Geodesign:
Design for a Complex World

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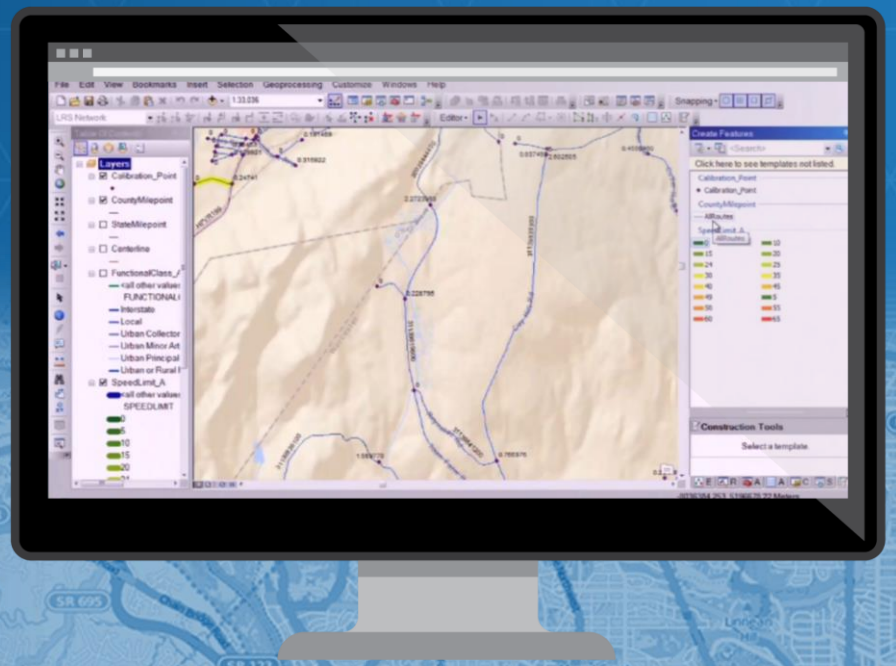
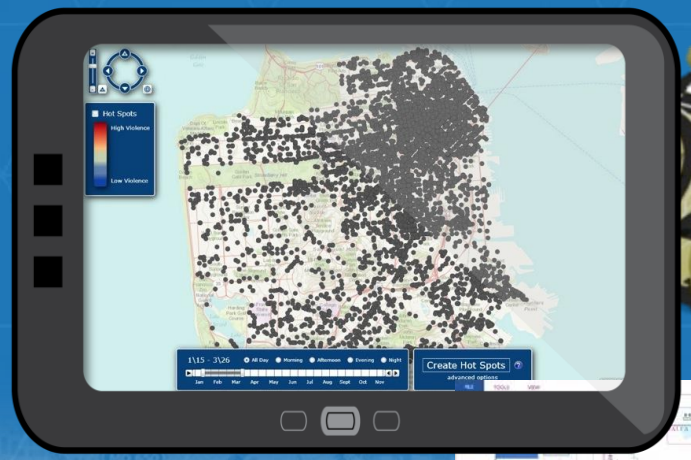
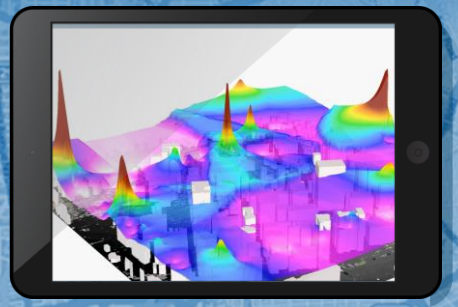
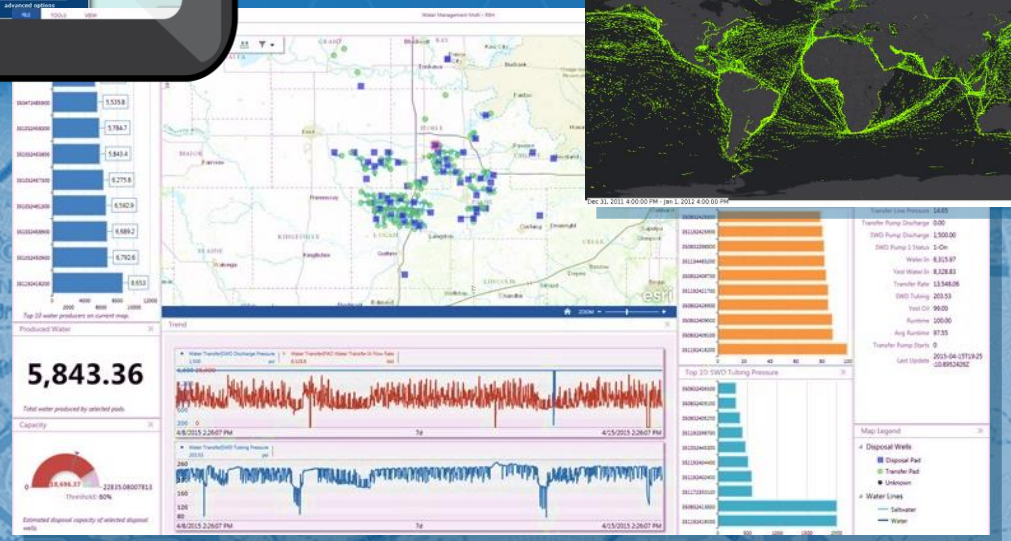
GIS is a System of Record

