Federal GIS Conference

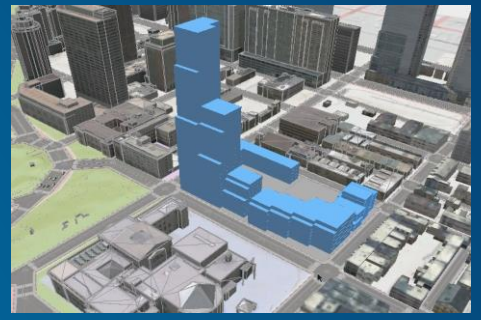
February 9–10, 2015 | Washington, DC

Creating 3D Content with Esri's City Engine

Why 3D GIS?

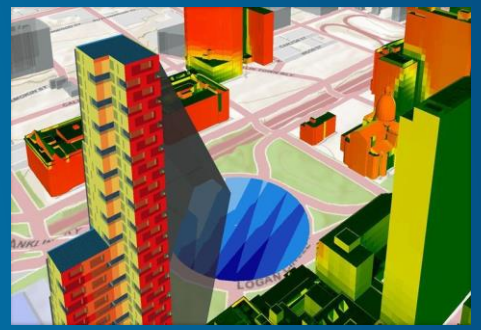
Because our world is 3D

- **Improve understanding**
  3D is easy for everyone to understand



- **Better communication**
  3D makes it easier to articulate ideas

- **Solve 3D problems**
  Some spatial problems can only be solved in 3D



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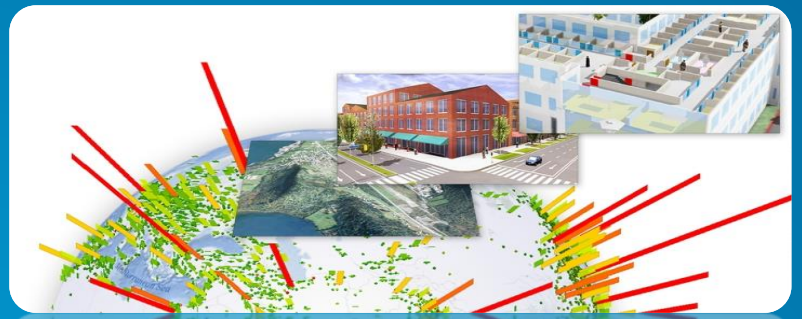
3D GIS Features



