



Smart 3D City Web Apps with the ArcGIS API for JavaScript

Pascal Mueller, Michael Van den Bergh

Agenda

- Introduction to Smart 3D Cities – Pascal
- 3D JavaScript API Highlights – Pascal
- An Urban Planning Web App – Michael
 - Filtering
 - Edge Rendering
 - “Polygon” Drawing Tool
- Conclusion & Outlook - Michael

Smart 3D Cities

Motivation & Application



What is a Smart City?



Wikipedia article for "Smart city". The article title is "Smart city" and it is part of the "WIKIPEDIA The Free Encyclopedia". The article content is partially visible, showing the "Terminology" section with an "[edit]" link. The left sidebar contains navigation links such as "Main page", "Contents", "Featured content", "Current events", "Random article", "Donate to Wikipedia", "Wikipedia store", "Interaction", "Help", "About Wikipedia", "Community portal", "Recent changes", "Contact page", and "Tools".

Terminology [\[edit \]](#)

Due to the breadth of technologies that have been implemented under the smart city label, it is difficult to distill a precise definition of a smart city. Deakin and Al Wear^[24] list four factors that contribute to the definition of a smart city:

1. The application of a wide range of electronic and digital technologies to communities and cities
2. The use of ICT to transform life and working environments within the region
3. The embedding of such Information and Communications Technologies (ICTs) in government systems
4. The territorialisation of practices that brings ICTs and people together to enhance the innovation and knowledge that they offer.

Our User Base



Millions of Users

Organizations

1,200 National Government Agencies

11,500 States & Regional Agencies

30,800 Cities & Local Governments

32,000 Businesses

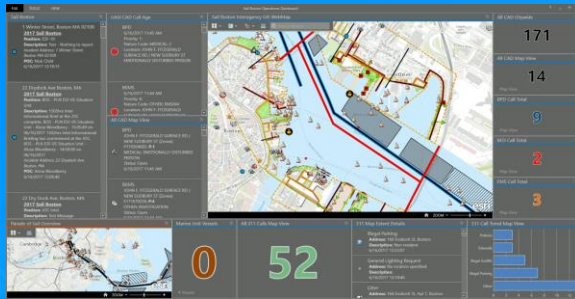
8,500 Utilities

12,600 NGOs

11,000 Colleges & Universities

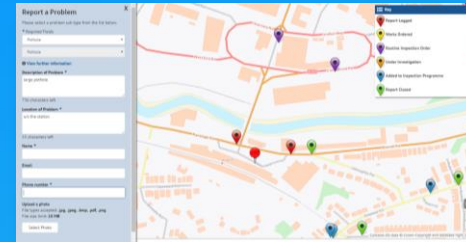
Monitoring

311 Dashboard



Massachusetts
Boston

Citizen Problem
Reporting



United Kingdom
Symology Ltd.

