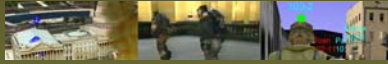


## Building Geo-registered X3D

Terrain and City Models..... Accurately Placed



Chris Nicholas, CTO – Planet 9 Studios  
San Francisco & Orlando  
[www.planet9.com](http://www.planet9.com)

Chris Nicholas – Building Geo-registered X3D



## Goals of This Tutorial



This tutorial is oriented towards content authors already familiar with X3D, geographic projections and 3D model construction. By the end of this tutorial, you will have a basic framework allowing you to build and publish your own real world locations.

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## A Bit About Planet 9

Planet 9 Studios, founded in 1995, produced the Internet's first commercial 3D virtual places using VRML. Today, we are the leading supplier of high-resolution 3D city data and software. Planet 9 has produced more than 70 virtual places, which are licensed by architects, engineers, researchers, film producers, game developers and others interested in using realistic city backdrops in geo-located applications. Our customers include Apple, IBM and Microsoft..... Clarion, Coleman and Sprint..... NASA, the US Army and the Weather Channel!

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## Tools Used

Many excellent tools exist. I will illustrate development concepts today using a suite of tools actually used in production at Planet 9. They include:

- Global Mapper – [www.globalmapper.com](http://www.globalmapper.com)
- 3D Studio Max – [www.discreet.com](http://www.discreet.com)
- Max X3D Plugin - <http://www.unrealoc.com/MaxExporter.html>
- Vizx3D – [www.mediamachines.com](http://www.mediamachines.com)
- Chisel - <http://www2.hrp.no/vr/tools/chisel/install.htm>
- X3D Edit - <http://www.web3d.org/x3d/content/README.X3D-Edit.html>
- XJ3D - <http://www.web3d.org/x3d/applications/xj3d/>

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## Data... Free and Otherwise

Geographic depictions are primarily composed of terrain, imagery and "cultural features" such as trees. Luckily, a great deal of this data is freely available online. The #1 location of this data is the USGS EROS Data Center located at:

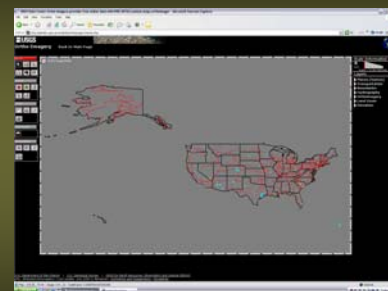
<http://gisdata.usgs.gov/website/orthoimagery>

Ben Discoe maintains an excellent site at [www.vterrain.org](http://www.vterrain.org) with links to many other data sources. Commercial imagery can be purchased thru aggregators such as GlobeXplorer.

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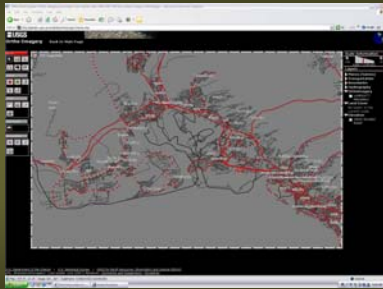
## EROS Data Center



