Your First Forge Dashboard

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About the speaker

Jaime Rosales D.

Senior Developer Advocate with Autodesk Forge. He’s part of the team that helps partners/customers create new products and transition to the cloud with the use of Autodesk’s new Platform - Forge.

He joined Autodesk in 2011 through the acquisition of Horizontal Systems the company that developed the cloud-based collaboration systems—now known as BIM 360 Glue the Glue. He was responsible for developing all the add-ins for BIM 360 Glue, using the API’s of various AEC desktop products.

He is currently empowering customers with the use of Autodesk’s Forge platform throughout the world, with hosted events such as Forge Accelerators, AEC Hackathons, VR & AR Hackathons. He has been recently involved in the development of AWS Quick Start to support Forge & BIM 360 Applications.



About the co-speaker

Xiaodong Liang

Senior Developer Advocate with Autodesk Forge. He joined Autodesk in 2007 as a developer advocate. Starting with desktop products' APIs, he is now engaging in Autodesk Forge and AEC solutions. He is one of the contributors of ADN DevBlog and Forge blog. He is based in China, yet mingling with the global community of Autodesk and programming.

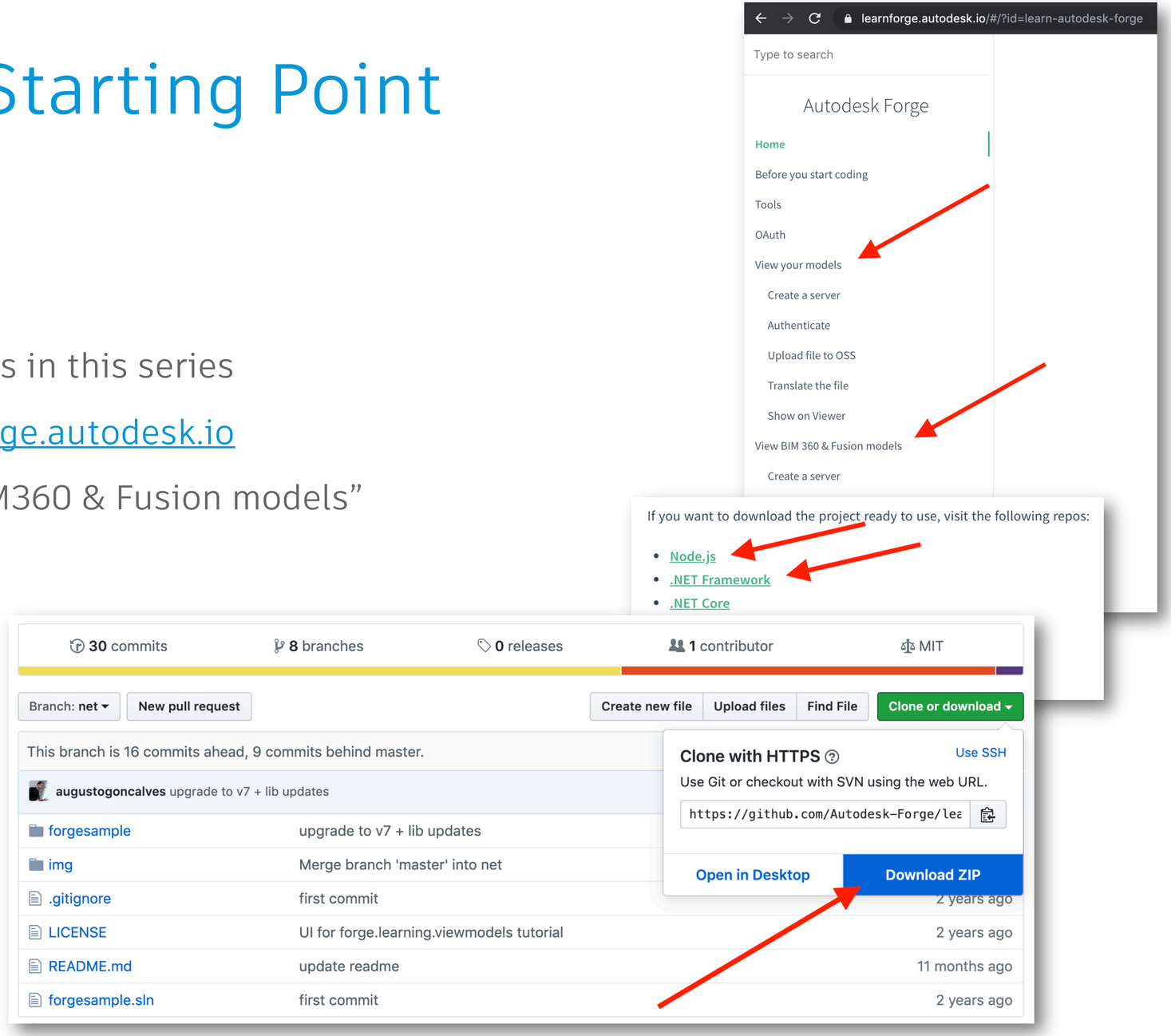
Before We Start



Starting Point

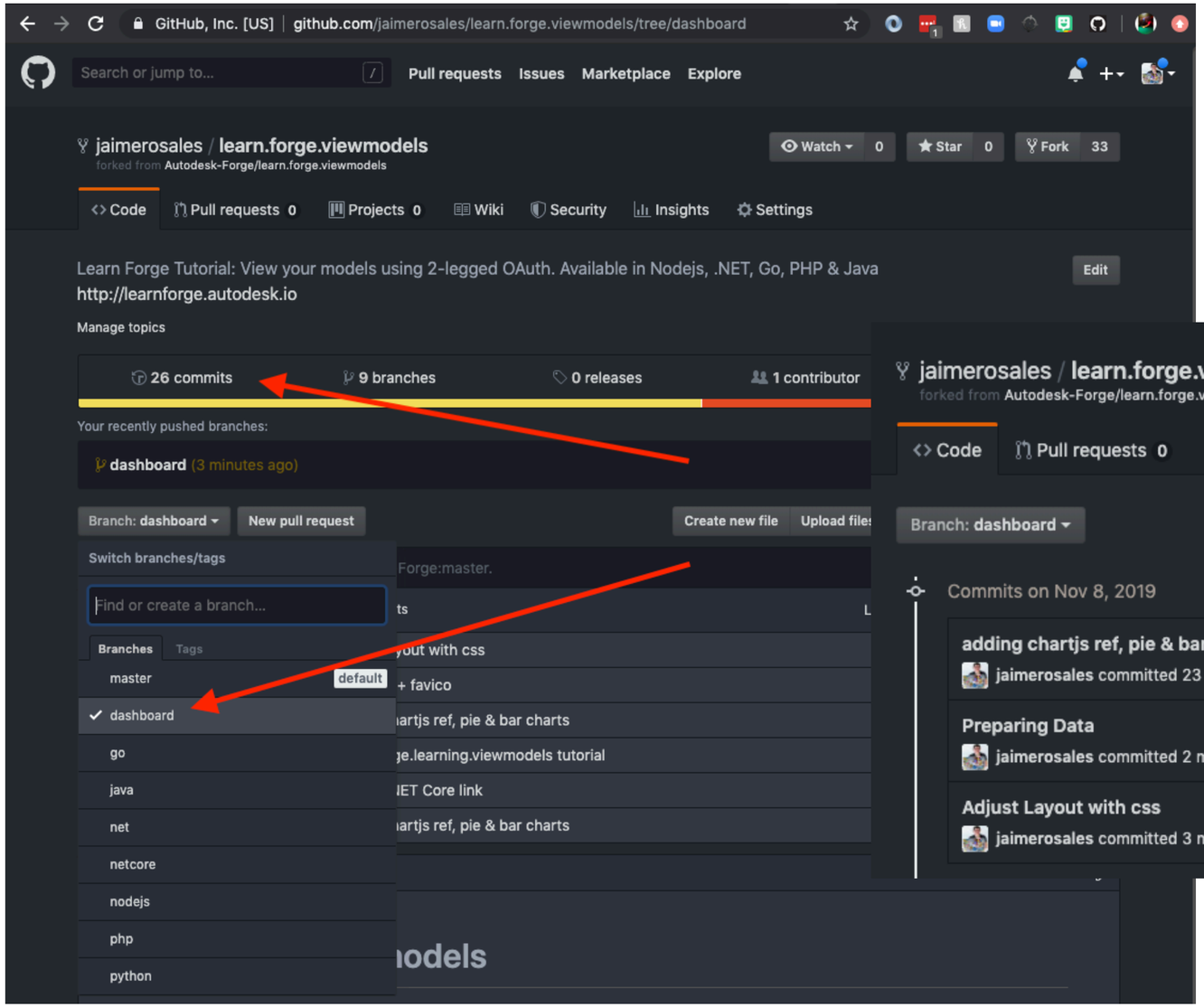
OPTIONS

- Use your project from previous labs in this series
- Use a sample from https://learnforge.autodesk.io
  - “View your models” or “View BIM360 & Fusion models”
  - Node.js or .NET
  - Download and extract
  - Follow steps in README



If You Get Lost

- All steps in this presentation are available as git commits
- https://github.com/jaimerosales/learn.forge.viewmodels/tree/dashboard
  Branch **dashboard**