Public Transit



Washington

Real-Time
Parking Availability



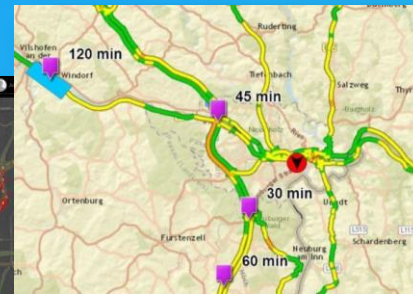
Alabama

Parking Capacity



North Dakota
Fargo

Traffic
Management



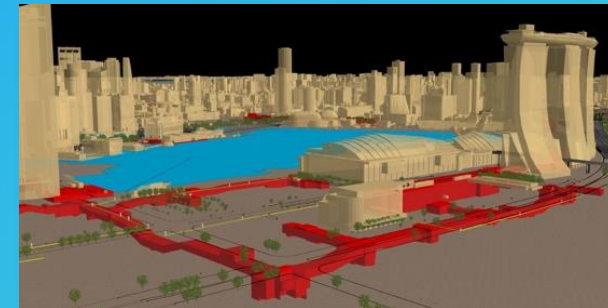
Germany

Traffic



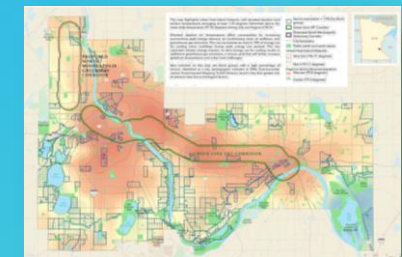
California
Caltrans

Underground
Network Planning



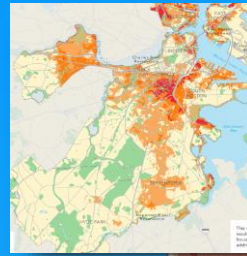
Singapore Land Authority

Urban Heat
Islands

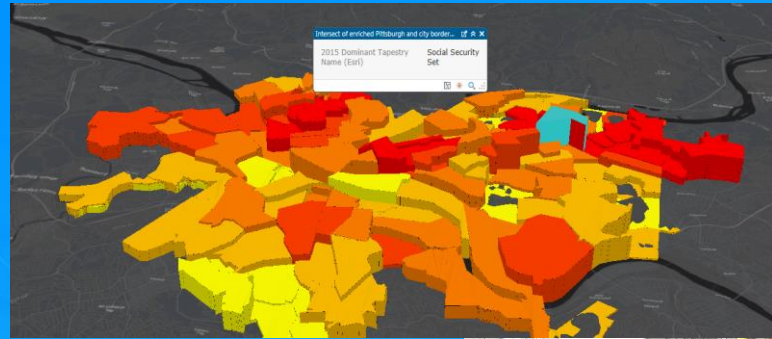


Minneapolis

Understanding

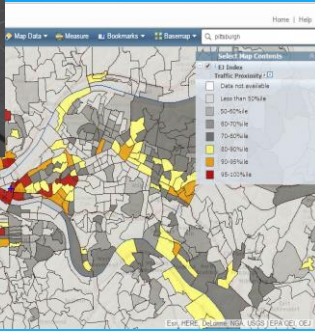


Pittsburgh

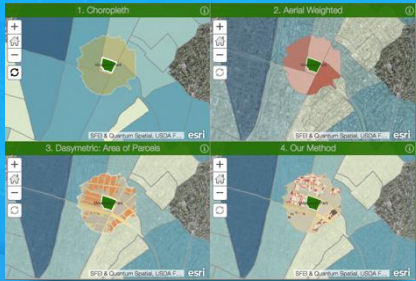


Income and % Minority

Traffic and Air Pollution



Population Modeling



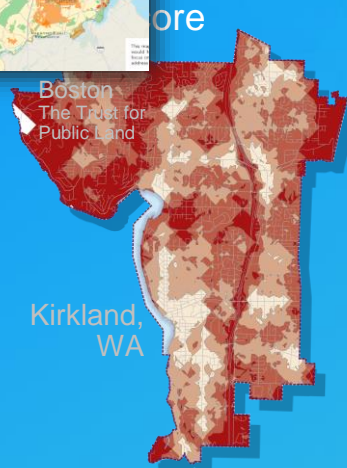
Oakland
Nic Jay Mapping



Green Infrastructure



New Jersey



Kirkland, WA

Boston
The Trust for
Public Land

Transit Stop Walk Times



UK
EGIS

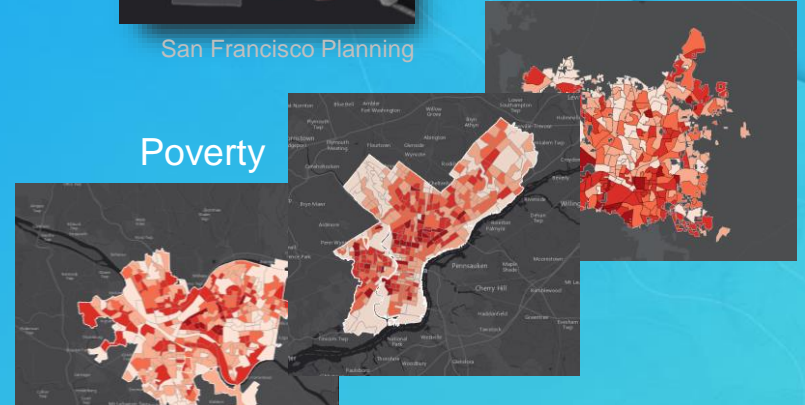
Walk to Bus Service



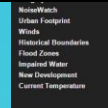
Michigan

San Francisco Planning

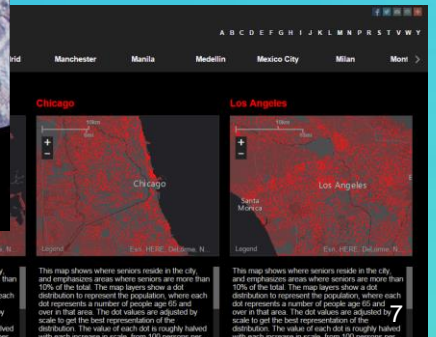
Poverty



Urban Observatory



This map shows where sensors reside in the city and employees across where sensors are more than 10% of the total. The map layers show a dot distribution to represent the population, where each dot represents a number of people age 65 and over in that area. The dot values are adjusted by scale to get the best representation of the distribution. The value of each dot is roughly halved with each increase in scale, from 100 persons per



