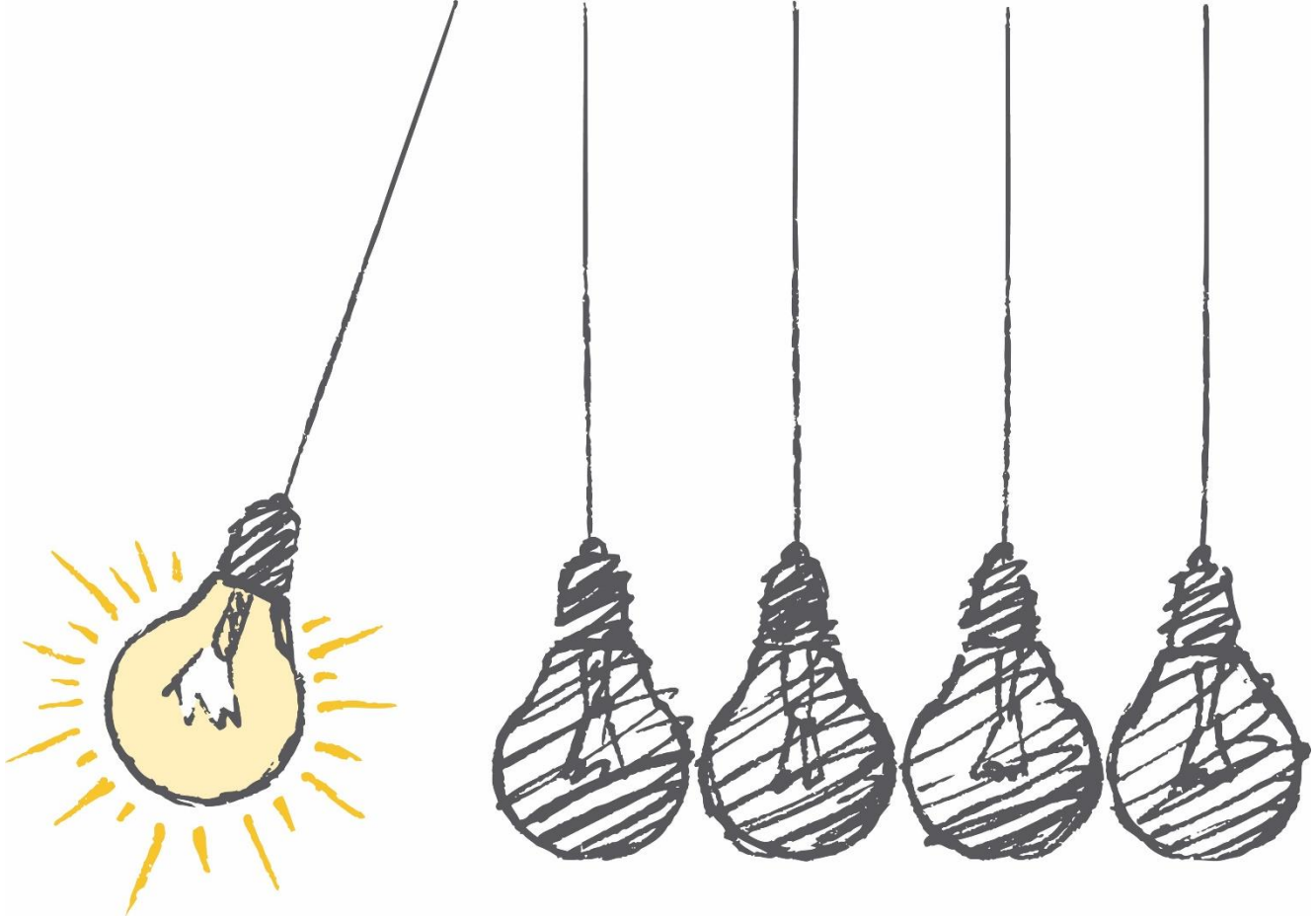
Session 4 - Introduction to APIs

Python for Data Science



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The World Bank | WB GitHub

