



# ArcGIS Developer Subscription and Licensing

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2021 ESRI  
DEVELOPER SUMMIT

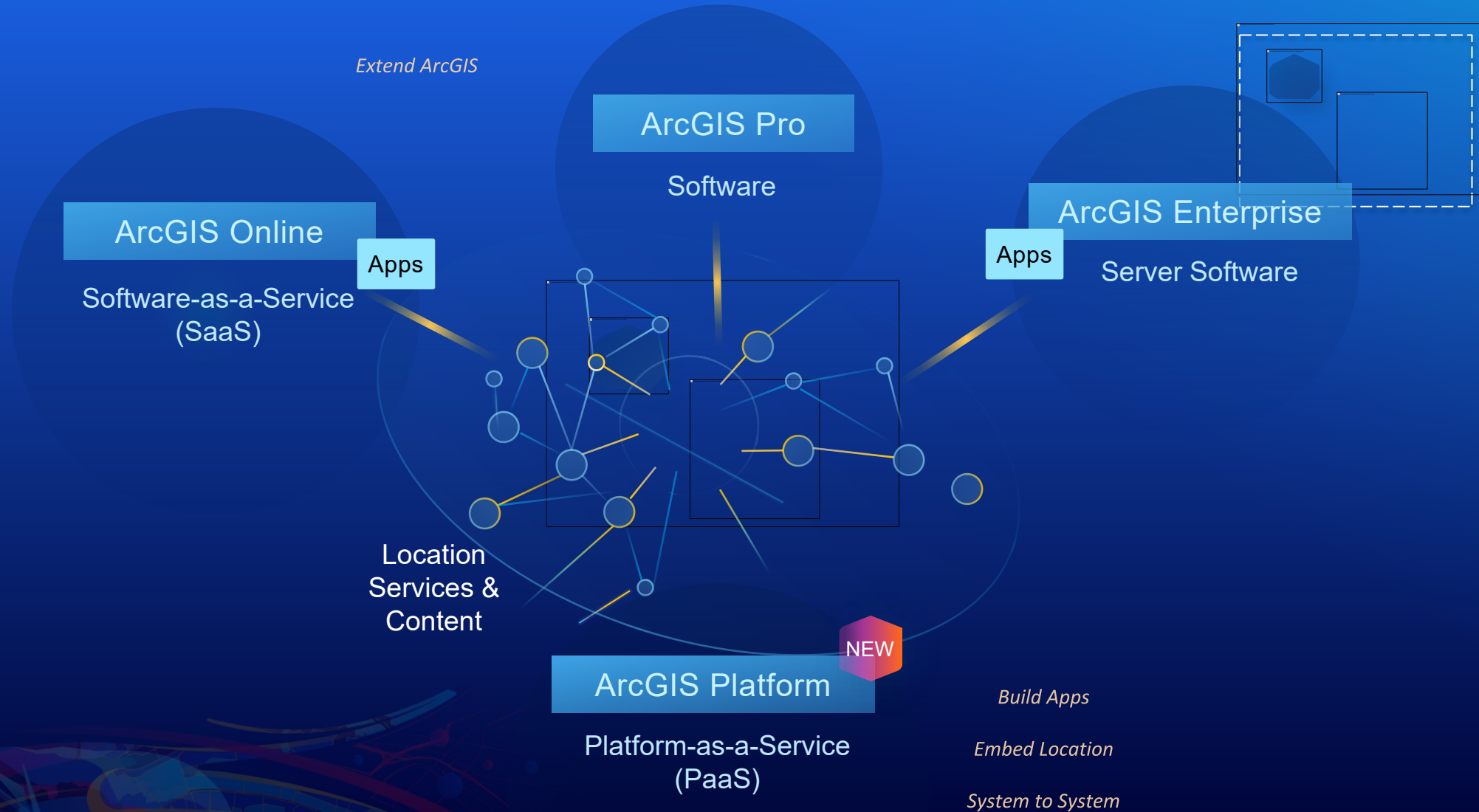
# Agenda

1. **ArcGIS System: A developers' perspective**
2. **Developing your solution: Tooling and software**
3. **Deploying your solution**

# ArcGIS System: A Developers Perspective

The background features a complex, abstract graphic design. It includes a stylized map of the United States in the upper left, a network of red and blue lines resembling a data flow or GIS network, and various geometric shapes and patterns in shades of blue, red, and yellow. The overall aesthetic is modern and technical, consistent with a developer's perspective on a GIS system.

