



# Esri Web 3D Technology

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**Esri Developer  
Summit Europe**

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Park Plaza Riverbank London



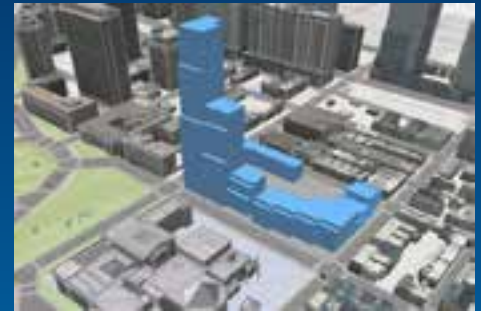
# Why 3D?



# ArcGIS 3D

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



# For what **use cases** are we developing Web3D?



## Story Telling in 3D

Industries: All (e.g. GeoDesign, urban planning)

Contents: 3D models, design scenarios, authored analyses etc **mashed up with surroundings** (e.g. terrain, buildings, 2D base maps)



## Situational Awareness in 3D

Industries: Public safety, defense & intelligence, ...

Contents: Visibility/spatial analysis tools for positional/lidar data **mashed up with 3D environment** (e.g. terrain, buildings)



## Monitoring & Tracking in 3D

Industries: Local Government, TODOGERT

Contents: Live location/tracking/event/sensor data **mashed up with 3D environment** (e.g. terrain, buildings)



## Search & Routing in 3D

Industries: All (e.g. logistics, TODOGERT)

Contents: Google Maps/Earth typical search and routing queries **put in 3D context** (e.g. terrain, buildings)

Demo

# City Engine Web Viewer

Current state

<http://www.arcgis.com/home/group.html?owner=CityEngine&title=CityEngine%20Web%20Scenes>