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Planning

Urban Design



Gothenburg
Sweden



Abu Dhabi, UAE

City Visualization



Helsingborg
Sweden



District Revitalization



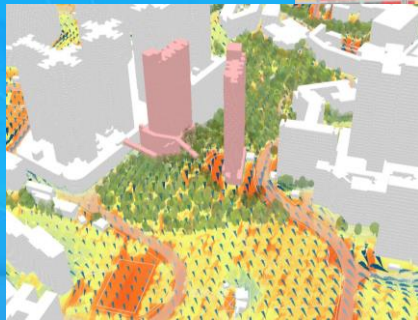
Oshkosh, Wisconsin
Houseal Lavinge Associates

Land Use Planning



Miami-Dade

Development Review

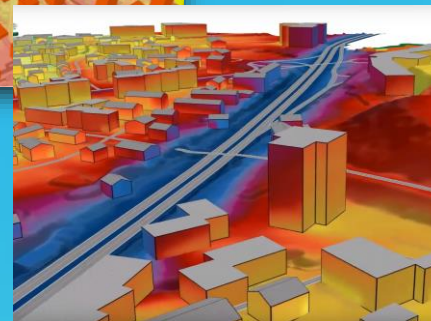


Hong Kong

Noise Simulation



n-Sphere AG
Switzerland



Comprehensive Planning



Outreach & Engagement

Public Service Information

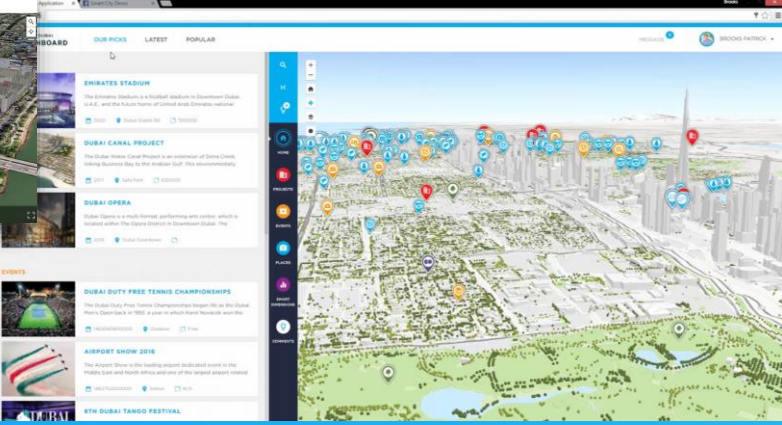
My Place Portal



China

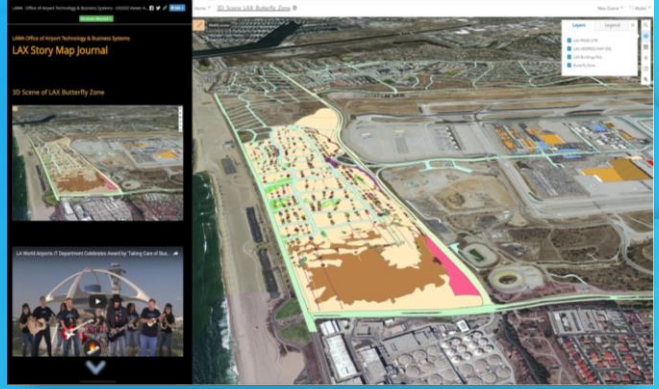
Illinois
Aurora

Smart City Dashboard



Dubai

Sensitive Habitats



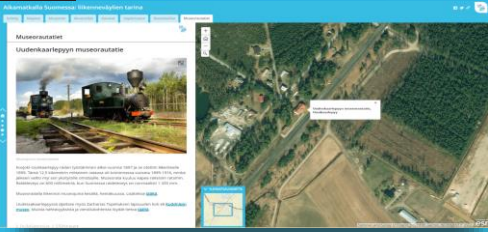
California
Los Angeles World Airports

Growth Capacity & Transit Planning



San Francisco

Transit Corridors



Finland

"Let's Plan Together"



