3D on the Web with ArcGIS

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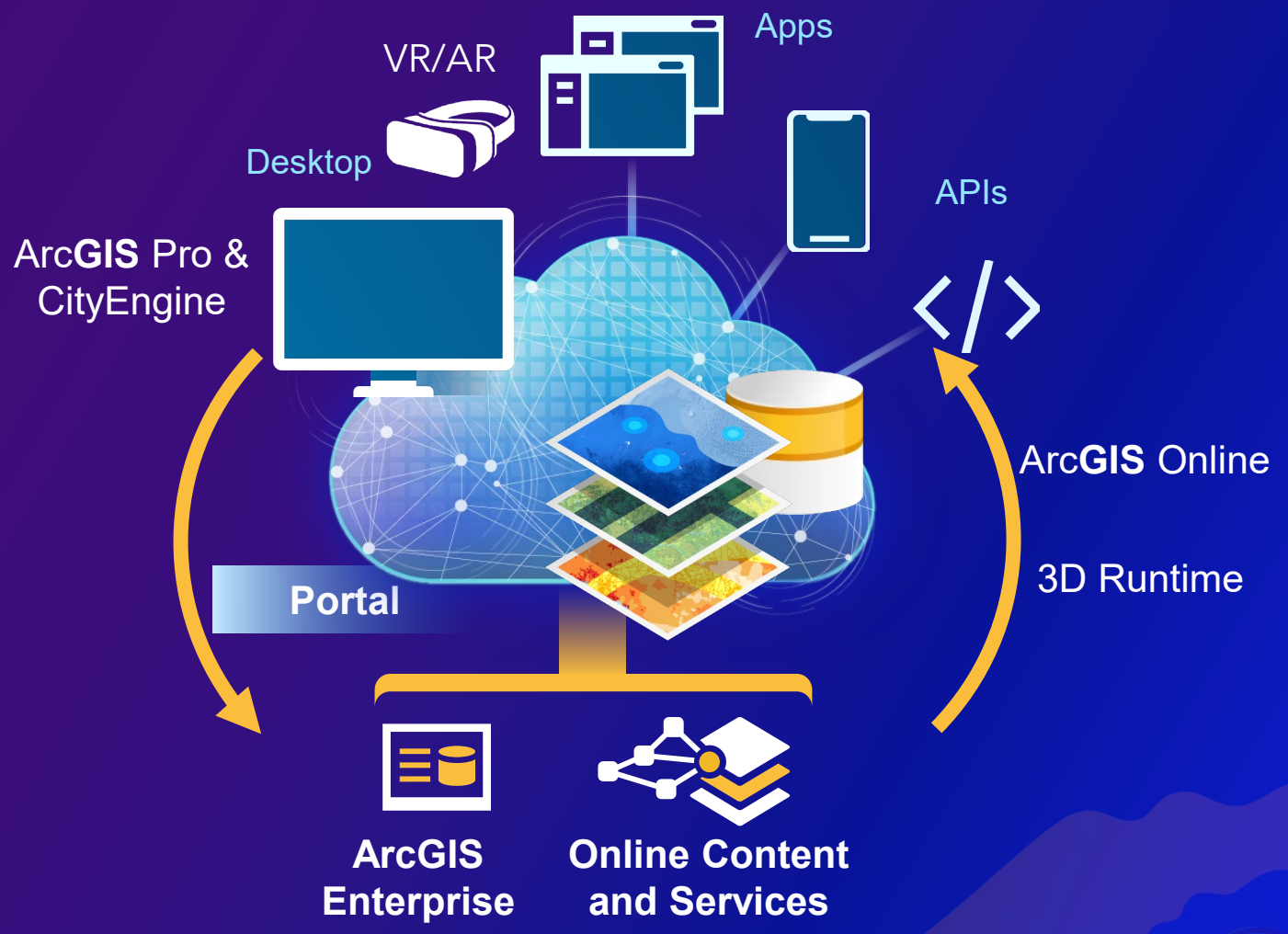
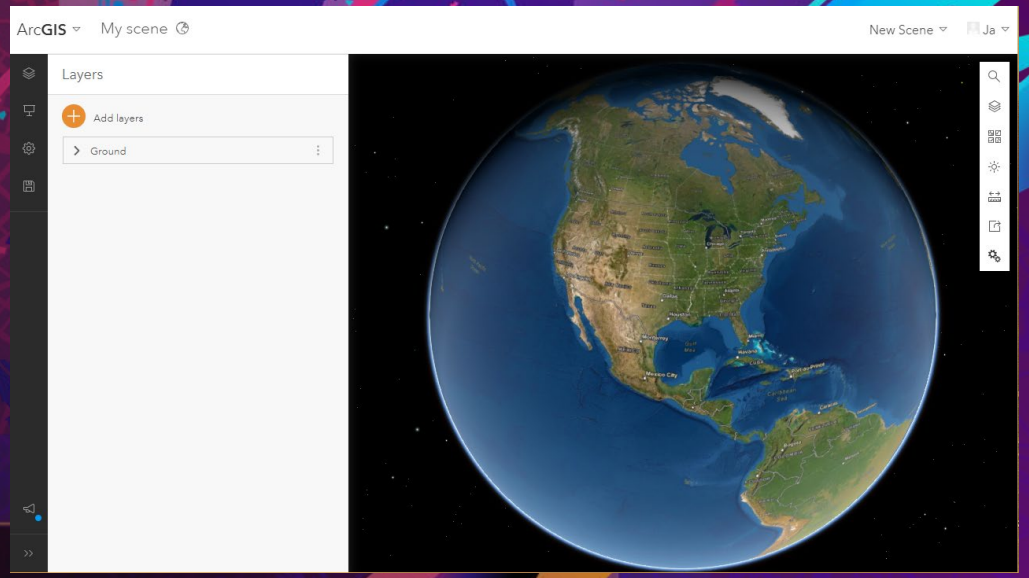
2021 ESRI USER CONFERENCE

3D Across the Platform

- GIS is 3D
- Web GIS services-based architecture
- New clients and experiences
- Workflow modernization
- Story-based solutions and products