# Web Viewer for Developers



ArcScene  
10.2

Export

GP Tool



ArcGIS



WebViewer

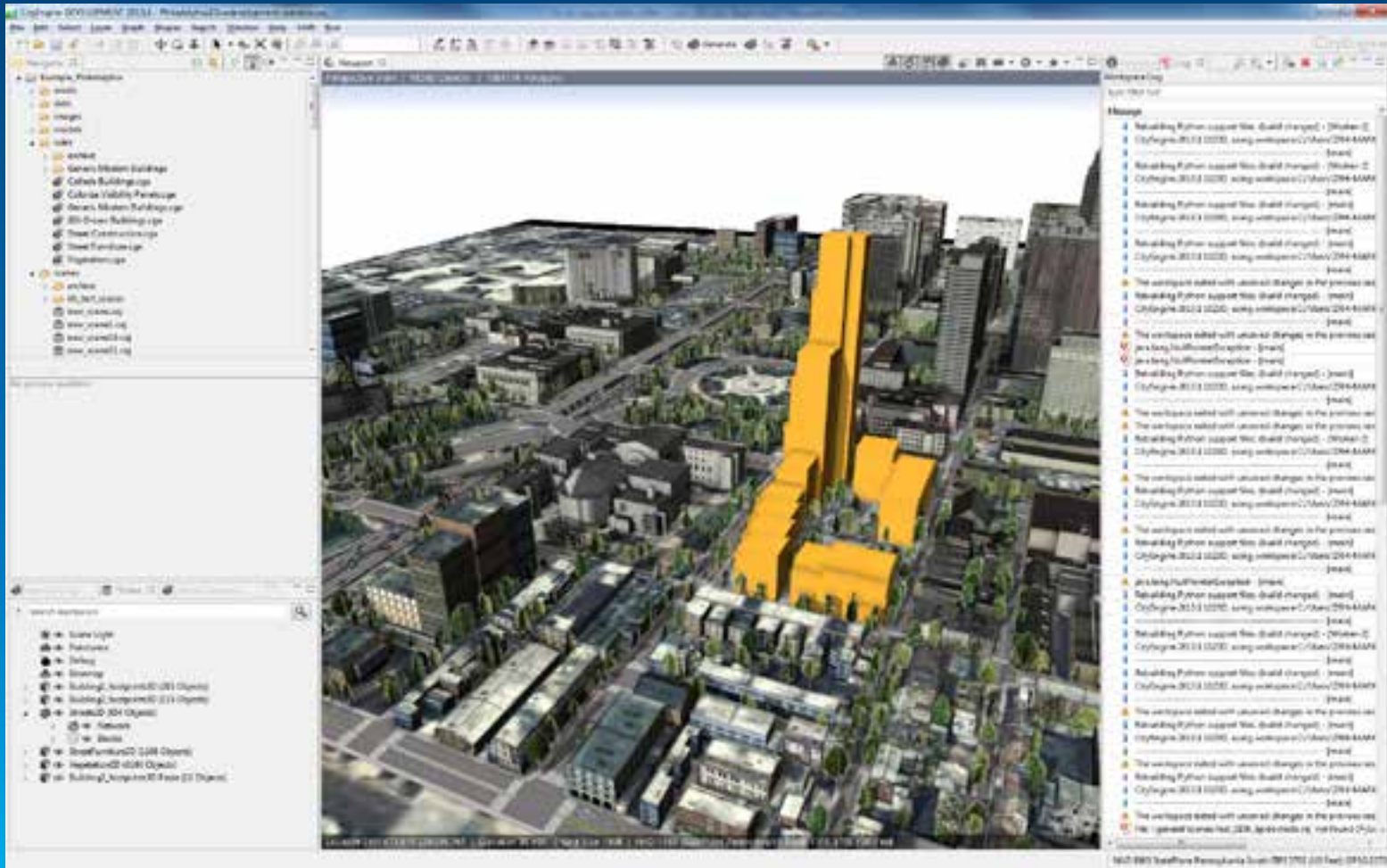


Scripting, GP Tools  
API's

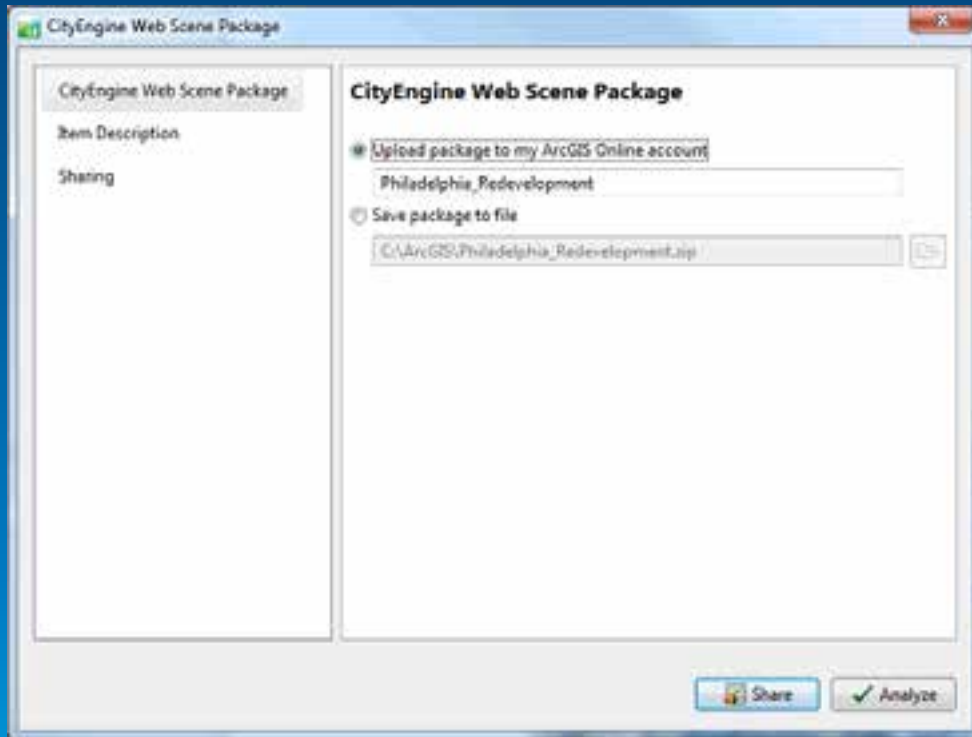
Currently NO 3D  
Javascript API



# Developing in CityEngine: Talk "Hacking Cities with CityEngine 2013"



# Export Workflow



CityEngine



ArcScene 10.2