New Zealand
Far North District Council

Historical Viewer



Virginia
Blue Raster

Take Away Messages

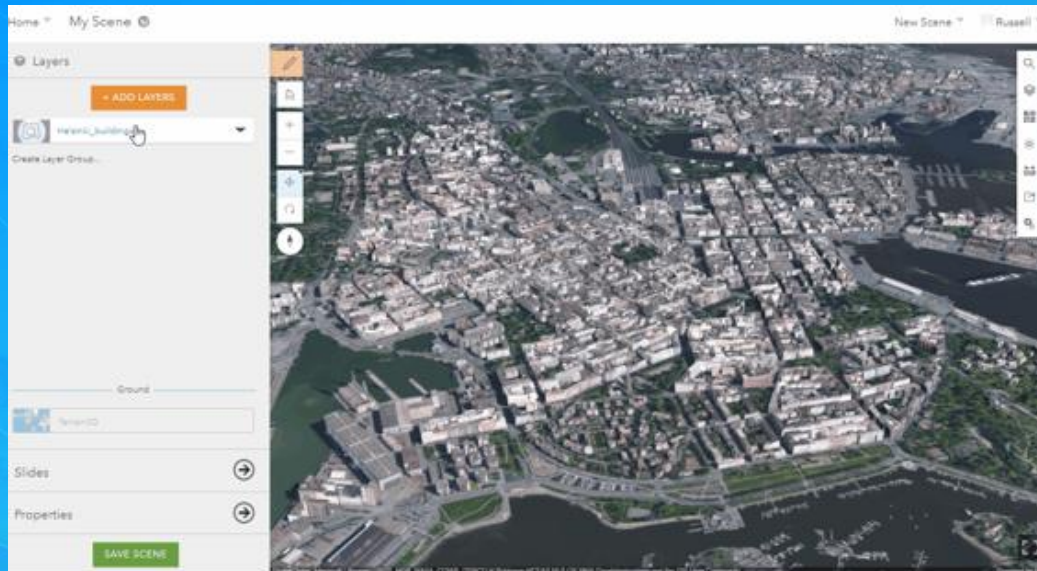
- Smart cities are implementing GIS-based solutions for both smarter maintenance and smarter development
- Smart cities are going 3D, especially for planning and engagement
 - 3D web API is required