For managing the geographic context of your assets and resources







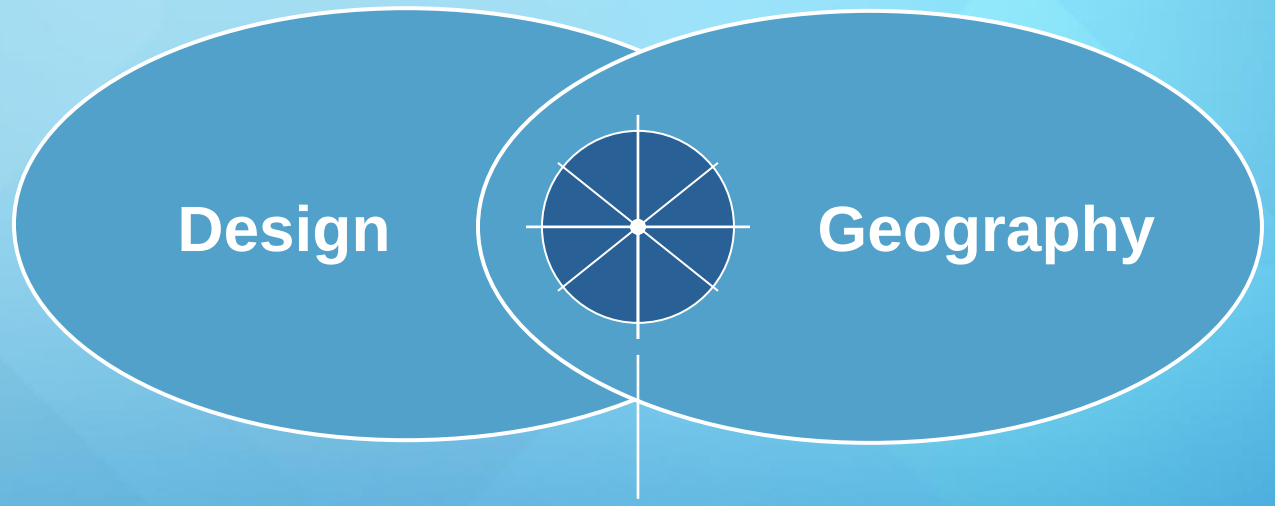


Integrating, displaying and analyzing information from many sources

What is Geodesign?

Data visualization

Cross disciplinary collaboration



Storytelling

Scenario impact simulations

Geodesign combines geography with design by providing designers with robust tools that support rapid evaluation of design alternatives against the resulting impacts

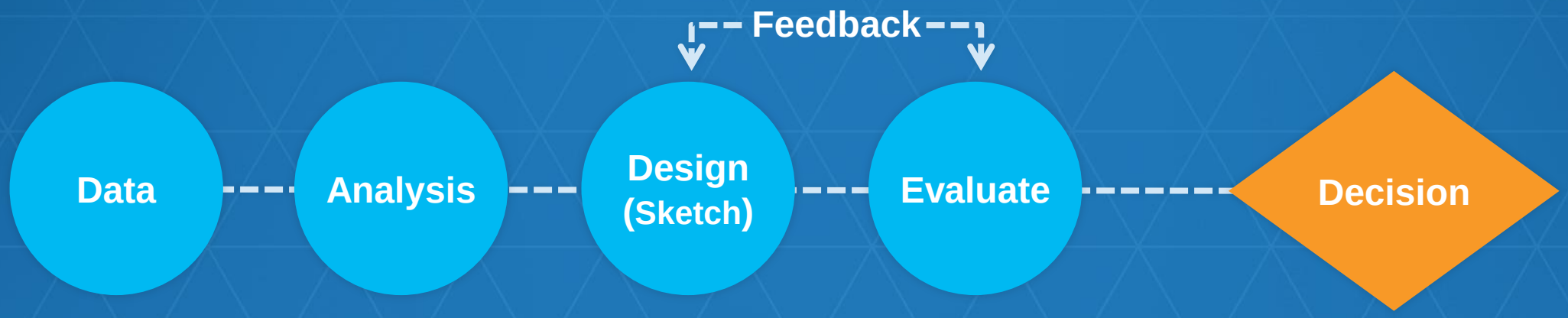
Why use Geodesign?

A new perspective

- Geodesign is a new way of thinking about the planning and design processes
- Its an approach to problem solving
- Fully supported by geospatial technology