# Scripting Web Viewer in the cloud - Status



ArcGIS

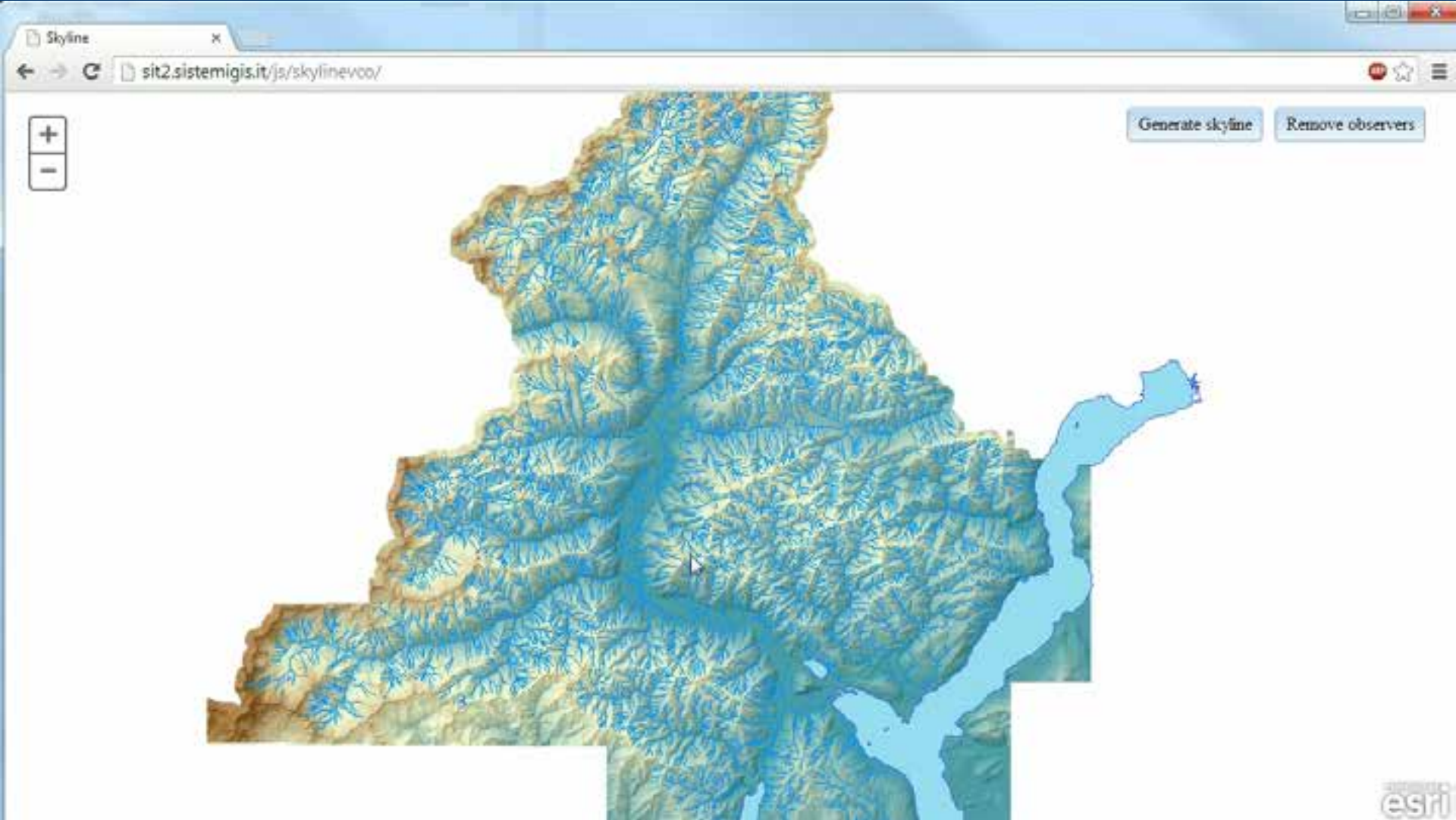
GP Tool



ArcGIS Server  
Object Extension

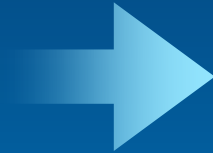


# Example Application



# Esri Web 3D Future

# Web Scene Viewer



Scene Server  
REST API



JavaScript 3D  
maps API

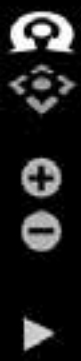


ArcGIS  
(Server  
& Portal)

