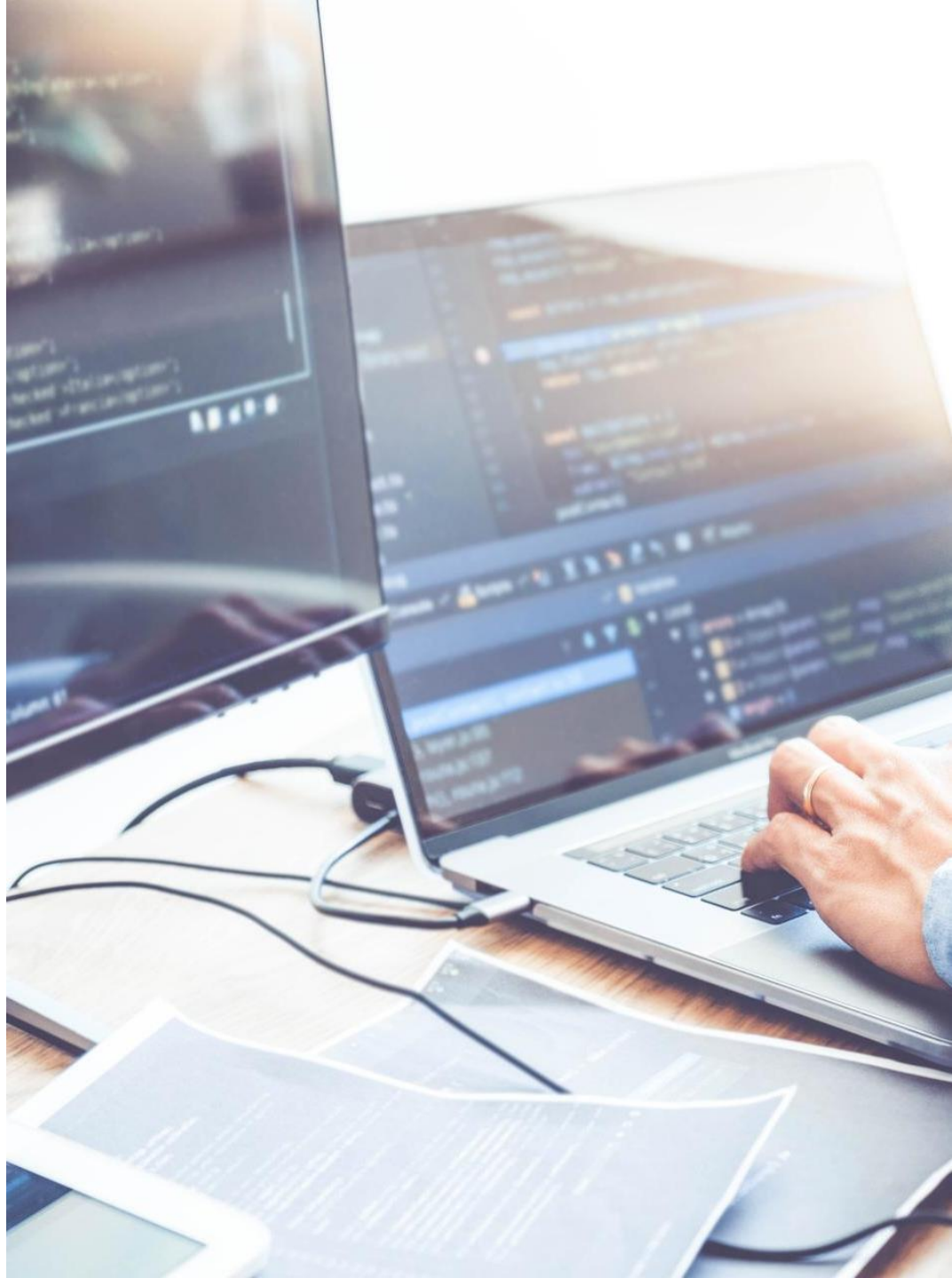
Clarivate™

Using Web of Science APIs

To support the Romanian research and research evaluation

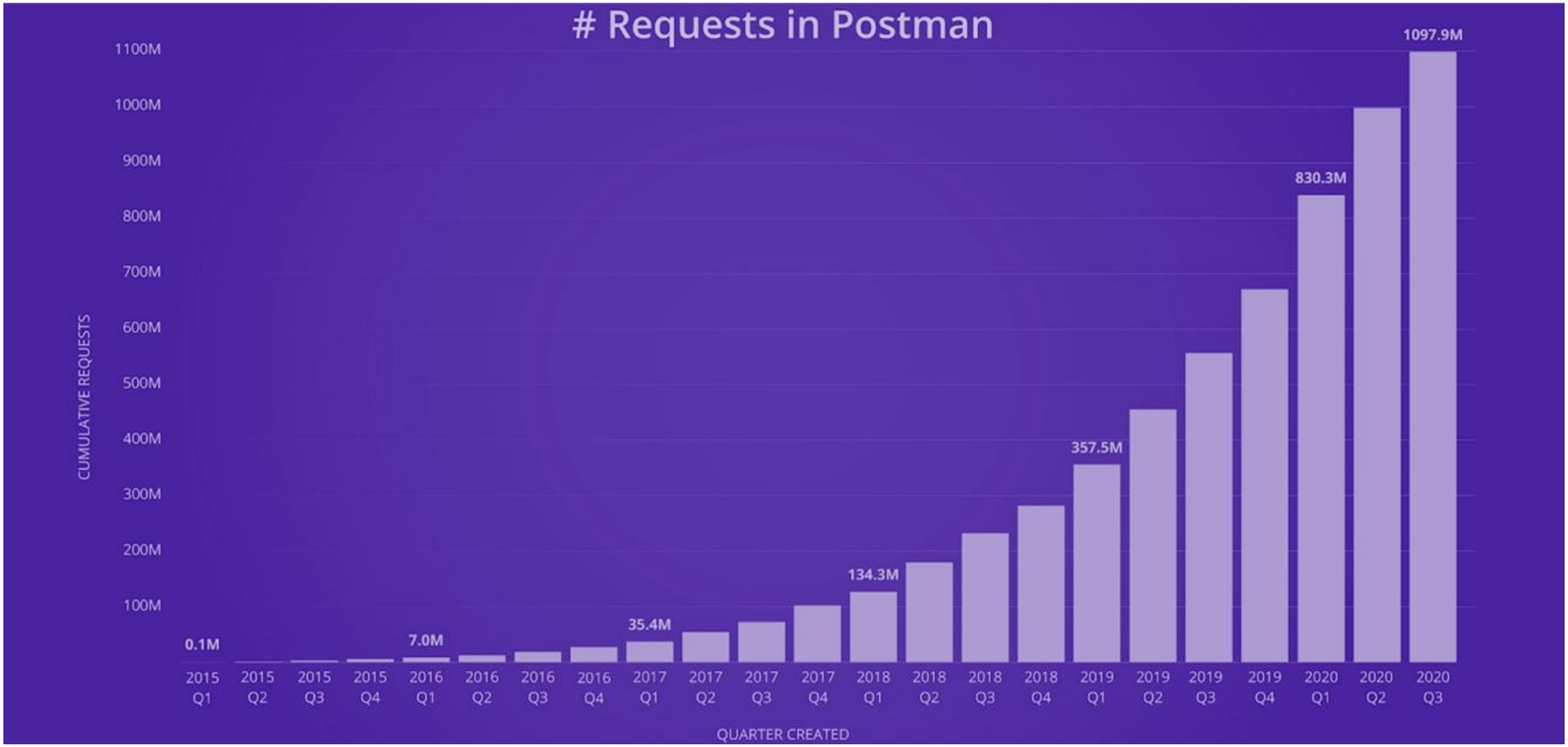
Pavel Kasyanov | 15 May 2023



Agenda

Why is API important?	10 min
Web of Science API use cases	20 min
Which Clarivate APIs exist?	5 min
How to get your API key?	5 min
Q&A	

Why is API important?



Clarivate™

Source: https://www.businesswire.com/news/home/20200902005256/en/Postman-Launches-New-Web-Client-to-Simplify-API-Development:

APIs

(Application Programming Interface – as opposed to “UI” or “User Interface”)

What is an API

API is a way of getting the data from the database:

- Directly
- Usually programmatically
- **Without the means (and limitations) of the User Interface**

What does it look like?

