Scripting with Python in ArcGIS Online

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Today's Software

ArcGIS Online

Mapping and analysis: location intelligence for everyone

+

Access via https://gisandata.maps.arcgis.com

Using Zoom

- Mute your audio
- Turn off your camera
- To ask questions:
  - Raise your hand – we'll be with you shortly
  - Write in the public chat or private chat a TA directly
  - Unmute your mic and speak up!
- During hands-on activities:
  - Mark YES or NO to let us know if you're having trouble
  - Write in the public chat

About this webinar

- This webinar will **NOT** be recorded
- This webinar consists of presentations and coding exercises
- We encourage you to code along – it's the best way to learn!
- After the workshop, you'll receive a complete ArcGIS Notebook
- If you have any questions after the workshop, email us at dataservices@jhu.edu

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Workshop Goal

Learn how to get started with the ArcGIS API for Python to script and create reproducible, automated geospatial visualization and analysis workflows in ArcGIS Online.

Agenda / What we will cover

Part 1 – Introductions

- What is the API? What is an ArcGIS Notebook?

Part 2 – Hands-on Activity 1

- Familiarize self with ArcGIS Notebook
- Basic user queries

Break (5 mins)

Part 3 – Hands-on Activity 2

- Class exercise demonstrating sample workflow

Class Exercise

We'll be examining Low-Income Housing Tax Credit (LIHTC) property data collected and produced by the US Department of Housing and Urban Development. For the purposes of this workshop, we'll use a cleaned subset of this data produced by Data Services. You can find this dataset on our JHU ArcGIS Online organization.

We'll be examining the distribution of LIHTC properties and low-income housing units in Baltimore neighborhoods. **Which neighborhood has the most LIHTC properties? Which has the least? Which has the most low-income housing units funded by the LIHTC program?**

What we WON'T cover

Introductory Python Concepts

- Basic Python syntax and terminology
- Installing and loading packages

Introductory Concepts on ArcGIS Online

- Webmaps, feature layers, groups

Advanced ArcGIS API Concepts

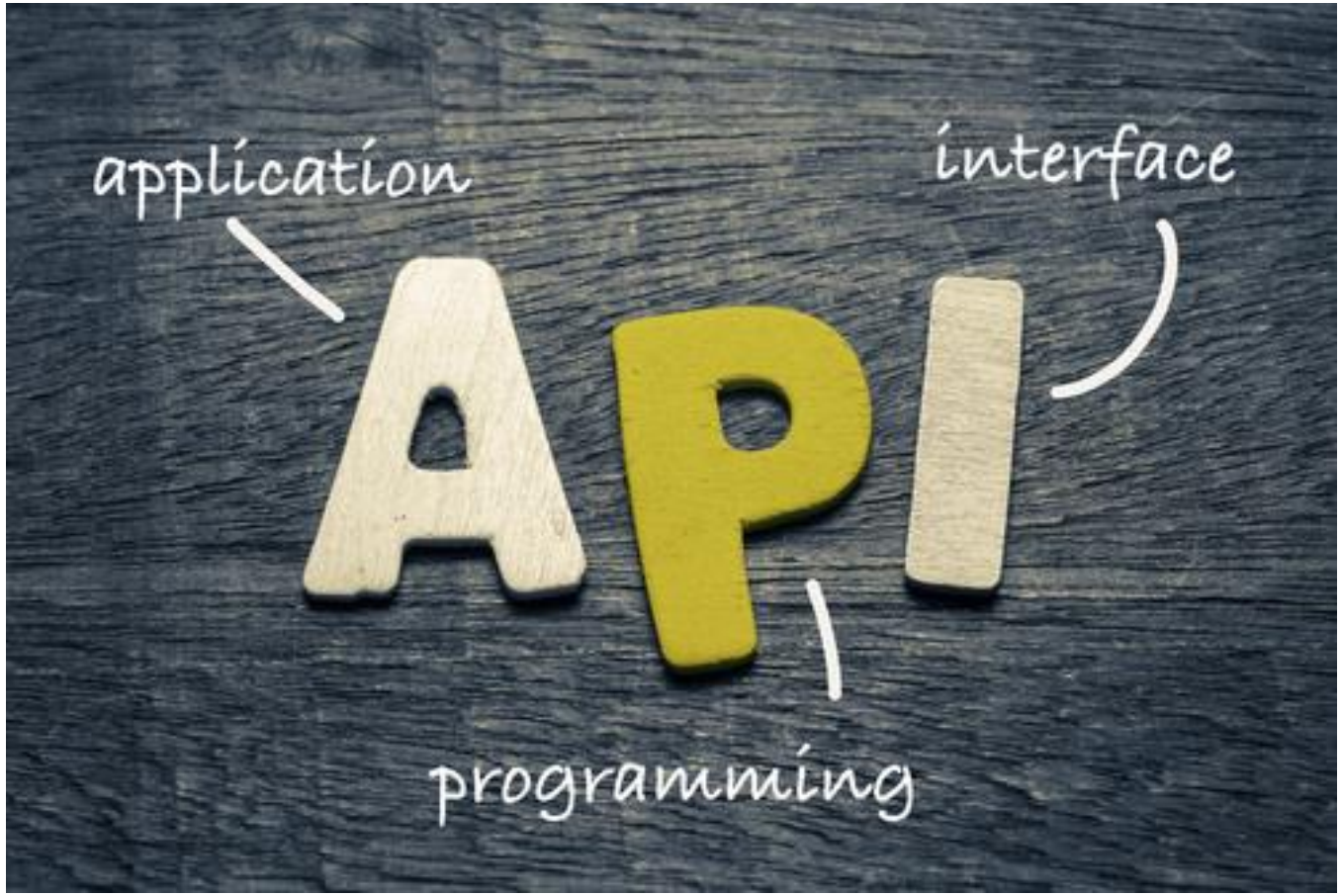
- User and content management
- Content publishing
- Machine learning