# ArcGIS | A Developer's View



# ArcGIS Platform | A Location Platform-as-a-Service

## Developer Experience

Mapping APIs  
Open-Source Mapping Libraries  
Developer Resources

## Location Services

Content &  
Capabilities

## Business Model

Consumption-Based



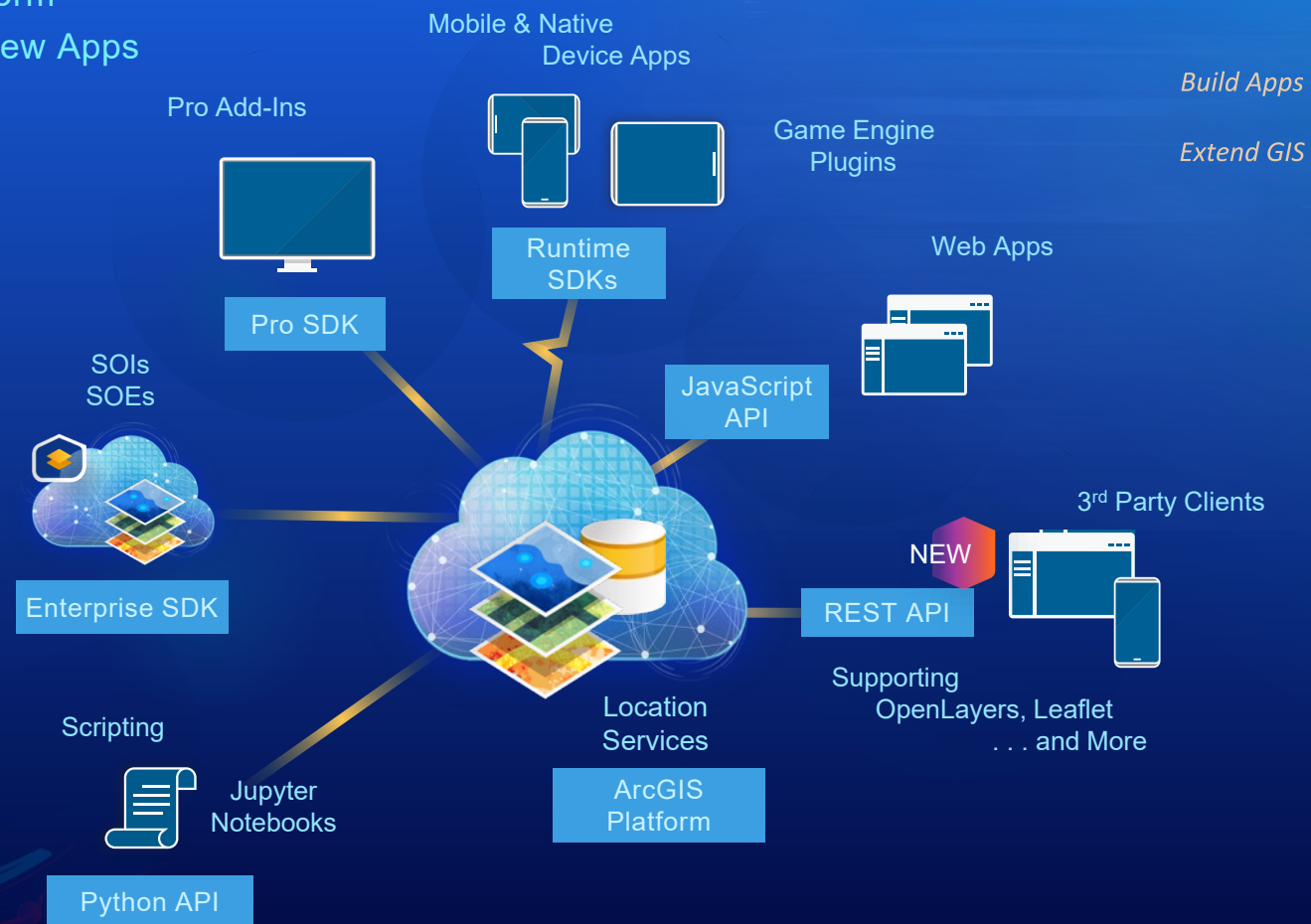
*An Intuitive Developer Experience  
for Accessing and Using ArcGIS Platform*

# ArcGIS A Developer's View

APIs & SDKs for Extending the Platform  
... and Creating New Apps

- New Developer Experience
- Usage Metrics
- Data Hosting Options

NEW



Bringing Powerful Spatial Tools and Location Services to All Developers

# Building Apps

## ArcGIS Client APIs

- ArcGIS REST API
- ArcGIS API for JavaScript
- ArcGIS Runtime APIs
- ArcGIS Maps SDK for Game Engines
- ArcGIS API for Python

- APIs architected to take full advantage of the Web GIS Pattern

## Open Source Client APIs

- ArcGIS Rest JS
- Leaflet
- Open Layers
- Mapbox GL JS
  
- ArcGIS services architected to work with Open Source APIs



*Build Apps*

*Embed Location*

*Extend ArcGIS*

# Web APIs and Native SDKs

The background features a vibrant, abstract digital graphic. It consists of various geometric shapes, including circles, lines, and polygons, in shades of blue, red, and yellow. The shapes are layered and overlapping, creating a sense of depth and movement. The overall aesthetic is modern and tech-oriented, typical of a presentation slide for a software-related topic.