This is what an API get-request looks like – a URL:

https://api.clarivate.com/api/wos/?databaseId=WOS&usrQuery=OG=Clarivate&count=100&firstRecord=1

This is what the retrieved data looks like:

Article metadata:

- **This format is called JSON (for JavaScript Object Notation)**
- **Can still be read by humans, but, more importantly, can easily be read by a computer program**

Clarivate™

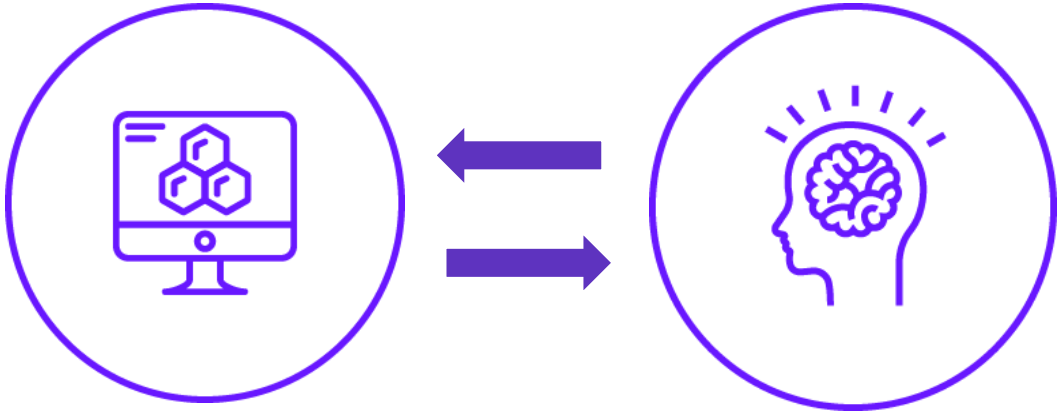
User interfaces and the APIs

The main differences

Web of Science platform user interface

Any task designed for human brain:

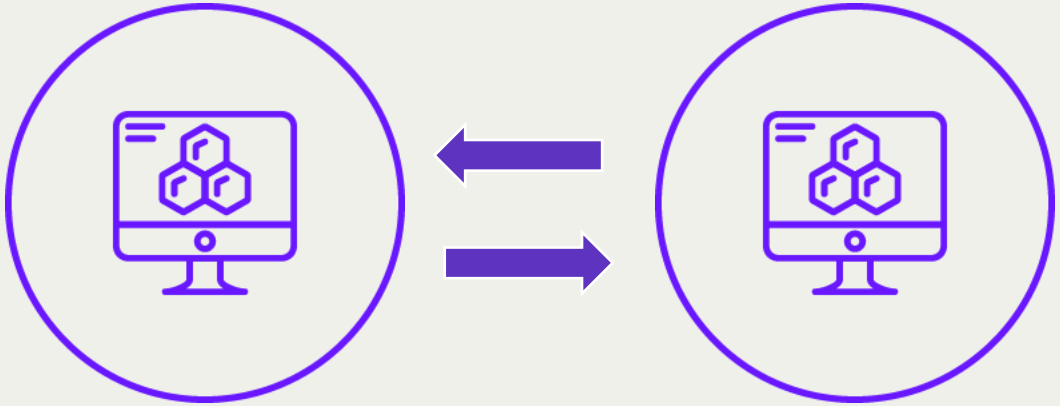
- Running a topical search in Web of Science
- Filtering results
- Selecting the most relevant search results
- Clicking through to the full text document to read it



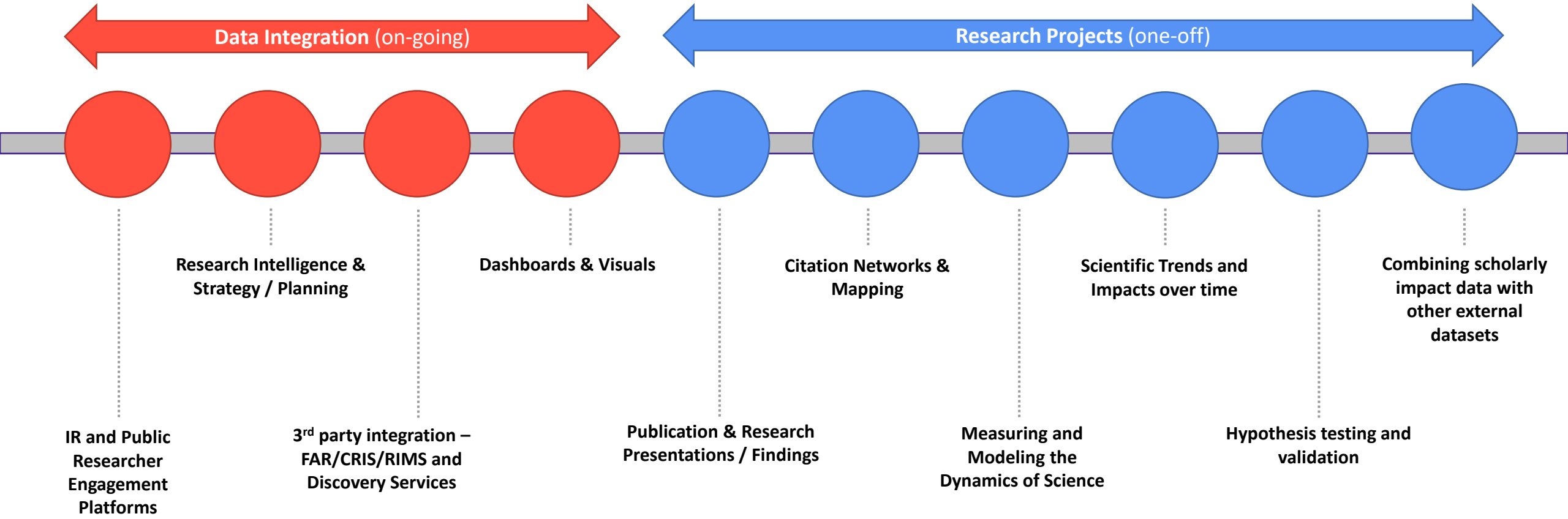
API (Application Programming Interface)

Any task on which computer works more efficiently:

- Routine calculations
- Extracting only necessary data fields
- Combining Web of Science data with external data for further analysis



Web of Science APIs: Primary Use Cases



Simplest example

Processing Web of Science Core Collection data the way you want

Web of Science data

A simple self-made or community-made program or algorithm

Answers to your unique and specific questions

https://github.com/clarivate

Let’s look in a bit more detail

API code snippets at Clarivate GitHub space

Why is this important?

API offers so much flexibility and various options to handle the data that one easily get overwhelmed with them

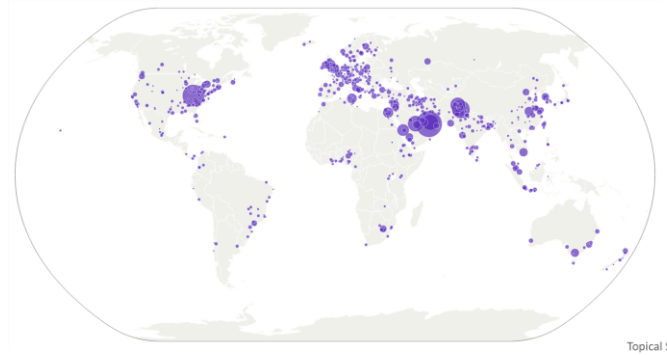
The codes shared there either make it easier to work with our APIs, or provide creative examples of what’s possible to do with it

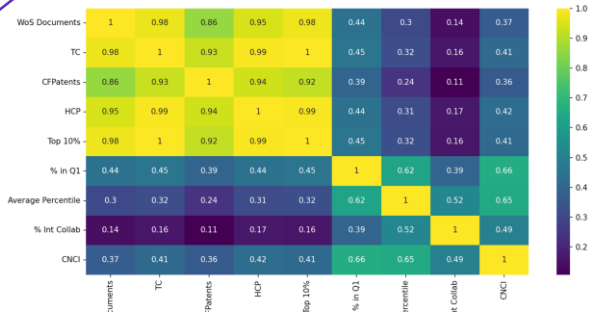
The idea behind all these demonstrational programs

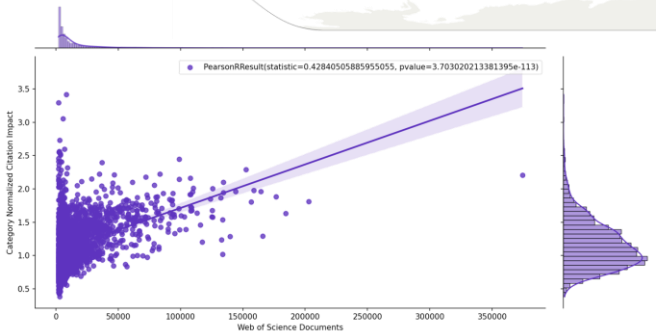
Web of Science data retrieved via API

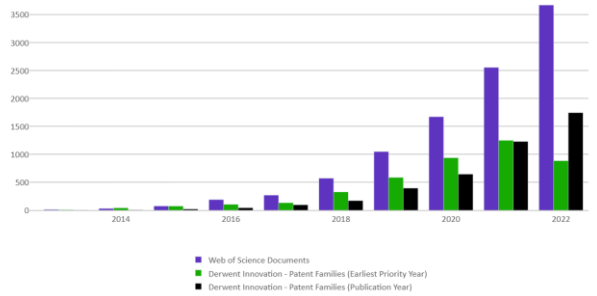
A computer program processes the data

“This is how I want the results to be visualized”









Clarivate™

Use case 1

“Which author IDs are created for the researchers in my organization? How up-to-date are they?"

