

# Data in Libraries: Understanding and Working with APIs

RUSA Online Learning webinar, 15 Apr 2020

Jeremy Darrington

Politics Librarian

Princeton University Library



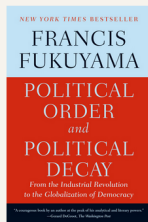
# What is an API?

- ◇ Application Programming Interface
  - ◇ interface for using computers to interact with an application via programmatic methods
- ◇ Think of as a contrast to human (e.g., visual) interfaces
- ◇ MARC record analogy

## POLITICAL ORDER AND POLITICAL DECAY

From the Industrial Revolution to the Globalization of Democracy

Francis Fukuyama  
Farrar, Straus and Giroux



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100 1 a| Fukuyama, Francis, e| author.  
245 1 0 a| Political order and political decay : b| from the industrial revolution to the globalization of democracy / c| Francis Fukuyama.  
250 a| First edition.  
264 1 a| New York : b| Farrar, Straus and Giroux, c| 2014.  
300 a| viii, 658 pages : b| illustrations : c| 24 cm  
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338 a| volume b| nc 2| rdacarrier  
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## Political order and political decay : from the industrial revolution to the globalization of democracy / Francis Fukuyama.

Author [Fukuyama, Francis \[Browse\]](#)

Format [Book](#)

Language [English](#)

Edition [First edition.](#)

Published/Created [New York : Farrar, Straus and Giroux, 2014.](#)

Description [viii, 658 pages : illustrations ; 24 cm](#)


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# What is an API?

- ◇ Application Programming Interface
  - ◇ interface for using computers to interact with an application via programmatic methods
- ◇ Think of as a contrast to human (e.g., visual) interfaces
- ◇ MARC record analogy
  - ◇ Provides a structured way to convey information that simplifies the connection between data provider and consumer
    - ◇ No need for consumer to understand internal systems of provider OR for provider to understand systems or use case of consumer

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## Address Validation Street Level API



With the Address Validation Street Level Application Programming Interface (API) capabilities as part of your integrated enterprise applications or website, you can be sure your customer's shipment is going to a valid address. Using the United States Postal Service® (USPS) database of valid addresses in the United States and Puerto Rico, the Address Validation Street Level API validates the address of your customer's shipments.

While validating addresses with the Address Validation Street Level API, if an error is discovered, the API can provide a list of potential valid addresses. Additionally, this API uses address classification to determine if an address is residential or commercial.

This API requires XML/Web Services programmers to code and integrate. UPS provides a developer guide that explains how to integrate and code UPS functionality into your existing business applications or e-commerce website.



## Rating API



If your customers want flexibility and control when shipping their online purchases, your e-commerce site needs the Rating Application Programming Interface (API). This powerful API lets online shoppers compare, rate, and select shipping services that best fit their needs and budgets. For example, your customers can choose express services when they need their packages right away and standard services when they have more time for delivery.

The Rating API is available in XML format. This API gives you greater flexibility by allowing you to format the rates and services data to suit your website or application's design and layout.

### Here's What It Does

For single packages shipped from over 40 countries, the Rating API identifies all the available UPS domestic and international services and displays shipping rates based on the package's specifications. It can be used to

dynamically generate a list of shipping services tailored for your customers' shipments.

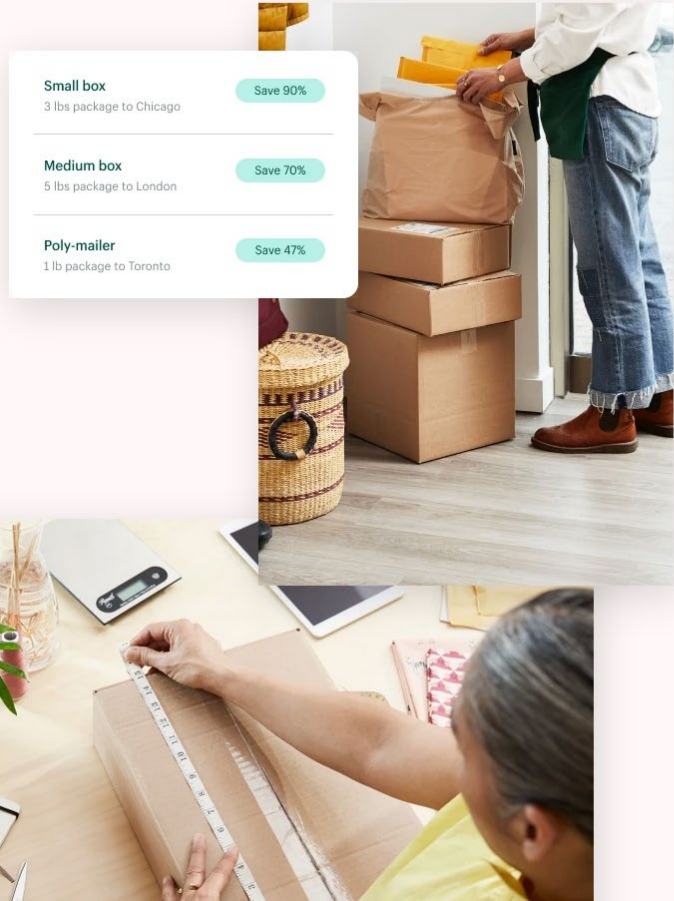
You can also use the Rating API to create easy-to-understand menus from which your online customers can select the best shipping method. So give your customers a wider range of service levels and rates by adding the Rating API to your site.

