

City of Vancouver 3d



Outline

- History
- 3D Goes Mainstream
- Issues
- State Of The Model
- Current Tools - Production Pipeline
- Case Studies
- Future Directions



Where we are going



About Us

- Urban Design - Graphics
- Community Services Group



History



Why A 3D Model

- No formal business case
- No established funding
- No specific objectives

- ...it just seemed like the right thing to do.



Vancouver's 3d Modeling History

- 20 years history working with 3D models
- 12 year history working with a City model



3d Modeling History - Tools

- Consultants - lost in the mists of time workstations
- Drafix 3D
- Imagine (Amiga)
- AutoCAD
- Autodesk Map 3D
- Kinetix VIZ
- Autodesk MAX
- SketchUP
- Pictometry
- ImageModeler

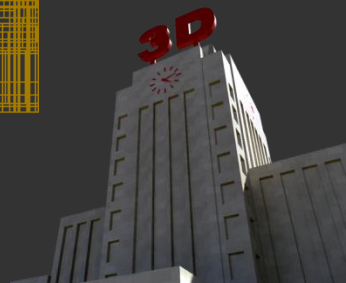
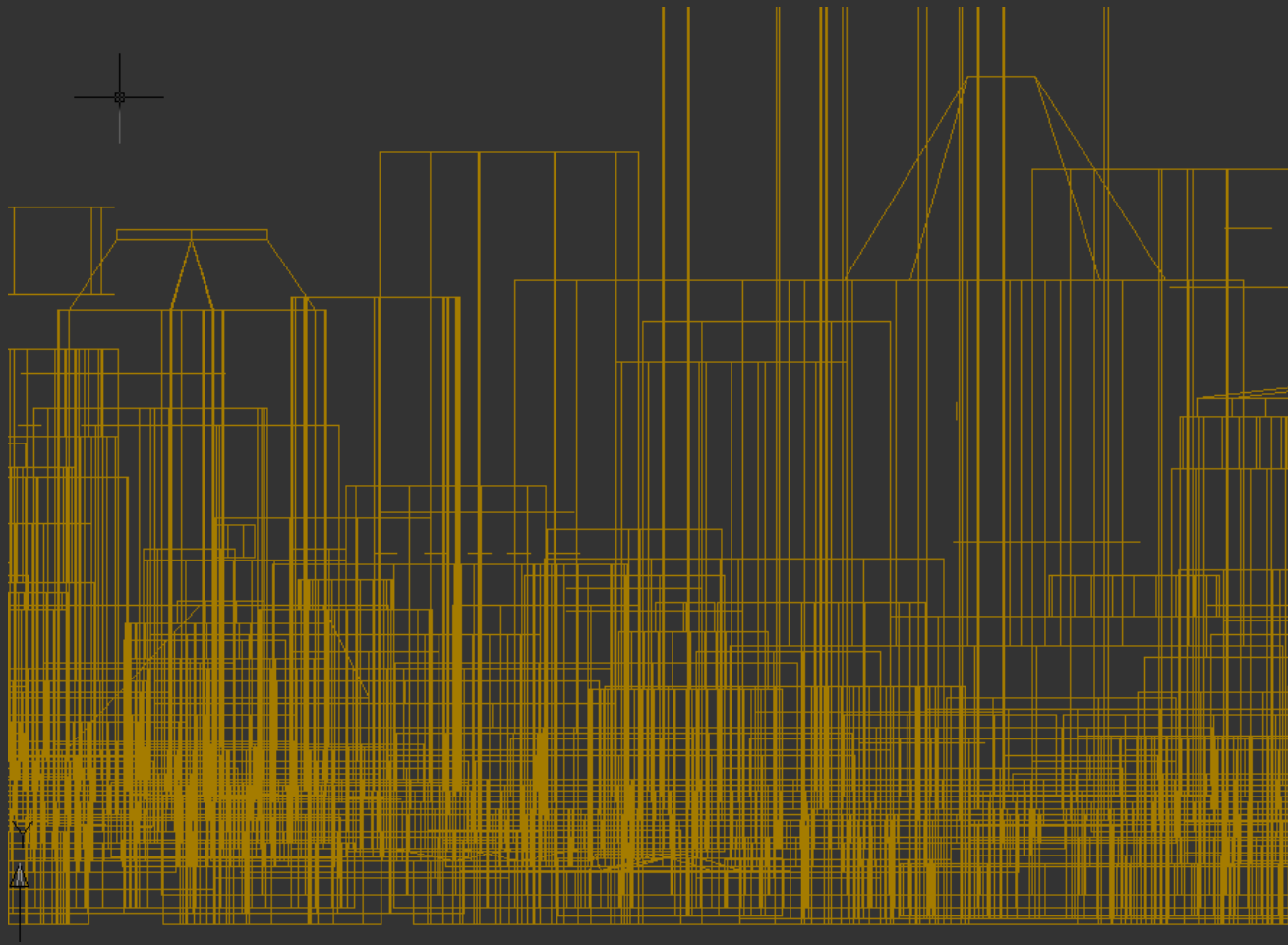


3D Modeling History - Events

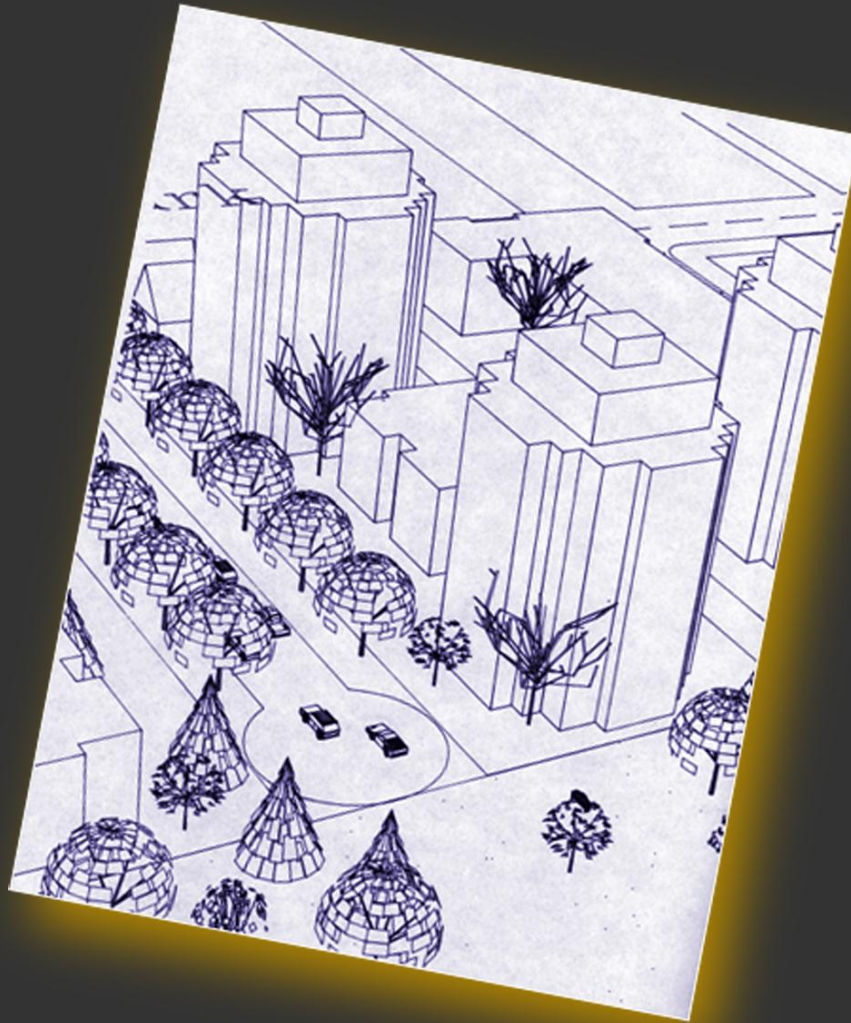
- 1989 Views Study
- 1995 City Model Initiative
- 1996 Purchased Views Study Model
- 2004 First orthophoto update



