLLOWS CURVED WALL

STEPS

1. CREATE A WIDE AND THICK FLOOR SURFACE AT THE DESIRED LOCATION OF THE FLOOR
2. JOIN THE CURVED WALL AND FLOOR
3. EDIT THE WALL BOUNDARY
4. SELECT THE EDGE OF THE NEWLY CREATED JOINED WALL
5. COMPLETE THE SKETCH SO THE FLOOR BOUNDARY CREATES A CLOSED LOOP
6. CLICK FINISH. THE FINAL PRODUCT SHOULD LOOK LIKE THE FIGURE BELOW.

NOTE: THE METHOD ABOVE COULD BE USED TO HAVE FLOORS FOLLOW ALL TYPES OF WALL SHAPES. ROOF ELEMENTS ALSO WORK. THE IMPORTANT STEP IF TO JOIN THE FLOOR WITH THE WALL SO THE RESULTING JOINED SOLID HAS A 'PINCHABLE' EDGE.
HOW TO SCALE USING PLANTING CATEGORY

Scaling by planting family is basically a trick that is from http://revitswatk.word-press.com where nesting the family into another planting family or change the category to planting, when the family is loaded into the project and the preset HT parameter value is changed then the entire family scales as shown. If there is no “height” parameter then create one as a type.

Note: This method works great on complex families as shown however requires multiple nesting to get it to scale in a predictable manner and there is little to no control over the scale origin or fine tune control.
8 Years' Worth of Dynamo and Revit Classes BY Marcello Sgambelluri

Make Hardscape Follow Site Topography 2013

HARDSCAPE FOLLOW TOPO USING DWG

STEPS
1. OPEN THE FILE "STRAIGHT_WALL_START.RVT" OR CREATE A NEW TOPO SURFACE.
2. GO TO THE SITE PLAN AND ADD A RECTANGULAR BUILDING PAD BOUNDARY BETWEEN GRIDS 1 TO 2 AND A TO B AS SHOWN.
3. SELECT THE "NEW TOPOGRAPHY" ELEMENT ISOLATE AND EXPORT THAT NEW TOPOGRAPHY ELEMENT AS A .DWG.
4. CREATE AN IN-PLACE MASS.
5. INSERT THE NEWLY EXPORTED .Dwg.
7. RESHAPE THE WALL PROFILE. SELECT THE TOP OF THE WALL AND COPY IT VERTICALLY. THE WALL PROFILE SHOULD LOOK LIKE THE FIGURE SHOWN.

NOTE: THE BUILDING PAD IS SACRIFICIAL GEOMETRY TO CREATE THE STRAIGHT WALL AND YOU WILL BE USING ITS UPPER EDGE TO LOCATE THE WALL. IF A Dwg IS NOT PREFERRED TO BE LEFT IN REVIT THEN DELETE IT. NOT USING THIS METHOD IS ALSO AN OPTION.
ENGAGE YOUR AUDIENCE BY MAKING THEM FEEL GREAT

I've learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel.

Maya Angelou

TIPS TO ENGAGE YOUR AUDIENCE DURING A PRESENTATION

You need to engage the audience and you need to make sure that what you are saying is coming from your heart. I realized quickly that it is people's emotions that you need to reach out to and make them feel like you care. That is how you get the audience to remember your presentation. All you need to do is keep them interested, active and feeling like you care about them. When I am at a conference, I ask people: I know when they leave a presentation, what they thought about it. When the presentation is uneventful; I get an answer such as "It was OK" or a little shoulder shrug. When the presentation was engaging or made them feel good, the answer is almost always "That was amazing!" So the point is: you want to engage the audience to turn this comment "It was OK" to this comment "That was amazing!"

The easiest way to engage an audience is to ask questions. Before I start a presentation, I always poll the audience to find out who is actually in the audience.

8 Years' Worth of Dynamo and Revit Classes BY : Marcello Sgambelluri

How to Prepare and Deliver an Engaging Presentation 2013

NOTES: For more information visit the Autodesk website and watch the class on "How to Engage an Audience"
CREATING SURFACES WITH PROFILE ORDER

STEP 1: OPEN REVIT FILE “PROFILEORDER_START.RVT”
STEP 2: OPEN A NEW DYNAMO FILE AND ADD NODES AS SHOWN
STEP 3: SELECT ELEMENT 0.1.2 IN THAT ORDER USING THE "SELECT" NODE AND RUN
NOTE: THE REVIT MASSING FAMILY DOES NOT ALLOW FOR PROFILES TO BE SELECTED IN ORDER
GET AND SET INSTANCE PARAMETERS WITH LINK FILE

SELECTED LINKED FILE IN REVIT

GETS THE WALL ELEMENTS FROM THE LINKED FILE IN REVIT (AMAZING)!
(NOTE: THIS IS A CUSTOM NODE IN THE SPRING NODE PACKAGE)

SETS THE WALL CAT.