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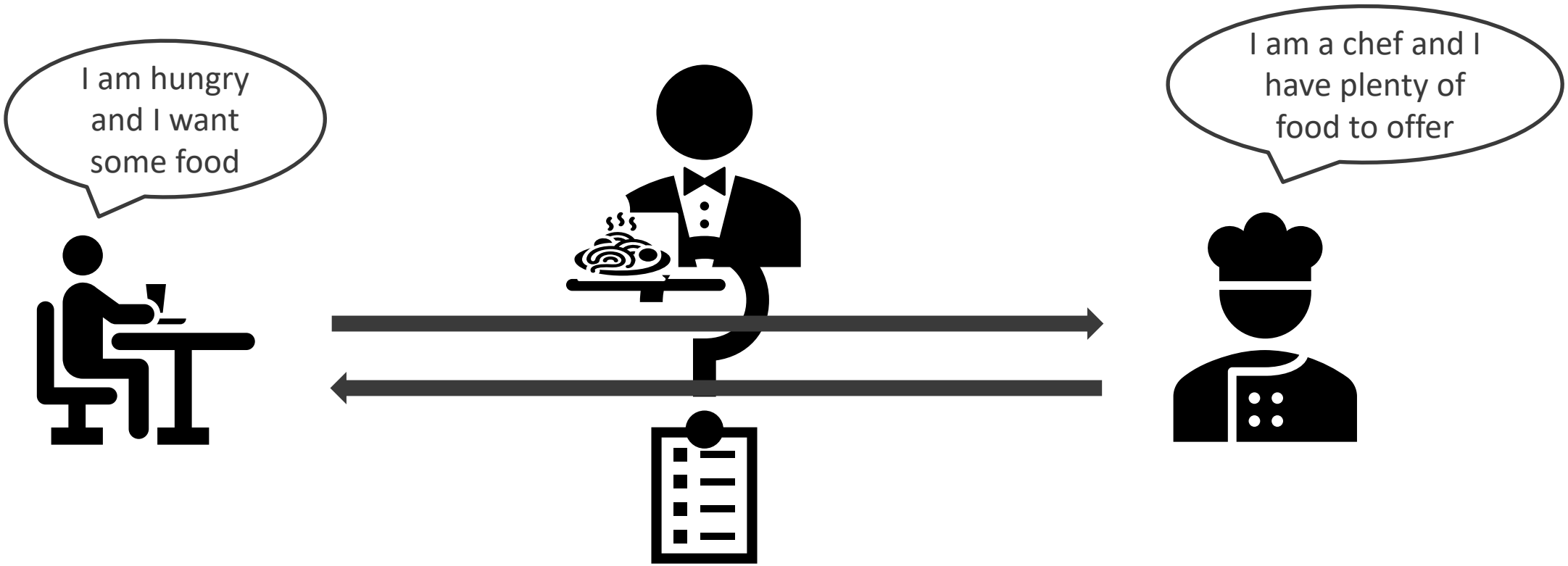
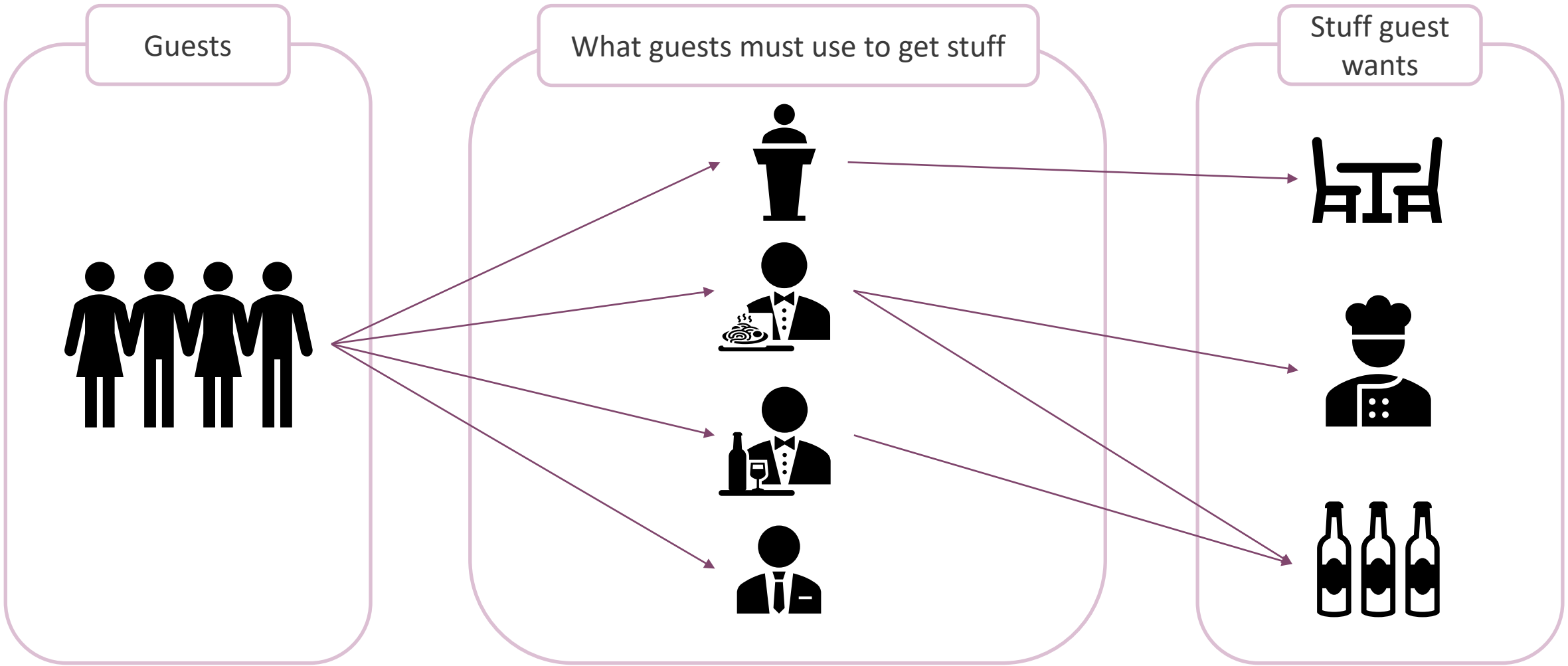
What is an API? (Application Programming Interface)