ArcGIS API for JavaScript 4.x

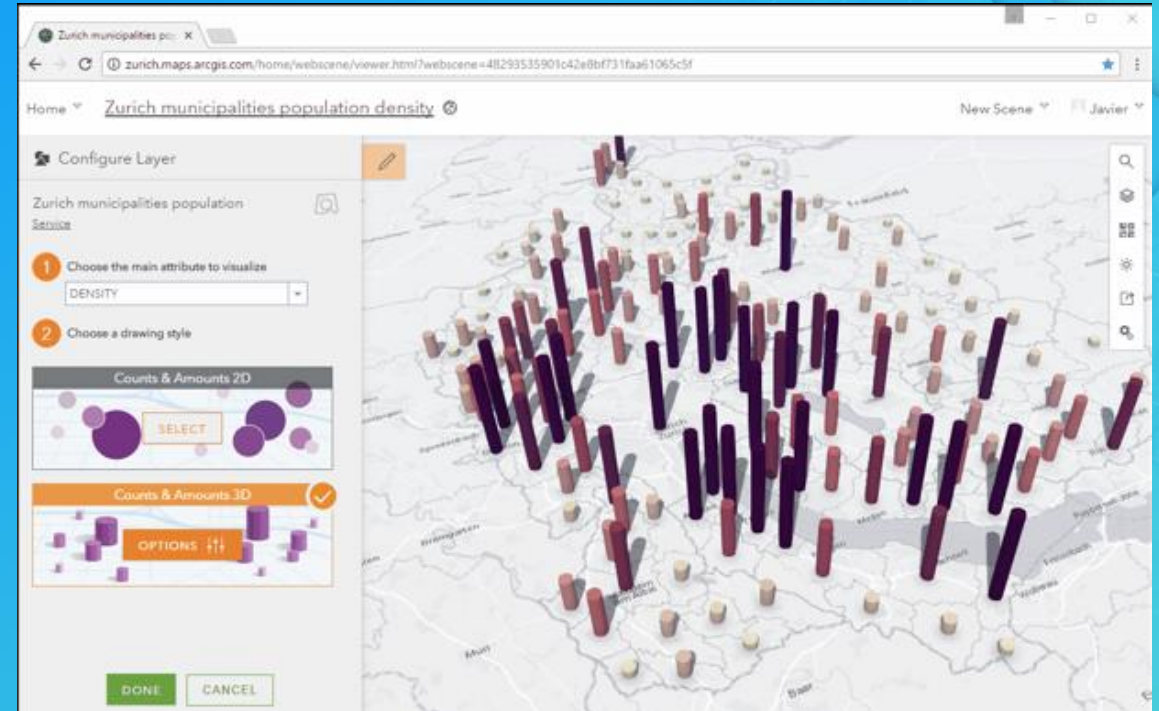
Relevant 3D Features