# ArcGIS REST API

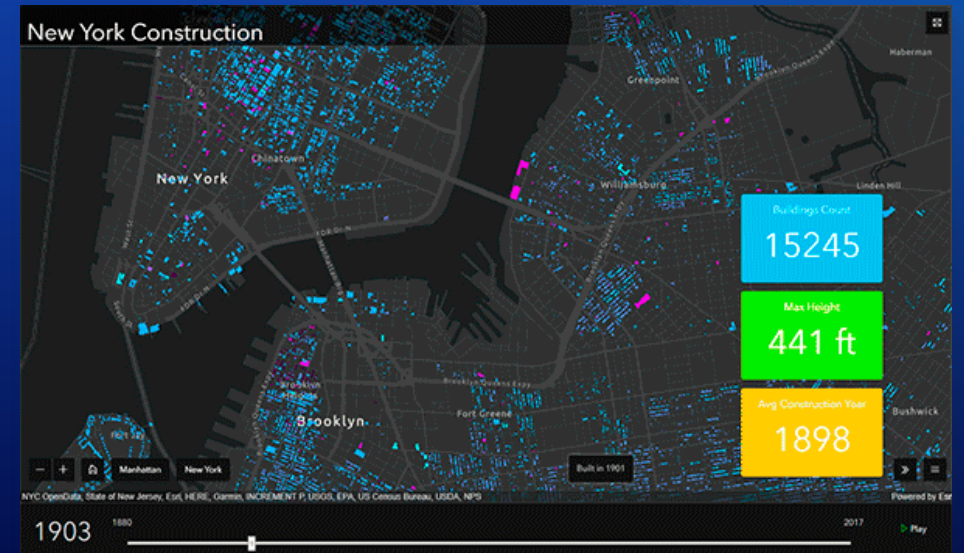
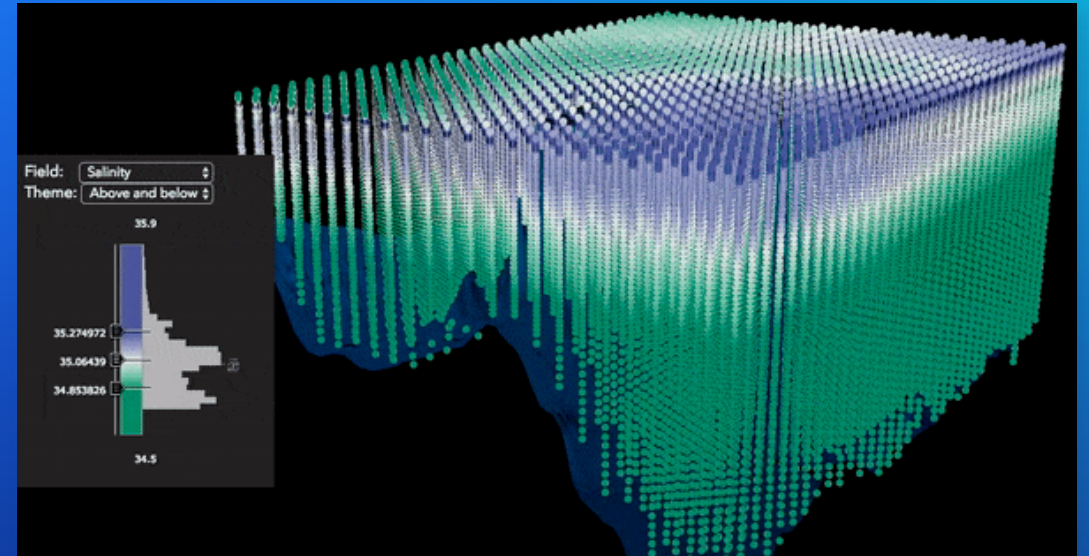
- ArcGIS Platform and ArcGIS Enterprise services are RESTful services
- Over 25 service types
- Grouped into 4 sub categories
  - Location based services
  - GIS services
  - Users, groups and items services
  - Enterprise administration services
- Higher level APIs wrap these REST services
  - Simplifies development
    - Presents capability in a more familiar environment
  - The underlying REST service can still be access directly if required



# ArcGIS API for JavaScript

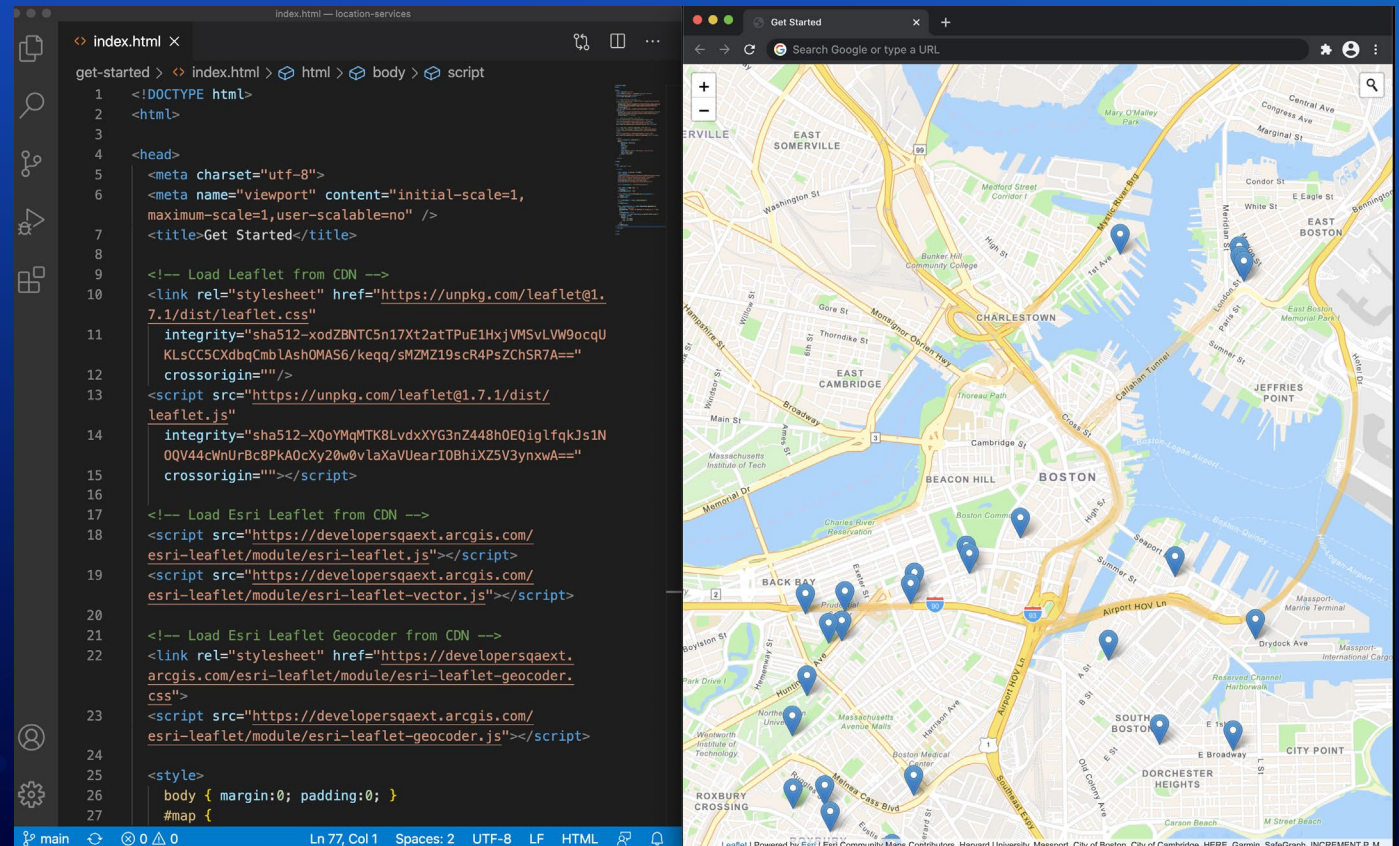
- A modern JavaScript API for Web GIS
- Supports 2D and 3D visualizations
- Mobile-first design
- Data-driven visualization
  - Turn data into information
  - Smart Mapping
- Client-side engine
  - Geometry, projection, queries