Demo

# Web 3D Future











Demo

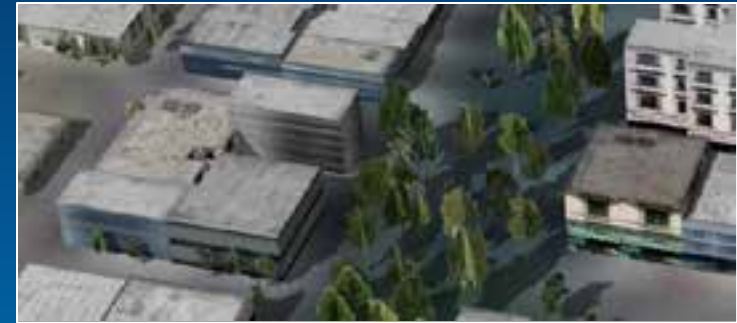
# Labeling Details



# Scene Server – Usage Scenarios



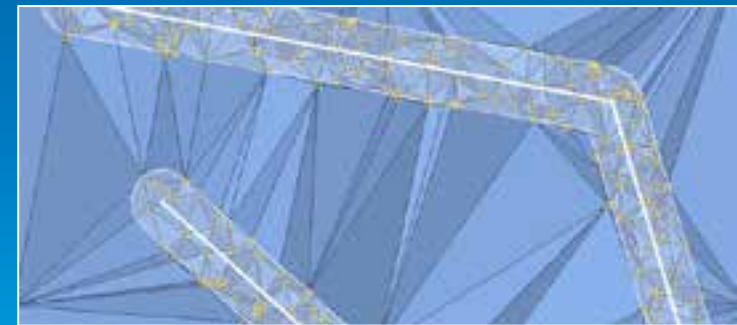
Global viewing of 2D/3D Content



Editing & Authoring



Feature overlays



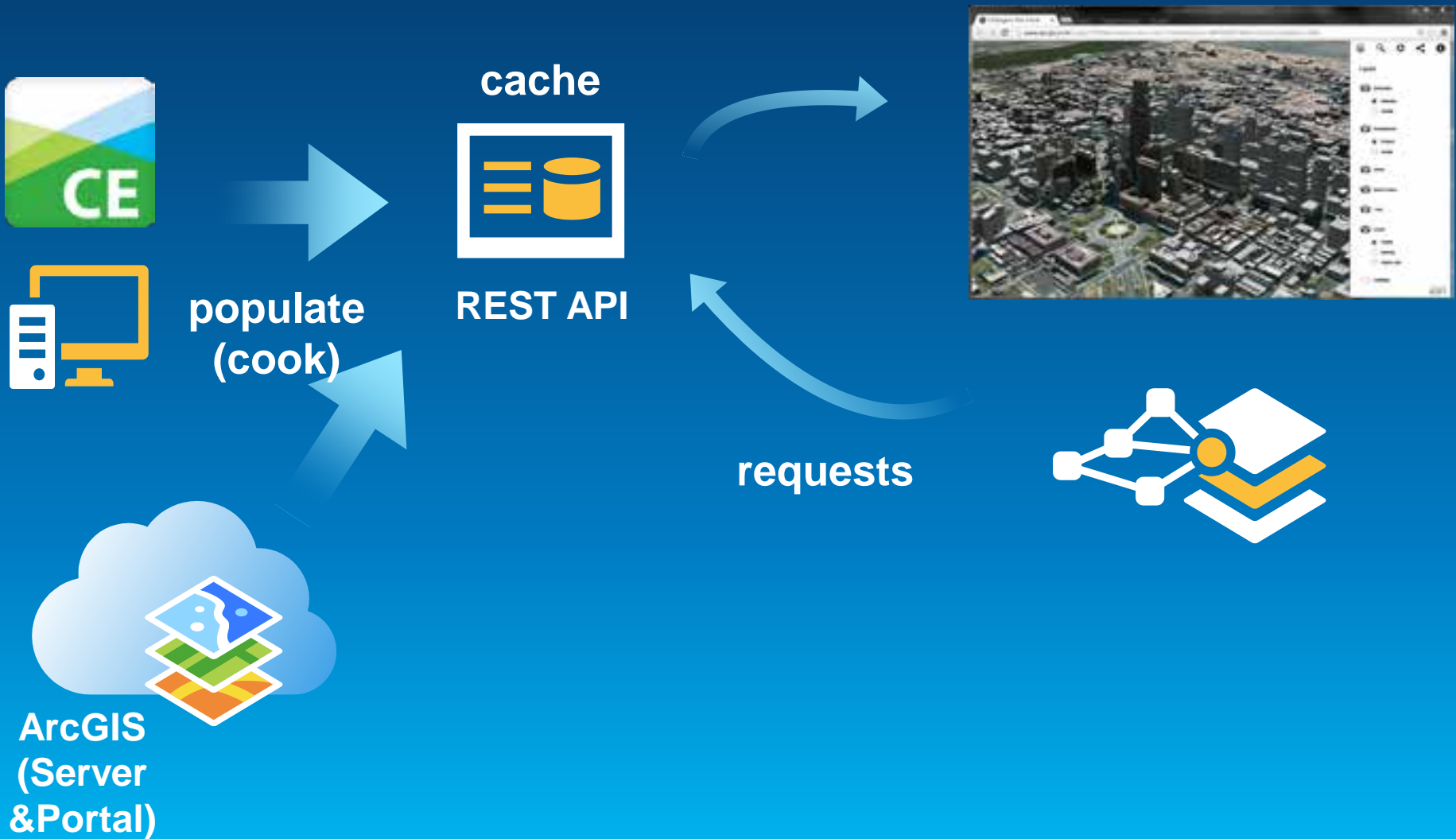
Feature fusion from multiple service instances

# Content Profiles (in development)

ID	Name ( <i>example</i> )	Display Type
1	Regular-spacing point array ( <i>Grid</i> )	Triangles
2	Pre-Triangulated irregular-spacing point array ( <i>TIN</i> )	Triangles
3	Integrated Mesh ( <i>Acute3D</i> )	Triangles
4	Individual Feature Mesh ( <i>Multipatch</i> )	Triangles
5	Point Cloud ( <i>LAS</i> )	Points
6	Point Features ( <i>GIS data</i> )	Points/Triangles
7	Line Features ( <i>GIS data</i> )	Lines/Triangles
8	Polygon Features ( <i>GIS data</i> )	Triangles



# Scene Server



# Rest Operations (in development)

## Base Service Profile

- **GetServiceInfo**
- **FindNode, GetNode, GetFeature**
- **SearchFeature**

## Transactional Service Profile

- **PostFeature**
- **PutFeature**
- **DeleteFeature**

All operations are available through a REST API:

GET <http://server/service/cachename/findNode?pos=x,y,z>

POST <http://server/service/cachename/> {FEATURE\_DATA}

# Rest Resources (in development)

- SceneServer

<http://.../rest/services/zurich/SceneServer>



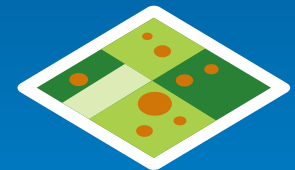
- Layer

</SceneServer/layers/Buildings>



- Node

</SceneServer/layers/Buildings/nodes/51>



- Features

</SceneServer/layers/Buildings/nodes/51/features/3>



# JavaScript 3D API (in development)

- Existing ArcGIS JavaScript API extended with 3D capabilities



## //API Example (parameters abbreviated)

```
map = new Map({3d: true});  
layer = new FeatureLayer(url);  
symbol = new SimpleMeshSymbol();  
symbol.style = SimpleMeshSymbol.Cylinder;  
layer.setRenderer(SimpleRenderer(symbol));  
map.addLayer(layer);  
  
map.addLayer(new SceneServiceLayer(url));
```

