Crowd Simulation Software

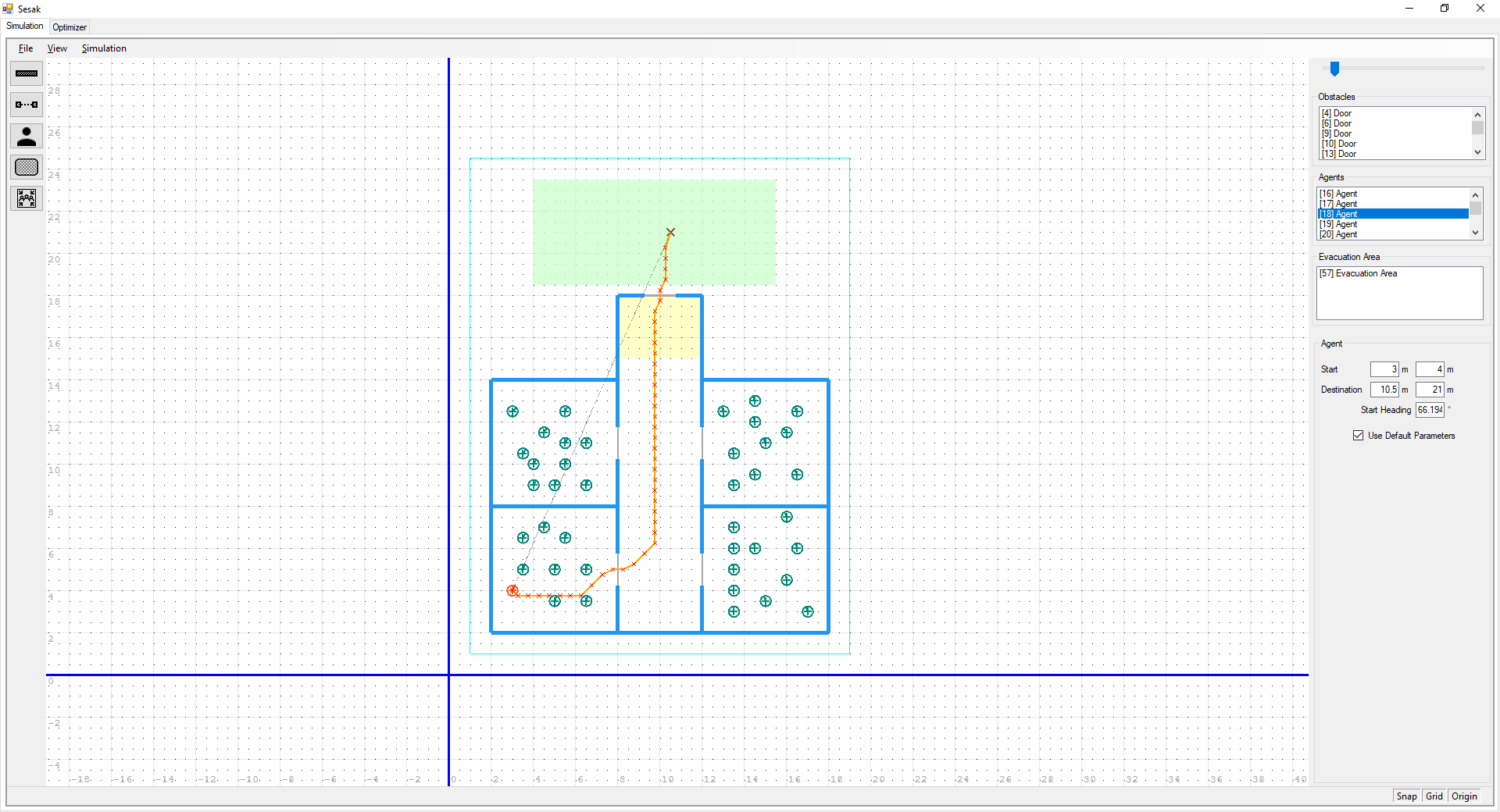
User Guideline

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# Graphical User Interface

## 1.1. Environment Editor



### 1.1.1. Workspace Control

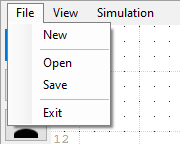
#### 1.1.1.1. Panning

Hold right click & drag to pan.