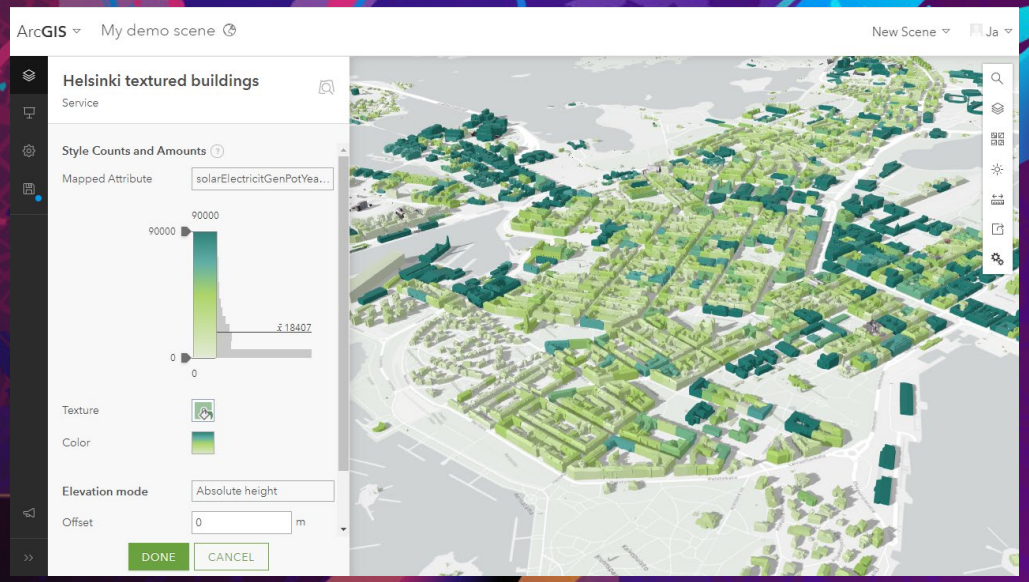


Complete workflow for editing, managing, publishing and sharing data in 3D



Scene Viewer Introduction

Janett Baresel

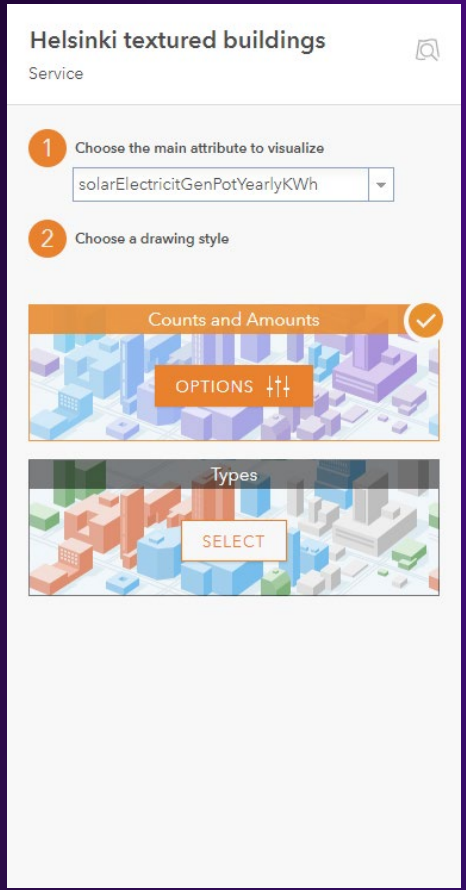


Styling Layers

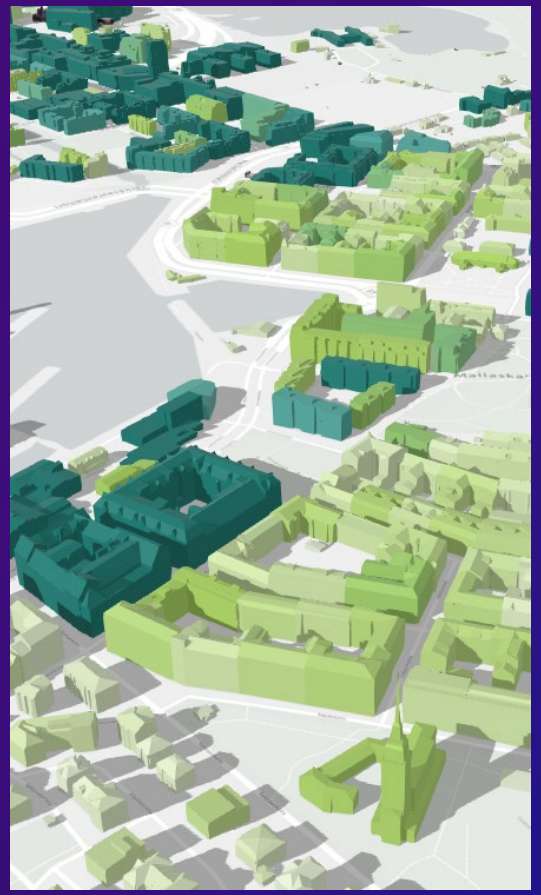
Janett Baresel

Styling Layers in Scene Viewer

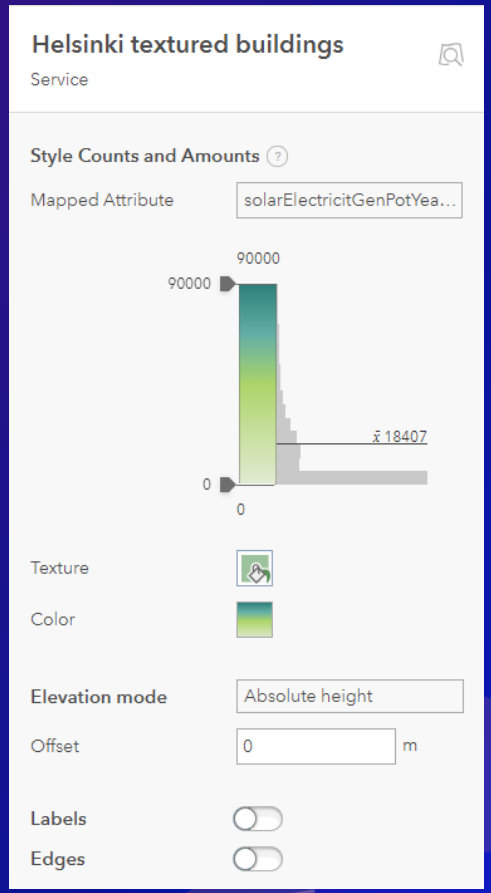
Template driven



Smart defaults



Fine tuning



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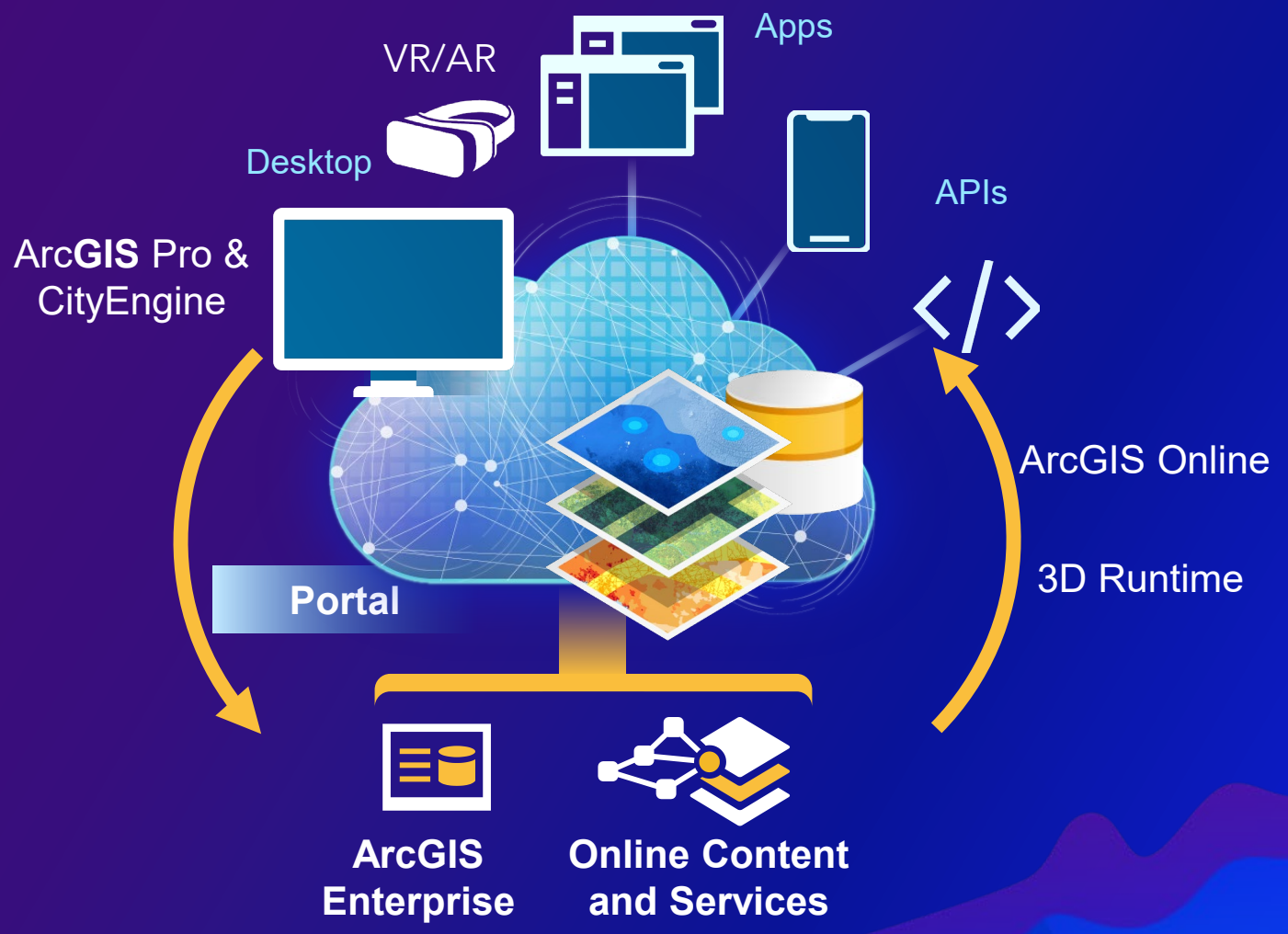
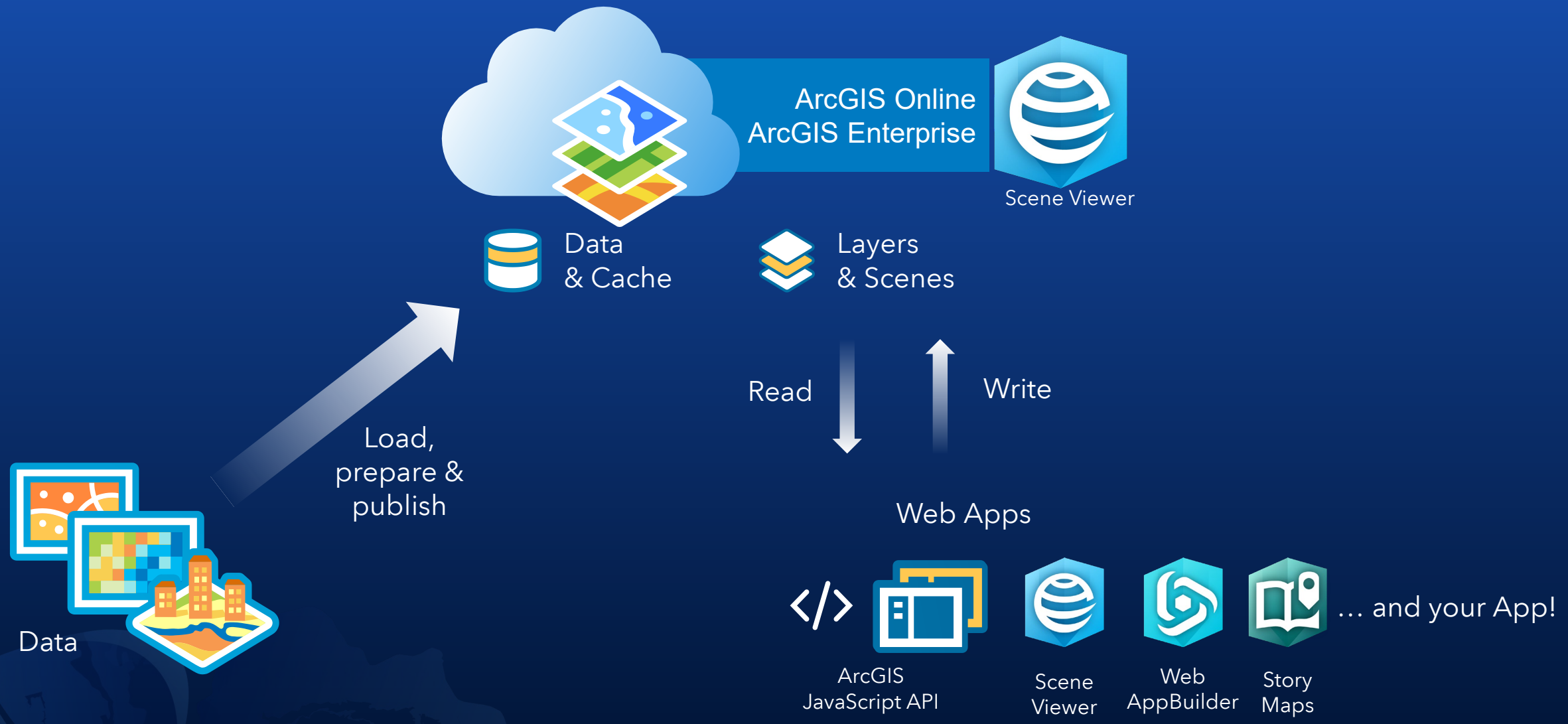


Complete workflow for editing, managing, publishing and sharing data in 3D

ArcGIS 3D Web Patterns



3D Data Overview

Feature Layers and Scene Layers

Understanding Feature Layers and Scene Layers

Feature Layers: Single Layer created from a Map Service or Feature Service. Contains Geometry, Attributes and is the standard data delivery mechanism within ArcGIS Online and Enterprise.

Scene Layers: A scene layer is a type of layer that is optimized for displaying large amounts of 3D data in a scene. There are 5 types of Scene Layers, and they utilize the I3S standard for delivery.