restaurant.com



restaurant.com



restaurant.com

Clients

```
def simple_hash(word):
    hash = 0
    for letter in word.lower():
        hash += ord(letter)-96

    #loop over hash until a single digit
    while hash >= 10:
        new_sum = 0
        for digit in str(hash):
            new_sum += int(digit)
        hash = new_sum

    return(hash)

print(simple_hash("dog"))
print(simple_hash("cat"))
```

Application Programming Interface
API

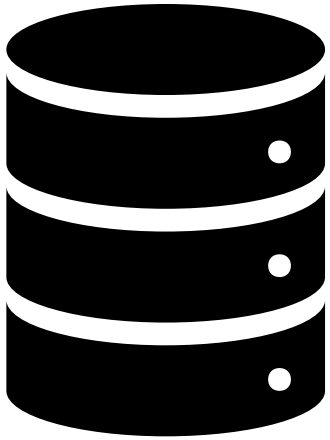
- restaurant.com/api/host/gettable
- restaurant.com/api/host/reservation

- restaurant.com/api/waiter/food
- restaurant.com/api/waiter/drink

- restaurant.com/api/sommelier/wine

- restaurant.com/api/manager/pay
- restaurant.com/api/manager/complain

Resources



Application Programming Interfaces (APIs)

- An API is a channel to interact with a web server
- In data science, these interactions are often used to retrieve data from data bases

Application Programming Interfaces (APIs)

- Why an API?
  - Allows to access data programmatically
    - No more sharing data and code for a project, only code
  - Allows to run code on the most recent data available or to update data seamlessly

Application Programming Interfaces (APIs)