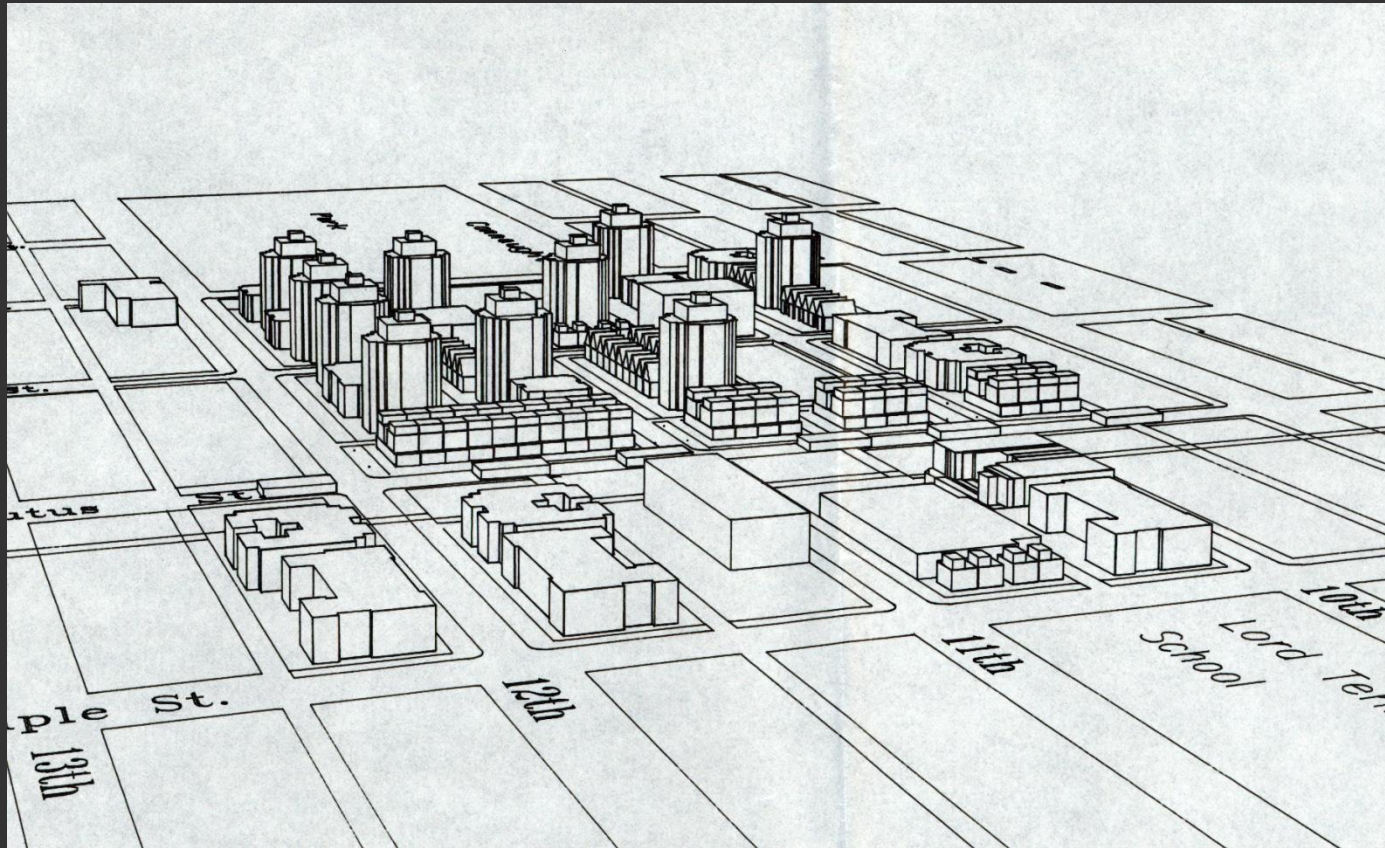
3d Modeling History 1980s - HA Simons



3d Modeling History - 1980s Drafix 3D

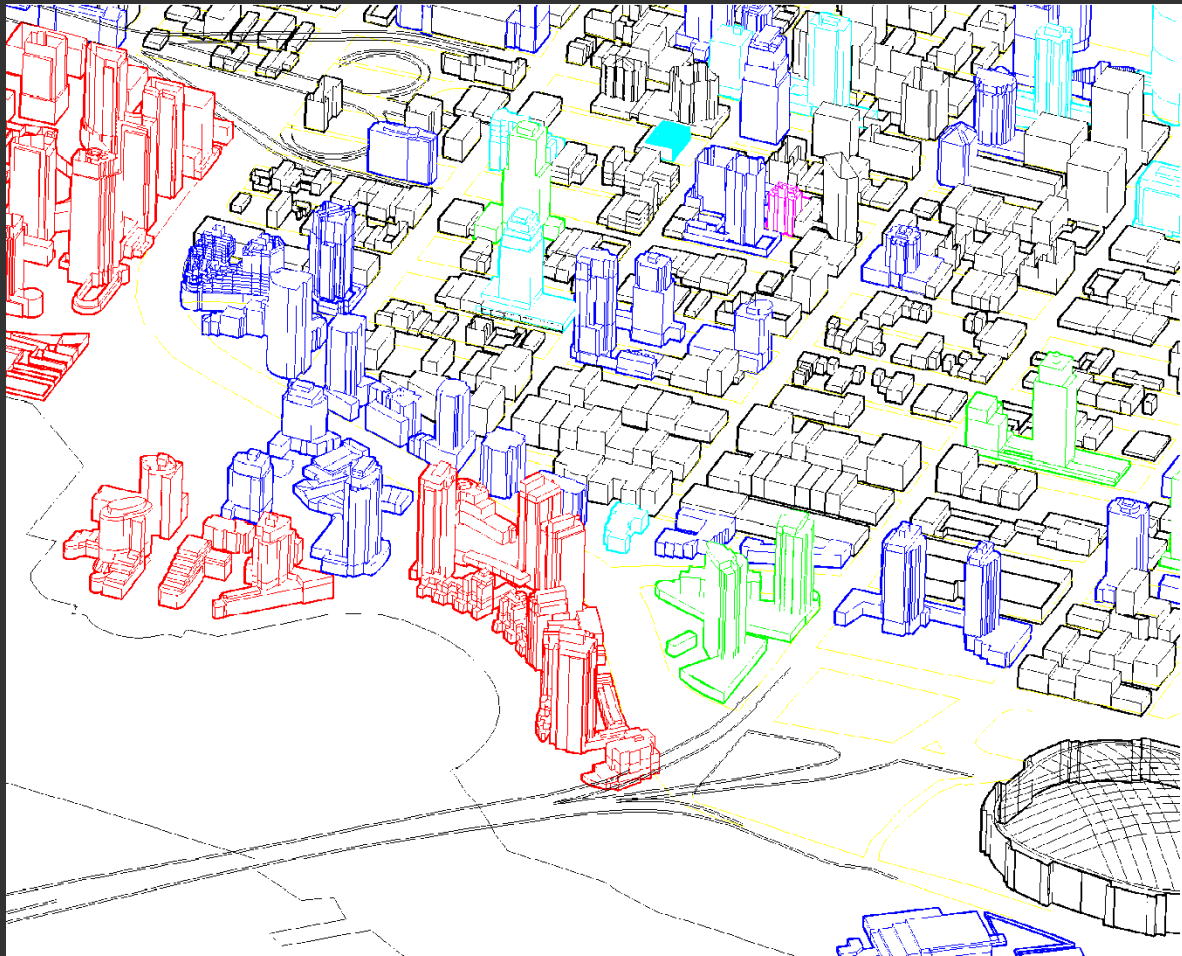


3d Modeling History - 1980s AutoCAD

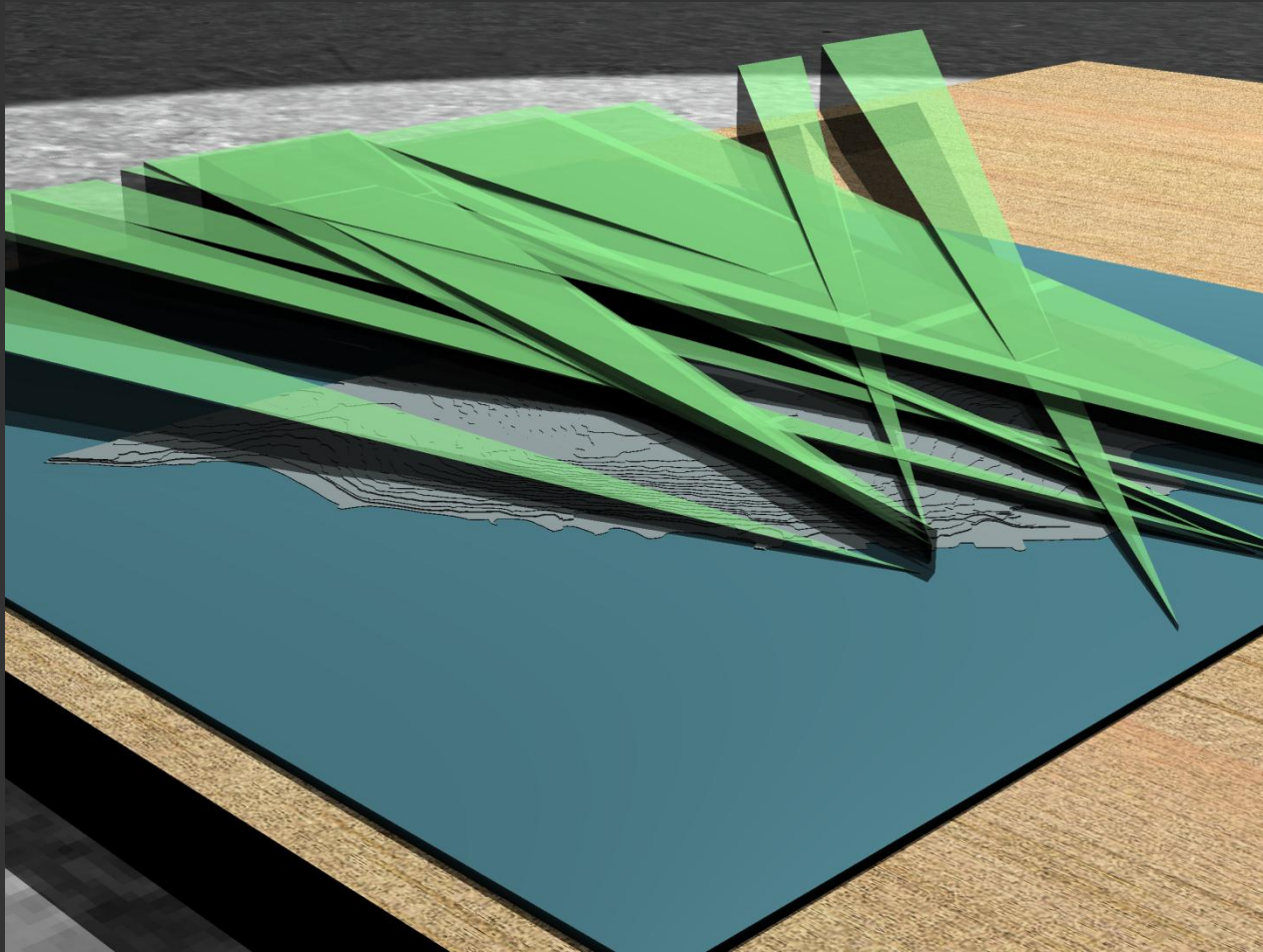


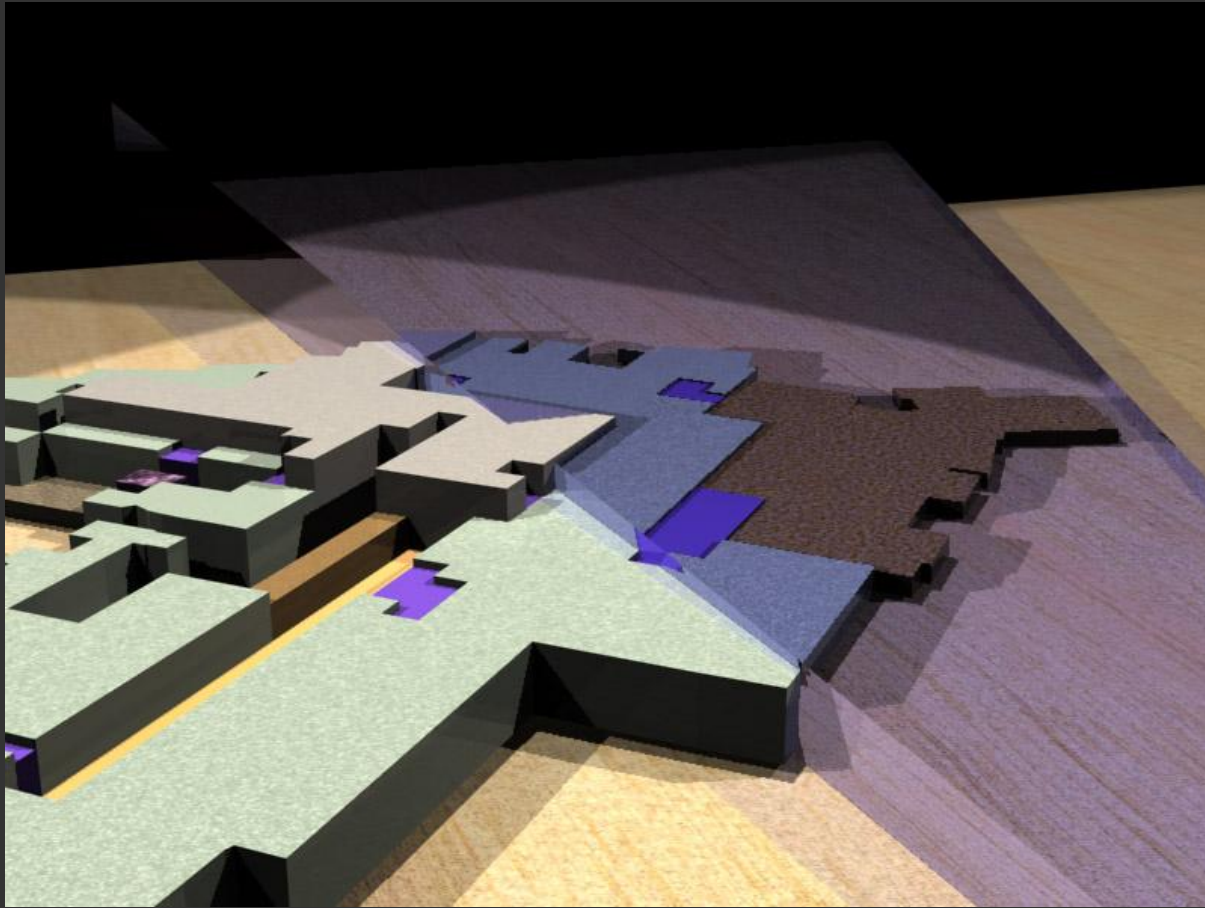
3d Modeling History - City 3D model 1996