SELECTS ALL THE COLUMN TYPES IN THE PROJECT

SETS THE BASE OFFSET PARAMETER VALUE

SETTINGS OF FAMILY TYPE

SET THE BASE OFFSET PARAMETER OF THE COLUMN TO THE BASE OFFSET PARAMETER OF THE WALL

WALL IS A LINKED FILE!

ORIGIN LOCATION OF BOTTOM OF COLUMNS

NEW LOCATION OF BOTTOM OF COLUMNS

STEP 1: OPEN FILE "GET_SET_PARAMETERS_START_LINK.RVT"
STEP 2: OPEN A NEW DYNAMO FILE, PLACE NODES AS SHOWN AND RUN SCRIPT FOR EACH COLUMN
SELECT THE LINKED FILE USING THE "SELECT MODEL ELEMENT" UI NODE
NOTES: LINKED FILES ARE "READ ONLY"
8 Years’ Worth of Dynamo and Revit Classes

BY: Marcello Sgambelluri

Dynamo for Contractors Part 1 2015

SURFACE AREA OF RAMPS

1. Select Model Elements
   - Change: Elements
   - Element: 309385

2. Element.Faces
   - element
   - Surface

3. Code Block
   - x
   - Surface
   - double

4. Surface.Area
   - Surface
   - Area: 187.932

THIS NODE SELECTS THE RAMP

THIS NODE EXTRACTS ALL THE SURFACES OF THE RAMP

THIS NODE "GETS" THE TOP SURFACE OR INDEX [3]

THIS NODE EXTRACTS THE SURFACE AREA OF THE "TOP" SURFACE OF THE RAMP

NOTE: IF THE RAMP IS STRAIGHT USE [3]

RAMP GEOMETRY

NOTE: USE THE METHOD ABOVE TO EXTRACT OTHER AREAS FROM REVIT SOLIDS SUCH AS ROOFS, FLOORS, FOUNDATION SLABS, ETC.

STEP 1: OPEN FILE "RAMP_AREA_START.RVT"
STEP 2: OPEN A NEW DYNAMO FILE, PLACE NODES AS SHOWN AND RUN SCRIPT
NOTES: TO GET THE AREA OF THE SIDES AND BOTTOMS, SIMPLY DELETE THE TOP SURFACE AREA FROM THE TOTAL SURFACE AREA

STEPS & NOTES
TOTAL SURFACE AREA OF MECH EQUIPMENT

This node selects all the elements in Revit

This node converts all the Revit family geometry to Dynamo surfaces

This node flattens all the items into a single list

Select Model Elements

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Element Names

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Dynamo and Revit Geometry

Steps & Notes:

1. Open file "Surface_Area_Robot_Start.rvt"
2. Open a new Dynamo file, place nodes as shown and run script.

Notes: Alt. method is to extract solid and get surface area.

And could be used on most Revit solid and surface elements.
CREATE A ROTATION RIG IN REVIT USING A REVOLVE

REVOLVE ELEMENT
(WITH CONSTANT LENGTH)

START ANGLE

HOST CONTENT ON THIS REFERENCE LINE

END ANGLE

REFERENCE LINE

CONTROL ROTATION VIA START AND END ANGLES OF REVOLVE EXTRUSION

REVOLVE METHOD

3D VIEW

NOTES: This method uses the start and end angles to control the angle, not the angle parameter. This way, the revolve element could be a constant arc length and angle and the end angle is "chasing" its start angle. This could be used on families at rotation points such as for this telehandler family.
TEXT TO UPPERCASE SHEET NAMES

1. THIS NODE SELECTS THE SHEET CATEGORY
2. THIS NODE SELECTS ALL THE SHEETS IN THE REVIT PROJECT
3. THIS NODE GETS THE SHEET NAME
4. THIS NODE CHANGES THE TEXT IN THE SHEETNAME TO UPPERCASE
5. THESE NODES SET ALL THE SHEET NAMES TO UPPERCASE