# Layer types: 3D Scene Service

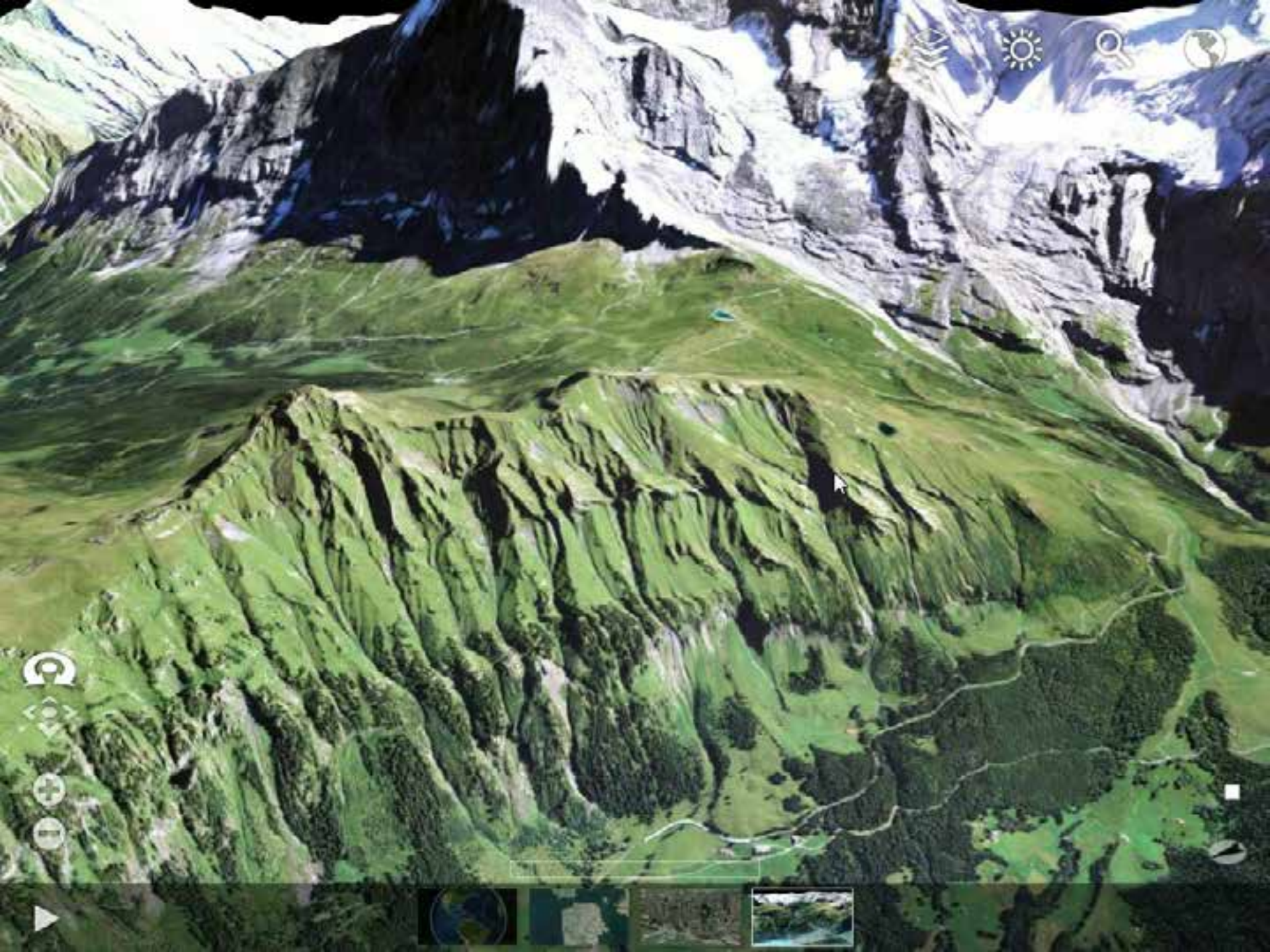




## Layer types: Elevation

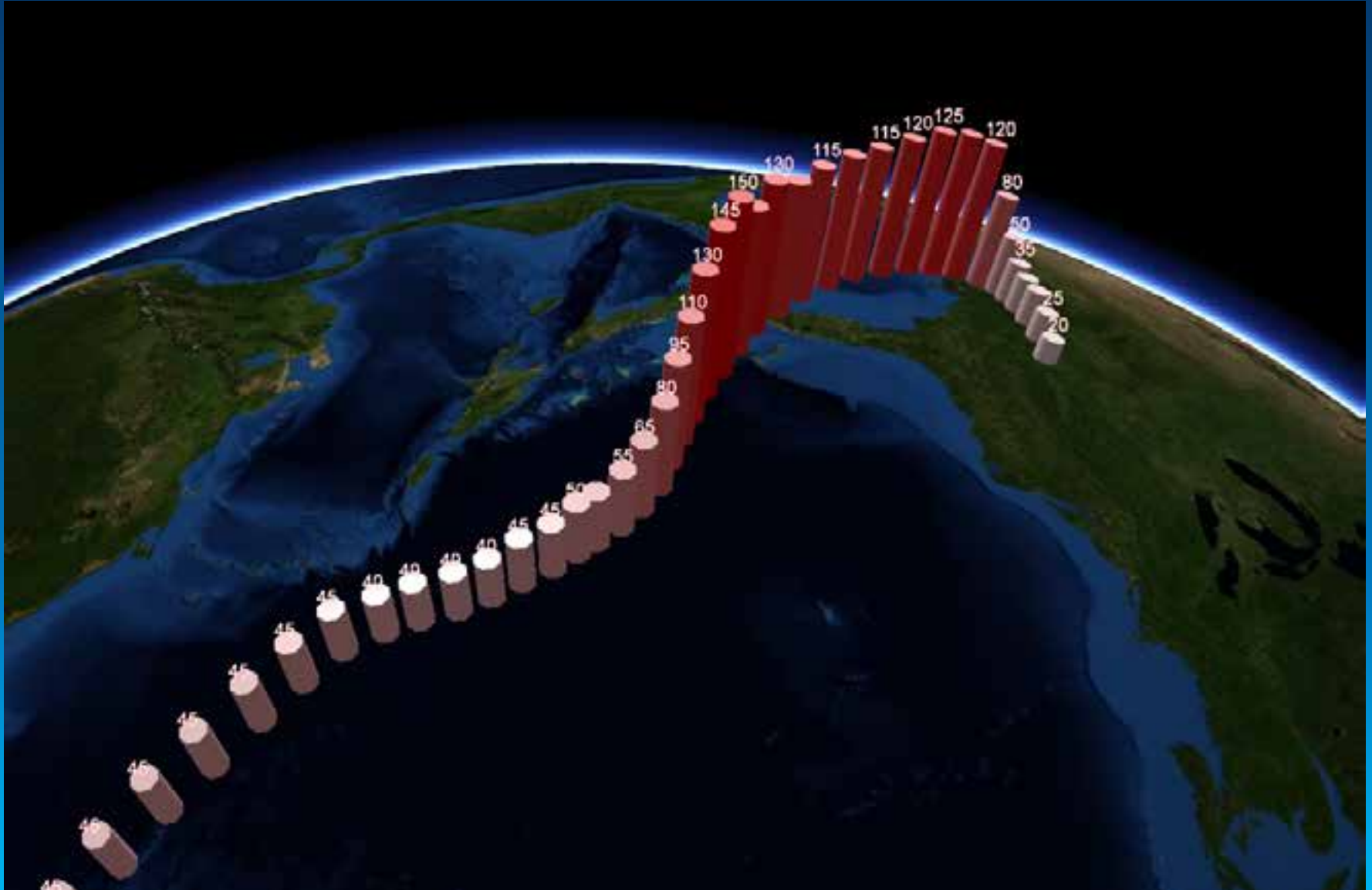