Additional notes

- Designed to be a starting point:
  - give you a basic understanding of the ArcGIS Python API
  - provide enough background to get started using it

- Your feedback helps us develop additional workshops!
  - Please complete the survey, link will be shared at the end

What is an API?



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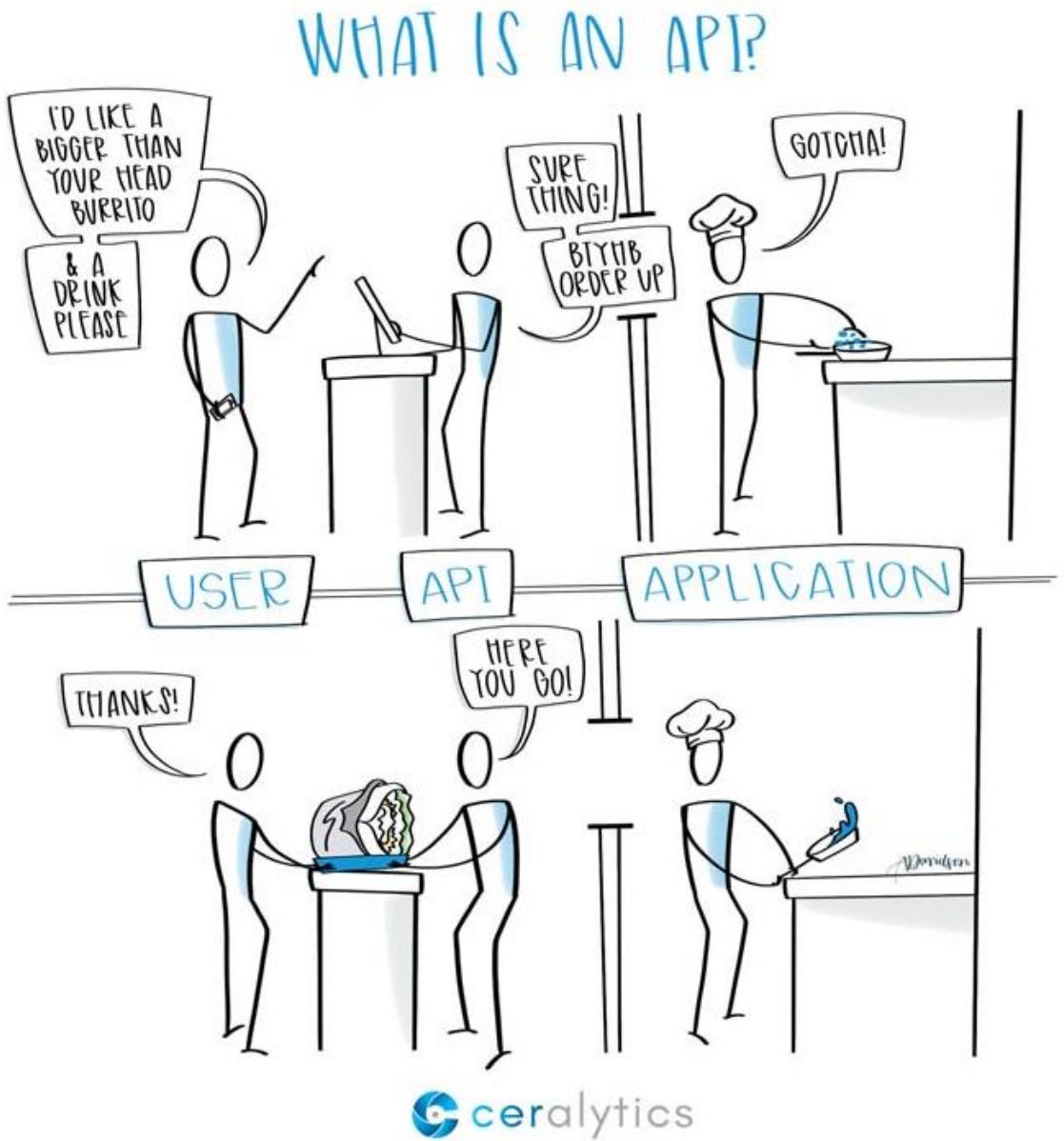