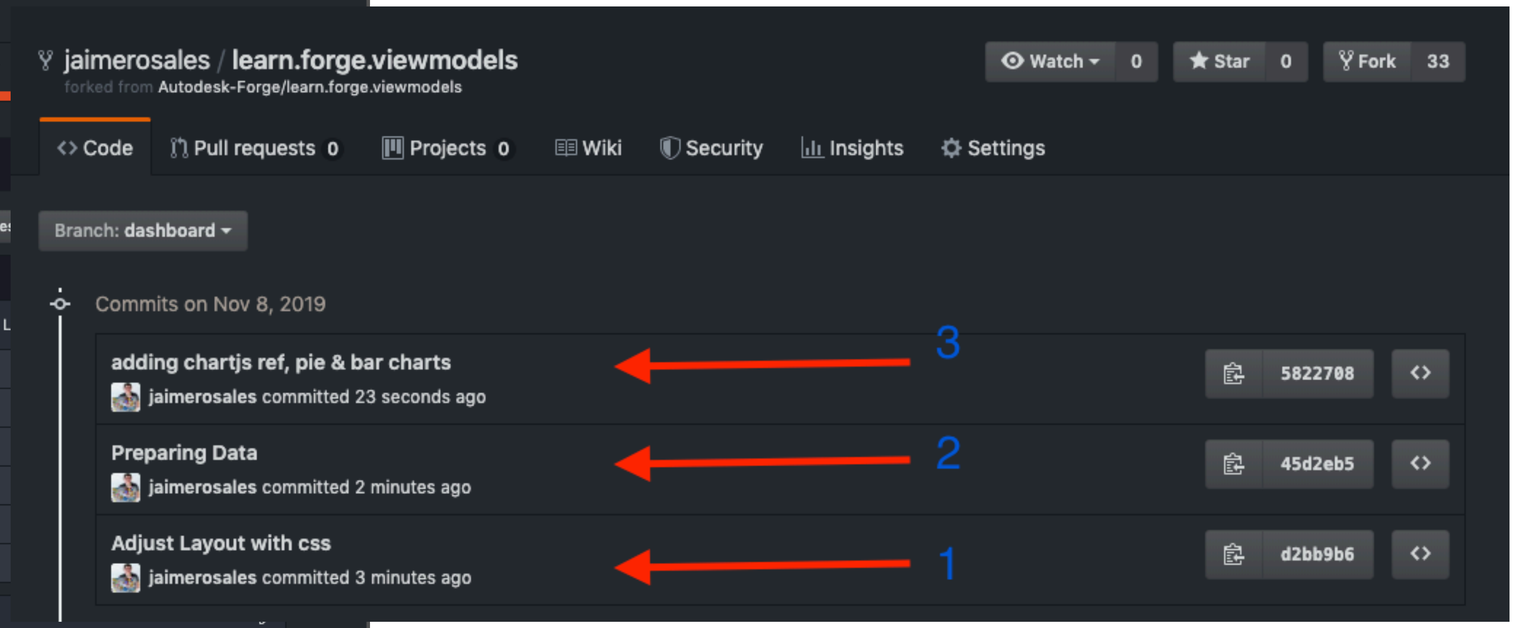


Chart.js

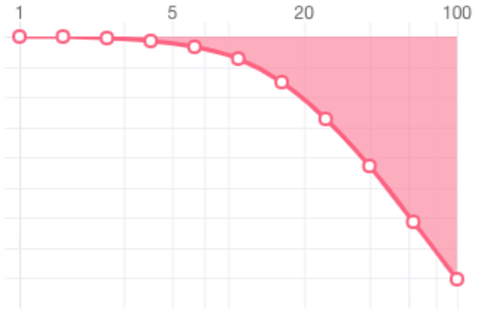


Chart.js

New in 2.0 **Mixed chart types**

Mix and match bar and line charts to provide a clear visual distinction between datasets.





New in 2.0 **New chart axis types**

Plot complex, sparse datasets on date time, logarithmic or even entirely custom scales with ease.

New in 2.0 **Animate everything!**

Out of the box stunning transitions when changing data, updating colours and adding datasets.



Simple yet flexible JavaScript charting for designers & developers

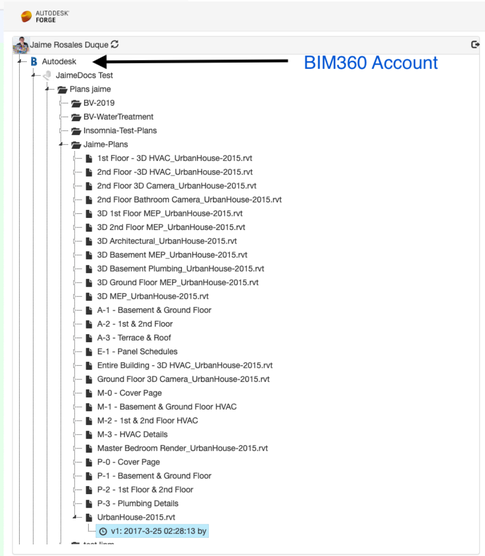
Adjust Layout



Adjust Layout

46 ■■■■■ js/Dashboard/Dashboard.js

```
@@ -0,0 +1,46 @@
+ $(document).ready(function () {
+     $(document).on('DOMNodeInserted', function (e) {
+         if ($(e.target).hasClass('orbit-gizmo')) {
+             // to make sure we get the viewer, let's use the global var NOP_VIEWER
+             if (NOP_VIEWER === null || NOP_VIEWER === undefined) return;
+             new Dashboard(NOP_VIEWER, [
+                 new BarChart('Material'),
+                 new PieChart('Material')
+             ])
+         }
+     });
+ })
+
+ // Handles the Dashboard panels
+ class Dashboard {
+     constructor(viewer, panels) {
+         var _this = this;
+         this._viewer = viewer;
+         this._panels = panels;