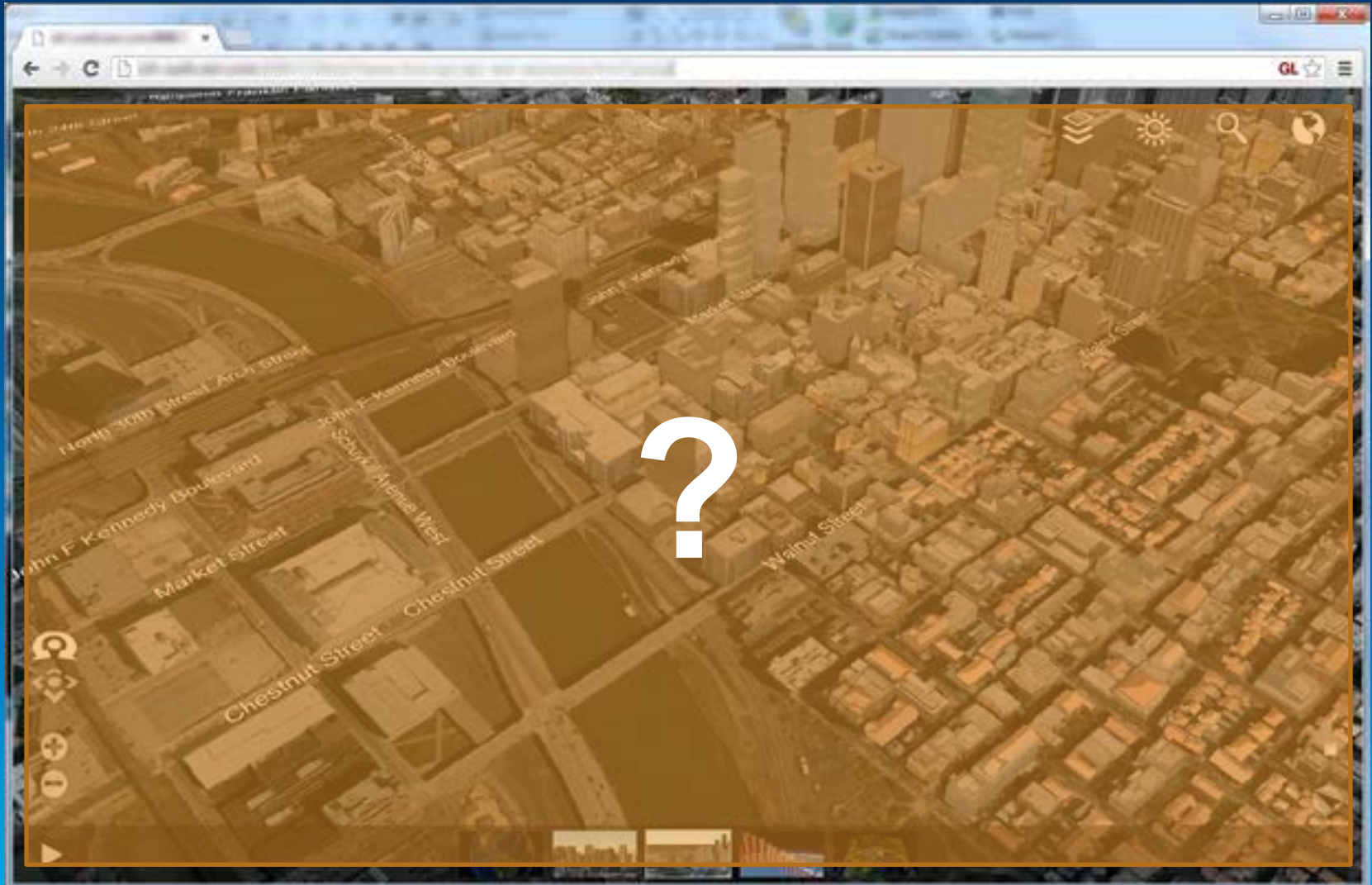




# Layer types: 3D Features with symbology



# Web scene viewer



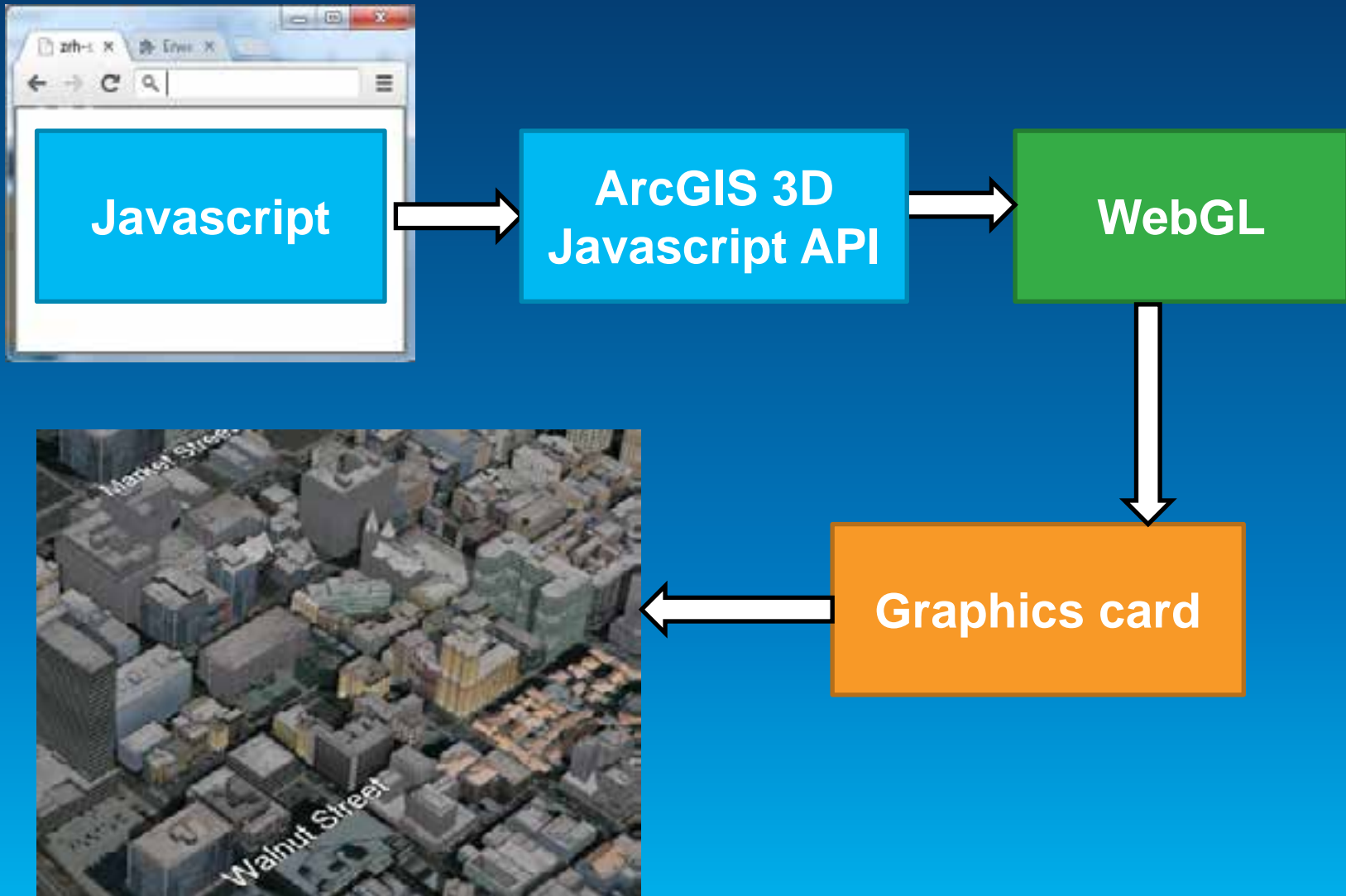




# WebGL



# Architecture