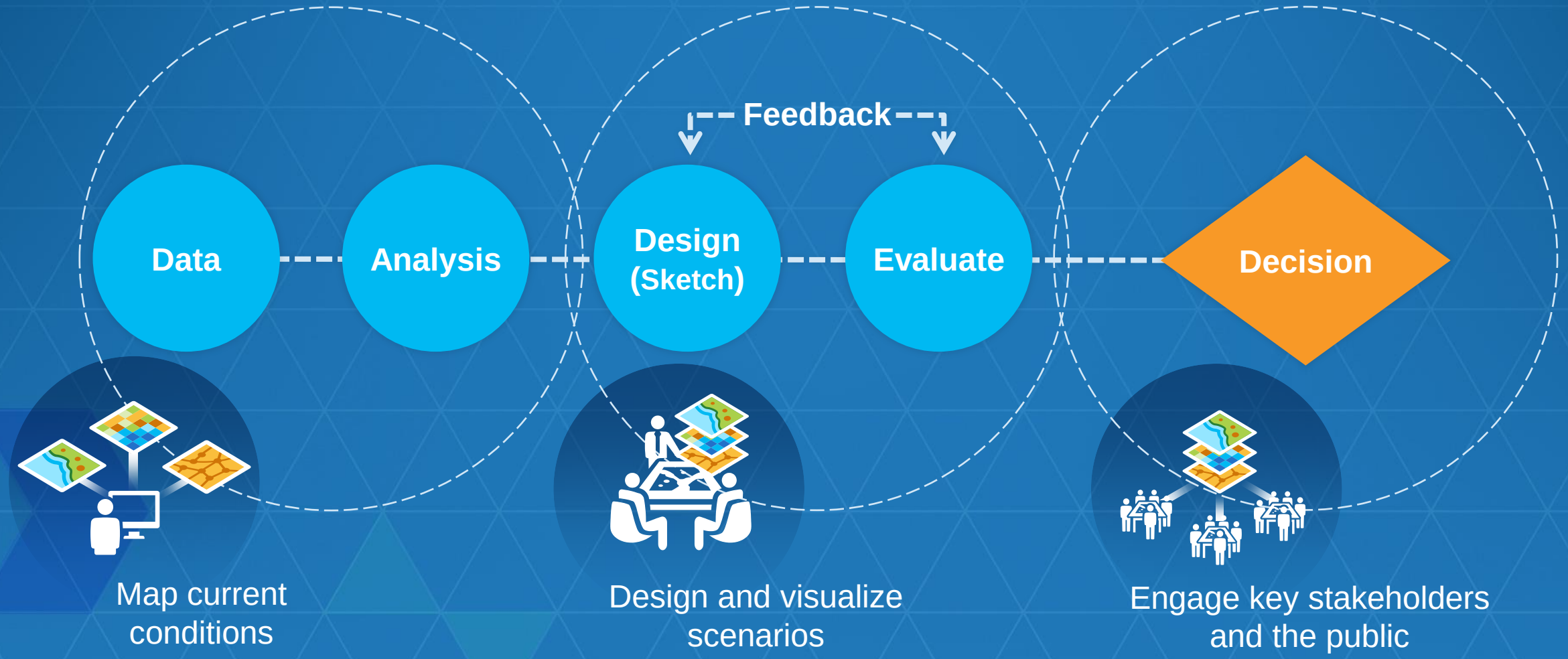
Geodesign overview

Integrating GIS into the planning and design process



Geodesign overview

Integrating GIS into the planning and design process



Geodesign Step 1: Map Current Conditions

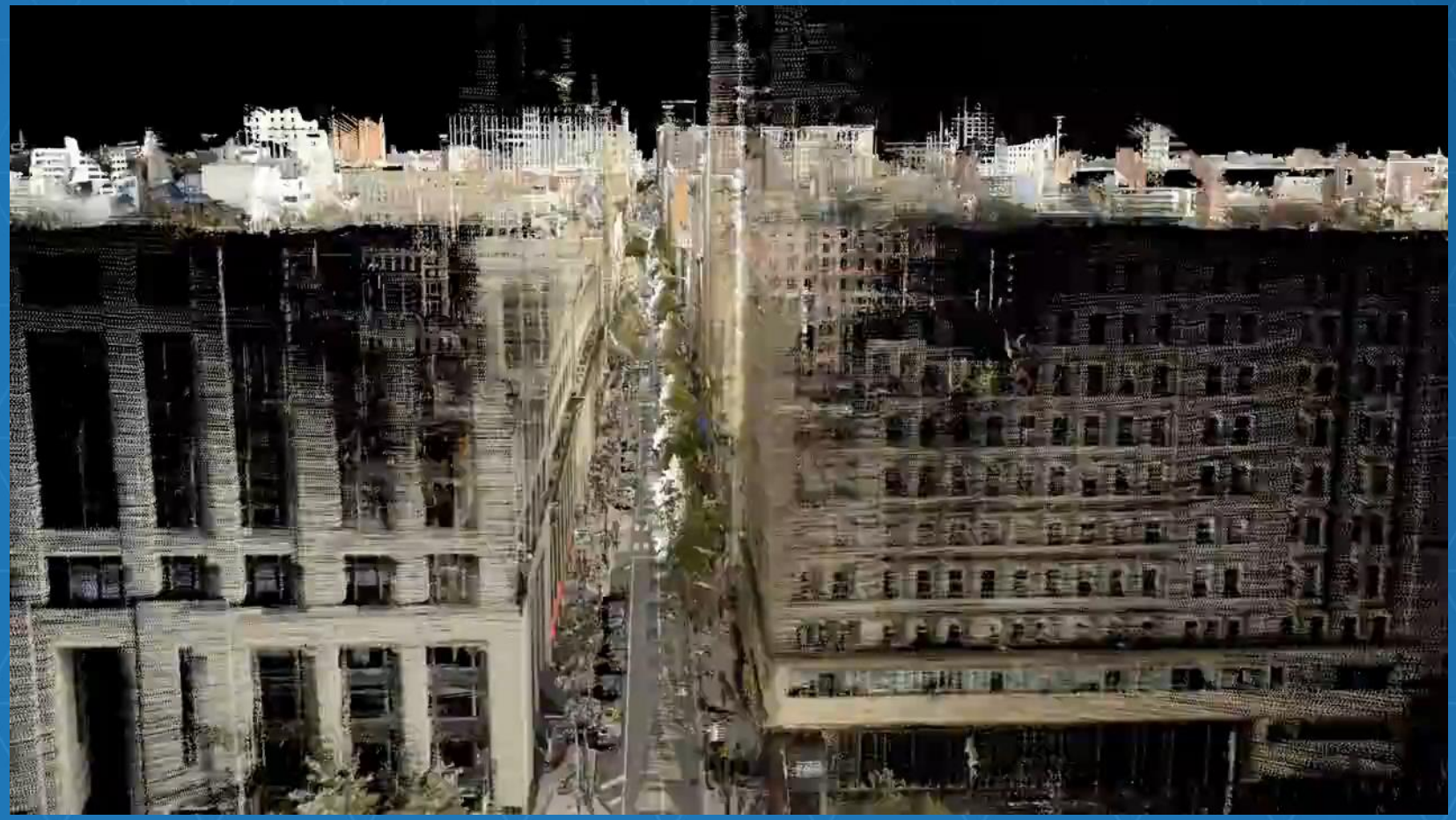
Bringing data into the process

- Enable easy access to critical information
- Build smart data-rich 3D city models
- Bring together existing trends and challenges
- Understand how to propose change

Geodesign Step 1: Map Current Conditions

Transformation to a smart 3D city model

- Leverage LiDAR and existing GIS data
- Combine 2D & 3D data to tell a story
- Increase operational awareness from all angles



