2013 Esri International User Conference
July 8–12, 2013 | San Diego, California

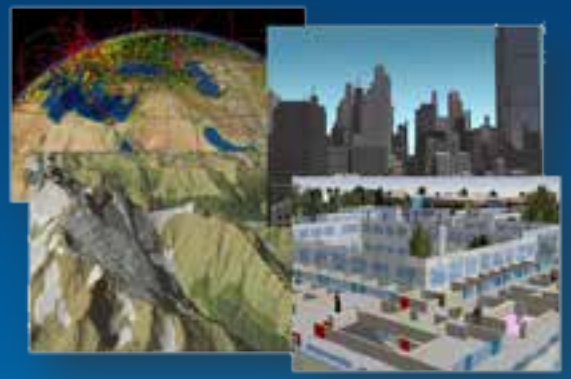
Technical Workshop

3D Analyst: Working with 3D Analyst and CityEngine

Nathan Shephard

Gert van Maren

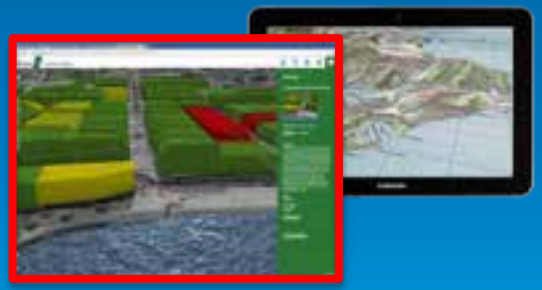
3D GIS Benefits



Multiscale 3D Models

3D Geodesign

ArcGIS for 3D Cities



Share 3D scenes

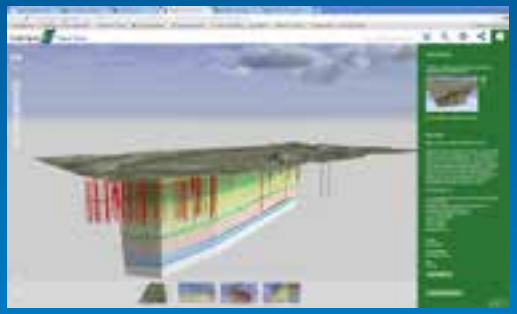
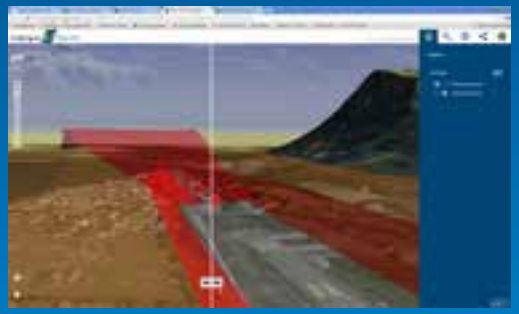
Integrated 3D