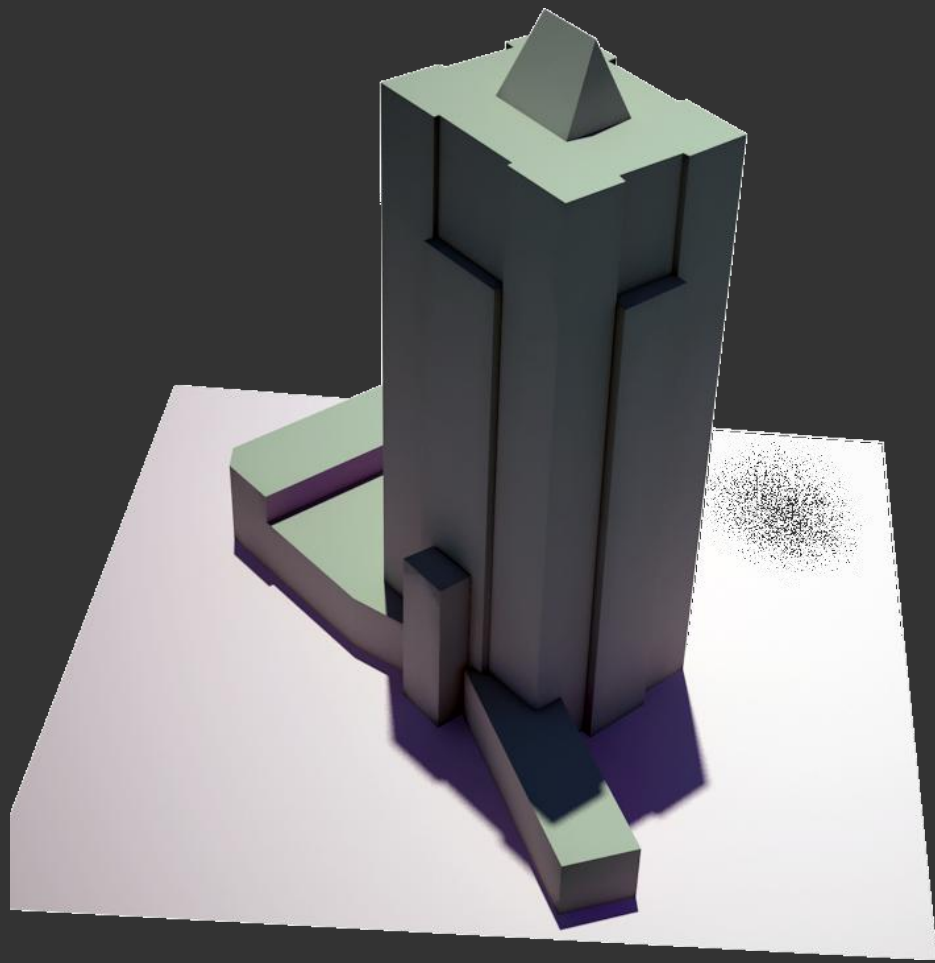
Autodesk Map 3D



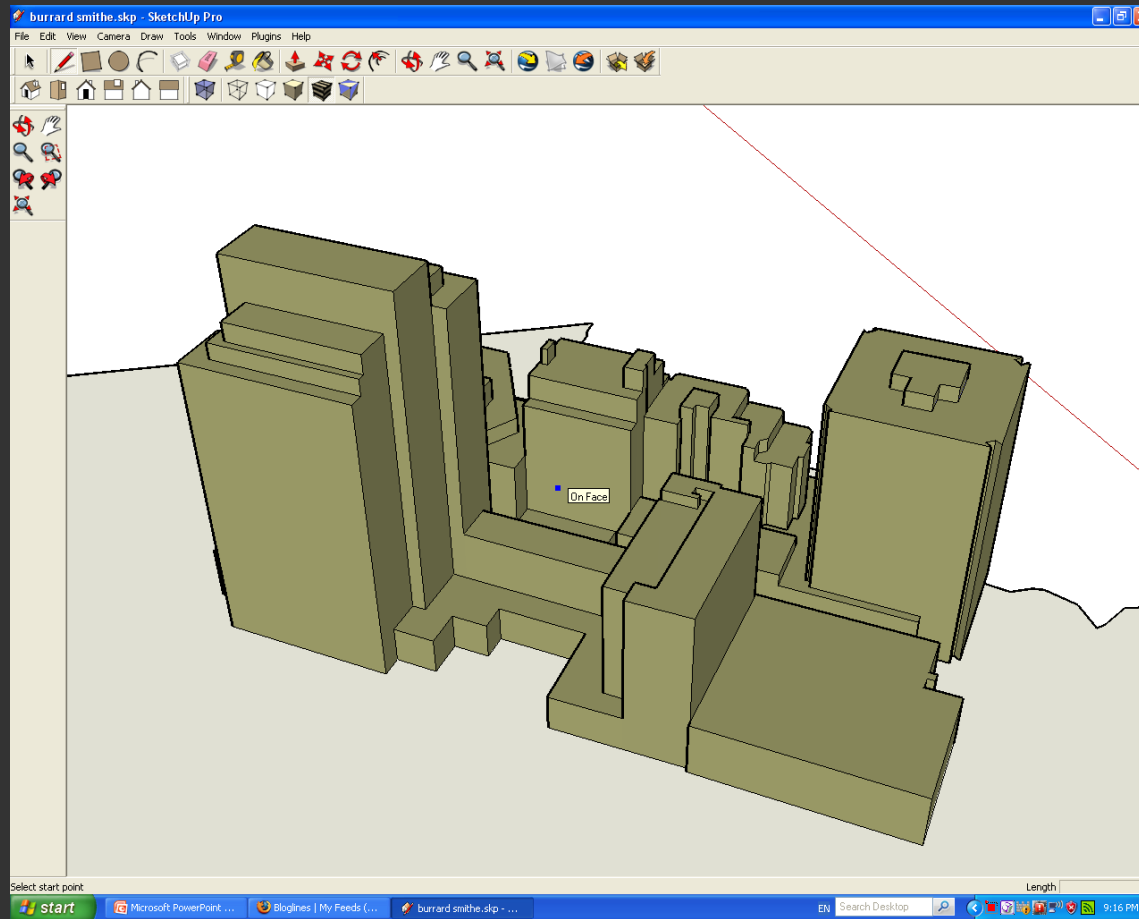
3d Modeling History - Autodesk VIZ



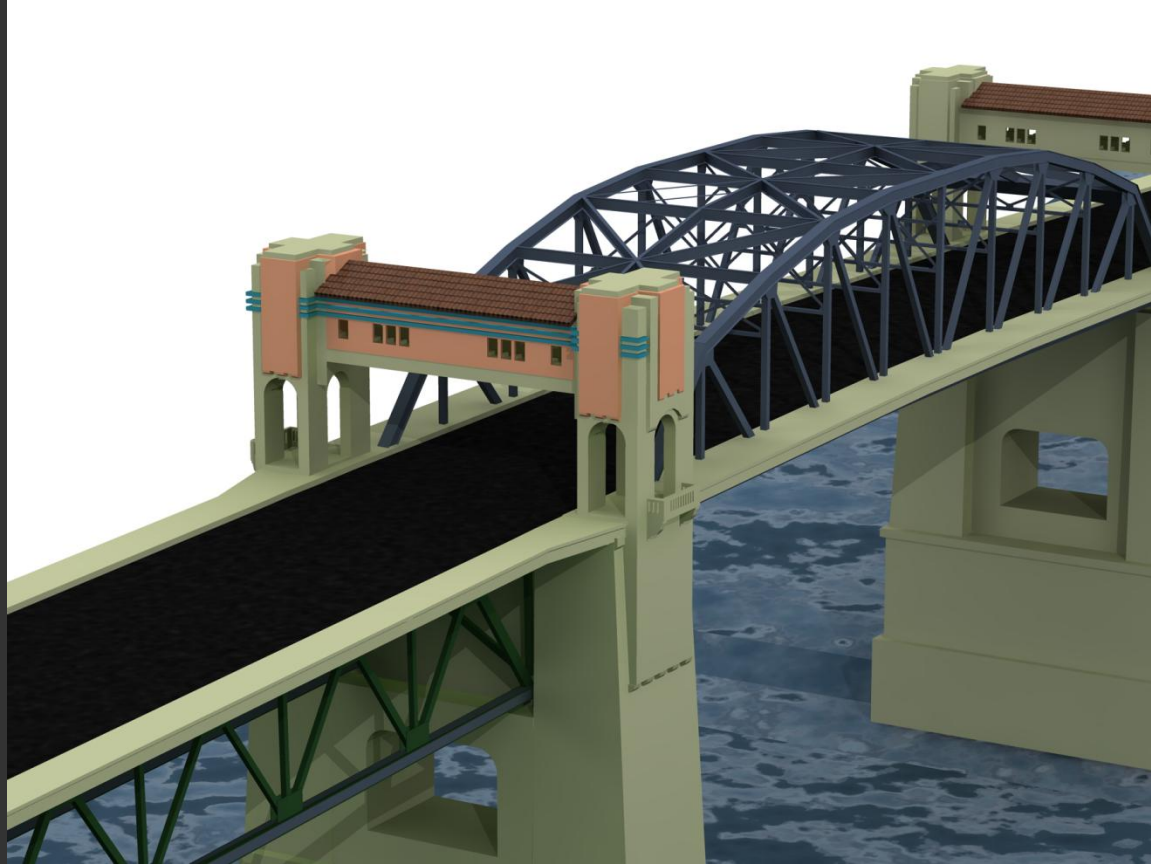




3d Modeling History - SketchUP



3d Modeling History - 3DS MAX



3D Model History

- Where we are today



3D Goes Mainstream



Ubiquitous 3D?

- About 5 years ago things began to change
- We had to think about the role of 3D in the City
- Our Conclusion...

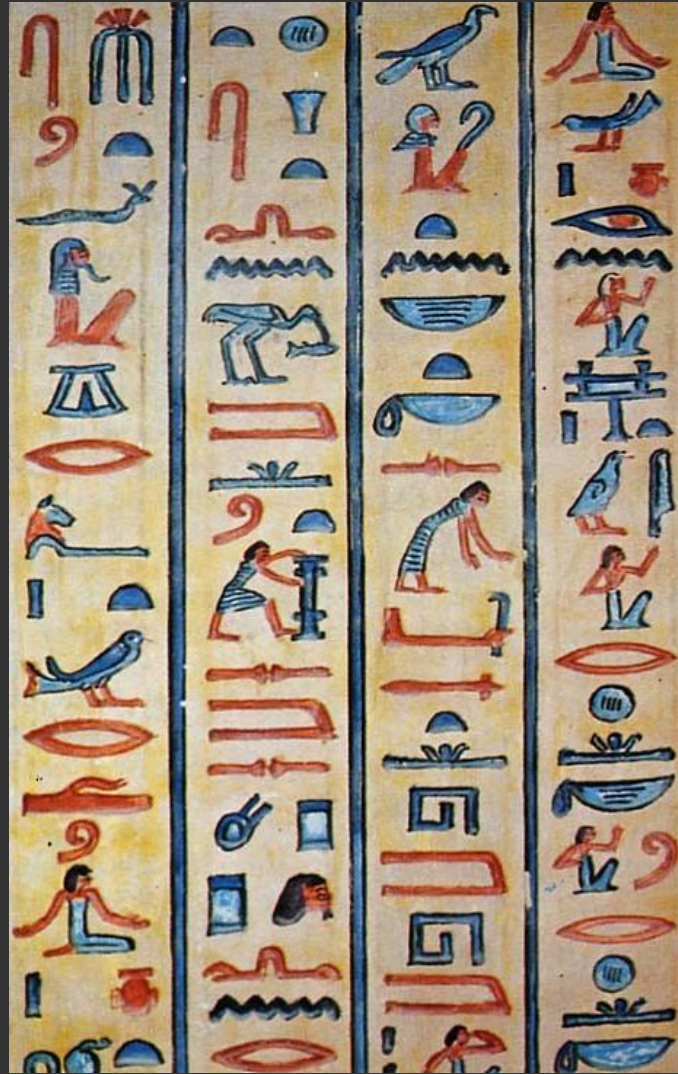


3D Is Easy

2D Is Hard



Lost In Translation



What Is The Role Of The 3D Model?

- Analysis
- Visualization
- Communication
- GIS
- It is all of the above plus lots more...so
- Can one model meet all these needs?



?



3D Can Have GIS Data

But...

3D without linked data is still data



3D Model Data - Not So Abstract



3D

Issues



Issues - Exposure

- How useful is a 3d model if only a handful of staff have the training or hardware to work with it?



Issues - Resources

- Work usually as time permits
- Limited budget
- Some revenue through licencing



Issues - Can One Size Fit All?

- Visualization vs Analysis



Issues - The Lure Of Pretty Pictures



Issues - Data Distribution

- Free - Cost Recovery - Subsidized?
 - The Public
 - Academic Community
 - Development Community



Issues - Maintenance

- Keeping it current



Issues - Emerging Standards?

- City GML



Issues - Perception - Consistency

- No two people will model a building the same way
- Ask two people to represent a street network, and it will be similar
- Exactly what is a building footprint?