Geodesign Step 1: Map Current Conditions

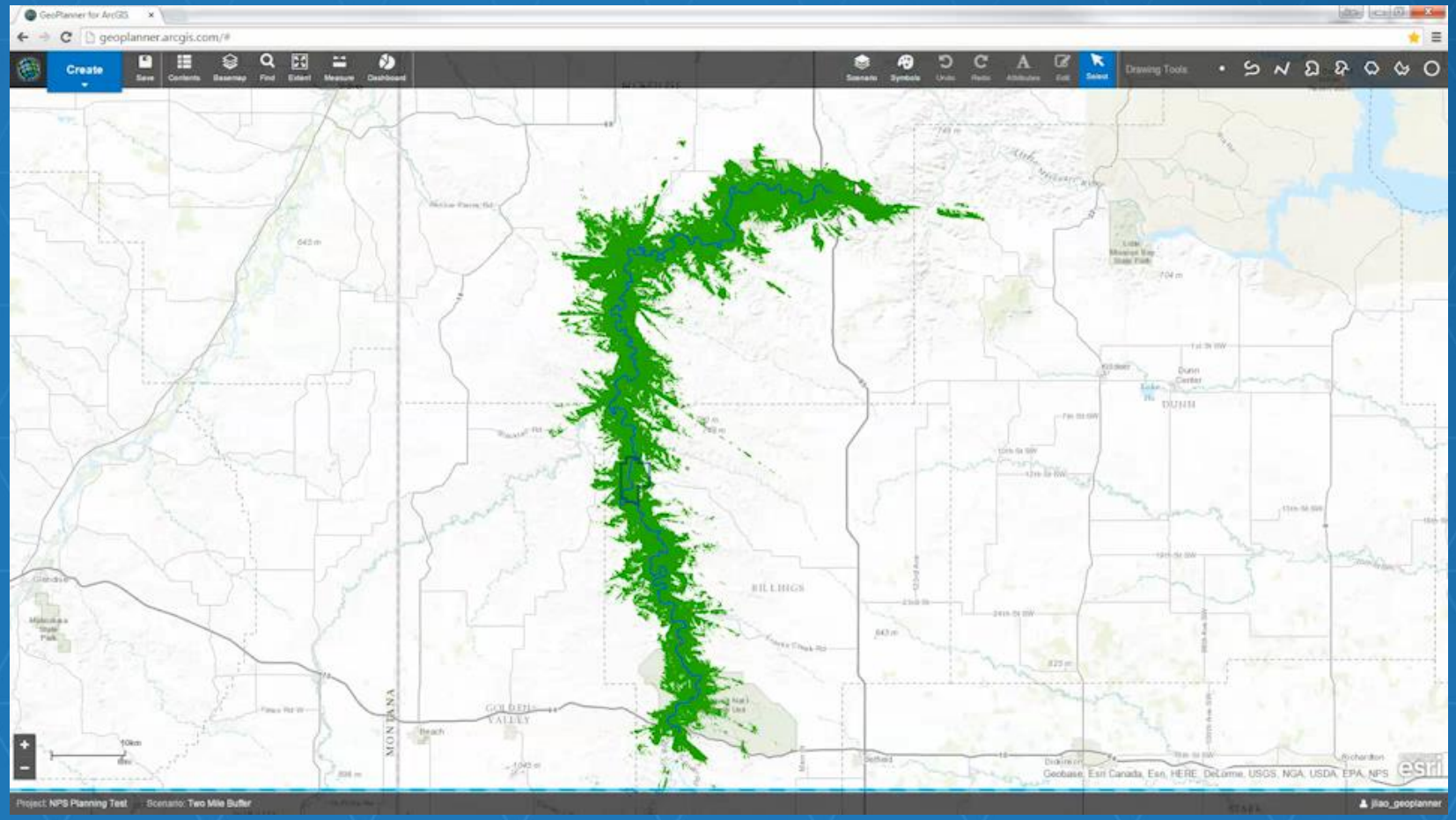
Understand trends and growth projections

- 3D enable zoning laws to see relationships
- Effectively communicate what can change
- Allocate resources for greatest community impact

Geodesign Step 2: Design and Visualize Scenarios

Instant comparison of design scenarios

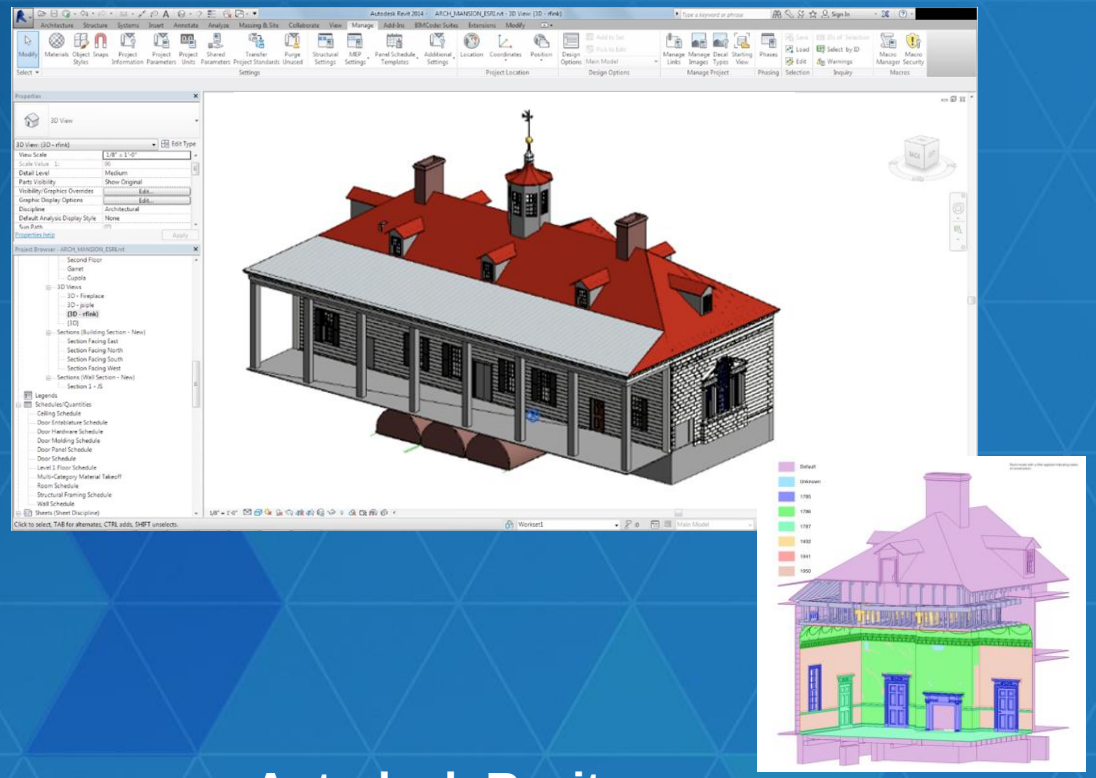
- Visualize new development proposals
- Build flexible scenarios faster
- Compare design alternatives

