Introduction to Scopus APIs

Presenter
Becky Brown
Market Development Manager, Scopus

July 21st, 12:00pm EDT
We suggest viewing the presentation in full screen
What you should do if you have questions

You are welcome to submit questions by using the “Ask a Question” feature on your screen. At the end of the presentation, the moderator will choose a few of the questions to answer.

Today, we’ll be live Tweeting using the #scopusfocus
Thank you for joining our monthly Scopus webinar series

Each month, a Scopus team member hosts a webinar with the aim to improve your Scopus experience and to answer questions about that month’s topic.

Upcoming Scopus webinar

August – No Webinar

September 22\textsuperscript{nd} – Scopus Update – What’s happened in 2016?

Today, we’ll be live Tweeting using the \#scopusfocus
What You Will Learn Today about Scopus APIs

• What is Scopus & what is an API?

• Simplistically, how do Scopus APIs work?

• What is the procedure to start using Scopus APIs?

• How are Scopus APIs most commonly used by Academic, Government and Corporate customers?

• How are people currently using the Scopus APIs?
Why are Scopus APIs Important?

• As an abstracting and indexing database, Scopus captures articles being published in virtually all scholarly journals of any significance in the world; and its profiling of authors and institutions makes it easy to find new articles by those authors at those institutions.

• The Scopus UI (user interface) offers many features to that end, allowing librarians, researchers, developers and & business intelligence groups to manually find publications originating from their institution that they can then add to their systems.

• Aside from that user interface, Scopus also has Application Programming Interfaces (APIs) that offer the same features, but then in a machine-readable format that enables software, rather than humans on the UI (User Interface), to find articles, authors and institutions in Scopus.

• This allows developers to write programs that automatically extract data from Scopus, and add that data to their systems & applications.
Over 15,400 APIs in July 2016

Launch of Scopus APIs

Source: http://www.programmableweb.com/
Is anyone really using our APIs?

In 2016, over 60% of our customers use APIs in some way.

We also have many users from the general public or from non-subscribers, including for research purposes.
# What is Scopus Data?

Scopus data is the highly structured content that is searchable through Scopus.com

## JOURNALS
- **21,568** peer-reviewed journals
- **361** trade journals
  - Full metadata, abstracts and cited references (ref’s post-1995 only)
  - Funding data from acknowledgements
  - Citations back to 1970

## CONFERENCES
- **90K** conference events
- **7.3M** conference papers
  - Mainly Engineering and Computer Sciences

## BOOKS
- **531** book series
- **30K** Volumes / **1.2M** items
  - **119,882** stand-alone books
  - **974K** items
  - Focus on Social Sciences and A&H

## PATENTS*
- **27M** patents
  - From 5 major patent offices
    - WIPO
    - EPO
    - USPTO
    - JPO
    - UK IPO

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That has been enhanced with

- **Deep citation linking** for all articles 1970-present
- Authoritative **Author & Affiliation Profiles** for all records 1823-forward
- Additional **enhanced metadata**, ex. Medline & other index terms, Funding Acknowledgements, etc.
Let’s go back to basics: the Scopus data model

The Scopus data model is designed around the notion that articles are written by authors that are affiliated with institutions. Visually and rather simplistically, this relational model is represented below.

What is the value of this structured data? This relational data model means that Scopus can tell you who is doing what in global literature and where they are doing it with higher accuracy than anyone else.

Scopus Data Model Simplified

- Over 62M Journal, Conference, & Book records
- Over 12M author profiles (active)
- Over 9M institutional profiles, incl. 7000 major output entities
Delivery Methods: How can users get Scopus Data?

**Scopus.com**

**What?**
World’s largest abstract and citation database of peer-reviewed literature

**How?**
Users access content from 5000 publishers directly with discovery & analytical tools

**Why?**
No other tool can tell you who is doing science and where better than Scopus

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**Scopus APIs**

**What?**
Way for a client’s system to ask Scopus for data in real-time

**How?**
API is like piping—without it, the customer could not connect to our data reservoir

**Why?**
Customer chooses for integration with programs and applications

---

**Custom Data**

**What?**
Bulk delivery of data in (relatively) static form

**How?**
Customer defines how much data they need and then deliver it on a thumb drive?

**Why?**
Custom Data is a great fit if the customer has a specific data need and wants control over the way its analyzed
Scopus

REQUEST

API

DATA

You
Let’s Visualize APIs

Typical Keyboard Search

API Request

VS

Scopus®

DATA

DATA
What Happens with an API Request?