Issues - Level Of Detail



Issues - How Much Context

- No longer are you just concerned with the area you administer.
- All you see is important



Issues - Multiple Versions

- AutoCAD - geo-referenced
- AutoCAD - 0,0,0
- Max
- SketchUp (bits and pieces)



Issues - 3d Silos

- SketchUP is free!
- AutoCAD now does 3D quite well...
- How about that Google Earth?
- Hey Microsoft is giving away trueSpace



Issues GIS - 3D

- How Does one model for GIS?
 - Air-space
 - Multi-use
 - etc



State Of The Model



What We Have - 3 Flavours Of 3D

- MAX
- Autodesk Map 3D
- SketchUp



Textures Being Added



City 3D Model - Current Extents



Production Pipeline

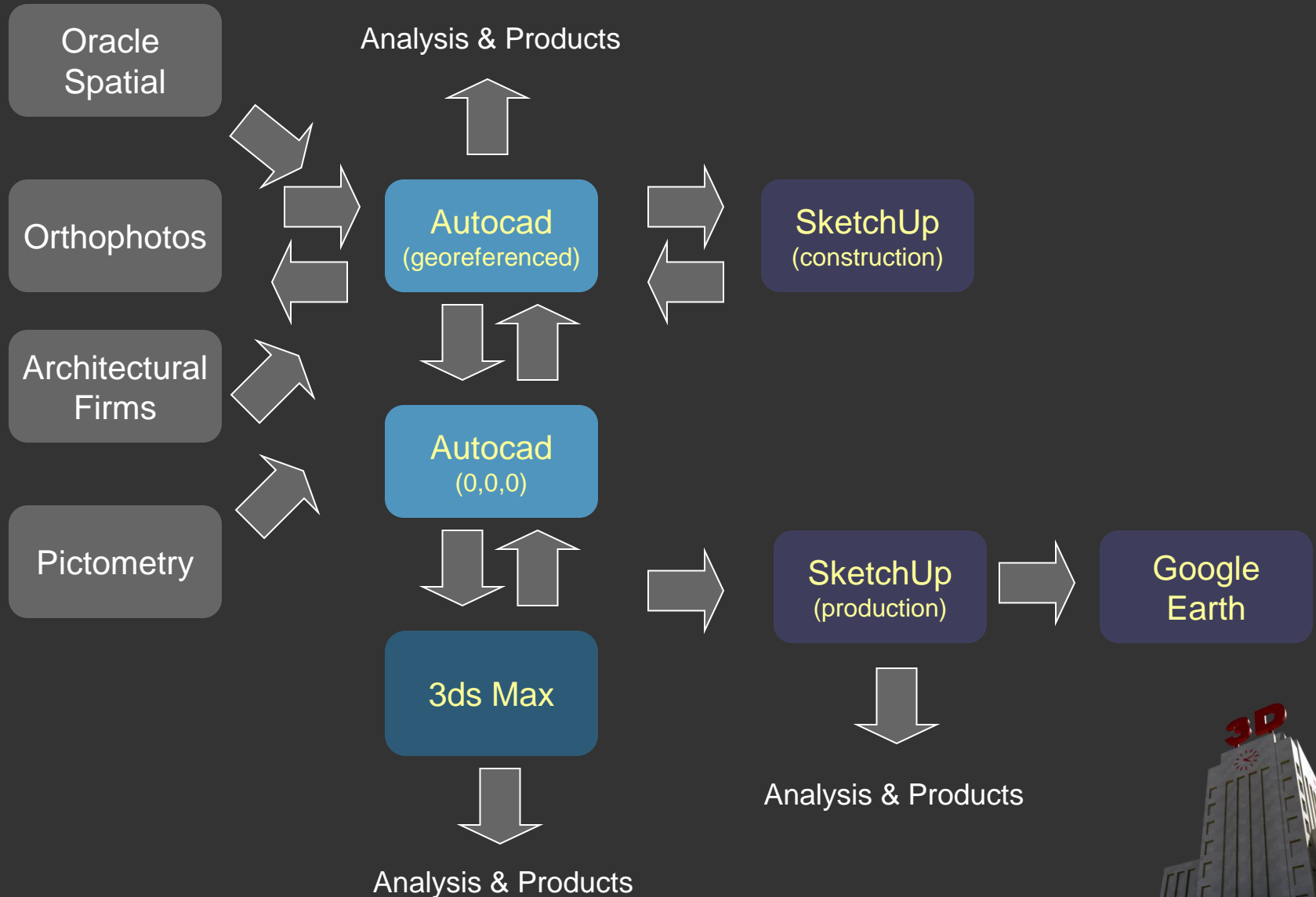


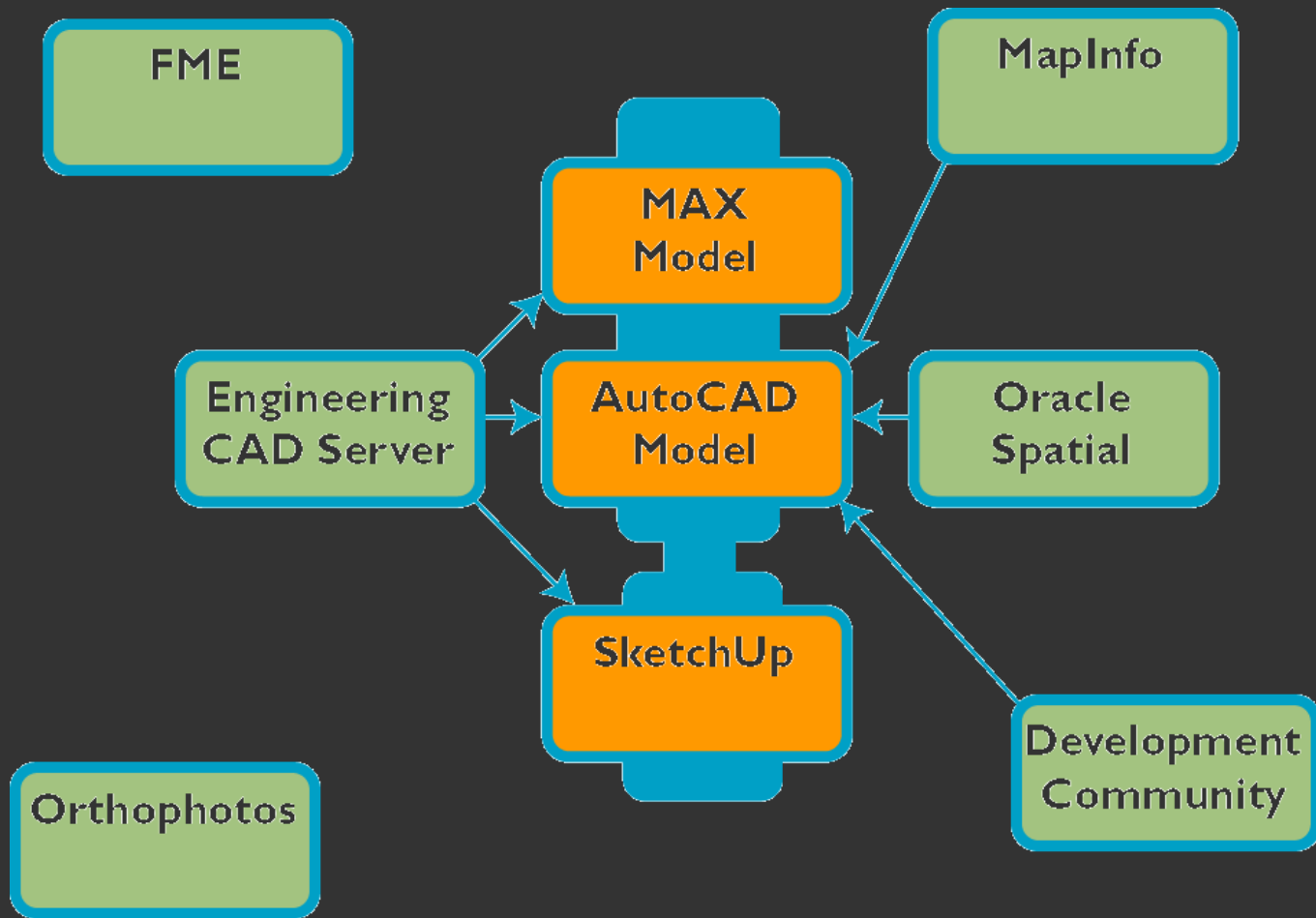
Base Creation

- Point Objects DEM
- Civil 3D surface



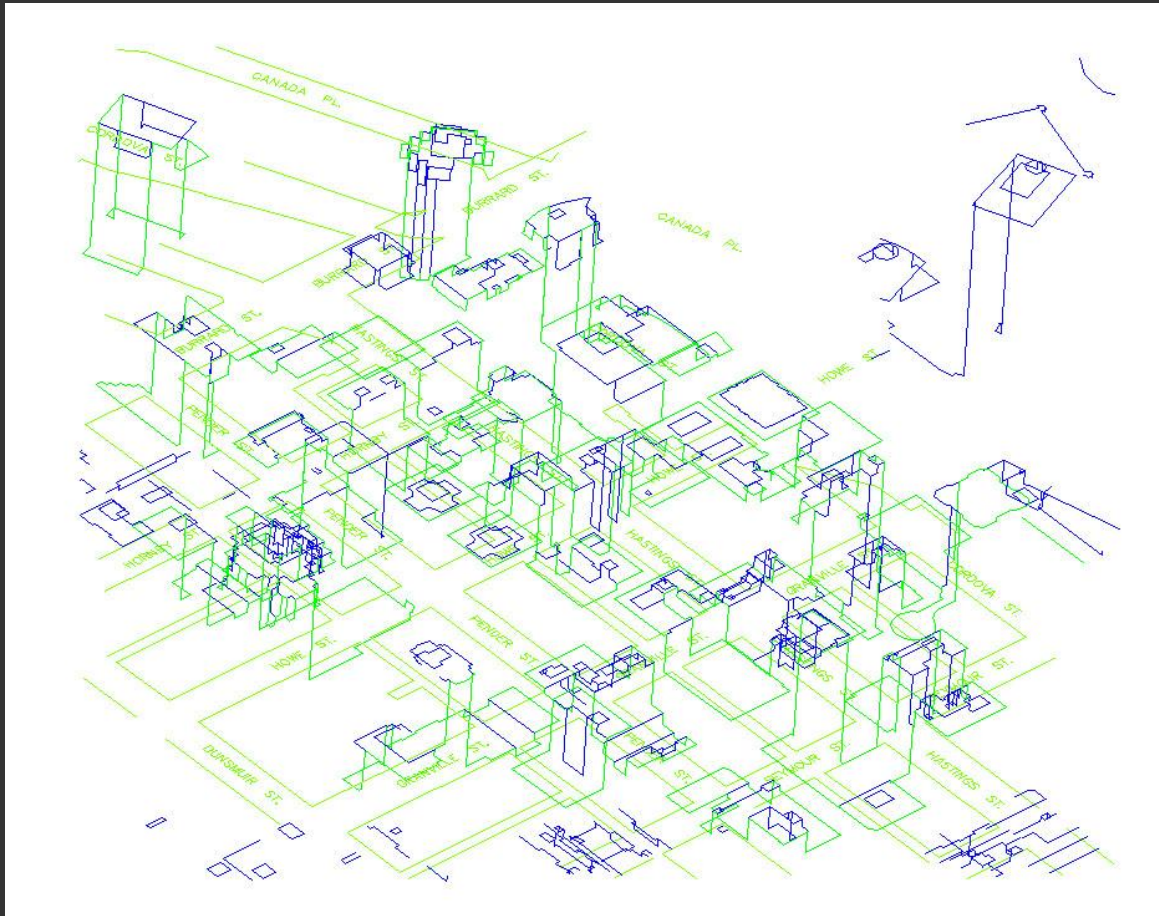
3d Model Production Pipeline