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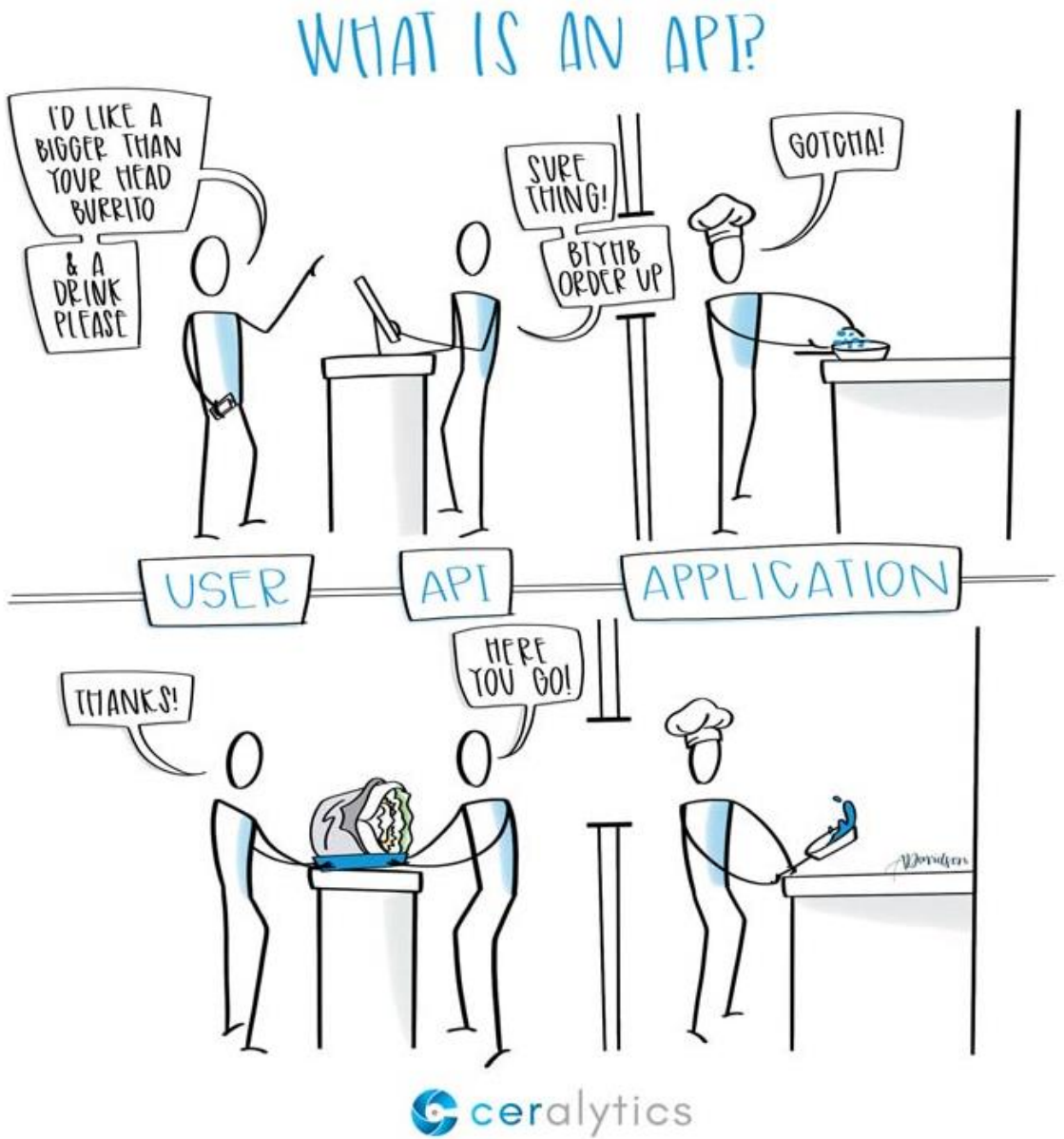