#### 1.1.1.2. Zoom In/Out

Mouse scroll up to zoom in. Mouse scroll down to zoom out.

### 1.1.2. Menu



#### [File] > [New]

Create new scene.

#### [File] > [Open]

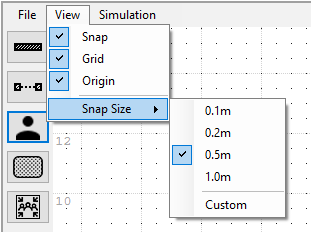
Open scene from file.

#### [File] > [Save]

Save scene to file.

#### [Exit]

Exit application.



#### [View] > [Snap]

Enable / disable object snapping.

#### [View] > [Grid]

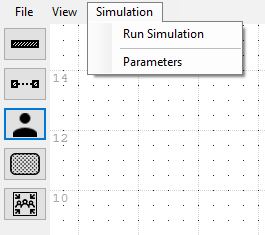
Show / hide grid.

#### [View] > [Origin]

Show / hide origin line.

#### [View] > [Snap Size]

Set snap size



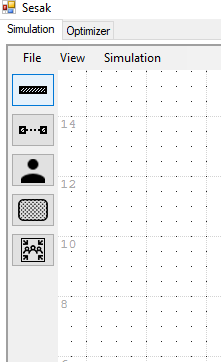
#### [Simulation] > [Run Simulation]

Run simulation with current scene.

#### [Simulation] > [Parameters]

Show simulation parameters dialog.

### 1.1.3. Toolbox



**1. Add New Wall**

**2. Add New Door**

**3. Add New Agent**

**4. Define Comfort Zone**

**5. Add Evacuation Area**

#### Add New Wall

Create new wall, wall can be either vertical or horizontal. Click & drag in workspace to draw wall.

#### Add New Door

Create new door, door can be either vertical or horizontal. Click & drag in workspace to draw door.

#### Add New Agent

Create new agent. Click & drag in workspace to define agent starting position & destination.

#### Define Comfort Zone

Define comfort zone. Click & drag in workspace to define comfort zone. Comfort zone is used to compute discomfort. Average crowd vs Density & Flow vs Density plot also computed using comfort zone.

#### Add Evacuation Area

Create new evacuation area. Click & drag in workspace to create new evacuation area. In simulation, agents entered evacuation area are marked as evacuated.

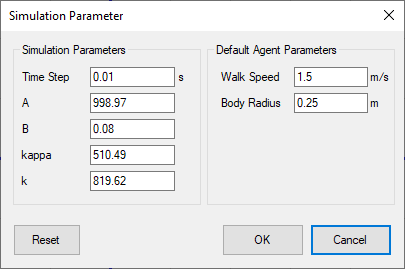
#### Cancel Draw Action

Press **[ESC]** key to cancel draw action.



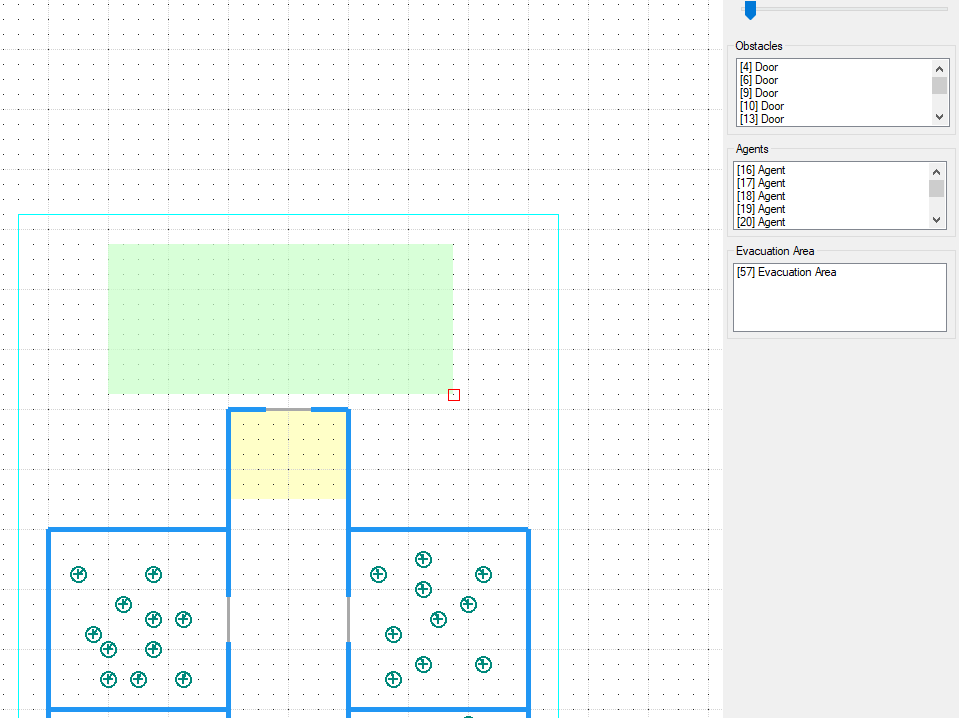
Snap, grid & origin can be quick toggle at the bottom right.