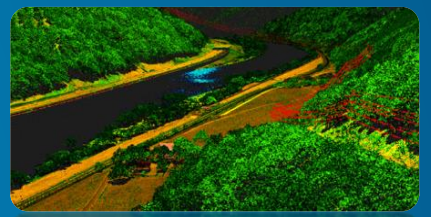
Multiscale 3D Models

3D Geodesign

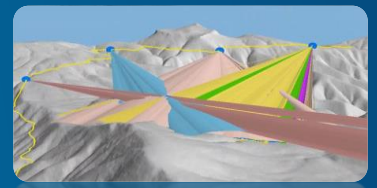
ArcGIS for 3D Cities

Share 3D scenes

Surface modeling



Native lidar support



3D Analysis

Integrated 3D

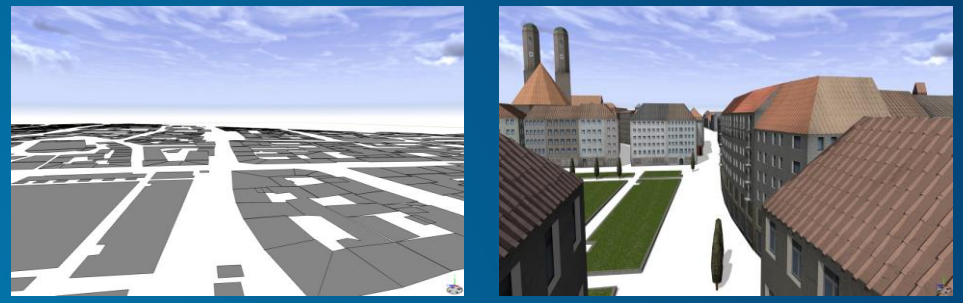
CityEngine

CityEngine

Transforms 2D GIS Data into Smart 3D City Models

3D City Creation

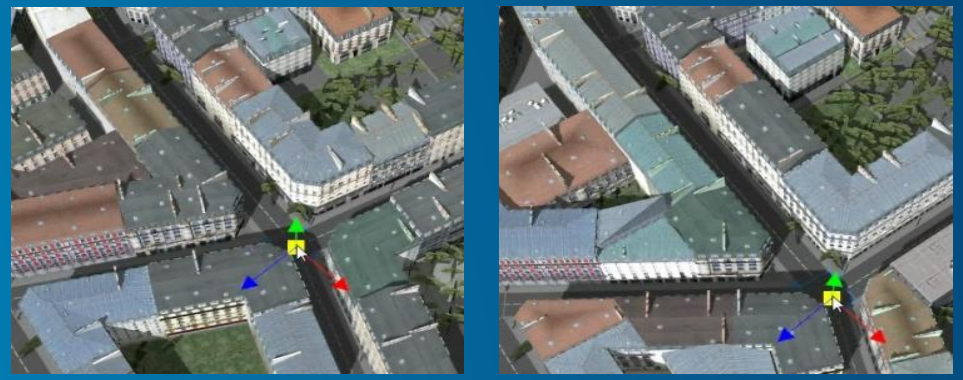
2D GIS data + rules



Geometry + Attributes + Rules

3D City Design

Interactive and rule driven design in 3D



Dynamic + Parametric editing