A Transaction

- Customer makes an order
- Server takes down order, processes it, and passes it to cook
- Cook acknowledges order
- Cook makes the order and gives it to the server
- Server gives the customer their order

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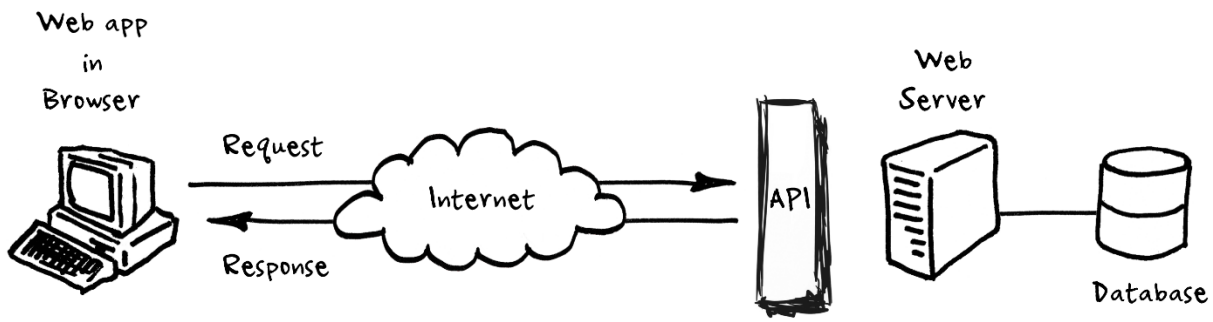

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Application Programming Interface

- User (client) makes a request
- API takes down request processes it, and passes it to the application
- Application acknowledges request
- Application processes request and signals API
- API returns request to user

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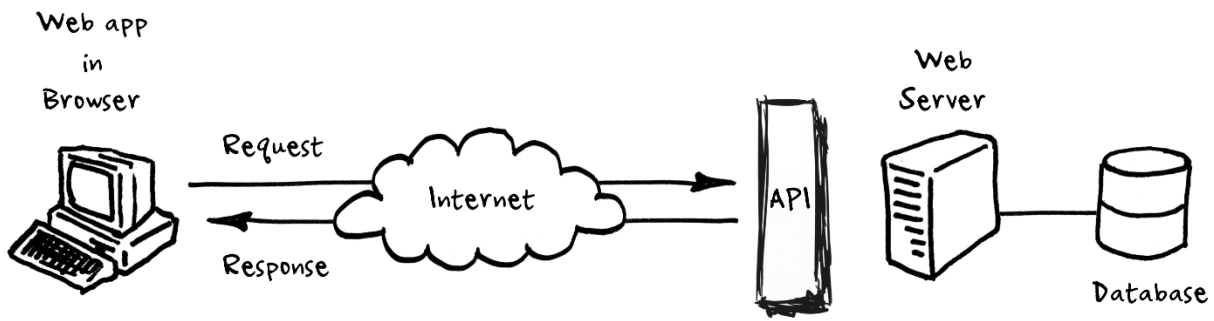

Application Programming Interface

- The API is NOT the database or server – it is the code that governs the access point(s) for the server
- APIs cover a broad category that includes all interfaces that facilitate communication between computer applications
- **Web APIs** – APIs that expose an application's data and functionality over the internet where two computers (client and server) interact with each other to request and provide data