### 1.1.4. Simulation Parameters



Configure simulation parameters. Simulation parameters can be access by clicking Simulation > Parameters on the menu.

### 1.1.5. Scene objects



**Viewport Scale**

**Obstacles (Door & Wall)**

**Evacuation Areas**

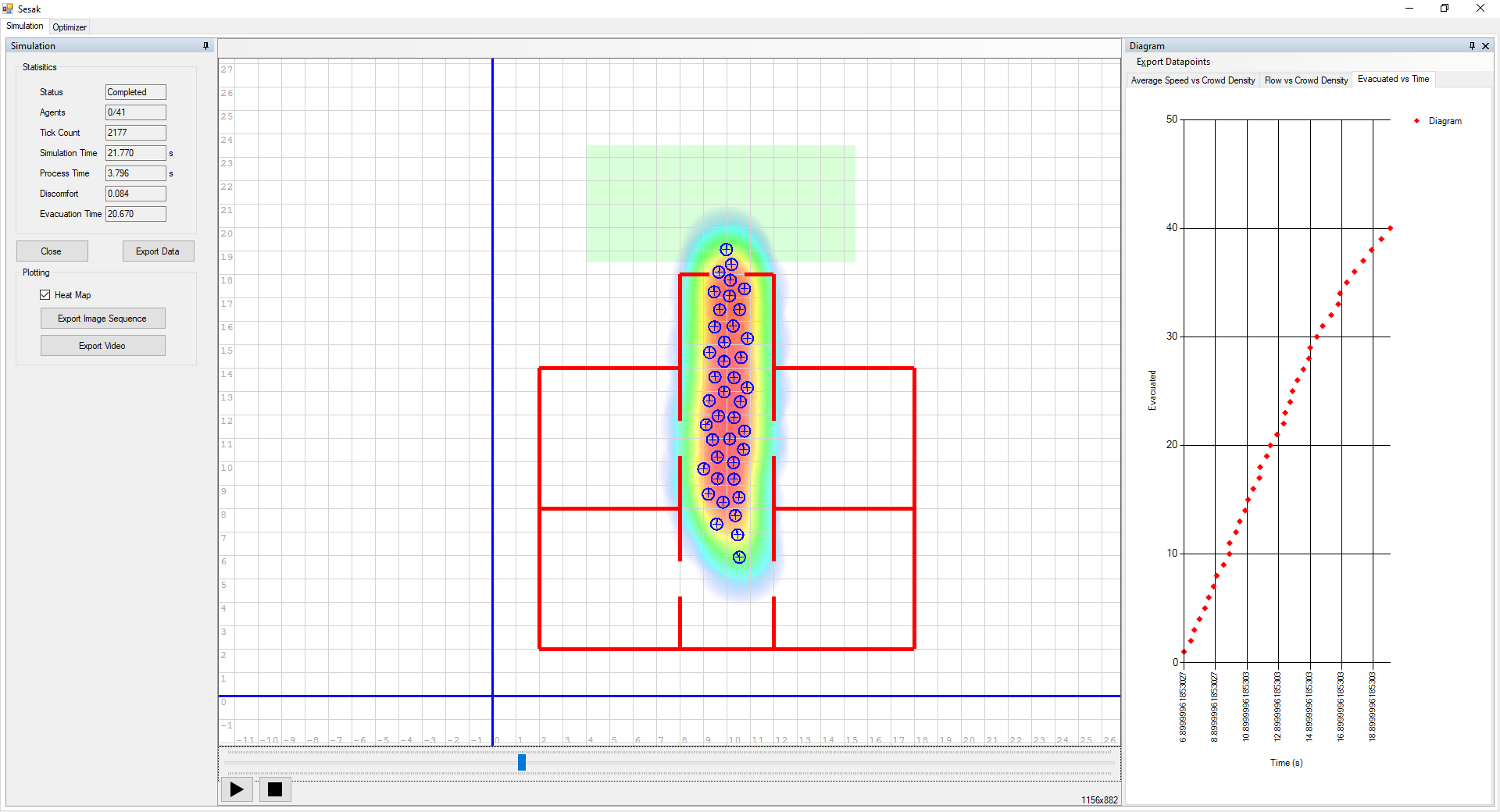
**Agents**

Doors, obstacles, agents, and evacuation areas can be selected using lists on the right side.

#### Delete Object

To delete object, select object in the list and press **[Delete]**.