Feature Layer	Scene Layer
Point, Line, Polygon	Performant, larger data (I3S Standard)
Can contain Z geometry.	Bespoke experiences (Building Explorer, LiDAR symbolization, Integrated Mesh manipulation)
Displaying frequently updated data	Textured multipatches- soon material properties
Explore and symbolize with smart mapping styles	Editable Attributes on the Web, Geometry with Pro (for 3D Object Scene Layer)
Several authoring and sharing options	Disconnected Workflows (SLPK can be read in ArcGIS Earth Mobile)
Editable on the web	Multiple Levels of Detail (LOD)
Save and shareable views	
Searchable features	

Good scenes need a good strategy

Scene Layers

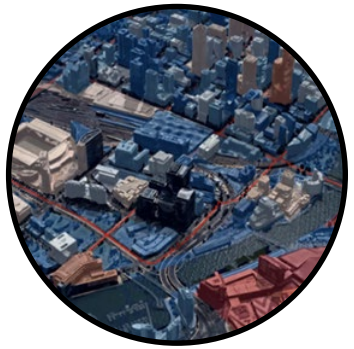
Storing and streaming large volumes of 3D content

3D Objects

- 3D Shapes
- Trees
- Buildings
- Infrastructure

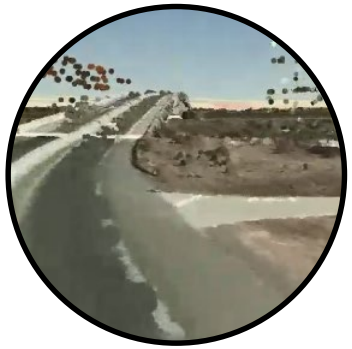
Point Scene Layer

- Point locations
- Symbolize with 3D Object Styling
- Can visualize attributes by size and color



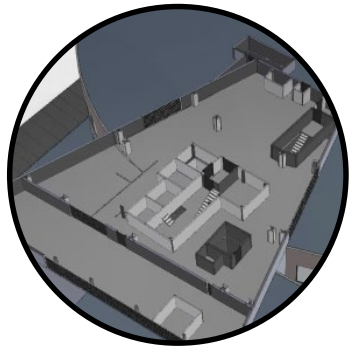
Integrated Mesh Scene Layer

- Skin of the Earth
- Textured with imagery
- Captured by Drone2Map or other methods