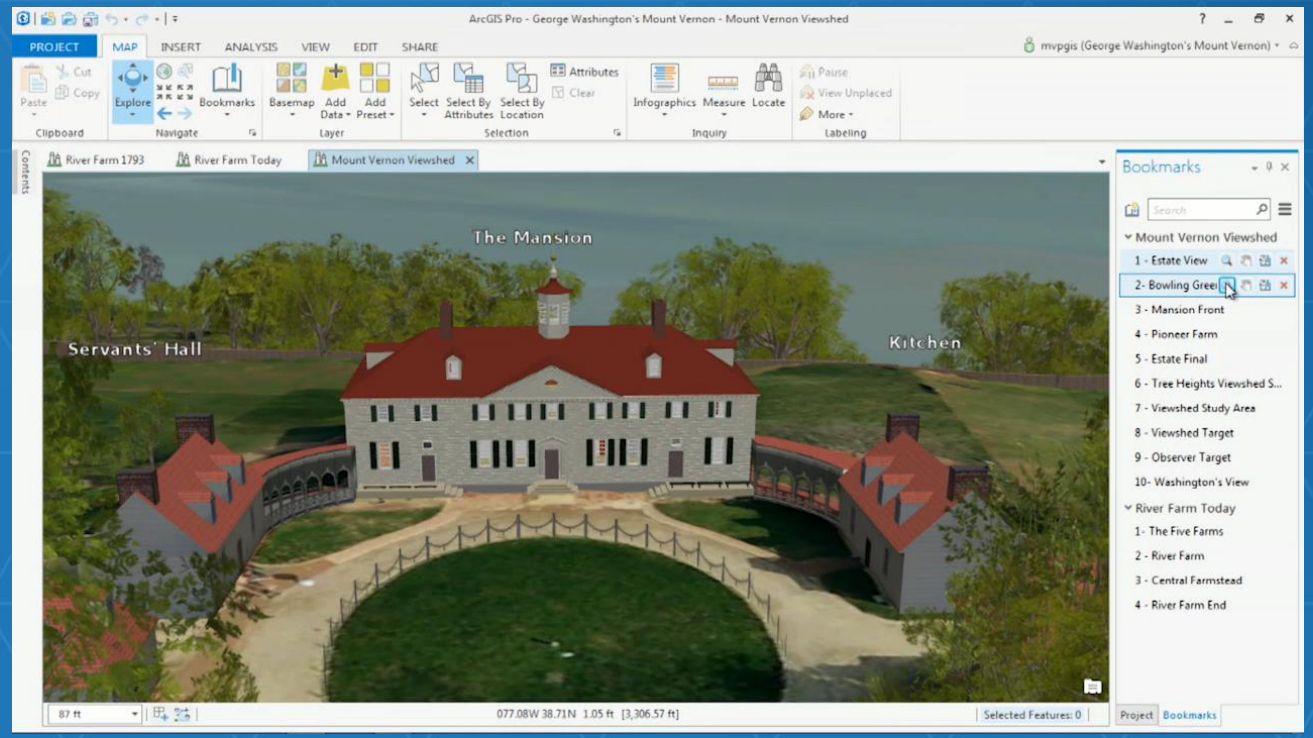


Geodesign Step 2: Design and Visualize Scenarios

Integrate BIM design data

Data
Interoperability
Extension





Autodesk Revit

Esri ArcGIS Pro

Geodesign Step 2: Design and Visualize Scenarios

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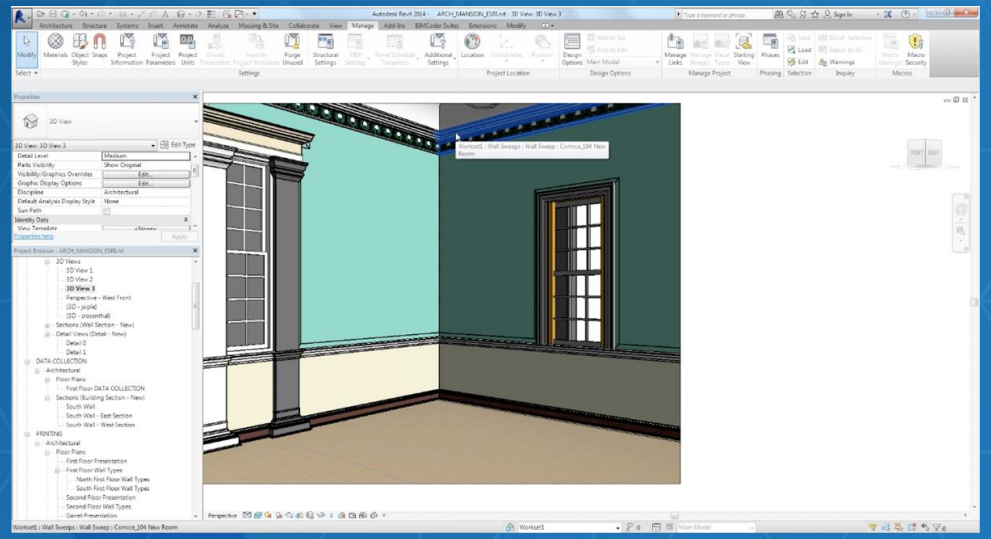
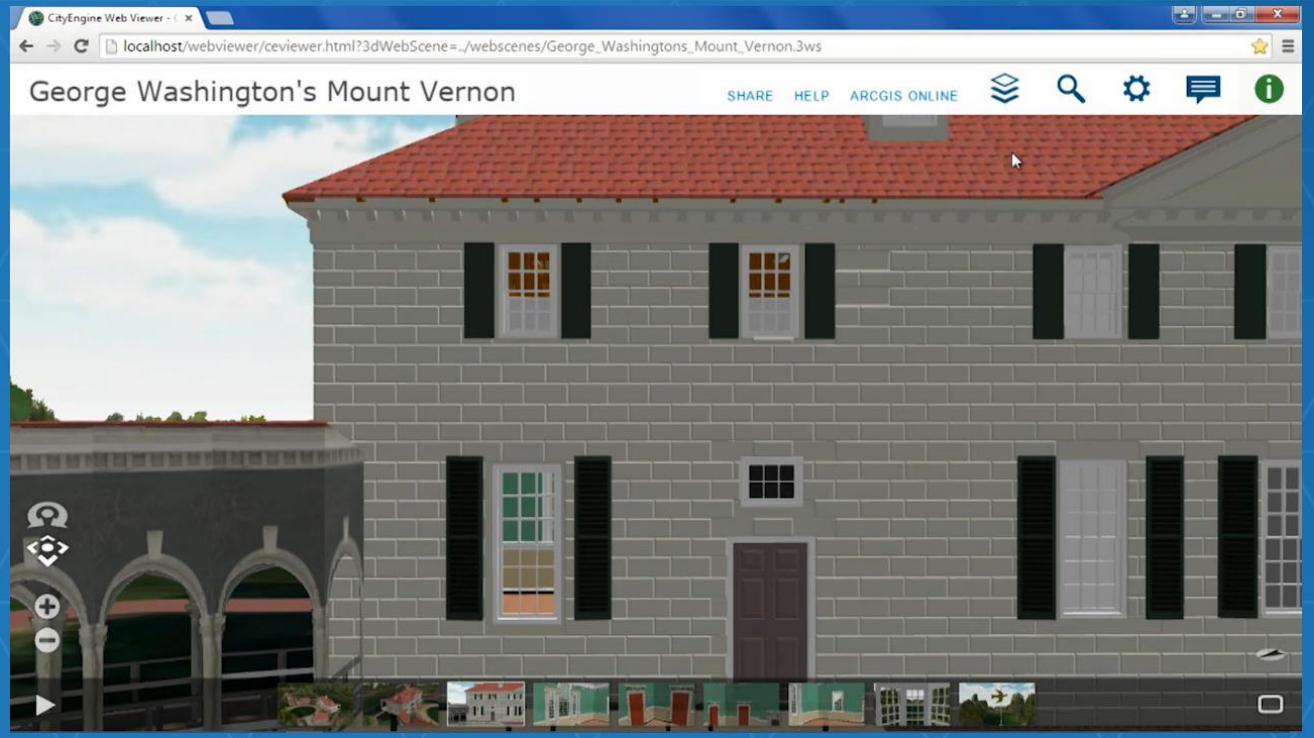