API Request

Data Request for Specific Fields Made Using API

Search for and Return Documents in an IR

Data Sent to Website

Bulk Data Pulled for Report/Analysis
A few quick Cited-By API Integration Examples

1. PLOS ONE: http://www.plosone.org/
   • Links:
     - Cited-By: 13
     - Crossref: 7
     - PMC: 10
     - Europe PubMed Central: 11

2. The University of Hong Kong: The HKU Scholars Hub

Links
- PLOS One: http://www.plosone.org/
- HKU Scholars Portal: http://hub.hku.hk/
Let’s Define A Few Important Concepts

• API (Application Programming Interfaces)
  • **Broad definition**: APIs allow pieces of software to interact with each other
  • **Narrow definition**: APIs are web interfaces that allow applications to communicate with each other over the internet, e.g.
    • one web site with another one
    • A desktop application with a server
  • REST is a specific *design paradigm* that makes APIs behave very similar to how users experience web sites – but then aimed at non-human clients
  • **NOTE**: Web Services and APIs are often used interchangeably.

• **Text- and data mining**:
  • *Data mining* is the “computational process of discovering patterns in large data sets”
  • *Text mining* is data mining specifically using written text as a data set (as opposed to e.g. sensor data, statistics, graphics, etc.)

• **How they fit together**:
  • APIs can be used by text mining programs to automatically and methodically search for and/or retrieve text content to mine
It’s Plural! Scopus has many APIs

Scopus offers multiple APIs, which retrieve different data

- Scopus Search API
- Abstract Citation Count API
- Citation Overview API
- Abstract Retrieval API
- Affiliation Search API
- Affiliation Retrieval API
- Author Search API
- Author Retrieval API
- Subject Classifications API
- Serial Title API
- Author Feedback API
Using Elsevier Developers site

http://dev.elsevier.com
How do you get access to Scopus APIs?

1. Look at use cases
2. Get API Key
3. Start coding

Use cases and Examples

- Federated Search
- IR/CRIS/VIVO
- ScienceDirect Journal info
- ScienceDirect Article info
- Cited by in Scopus
- Academic Research
- Journal Metrics
- Text Mining
- CORS Search Examples

What are the most popular use cases?

1. Federated Search
2. Cited By in Scopus
3. IR/CRIS/VIVO
Register for an API Key

Tip:
- If you are a registered user of most Elsevier products, like Scopus, ScienceDirect, Engineering Village, Embase or more, use that username and password
- Otherwise, register once and use this username
Run a test API call using our interactive documentation

1. Look at use cases
2. Get API Key
3. Start coding

ELSEVIER Developers

Overview
Use Cases

Explore

Interactive Search APIs
Interactive Retrieval APIs
Interactive Metadata APIs
CORS Search Examples
HTML Widgets
Example of an API Request

• I am looking to retrieve records from Scopus authored by anyone with the last name Brown written in Chemistry journals.

• I sign up for my developer key at http://dev.elsevier.com/myapikey.html

• I register a new project and read the documentation to learn how to structure the request

• http://api.elsevier.com/content/search/scopus?query=AUTHLASTNAME%28brown%29%20AND%20SUBJAREA%28CHEM%29&apikey=feada8950b5eb3c481f48762bdde05c6
What does the output of an API Call look like?