Point Cloud Scene Layer

- LiDAR
- Photogrammetric points
- Style by elevation, color, classification



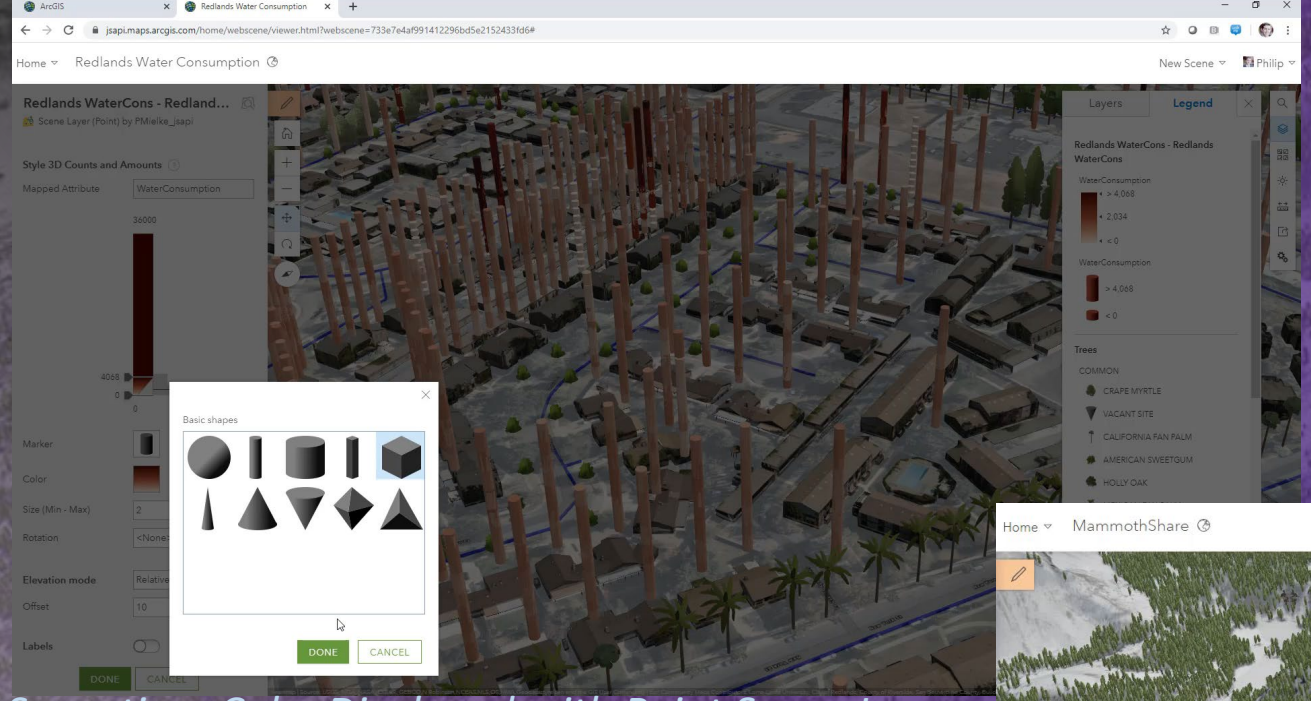
Building Scene Layer

- Detailed building models
- Read directly from Revit
- Filter categories and floors

