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

Description

The speaker has taught classes at Autodesk University since 2012 and has presented more than 25 classes at AU. It’s time for him to summarize each class for all attendees who couldn’t attend every one of them. He will 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. You’ll be energized by his infectious, passionate style of presenting complex topics and making them easy to understand. No matter your discipline or how you use Revit, you’ll learn something of value and see the different ways to use Revit. This class will cover more than 25 classes and it’s going to be fast and fun!
8 Years’ Worth of Dynamo and Revit Classes BY : Marcello Sgambelluri

About the Speaker

Marcello currently serves as the Building Information Modelling (BIM) director at John A. Martin & Associates Structural Engineers in Los Angeles, California. Marcello has worked on many BIM projects over the last 18 years including the Walt Disney Concert Hall in Los Angeles; the Ray and Maria Stata Centre at the Massachusetts Institute of Technology; and the Tom Bradley International Terminal Expansion at Los Angeles International Airport. Sgambelluri is internationally recognized as one of the top BIM leaders and contributors to the education and implementation of BIM technology in the building industry. He continually speaks at Autodesk University and the Revit Technology Conference, and he has received a record total of 15 1st place speaker awards between both conferences. Marcello Sgambelluri received his bachelor’s and master’s degrees in civil engineering, and he is a licensed civil and structural engineer.

Marcello also has been building media that includes the following:

Simply Complex Blog Site -
http://therevitcomplex.blogspot.com/

Simply Complex YouTube
https://www.youtube.com/channel/UC7IkO1Bc4PhFKAHEArmQ0jw/videos

Simply Complex Podcast -
http://simplycomplex.sharedcoordinates.com/

AEC Complex Comic -
https://www.aeccomplexcomic.com/
THE DATASET

The Entire DATASET OF all 8 years and 25 classes could be downloaded here. This includes every handout, every dataset and every presentation slide. That's over 13GB worth of datasets, and about 1000 total pages of handouts.

[Link to download] https://a360.co/361XgcN

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8 Years’ Worth of Dynamo and Revit Classes

BY: Marcello Sgambelluri

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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

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 SHOWS UP.
CREATE A ROTATION RIG IN REVIT AC OR MASSING FAMILY

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

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.
CREATE A DROPPED CEILING USING A DIVIDED PATH+AC

**STEPS**

1. OPEN POWER_POINT_POWER_PlAYS_2012_START.rfa
2. SELECT ON BOTH LINES AND DIVIDE PATH
3. CHANGE THE PATH SETTINGS AS SHOWN
4. PLACE THE 2-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 OR 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
Revit Family Modeling Secrets Revealed! 2012

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 123D CATCH 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

5. 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 FOLLOW CURVED WALL

**STEPS**

1. CREATE A WIDE AND THICK FLOOR SURFACE AT THE DESIRED LOCATION OF THE FLOOR.
2. JOIN THE COW 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.

**NOTES**

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 "PICKABLE" EDGE.

Exciting New Methods to Model Extremely Complex Geometry 2012

8 Years’ Worth of Dynamo and Revit Classes BY :Marcello Sgambelluri,
HOW TO SCALE USING PLANTING CATEGORY

SCALING BY PLANTING FAMILY IS BASICALLY A TRICK THAT IS FROM HTTP://REVITSWAT.WORDPRESS.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.
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.
How to Prepare and Deliver an Engaging Presentation 2013

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

NOTES: FOR MORE INFORMATION VISIT THE AUTODESK WEBSITE AND WATCH THE CLASS ON “HOW TO ENGAGE AN AUDIENCE”
Creating Surfaces with Profile Order

These nodes select the profile curves.

This node creates a list in the correct profile order.

This node creates the surface lofted over the correct 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

SELETS 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

GETS THE BASE OFFSET PARAMETER VALUE

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

WALL IS FROM A LINKED FILE!

ORIGINAL 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 COL
SELECT THE LINKED FILE USING THE "SELECT MODEL ELEMENT" UI NODE
NOTES: LINKED FILES ARE "READ ONLY"
SURFACE AREA OF RAMPS

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

2. Element.Faces
   - Code Block:
   - element Surface[]
   - x[3];
   - Surface

3. Code Block
   - Code:
   - x[3];
   - Surface
   - 107.932

4. Surface.Area
   - Surface Area

DYNAMO NODES

- 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

RAMP GEOMETRY

- NOTE: If the ramp is straight use [0]

REVIT GEOMETRY

- NOTE: Use the method above to extract other areas from Revit solids such as roofs, floors, foundation slabs, etc.

STEPS & NOTES

- 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.
TOTAL SURFACE AREA OF MECH EQUIPMENT

**Dynamo for Contractors Part 2 2015**

**Select Model Elements**

<table>
<thead>
<tr>
<th>Change</th>
<th>Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4826 4898 4921 5019 5095</td>
</tr>
<tr>
<td></td>
<td>5147 5176 5242 5261 5308 5343</td>
</tr>
<tr>
<td></td>
<td>5382 5428 5463 5486 5499 5508</td>
</tr>
<tr>
<td></td>
<td>5557 5574 5634</td>
</tr>
</tbody>
</table>

**ElementFaces**

<table>
<thead>
<tr>
<th>element</th>
<th>Surface[]</th>
</tr>
</thead>
</table>

**Flatten**

| list | var[]...[] |

**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**

**Dynamo Geometry**

**Revit Geometry**

---

**Steps & Notes**

STEP 1: OPEN FILE "SURFACE_AREA_ROBOT_START.RVT"

STEP 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)

END ANGLE

HOST CONTENT ON THIS REFERENCE LINE

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 NAMES
4. THIS NODE CHANGES THE TEXT IN THE SHEET NAME TO UPPERCASE
5. THESE NODES SET ALL THE SHEET NAMES TO UPPERCASE

REVIT VIEW BROWSER

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
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 REVOLVE 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 HOST’ IF POINTS NEED TO BE REHOSTED

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
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

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 NODES 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.
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 ITS 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

I'M TIRED OF JUST HAVING READ ACCESS TO REVIT. AS AN ENGINEER I NEED WRITE ACCESS AS WELL. I AM TIRED OF THE BIM STAFF SAYING ENGINEERS ARE GOING TO MESS UP REVIT.