Smart Mapping

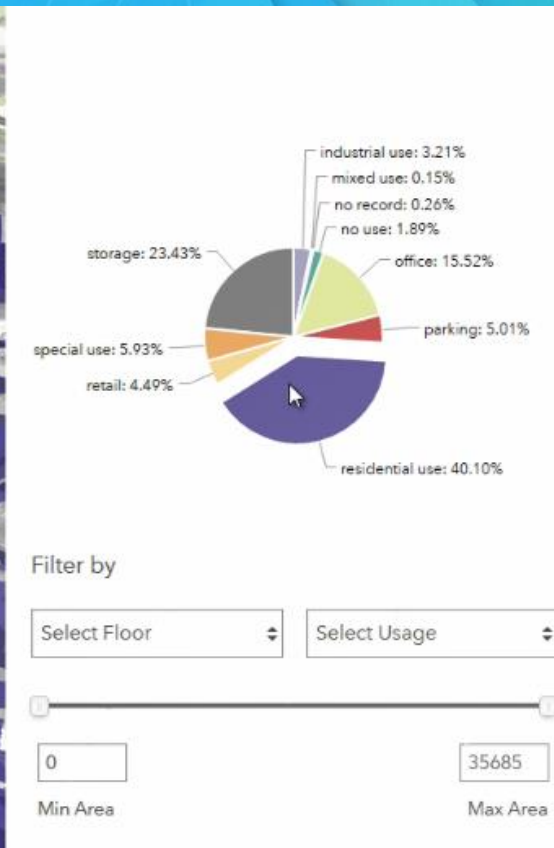
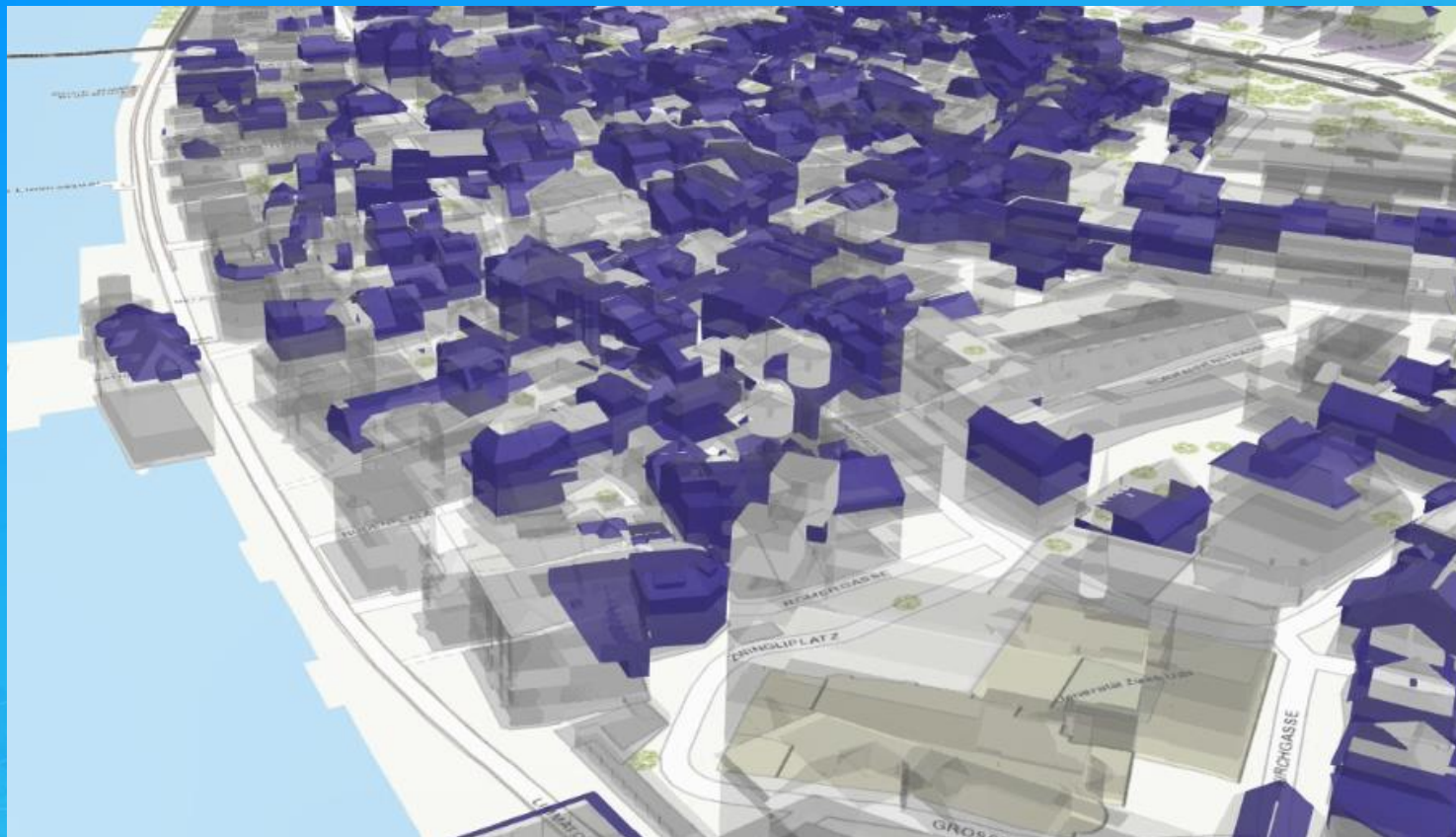