## 1.2. Run Simulation



**Viewport**

**Playback Control**

**Simulation Result**

**Fundamental Diagram**

### Close

Close simulation run & back to scene editor

### Heat Map

Show / hide heatmap.

### 1.2.1. Export Data

Export current simulation data to CSV file.

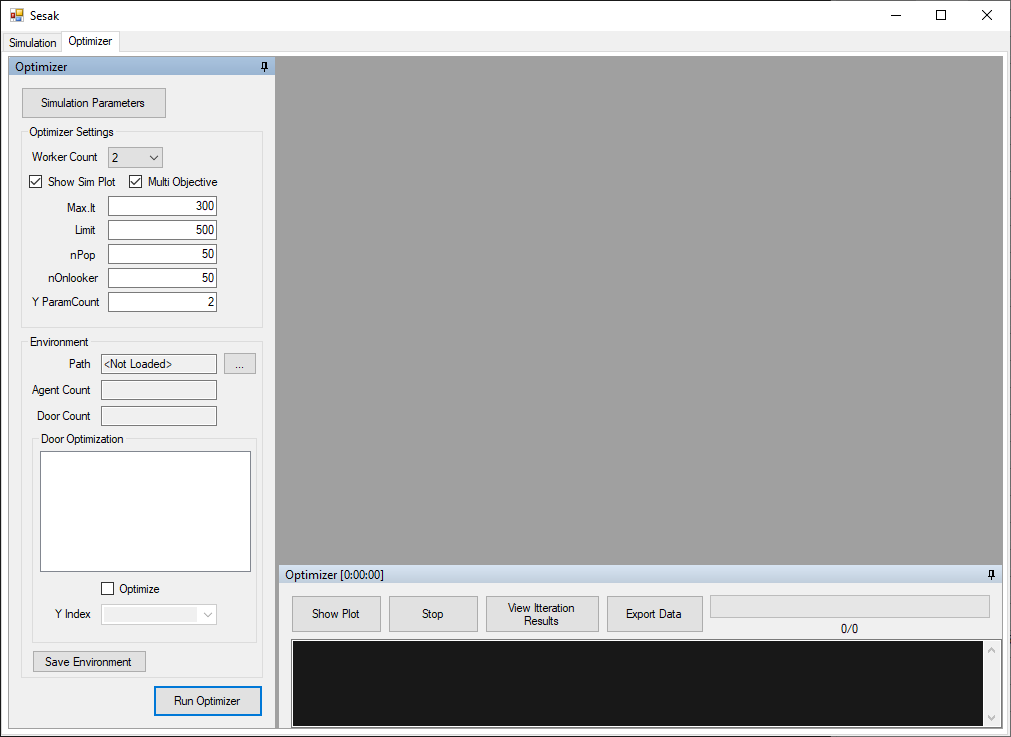
### 1.2.2. Export Image Sequence

Export image sequence of simulation playback. Image sequence output use current viewport position & size.