STEP 1: OPEN REVIT SAMPLE PROJECT "TEXT_TO_UPPERCASE_SHEET_NAMES_START.RVT"
STEP 2: OPEN A NEW DYNAMO FILE, PLACE NODES AS SHOWN AND RUN SCRIPT
NOTES: THE METHOD ABOVE WORKS WELL WHEN CHANGING MANY SHEET NAMES TO UPPERCASE
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Cutting Edge Revit Structure Modeling Techniques 2016

ORIENT BEAM FRAMING TO SURFACE USING AC

STEP 1
OPEN FILE BEAM_ORIENTATION_START.RVT
SELECT THE SURFACE AND CLICK DIVIDE SURFACE
CHANGE THE GRID SPACING TO 1 AND 12
DISPLAY THE NODES ON THE DIVIDED SURFACE
ADD THE TWO-POINT AC TO EACH DIVIDED SURFACE NODE

STEP 2
SELECT THE AC AND CLICK THE REPEAT ICON
WATCH THE BEAMS ORIENT TO THE SURFACE

NOTES: THIS METHOD USES ADAPTIVE COMPONENTS AS BEAMS AND SINCE THE POINTS ARE
HOSTED TO THE SURFACE THE ADAPTIVE COMPONENTS WILL ORIENT TO THE SURFACE
CREATE BALL JT ROTATION VIA HOSTING PT ON SURFACE

STEP 1
CREATE A REFERENCE LINE REVOLVES A CIRCLE ROUND THAT REFERENCE LINE TO CREATE A SPHERE.

STEP 2
PLACE TWO POINTS AND HOST THEM ON THE SPHERE. PLACE A REFERENCE "SPLINE" BETWEEN THESE POINTS HOST ANYTHING TO THE REFERENCE LINE CREATE PARAMETERS TO CONTROL THE LOCATIONS OF REFERENCE LINE SIMILAR TO THE "REVOLVE" METHOD USE PICK NEW POINT IF POINTS NEED TO BE REPOSITIONED.

NOTES:
THIS METHOD USES THE START AND END POINTS HOSTED ON THE SPHERE TO CONTROL THE REFERENCE LINE. THIS METHOD COULD BE USED TO SIMULATE BALL JOINT MOVEMENTS. IN THE EXAMPLE SHOWN IT IS SHOWING HOW TO MOVE THE HEAD OF A COW MODELED IN REVIT.
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High Tech Structural Engineering 2016

QA/QC YOUR REVIT FRAMING AND FIX IT USING THE ANALYTICAL MODEL

STEP 1
Select the analytical model and click "analytical adjust". Adjust the node location so it is at the same location as the other node.

STEP 2
Edit beam family and add a model line. Make sure to lock the model line to the ends of the beams and the middle of the beam. Add the model line at the top of the beam.

STEP 3
Reload the beam back into the project. 3D align the beam model line to the analytical line.

Notes: This method could be used on any Revit framing that has an analytical model behind it. This method works best on roof framing and framing must not have its "Z" value adjusted or else analytical line will not be at beam work line loc.
CREATE BEAMS FROM 2-PT AC LINE FAMILIES

STEP 1
CREATE A 2-POINT AC FAMILY AND LOAD INTO PROJECT

STEP 2
OPEN "BEAMS_AC_LINES_START.RVT"

STEP 3
PLACE 2-POINT AC FAMILIES IN PROJECT AS ROOF FRAMING

STEP 4
PLACE DYNAMO NODLes AND DYNAMO WILL PLACE BEAMS ON AC LINES

NOTES
CONSIDER USING A 2-PT AC FAMILY FOR ROOF FRAMING IN LIEU OF BEAM FRAMING. PLACE THE BEAMS ON THE AC FAMILIES VIA DYNAMO.

Dynamo for Structure 2017
8 Years' Worth of Dynamo and Revit Classes BY: Marcello Sgambelluri.
**INTERACTIVE: SIMPLY CONSTRUCTION ANIMATIONS**

**STEP 1**
Open MAX file and set up animations. Select the elements and export "FBX selected. Verify that "Bake animation" is checked.

**STEP 2**
Open interactive file (best results with live template, and import the FBX.

**STEP 3**
After FBX import place the asset in scene. Add flow nodes as shown to control the animation (animation controller is not needed). Consider adding a "STOP" control as well. Test and deploy now your users could zoom and pan as animation runs. No more static animation cameras.