*Supports Elegant and Engaging User Experiences*



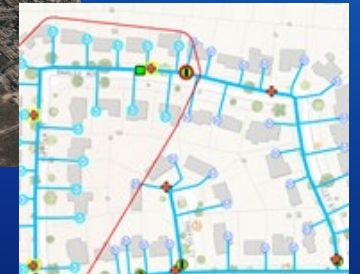
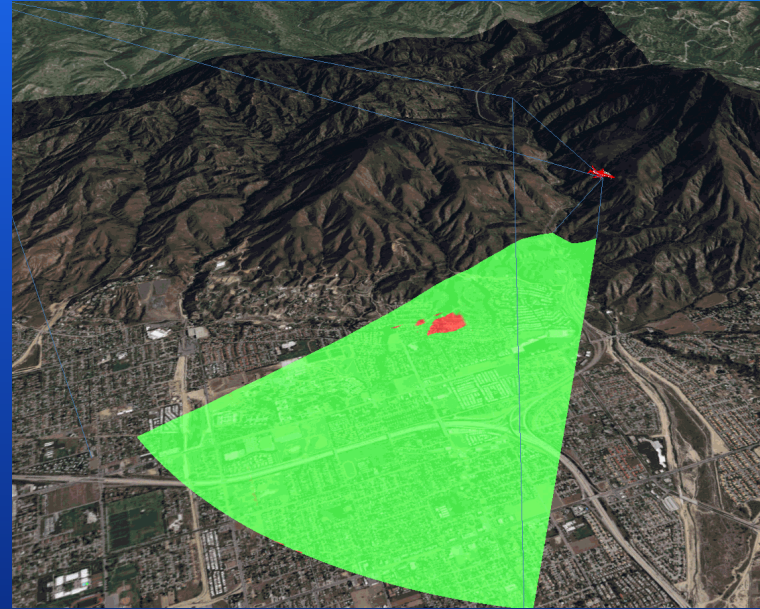
# Open Source Web APIs

- Several open source APIs are supported
- Esri
  - Esri Leaflet
  - ArcGIS Rest JS
- Third Party
  - Open Layers
  - Mapbox GL JS



# ArcGIS Runtime SDKs

- Native application development
- Advanced Cartography
- Excellent client to your web GIS
- Work Offline
- Cross-Platform and Cross-Device
- Distribute to App Stores



# ArcGIS Maps SDK for Game Engines

- ArcGIS Maps SDK for Unity
- ArcGIS Maps SDK for Unreal Engine
- Deliver as plugins
- APIs to access ArcGIS services and local data
- Support local and global (open world) 3D experiences
- Honor real world, geographic coordinate space
- Include SDK resources



# Scripting APIs

The background features a vibrant, abstract composition. On the left side, there are several overlapping, semi-transparent shapes in shades of blue, red, and yellow. These shapes include a stylized globe, a grid of small squares, and various curved lines and bands. The overall aesthetic is modern and digital, with a strong emphasis on geometric forms and a rich color palette. The text 'Scripting APIs' is centered in the upper half of the image, rendered in a clean, white, sans-serif font.