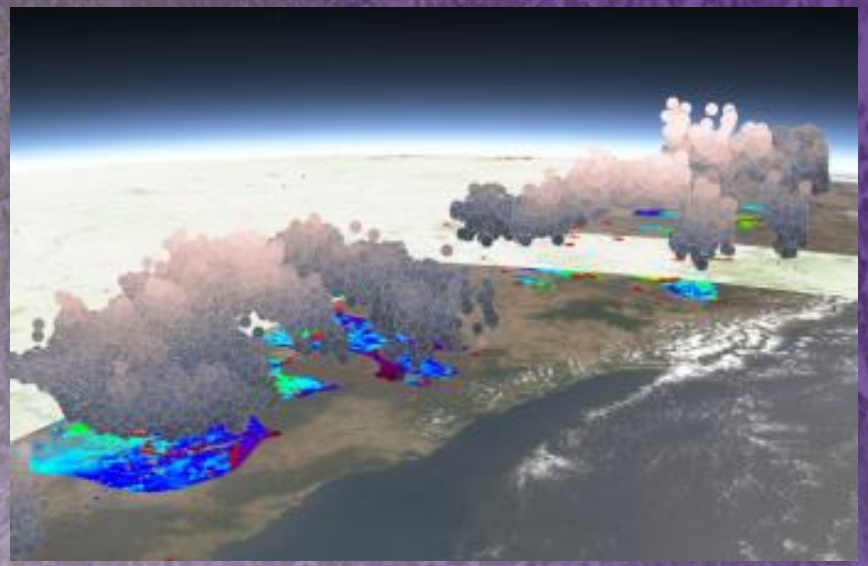
3D Data Overview

Point Scene Layer

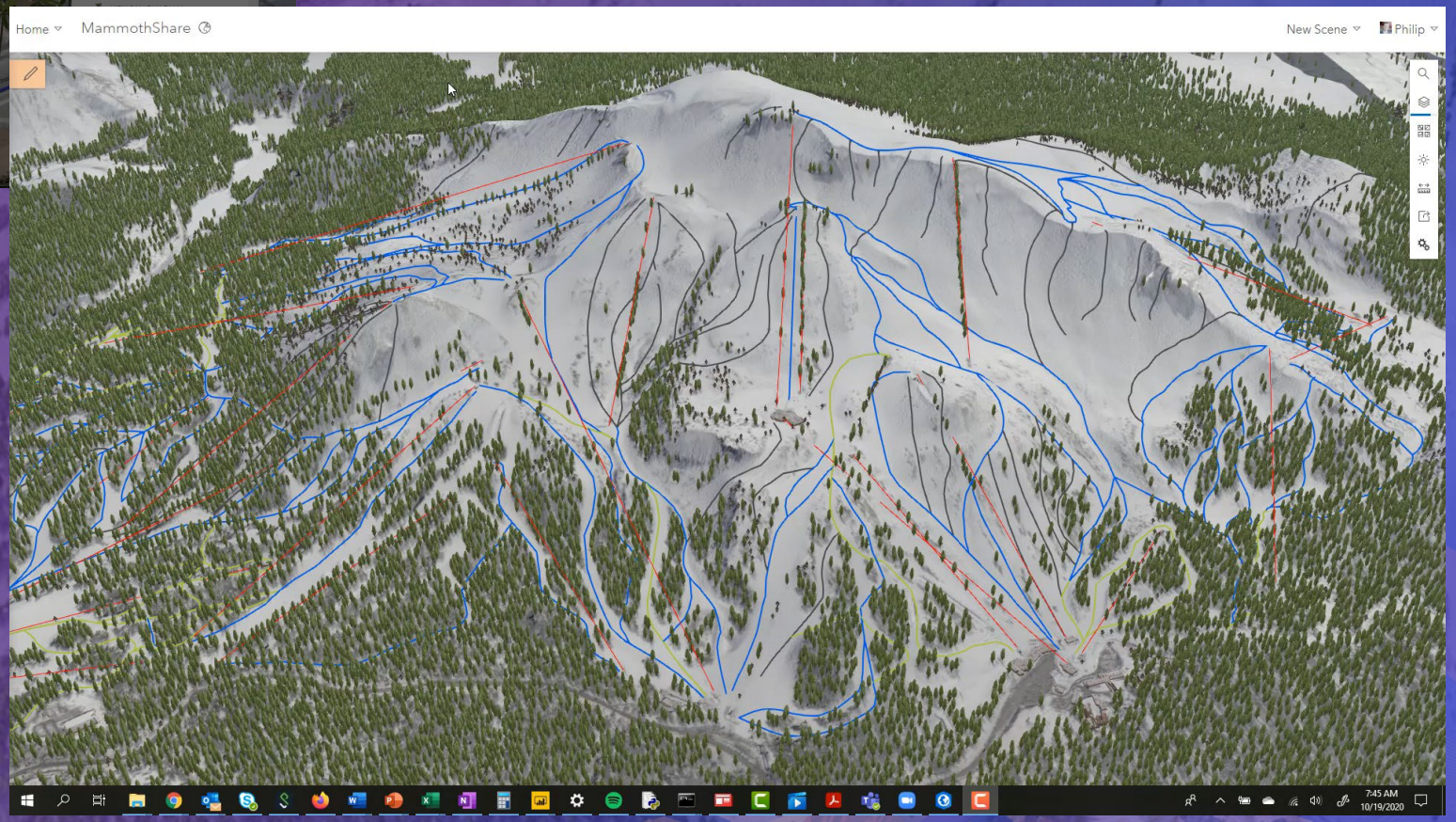
New! 1.7 I3S Spec is almost 2x as fast



Spacetime Cube Displayed with Point Scene Layer



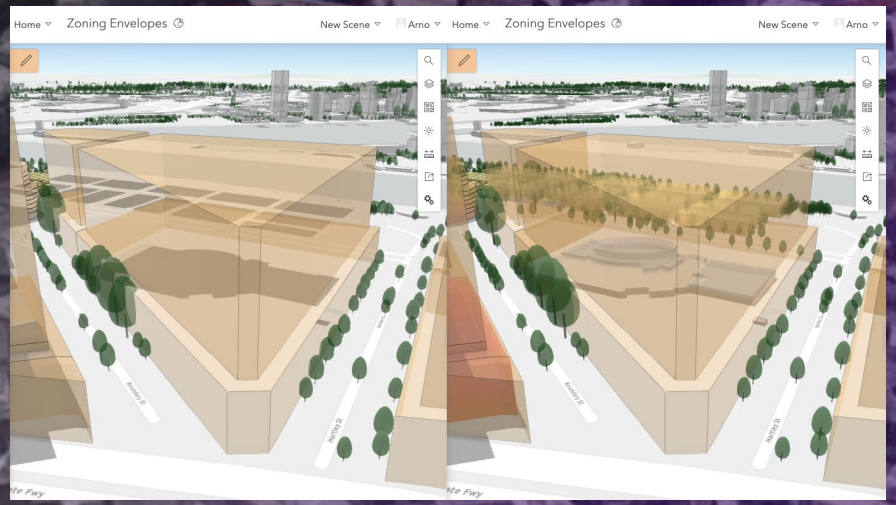
NASA Disaster Response Smoke Plume



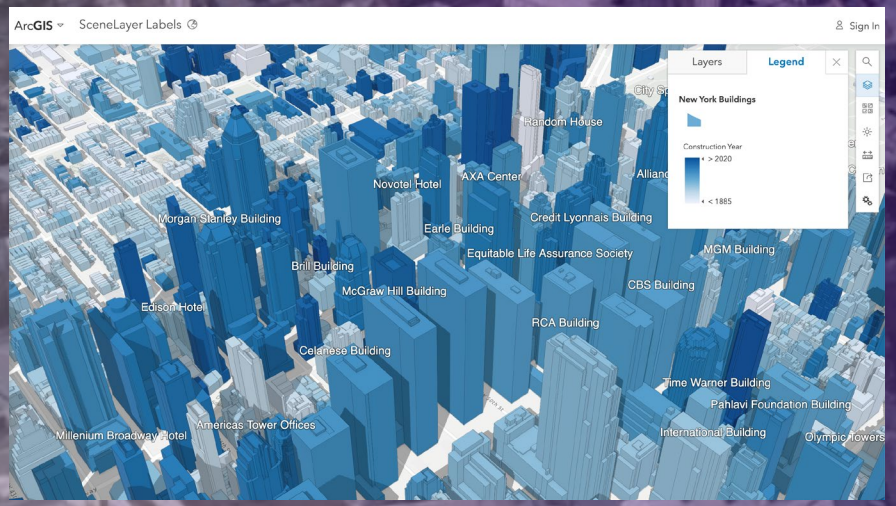
Point Scene Layer displayed with 3D Webstyle