**NOTE**
For elements with animation it's more stable to export via FBX and then import into interactive then to use the MAX to interactive link.
Who Should Model the Structural Analysis Model? 2017

THE AEC-COMPLEX COMIC

THEY THREW US INTO JUST HAVING KD'S ACCESS TO REVIT, AS IF AN ENGINEER I HAD KD'S ACCESS AS WELL. I AM TRED OF THE KD'S SAYING ENGINEERS ARE GOING TO TELL ME WHAT I NEED TO KNOW.

THEY DON'T EVEN READ IT UP. THEY HAVE NO BUSINESS OPENING THESE UP.

NOW I FIGURED THAT IT IS JUST LIKE THE BIRD-REVIT DRAFT Docs HAVE KD'S ACCESS AND TO THE STRUCTURAL ANALYSIS MODELS.

NOW WE KNOW IT'S DARNED EASY, THEY FELL.

WHERE NOT TO EVEN ACCESS TO BE."
ALIGN REVIT BEAMS WITH AN OFFSET
WITH DYNAMO PLAYER

OFFSET CURVE FROM EDGE OF SLAB
BY "*" NOTE: SLIDERS BECOME INPUT IN DYNAMO PLAYER

DYNAMO PLAYER

STEP 1: OPEN FILE "ALIGN_OFFSET_START.RVT". OPEN NEW DYNAMO, ADD NODES, AND SAVE.
STEP 2: OPEN DYNAMO PLAYER AND NAVIGATE TO FOLDER WITH DYN FILE.
STEP 3: SELECT THE "EDIT INPUTS" ON PLAYER, SELECT SLAB EDGE AND BEAM AND CLICK RUN.
CREATE A DYNAMO POINT VIA DEFAULT X,Y,Z = 1

```csharp
namespace MY_LIBRARY_FOLDER
{
    public class Dynamo_Geometry
    {
        private Dynamo_Geometry()
        {
        
        }
        public static Autodesk.DesignScript.Geometry.Point dsztPoint
        (double inX = 1, double inY = 1, double inZ = 1)
        {
            //Autodesk.DesignScript.Geometry.Point is a Dynamo point
            Autodesk.DesignScript.Geometry.Point dp =
            return dp;
        }
    }
}
```

**Zero Touch for Dynamo PT 2018**

**Dynamo ZT Node**

**Zero Touch Code**

**Steps**

2. Type code as shown. Build the solution.
3. Open Dynamo and start a new file. Load the DLL from bin folder.
4. Add nodes as shown. Open "Final" file folder if needed. Note: Value is always in decimal feet.
8 Years’ Worth of Dynamo and Revit Classes BY: Marcello Sgambelluri

Zero Touch for Dynamo COW 2019

CREATE A COW IN DYNAMO WITH MULTIPLE OUTPUT PORTS

//SETTING UP MULTIPLE RETURN TAGS

["leftbody", "leftleg", "rightbody", "rightleg", "lefteye", "righteye", "softears", "rightears"]

//RETURNING

Dictionary<string, object> betInfo =
    new Dictionary<string, object>
    {
        {"leftbody", leftbody},
        {"leftleg", leftleg},
        {"rightbody", rightbody},
        {"rightleg", rightleg},
        {"lefteye", lefteye},
        {"righteye", righteye},
        {"softears", softears},
        {"rightears", rightears}
    };

return betInfo;

create and store multiple outputs

DYNAMIC NODES

MY ZERO TOUCH LIBRARY
   MY LIBRARY FOLDER
      Dynamo Geometry
         Dynamo Cow

OPEN VISUAL STUDIO FOLDER “CREATE_DYNAMO_COW_FINAL” OPEN SLN FILE.
TYPE CODE AS SHOWN, BUILD THE SOLUTION.
OPEN DYNAMO AND START A NEW FILE, LOAD THE DLL FROM BIN FOLDER.
ADD NODES AS SHOWN, OPEN “FINAL” FILE FOLDER IF NEEDED. NOTE VALUE IS ALWAYS IN DECIMAL FEET.
GET ETABS FRAME LENGTHS AND AREAS

Steps: 1. Open any ETABS model "ETABS_GET_FRAME_AREA_LENGTHS_FINAL.EDB"
2. Open Dynamo and add the nodes above

Notes: 1. Best if Dynamo for ETABS is run in Manual. Read node if it's not updating
2. Don't forget to use all those other OOTB Dynamo nodes to help you