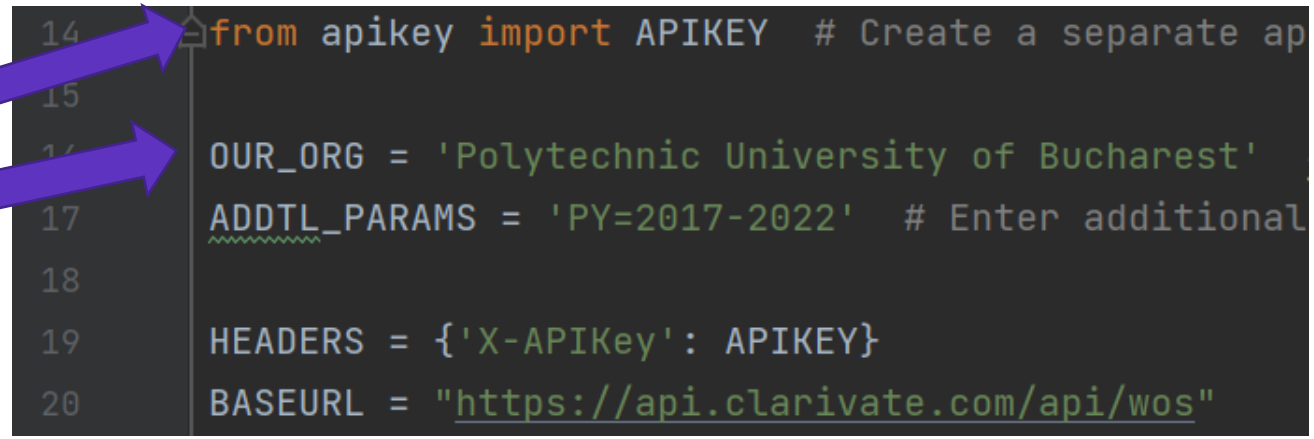
https://github.com/clarivate/wos_api_usecases/tree/main/retrieve_author_ids

Simple code for extracting the necessary data

A tool to retrieve the organization’s researcher names, their documents, and other data

How to use it

- Download the code
- Launch it
- Import the WoS Expanded API key
- Enter the advanced search query
- Run the code



Result

A .csv table containing all the author records for our organization

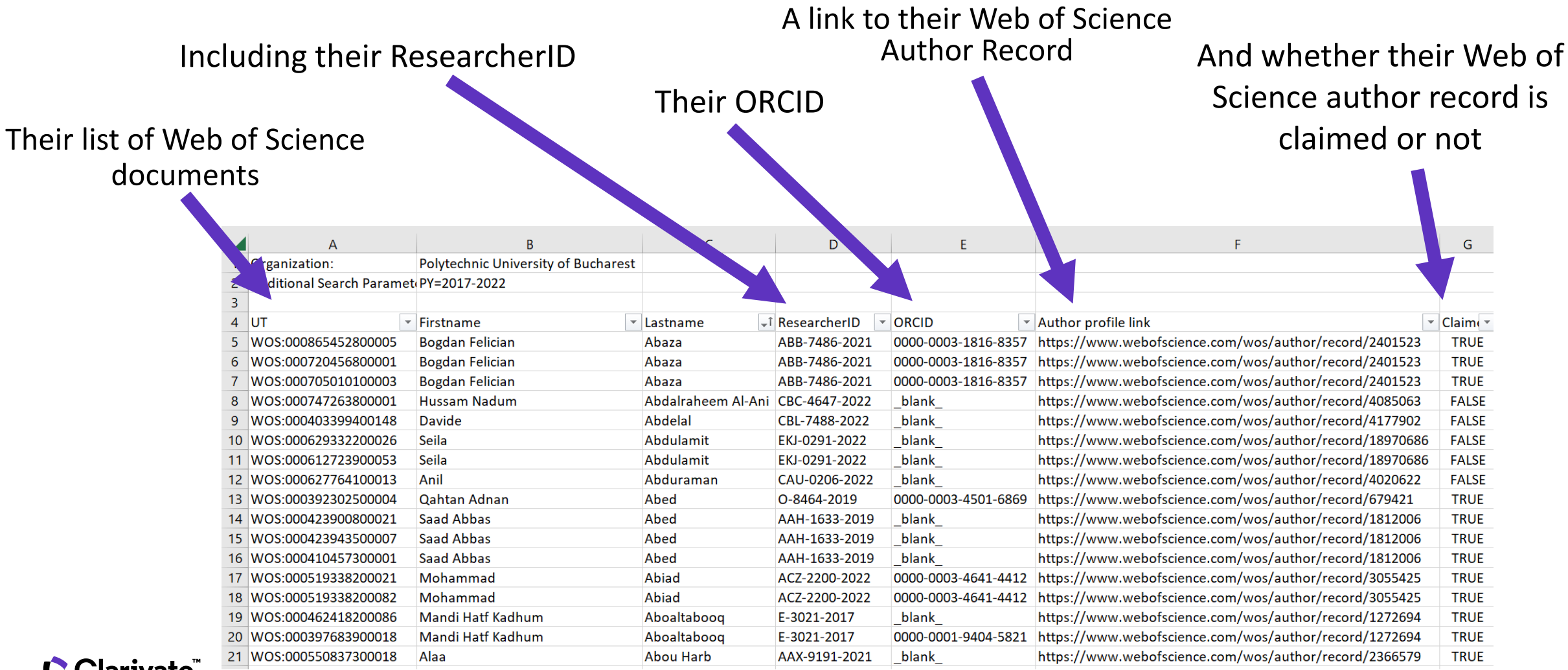
Their list of Web of Science documents

Including their ResearcherID

Their ORCID

A link to their Web of Science Author Record

And whether their Web of Science author record is claimed or not



	A	B	C	D	E	F	G
1	Organization:	Polytechnic University of Bucharest					
2	Additional Search Paramet	PY=2017-2022					
3							
4	UT	Firstname	Lastname	ResearcherID	ORCID	Author profile link	Claim
5	WOS:000865452800005	Bogdan Felician	Abaza	ABB-7486-2021	0000-0003-1816-8357	https://www.webofscience.com/wos/author/record/2401523	TRUE
6	WOS:000720456800001	Bogdan Felician	Abaza	ABB-7486-2021	0000-0003-1816-8357	https://www.webofscience.com/wos/author/record/2401523	TRUE
7	WOS:000705010100003	Bogdan Felician	Abaza	ABB-7486-2021	0000-0003-1816-8357	https://www.webofscience.com/wos/author/record/2401523	TRUE
8	WOS:000747263800001	Hussam Nadum	Abdalraheem Al-Ani	CBC-4647-2022	_blank_	https://www.webofscience.com/wos/author/record/4085063	FALSE
9	WOS:000403399400148	Davide	Abdelal	CBL-7488-2022	_blank_	https://www.webofscience.com/wos/author/record/4177902	FALSE
10	WOS:000629332200026	Seila	Abdulamit	EKJ-0291-2022	_blank_	https://www.webofscience.com/wos/author/record/18970686	FALSE
11	WOS:000612723900053	Seila	Abdulamit	EKJ-0291-2022	_blank_	https://www.webofscience.com/wos/author/record/18970686	FALSE
12	WOS:000627764100013	Anil	Abduraman	CAU-0206-2022	_blank_	https://www.webofscience.com/wos/author/record/4020622	FALSE
13	WOS:000392302500004	Qahtan Adnan	Abed	O-8464-2019	0000-0003-4501-6869	https://www.webofscience.com/wos/author/record/679421	TRUE
14	WOS:000423900800021	Saad Abbas	Abed	AAH-1633-2019	_blank_	https://www.webofscience.com/wos/author/record/1812006	TRUE
15	WOS:000423943500007	Saad Abbas	Abed	AAH-1633-2019	_blank_	https://www.webofscience.com/wos/author/record/1812006	TRUE
16	WOS:000410457300001	Saad Abbas	Abed	AAH-1633-2019	_blank_	https://www.webofscience.com/wos/author/record/1812006	TRUE
17	WOS:000519338200021	Mohammad	Abiad	ACZ-2200-2022	0000-0003-4641-4412	https://www.webofscience.com/wos/author/record/3055425	TRUE
18	WOS:000519338200082	Mohammad	Abiad	ACZ-2200-2022	0000-0003-4641-4412	https://www.webofscience.com/wos/author/record/3055425	TRUE
19	WOS:000462418200086	Mandi Hatf Kadhum	Aboaltabooq	E-3021-2017	_blank_	https://www.webofscience.com/wos/author/record/1272694	TRUE
20	WOS:000397683900018	Mandi Hatf Kadhum	Aboaltabooq	E-3021-2017	0000-0001-9404-5821	https://www.webofscience.com/wos/author/record/1272694	TRUE
21	WOS:000550837300018	Alaa	Abou Harb	AAX-9191-2021	_blank_	https://www.webofscience.com/wos/author/record/2366579	TRUE