# ArcGIS Python API

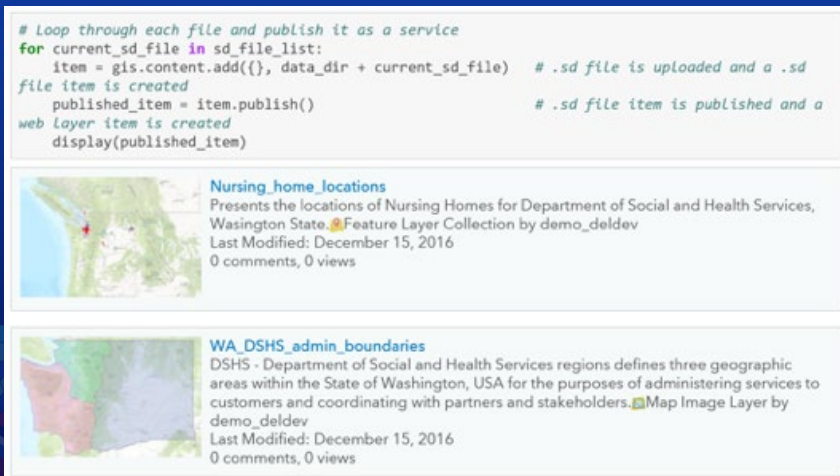
A Whole New Way to Experience and Leverage ArcGIS

- Analytics - Data Science
- Scripting and Automation
- System Administration

## Command Line

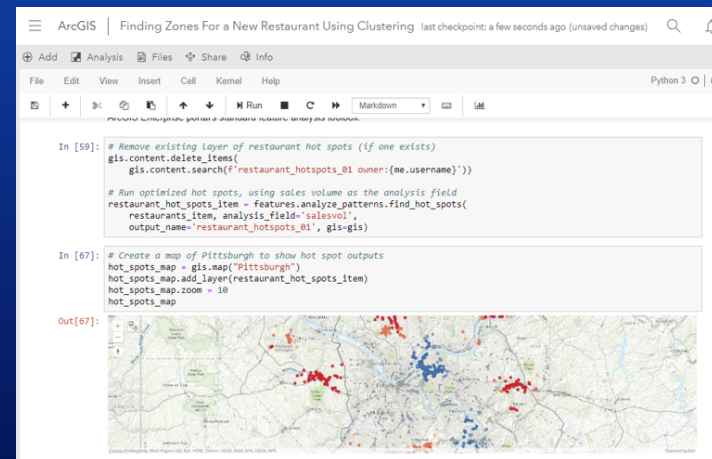
```
Administrator: Anaconda Prompt - python
Python 3.6.0 [Anaconda 4.3.0 (64-bit)] (default, Dec 23 2016, 11:57:41) [MSC v.1900 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> from arcgis.gis import GIS
>>> my_gis = GIS()
>>> my_gis.properties
{
  "analysislayersGroupQuery": "title:\\Living Atlas Analysis Layers\\ AND owner:esri",
  "basemapGalleryGroupQuery": "title:\\United States Basemaps\\ AND owner:Esri_cy_US",
  "colorSetsGroupQuery": "title:\\Esri colors\\ AND owner:esri_en",
  "customBaseUrl": "maps.arcgis.com",
  "defaultBasemap": {
    "baseMapLayers": [
      {
        "url": "https://services.arcgisonline.com/ArcGIS/rest/services/World_Topo_Map/MapServer",
        "layerType": "ArcGISFileMapServiceLayer",
        "resourceInfo": {
          "currentVersion": 10.3,
          "serviceDescription": "This map is designed to be used as a basemap by GIS professionals and as a reference
p by anyone. The map includes administrative boundaries, cities, water features, physiographic features, parks, landma
```

```
# Loop through each file and publish it as a service
for current_sd_file in sd_file_list:
    item = gis.content.add({}, data_dir + current_sd_file) # .sd file is uploaded and a .sd
file item is created
    published_item = item.publish() # .sd file item is published and a
web layer item is created
    display(published_item)
```



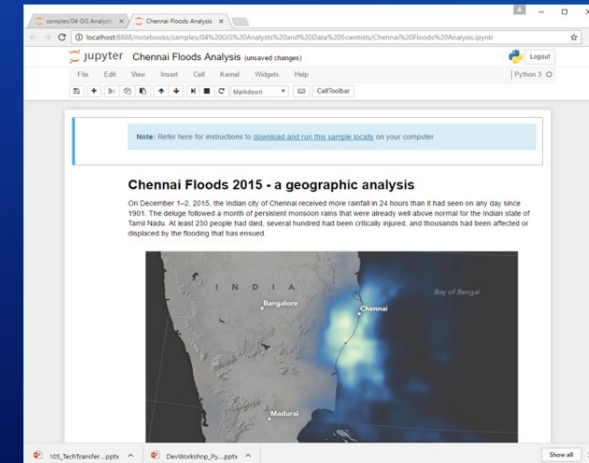
The screenshot shows two ArcGIS Online feature layer collections. The first is 'Nursing\_home\_locations', which presents the locations of nursing homes for the Department of Social and Health Services in Washington State. The second is 'WA\_DSHS\_admin\_boundaries', which defines three geographic areas within the state of Washington for administrative purposes.

Scripts



The screenshot shows an ArcGIS Notebook with two input cells. The first cell contains code to delete an existing layer and create a new one. The second cell contains code to analyze restaurant hot spots in Pittsburgh. The output shows a map of Pittsburgh with red and blue hot spots overlaid on a street map.