3D Data Overview

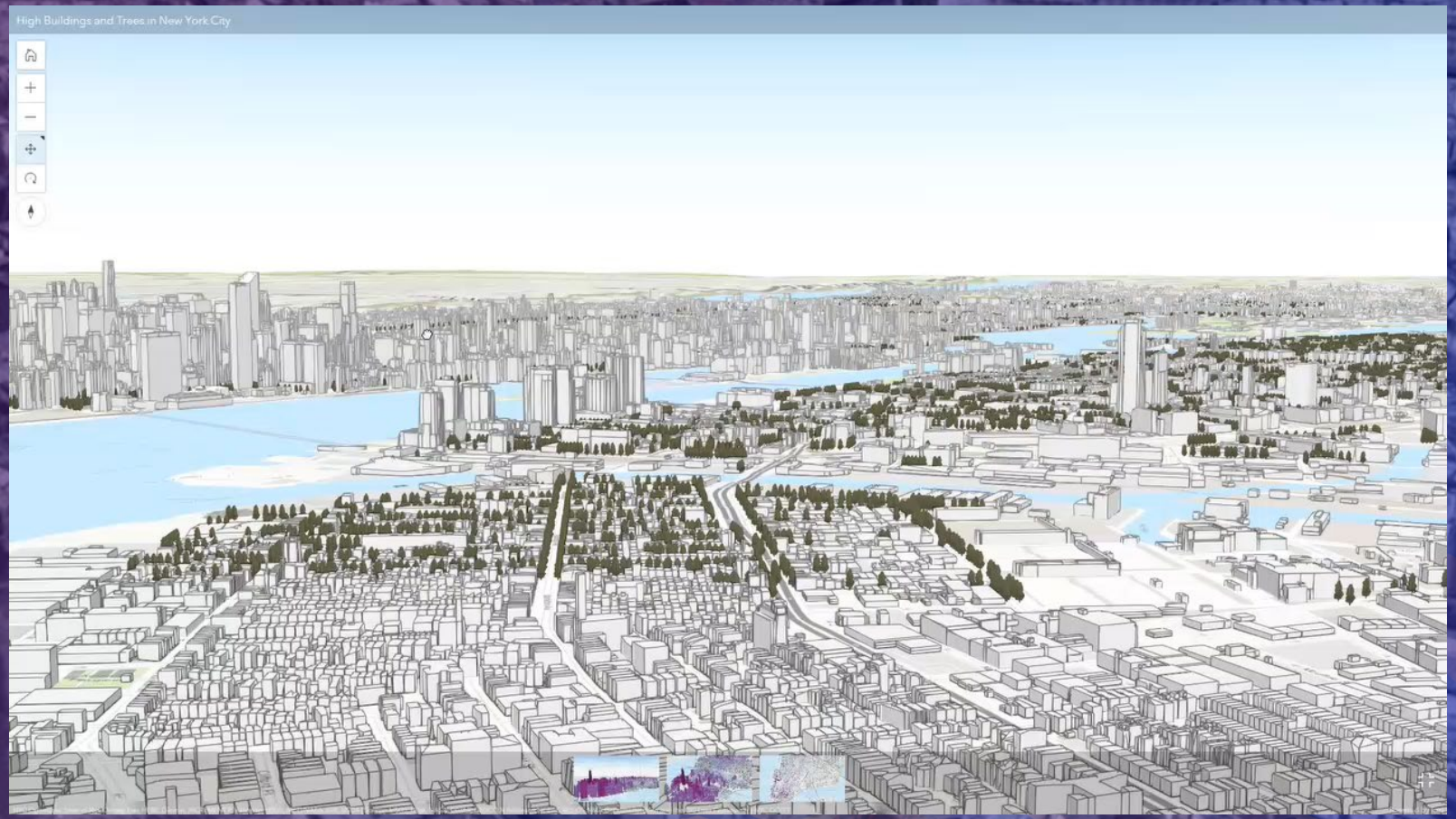
3D Object Scene Layer



Improved Transparency



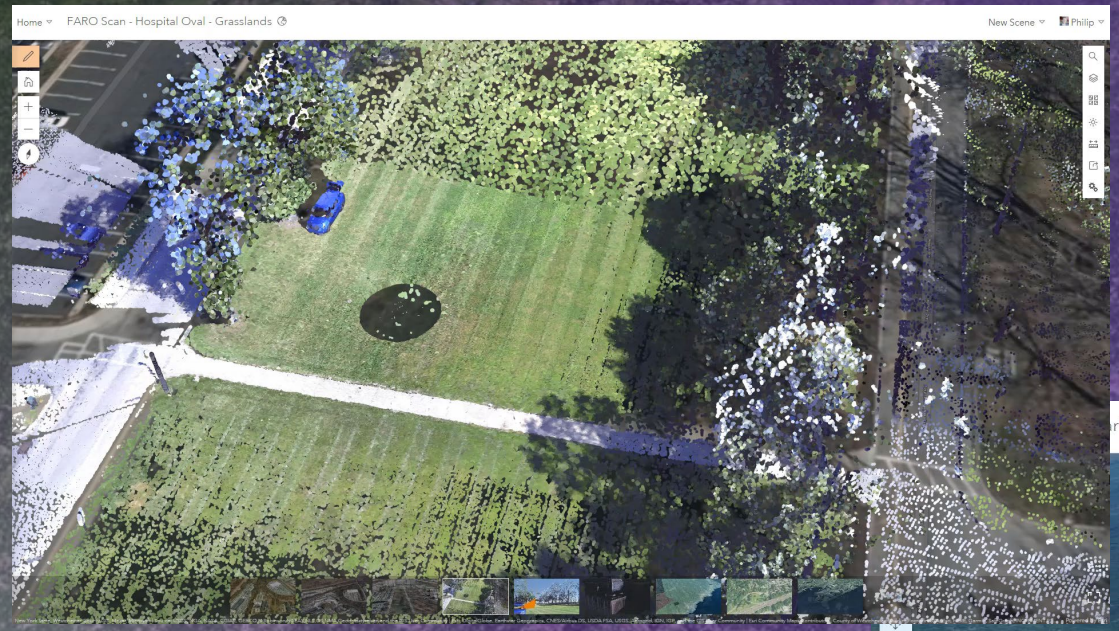
Labeled 3D Objects



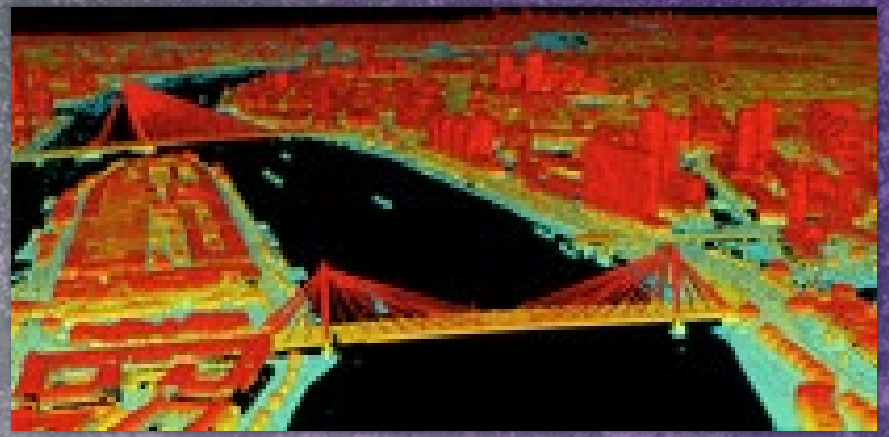
New York City Buildings and Trees (3D Objects)