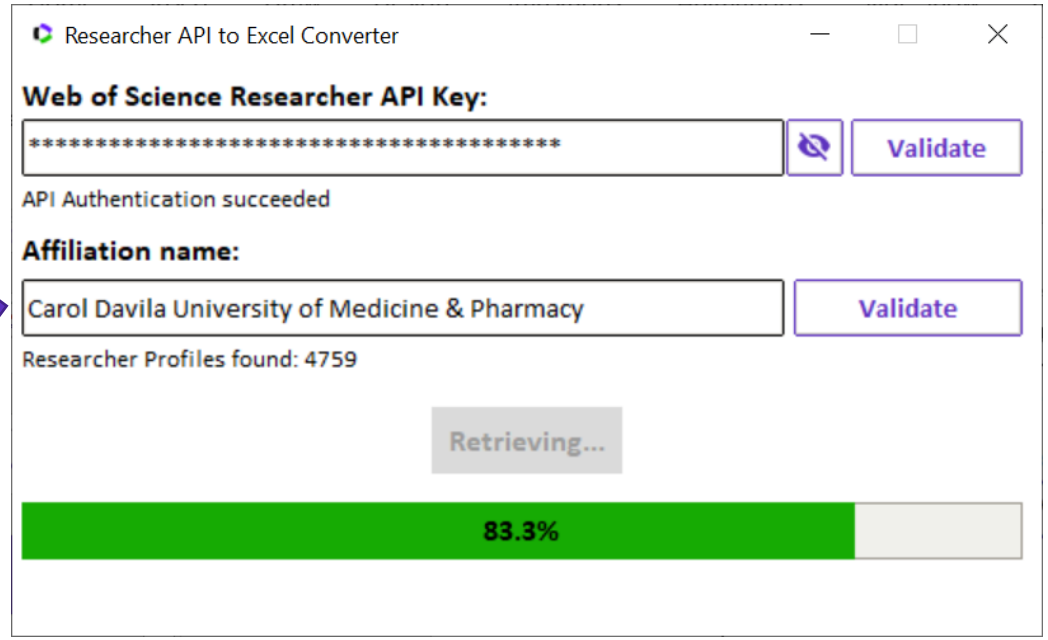
https://github.com/clarivate/wos_api_usecases/tree/main/researcher-api-excel-converter

Option 2 – a different program using Researcher API

A tool to retrieve the same data, but on the researcher level

How to use it

- Download the code
- Launch it
- Paste the Researcher API key
- Enter the Web of Science Affiliation name
- Click “Run”



Result

An Excel table containing all the author records for our organization

ResearcherID

Full name

Primary Affiliation

Metrics

And a link to the Web of Science platform profile

	A	B	C	D	E	F	G
1	rid	fullname	primary_affiliation	h-index	documents_count	times_cited	wos_platform_link
2	CPF-4722-2022	Elena, Dogaru	Carol Davila University of Medicine & Pharmacy	0	1	0	https://www.webofscience.com/wos/author/record/CPF-4722-2022
3	EMJ-7857-2022	Bogdan, Manolescu	Carol Davila University of Medicine & Pharmacy	1	3	1	https://www.webofscience.com/wos/author/record/EMJ-7857-2022
4	FJF-8626-2022	Luminita, Dumitru	Carol Davila University of Medicine & Pharmacy	0	1	0	https://www.webofscience.com/wos/author/record/FJF-8626-2022
5	EKM-8775-2022	Iacob, Alina	Carol Davila University of Medicine & Pharmacy	0	1	0	https://www.webofscience.com/wos/author/record/EKM-8775-2022
6	FQT-6780-2022	Papacocea, Ioana Raluca	Carol Davila University of Medicine & Pharmacy	3	12	26	https://www.webofscience.com/wos/author/record/FQT-6780-2022
7	FKH-3943-2022	Kovacs, E.	Carol Davila University of Medicine & Pharmacy	11	48	327	https://www.webofscience.com/wos/author/record/FKH-3943-2022
8	FUU-2697-2022	Sundell, Per	Carol Davila University of Medicine & Pharmacy	2	2	4	https://www.webofscience.com/wos/author/record/FUU-2697-2022
9	AAG-9751-2021	Moldoveanu, Alexandru Constantin	Carol Davila University of Medicine & Pharmacy	7	28	113	https://www.webofscience.com/wos/author/record/AAG-9751-2021
10	ABC-2986-2020	Craiu, Dana	Carol Davila University of Medicine & Pharmacy	25	93	2110	https://www.webofscience.com/wos/author/record/ABC-2986-2020
11	ABD-2154-2021	Ilie, Mihaela Adriana	Carol Davila University of Medicine & Pharmacy	16	25	722	https://www.webofscience.com/wos/author/record/ABD-2154-2021
12	EJM-3903-2022	Antonescu-Ghelmez, Dana	Carol Davila University of Medicine & Pharmacy	0	3	0	https://www.webofscience.com/wos/author/record/EJM-3903-2022
13	HEQ-9770-2022	Victor Ng-Thow-Hing	Carol Davila University of Medicine & Pharmacy	1	2	2	https://www.webofscience.com/wos/author/record/HEQ-9770-2022
14	HJR-6528-2023	Antonescu, Florian	Carol Davila University of Medicine & Pharmacy	0	3	0	https://www.webofscience.com/wos/author/record/HJR-6528-2023
15	ETN-0756-2022	Farca, Catalin	Carol Davila Cent Univ Emergency Mil Hosp, Car	1	1	3	https://www.webofscience.com/wos/author/record/ETN-0756-2022
16	AAF-5521-2020	Rimbas, Mihai	Colentina Clin Hosp, Carol Davila University of I	16	97	763	https://www.webofscience.com/wos/author/record/AAF-5521-2020
17	AER-4258-2022	Mariana, Zazu	Carol Davila University of Medicine & Pharmacy	1	4	9	https://www.webofscience.com/wos/author/record/AER-4258-2022
18	ESU-3796-2022	Cretu, Stefana	Carol Davila University of Medicine & Pharmacy	2	10	13	https://www.webofscience.com/wos/author/record/ESU-3796-2022

Use case 2

Combining Web of Science data with data from other databases

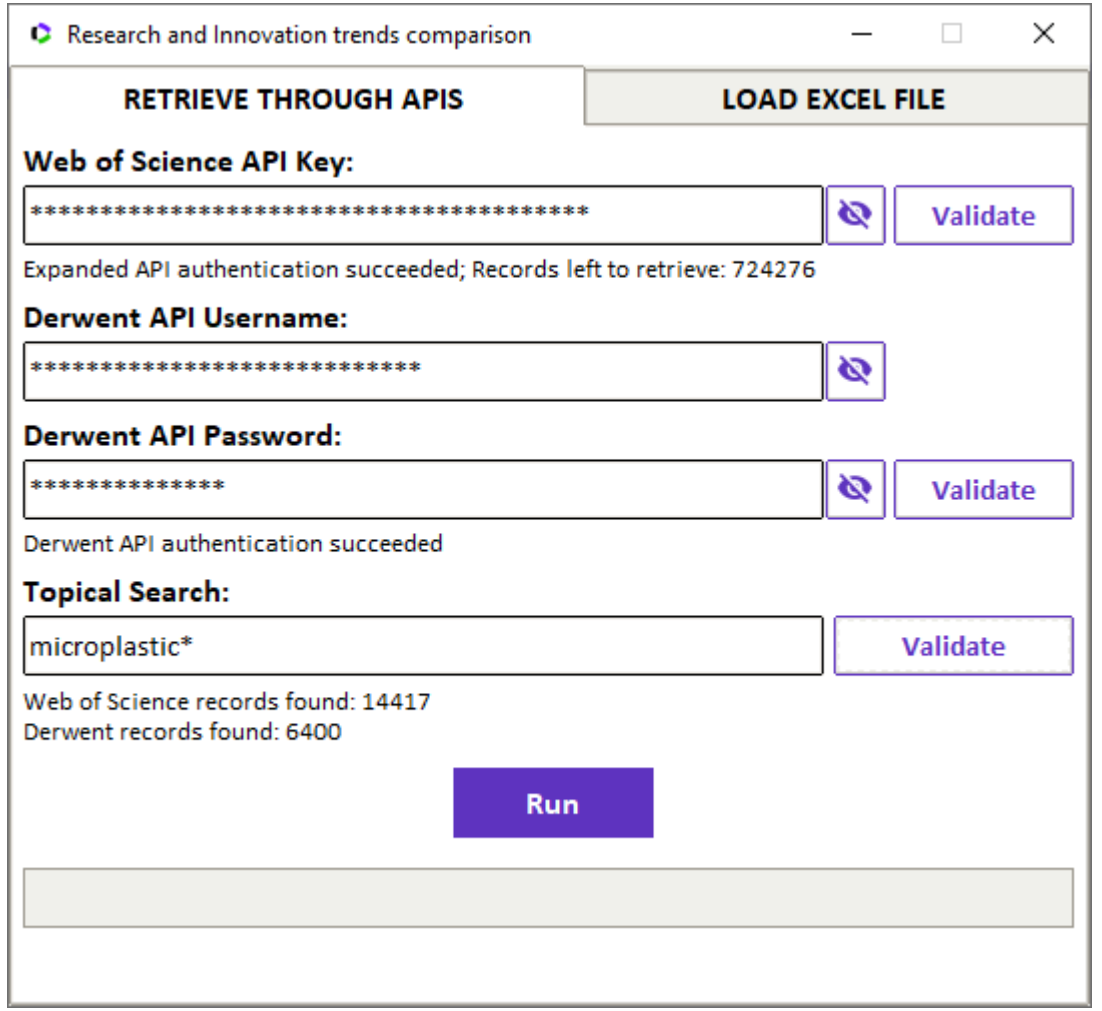
https://github.com/clarivate/wos_api_usecases/tree/main/wos_and_derwent_api_topical_search