ArcGIS  
Notebooks



The screenshot shows a Jupyter Notebook with a text cell and a map. The text cell describes the Chennai floods of 2015, noting that the city received more rainfall in 24 hours than it had seen on any day since 1951. The map shows the location of Chennai, India, with a blue glow indicating the flood area.

Jupyter  
Notebooks

# Extension SDKs

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# ArcGIS Extending SDKs

- **Extension SDKs allow developers to customize ArcGIS for their specific workflows**
- **SDKs are designed and built specifically for this purpose**
- **ArcGIS Pro SDK for .NET**
- **ArcGIS Enterprise SDK**

# ArcGIS Pro

## Customizing and Extending ArcGIS Pro

- Configure UI through settings and workflows through tasks
- Automate using geoprocessing and Python
- Extend with your own custom tools and solutions using the Pro SDK for Microsoft .NET

The collage illustrates various ways to customize and extend ArcGIS Pro:

- Microsoft .NET:** A screenshot of the Bing Streetside Viewer interface with a custom tool overlay.
- Python:** A Python script snippet for a Buffer tool:

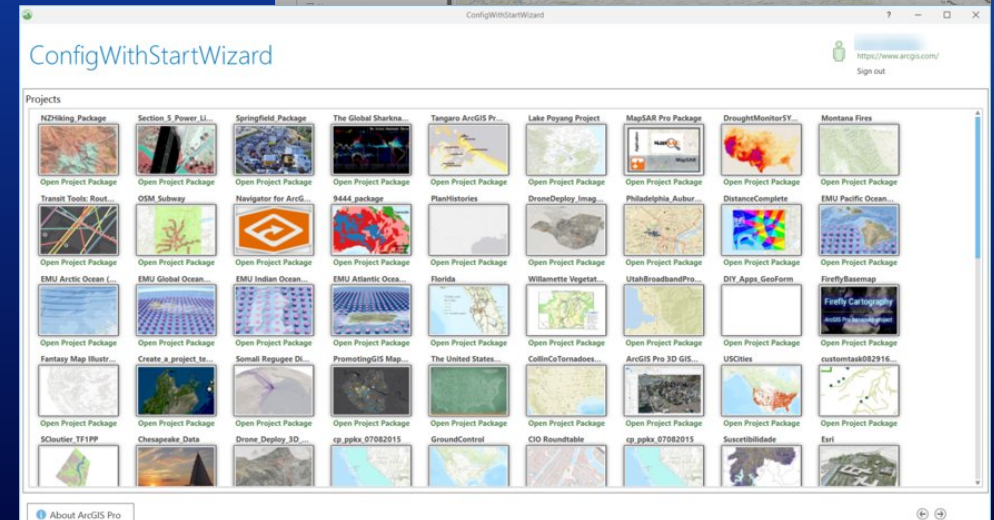
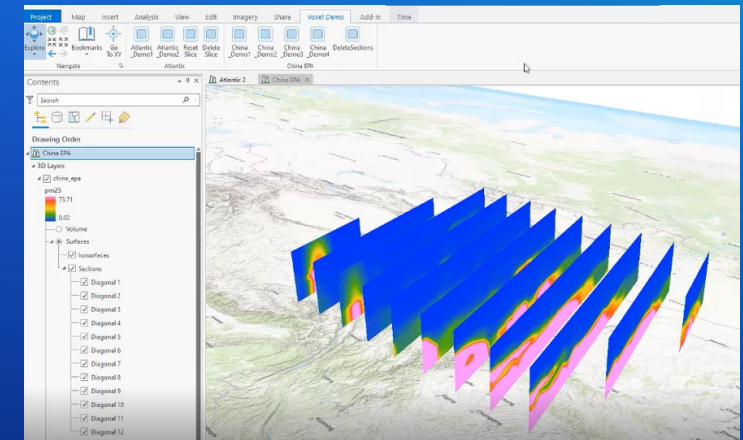
```
output = "c:/base/data/gdb/roads"

# Run Buffer
arcpy.Buffer_analysis(roads, output, "100 Feet")
```
- Workflow Diagram:** A diagram showing a sequence of tools: Light Rail Station, Buffer, Output Feature Class, City Business, Select Layer By Attribute, Output Layer Name, Buffer (2), Output Feature Class (2), Intersect, and Output Feature Class (3).
- Map Interface:** A screenshot of the ArcGIS Pro map interface showing a custom tool overlay for 'Acme Electric' with the text 'powered by ArcGIS Pro'.

