

3D Polling Environments: User Guide

URI VOTES



Engineering for Democracy

Recommendations that will lead to future sustainable practices and tools utilized to overcome new and future obstacles in voting and election processes.

The idea of democracy is simple.
Execution is complicated.

Tool: 3D Voting Environment Models

Purpose of Tool:

The purpose of this tool is to provide versatile three-dimensional models of voting environments that can be used for developing 2D Polling Setup Diagrams, simulations, and VR intractability.

Required Inputs:

This tool requires the physical dimensions of the voting environment, as well as the components and assets of the voting environment, such as voting equipment. The object library folder contains all the necessary components to develop most typical voting environments (<https://3dwarehouse.sketchup.com/by/RI-VOTES?nav=collections>). Any additional assets needed can be accessed through the Sketchup 3D Warehouse. The assets within the environment must be formatted and organized within their own separate layers. For example, all voting booths should be organized within their own layer; likewise, all the electronic poll pads, tables, voting machines, should be separated into their own layers. This allows for ease of use and manipulations of the tool, such as the toggling on and off of assets depending on the user's needs.

Although this tool can be used for simulation and VR intractability, additional third-party applications are required, such as Simio for simulation and SimLab or Unity for the virtual reality integration.

Instructions for Use:

To use this tool, Sketchup must either be pre-installed on the computer, or the file can also be uploaded onto the free Sketchup website and opened from there. Each Sketchup model file can be easily identified as it has the unique extension “.skp”.

To create a new jurisdiction model:

Create an accurate floor plan of the voter area:

- Use the line tool (press “L”) and, on the red and green plane, sketch the floor plan.
- Input dimensions in a line by clicking to select its start point and dragging the mouse in the direction of the desired line.
- Type in the length and press enter. This will create a line in the indicated mouse direction of the entered length. Once all lines of the floor plan are connected to one another, the flat plane will turn into a solid grey or white color.

Create the walls:

- Use the line tool on the vertical plane on the ends of the floor plan to draw the back and sidewalls, inputting dimensions as necessary. Typically walls are 10 feet tall and 5 to 6 inches thick; custom wall sizes can be created as needed).
- Before creating the front wall(s), create a new layer titled “Front Walls,” and select that layer as primary by clicking the circular checkbox on the left of the layer name.

- Create the front walls as previously described.
- Return to “Layer0” as the primary layer.
- After the main outside walls (see Fig. 1) have been completed, check to see if the voter area has any extra walls or partitions.
- If additional walls are required, then model them using the same method as previously explained.