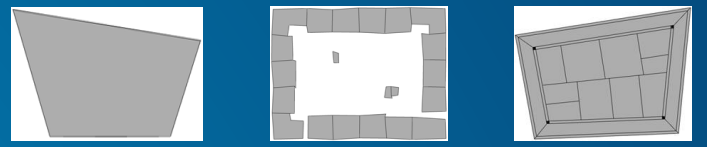
Demo - City Engine

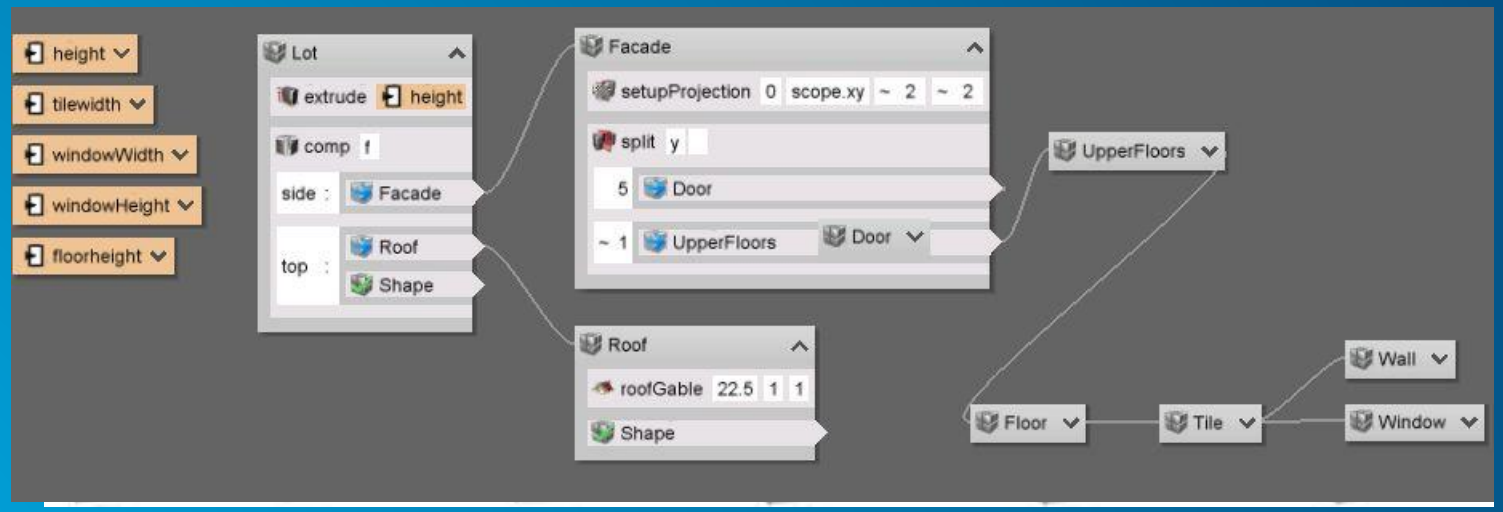
- Introduction to City Engine

Procedural modeling

3D model creation using rules / algorithms

- **Base geometry**



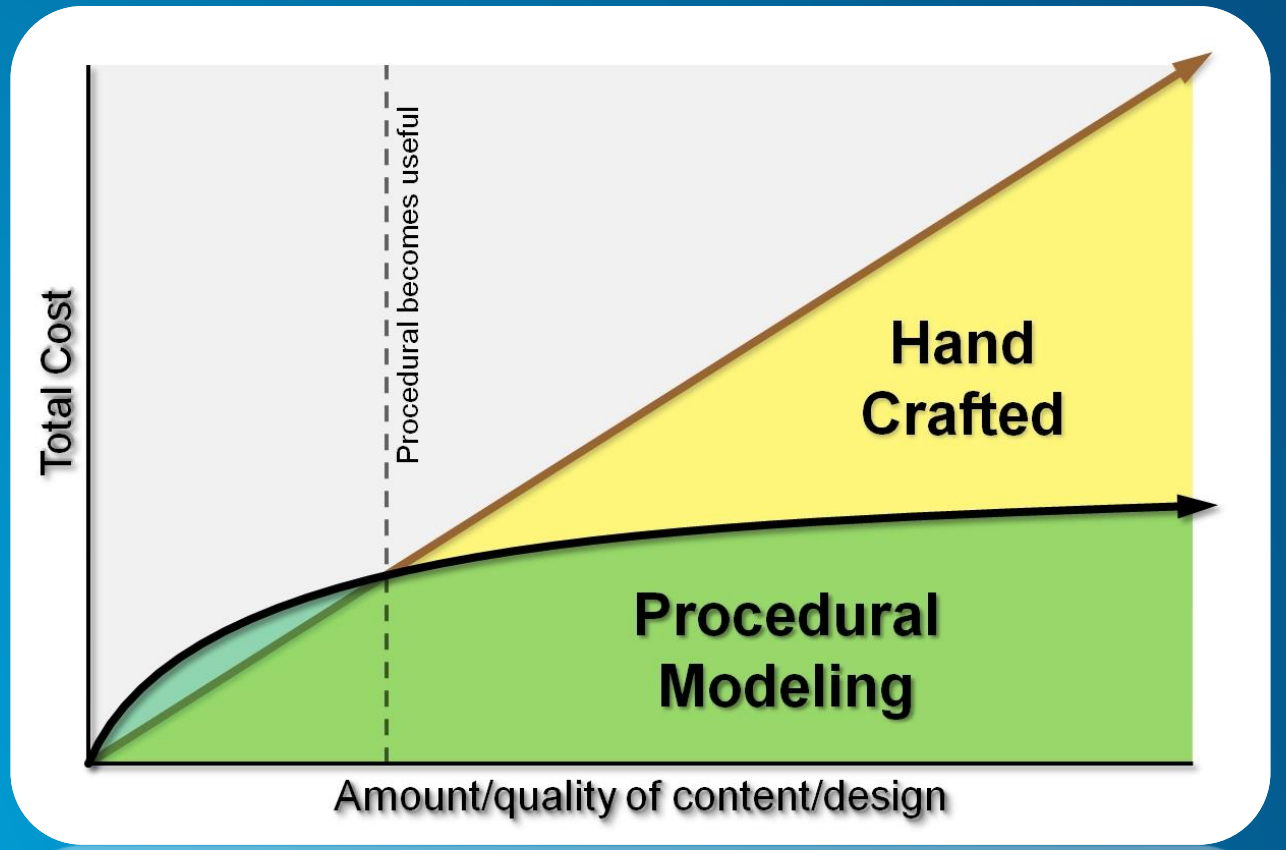


Base geometry

Iterative refinement

Final 3D model

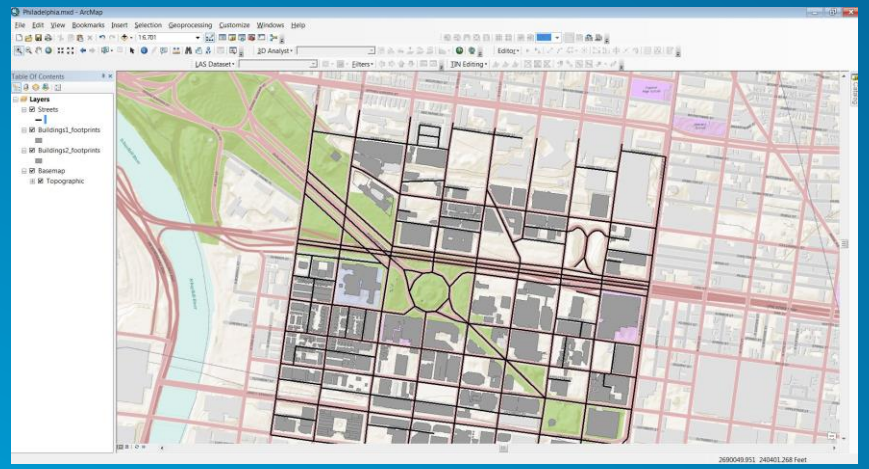
Procedural modeling vs. Manual modeling



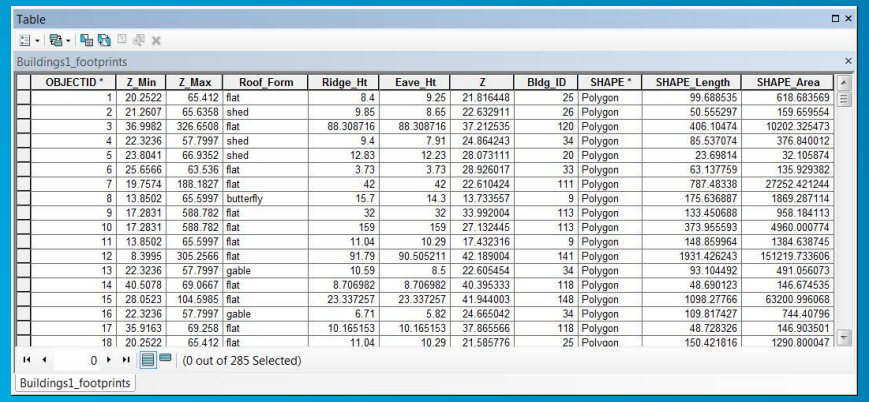
Time reduction / cost saving

2D GIS Data + Rules

Procedural city modeling