### With the Rating API, You Can:

- Generate specific shipping charges for each of your customer's product purchases.
- Generate specific shipping charges for each shipping option available to customers.
- Create attractive pull-down menus your online customers can use to make their shipping choices.

### Your Customers Can:

- Find accurate service and rate information from UPS on your website.
- Compare total shipping and handling charges for different UPS service levels.
- Save money by choosing the best shipping option for their needs every time.
- Learn when their packages will arrive and how much shipping will cost.



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---

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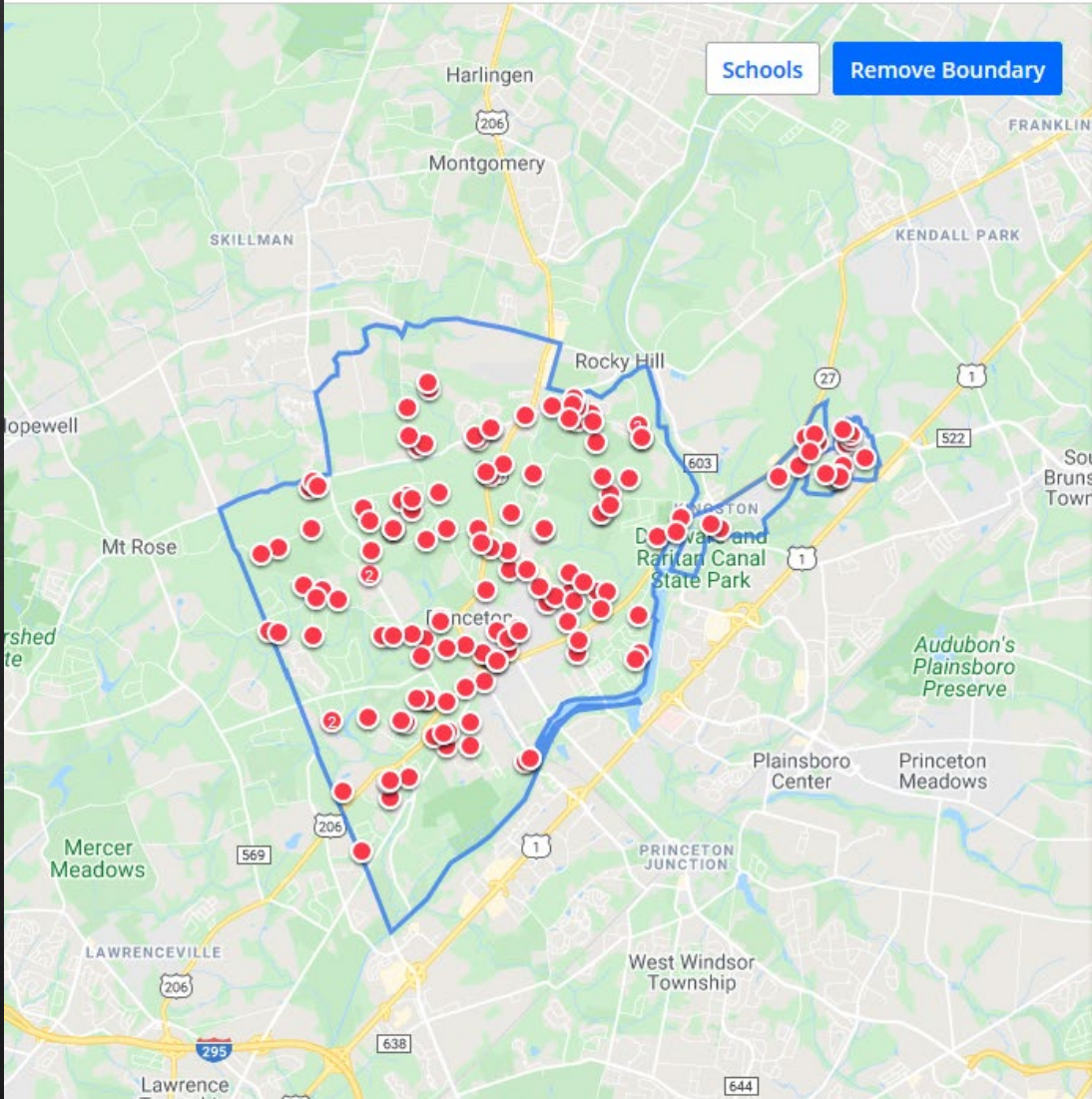
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## Latest Tweets - [see all](#)