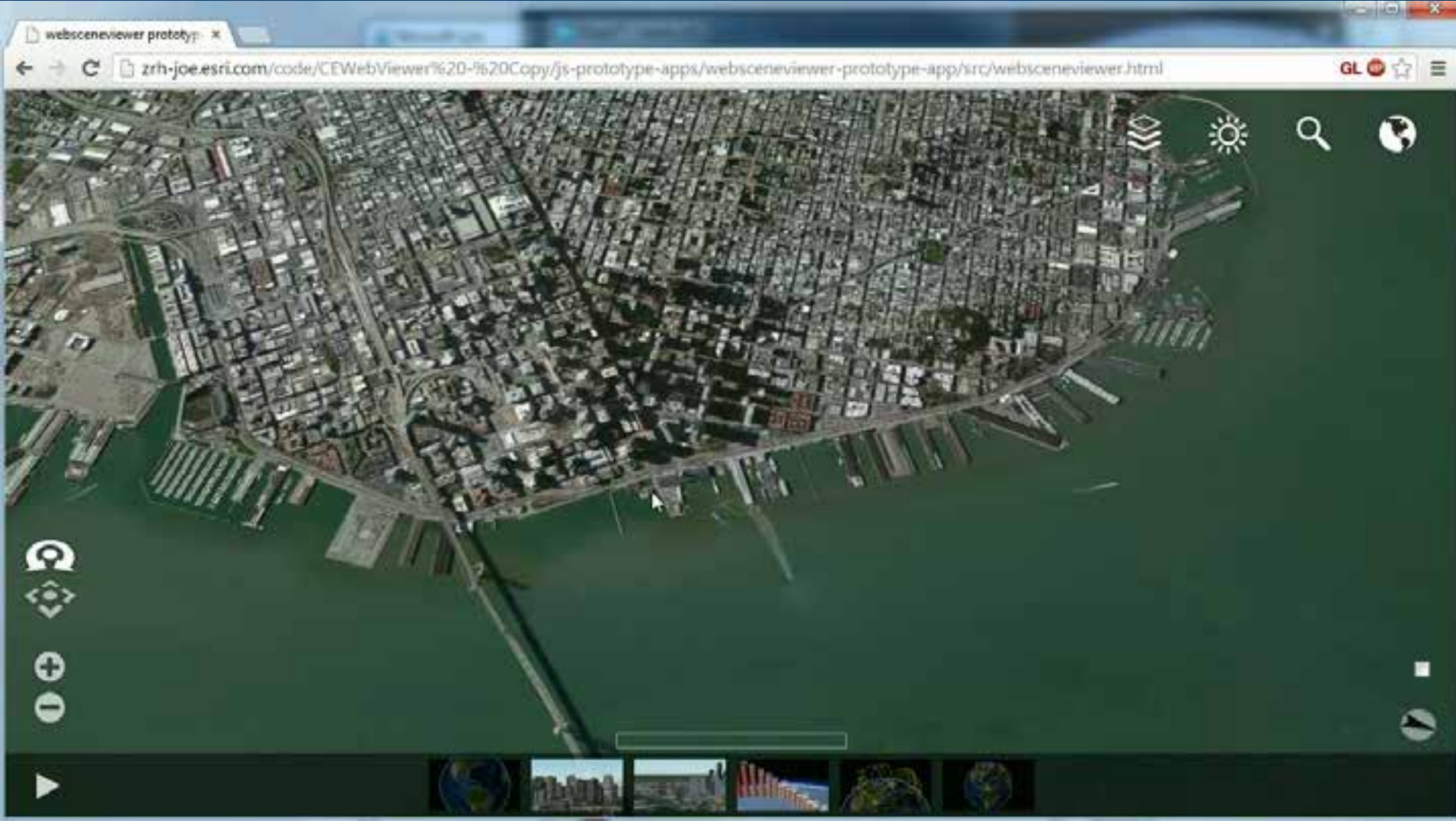


# Streaming input data





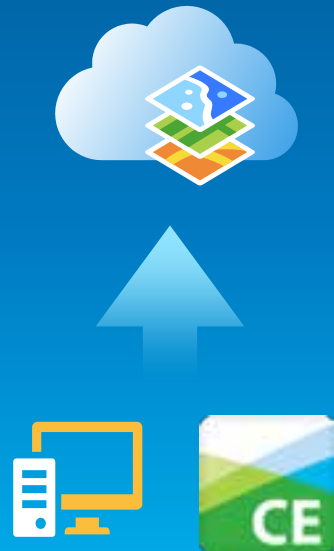
# Streaming input data



# Summary: Esri Web 3D great for Developers