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
-<search-results>
  <opensearch:totalResults>14446</opensearch:totalResults>
  <opensearch:startIndex>0</opensearch:startIndex>
  <opensearch:itemsPerPage>25</opensearch:itemsPerPage>
  <opensearch:Query role="request" searchTerms="AUTHLASTNAME%28brown%29+AND+SUBJAREA%28CHEM%29"
  startPage="0">
    <link ref="self" href="http://api.elsevier.com:80/content/search/scopus?start=0&count=25&
    query=AUTHLASTNAME%28brown%29+AND+SUBJAREA%28CHEM%29&apikey=feada8950b5eb3c481f48762bdde05c6"
    type="application/xml"/>
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    type="application/xml"/>
    <link ref="last" href="http://api.elsevier.com:80/content/search/scopus?start=4975&count=25&
    query=AUTHLASTNAME%28brown%29+AND+SUBJAREA%28CHEM%29&apikey=feada8950b5eb3c481f48762bdde05c6"
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    <link ref="scopus" href="http://www.scopus.com/inward/record.url?partnerID=HzOxMe3b&scp=849432797577&origin=inward"/>
    <link ref="scopus-citedby" href="http://www.scopus.com/inward/citedby.url?partnerID=HzOxMe3b&scp=849432797577&
    origin=inward"/>
  </entry>
```
How do you generate an API call?

• Calling a REST API is just like going to a web address with your browser, except:
  • You don’t use a browser to go to the address manually – instead, you write a computer program that goes to the address automatically as part of a script
  • The address usually contains some variables that specify what exactly you want to get
  • What you get from the API is not an HTML document that is shown to a user in a browser, but XML (or another format) that is processed by the computer program
  • APIs usually don’t use un/pw for access, but an APIKey and/or access tokens

So, first: get an API key from http://dev.elsevier.com

• Once you’ve registered your website or application for access, you will be issues an APIKey that has access rights to a number of Elsevier APIs
• Read the documentation to understand the APIs’ capabilities
• Write your application/program to make API requests using the correct parameters and your APIKey, and to parse the response from the APIs into your web site or application
Example of the Scopus API being used on a web page

https://library2.lincoln.ac.nz/dashboard/
Example of the Scopus API being used on a web page

Article metrics for:

Integrative analysis of 111 reference human epigenomes


Total citations

111 [Web of Science] 309 [CrossRef] 280 [Scopus]

Online attention

Altmetric score (what's this?)
Tweeted by 129
On 13 Facebook pages
Mentioned in 21 Google+ posts
Picked up by 40 news outlets
1 Reddit

http://www.nature.com/nature/journal/v518/n7539/nature14248/metrics
Scopus API for Academic Research

Definition: The end product is a scholarly published work that utilizes publications in Scopus for a research effort.

Examples:
- Analysis of abstract cited-by counts across a specific, singular academic discipline.
- Relationship between authors’ geographic locations and their academic affiliations.
- Analysis of the relationship of citing works from a limited set of publications.
Scopus API for Academic Research
Full details: dev.elsevier.com/academic_research_scopus.html

We ask researchers to abide by the following conditions:

• Research is for academic purposes only & limited in scope to a specific discipline
• Retention of original research dataset is limited to archival purposes and reproduction of the research results.
• Scopus is identified as the data source.

IF YOU WANT TO USE SCOPUS DATA VIA API FOR ACADEMIC RESEARCH, PLEASE
1. VISIT DEV.ELSEVIER.COM
2. REVIEW ACADEMIC USE CASE DOCUMENTATION
3. REGISTER FOR AN API KEY AND
4. CONTACT US WITH ANY ACCESS OR USE QUESTIONS
What do we mean by “commercial use”?

We work with many major R&D organizations

1. Are you a member of a commercial entity, with or without a Scopus license?

2. Do you want access to Scopus data for use-cases not defined in our current documentation, ex. large-scale text mining project to identify research whitespace?

3. Is the intended use of the output for anything other than academic research purposes (see academic research use-case, ex. publishing a journal article)?

4. If you answer yes to all three of these questions, please contact your Elsevier representative, or contact us via dev.elsevier.com

Open Innovation

Identify Key Opinion Leaders

Analyze Trends

Competitive monitoring

Find research whitespace

Tracking research landscape
<table>
<thead>
<tr>
<th>Scopus Use cases</th>
<th>API</th>
<th>More information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Showing publications from Scopus on your website</td>
<td>Scopus Search API</td>
<td><a href="#">Detailed policy</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td><a href="#">Implementation guide</a></td>
</tr>
<tr>
<td>Showing Scopus cited-by counts on your website</td>
<td>Scopus Search API / Abstract Citation Count API</td>
<td><a href="#">Detailed policy</a></td>
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<td></td>
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<td></td>