1. [Apr 8, 2020 01:11:51 PM](#) - Extraordinary times require even closer cooperation between friends. Thank you India and the Indian people for the decision on HCQ. Will not be forgotten! Thank you Prime Minister @NarendraModi for your strong leadership in helping not just India, but humanity, in this fight!
2. [Apr 8, 2020 11:12:24 AM](#) - Can't see AOC plus 3 supporting Sleepy Joe!
3. [Apr 8, 2020 11:09:38 AM](#) - Wow, Bernie is unwilling to give up his delegates, and wants more of them! What's that all about?
4. [Apr 8, 2020 10:49:28 AM](#) - Bernie Sanders is OUT! Thank you to Elizabeth Warren. If not for her, Bernie would have won almost every state on Super Tuesday! This ended just like the Democrats & the DNC wanted, same as the Crooked Hillary fiasco. The Bernie people should come to the Republican Party, TRADE!
5. [Apr 8, 2020 10:26:20 AM](#) - FLATTENING OF THE CURVE!
6. [Apr 8, 2020 09:52:56 AM](#) - Once we OPEN UP OUR GREAT COUNTRY, and it will be sooner rather than later, the horror of the Invisible Enemy, except for those that sadly lost a family member or friend, must be quickly forgotten. Our Economy will BOOM, perhaps like never before!!!
7. [Apr 8, 2020 09:49:53 AM](#) - Once we OPEN UP OUR GREAT COUNTRY, and it will be sooner rather than later, the horror of the Invisible Enemy, except for those that sadly lost a family member or friend, must be quickly forgotten. Our Economy will BOOM, perhaps like never before!!!
8. [Apr 8, 2020 09:42:25 AM](#) - ...the Fake News Media into not covering them, but that effort failed because the ratings are through the roof according to, of all sources, the Failing New York Times, "Monday Night Football, Bachelor Finale" type numbers (& sadly, they get it \$FREE). Trump Derangement Syndrome!