+         this.adjustLayout();
+         this._viewer.addEventListener(Autodesk.Viewing.GEOMETRY_LOADED_EVENT, (viewer) => {
+             _this.loadPanels();
+         });
+     }
+
+     adjustLayout() {
+         // this function may vary for layout to layout...
+         // for learn forge tutorials, let's get the ROW and adjust the size of the
+         // columns so it can fit the new dashboard column, also we added a smooth transition css class for a better us
+         var row = $(".row").children();
+         $(row[0]).removeClass('col-sm-4').addClass('col-sm-2 transition-width');
+         $(row[1]).removeClass('col-sm-8').addClass('col-sm-7 transition-width').after('<div class="col-sm-3 transition
+     }
+
+     loadPanels = function () {
+         var _this = this;
+         var data = new ModelData(this);
+         data.init(function () {
+             $('#dashboard').empty();
+             _this._panels.forEach(function (panel) {
+                 // let's create a DIV with the Panel Function name and load it
+                 panel.load('dashboard', viewer, data);
+             });
+         });
+     }
+ }
```





```
+
+ #dashboard{
+   overflow: auto;
+   height: calc(100vh - 100px);
+ }
+
+ .transition-width {
+   transition: width 1s ease-in-out;
+ }
+
+ .dashboardPanel {
+   width: 100%;
+   padding: 3%;
+   display: block;
+ }
```