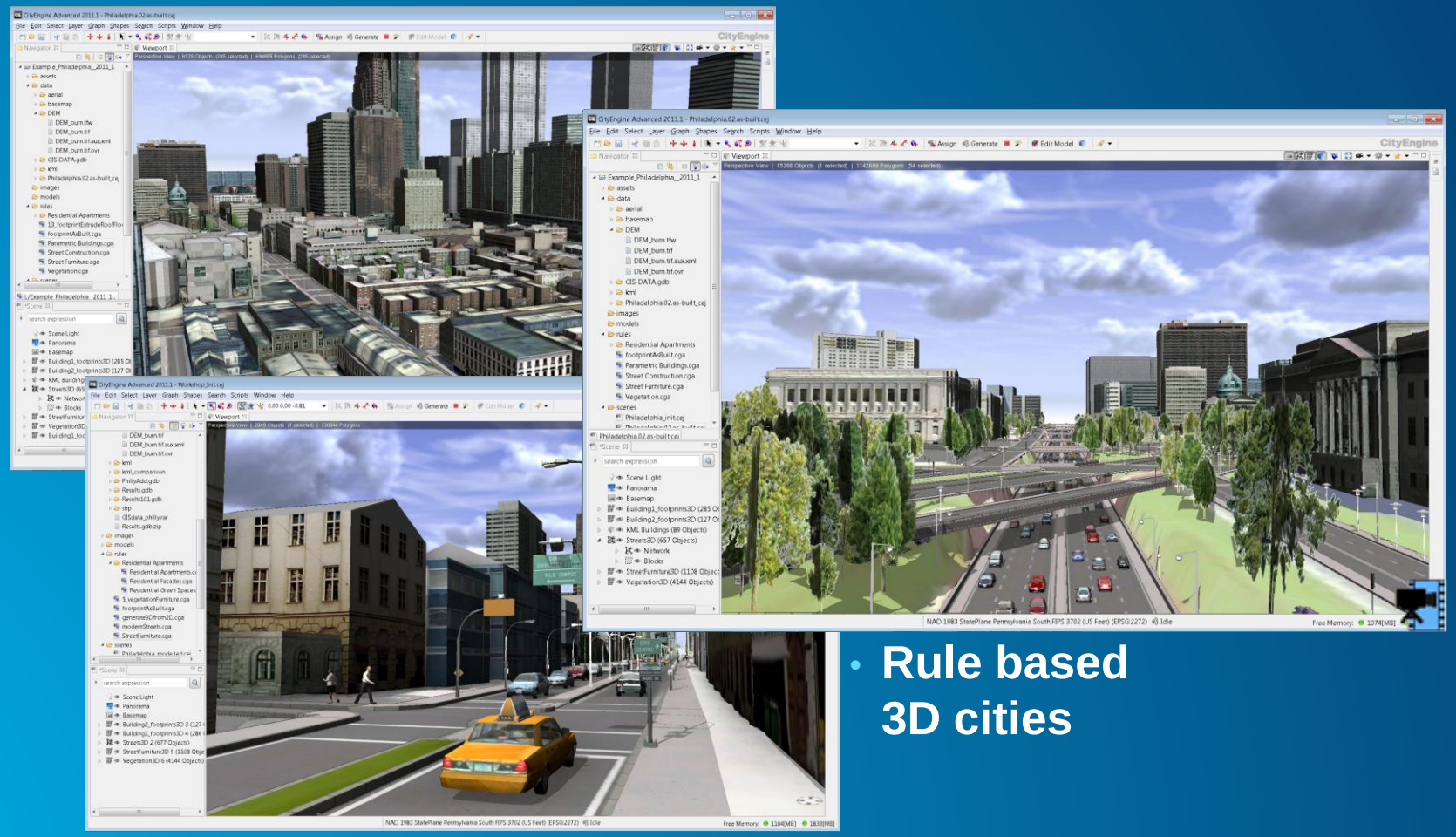
Geometry



Attributes

3D City Creation

Procedural city modeling



- **Rule based 3D cities**

Demo - 3D City Creation

- 3D City generation

Aggregate As-built and Procedural Cities

As-built models

- Reality at time of data capture
- Sensor derived
- Exterior shells
- Static models

-> Visualization of existing city

Procedural models

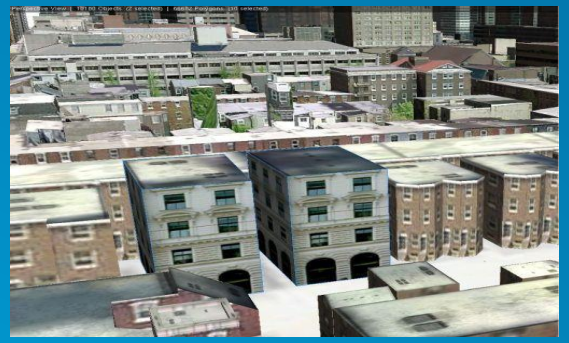
- Approximtion of reality
- Based on GIS data
- Rule driven
- Exteriors and interiors
- Dynamic models