## Tweets as President (NaN days)

[647 tweets](#) about Fake News

[988 tweets](#) Russia and Collusion

[683 tweets](#) about Fox News or Sean Hannity

[169 tweets](#) about CNN

[127 tweets](#) about NBC

[152 tweets](#) about the New York Times

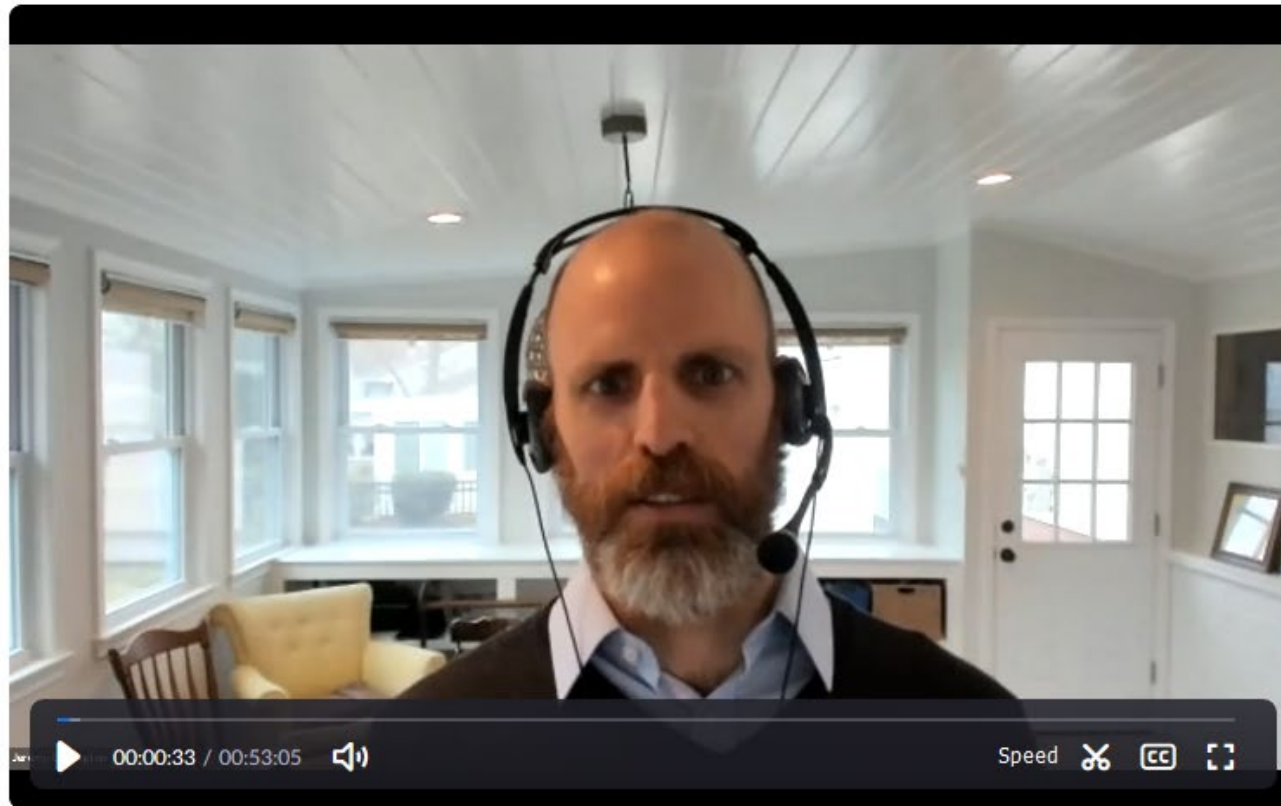
[353 tweets](#) about Clinton

[299 tweets](#) about Obama

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## All Tweets

[234 tweets](#) with "loser"



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and I just want to say  
from the get go, that

00:32 **This is a challenging  
time to try and do  
research right in the  
middle of semester  
when everything is  
just so up in the air  
and we realize that  
we're laboring  
under sort of**

00:43 challenging  
circumstances as a  
library, just because  
the library as a  
physical place is  
closed for the next  
couple of weeks.

00:52 And maybe  
indefinitely, just  
depending on how  
things move forward



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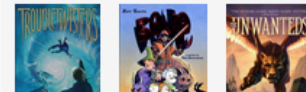
2. Seeds of rebellion



3. Chasing the prophecy

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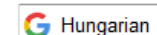
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[Donald Trump meglendült az Egészségügyi Világszervezet felett kezelése koronavírus.](#)

hírek | Egyesült Királyság Nagy-Britannia és Észak-Írország | 543 szavak | 8. április 2020 | Melanie Kaidan  
Express Online

Preview

... Donald Trump szempillák ki **Az Egészségügyi Világszervezet** felett kezelése koronavírus Donald Trump meglendült a **Az Egészségügyi Világszervezet** felett kezelése koronavírus ...

... Scott, a floridai republikánus, fogalmazott. Demokratikus törvényhozók, kormányzók és politikusok **bírálta** Az elnök válasza a járvány, azt állítva, ő túl kevés, ...

2. [Koronavírus halálos áldozatok száma a Magyar igazolványok 12000; Trump azt mondja, hogy tehet A Hold On US finanszírozását az Egészségügyi Világszervezet. Vetítve 6- 7P ET](#)

hírek | US Federal; Arkansas; Ker. A Columbia; Florida; Michigan; New York; Oklahoma; Virginia; Wisconsin  
10788 szavak | Április 7, 2020 | Wolf Blitzer, John King, Sanjay Gupta, Daniel Dale, Jim Acosta  
CNN Transcripts

Preview

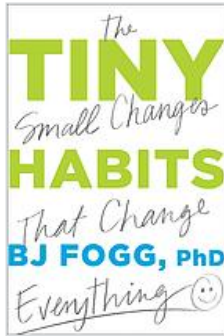
... nemzet, ritka Ovális Iroda címet a nemzet, ő idézett a **Az Egészségügyi Világszervezet** mert még aznap, a WHO, hogy a ...

**Az Egészségügyi Világszervezet**. Idézet, idézet vége hívták rossz. És azt mondja, a ...

... adminisztráció most átértékeli, hogy az Egyesült Államok finanszírozza a **Az Egészségügyi Világszervezet**. Nem fogom védeni a **Az Egészségügyi Világszervezet** ...

... az idő, hogy én bezárták. [18:10:00] És érdekes módon, a **Az Egészségügyi Világszervezet** Nem támogatja a számunkra záró le. És ha ...