- How to use an API
  1. Read the API documentation
  2. Find the API endpoint
  3. Explore the endpoint
     - Start by trying a simple query in your web browser
  4. Explore the API result
     - JSON is a widely used data format. It consists of nested dictionaries and lists
  5. Write code to send custom API requests

API Example 1: http://open-notify.org/

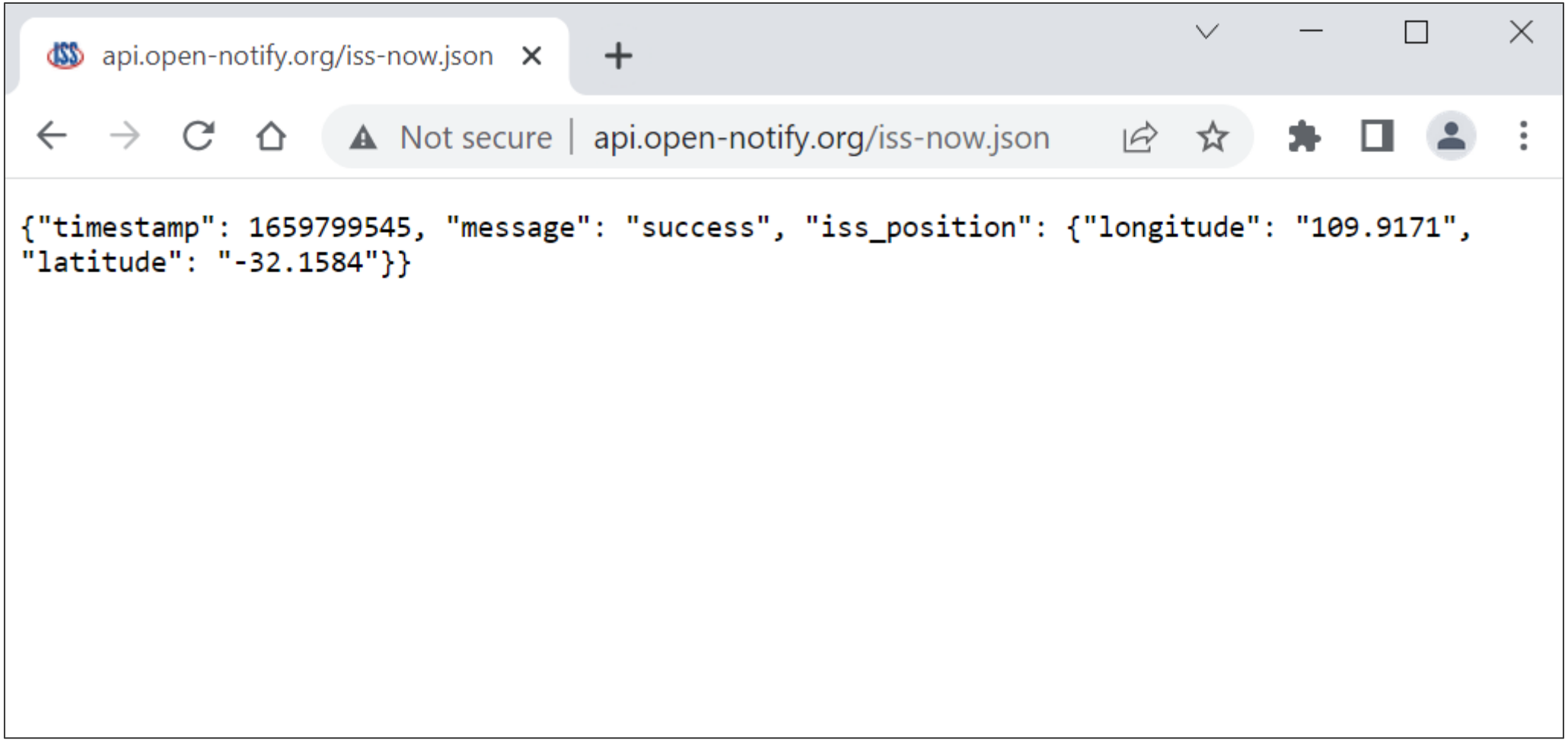
A very simple API to get real time data about the International Space Station

