Urban Rail Studies Move Faster in 3D

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Project

- Analyzing the impact of a future urban rail line in Austin
- “Build” versus “No Build”
- City of Austin, University of Texas – Austin, Advisory Committee, and Civic Analytics
Project Workflow

- Scenario planning: ArcMap + Envision Tomorrow + CityEngine

GIS Layers + Building Library

Analysis by UT Researchers and CA

Visual and Analytical Impacts

Advisory Committee

UT

Feedback
• Divided route in three subareas
Methods

• 2010 data & 2030 population and employment projections

• Find **difference** for each corridor – control totals.

• Use building library (~ 75-80 building types)

Ex: East Riverside

<table>
<thead>
<tr>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>28,366</td>
</tr>
<tr>
<td>- 46,007</td>
</tr>
<tr>
<td>17,641</td>
</tr>
</tbody>
</table>

[Map of East Riverside]
• Using building attributes: population, employment, estimated property tax revenue, people per acre, parking spaces, water use, etc…

... we gain insight into “Build” and “No Build” scenarios.
Ensuring Accuracy

• Feedback process with University of Texas

• Feedback process with Central Corridor Advisory Committee
Ensuring Accuracy

Ex: East Riverside

Chart 1: Residents from Future Development

<table>
<thead>
<tr>
<th>Chart Type</th>
<th>High Rand Subarea</th>
<th>Core Subarea</th>
<th>ERC Subarea</th>
<th>Total Corridor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi Build</td>
<td>2,152</td>
<td>2,032</td>
<td>5,743</td>
<td>9,929</td>
</tr>
<tr>
<td>Hi No build</td>
<td>1,140</td>
<td>1,820</td>
<td>4,743</td>
<td>7,699</td>
</tr>
</tbody>
</table>

2030 'No-Build High' ET Scenario (COA)

Source: City of Austin 2014
- Low buy in at first
- How does 3D contribute?
- Not presented until mid-project
Civic Analytics

Workflow

Envision Tomorrow

CityEngine

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Lot Size (Sq Ft)</th>
<th>Building Lot Coverage</th>
<th>Parking Lot Coverage</th>
<th>Height (Stories)</th>
<th>Floor Area Ratio (FAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>210 Barton Springs</td>
<td>69,131</td>
<td>100%</td>
<td>0%</td>
<td>17</td>
<td>4.05</td>
</tr>
<tr>
<td>300 E Riverside</td>
<td>186,367</td>
<td>45%</td>
<td>24%</td>
<td>5</td>
<td>1.27</td>
</tr>
<tr>
<td>High Density Apartment</td>
<td>101,054</td>
<td>70%</td>
<td>21%</td>
<td>4</td>
<td>1.98</td>
</tr>
<tr>
<td>Apt Low Density</td>
<td>65,340</td>
<td>35%</td>
<td>17%</td>
<td>2</td>
<td>0.19</td>
</tr>
<tr>
<td>Broadstone (RunTex)</td>
<td>66,503</td>
<td>100%</td>
<td>0%</td>
<td>6</td>
<td>3.16</td>
</tr>
<tr>
<td>Cityview</td>
<td>175,266</td>
<td>77%</td>
<td>0%</td>
<td>8</td>
<td>1.99</td>
</tr>
<tr>
<td>Grove Tract Lofts</td>
<td>789,510</td>
<td>21%</td>
<td>13%</td>
<td>2</td>
<td>0.27</td>
</tr>
<tr>
<td>Hyatt Garage &amp; Ballroom</td>
<td>416,739</td>
<td>74%</td>
<td>3%</td>
<td>1</td>
<td>0.40</td>
</tr>
<tr>
<td>Lakeshore Lot 10</td>
<td>137,824</td>
<td>42%</td>
<td>18%</td>
<td>5</td>
<td>2.05</td>
</tr>
<tr>
<td>Lakeshore Pearl</td>
<td>261,273</td>
<td>29%</td>
<td>37%</td>
<td>5</td>
<td>0.82</td>
</tr>
</tbody>
</table>
• Python Scripting:

If (Bldng X) { divide into “Bldng X” lots }
### TREES

Trees -->

```cgs
scatter(surface.geometry.area / 150, uniform) { PutTree(rand(.4, 1.5))}
```

PutTree(scalar) -->

```cgs
s(0, 0, 0)
```

Center(xz)

1(fileRandom("assets/vegetation/*.obj"))
3D Model

Project Connect - Urban Rail
3D Model

Build

No Build
Project Connect - Urban Rail

3D Model
Urban Rail Impact

• More engagement
• Faster feedback
• New conversations
• Unique data validation
• Process moved faster