Research and Innovation trends comparison

A tool to compare the growing trends for a given emerging topic – from both WoS records and Derwent patent families perspective

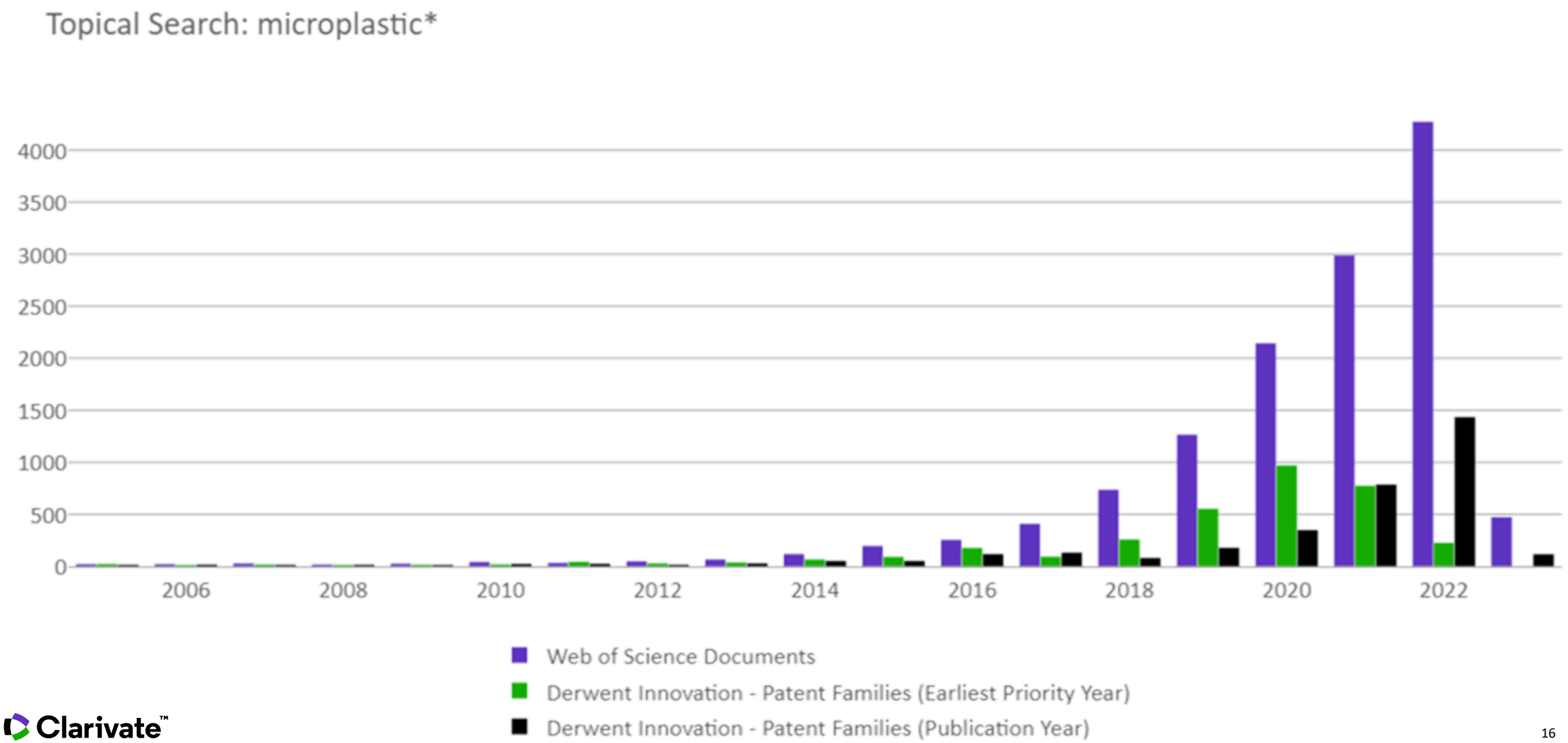
How to use it

- Paste the WoS API key, Derwent API username, and Derwent API password
- Enter the topical search query
- Click Run



Clarivate™

Standard output: .xlsx file, interactive Plotly graph



Use case 3

“Can we calculate the H-index for our researchers - but excluding their self-citations?”

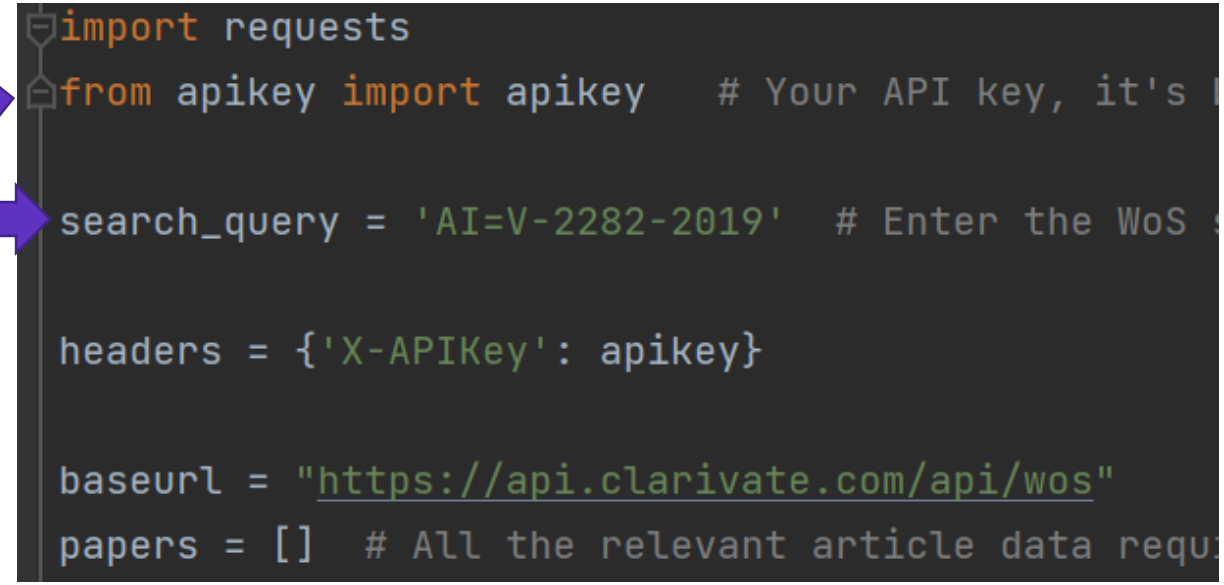
https://github.com/clarivate/wos_api_usecases/tree/main/researcherid-based_h-index_excluding_self-citations

Simple code identifying self-citations

And removing them from the analysis

How to use it

- Download the code
- Launch it
- Import the WoS Expanded API key
- Enter the advanced search query (normally an Author name, or Author ID)
- Run the code



Result:

Summary printed out by the program and details saved to a .csv file

- This gets printed out by the program:

```
The H-index is:
    Including self-citations: 12
    Excluding self-citations: 11
Please check details in 'H-index.csv' file
```

- And this is the .csv file:

	A	B	C
1		Including Self-Citations	Excluding Self-Citations
2	H-Index	12	11
3			
4	UT	Times Cited (including self-citations)	Times Cited (excluding self-citations)
5	WOS:000526184900011	7941	7930
6	WOS:000646027900015	298	295
7	WOS:000570130100001	178	177
8	WOS:000675844000014	87	86
9	WOS:000634285400009	56	52
10	WOS:000509325900001	49	49
11	WOS:000753615000007	30	30
12	WOS:000642161700014	21	19
13	WOS:000327443300073	18	14
14	WOS:000373116500037	16	14
15	WOS:000338177500003	16	13
16	WOS:000441934100001	10	10
17	WOS:000456001300028	10	9
18	WOS:000707017600023	9	8
19	WOS:000352218400042	12	7
20	WOS:000446691400006	7	6
21	WOS:000675524700019	6	6

- This is where the difference comes from:

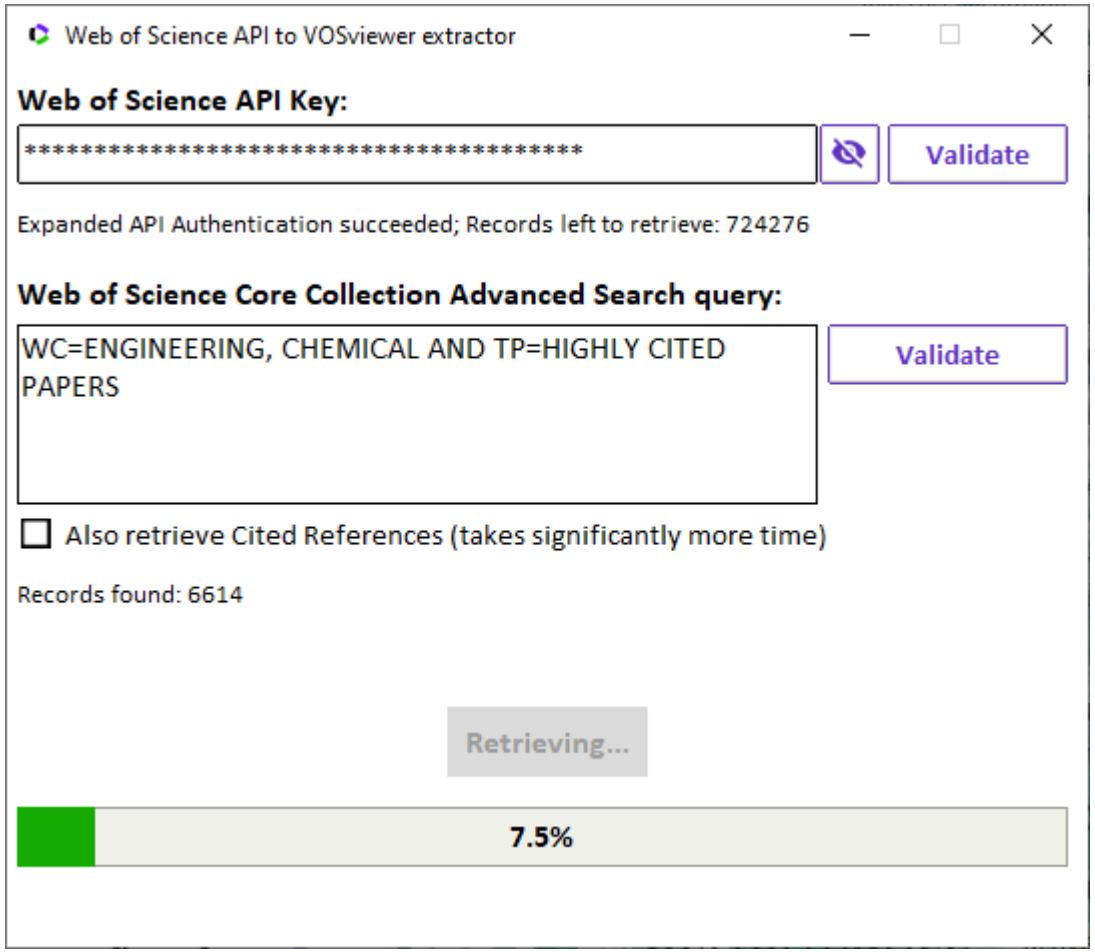
Use case 4

Pulling data from WoS into VOSviewer

https://github.com/clarivate/wos_api_usecases/tree/main/wos_to_vosviewer_exporter

WoS to VoS extractor

A tool to retrieve the documents from Web of Science – and save them into a tab-delimited file accepted by VOSviewer

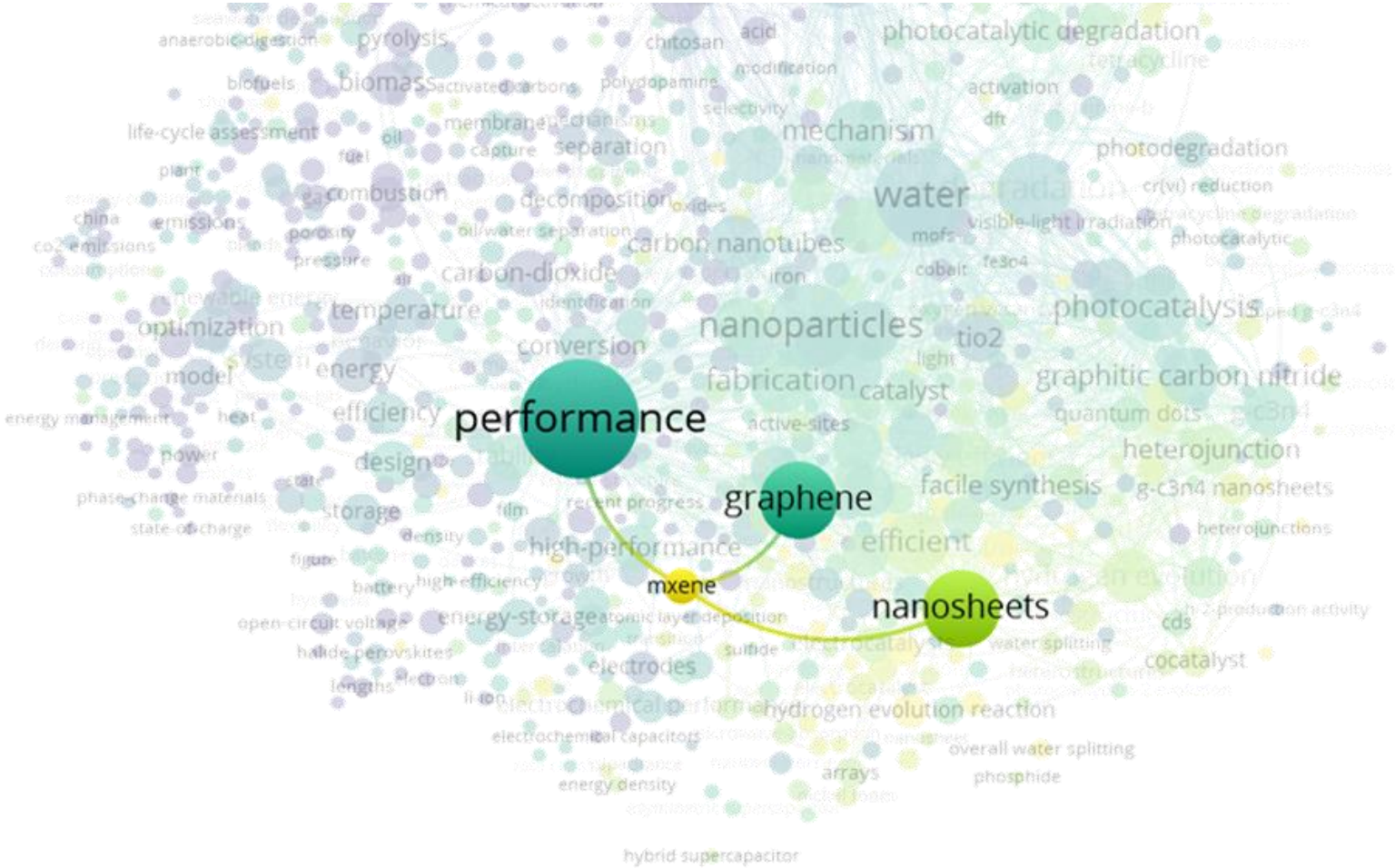


How to use it

- Paste the WoS Expanded API key (Starter also works but returns limited set of fields)
- Enter the advanced search query
- Check if you also need the cited references to perform the citation, co-citation, and bibliometric coupling analyses
- Click Run
- …

Clarivate™

The text file saved into the Python project folder can then be uploaded into VOSviewer



Other use cases worth mentioning

https://github.com/clarivate/wos_api_usecases

Other use cases

Might be without a GUI/visualization capabilities

There are also plenty of unpublished code snippets

- Chances are that if you need to check if a specific analysis is possible with Web of Science API, we can already demonstrate what it would look like

Web of Science Expanded API

- Calculating self-citations at coauthor/organizational/source/country level (a.k.a. **scientific self-citation calculator**)
- **Citations from patents report** (which individual WoS documents get cited the most by DII patent families?)