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## EROS Data Center

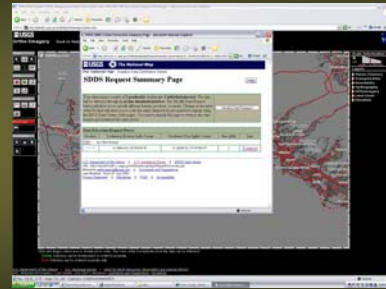


Zoom to the Area of Interest

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## EROS Data Center

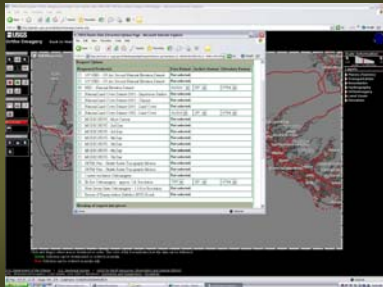


Results Page

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## EROS Data Center

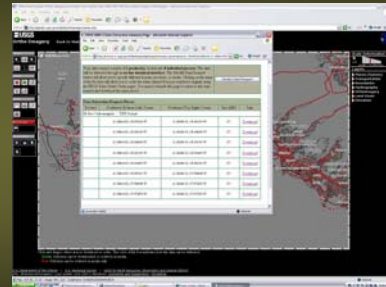


Data Download Options

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## EROS Data Center

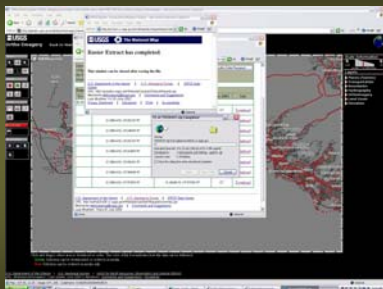


Data Over 100mb is Broken into Chunks

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## EROS Data Center

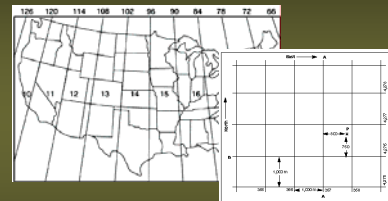


The USGS Server Extracts, Compresses and Downloads the Data

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## Geographic Projections



Projection - Latitude / Longitude vs. UTM  
Datum - NAD27, NAD83, WGS84  
Units - Meters

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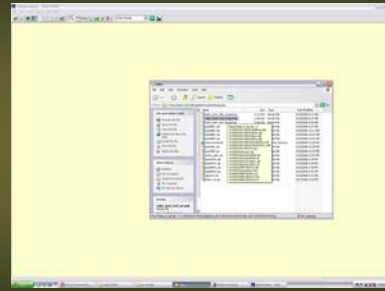
## Global Mapper



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## Global Mapper

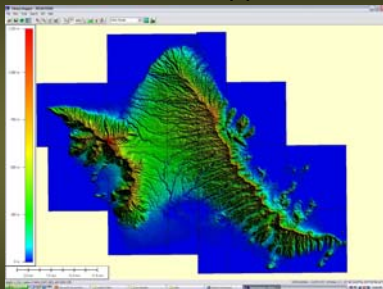


Open Files

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## Global Mapper

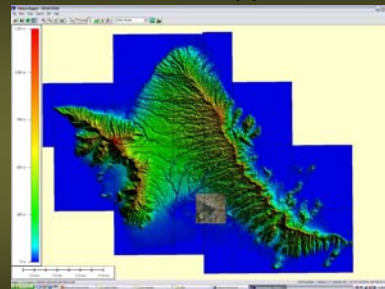


Import DEM

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## Global Mapper

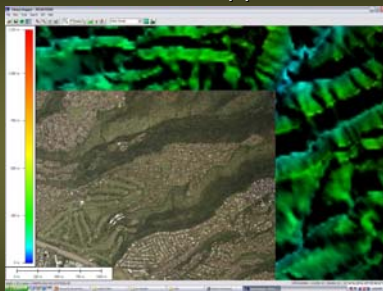


Import Imagery

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## Global Mapper

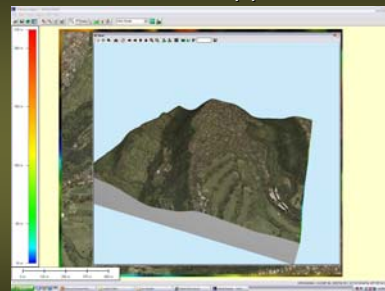


Zoom to Area of Interest

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## Global Mapper

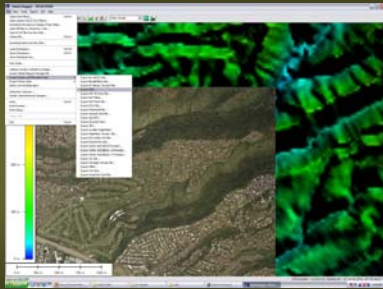


View in 3D

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## Global Mapper

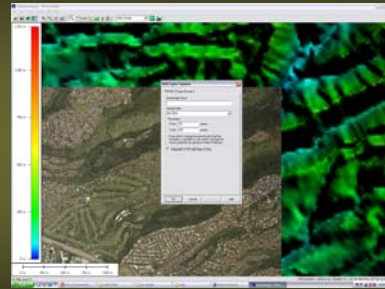


Export DEM

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## Global Mapper

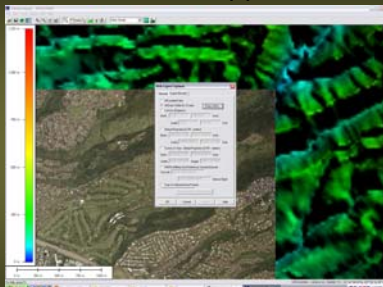


Set Grid Spacing to 30m.

