3D VISUALIZATION OF GIS DATA
Software history, 2 distinct categories

- 3D software (Maya, 3D Studio Max, etc) Hollywood, gaming
  Made for optimal image quality, flexibility, lighting and speed
- GIS (Arc Gis, Map 3D, etc)
  Made for visual databases, slower less evolved 3D displays (Arc Scene, etc)
MetroPlanning/3D Plats

- 2005  Started building 3D models by hand, proved to be slow, inadequate
- 2006 Created Custom scripts and translators (C++, mel, python)
- Exchange of data between Maya and Arc
- Python scripting /Model builder
- Custom Tools (GIS, Maya RenderFarm)
- 2007 Autodesk UVIS award
Data Formats (just a few of them, All data is georeferenced)

- Elevation Raster (Arc Grid, DEM)
- RGB Raster (GeoTiff, Sid, More...)
- Tin (Survey Contours, etc)
- Shapefiles, CAD, Map 3D
- Other (Polygon Mesh, DXF/DWG, Sketchup, Tree Surveys, TIN, Custom data entities)
Data Tables/Fields

- Database translation
- Custom implementations (bring any database into 3D, can be displayed as abstract visual information)
- DBF database via ESRI Geoprocessor
- Oracle via Map 3D
Advances in production

- Proceduralism / Automated tools
- Trees, Cut and fill, Road construction, linework, 3d surface generation
- Take advantage of existing GIS data, For example: 3d lines from a Shapefile, draping lines over a DEM
Open Source Tools

- GDAL/OGR translators
- Quantum GIS/GRASS
- Linux Based systems (Maya renderfarm, python scripts)
Process

- Convert DEMS to polygon mesh
- Import Ortho Imagery
- Add linework from shapefile
- Create Roads (cut and fill)
- Add trees
- Add buildings (blueprints, footprints)
- Setup animation / Render
Polygons, Polygons ...
cut and fill
Step 1 CAD
Step 2 Road construction
Step 3 Maya Rendering
Step 3 Maya Rendering
Dillard Heights
Data Translation Examples
Elevations Represented as Polygon meshes. (arc grid, DEM, TIN etc)
Geo-referenced imagery
Shapefiles in 3D
3D Points (X,Y and Z values)
Script Processing

- Trees, Survey points (including data/types)
- Houses, CAD Blueprints (Geo Referenced)
- Roads, Cut and Fill
- Creation of Contour Surfaces, LineWork
- Fully compatible with geoprocessing toolset, python 2.52 and ESRI Modelbuilder
- ArcInfo to Maya, Maya to ArcInfo
Prototyping Functions in modelbuilder
Image Gallery
3D Maps of Eugene, Oregon
3D Maps of Eugene, Oregon
Crescent Village
Crescent Village
Crescent Village
On the horizon...

- Google Earth, Mapguide, Map 3D, CAD, Revit and BIM modeling, Vissim/Syncro Traffic simulation, Lidar data sets, ... and much more

- Faster production, better quality
Thank You