You can find the documentation here: http://open-notify.org

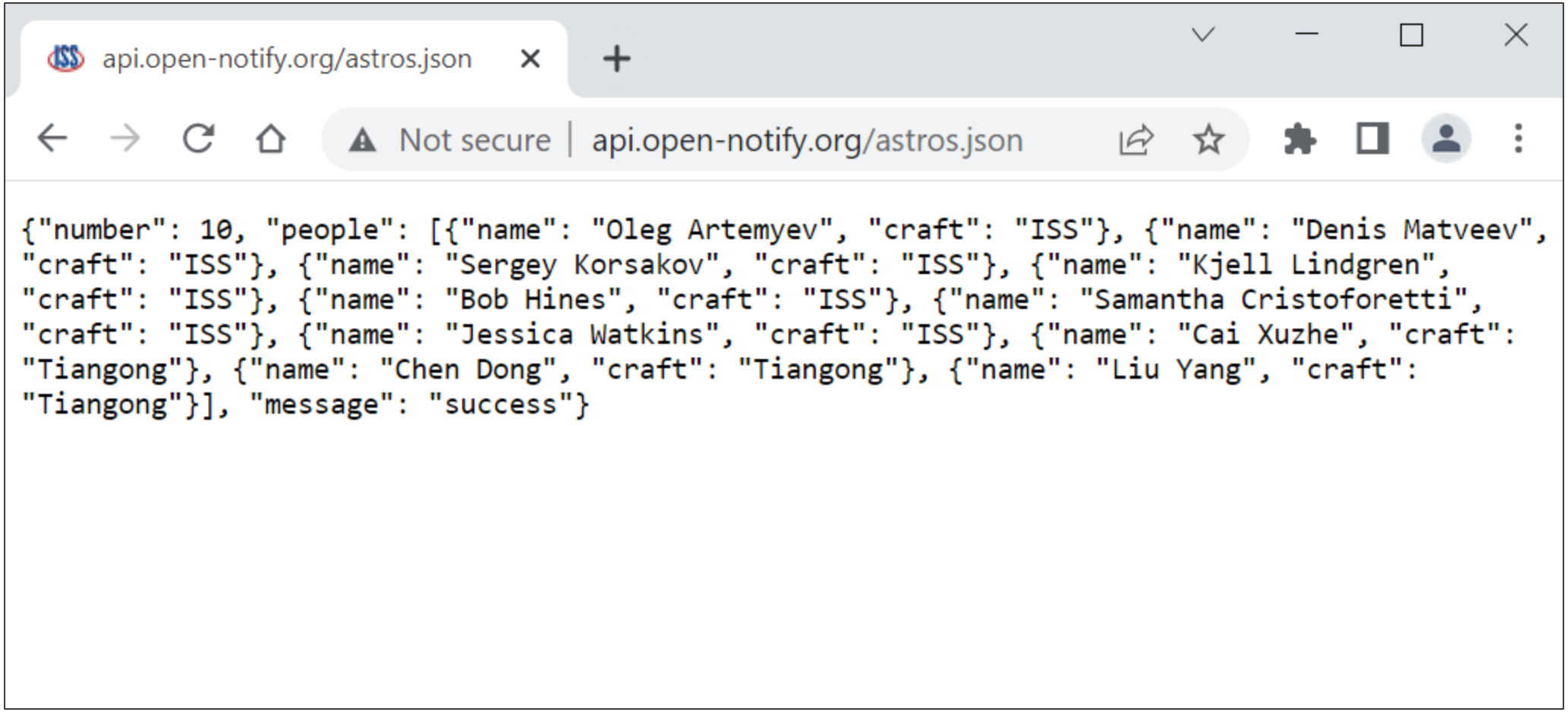
Two endpoints:

- Current location of the ISS: http://api.open-notify.org/iss-now.json
- Astronauts in space now: http://api.open-notify.org/astros.json