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## Global Mapper

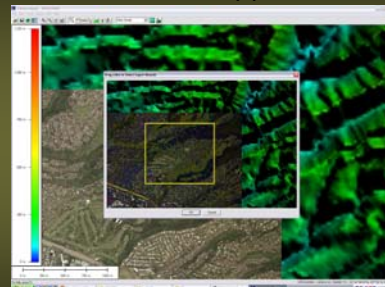


Select Export Area

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## Global Mapper

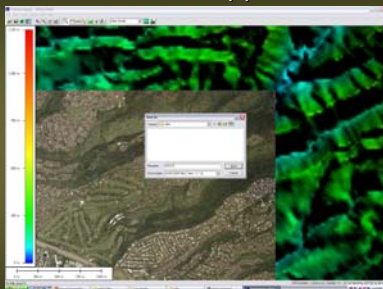


Select Export Area

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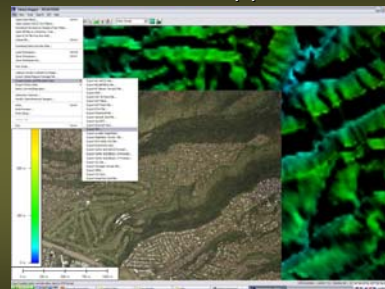
## Global Mapper



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## Global Mapper

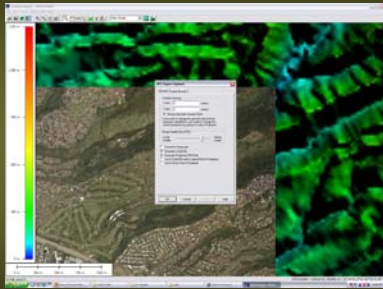


Export Image

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## Global Mapper

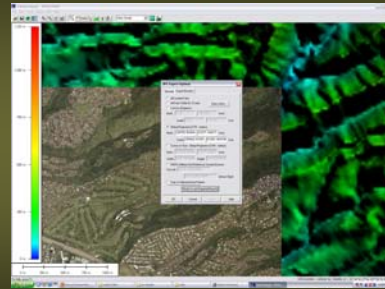


Set Resolution

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## Global Mapper

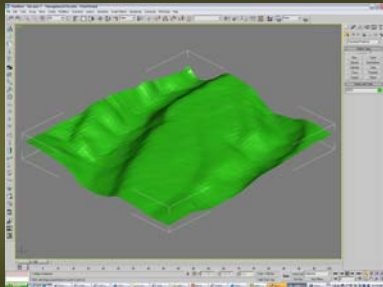


Re-use Export Selection

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## 3D Studio Max

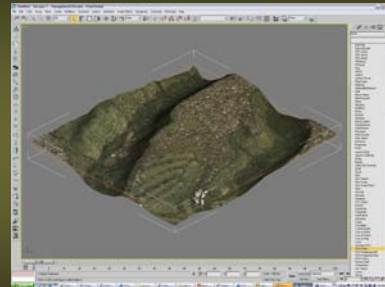


Import Our DEM File

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## 3D Studio Max

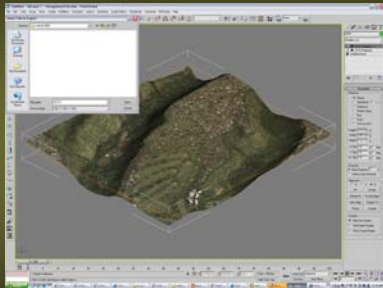


Add the Texture to Our Mesh

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## 3D Studio Max

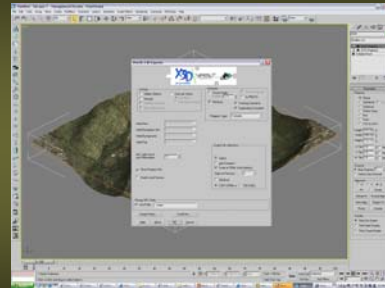


Export an X3D File

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## 3D Studio Max

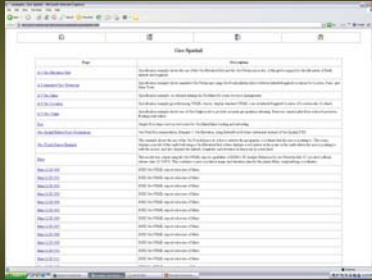


Configure Our Export

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## X3D Geo-spatial Spec



<http://www.web3d.org/x3d/content/examples/GeoSpatial/index.html>

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## Thank-You!



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