Dynamo – Everyone’s Doing It

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IMAGINiT Technologies - Senior Applications Expert
@theBIMsider
Class summary

This session is not for people who are heavy Dynamo software users. This session is for people who aren’t programmers (visual or other), but from time to time may need to use Dynamo as part of their workflows. It’s also for people who have heard of Dynamo, or visual programming, but never thought it was something they could do (but it totally is!). It’s also for those who just don’t think Dynamo can help them in their everyday workflows (don’t be so sure). By the end of this session, you will have an introductory understanding of Dynamo. You will learn that Dynamo can be used to create geometry with parametric relationships, and that this geometry can then be pushed into a Revit software project or family using the Revit software database. You will learn that Dynamo can do more than just geometry. It can also help with everyday tasks like creating grids and levels, adding some trees to your site, performing an energy analysis, or even changing your text from sentence case to all CAPS. This session features Revit and Dynamo Studio.
Key learning objectives

At the end of this class, you will be able to:

- Learn about Dynamo
- Find out some of the many workflows Dynamo can improve
- Gain a basic understanding of the Dynamo user interface
- Have fun
Agenda

- Introduction
- What is Dynamo
- How to get Started in Dynamo
- Explaining the User Interface
- Resources
- Demo
- Questions
### Introduction

**Presenting Today:**

- Worked in Residential & Commercial Architecture
- Worked in Commercial Construction (BIM/VDC)
- Over 5 years as a Collegiate & Industry Instructor
- Speaker at Multiple AU & RTC Conferences
- Started working with CAD in 1993
- Been involved in AEC Since 1998
- Been utilizing BIM since 2008
- With IMAGiNiT Since 2012

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What is Dynamo?
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Its Visual Programing
What is Dynamo?

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Its Visual Programming
What is Dynamo?
Its More Than Just Visual Programming

“Open-source Dynamo is a visual programming extension for Autodesk® Revit that allows you to manipulate data, sculpt geometry, explore design options, automate processes, and create links between multiple applications.”

Source: dynamobim.org
What is Dynamo?
Its More Than Just Visual Programming

“Open-source Dynamo is a visual programming extension for Autodesk® Revit that allows you to manipulate data, sculpt geometry, explore design options, automate processes, and create links between multiple applications.”
Source: dynamobim.org

“Dynamo is, quite literally, what you make it. Working with Dynamo may include using the application, either in connection with other Autodesk software or not, engaging a Visual Programming process, or participating in a broad community of users and contributors.”
Source: Dynamo Primer
What is Dynamo?

"I spend a lot of time on this task. I should write a program automating it!"

**Theory:**
- Writing code
- Work on original task
- Automation takes over
- Free time

**Reality:**
- Writing code
- Debugging
- Ongoing development
- No time for original task anymore
- Rethinking

Source: http://xkcd.com/1319/
How to get Started in Dynamo?
How to get Started in Dynamo?

Open-source Dynamo is a visual programming extension for Autodesk® Revit that allows you to manipulate data, sculpt geometry, explore design options, automate processes, and create links between multiple applications.

- Rapid design iteration and broad interoperability
- Lightweight scripting interface
- Works with Autodesk Revit
- Free with Revit 2015, 2016, and 2017

Autodesk® Dynamo Studio is a visual programming platform that functions fully independently of any other application. Employ all the power of visual programming without buying another Revit license.

- Rapid design iteration and broad interoperability
- Lightweight scripting interface
- Direct access to cloud services
- Includes advanced geometry engine

Download

Version 1.2.0

Buy or Try

Version 1.1.0
How to get Started in Dynamo?

- Check out the getting started videos from DynamoBIM.org/learn
- Reading “The Dynamo Primer” the unofficial online user’s manual
- 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/
How to get Started in Dynamo?
No Programming Experience Required…But…

Terry Tate – Office Linebacker
How to get Started in Dynamo?
No Programming Experience Required...But...

Words of wisdom on programming from Bill Debevc and BIMThoughts Episode 35. Think of programming like getting a cup of coffee in the morning.
Explaining the User Interface
Explaining the User Interface

1. Menu Bar
2. Toolbar
3. Workspace Toggle
4. Library
5. Zoom options
6. A Graph
7. Workspace
8. Execution Bar
Explaining the User Interface
Nodes and Wires
Explaining the User Interface

Nodes and Wires

Dynamo 1.1 and earlier

1. Name
2. Input
3. Output
4. Main
5. Data Preview
6. Lacing Icon
Explaining the User Interface
Nodes and Wires

Dynamo 1.2 and after
1. Name
2. Input
3. Output
4. Main
5. List @ Level Menu
6. Lacing Icon
Resources
Resources
Blogs & Websites