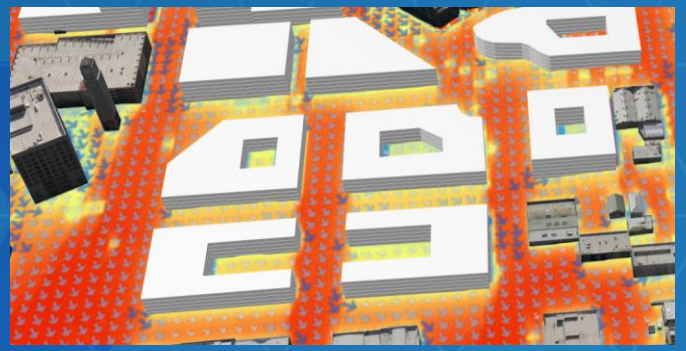
Autodesk Revit

Esri 3D Web Scene

Geodesign Step 2: Design and Visualize Scenarios

Understand how an existing site performs

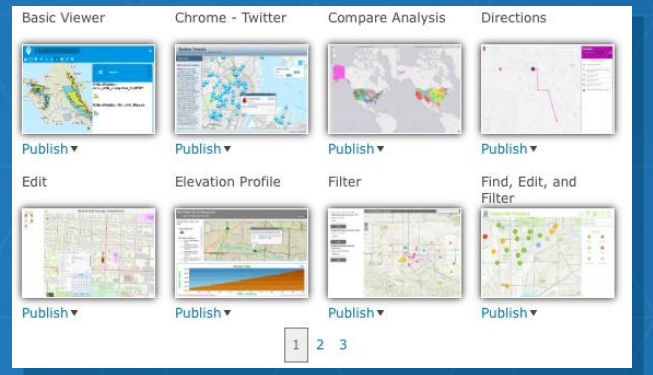
- Advanced analysis to drive decision making
- Assess and improve the quality of life for residents
- Manage and mitigate risk



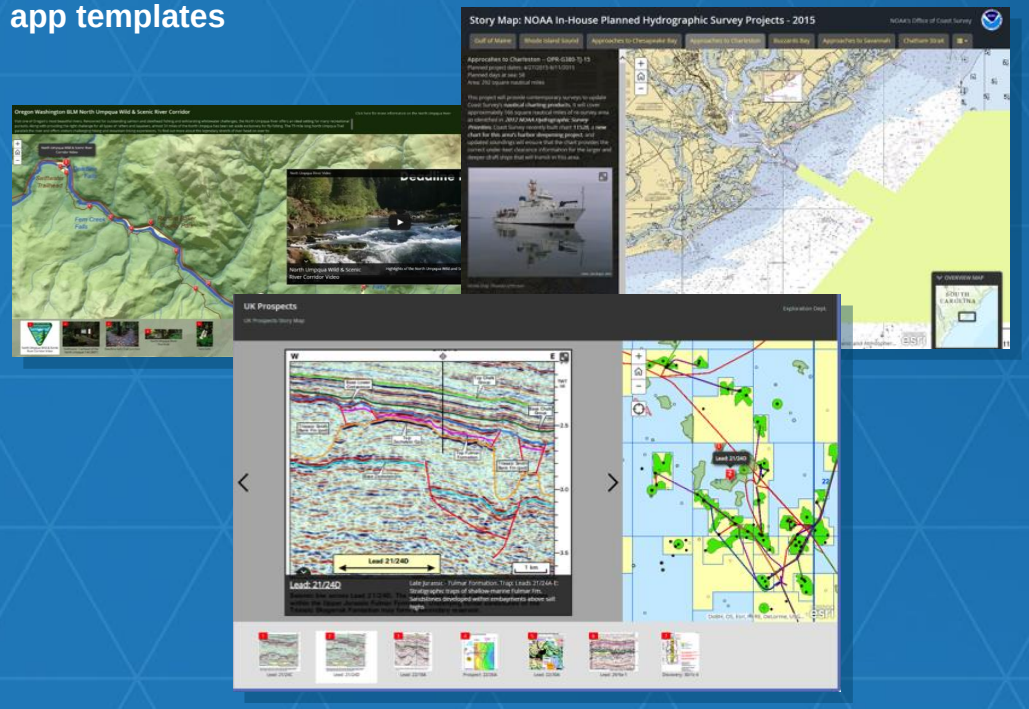
Geodesign Step 3: Engage with Stakeholders and the Public