OK BUT ONLY IF THE BIM STAFF GETS READ AND WRITE ACCESS TO YOUR STRUCTURAL ENGINEERING MODELS.

NO WAY THEY COULD MESS IT UP. THEY HAVE NO BUSINESS OPENING THOSE UP.

WELL NOW YOU KNOW HOW THEY FEEL.

WOW, I NEVER THOUGHT ABOUT IT LIKE THAT BEFORE. OK BIM STAFF COULD HAVE READ ACCESS ONLY TO THE STRUCTURAL ANALYSIS MODELS.

OK THEN ENGINEERS GET READ ONLY ACCESS TO REVIT!

HERE WE GO AGAIN.
ALIGN REVIT BEAMS WITH AN OFFSET WITH DYNAMO PLAYER

SELECTS THE BEAM TO ALIGN
NOTE: SELECTION UI NODES BECOME INPUT IN DYNAMO PLAYER

SELECTS THE EDGE OF THE OPENING
NOTE: SELECTION UI NODES BECOME INPUT IN DYNAMO PLAYER

OFFSET CURVE FROM EDGE OF SLAB BY ‘1’ NOTE: SLIDERS BECOME INPUT IN DYNAMO PLAYER

RELOCATES THE SELECTED BEAM TO THE SPECIFIED DYNAMO GEOMETRY (SLAB EDGE)

OFFSET CURVE FROM THE EDGE

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

```
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 dPt =
            return dPt;
        }
    }
}
```

OPEN VISUAL STUDIO FOLDER "CREATE_DYNAMO_POINT_START" 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
CREATE A COW IN DYNAMO WITH MULTIPLE OUTPUT PORTS

//SETTING UP MULTIPLE RETURNS TAG

[MultiReturn(new[]) { "LeftBody", "LeftLeg", "RightBody", "RightLeg", "LeftEye", "RightEye", "LeftHorn", "RightHorn" }]

//RETURNING

Dictionary<string, object> OutInfo =
    new Dictionary<string, object>
    {
        {"LeftBody",SurfaceTorso},
        {"LeftLeg",SurfaceLeg},
        {"RightBody",MirrorSurfaceTorso},
        {"RightLeg",MirrorSurfaceLeg},
        {"LeftEye",RotationEyeball},
        {"LeftHorn",RotationHorn},
        {"RightEye",MirrorRotationEyeball},
        {"RightHorn",MirrorRotateHorn},
    };

return OutInfo;

---

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

**Dynamo Nodes**

- **FrameObj.GetNameList**
  - ret
  - NumberNames
  - MyName

- **FrameObj.ConvertLine**
  - Name
  - CSys

- **Curve.Length**
  - curve
  - double

- **Surface.Area**
  - surface
  - double

- **Math.Sum**
  - values
  - sum

- **Code Block**

**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
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

CREATE AN EMPTY LIST IF NO LOAD COMBO OUTPUT IS DESIRED

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

VIA DYNAMO CONVERT UNITS TO K-FT

GETS FRAME ANALYSIS RESULTS FROM FRAME

Code Block
LoadCases.GetNameList

Code Block
LoadCases, GetFrameList

Code Block
AnalysisResults.FrameForce

Code Block
ret

Code Block
Name

Code Block
LoadCases

Code Block
LoadCombos

Code Block
ret

Code Block
FrameType

Code Block
StepNum

Code Block
p

Code Block
V2

Code Block
V3

Code Block
T

Code Block
M2

Code Block
M3

List
DeadSelf

List
DeadSelf

List
DeadSelf

List
0.12532.93720.541

List
1.52688.64871.168

List
1.5781.04791.241

List
-21.6331629270.541

List
12.72157657259.73

List
-4.3968602740.953

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
8 Years’ Worth of Dynamo and Revit Classes

BY: Marcello Sgambelluri

Capitalizing on Advanced Tech 2018

SAP GET LENGTHS OF ALL FRAMES

Steps:
1. Open any ETABS model "QM_FINAL.sdb" and open Dynamo
2. 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
Connecting Dynamo with RAM via API 2018

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

- Selects X grids in Revit
- Selects Y grids in Revit
- Gets X ordinate of grids
- Gets Y ordinate of grids
- Gets name of X grids
- Gets name of Y grids
- Creates new X and Y grids with names in RAM on single existing grid system

Revit Dynamo Nodes

Revit Model Grid

RAM Dynamo Nodes

RAM Model Grid

Steps & Notes:
1. Open Visual Studio folder "Revit_to_Ram_Grid" open SLN file
2. Open Revit file "Revit_to_Ram_Grid_Start.rvt" and open Dynamo for Revit
3. Load DLL, select the RAM file "Revit_to_Ram_Grid_Start.rss"

Note: RAM does not need to be open. See Simplex package and RAM API manual
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
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.