- 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
- BIM 42 – Simon Moreau’s blog, lots of good Dynamo and Revit content
- 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
- DynamoNodes – A blog about Dynamo nodes, great place to learn about standard and 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 pretty cool) 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
- Parametric Monkey – A website about computational design with Dynamo (and other) tutorials
- Revit Dynamite and Ammo – blog about Dynamo and Python
- Simply Complex – Marcella Sgambelluri’s blog about Dynamo, Revit & making complex things simple
- sixtysecondrevit – John Pierson’s blog about Dynamo and Revit in 60-second bites
- Stuff and BIMs – Adam Sheather’s blog (the creator of DynaWorks) with some good Dynamo content
- The Dynamo Primer the unofficial online user’s manual
- The Revit Saver – Brian Nickel’s blog about Revit and Dynamo from an MEP perspective
Resources
Blogs & Websites

tips & tricks for zerotouch libraries in dynamo
BY KONRAD K. BORON / 27 JUN 2016 / 4 COMMENTS
Resources
Blogs & Websites

DynamoNodes
all about Dynamo nodes

Explore Dynamo Nodes

Standard Nodes
Standard, or out of the box (OOTB), nodes come installed with Dynamo.

Custom Nodes
Custom nodes are made by combining standard nodes. Sets of custom nodes can be shared as packages.

Workflows
Workflows are the final product: a visual program, usually designed to execute a specific task.
**Simply Complex**

A blog dedicated to modeling and documenting complex geometry in the AEC industry using Autodesk Products including DynamoBIM and DynamoBIM training.

**Friday, March 25, 2016**

**How to Mirror DynamoBIM Geometry and Not Keep Original**

Have you ever wanted to Mirror DynamoBIM Geometry and Not Keep Original? It is sometimes annoying to have to mirror DynamoBIM geometry and "hide" the original? Follow the image below on how to only create the mirrored DynamoBIM Geometry!

The trick is using design script and a strategically placed **"**.

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sixtysecondrevit
A blog dedicated to tidbits of software information related to the AEC industry. Most tips and tricks are roughly 60 seconds because, “Hey who doesn’t have 60 seconds.”

*The views and opinions expressed in this blog do not reflect those of my employer.

Wednesday, June 15, 2016

Get #Revit Beam System Members with #DynamoBIM

A question came up at my firm recently regarding how to quantify the amount of beams a beam system contains in Revit. Currently, this is not easily accessible through the UI, but luckily there is an API method for obtaining the members of the system.

This is where Dynamo and python come into play.

This node is now in Rhythm, enjoy!

-johnp
Resources

Blogs & Websites
Resources
Courses & Training

- **ArchAmarter – Learning Dynamo** – This is a paid course created and delivered by [Michael Killen](#).
- **CADLearning for Dynamo** – DVD course for Dynamo intro by [Jason Boehning & Marcello Sgamelluri](#).
- **Learn dynamo** – This is a free resource with more tutorials always being added.
- **Lynda.com – Dynamo Essential Training** – This is a subscription paid course by [Ian Siegel](#).
- **Lynda.com – Dynamo for Revit Workflow** – This is a subscription paid course by [Ian Siegel](#).
- **Plurasight – An Introduction to Dynamo for Daily Use Within Revit** - This is a subscription paid course by [John Pierson](#).
- **Plurasight – Exploring Dynamo Geometry** - This is a subscription paid course by [Sol Amour](#).
- **ThinkParametric – Dynamo 101 Fundamentals** - This is a subscription paid course by [Konrad Sobon](#).
- **ThinkParametric – Create Custom View Filters using Dynamo** - This is a subscription paid course by [Konrad Sobon](#).
Resources
Courses & Training
Resources
Courses & Training

Lynda.com

Dynamo Essential Training with Ian Siegel

Start your free trial now and begin learning software, business and creative skills—anytime, anywhere—with video instruction from recognized industry experts.

Related Courses
- Revit 2017: New Features for Architecture
  - Paul F. Aubin
  - 2,894 Views
- Architectural Families in Revit
  - Erik Wang
  - 1,479 Views
- Revit 2017: Essential Training for Architecture (Imperial)
  - Paul F. Aubin
  - 2,894 Views
- MEP Families in Revit
  - Erik Wang
  - 10,783 Views
- Revit: Tips, Tricks, and Troubleshooting
  - Paul F. Aubin
  - 44,227 Views

Course details
- Dynamo Essential Training
- 3hr 30min
- Appropriate for all
- Mar 29, 2016
- Views: 1,791
Resources
Courses & Training

An Introduction to Dynamo for Daily Use Within Revit
By John Pierson

Automating repetitive tasks just got easier with Dynamo, a visual scripting tool for Revit. This course will focus on Dynamo and how it interacts with Revit when it comes to mining data from your Revit model.
Resources
Podcasts & Videos

- **Dynamo** – Autodesk’s Dynamo YouTube Channel
- **Dynamo Thoughts** – A Vodcast about teaching and learning Dynamo by Bill Debevc and Ian Siegel
- **Konrad Sobon’s YouTube Channel** – Creator of archi+lab and 4 helpful dynamo packages
- **San Francisco Dynamo User Group YouTube Channel**
- **The Simply Complex Podcast** – A Dynamo podcast by Marcello with help from Jason and John
Resources
Podcasts & Videos

Autodesk Building Solutions

Dynamo
Autodesk Building Solutions • 39 videos • 10,283 views • Last updated on Sep 18, 2015

1. Dynamo Tutorials Part I: How to use Autodesk Dynamo Studio
   by Autodesk Building Solutions

2. Dynamo Tutorials Part II: Creating Revit Elements for Dynamo
   by Autodesk Building Solutions

3. Dynamo Tutorials Part III: Defining a Structural System
   by Autodesk Building Solutions
Resources
Podcasts & Videos

The Simply Complex Podcast

The Simply Complex Podcast is based on the theme of the parent blog "Simply Complex" and is dedicated to finding simple solutions to complex problems in the AEC-O industry with raw unedited audio podcasts. Marcello Sgambarluri is the main host with Jason Boehning and John Pierson as regular guest hosts.