<td><a href="#">Implementation guide</a></td>
</tr>
<tr>
<td>Populating IRs with basic document metadata from Scopus</td>
<td>Scopus Search API / Abstract Retrieval API / Citation Count API</td>
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<td><a href="#">Implementation guide</a></td>
</tr>
<tr>
<td>Populating current research information systems with basic document metadata and citation overviews from Scopus</td>
<td>Scopus Search API/ Abstract Retrieval API / Citation Count API</td>
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<td><a href="#">Implementation guide</a></td>
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<tr>
<td>Populating publication histories of VIVO profiles</td>
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<td><a href="#">Implementation guide</a></td>
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<td>Showing SNIP/SJR/IPP on journal homepage</td>
<td>Serial Title API</td>
<td><a href="#">Detailed policy</a></td>
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<td></td>
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<td><a href="#">Implementation guide</a></td>
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<tr>
<td>Limited Use for Commercial Applications</td>
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</table>
## Overview of (Access) levels

<table>
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<tr>
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<th>Non Subscriber</th>
<th>Scopus.com Subscriber</th>
<th>Case by Case Subscriber</th>
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<tr>
<td><strong>Types</strong></td>
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<tr>
<td>RESTful APIs</td>
<td>Cited-by and Scopus Query API</td>
<td>All APIs</td>
<td>Some text-mining and deeper integration with partner tools</td>
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<td><strong>Limits</strong></td>
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<td><strong>Use-cases</strong></td>
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<td></td>
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<tr>
<td>Display Scopus Citation Counts or Records</td>
<td>Yes, Citation and Query API</td>
<td>Yes, more results returned</td>
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<td>IR and CRIS Systems</td>
<td>No</td>
<td>Yes, Full integration with IR and CRIS systems</td>
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<tr>
<td>Federated Search Integration</td>
<td>No</td>
<td>Yes, Federated Search via Query API and Citation Count</td>
<td>Deeper Integration with preferred Partners</td>
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<tr>
<td>Data Rights for Research (Text-mining, etc)</td>
<td>No</td>
<td>Access for Academic Research Commercial use on case by case basis</td>
<td></td>
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</tbody>
</table>

Full details available:
Summarize: Scopus APIs power advanced integration & visibility

**Scopus** provides a variety of **APIs** (Application Programming Interfaces) to power integration of Scopus into outside sites. They make excellent tools to help you **showcase your publications**, **build search widgets for library pages**, or **mash up Scopus citation data with data from other APIs**.

- They are free to use for non-commercial purposes, as long as you honor our policies for content use through our APIs.
- You don't need to have a full subscription to Scopus to use our APIs, but if you have one, you'll be able to get more data from the APIs.
- If you work for, or on behalf of, an institution with a Scopus subscription you can request direct access to our APIs. For that, please register API key first and then [contact us](#).

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**What are some common uses of Scopus APIs?**

- **Cited-by retrieval**
  Retrieve the cited-by count for documents to incorporate into your website
- **Federated Search**
  Integrate search results from Scopus and ScienceDirect into your Federated Search application

**See Examples:**
- Scopus Citation Counts: [http://eprints.hud.ac.uk/6352/](http://eprints.hud.ac.uk/6352/)
- Federated Search: Company Intranet, Sharepoint, & more.
Don’t forget, APIs are just a way for computer applications and programs to talk to each other.
Resources
## Important Scopus resources to stay up to date:

<table>
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Upcoming Scopus Webinar

Upcoming Scopus webinar

August – No Webinar

September 22nd – Scopus Update – What’s happened in 2016?

Register at blog.scopus.com/webinars
QUESTIONS?
Thank you and please join us again in September.

A recording of this webinar will soon be made available via BrightTALK.
# Script for Developer Portal Demo

<table>
<thead>
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<th>What to show</th>
<th>How to navigate there</th>
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<td>Introduce developer portal as a self-service site for all Elsevier APIs needs</td>
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