-> City planning / design

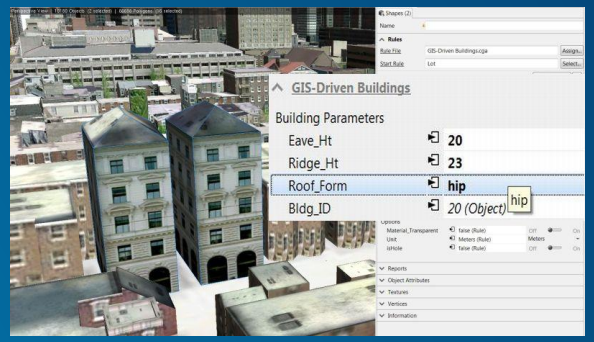
3D City Design

3D procedural design

Parametric editing

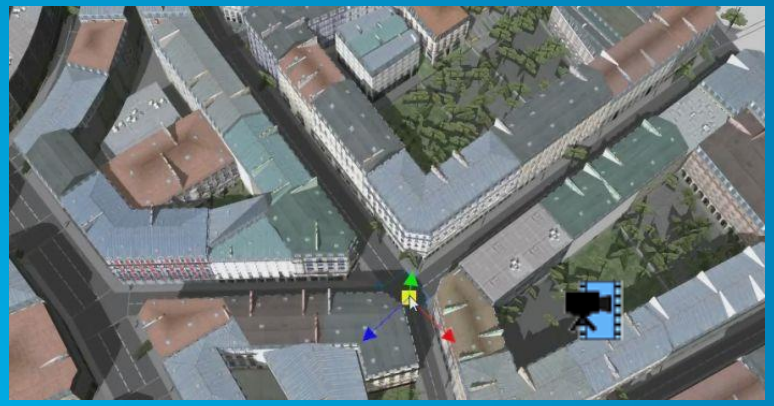


Add a floor

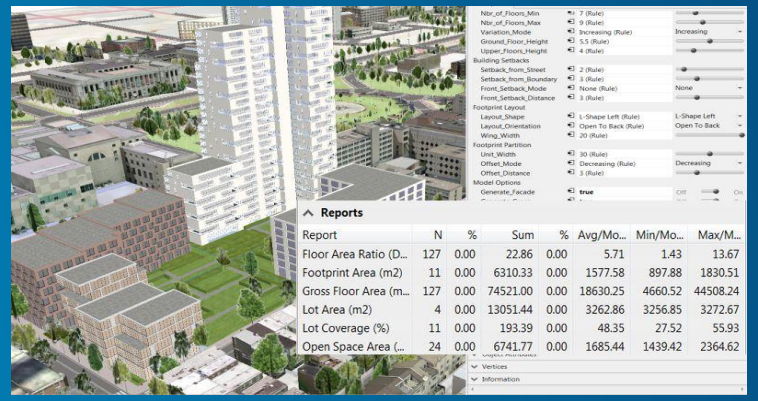


Add a roof

Dynamic editing



Procedural reporting



Rule based design

Demo - 3D City Design

- Dynamic editing
- Manual editing

ArcGIS & CityEngine

Store

Analyze

Visualize

2D-to-3D

Share

2D-to-3D

Edit & Design

Share

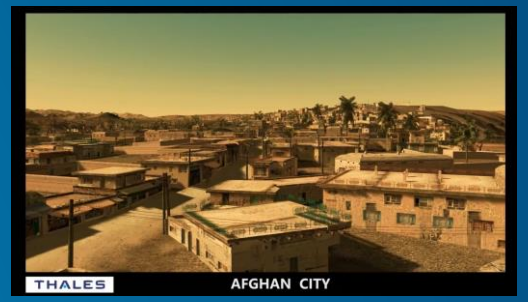
ArcGIS & CityEngine

Store
Analyze
Visualize
2D-to-3D
Share

2D-to-3D
Edit & Design
Share

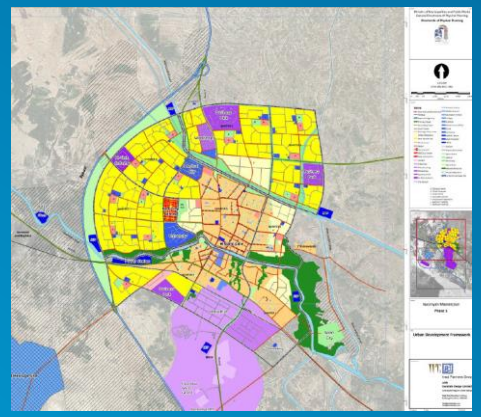
CityEngine Examples

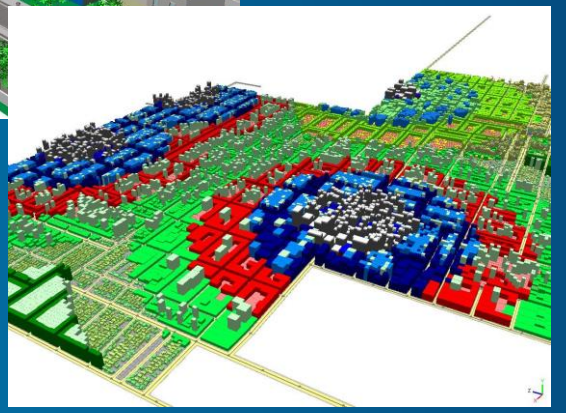
- Urban Planning & Architectural Visualization
  - Foster & Partners, Grimshaw,…
- Local government
  - Singapore, Brisbane, …
- Simulation & Defense
  - Thales, CS, Raytheon,…
- Entertainment
  - Pixar, DreamWorks, Weta Digital,….
- Academia
  - MIT, ETH, Stanford,….