API Example 1: http://open-notify.org/



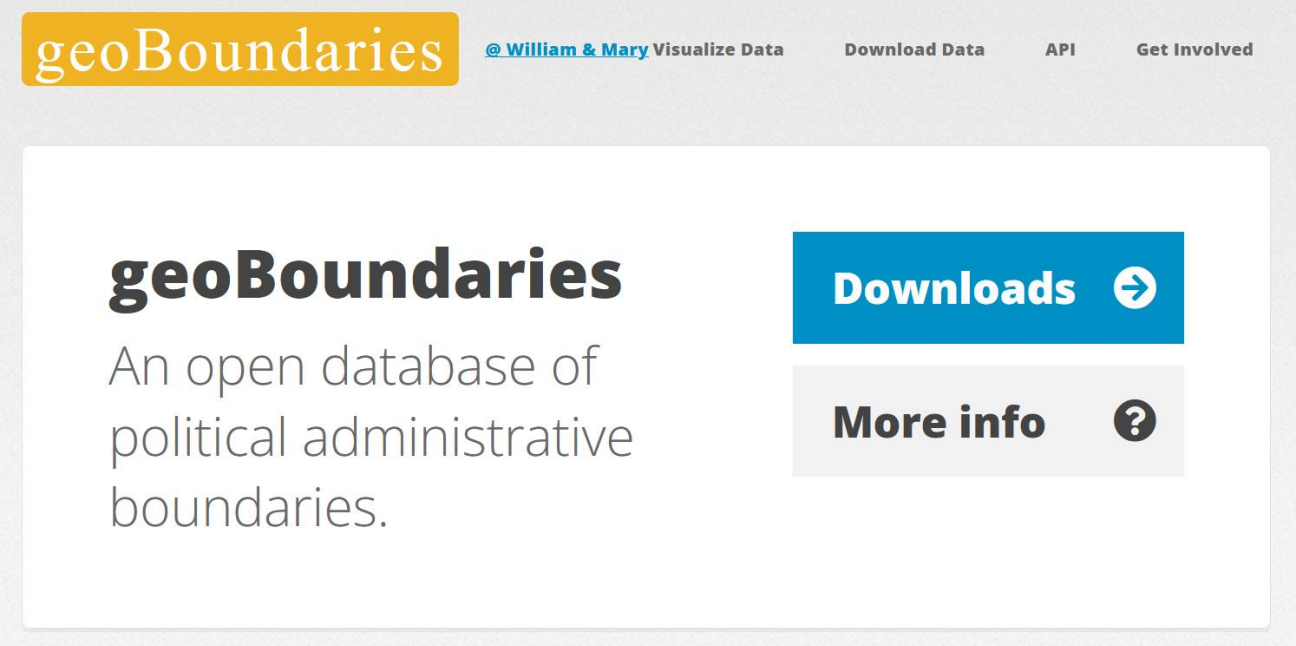
API Example 1: http://open-notify.org/



API Example 2: https://www.geoboundaries.org/

API to fetch geographic country data.

Documentation: https://www.geoboundaries.org/api.html



API Example 2: https://www.geoboundaries.org/

From the documentation:

API Access to geoBoundaries

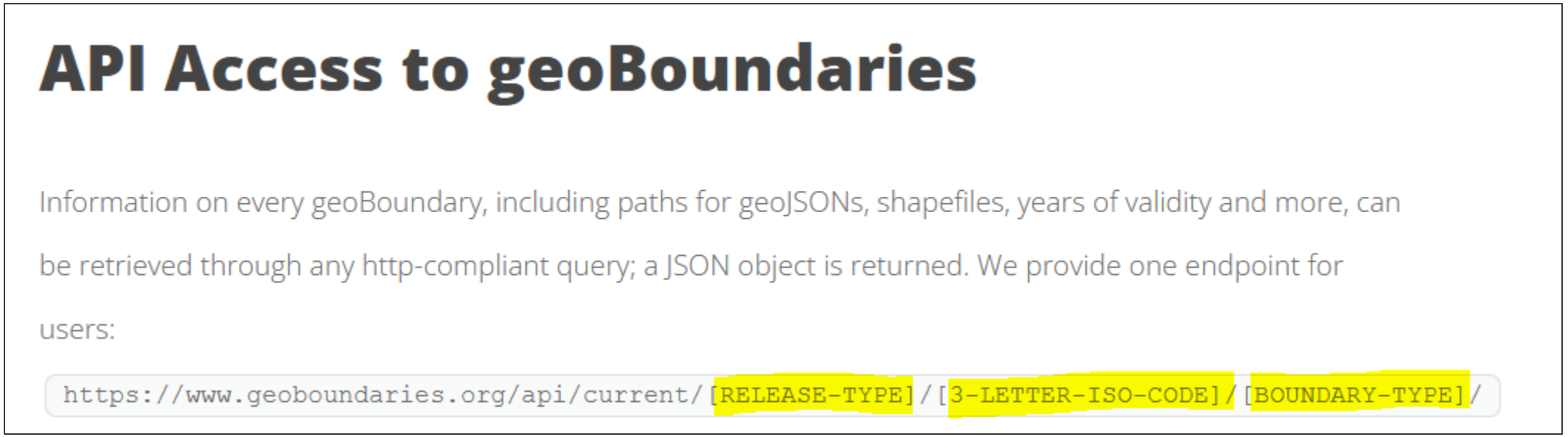
Information on every geoBoundary, including paths for geoJSONs, shapefiles, years of validity and more, can be retrieved through any http-compliant query; a JSON object is returned. We provide one endpoint for users:

```
https://www.geoboundaries.org/api/current/[RELEASE-TYPE]/[3-LETTER-ISO-CODE]/[BOUNDARY-TYPE]/
```

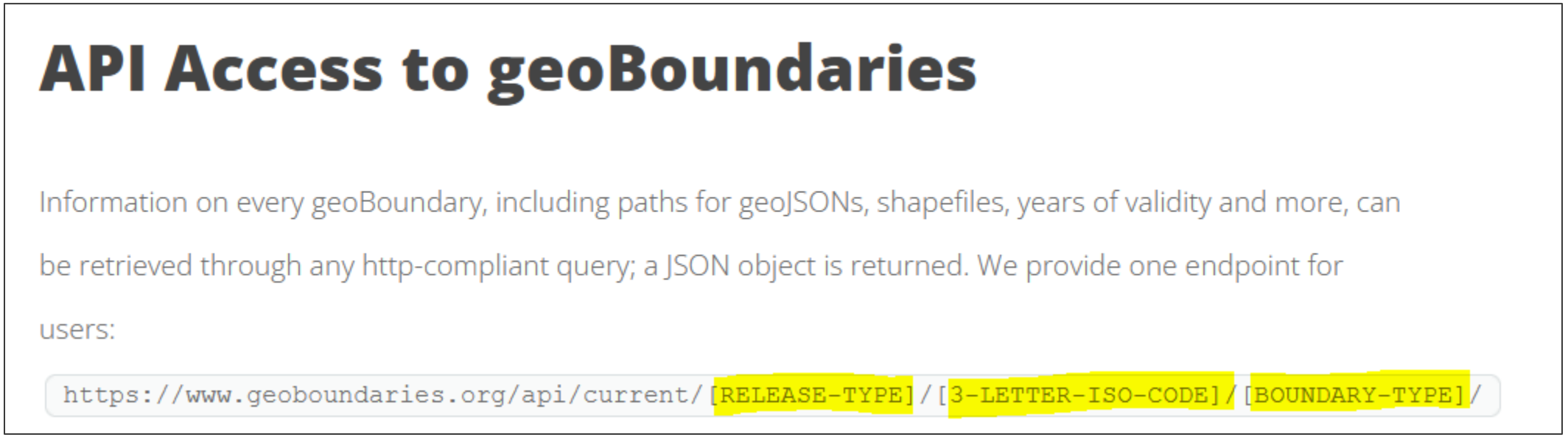
Custom API calls

Most APIs require users to pass information through the URL to specify how they want to interact with the web server.

