APIs All the Way Down

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Questions We Will Answer This Morning

1. What is an API?

2. Why Should We Care About APIs?

3. Which APIs Should I Use or Explore?

4. How Can I Use APIs? Where Do I Get Started?
1. What is an API?

*Application Programming Interface*

An API is a contract between 2 (or more) applications.

If an user application provides input in a pre-defined format, an API application provides some expected outcome to the user for reuse of function or data.

Compare APIs with other interfaces:

**Graphical User Interfaces (GUIs) & Command Line Interface (CLI)**

where Humans are the Users.
** Web-based System APIs **

Interface to web server/browser typically over HTTP. Various Web API Options Exist.

** Operating System APIs **

Offers functionality of various OS (Windows, Mac, Linux) features to applications.

** Database System APIs **

Returns database query output in format that’s understandable by client(s), extending database interoperability.

** Hardware System APIs **

Allow access to various hardware components of a system.
Access: Permissions Check for User Making Request

Request: Data or Service Asked For. Has 2 main parts:
  Methods: Data & Responses You Can Ask For
  Parameters: Other Details Included in Request or Response

Response: Data or Service Resulting from your Request

["Application program interfaces (Computer software)",
 - ["Application program interfaces (Computer software)
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 - ["1 result"
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 - ["http://id.loc.gov/authorities/subjects/sh98004527"
  ]}
Web APIs: REST vs SOAP

**REpresentational State Transfer**
- Architectural Style
- Based on URIs (Uniform Resource Identifiers) & HTTP
- Use JSON for data format, but permits others
- Aims for Simplicity
- [OpenAPI Specification (OAS)](https://swagger.io/
- “Postcard”

**Simple Object Access Protocol**
- Own Protocol (Service Interface)
- More comprehensive security & transactions
- Built-in ACID (Atomicity, Consistency, Isolation, Durability) Compliance
- XML Only
- “Envelope”
2. Why Should We Care About APIs?

- Researcher wants to perform Topic Analysis on digitized newspapers
- Cataloger needs to use authority matching for names in a catalog
- Purchasing wants stats on what eBook titles are used the most
  - User wants to search library catalog from within other apps
- Library wants to extend its digital collections with other open digital library materials
- Cultural Heritage Institutions want to capture & archive an expanding scope of electronic communication & output

We Want to Enable Reuse of Data & Services – For Ourselves or For All Our Possible Library & Cultural Heritage Institution Users
3. Which APIs Should I Use or Explore?

Some Examples of Possibly Useful, Information Institution-centric APIs
COUNTER Stats via SUSHI

Standardized Usage Statistics Harvesting Initiative

SOAP API Specification for E-Resource Vendors to Provide Usage Stats

http://www.niso.org/workrooms/sushi/developers

PyCounter: Python Library to leverage COUNTER via SUSHI:
https://github.com/pitthsls/pycounter

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Journals Accessed through De Gruyter (taken from Serial Solutions data):
DPLA
(Digital Public Library of America)

https://dp.la/info/developers/codex/

https://api.dp.la/v2 (REST API)

You Need to Register & Get a User Key

Returns Metadata for all Items in DPLA

See what other people have built with the DPLA API in the DPLA App Library: https://dp.la/apps

http://colorbrowse.club/ Chad Nelson

APIs All the Way Down /C. Harlow, cmharlow@gmail.com
VIAF
(Virtual International Authority File)

https://platform.worldcat.org/api-explorer/apis/VIAF/AuthorityCluster/SRU/ SRUSearch

SRU: Search / Retrieval via URL

REST API
Requires a User Key from OCLC
OCLC API Gateway has GUI for Testing
Twitter API

REST API, requires Authentication with Twitter Account via OAuth

Can Search last ~2 weeks & Filter in Real Time Tweets, Among other Options


TWARC: Twitter Archive, Python Library written & used by Library Technologists for Capturing Tweets to Archive: github.com/edsu/twarc

Documenting the Now, a Project Capturing & Archiving Social Media for Movements like Black Lives Matter
WASAPI
(Web Archiving Systems API)

Standardized mechanism for export & import of Web Archive Data

https://github.com/WASAPI-Community/data-transfer-apis

REST API Specification being tested by Internet Archive among others

SWAGGER Specification follows OAS

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4. How Can I Use APIs? Where Do I Get Started?

- PostMan, Tool for Testing API Calls: https://www.getpostman.com/
- Ask your Community: Code4Lib, LITA, DPLA, …
- Take that Crash Course in Python / Ruby / PHP / …
- Use your Web Browser with Add-ons for JSON or XML Parsing
- Use GitHub as Place to Start for Specs, Implementations, or Code
Thanks!

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Librarians and APIs 101: overview and use cases