Using apps for engagement

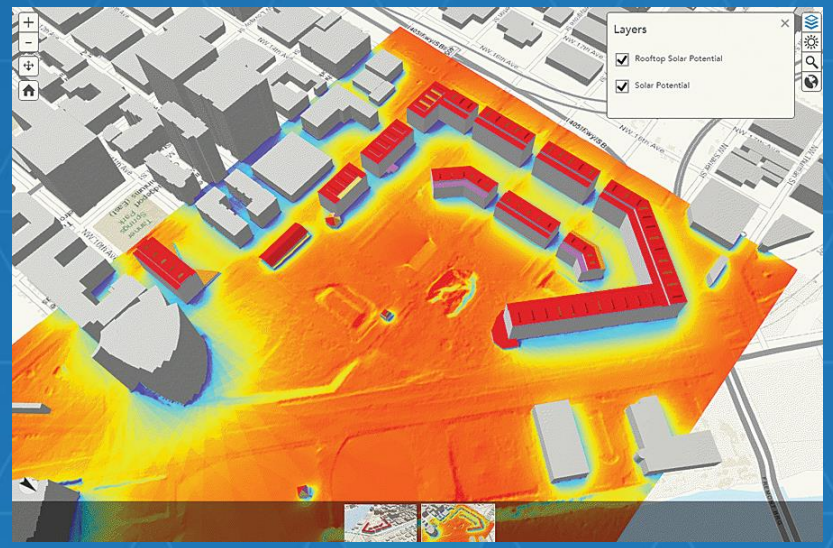
- Publish focused web and mobile applications to the cloud
- Effectively and proactively engage citizens
- Increase transparency and spur innovation



Web app templates



Story maps



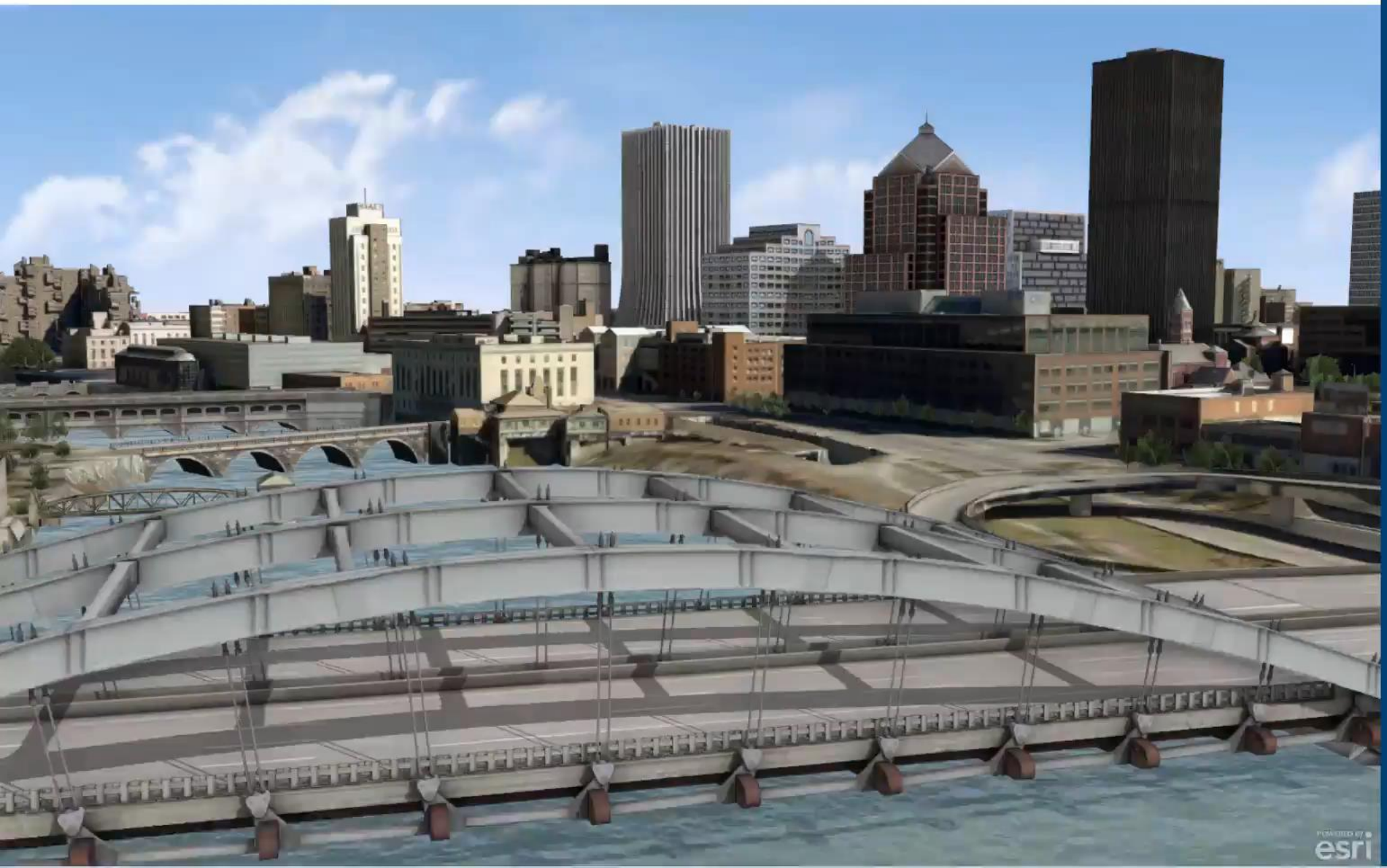
3D web scenes

CityEngine Web Viewer -

www.arcgis.com/apps/CEWebViewer/viewer.html?3dWebScene=c451f359c24a4f34bf63c1e5077f1694

Bergmann Associates - Rochester NY Master Plan

Help Sign In ArcGIS Online



Layers

- Master Plan
  - Master Plan
- Proposed Development
  - Master Plan Buildings
- Sub Neighborhoods
- Development Areas
- District Recommendations
- Parcel Data
- Assessed Value
  - Value Density Map
- Landmark Buildings
- Buildings
- Trees