Visit podcast website ▶

EP04 – Co-speaker Responsibilities at Conferences

Hey Everyone, in this episode Marcello, Jason and I (John) discuss the responsibilities surrounding being a Co-speaker at a technology conference. We talk about our experiences with classes that have co-speakers, our experiences as co-speakers and give some ideas for improvement.

Download episode | Play in new window | File size: 45.2MB

EP03 – Understanding Dynamo Nomenclature

In this episode Marcello is joined by Jason Boehning and John Pierson to discuss Dynamo node naming and how to make sense of it all.

Download episode | Play in new window | File size: 35.9MB
Resources
Podcasts & Videos

Dynamo Thoughts

DynamoThoughts

DynamoThoughts uploaded a video 5 days ago

DynamoThoughts E:1 Hello World
Dynamo Thoughts
5 days ago • 120 views
Ian and Bill walk you through writing 'Hello World' in 3D Text in Revit with Dynamo. This exercise is tailored for the beginner Dynamo user as your first program in a new and exciting...
# Resources

## 30 Dynamo Packages You Should checkout

<table>
<thead>
<tr>
<th>Number</th>
<th>Dynamo Package Name</th>
<th>Latest Version</th>
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<td>Ampersand</td>
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<tr>
<td>2</td>
<td>archi-lab.net</td>
<td>2016.12.1</td>
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<tr>
<td>3</td>
<td>Archi-lab_Mandrill</td>
<td>2017.12.1</td>
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<tr>
<td>4</td>
<td>Archi-lan_Mantis Shrimp</td>
<td>2017.12.4</td>
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<td>5</td>
<td>Bakery</td>
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<tr>
<td>6</td>
<td>BumbleBee</td>
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</tr>
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<td>7</td>
<td>Clockwork for Dynamo 1.x</td>
<td>1.0.2</td>
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<tr>
<td>8</td>
<td>DynamoMEP</td>
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<td>9</td>
<td>DynamoUnfold</td>
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<td>10</td>
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<td>If Equal Return Index</td>
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<tr>
<td>15</td>
<td>Illustrator</td>
<td>0.1.0</td>
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<td>16</td>
<td>Juggernaught</td>
<td>1.0.8</td>
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<tr>
<td>17</td>
<td>Ladybug</td>
<td>0.1.3</td>
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<tr>
<td>18</td>
<td>Landform</td>
<td>2016.5.24</td>
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<td>19</td>
<td>LunchBox for Dynamo</td>
<td>2016.9.30</td>
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<tr>
<td>20</td>
<td>MeshToolKit</td>
<td>1.1.0</td>
</tr>
<tr>
<td>21</td>
<td>Optimo</td>
<td>0.1.2</td>
</tr>
<tr>
<td>22</td>
<td>Prorubim Common Kit (Dynamo 4 Revit)</td>
<td>0.1.3</td>
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<tr>
<td>23</td>
<td>Rhynamo</td>
<td>2016.5.3</td>
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<td>24</td>
<td>Rhythm</td>
<td>2016.10.6</td>
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<td>25</td>
<td>Slingshot! For Dynamo</td>
<td>2014.11.30</td>
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<td>26</td>
<td>SpaceLayout</td>
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<td>27</td>
<td>Solar Analysis for Dynamo</td>
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<td>30</td>
<td>Zebra</td>
<td>2016.7.2</td>
</tr>
</tbody>
</table>
Demo
Demo

Exercise 1 – OTB Samples

In this exercise we will become familiar with using Dynamo inside Revit to open existing Dynamo graphs and execute them to see the results.
Demo

Exercise 2 – Installing a Package

In this exercise will install a couple of Dynamo Packages that will be used in later exercises.
Demo

Exercise 3 – ALL CAPS

In this exercise we change the room names from sentence case to ALL CAPS. This same workflow can be used with other Revit text parameters like sheet or view names.
Demo

Exercise 4 – Lego Part 1 – Extracting Info

In this exercise we look at some different ways to extract simple information out of our Lego model.
Demo

Exercise 5 – Lego Part 2 – Writing to Excel

In this exercise we will write some information from Dynamo & Revit out to Excel.
Questions?

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www.facebook.com/theBIMsider
How did I do?

- Your class feedback is critical. Fill out a class survey now.
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- Give feedback after each session.
- AU speakers will get feedback in real-time.
- Your feedback results in better classes and a better AU experience.