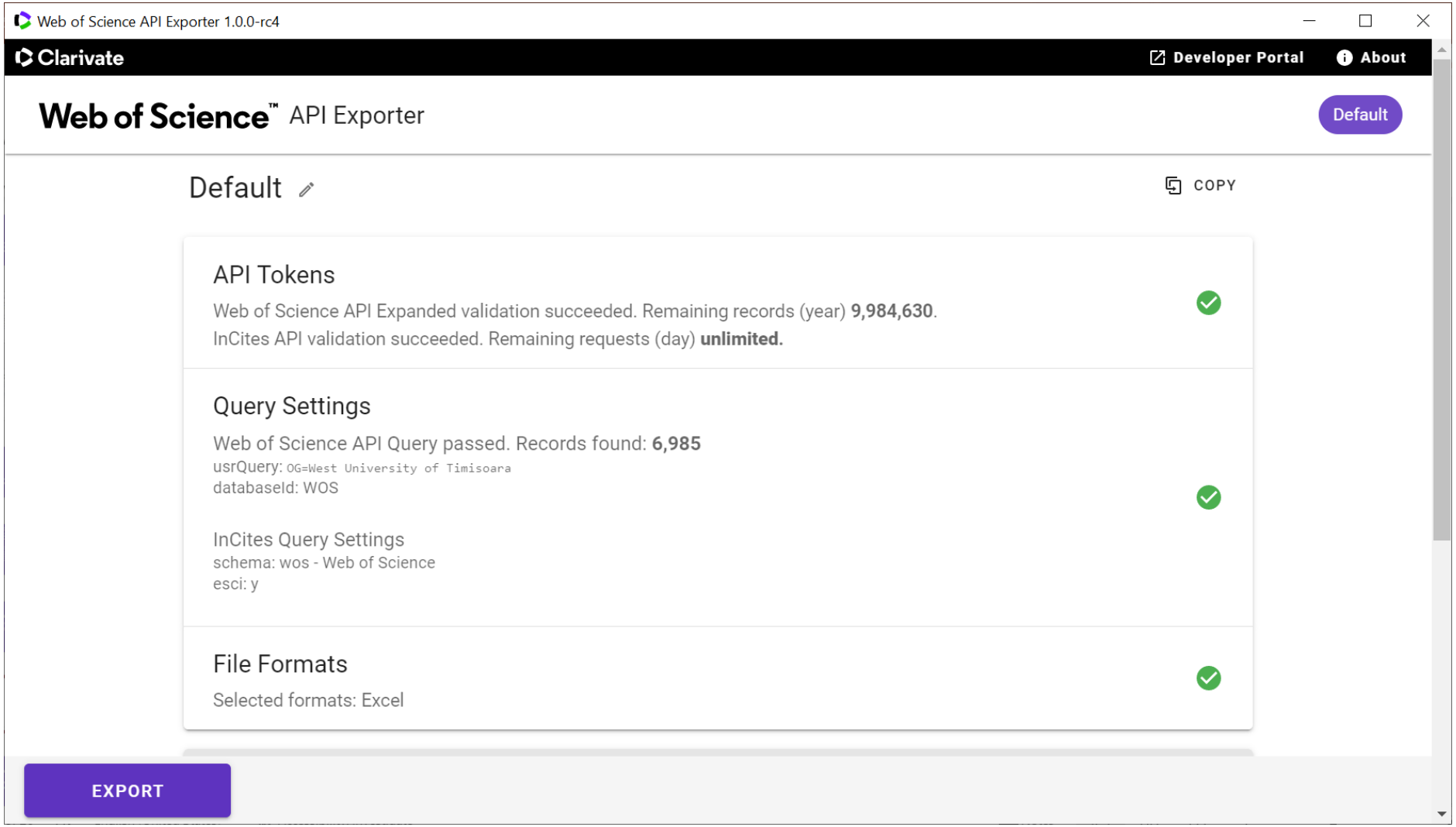
Web of Science Expanded and/or InCites API:

- Web of Science API exporter (a.k.a. **Excel Converter**) – *doesn't require any coding skills to work with*

Excel Converter
a.k.a.
API Exporter

https://github.com/clarivate/wos-excel-converter

A simple tool to retrieve Web of Science data in an Excel, CSV, JSON, or XML format through the API



Types of Web of Science APIs

Web of Science™ APIs

December 2022

The Web of Science Publication APIs complement our suite of RESTful Web of Science APIs to provide complete publication metadata from the Web of Science

Publication metadata

Web of Science Starter API
Support search and data integration using limited Web of Science data returned as JSON or XML

Web of Science API Expanded
Support search and data integration using full Web of Science data returned as JSON or XML

Publication metrics

InCites API
Support bibliometric analysis and integration of document-level metrics

Journal metadata/metrics

Web of Science Journals API
Support bibliometric analysis and integration of journal-level metrics

Researcher metadata/metrics

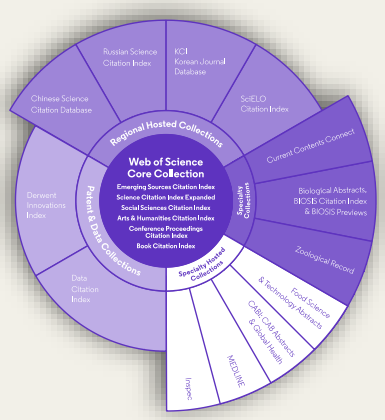
Web of Science Researcher API
Support bibliometric analysis and integration of researcher profile data

Coverage

WoS Starter API

Includes the following data sources:

- Web of Science Core Collection
- BIOSIS family (BCI, BIOABS, BIOSIS)
- Current Contents
- Data Citation Index
- Derwent Innovations Index
- Medline
- Zoological records (ZR)
- All Databases



WoS API Expanded

Includes the following data sources:

- Web of Science Core Collection
- BIOSIS family (BCI, BIOABS, BIOSIS)
- CABI
- Current Contents
- Data Citation Index
- Derwent Innovations Index
- FSTA
- INSPEC
- Medline
- Regional content
- Zoological records (ZR)
- All Databases

Data fields

WoS Starter API

Authors, RID, Author keywords, Document type, Title, Issue, Pages, Publication date, Source title, Volume, DOI, ISBN, ISSN, PMID, Times cited

WoS API Expanded

WoS Starter fields + Author addresses/affiliations, Grants, Funding organizations, Publisher, Citing articles, Cited references, Organization enhanced, ORCID, Citation topics, Subject categories, Citation context, Author position, Corresponding author

API usage

- GET/POST query for all publications using WoS advanced search field tags
- GET cited references and citing articles
- GET times cited counts
- GET WoS UTs to quickly identify new publications for your collection

Queries:
Boolean AND/+, OR and NOT operators are supported, along with '*' wildcards. Queries can be filtered by values, ranges, and dates.

See https://developer.clarivate.com/apis/wos and https://developer.clarivate.com/apis/wos-starter for more information

Example use cases

Integrate these APIs to maintain and export high-quality full item-level metadata and times cited counts of Web of Science documents.

- **Publishers and editors** - Understand how your articles are performing and benchmark or analyze citation networks against others in their discipline.
- **Librarians** - Understand which articles are the most important to your institution's and researcher's success.
- **Researchers** - Guide to discover and select the most appropriate articles to read and compare your research findings in.
- **Research managers and information analysts** - Track bibliometric and citation patterns to support strategy and funding decisions, as well as highlight your institution's impact on the research community.

InCites Benchmarking & Analytics™ API

December 2022

The InCites API complements our suite of RESTful Web of Science APIs to provide complete document-level metrics from InCites

Publication metadata

Web of Science Starter API
Support search and data integration using limited Web of Science data returned as JSON or XML

Web of Science API Expanded
Support search and data integration using full Web of Science data returned as JSON or XML

Publication metrics

InCites API
Support bibliometric analysis and integration of document-level metrics

Journal metadata/metrics

Web of Science Journals API
Support bibliometric analysis and integration of journal-level metrics

Researcher metadata/metrics

Web of Science Researcher API
Support bibliometric analysis and integration of researcher profile data

Coverage

InCites API
Includes the following data sources:
- Science Citation Index Expanded
- Social Sciences Citation Index
- Arts & Humanities Citation Index
- Conference Proceedings Citation Index (SCI & SSH)
- Book Citation Index (SCI & SSH)
- Emerging Sources Citation Index

Key features
Includes the following data sources:
- Reliable citation indicators
- Global evaluation schema
- Collaboration indicators
- Open access indicators
- Citation Topics
- Trend analysis
- Institutional profiles

API usage

- GET metrics by institution ID endpoint
- GET metrics by UT endpoint
- Set global evaluation schema for regional context
- Harvest SDGs and Citation Topics

Queries:
Search by WoS accession number (UT) to get document- level metrics

See https://developer.clarivate.com/apis/incites for more information

Example use cases

- **Library:** publication repository updates, metrics for institution papers
- **Research management:** benchmark, collaborations, citations, integration with CRIS
- **Research:** Retrieve metrics and citation topics for bibliometrics studies

Data fields

- Times Cited
- Document Type
- Journal Impact Factor
- Highly Cited/Hot Paper
- Collaboration indicators (International, industry, Institution)
- Open Access type (DOAJ Gold, Other Gold, Green Published, Green Accepted, Bronze)
- Normalized metrics (Category Normalized Citation Impact (per category), Journal Normalized Citation Impact)
- Percentile per category

Web of Science™ Journals API

December 2022

The Journals API complements our suite of RESTful Web of Science APIs to provide complete journal metadata and metrics from the Journal Citation Reports

Publication metadata

Web of Science Starter API
Support search and data integration using limited Web of Science data returned as JSON or XML

Web of Science API Expanded
Support search and data integration using full Web of Science data returned as JSON or XML

Publication metrics

InCites API
Support bibliometric analysis and integration of document-level metrics

Journal metadata/metrics

Web of Science Journals API
Support bibliometric analysis and integration of journal-level metrics

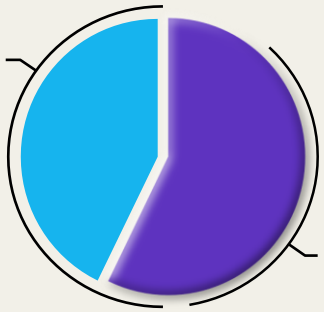
Researcher metadata/metrics

Web of Science Researcher API
Support bibliometric analysis and integration of researcher profile data

Coverage

21,000 +
journals covered*
Includes the sciences (SCIE), social sciences (SSCI), and now both the arts & humanities (AHCI) and emerging sources (ESCI)

*From July 2022



All Web of Science Core Collection™ Journals

12,000 +
have a Journal Impact Factor™ (JIF)
SCIE and SSCI

A new normalized journal metric*

Journal Citation Indicator

calculated for all Web of Science Core Collection journals, along with:

- Journal name & ISSN/eiSSN
- Category and rank
- Total cites
- Immediacy Index
- Journal Impact Factor™
- 5-year JIF
- JIF quartile
- Average JIF percentile
- Eigenfactor and Article Influence score
- Cited/citing half-life
- Citable items
- Open access
- Source data counts

Example use cases

Integrate with internal systems
For example, to pass Journal Impact Factors (JIFs) and Journal Citation Indicators (JCIs) to journal web pages

Bibliometric studies
Access and retrieve core journal metrics for entire categories of groups and journal to include in analyses

API usage

Journal
- Query for all journals or by journal ID
- GET cited and citing journals
- GET journal metrics

Category
- Query for all categories or by category ID
- GET cited and citing categories
- GET category metrics

Queries:
Boolean AND/+, OR and NOT operators are supported, along with '*' wildcards. Queries can be filtered by values, ranges, and dates.