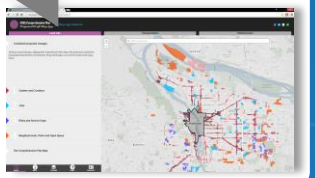
A Mapping Platform for Planning and Design

Integrating GIS into the planning and design process

Platform Components

ArcGIS Online / Portal

ArcGIS solution templates



ArcGIS Pro

Data management, analysis, and publishing of 2D and 3D scenarios

GeoPlanner

Conceptual planning and analysis in a single collaborative web application

CityEngine

Improving urban planning and design with efficient 3D scenario authoring

Capabilities

3D Scene Services

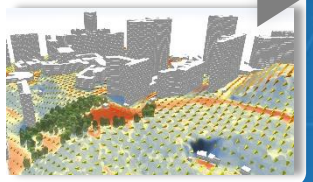
View, create, and share 3D scenes in your browser

Procedural Rules

Leverage GIS attributes to quickly generate 3D models from 2D data

Spatial Analysis

Understand and measure impact on natural and man-made systems



ArcGIS Platform

CityEngine Advanced 2014.0 - JLD_Dashboard.cej

File Edit Select Layer Graph Shapes Search Scripts Window Help

Generate

CityEngine

Navigator

Parcel_To_Lots.cga
Parcel.cga
Park Furniture.cga
printArea.cga

*Scene

search expression

Rings (75 Objects)
Population_Scaled
Zoning
Parks and Trees
Detailed Buildings
Elevated Rail
Texture SE
Texture SW
Texture NE
Texture NW
Terrain
-> Basemap
Building Pop
Building
Vacant (1 Object)
Vacant Other
Dashboard (1 Objec
Microsim (6 Objects
-> Operational
Views from MRT
Pregen Buildings
Pregen Roads
Lake View
Templates (9 Object

Viewport

Perspective View | 16261 Objects (1 selected) | 1706907 Polygons (101 selected)

Location 358162.19m 147480.16m | Elevation 5.00m | WGS 1984 UTM Zone 48N

esri

WGS 1984 UTM Zone 48N (EPSG:32648) Free Memory: 7528[MB] 7325[MB]

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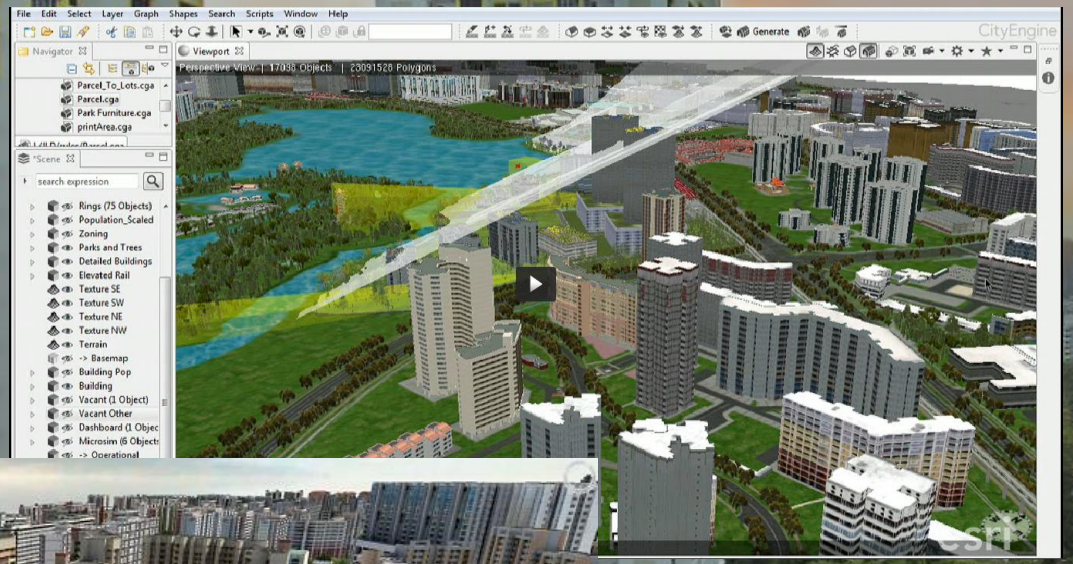
Location 358975.29m 148383.32m | Elevation 7.64m | WGS 1984 UTM Zone 48N

esri

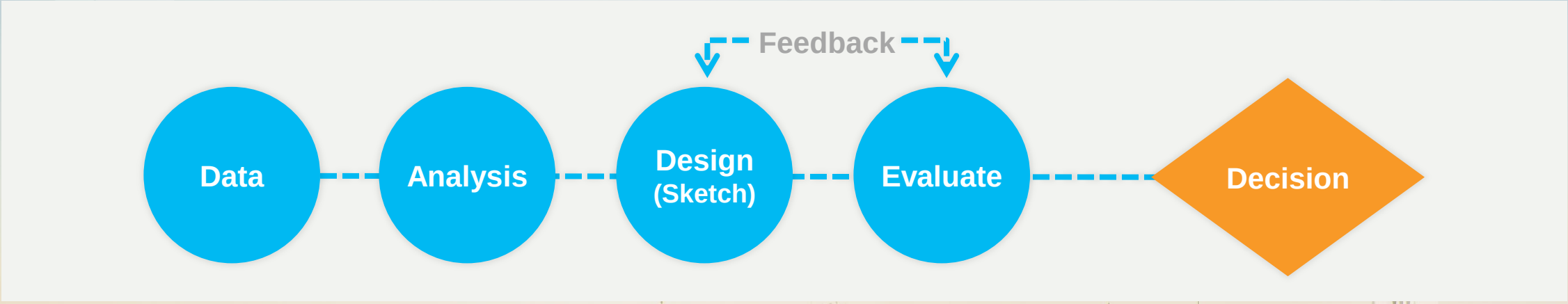
WGS 1984 UTM Zone 48N (EPSG:32648) Free Memory: 7558[MB] 7217[MB]

Singapore



- Implemented 3D design process that embeds planning laws and constraints into planning tools
- Evaluation of multiple scenarios and spatial analytics of future impacts
- Faster and more efficient process

Enabling Singapore to secure its future sustainability



Thank you.

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