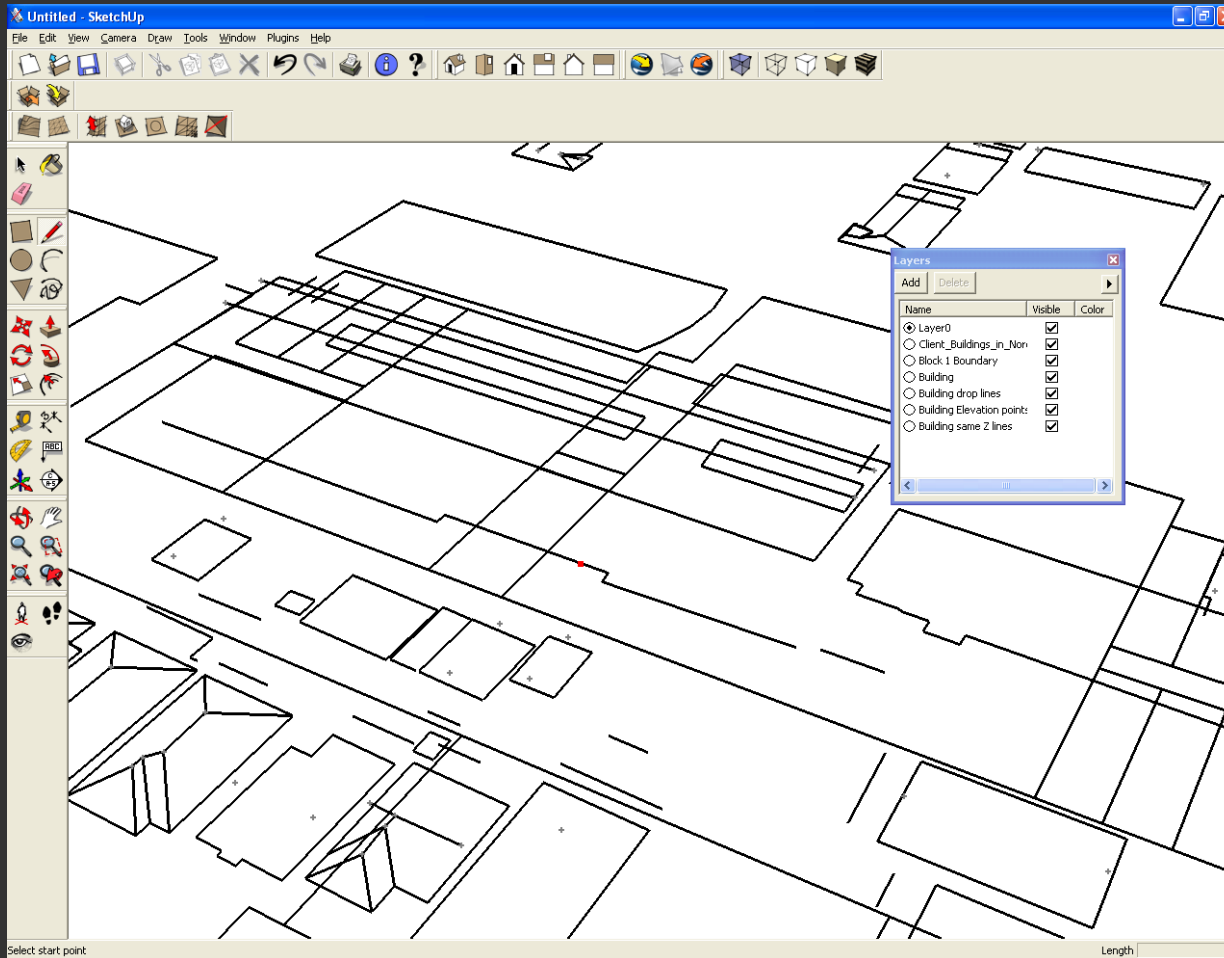


3D

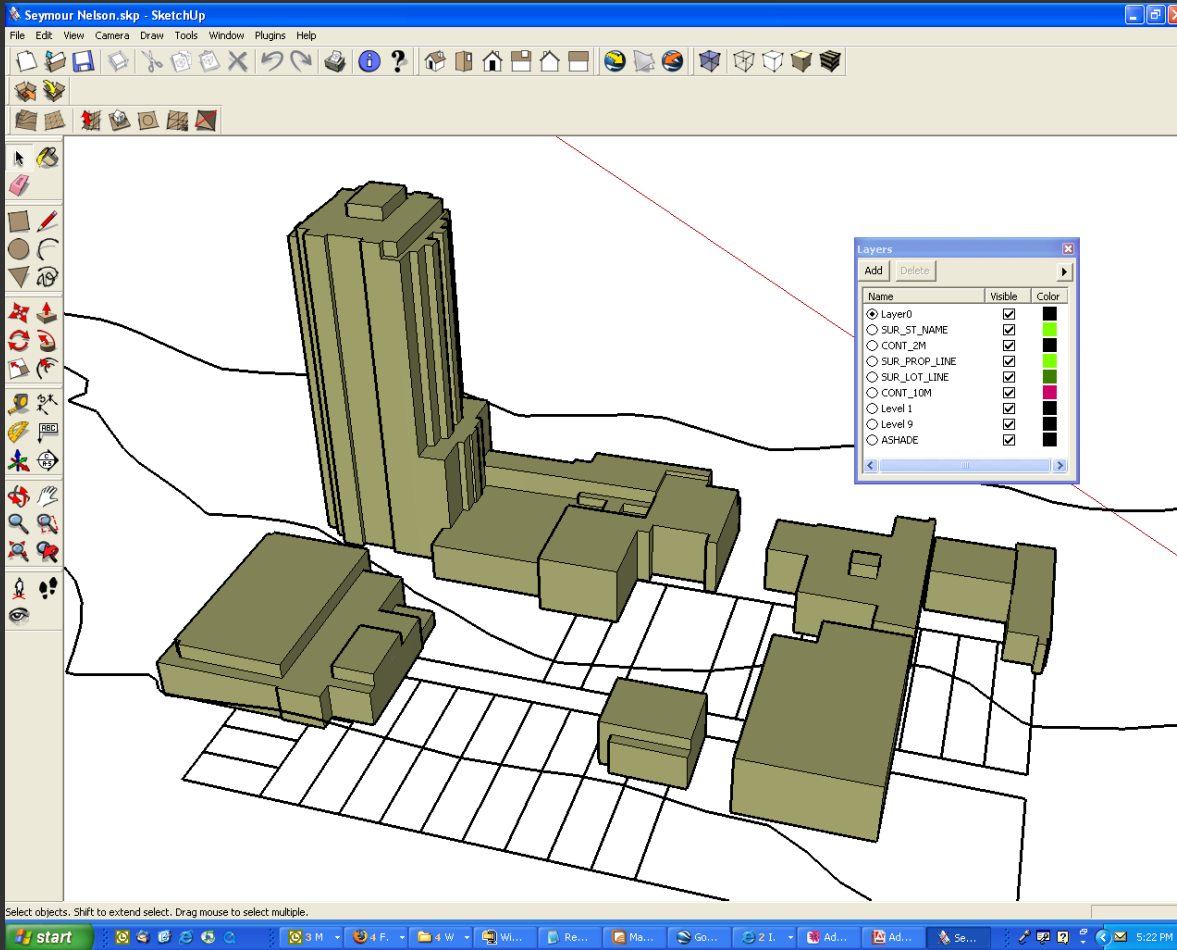
Photogrammetry - DWG Rooftops



SketchUp Rooftops



SketchUp Puzzle Completed



Construction Method



Adding New Content

- Photo of wall



How We Currently Use The Model

- Massing
- Views
- Shadowing
- Character
- Light
- Movement



Our Primary Construction Process

- New orthophotos flown
- Drawing prepared noting new buildings
- Photogrammetric rooftop collection
- DWG file with reference building framework
- Puzzle solving with SketchUp
- Place in real work position within AutoCAD
Map 3D
- Move entire model to 0,0,0
- Import into 3DS MAX



Trends



Trends

- 3d specialist joined by 3d generalists
- Boundaries between 3D analysis, visualization and geo-spatial analysis are blurring
- Younger staff joining the City bring existing 3d skills
- 3d use expanding beyond Planning functions