Examples:



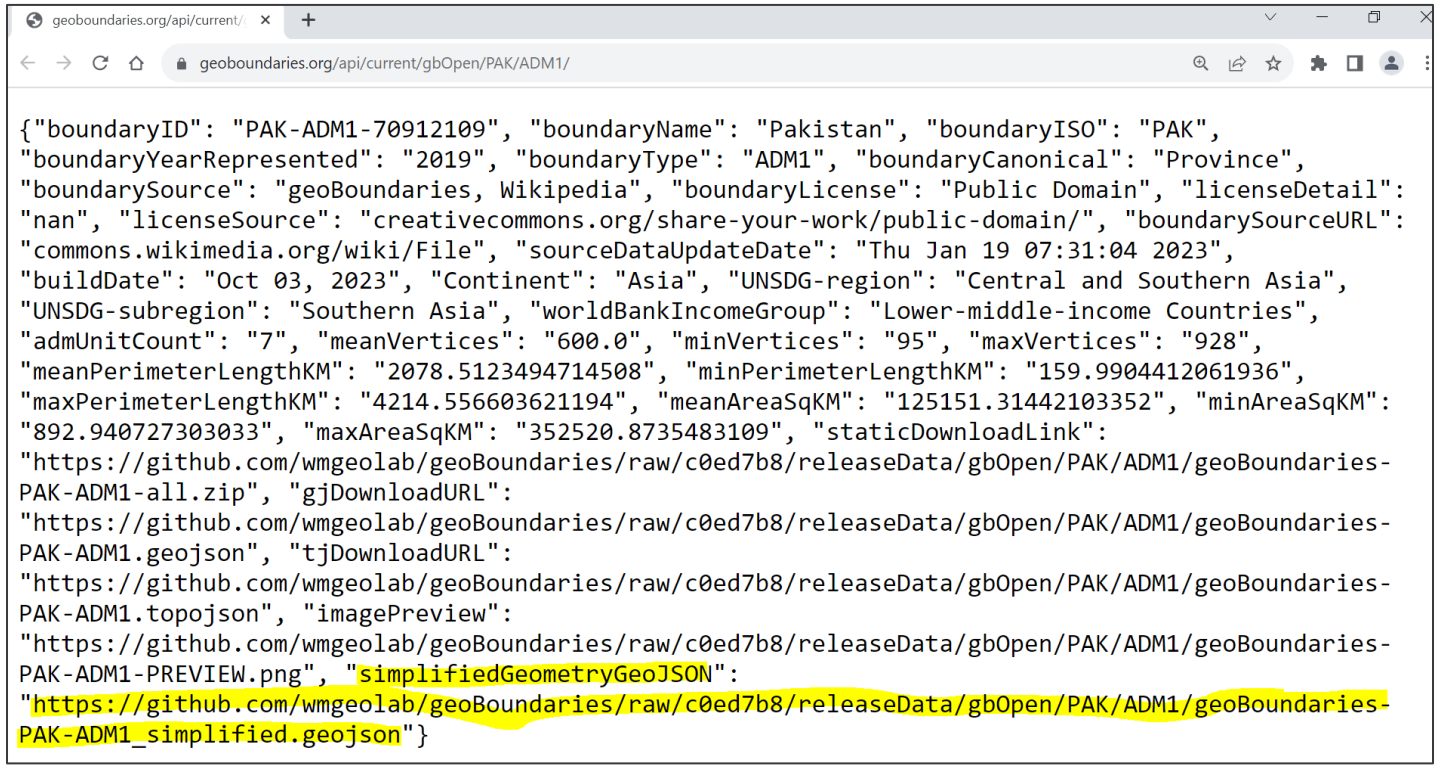
Custom API calls



- Colombia national boundaries: https://www.geoboundaries.org/api/current/gbOpen/COL/ADM0/
- Pakistan first-level administrative boundaries: https://www.geoboundaries.org/api/current/gbOpen/PAK/ADM1/

Exploring API results

- Many APIs will return extra information and metadata we don't always need
- You should explore the returning JSON to locate relevant information and data



Now we'll continue with the notebooks for this session

Thank you!
Gracias!