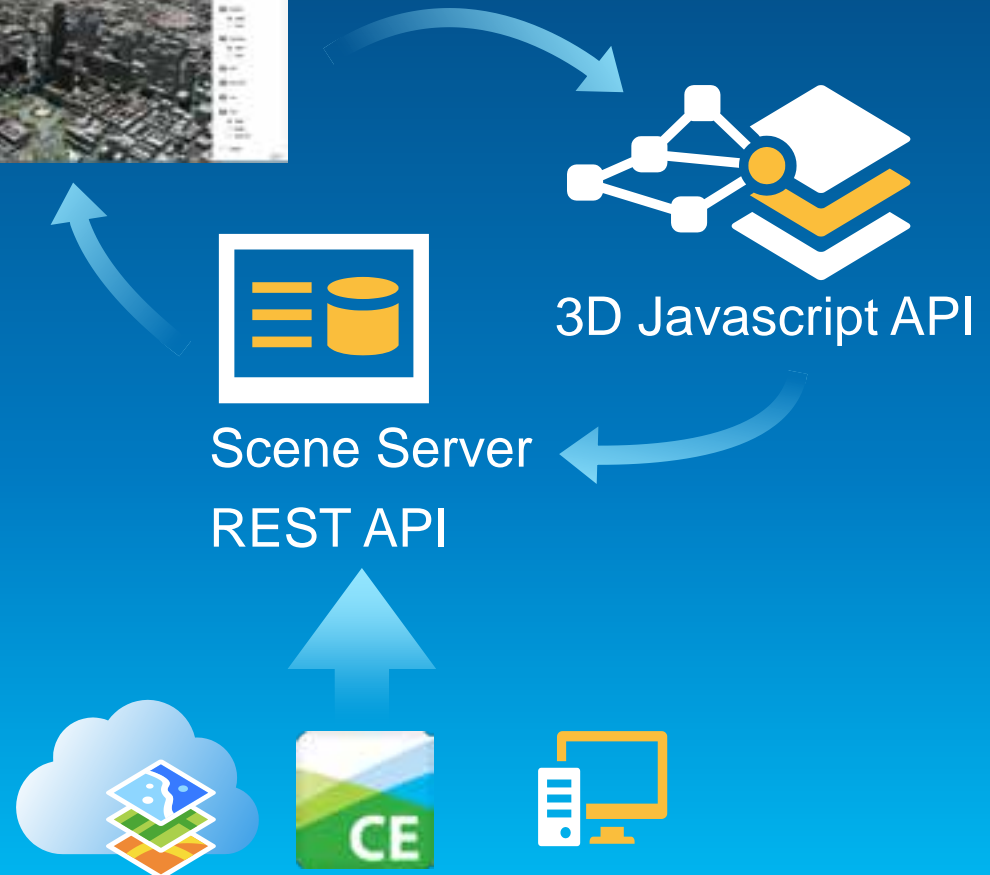
Now

CityEngine  
Web Viewer



*Future: online & on-premise solution for 3D*

Streaming Web Viewer





Understanding our world.