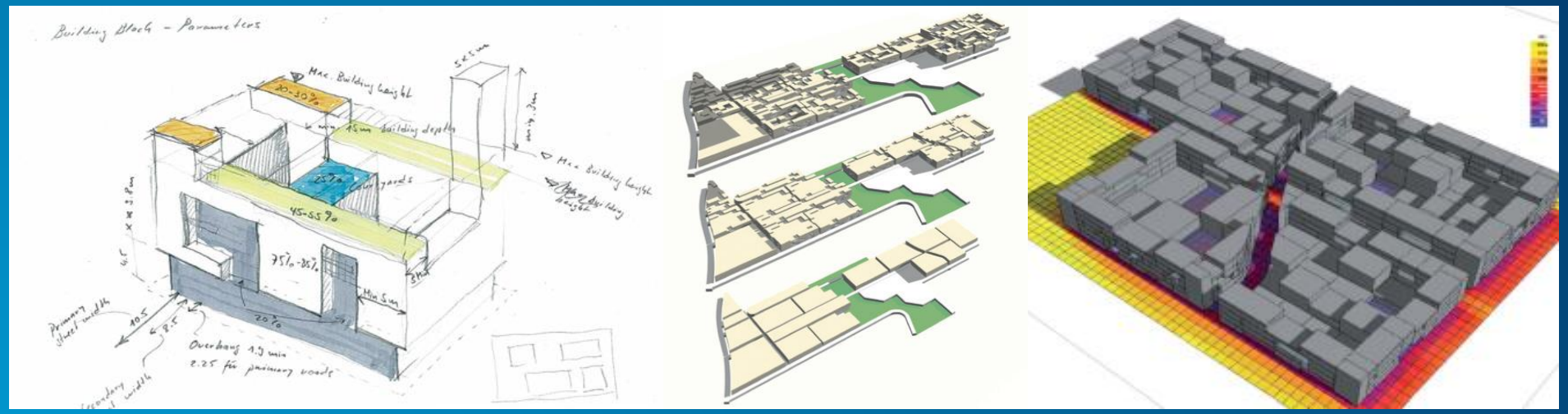
Master Planning in Iraq

Garsdale Design Limited





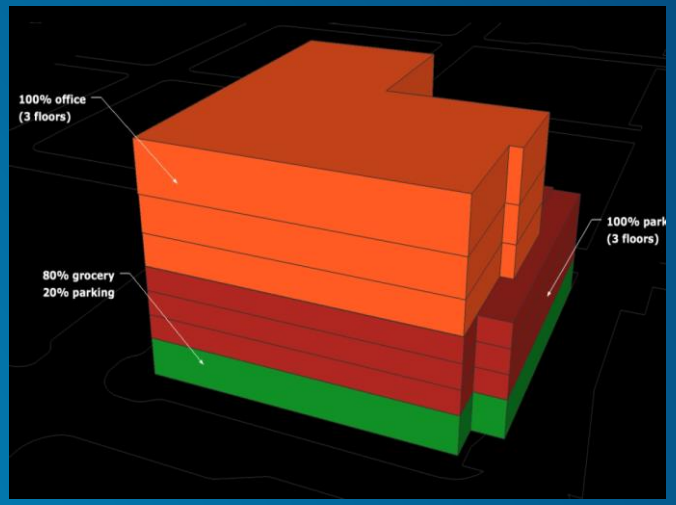
Urban Design: Masdar

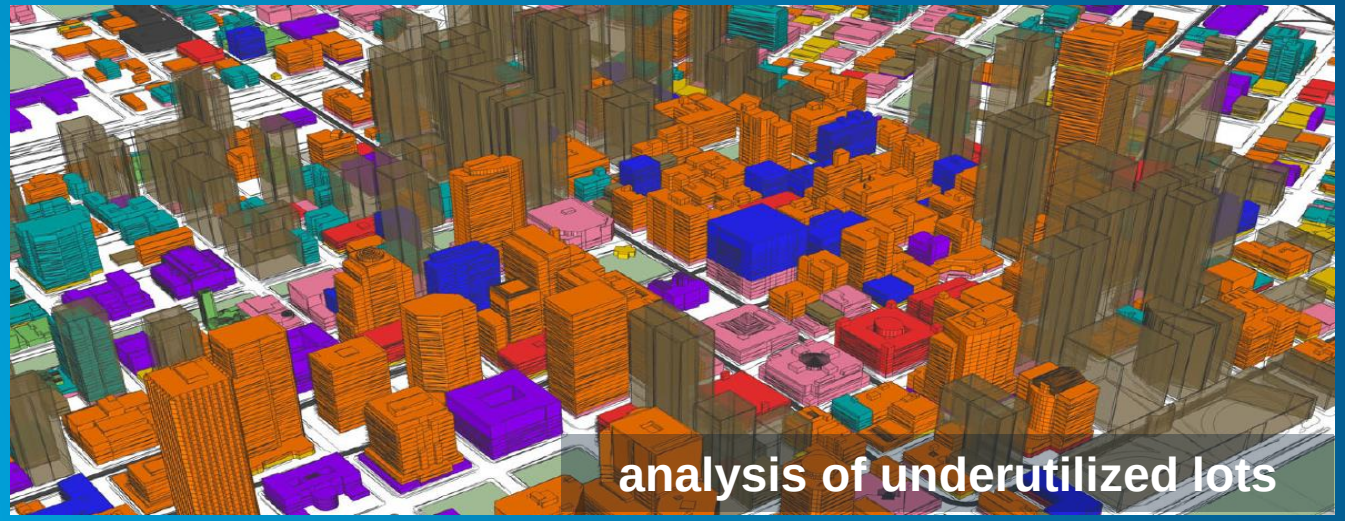


Swiss Village
in the heart of Masdar City

Foster + Partners

Portland – 3D land use inventory



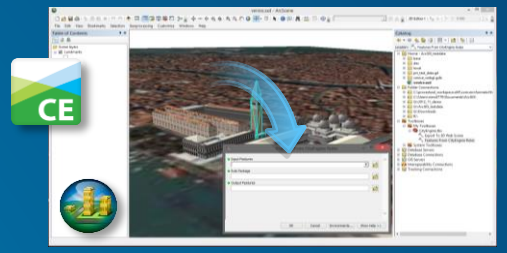


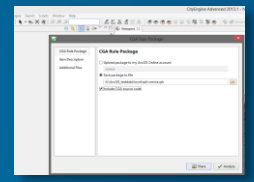
Simulation and Defense

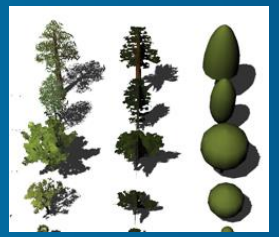
Entertainment

CityEngine 2013.1

- Rule packages
- SDK
- Improved Streets
- 3D plant library

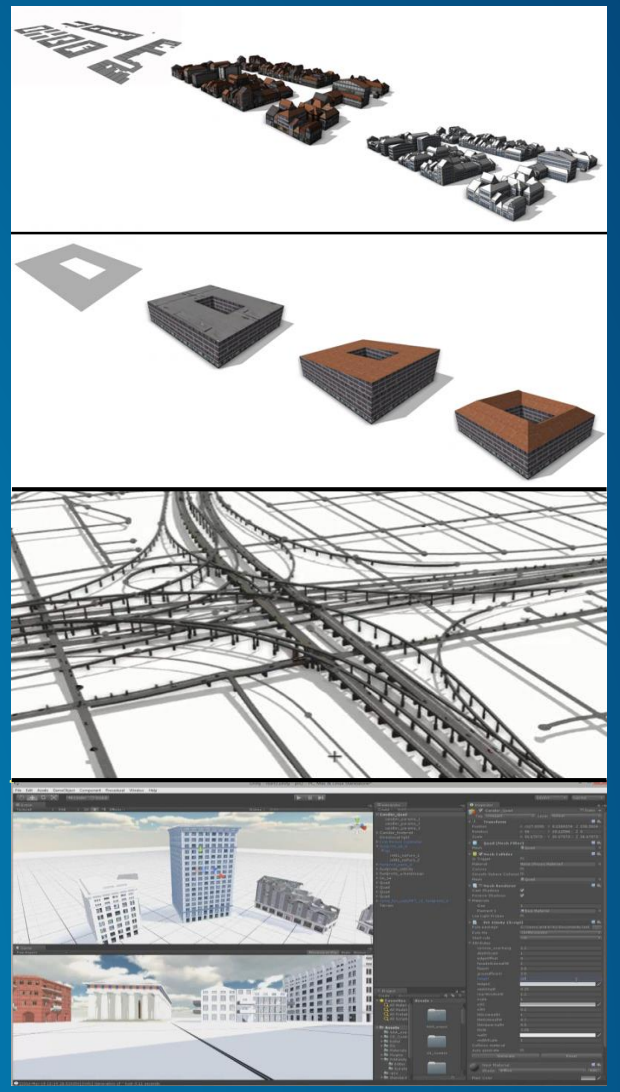






CityEngine 2014.0

- Built-in Esri rule library
- Improved hole support
- Improved streets
- Unity example plugin