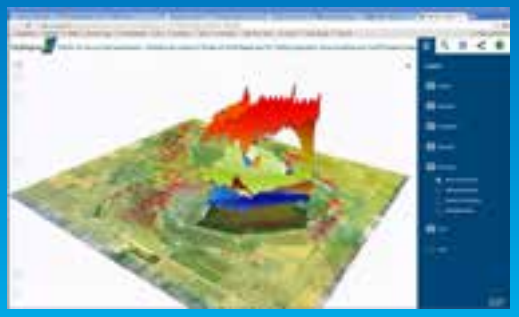
Native lidar support

Surface modeling

3D Analysis

Share 3D Scenes

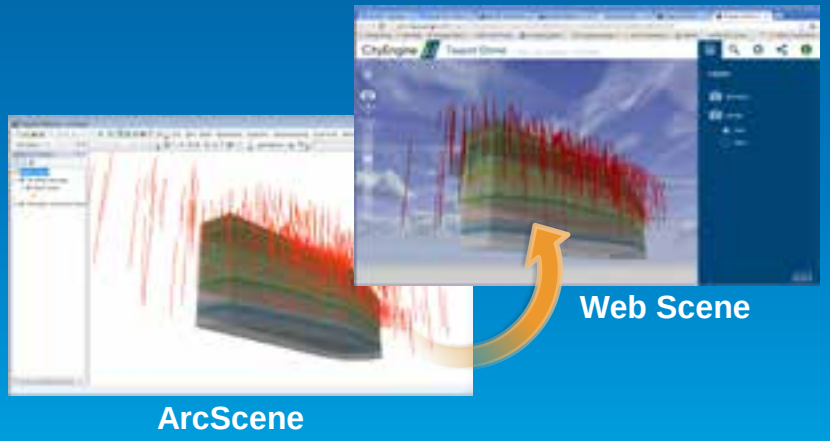





Share your 3D Scenes

Share your ArcScene Project as a Web Scene

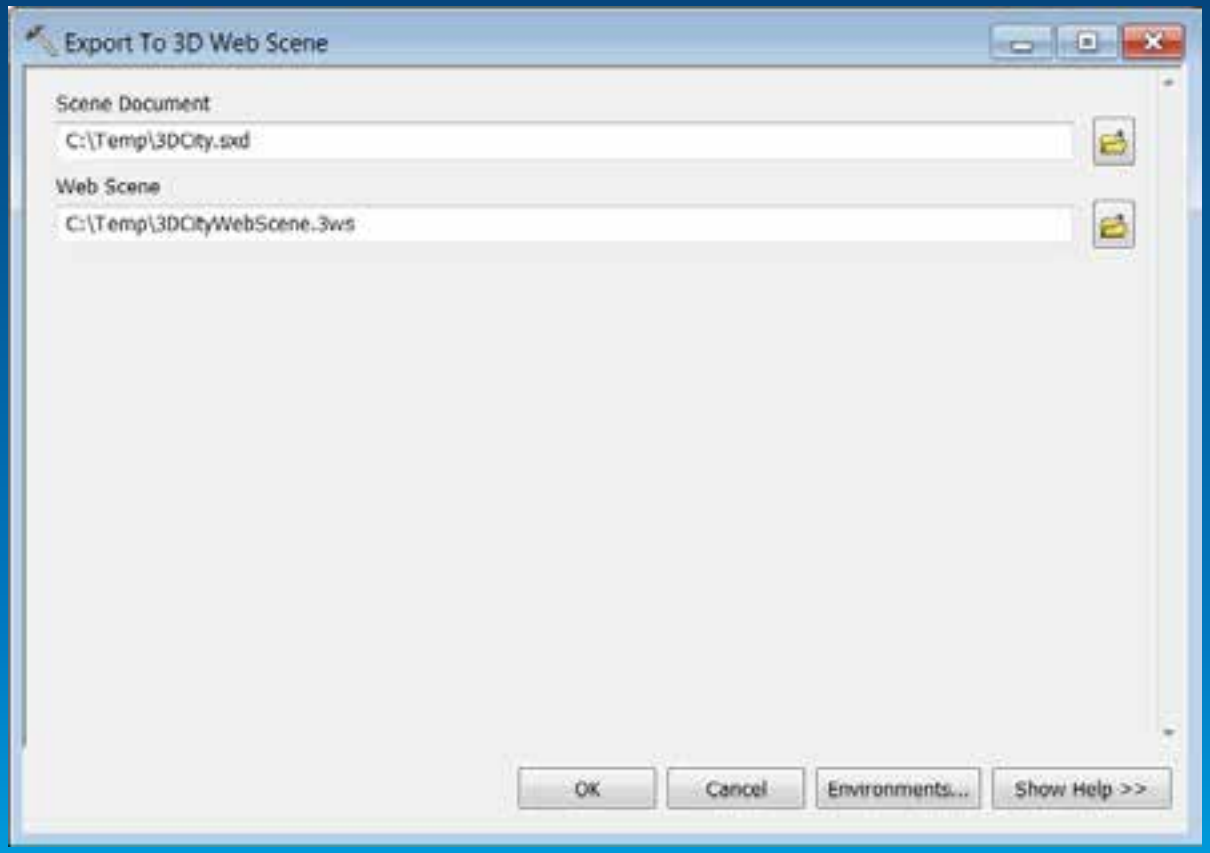
"Clip and Share"



Supporting Defense, Local Government, Scientists, Urban Planners,

Facilities Managers, Geologists, Architects, Landscape Planners…

Export to 3D Web Scene



ArcScene Layer Types

- Feature layer (point, line, polygon and multipatch geometries)
  - Layer extrusion or 3D symbology
- Raster layer
- TIN layer

- Note: LAS dataset and Graphics layer cannot be exported to 3ws.