See https://developer.clarivate.com/apis/wos-journal for more information.

Web of Science™ Researcher API

December 2022

The Web of Science Researcher API complements our suite of RESTful Web of Science APIs to provide complete researcher profile data from the Web of Science

Publication metadata

Web of Science Starter API
Support search and data integration using limited Web of Science data returned as JSON or XML

Web of Science API Expanded
Support search and data integration using full Web of Science data returned as JSON or XML

Publication metrics

InCites API
Support bibliometric analysis and integration of document-level metrics

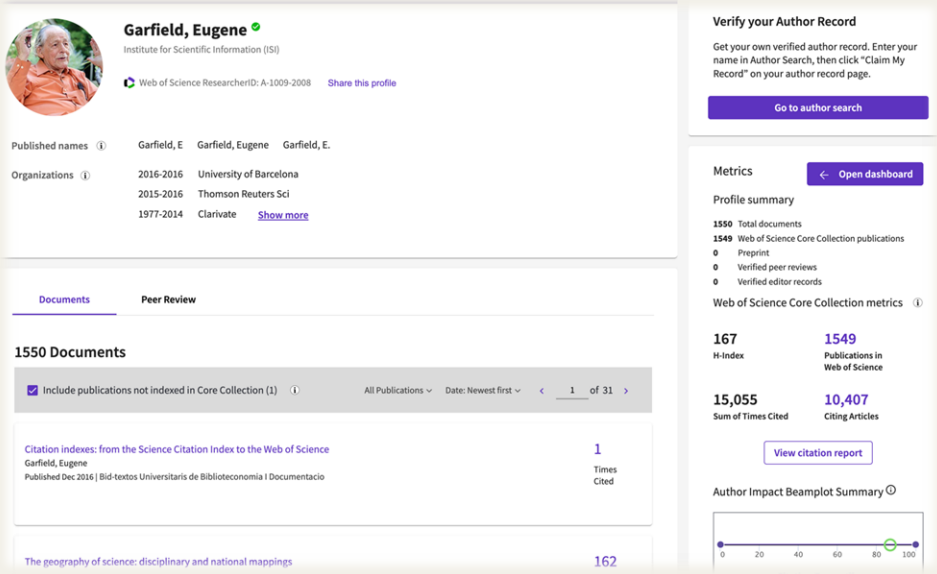
Journal metadata/metrics

Web of Science Journals API
Support bibliometric analysis and integration of journal-level metrics

Researcher metadata/metrics

Web of Science Researcher API
Support bibliometric analysis and integration of researcher profile data

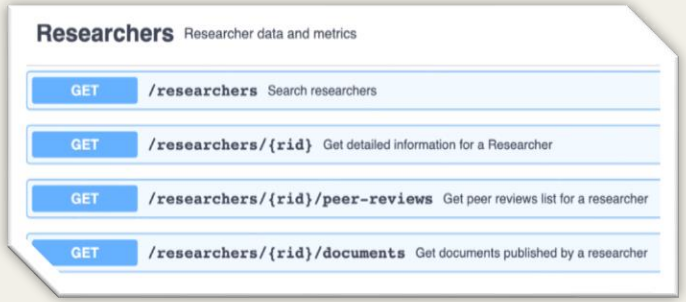
Web of Science Author Records



See https://developer.clarivate.com/apis/wos-researcher for more information on the Researcher API.

See Web of Science Researcher Profiles for more information on Author Records in Web of Science.

API usage



Queries:

Operator/Attribute:
- **FirstName**
- **LastName**
- **ResearcherID** or **RID**
- **ORCID**
- **Organization** or **OG**: Organization Enhanced Name (currently only primary affiliation)
- **Topic** or **TS**: Title, Abstract and Keywords

Attribute filtering possible with = (equals), ~ (includes), and ! (not)

Example use cases

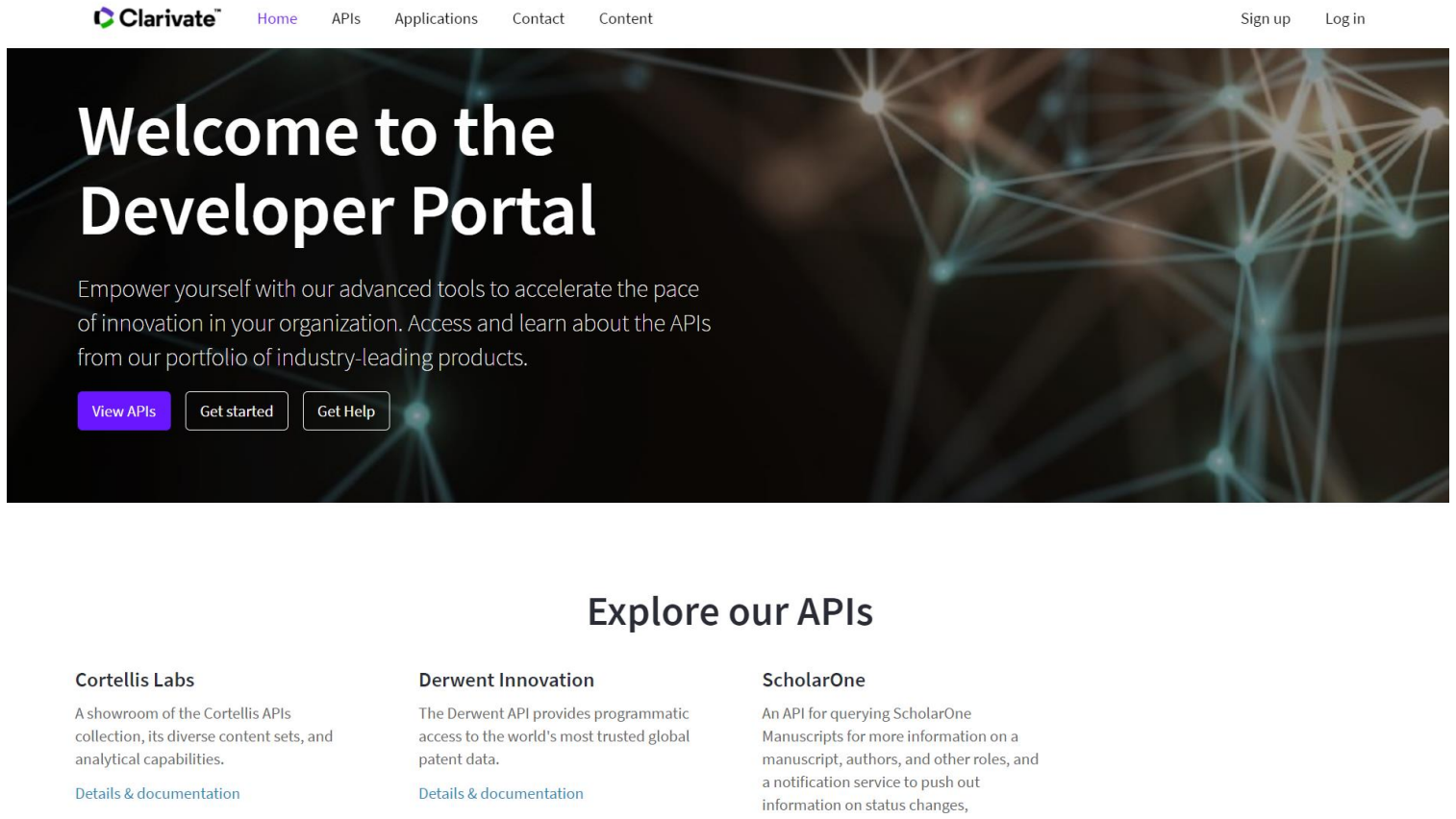
- Harvest RIDs for your organization (primary affiliation only)
- Pull H-index, along with other metrics, for your researchers at your organization
- Populate researcher profiles
  - Internal use cases, e.g. pre-populate FAR, CRIS etc
  - Seed external profiles, e.g. VIVO
- Get latest researcher metrics
  - Populate FAR with metrics
  - Display researcher-focused data on university site
- Find and track output of leading researchers within a topic

Web of Science Developer Portal

https://developer.clarivate.com/

How to get your API key

developer.clarivate.com



- Register (your Web of Science credentials should work)
- Create an application
- Select an API and click “subscribe”

Almost any analysis with Web of Science data that you can think of – even if it is not yet implemented in Web of Science user interface – is possible using the API

If you’d like to know more

Eva Czegledi

Senior Account Manager

Clarivate

eva.czegledi@clarivate.com

Clarivate™

Thank you

Pavel Kasyanov

pavel.kasyanov@clarivate.com

clarivate.com