These nodes get all the frame and area names

This node converts ETABS frames to Dynamo curves

This node gets the length of Dynamo curves

This node converts ETABS areas to Dynamo surfaces

This node gets Dynamo Surface Area

This node sums all values in the list

Dynamo Nodes

Dynamo Geometry

ETABS Geometry

ETABS and SAP API GET AREAS 2018
8 Years' Worth of Dynamo and Revit Classes BY: Marcello Sgambelluri

GET ETABS ANALYSIS FRAME RESULTS

CASE TYPE "1" IS ENUM = LINEAR

GET LOAD CASES FROM ETABS FILE

SEPARATES LOAD CASE TO BE DISPLAYED (DEADSELF) IN THIS CASE

DISPLAYS OUTPUT LOAD CASE

CREATE AN EMPTY LIST IF NO LOAD COMBO OUTPUT IS DESIRED

DISPLAYS OUTPUT MOMENT IN STRONID DIR. UNITS = LB-IN

VIA DYNAMO CONVERT UNITS TO K-FT

STEPS: 1. OPEN ETABS "ETABS_GEOMETRY_ANALYTICS_FINAL.EDB" AND RUN ANALYSIS
2. AND OPEN DYNAMO AND ADD THE NODES ABOVE
NOTES: 1. RESULTS SHOW LOAD CASE OR LOAD COMBO ALSO NOTE UNITS ARE IN LB-IN
2. IF THE NODE DOES NOT UPDATE PLACE A NEW NODE ON CANVAS

ETABS and SAP API GET ANALYSIS 2018
8 Years' Worth of Dynamo and Revit Classes BY: Marcello Sgambelluri

Capitalize on Advanced Tech 2018

SAP GET LENGTHS OF ALL FRAMES

Steps: 1. Open any ETABS model "QM_FINAL.slb" and open Dynamo
2. Add the nodes above

Notes: 1. Best if Dynamo for ETABS is run in manual - read node if not updating
2. Don't forget to use all those other QOB Dynamo nodes to help you
Connecting Dynamo with RAM via API 2018

CREATE GRIDS IN RAM FROM REVIT USING DYNAMO VIA RAM API AND C#

REVIT DYNAMO NODES

REVIT MODEL GRID

RAM MODEL GRID

DYNAMO NODES

CONNECTS Y AND Y GRIDS WITH NAMES IN RAM ON SINGLE EXISTING GRID SYSTEM

GETS X ORDIINATE OF GRIDS

GETS NAME OF X GRIDS

GETS NAME OF Y GRIDS

GETS Y ORDIINATE OF GRIDS

SELECTS X GRIDS IN REVIT

SELECTS Y GRIDS IN REVIT

NOTE: RAM DOES NOT NEED TO BE OPEN. SEE SIMPLEX PACKAGE AND RAM API MANUAL

STEP 1: OPEN VISUAL STUDIO FOLDER "REVIT TO RAM GRID" OPEN SLN FILE
STEP 2: OPEN REVIT FILE "REVIT TO_RAM_GRID_START.DW" AND OPEN DYNAMO FOR REVIT
STEP 3: LOAD DLL, SELECT THE RAM FILE "REVIT TO_RAM_GRID_START.dll"

BY: Marcello Sgambelluri
LEARN HOW TO GET YOUR REVIT FAMILIES TO MOVE IN THE AUTODESK STINGRAY GAME ENGINE (CLASS PROPOSAL 2017)

NOTE:
THE TYPICAL WORKFLOW IS REVIT TO STINGRAY, SOME FAMILIES REQUIRE REVIT TO 3DSMAX TO STINGRAY
Game Engines for Engineers - See Something Say Something Part 2 2018

DEPLOY REVIT PROJECTS VIA ENSCAPE

1. REVIT TO ENSCAPE

OPEN REVIT AND GO TO A 3D VIEW
CLICK ON ADDINS
CLICK ON ENSCAPE
CLICK ON START

THE REASON TO CREATE A STANDALOG .EXE FILE IS TO SHARE WITH OTHERS YOUR ENSCAPE SCENE. THE .EXE FILE COULD BE OPENED BY OTHERS WHO DO NOT HAVE ENSCAPE. NOTE THAT IT TAKES A LOT OF COMPUTER RESOURCES TO VIEW THE STAND ALONG .EXE FILE FROM ENSCAPE AND SOME PEOPLE MAY NOT BE ABLE TO OPEN OR VIEW THE .EXE FILE.