# ArcGIS Pro .NET SDK

## Customizing and Extending ArcGIS Pro

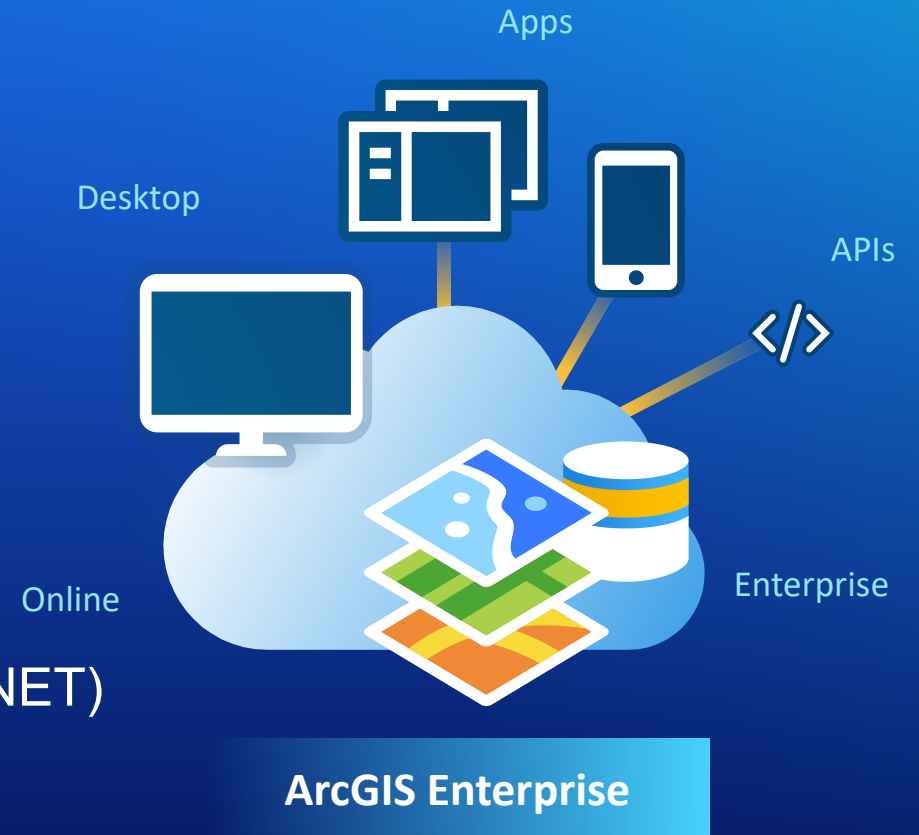
- Framework designed specifically to support customization
- Microsoft .NET – using Visual Studio 2017/2019
- Extensibility patterns supported with SDK:
  - Add-Ins – Develop tools and new functionality to extend Pro
  - Managed Configurations –branding, start-up experience, streamline UI
  - Plug-in Data sources – Develop custom data source formats
  - CoreHost Applications – Standalone apps for 64-bit Geodatabase and geometry access



# ArcGIS Enterprise SDK

## Extending ArcGIS Pro Compatible Services

- Extending ArcGIS Pro-based services
  - Building Server Object Extensions (SOEs)
  - Building Server Object Interceptors (SOIs)
  - Supports Map and Image services
- SDK for Java and .NET developers
- IDE integration for Eclipse (Java) and Visual Studio (.NET)



# Developing your solution

The background features a vibrant, abstract composition. On the left side, there are several overlapping elements: a stylized globe, a network of nodes and lines, and various geometric shapes in shades of blue, red, and yellow. The overall aesthetic is modern and technological, with a strong emphasis on the color palette of blue, red, and yellow.

**Purchase Software**

**Or**

**ArcGIS Developer Subscription**

# ArcGIS Developer Subscription

Plans Tailored to What You Do

*Build Apps  
(ArcGIS Platform)*

## Essentials



- Mapping APIs
- Access to Location Services

## Builder



- AppStudio
- ArcGIS Online

## Professional



- ArcGIS Pro (Basic)
- ArcGIS Enterprise (Advanced)

## Premium



- ArcGIS Pro (Standard)

## Enterprise



- ArcGIS Pro (Advanced)
- ArcGIS Enterprise Capabilities
- Dev Summit Registration

*Extend ArcGIS*

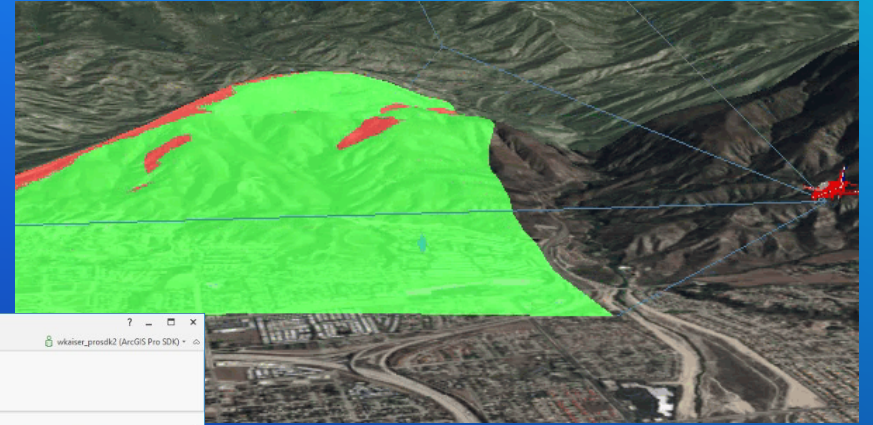


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# Deploying your solution



# Areas To Consider When Deploying Apps



1. Use of location services

2. Mapping libraries

3. Extending ArcGIS

ArcGIS Pro - Interacting with Maps - Portland 3D City

My Identify

Select the layer to view

Select Layer: Buildings

OBJECTID	FIRSTGEN_USE	BUILDID	MAXHEIGHT	ZonalStb
21	Institutional	192	113.455	35154
23	Vacant	196	45.968	3085
25	Restaurant	224	25.23	4536
39	Retail	230	75.263	10098
47	Vacant	244	39.651	4752
58	Industrial	1316	137	17427