Case Studies

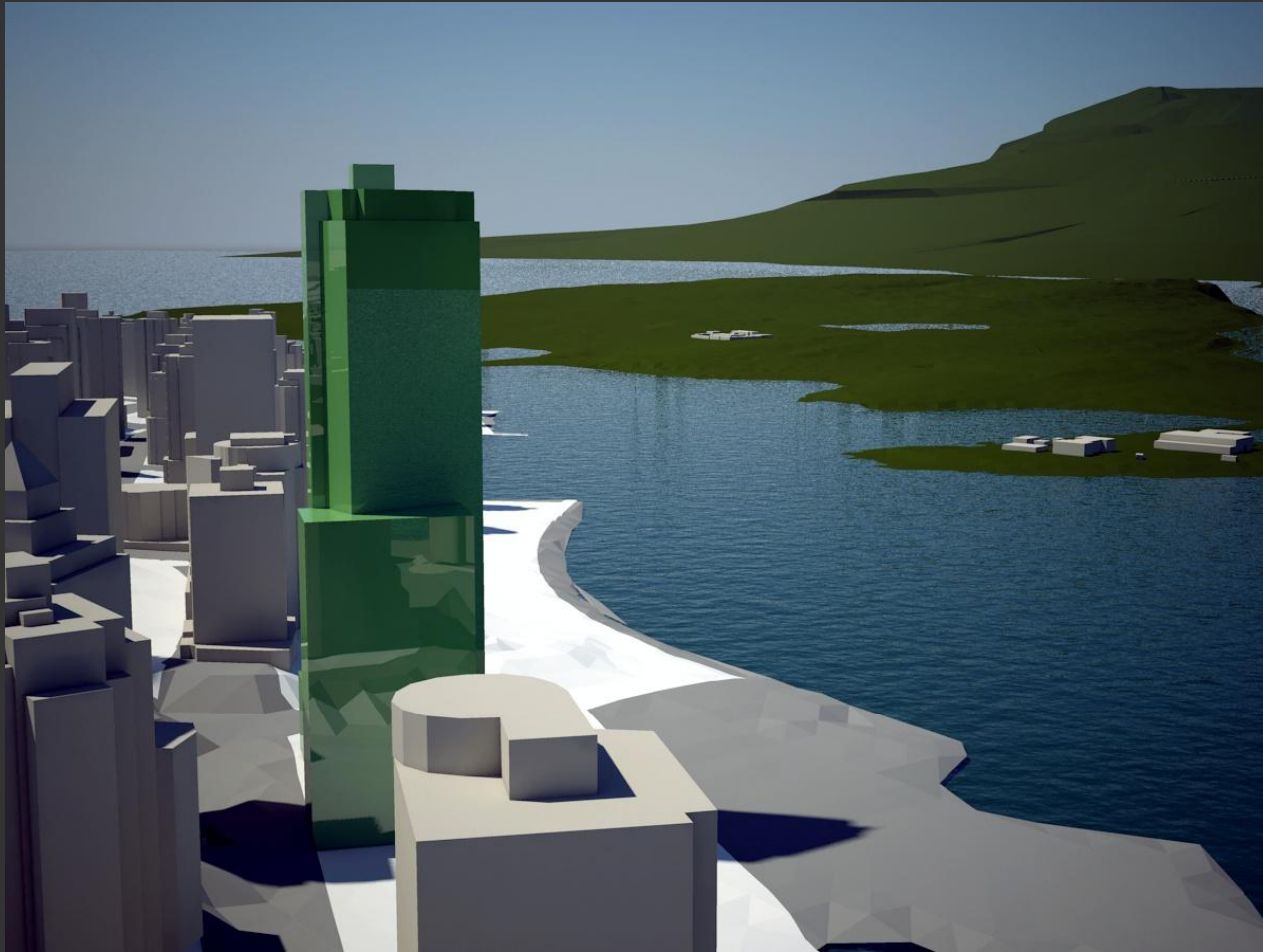


Case Studies

- Shaw Tower - NavCan
- Skyline Study
- Canada Day Fireworks



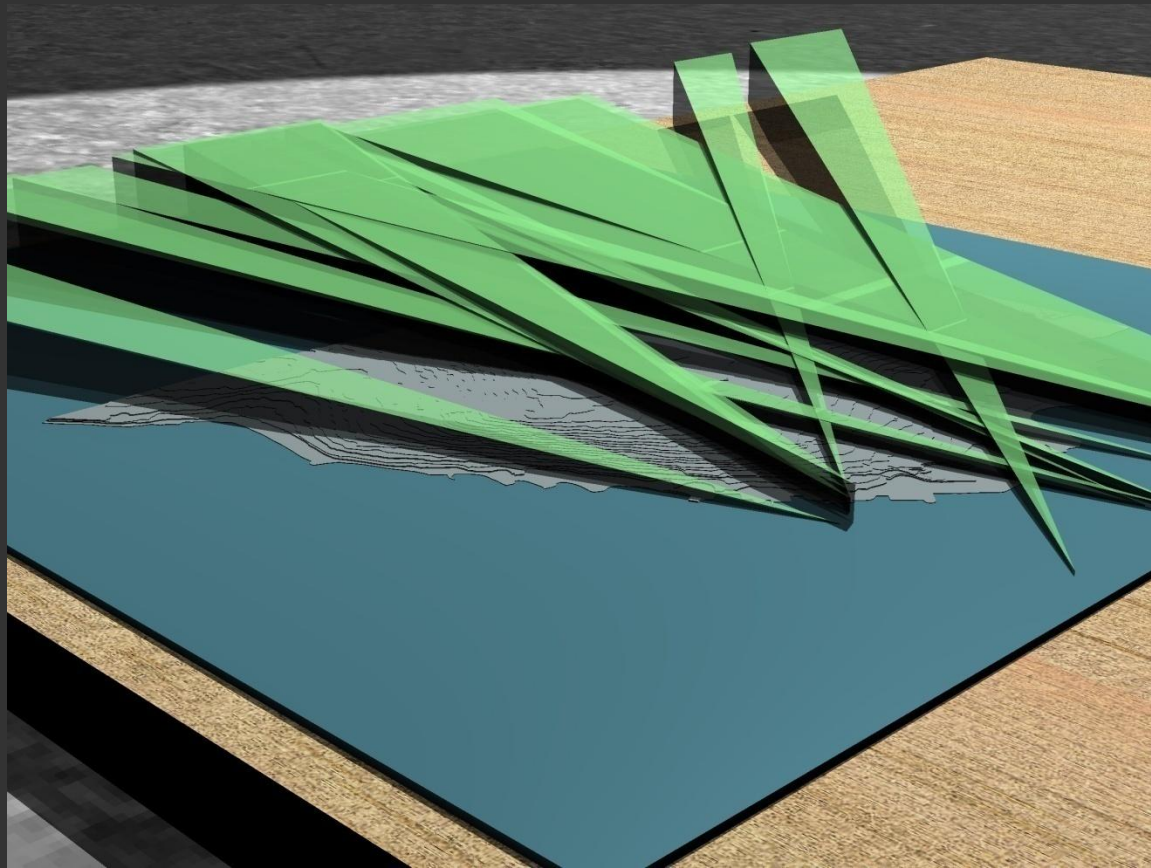
Shaw Tower - NavCan



Skyline Study



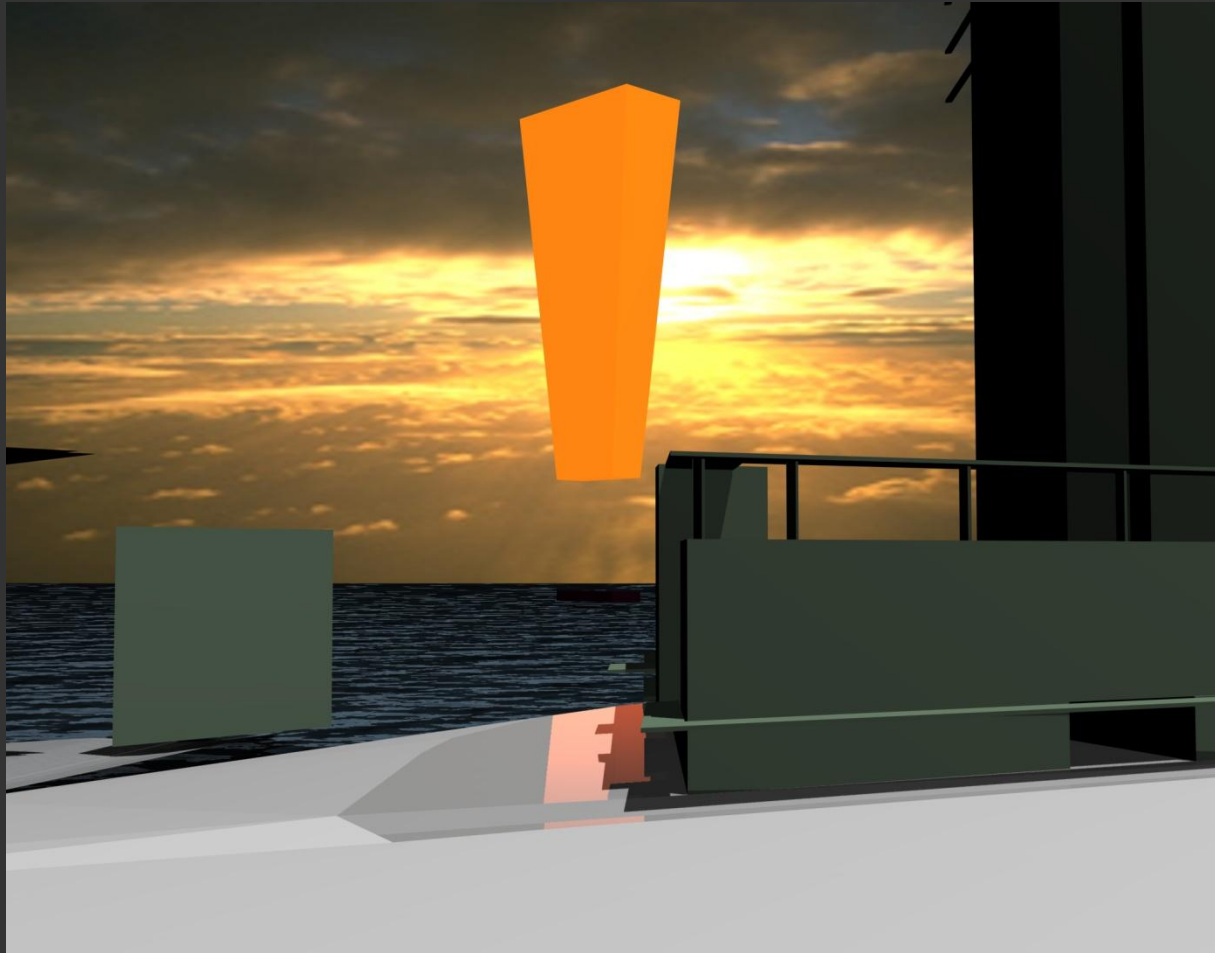
Skyline Study



Fireworks Study



Fireworks Study



Future Directions

- Single authoritative source for data (Oracle Spatial?)
- All data in its real world location
- Intelligent 3D objects
- Scalability
- Digital plan submission
- BIM adoption
- Full public access to City data
- Public Mashups