3D Data Overview

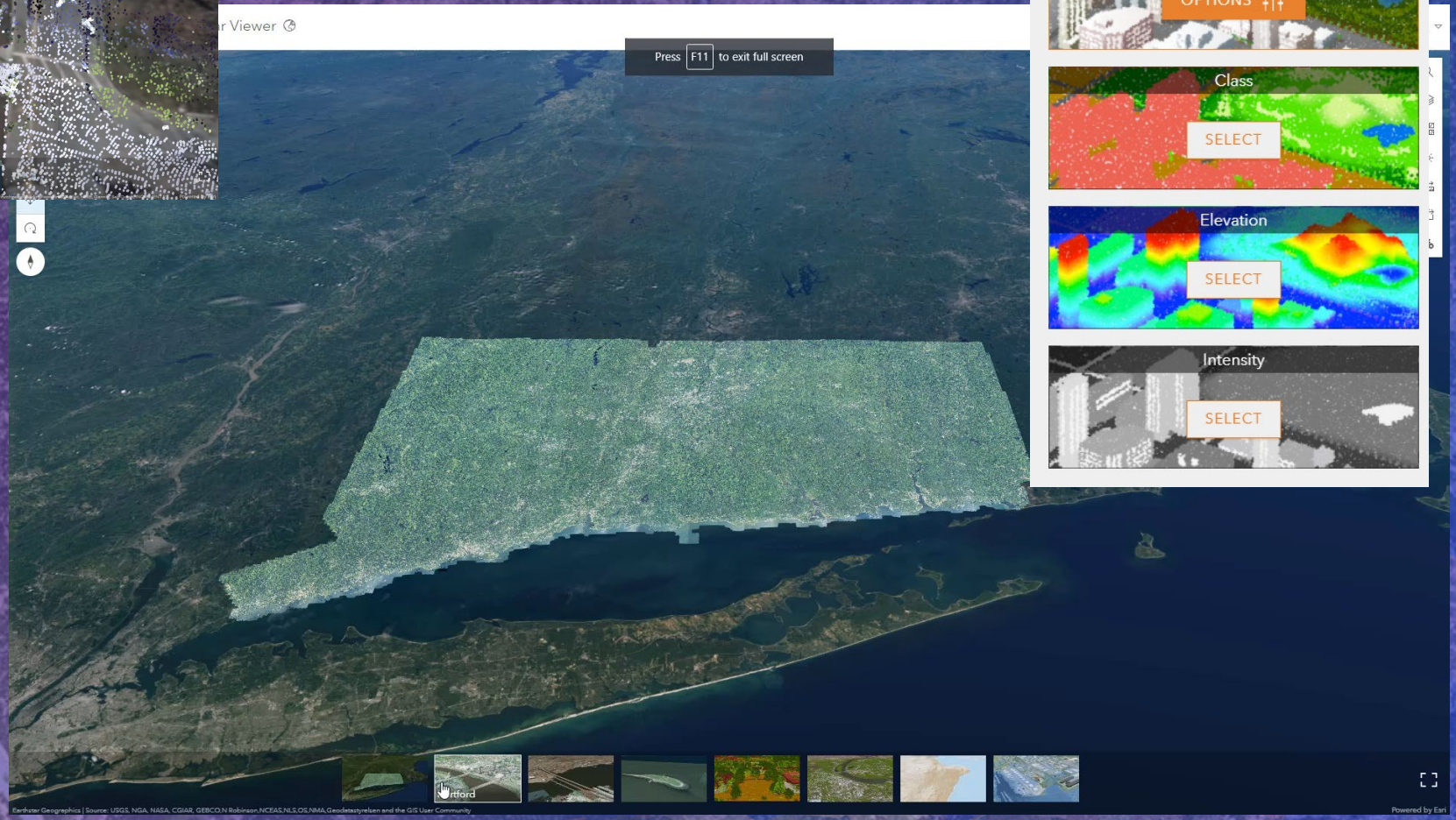
Point Cloud Scene Layer



Terrestrial LiDAR



Styled by elevation

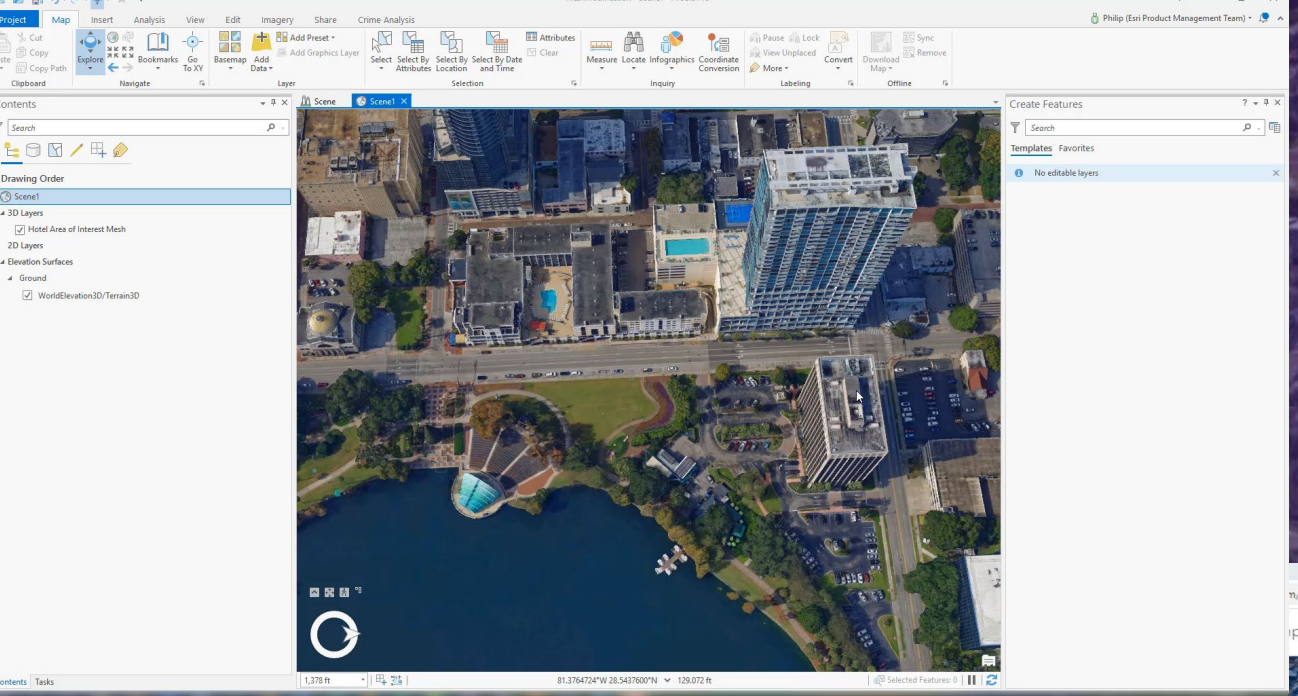


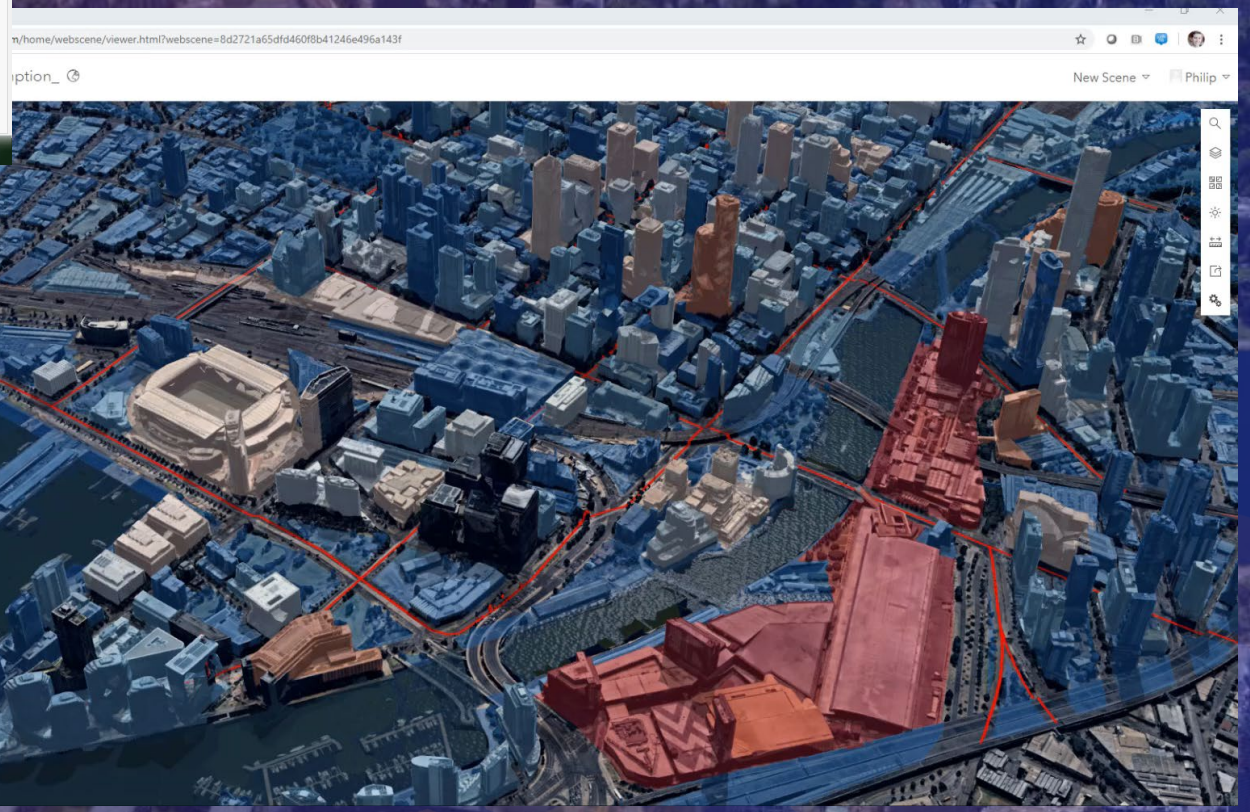
State of Connecticut LiDAR Viewer

NEW!: Pop ups on Point Cloud Scene Layers

3D Data Overview

Integrated Mesh Scene Layer





Mesh Modification- Published by Pro

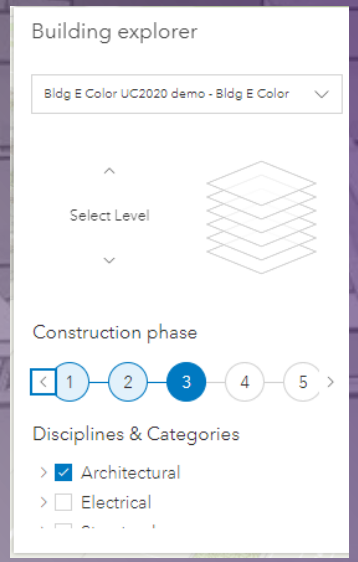
Captured by Drone

Polygons draped to Integrated Mesh

3D Data Overview

Building Scene Layer

Building Scene Layer of Electrical Substation



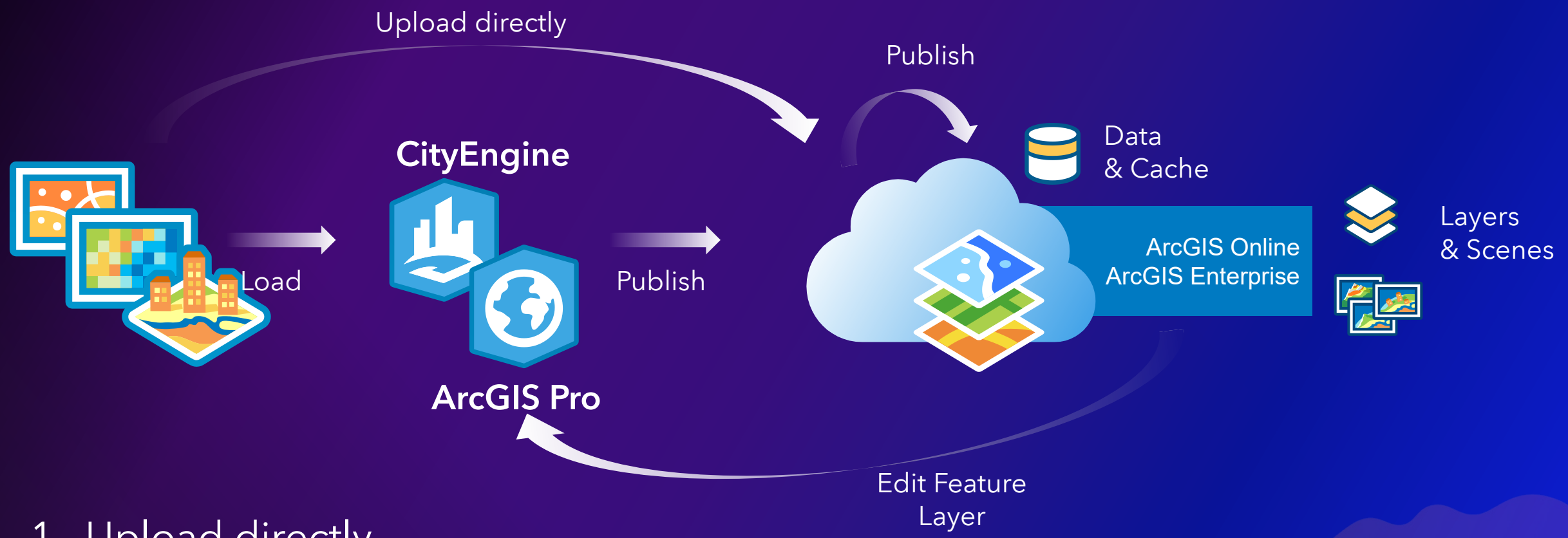
Building Explorer:
Selects Phases, Levels and Categories