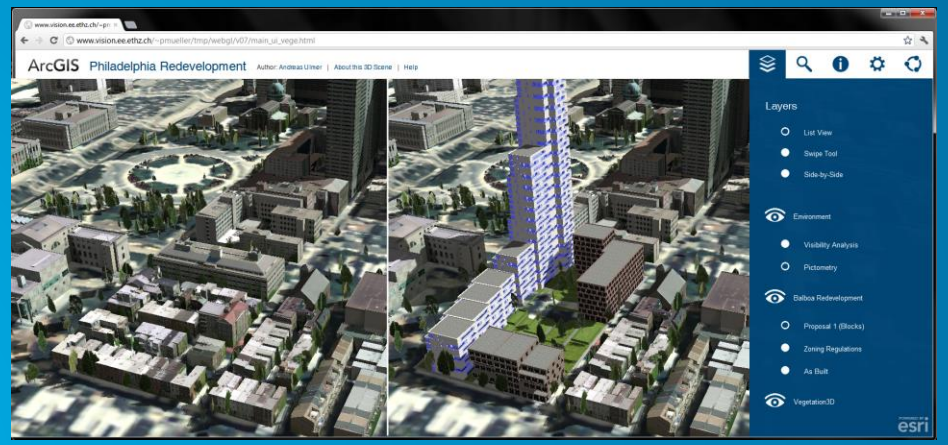


Demo - beyond CityEngine

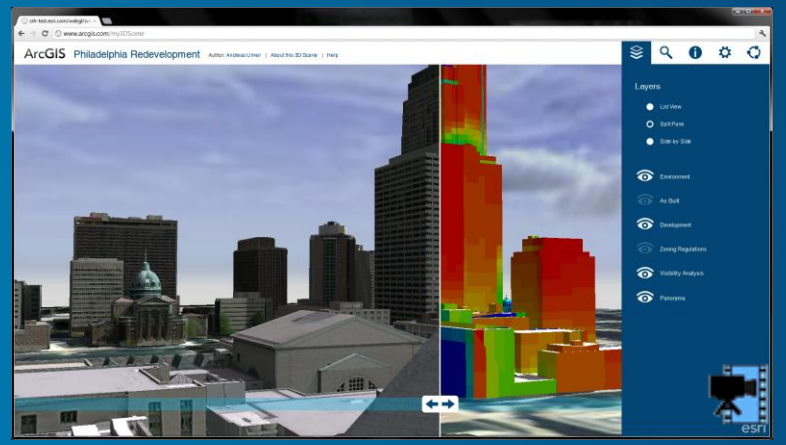
- Rule Package

Share 3D Web Scenes

- 3D in the browser
- Easy-to-use (cloud solution)
- For Chrome, Firefox & Safari
- Modern GUI & graphics



Example: Side-by-side view to compare before/after



Example: Share analysis results (Swipe tool)

Share your 3D Scenes

3D models in the browser and on mobile devices

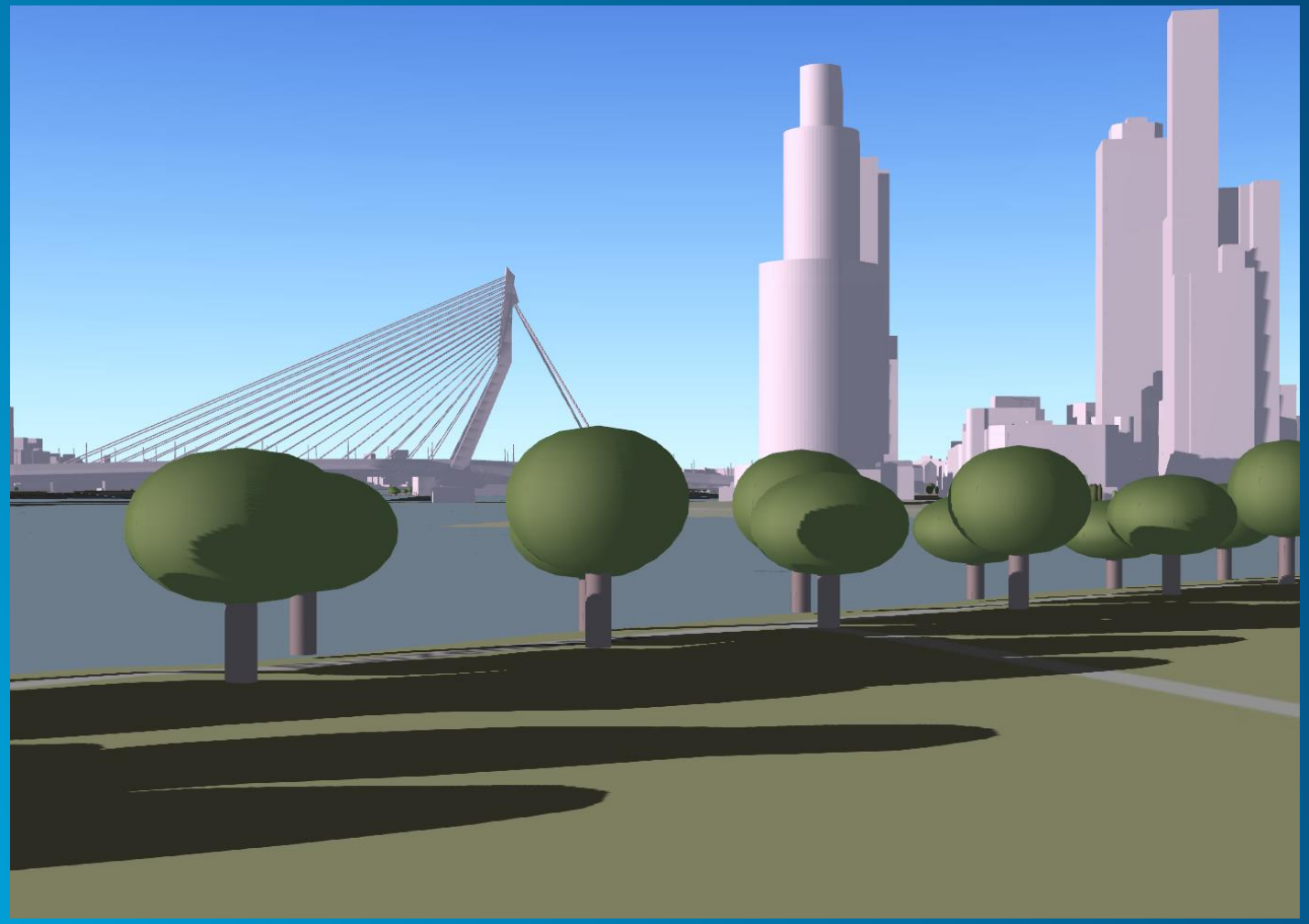
Share your ArcScene Project as a Web Scene