Digital Cities Research Project

- Partnership with Autodesk along with
 - Salzburg, Austria
 - Incheon, Korea

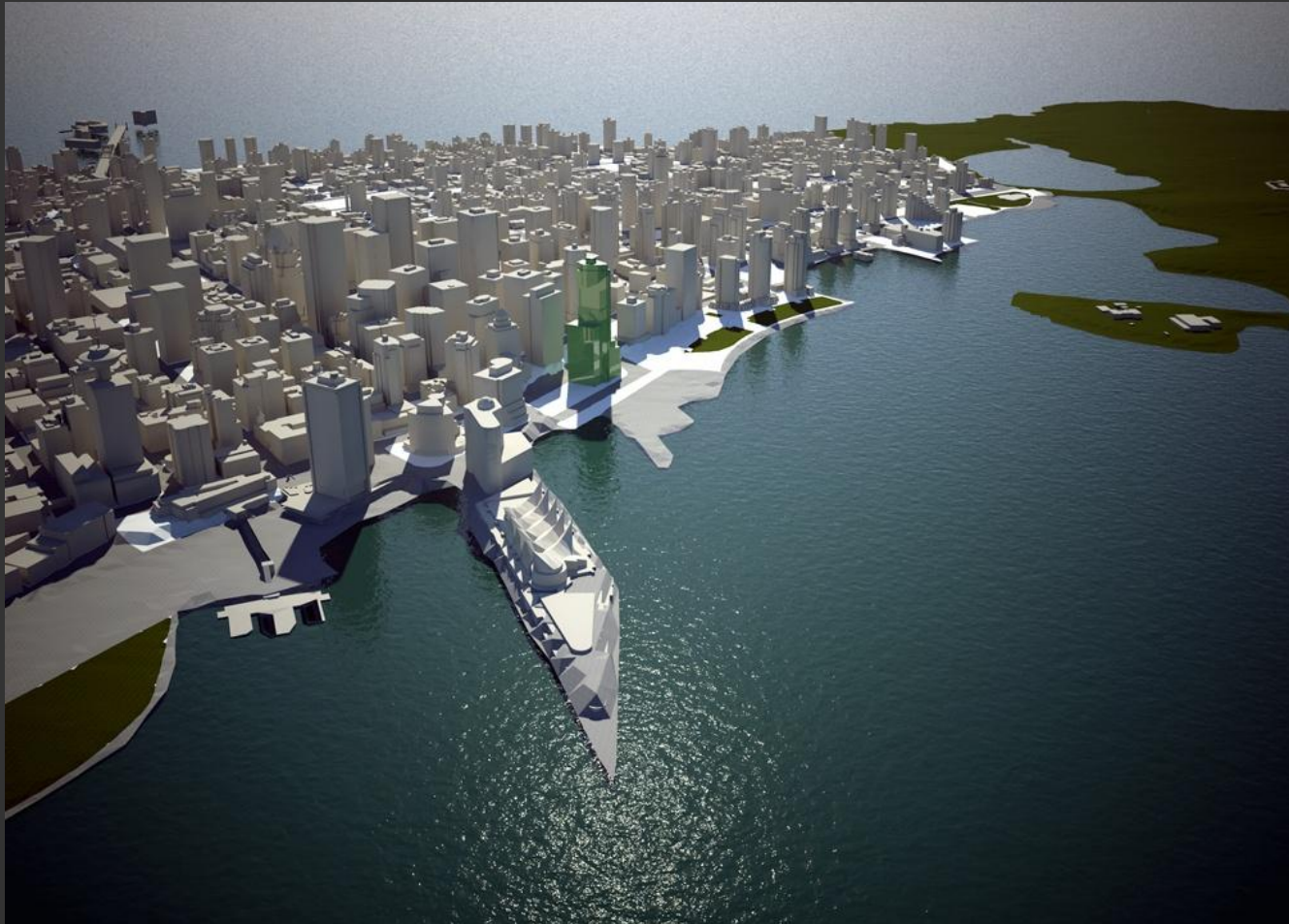


New Initiatives

- Digital Cities Research Project



City 3d Model - Waterfront



Guerilla Marketing





City 3d Model - Waterfront



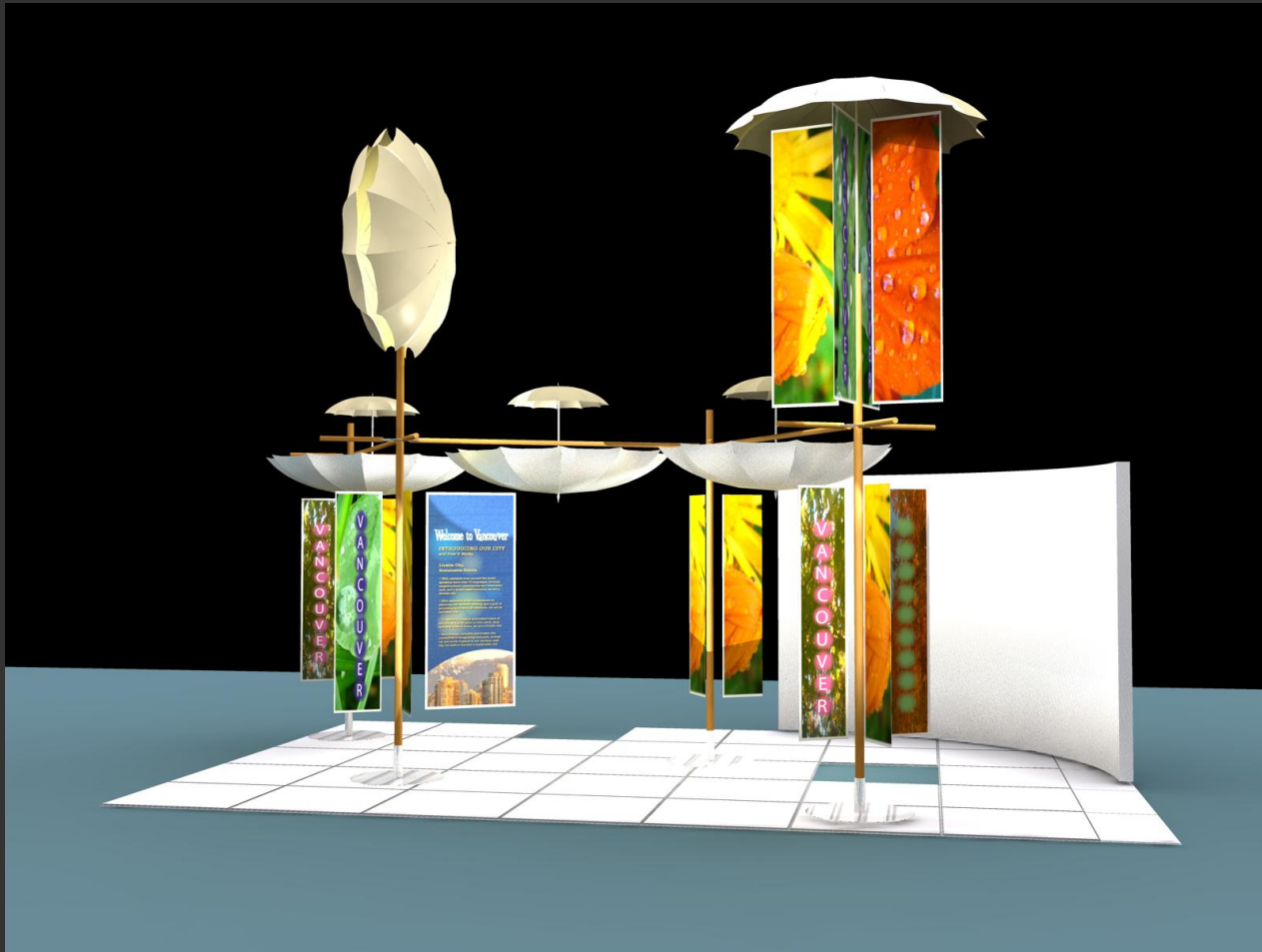
City 3d - Non-Geospatial



City 3d Non-Geospatial



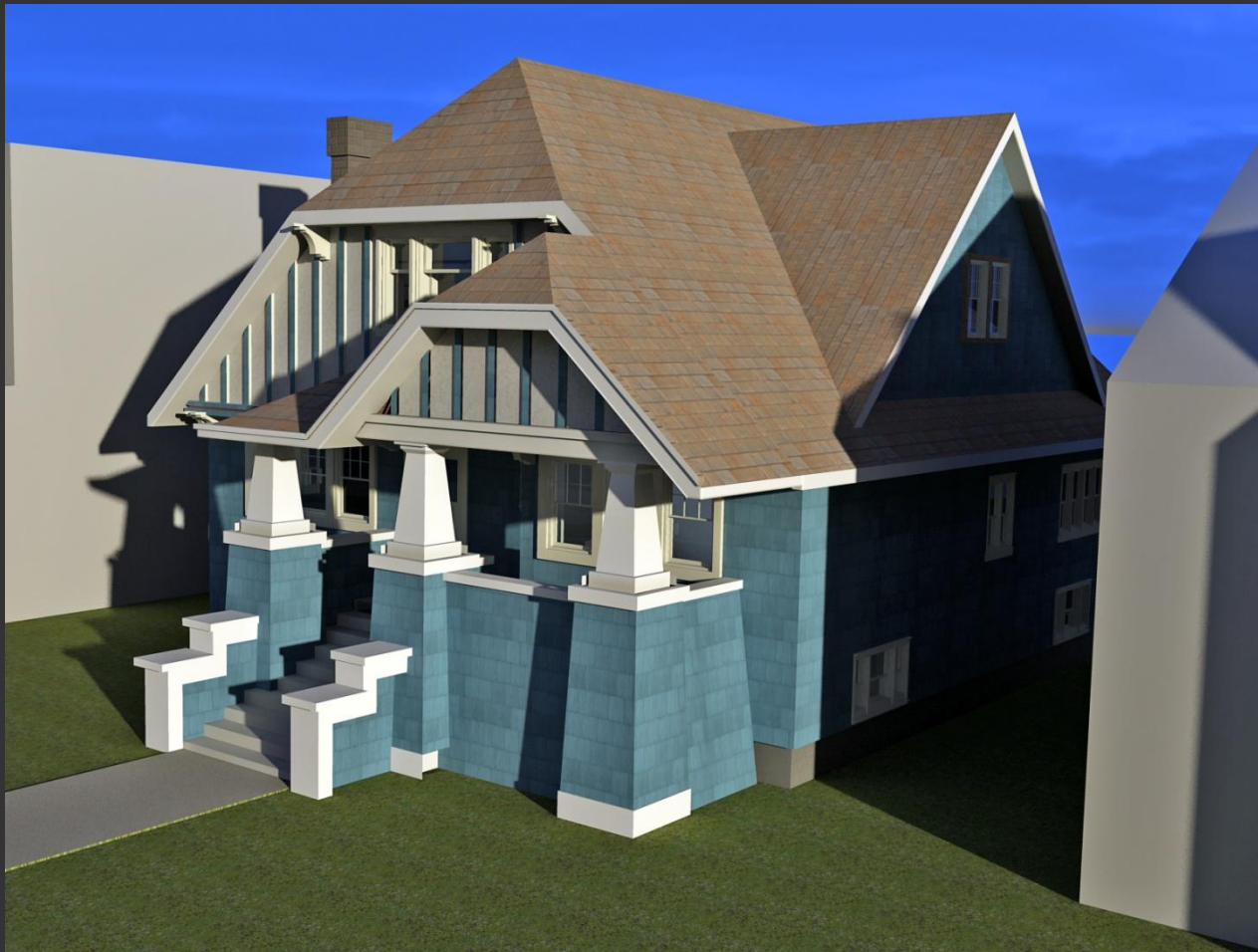
World Urban Forum Display



BIA - 2010 Banners



City 3d Model - Residential Character