Building Scene Layer Search

Publishing Patterns

Publishing Examples

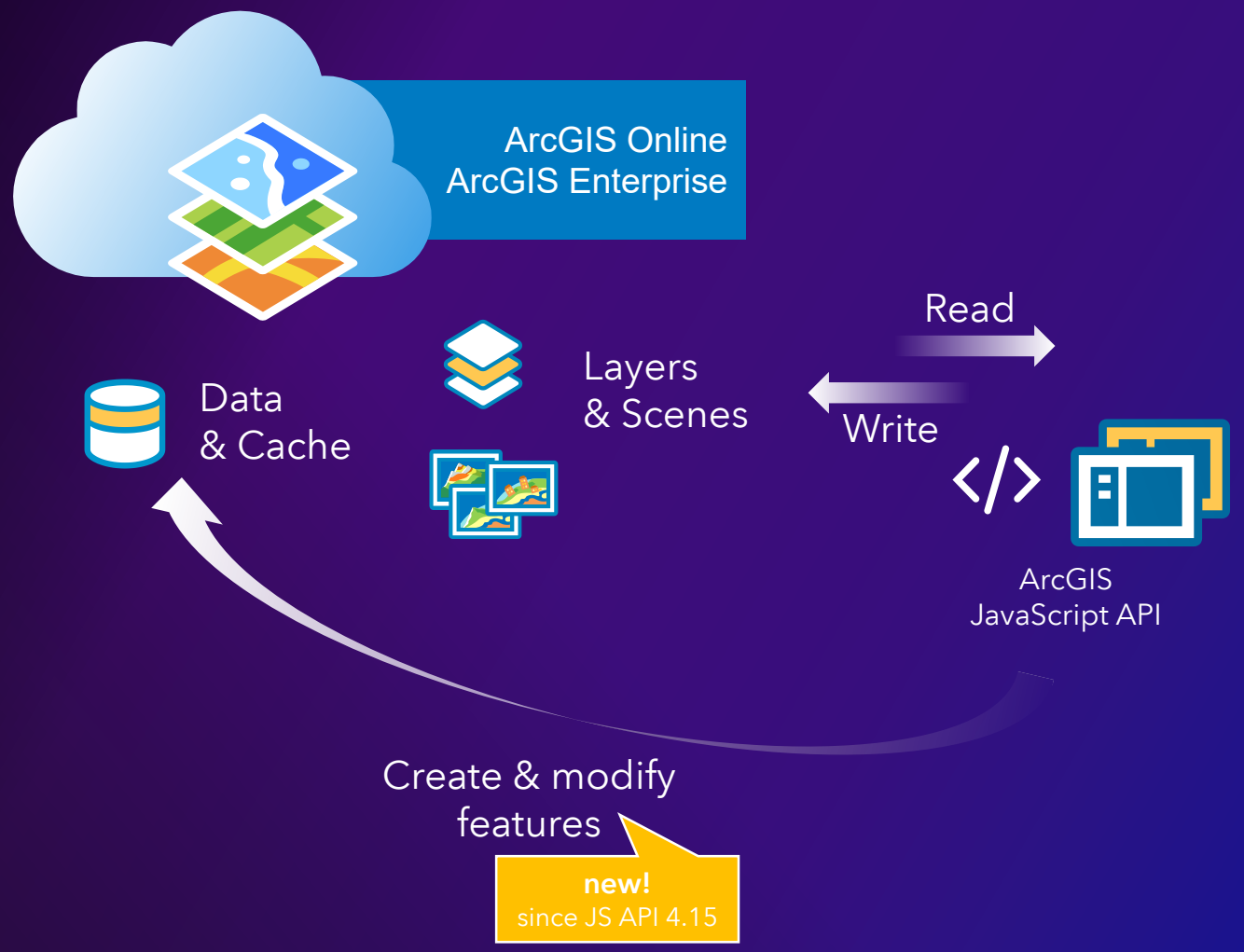
Understanding data authoring



1. Upload directly
2. ArcGIS Pro: Table processed to Feature to Scene Layer
3. ArcGIS Online- Solution Feature Edit Template load for editing

3D Configurable Apps

Authoring & Consumption



3D Web Apps

ready to use

Scene
Viewer

- explore
- analyze
- author
- share

configurable

Story
Maps

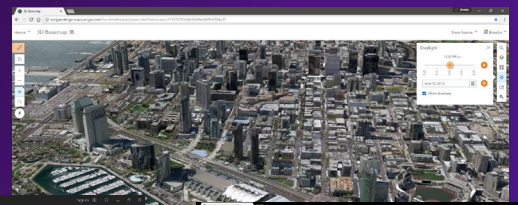
Experience
Builder

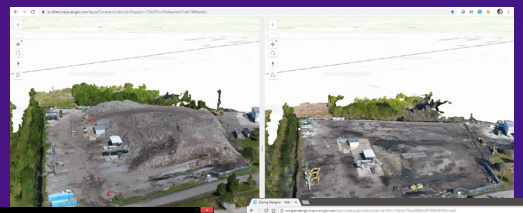
Web
AppBuilder

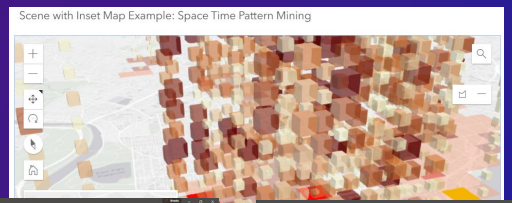
custom code

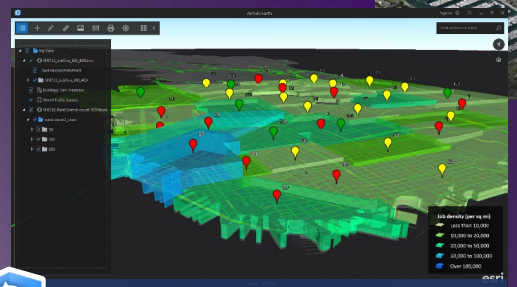
... your own App!

Apps | 3D Applications that can consume scenes

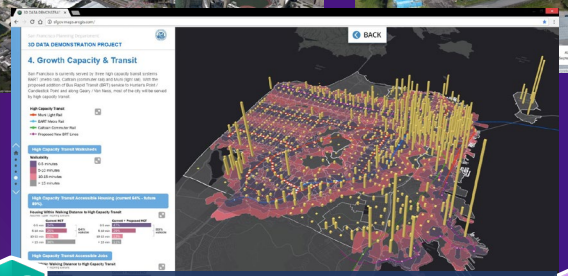




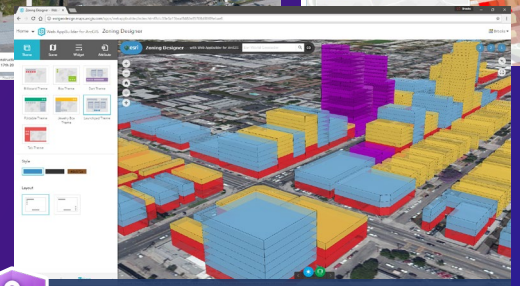




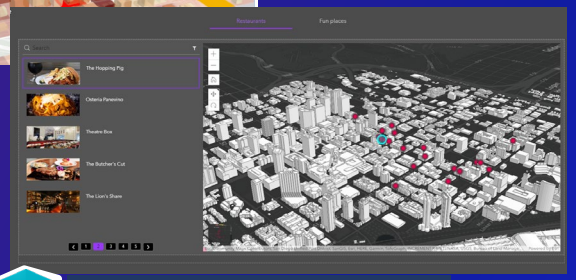
ArcGIS Earth



Storymaps



Web AppBuilder



Experience Builder

ArcGIS Earth	Easy-to-use 3D data exploration for Enterprise users
Scene Viewer	View 3D maps in any standard web browser
Web AppBuilder	Build powerful 3D GIS apps without writing a single line of code
App Templates	New! Instant App Template. Access Line of Sight
StoryMaps	Combine 3D maps with narrative text, images, and multimedia content
Experience Builder	Interact with 2D and 3D content through drag-and-drop widgets