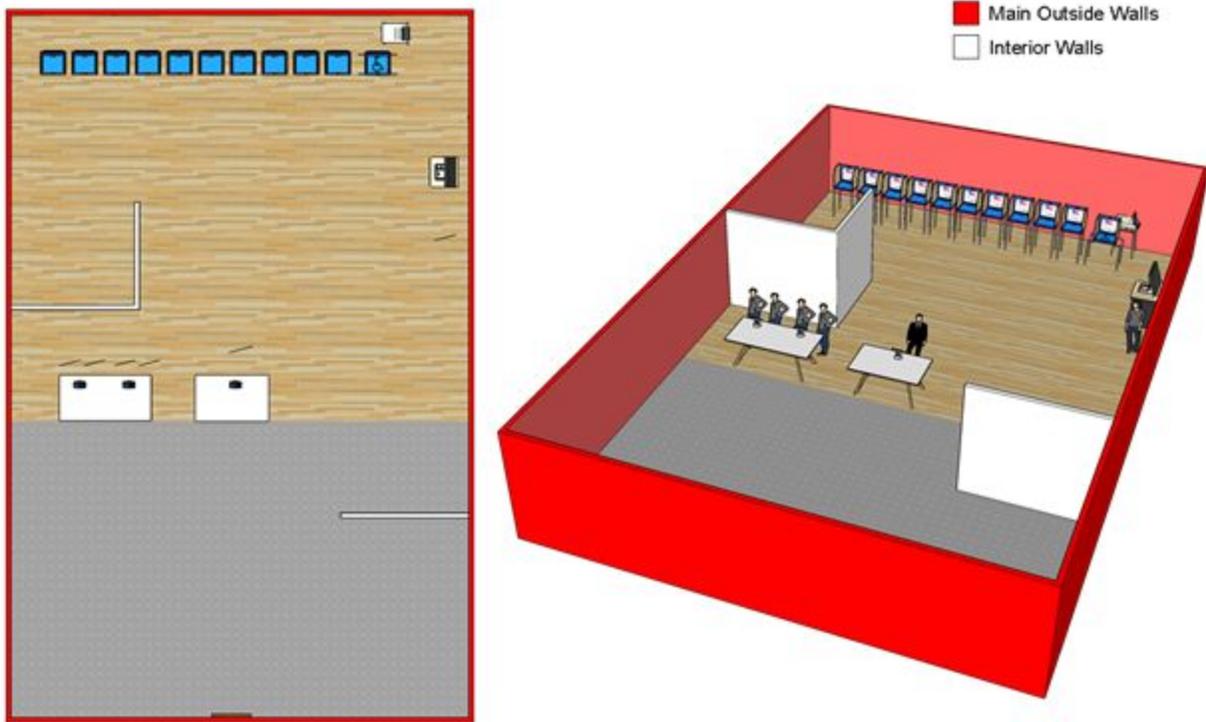


Figure 1: Example of Main Outside Walls (walls that outline the structure)

Indicate the “voters only” area:

- Use the line tool to mark the “voters only” area.
- Add color to the model by clicking on the paint can icon or pressing “B”.

Import objects into the model:

- Option 1 - Object Library Folder:
 - The object library folder can be created by downloading all the objects from the RI VOTES asset website and placing them all into one folder.
 - To import these objects into the desired Sketchup model, use the created folder, then drag and drop the desired asset into the 3D model.
- Option 2 - RI VOTES Asset Website:
 - The RI VOTES asset website can be accessed using the provided link: <https://3dwarehouse.sketchup.com/by/RI-VOTES?nav=collections>
 - From the homepage, select the “Voting Assets & Tools” tile. This will open a selection of all the voting assets used to create a typical voter location.

- To download one of these assets, click on the desired asset. Then select the red download button located under the image. This will download a “.skp” file onto the computer.
- To import this asset into the desired Sketchup model, simply drag and drop the file into the 3D model.
- Option 3 - 3D Warehouse:
 - The Sketchup 3D Warehouse can be accessed from within the Sketchup program by clicking the “3D Warehouse” button on the toolbar located at the top of the screen.
 - Within the pop-up window, select the search bar and type the name of the desired asset (for example “chair”), then click search. A list of open source assets related to the searched name will appear.
 - To download one of these assets, click on the desired asset. Then click the red download icon. Once downloaded, the object will automatically be imported into the current Sketchup file.
 - Note that these objects usually do not come pre-layered. Transfer them manually into the desired layer, or create a new layer for better organization.

Placing objects into the model:

- Determine exactly how many wall outlets are available in the voter area, as well as the number of voting booths, DS200 ballot scanners, AutoMARKs, tables, etc.
- Place all wall outlets and doors as accurately as possible. The main voter entrance and exit location must be marked using the special entrance and exit doors contained within the doors packet on the RI VOTES website.
- Place all tables.
- Place the electronic poll pads/check-in equipment on the appropriate tables.
- Place voting booths using the line copy and paste feature (shown in the video) for efficiency.
- Place the DS200 ballot scanner and the AutoMARK.
- If certain assets wish to be removed, simply highlight the desired object and press delete on the keyboard.

***All items within the RI VOTES asset library come pre-layered. No extra layering is needed for these assets.

Definition and Explanations of Outputs:

These tools create accurate 3D models of existing voter areas. These models can easily be duplicated and shared, to help election planners better understand voting environments without having to physically visit each location or only rely on 2D images.

These models can be easily converted into 2D polling diagrams for setup teams. They can also be incorporated into virtual reality hardware to experience the voter area in the first person to better understand location dimensionality. As mentioned above, separate VR hardware and software would be required to use the models in this way.

Feedback Section:

Please contact uri.sis.lab@gmail.com with any questions, concerns, or feedback. We will respond as quickly as possible to help resolve any problems.