City of Helsinki



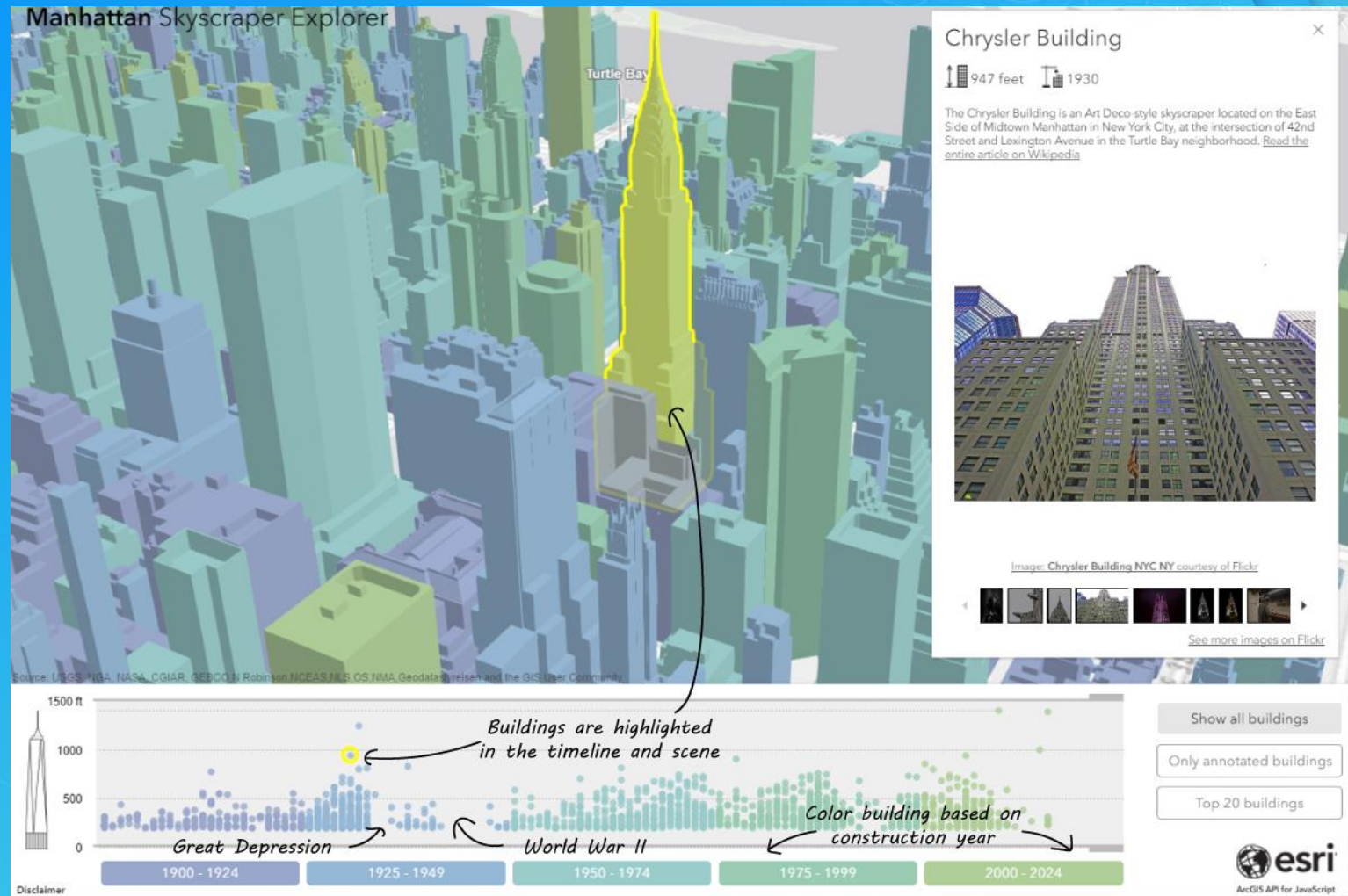
City of Zurich

Filtering & Querying

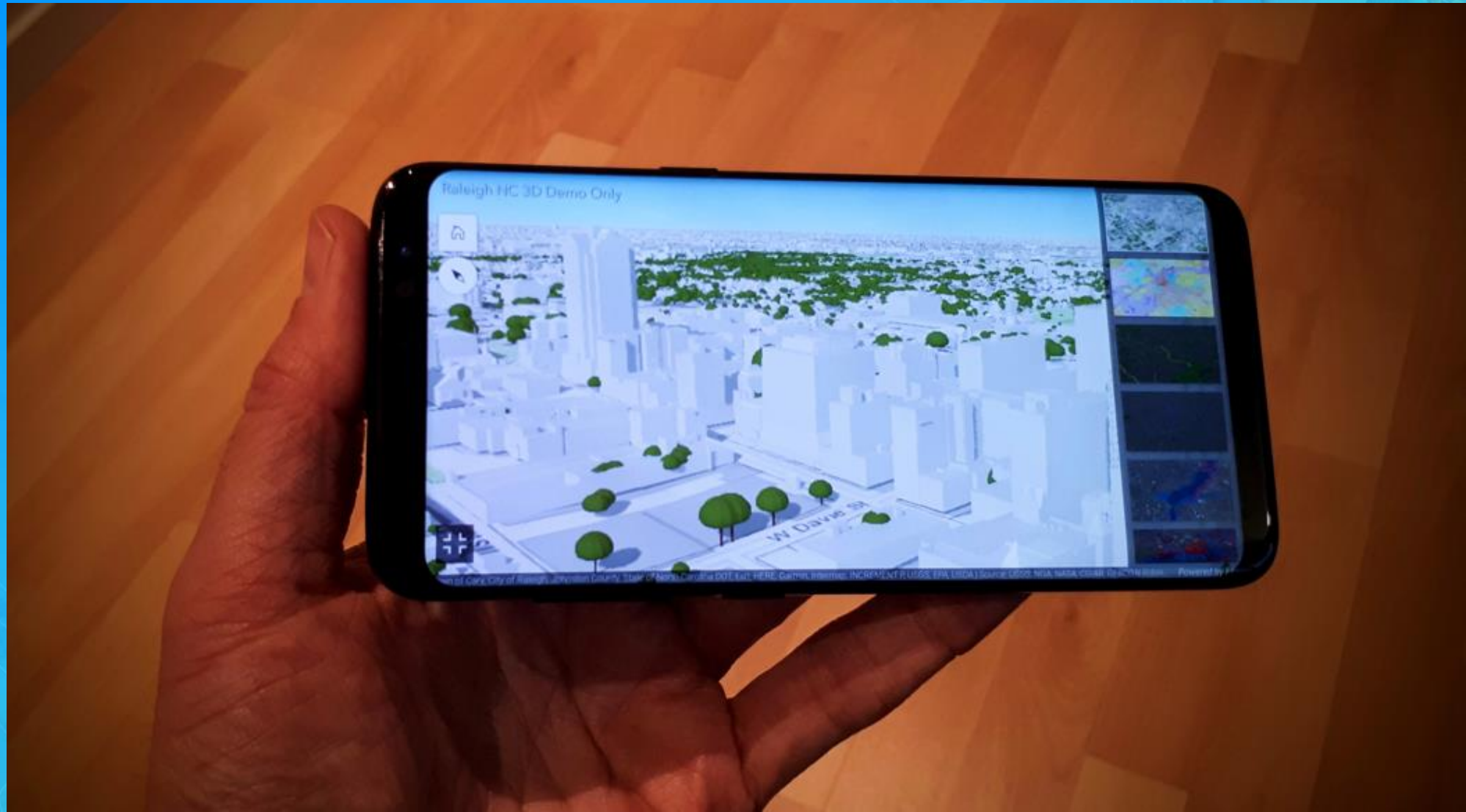


Overlays & Labeling

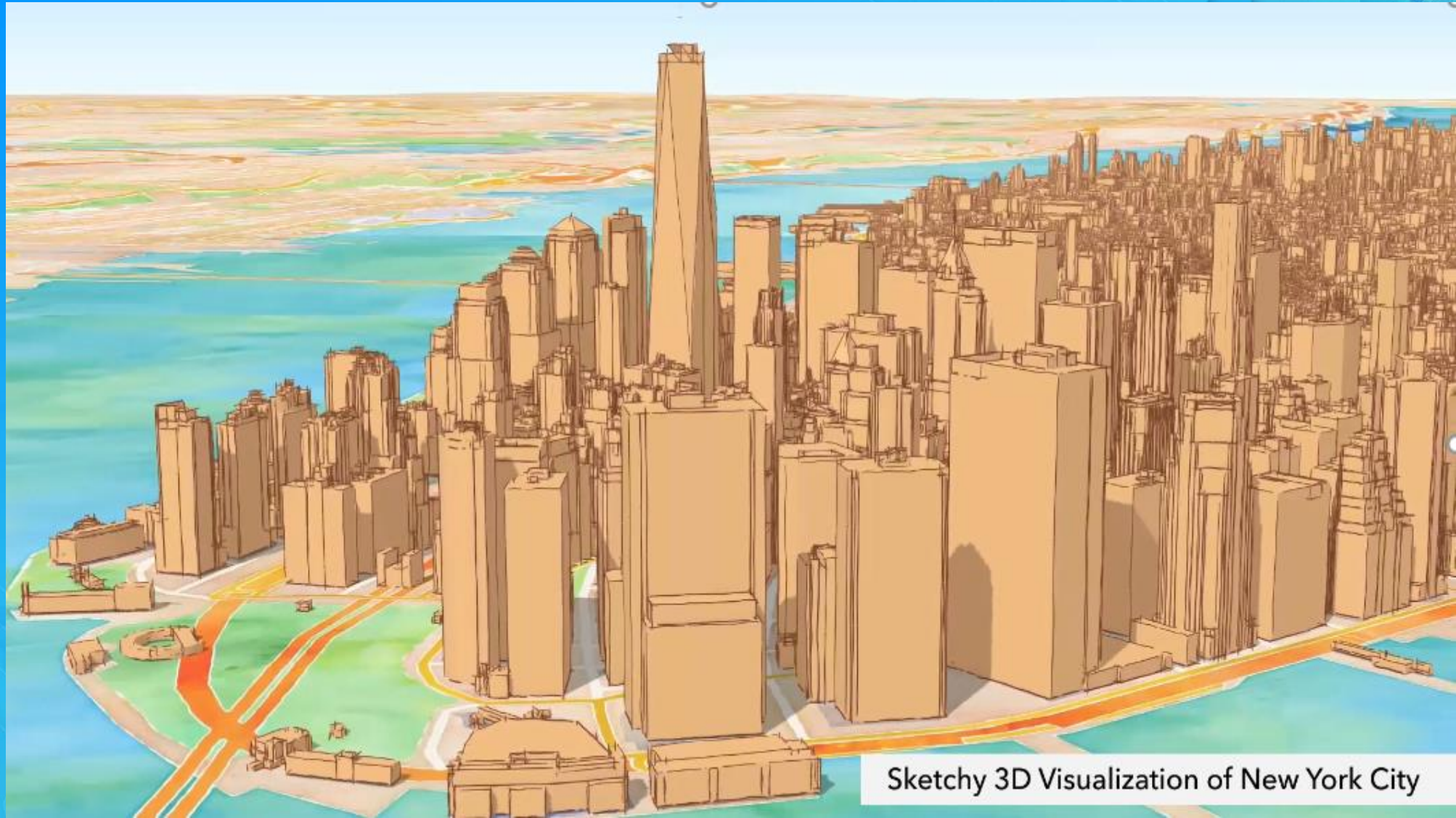
Skyscraper Explorer



Mobile Support



Edge Rendering



Sketchy 3D Visualization of New York City

Take Away Messages

- ArcGIS API for JavaScript 4.x integrates very well with existing GIS, especially Pro
- ArcGIS API for JavaScript 4.7 is snappy fast, supports mobile, and looks beautiful
 - 3D web API for planning & engagement apps



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THE
SCIENCE
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WHERE