### 1.2.3 Export Video

Export video of simulation playback. Video output use current viewport position & size. Exporting video require ffmpeg. Download ffmpeg at <https://ffmpeg.org/>

## 1.3. Optimizer



### 1.3.1. Simulation Parameters

Show simulation parameters dialog.

### 1.3.2. Optimizer Settings

#### Worker count

Define maximum simulation instance for optimizer.

#### Show Sim Plot

Show simulation plots during optimizer run. \*This will slow down optimizer calculation.

### 1.3.3. Simulation Environment

#### Path

Load scene from file to run optimizer.

#### Door optimization

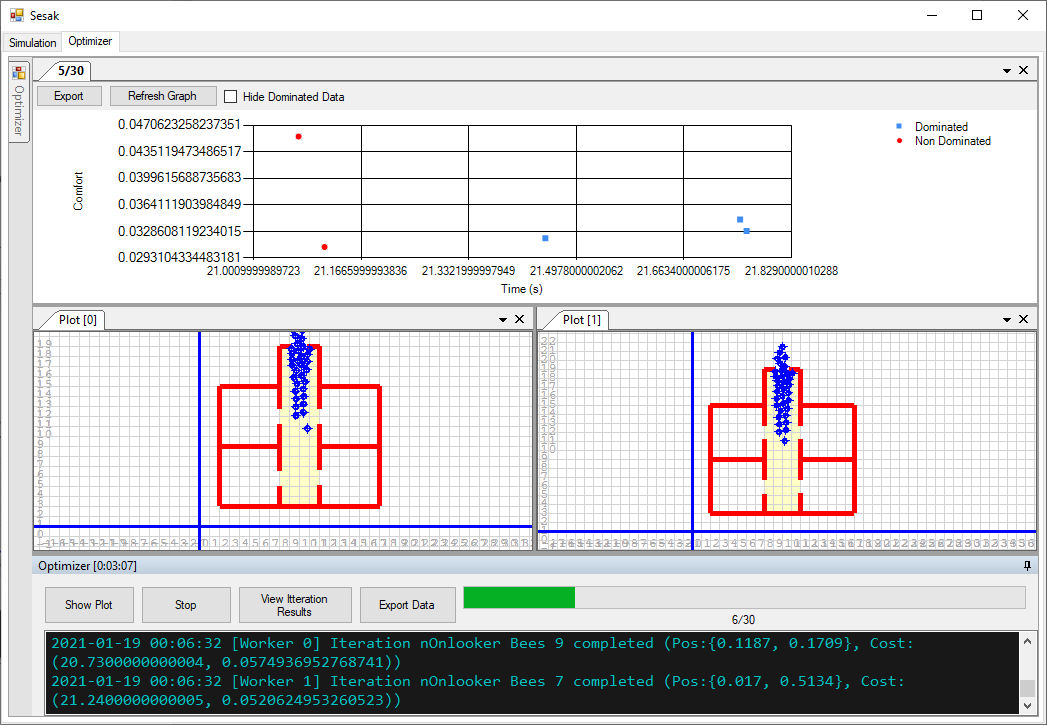
Define which door need to optimize.

#### Y Index

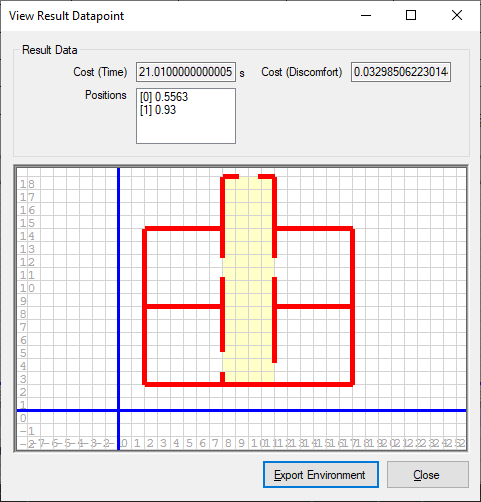
Define door group. Door with same group will share position value. Group count is defined in

Y ParamCount in Optimizer Settings.

### 1.3.4. Running Optimizer



In multi-objective, dominated & non dominated result are shown on the chart. Double click on the data point to show result & scene details.



#### Export Environment

Save current scene to file.