Selected Feature Count by Layer

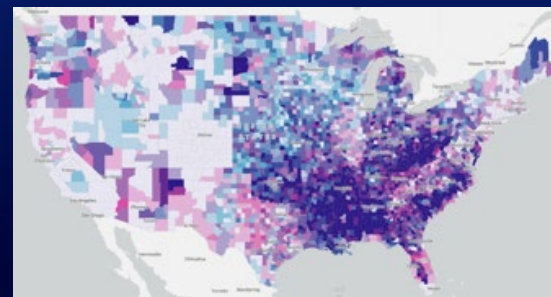
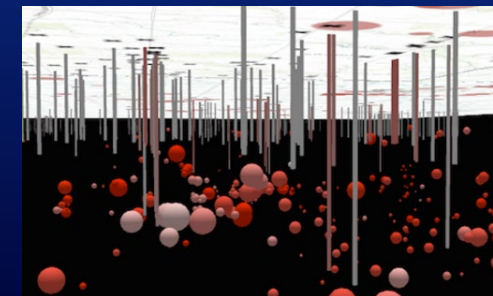
Feature Layers

- Trees
- Buildings

Exit ArcGIS Pro

122.68W 45.53N 54.478 ft

Selected Features: 24



# Deploying Solutions (1/3)

## ArcGIS Platform Location Services

- Business model depends on the product you deploy with
  - Stand alone apps that leverage ArcGIS Platform
    - Fully consumption based
    - Currency is U.S. Dollars
  - Apps that extend ArcGIS Online, Pro
    - Consumption and subscription based
    - Currency is credits

# Deploying Solutions (2/3)

## Mapping Libraries

- **JavaScript API**
  - Unlimited free deployments
- **Third party mapping libraries**
  - Unlimited free deployments
- **Runtime SDKs**
  - **Deployment license required**
    - Named user or license string
  - **Based on capability**

### Lite

- View maps/scenes/lyrs from ArcGIS
- Routing, Place finding, geocoding

### Basic

- All capabilities of Lite
- Editing of private data\*
- Navigation

### Standard

- All capabilities of Basic
- Access to additional data
  - KML, Shapefiles, CDRG, J2K, TIFF, GeoTIFF, PNG, DTED ...
- Advanced Editing
  - Utility Network

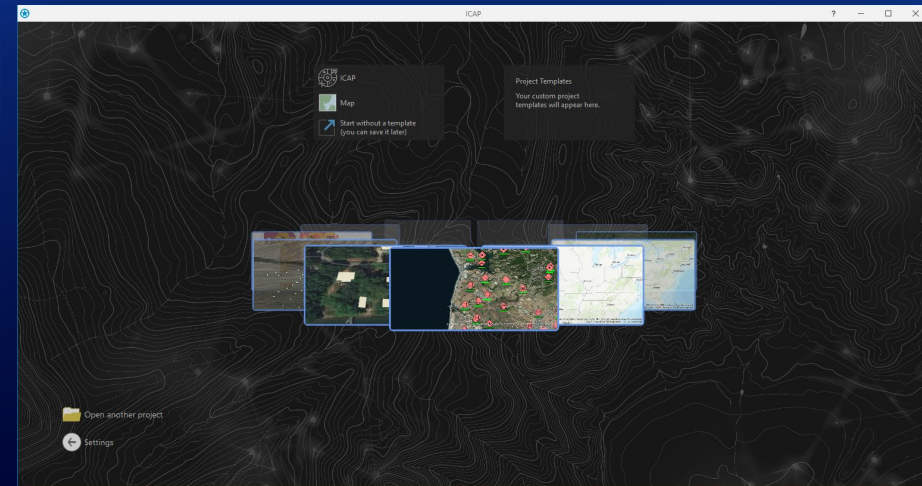
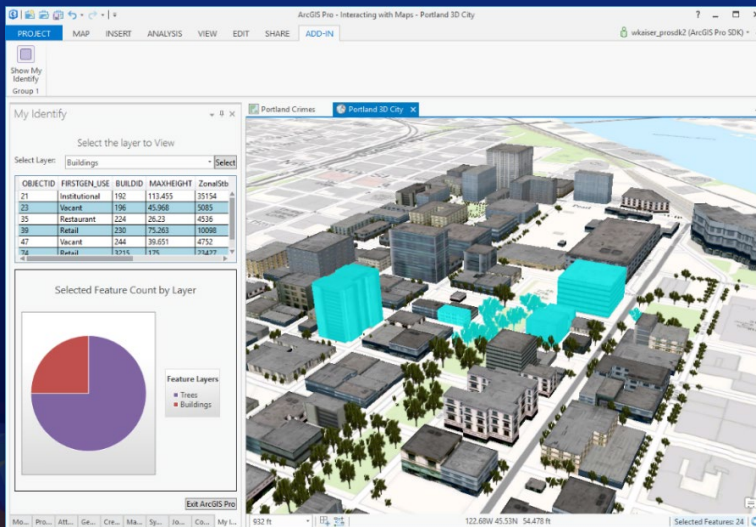
### Advanced

- All capabilities of Standard
- Analysis (177)
- Advanced 3D (33)
- Advanced Spatial Analysis (156)
- Advanced Network (10)

# Deploying Solutions (3/3)

## Extending ArcGIS

- A commercial license for the product you are extending is required
  - Custom app that extends our SaaS - **ArcGIS Online** required
  - Add-ins and custom configurations in Pro - **ArcGIS Pro** and applicable extensions required
  - SOIs and SOEs – **ArcGIS Enterprise** required





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