Object Tree & Properties



Iterate Objects

- In *public/js/HeatmapExtension.js*:
  - Add **getLeafNodes()** method
  - Retrieve object tree: **viewer.getObjectTree(callback)**
  - Retrieve root node ID: **tree.getRootId()**
  - Enumerate children of specific node: **tree.enumNodeChildren(parentId, callback, recursive)**
  - Count child nodes: **tree.getChildCount(id)**

14 public/js/HeatmapExtension.js

```
@@ -28,6 +28,20 @@ class HeatmapExtension extends Autodesk.Viewing.Extension {
28 28             this._button.addClass('heatmapButtonIcon');
29 29             this._group.addControl(this._button);
30 30         }
   31 +
   32 +     getLeafNodes() {
   33 +         return new Promise((resolve, reject) => {
   34 +             this.viewer.getObjectTree((tree) => {
   35 +                 let dbids = [];
   36 +                 tree.enumNodeChildren(tree.getRootId(), (dbid) => {
   37 +                     if (tree.getChildCount(dbid) === 0) {
   38 +                         dbids.push(dbid);
   39 +                     }
   40 +                 }, true);
   41 +                 resolve(dbids);
   42 +             });
   43 +         });
   44 +     }
31 45   }
32 46
33 47   Autodesk.Viewing.theExtensionManager.registerExtension(
```

Custom UI



AUTODESK
FORGE



Jaime Rosales Duque

- Autodesk
  - JaimeDocs Test
    - Plans jaime
    - Project Files
      - BV-WaterTreatment
      - Linked
      - RevitIO Samples
      - akihiroforgedevcon
      - coppel test
      - insomniabackup
      - insomniaforgedevcon
      - jaime-folder
        - 43 Warren Floor Plan.dwg
        - Hackathon-Copia.rvt
        - UrbanHouse-2015.rvt
          - v1: 3/2/2017, 5:03:33 PM by Jaime Rosales
      - scaledrobotics
      - vishudemofolder
      - 185289-060-FCLRFR_PID_Exp.rvt
      - 185289-062-FSPS_PID_Exp.rvt
      - Screen Shot 2018-02-25 at 3.14.13 PM.png
      - zoeforge.json
    - Recycle Bin
    - Shop Drawings
  - aecom-testing-project
- Autodesk Forge Partner Development
- Autodesk_EMEA
- jaime.rosales.duque
- Autodesk Visual Parts Catalog
- DPR Construction Hub


Good Job!
You did it!

Resources

- Learning
  - Viewer reference: https://forge.autodesk.com/en/docs/viewer/v7/reference
    - Events: https://forge.autodesk.com/en/docs/viewer/v7/reference/Viewing/#events
    - Viewer3D API: https://forge.autodesk.com/en/docs/viewer/v7/reference/Viewing/Viewer3D
  - Learn Forge tutorial: https://learnforge.autodesk.io
  - ChartJS:

- Questions
  - Stack Overflow (tags “autodesk-forge”, “autodesk-viewer”, “autodesk-model-derivative”, etc.)
  - https://forge.autodesk.com/en/support/get-help
  - forge.help@autodesk.com



Come code with us!

- Forge Accelerator events in 2020: http://autodeskcloudaccelerator.com/
  - Jan 13 – Jan 17 – San Francisco
  - Feb 3 – Feb 7 – Bogota
  - Feb 17 – Feb 21 – London
  - Mar 9 – Mar 13 – Sydney
  - Apr 6 – Apr 10 – São Paolo
  - Apr 27 – May 1 – Boston
  - Jun 1 – Jun 5 – Denver
  - Jun 8 – Jun 12 – Barcelona



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