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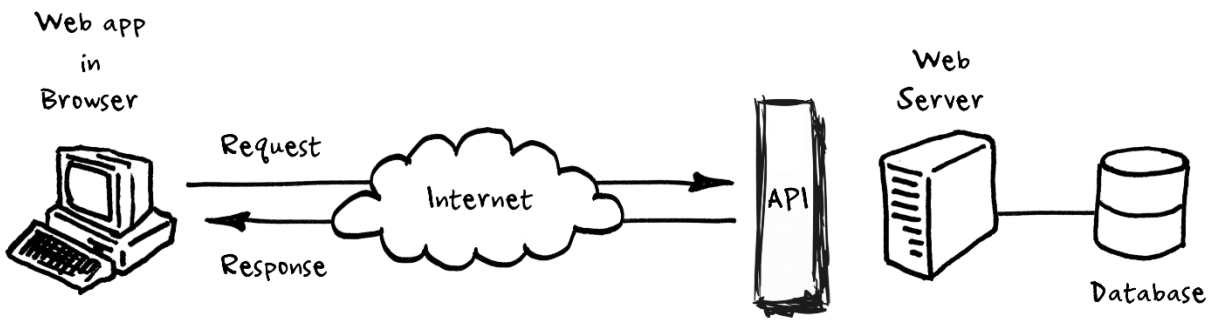


Application Programming Interface

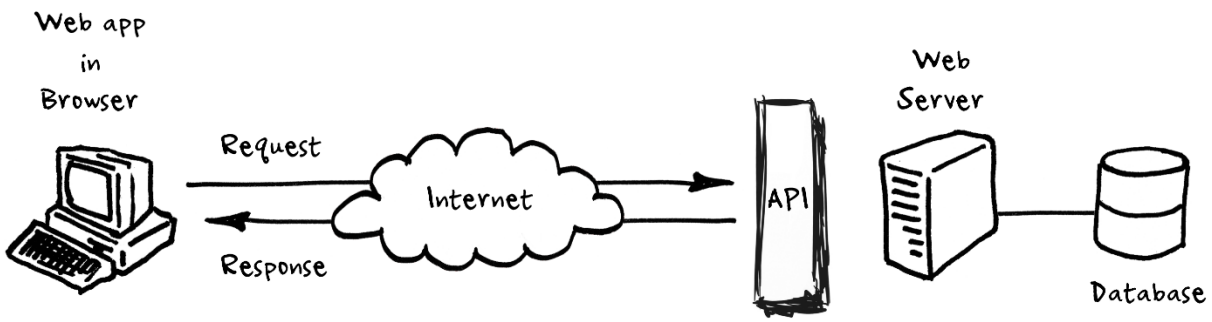
- 4 main types of web APIs:

    1. Open/Public APIs
       no restrictions to access

    2. Partner APIs
       requires specific rights and/or licenses

    3. Internal APIs
       designed for internal use within an organization

    4. Composite APIs
       combines different data and service APIs



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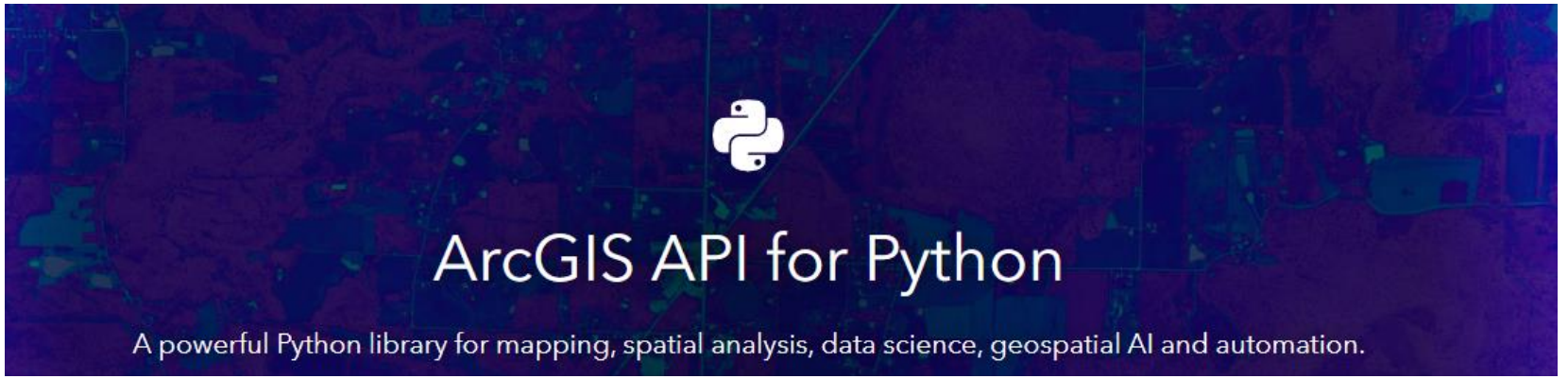
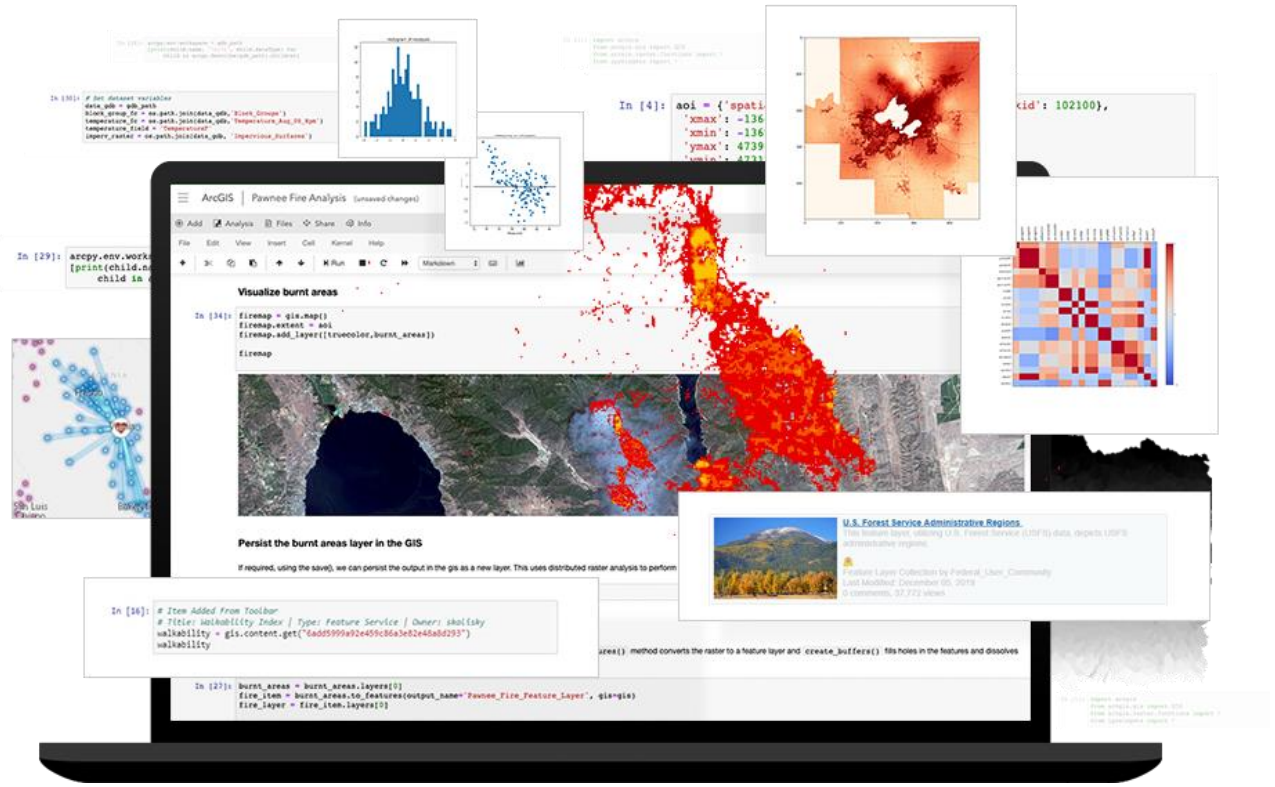


- Python library created and maintained by Esri for use with ArcGIS Online or Enterprise
- Use for GIS – from managing and searching for data to spatial analysis and mapping
- An automation and data science tool
- Note: ArcGIS API for Python is distinct from Arcpy. ArcPy is another python library created and maintained by Esri, for use with desktop ArcGIS software like ArcGIS Pro or ArcMap.



- ArcGIS Notebooks = specialized Jupyter Notebooks
- Integrated with ArcGIS Online
- Designed for spatial analysis

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Let's Dive In!

Thank you!

- Take our survey:

  https://www.surveymonkey.com/r/arcgis_python_api

- Email us at dataservices@jhu.edu with any questions