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### Tiny habits : the small changes that change everything

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Publisher: Boston : Houghton Mifflin Harcourt, [2020]  
Edition/Format: Print book : English [View all editions and formats](#)  
Summary: "The world's leading expert on habit formation shows how you can have a happier, healthier life: by starting small"--  
Rating: ☆☆☆☆☆ (not yet rated) [0 with reviews - Be the first.](#)  
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**Review from goodreads.com**

by Sheri (GoodReads user published 2020-02-06) ★★★★★

58 of 58 people found this review helpful

I liked this book, but my biggest criticism is that its a simple and empowering idea laid out in a lengthy and more complicated format than it has to be. The book itself felt way too long and I ended up skimming it to get the gist of the actual methodology. The examples and exercises were helpful...[more...](https://www.goodreads.com/review/show/3179725715)

**Review from goodreads.com**

# Constructing and interpreting an API call and response

- ◇ Some terminology:
  - ◇ **Endpoint:** like the outlet on your wall it's the point at which the customer application "plugs into" the API providing the service; essentially the URL you direct your requests to.
  - ◇ **Call:** a distinct and fully-formed query that you send to an API endpoint
  - ◇ **Parameter:** a component to specify what you're requesting with your API call
    - ◇ for example, parameters could specify a keyword, a type of record, a geographic identifier, a sort option, or the number of results to return with your call
  - ◇ **Response:** the structured data returned by the server in response to your call.
    - ◇ Could be in various formats, including JSON, XML, or CSV.



# Constructing and interpreting an API call and response

- ◆ Read the instructions!
  - ◆ need to understand which parameters are required, which are optional, what limitations there are (rate limits on queries, # records returned per response), in what format the data will be returned
- ◆ Good APIs will have clear documentation with examples that you can use to both understand how to construct your call and what the data will look like when it's returned.

# Constructing and interpreting an API call and response

- ◆ Identify the different parts
- ◆ HathiTrust bib API is very simple, so a good way to introduce what's going on
  - ◆ [https://www.hathitrust.org/bib\\_api](https://www.hathitrust.org/bib_api)

`http://catalog.hathitrust.org/api/volumes/brief/<id type>/<id value>.json`

Endpoint URL

Parameter  
1

Parameter  
2

Format  
parameter

# Constructing and interpreting an API call and response

- ◇ HathiTrust live example:

- ◇ <https://catalog.hathitrust.org/api/volumes/brief/oclc/00424023.json>

- ◇ <https://catalog.hathitrust.org/api/volumes/full/oclc/424023.json>

- ◇ <https://catalog.hathitrust.org/api/volumes/brief/json/oclc:1020151|oclc:10764073|oclc:1089706|oclc:1116036|oclc:1316115|oclc:13649101|oclc:13897810|oclc:141509|oclc:14564116|oclc:266921|oclc:2770837|oclc:2780676|oclc:28808454|oclc:29329594|oclc:2966120|oclc:3200348|oclc:3223662|oclc:3240743|oclc:3323894|oclc:3343123>

# Constructing and interpreting an API call and response

- ◇ LOC.gov example:
  - ◇ Documentation: <https://libraryofcongress.github.io/data-exploration/requests.html>
  - ◇ Examples:
    - ◇ <https://www.loc.gov/collections/civil-war-maps?sp=3&c=50&fo=json>
    - ◇ <http://www.loc.gov/collections/abraham-lincoln-papers/?c=1000&fo=sitemap>
    - ◇ <https://www.loc.gov/search/?fa=location:pennsylvania&fo=json>

# Constructing and interpreting an API call and response

- ◇ Census ACS data API example:
  - ◇ Documentation: <https://www.census.gov/data/developers/data-sets/acs-5year.html>
  - ◇ Example calls: <https://api.census.gov/data/2018/acs/acs5/examples.html>
  - ◇ Census API extract creator to help construct API calls:  
<https://public.tableau.com/profile/us.census.bureau#!/vizhome/CensusAPIExtractCreator/MainMenu>
  - ◇ Example API call: Median household income for all counties:
    - ◇ [https://api.census.gov/data/2018/acs/acs5?get=GEO\\_ID,B19013\\_001E,NAME&for=COUNTY:\\*](https://api.census.gov/data/2018/acs/acs5?get=GEO_ID,B19013_001E,NAME&for=COUNTY:*)
- ◇ Census video tutorial for another approach:
  - ◇ <https://www.census.gov/library/video/2020/using-api-all-results-for-acs-table.html>

# Happy experimenting!

Questions/comments?

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