ArcScene document properties

- Scene coordinate system
- Area of Interest (AOI)
- Bookmarks
- Group Layers
- Vertical exaggeration

Demo

Teapot Dome

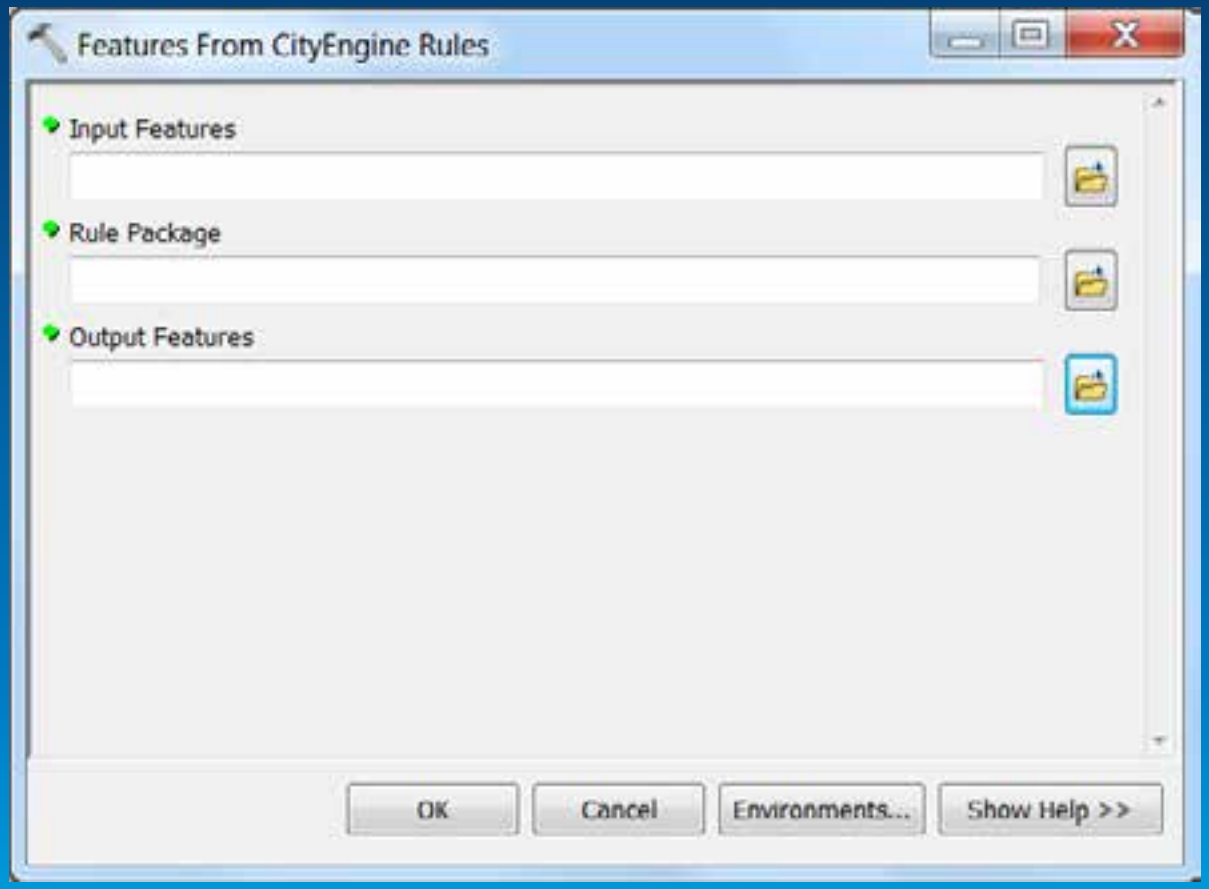
3D Zoning Queenstown

Wind Speed

Creating 3D objects in ArcGIS

- In ArcGIS 10.1
  - Via symbology (eg: point symbols)
  - Using GP tools (eg: Buffer 3D)
  - Importing external models (eg: COLLADA)
- In ArcGIS 10.2
  - Using pre-authored CityEngine rule packages
- In CityEngine
  - Using pre-authored CityEngine rules
  - Writing / adjusting new rules
  - Interactively editing new 3D models

Features From CityEngine Rules



ArcScene Layer Types

- At 10.2, Polygon source geometry only
  - Buildings (real and imagined)
  - Zoning regulations
  - …
- Line support (eg: for streets) is coming later
- Until then, export features from CityEngine

Demo

Generating 3D content using a Rule Package

- **…for existing features**
- **…as part of an editing / design effort**
- **…with updated textures**
- **…by adjusting / authoring a new rule**

ArcGIS for 3D Cities solution

Create, manage and utilize your 3D city model

Benefits:

- Database driven 3D City model
- Based on Esri's 3D City Information Model

GDB

Buildings
Transportation
Installations
Utilities
Zoning
Landuse
Land cover
Subsurface
Atmosphere

- **Supports different themes / views on the city**

- **Comes with ready use apps**

Creating 3D objects in ArcGIS

- In ArcGIS 10.1
  - Via symbology (eg: point symbols)
  - Using GP tools (eg: Buffer 3D)
  - Importing external models (eg: COLLADA)
- In ArcGIS 10.2
  - Using pre-authored CityEngine rule packages
- In CityEngine
  - Using pre-authored CityEngine rules
  - Writing / adjusting new rules
  - Interactively editing new 3D models

Manual 3D model creation

- Interactively create 3D models in CityEngine
  - Yes, it creates / edits multipatches

Steps

1) Bring contextual information into CityEngine
   - For background data and the coordinate system
2) Digitize your 3D model shape
3) Add interactive textures or procedural textures
4) Export back to the GIS database

Demo

Interactively creating 3D models in CityEngine

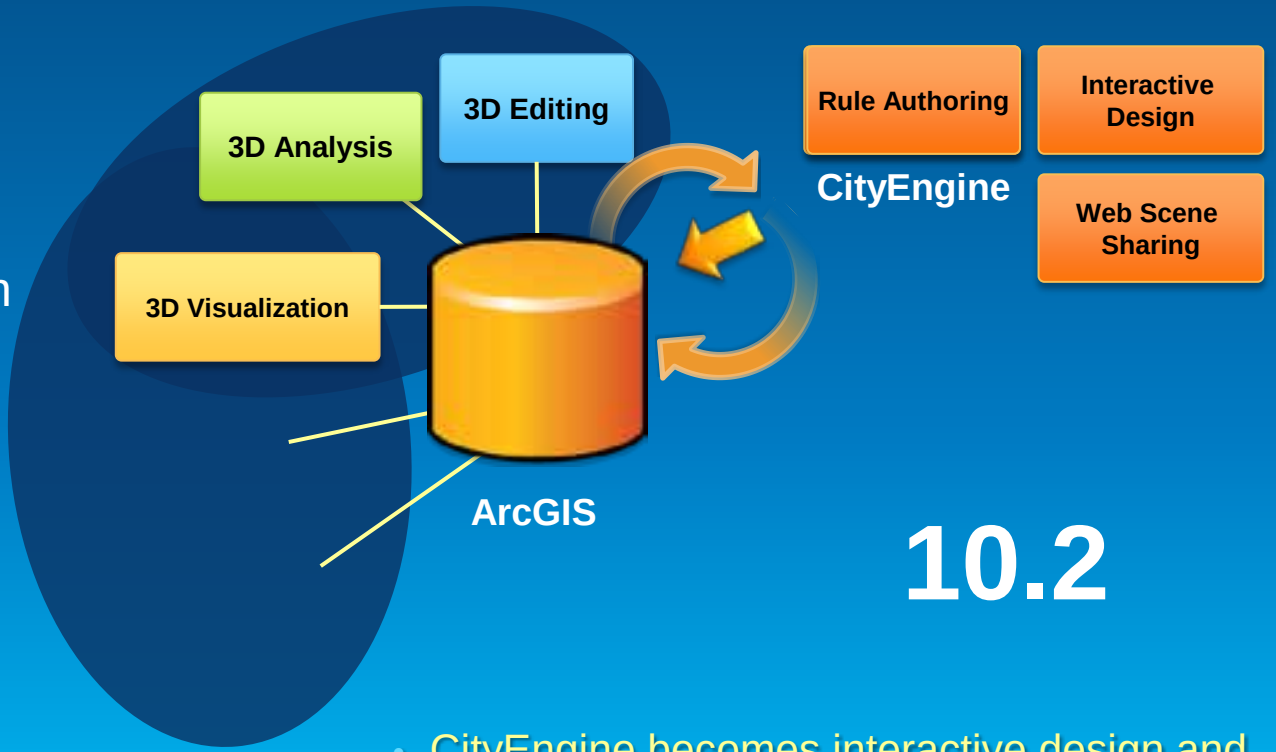
ArcGIS 10.2 – CityEngine 2013

Bringing easy 3D Content Creation to ArcGIS

ArcGIS 10.2
- 2 CityEngine-based GP tools

CityEngine 2013
- Rule Packages

Solutions
- 3D City Information Model
- Gallery of building and tree types



10.2

- CityEngine becomes interactive design and rule authoring environment

Understanding our world.