"Clip and Share"

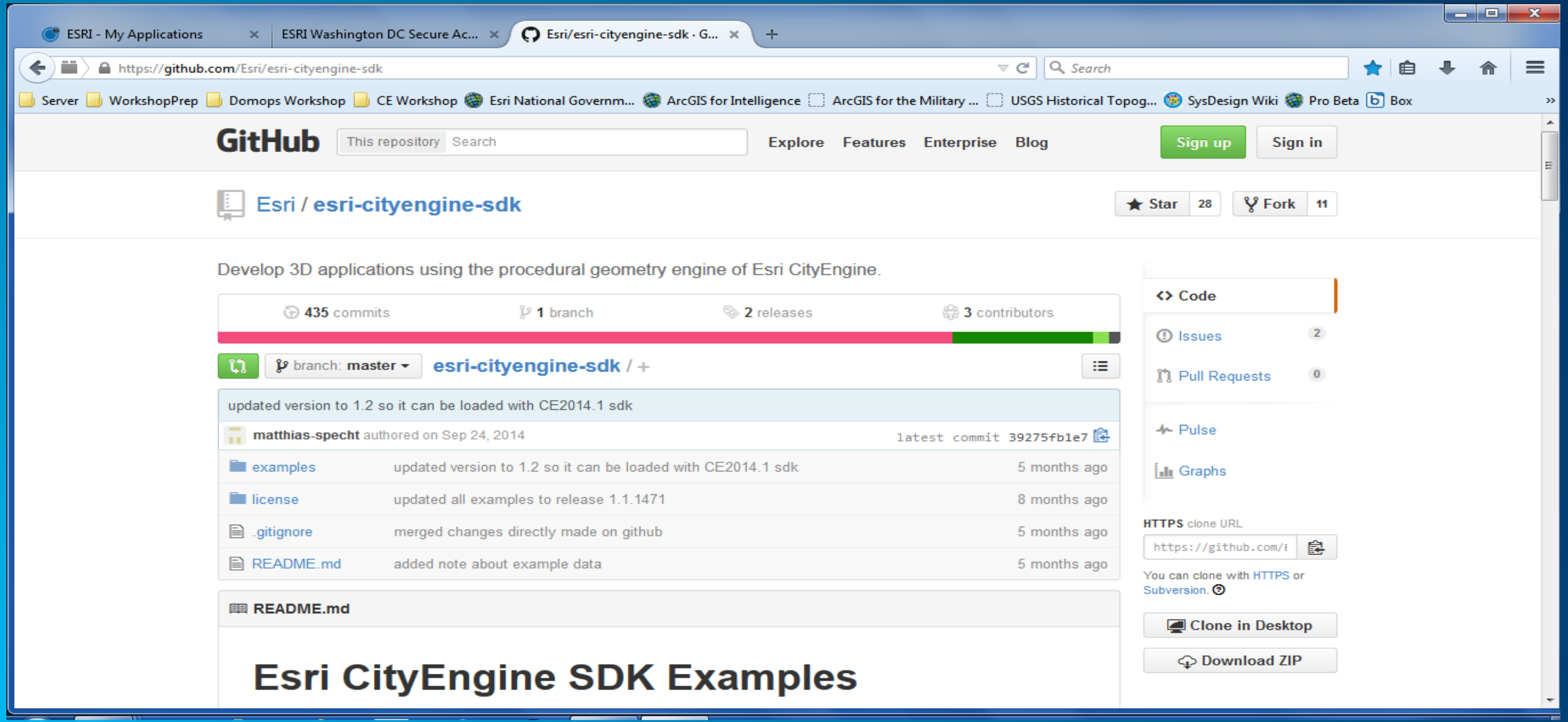
Stream 3D Scenes to the Browser and Mobile Devices

Supporting Defense, Local Government, Scientists, Urban Planners, Facilities Managers, Geologists, Architects, Landscape Planners…

DEMO – Let’s make a Web Scene…



P.S… There is an SDK



Useful links

- CityEngine trial
  - http://www.esri.com/software/cityengine
- Resources
  - Resource Center: http://resources.arcgis.com/en/communities/city-engine/index.html
  - Forum: http://forums.arcgis.com
  - Ideas: http://ideas.arcgis.com
- Support
  - http://support.esri.com
- Training
  - http://training.esri.com

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esri

Don’t forget to complete a session evaluation form!

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Print your customized Certificate of Attendance!

Printing stations located on L St. Bridge, next to registration

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GIS Solutions EXPO, Hall D

Monday, 12:30pm – 6:30pm

Tuesday, 10:45 AM–4:00 PM

- Exhibitors
- Hands-On Learning Lab
- Technical & Extended Support
- Demo Theater
- Esri Showcase

Federal GIS Conference

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Networking Reception:

National Museum of American History

Tuesday, 6:30 PM–9:30 PM

Bus Pickup located on L Street

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Add a day to your Fed GIS experience and register to attend the Esri DevSummit Washington DC. Stop by the registration counter to sign up.

Understanding our world.