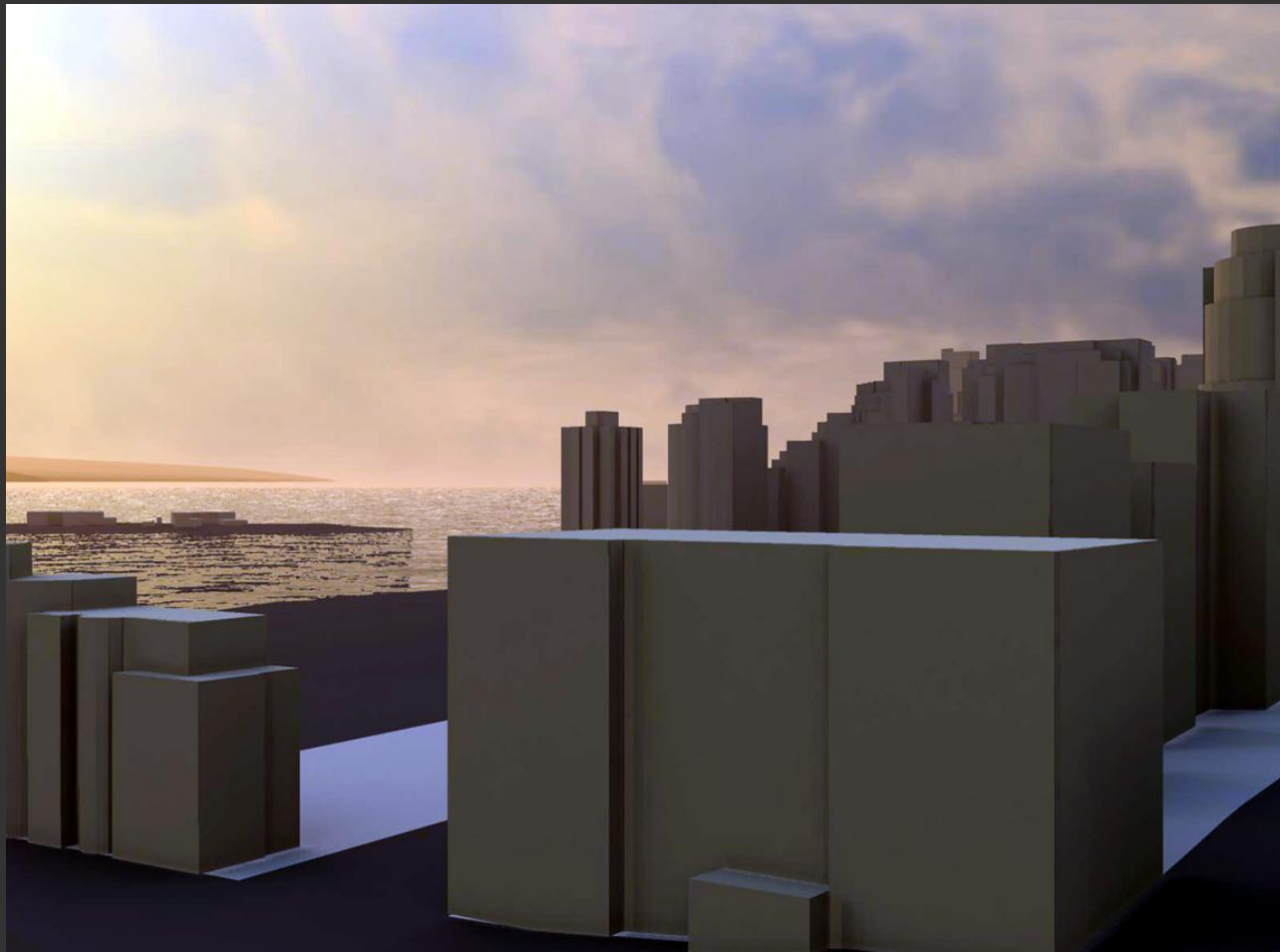
City 3d Model - City Hall



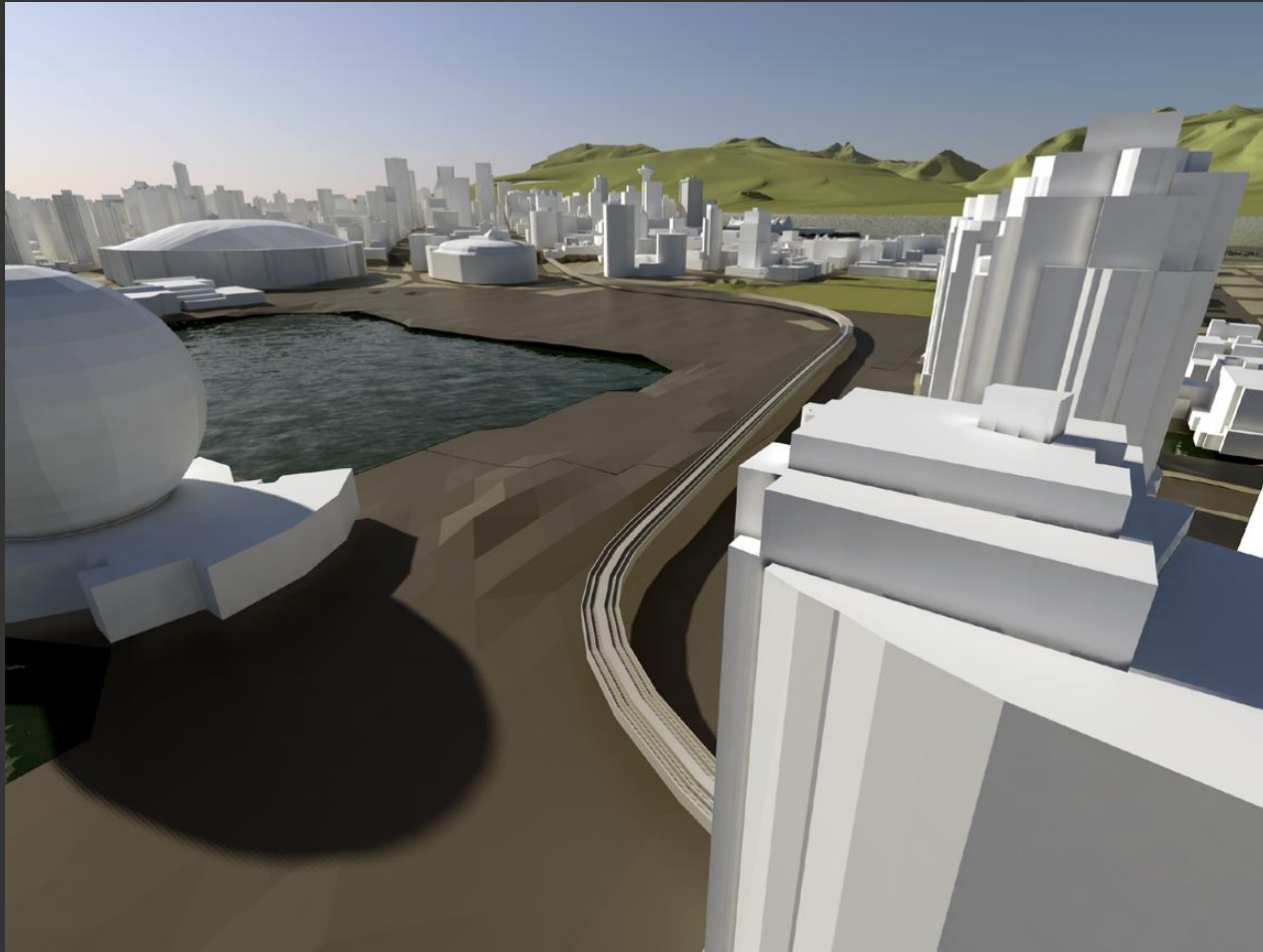
City 3D Model



City 3D Model - Coal Harbour



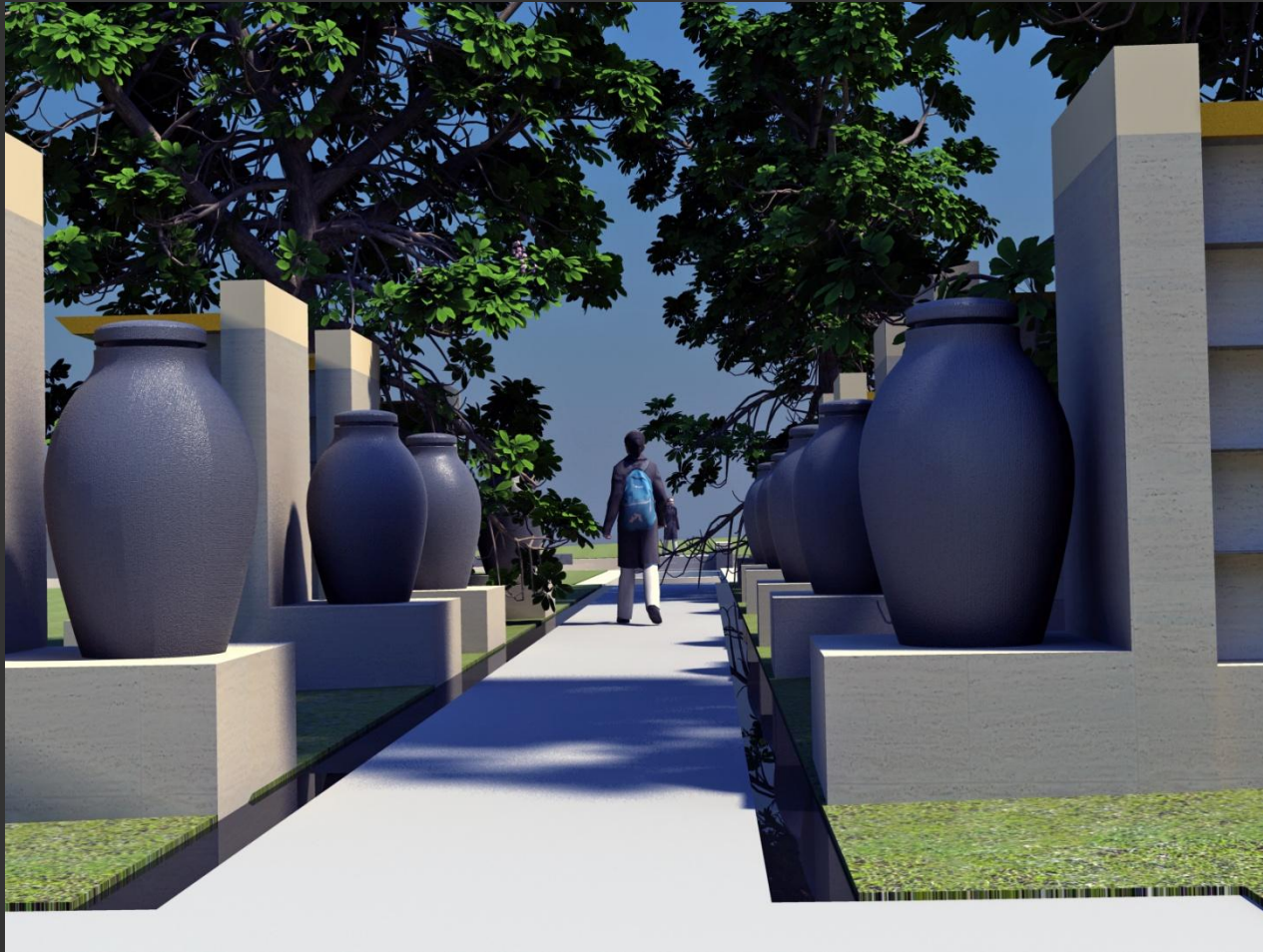
City 3d Model - False Creek



City 3d Model - Burrard Bridge



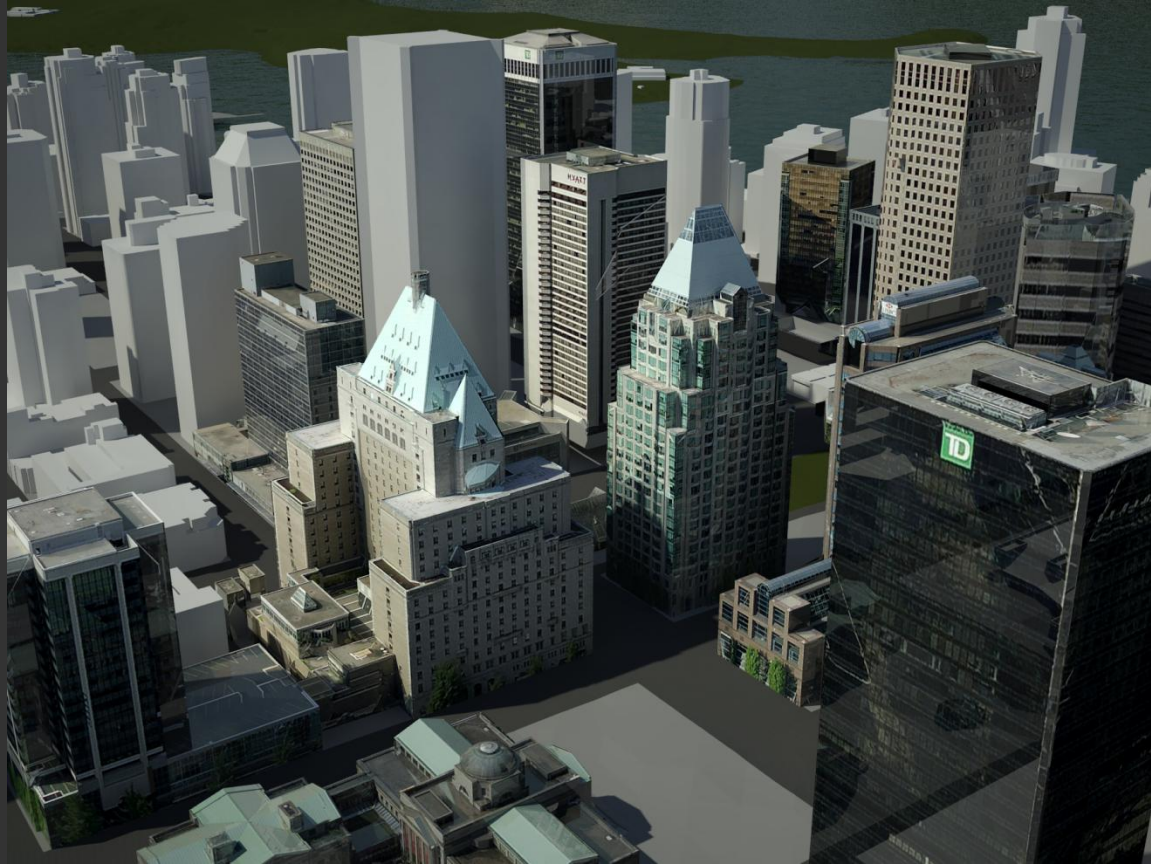
City 3d - Mountain View Cemetery

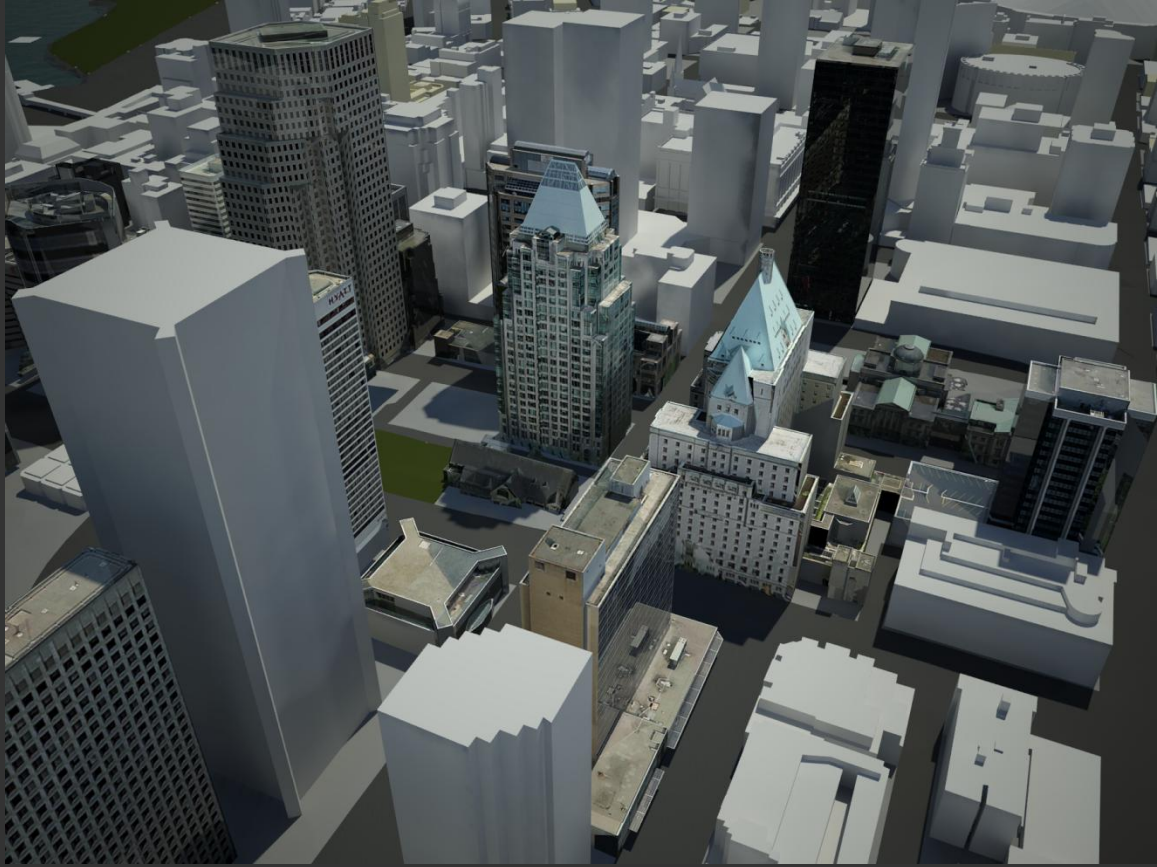


City 3D Model



Textures From Pictometry





FIN



Issues - Forbidden 3 Ds

- Distort
- Deflect
- Deceive

