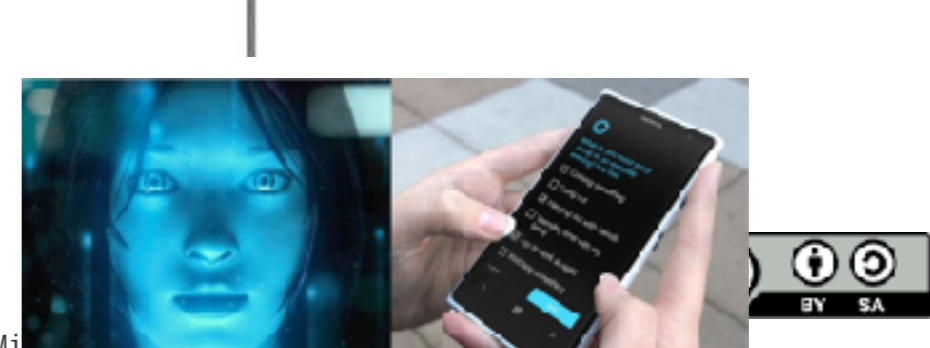
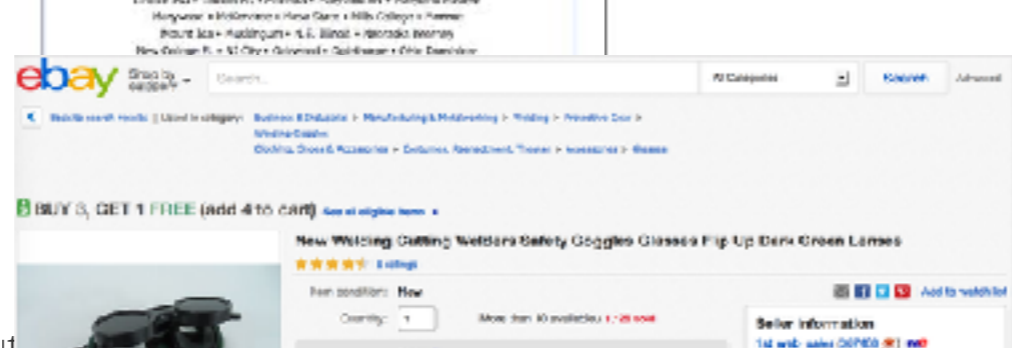
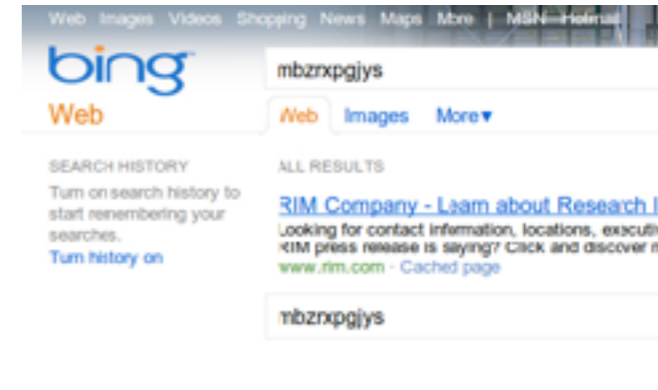
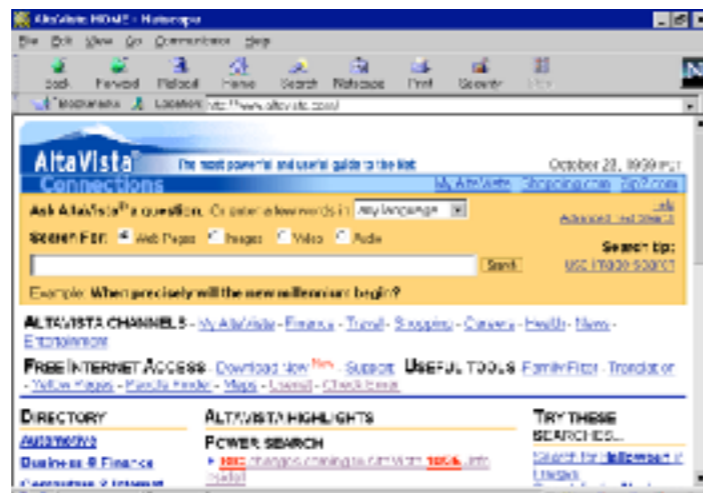


Ask Me Anything about Search Engines History and Future

(altavista -> Google -> Bing -> Wolfram Alpha -> Social Graph -> ?)

Michael Christen M.Sc., mc@yacy.net, @0rb1t3r



Geocities 1994 - 2009

The screenshot shows the Geocities website interface. At the top, there is a navigation bar with links for "Neighborhoods", "Members' Area", "Shopping Center", and "Search". Below this is a "Join GeoCities" button and a large "G" logo. The main heading reads "Welcome to GeoCities" with a "FREE e-mail" icon. A horizontal banner features advertisements for "amazon.com" (Books), "SURPLUS DIRECT" (Computers), "CDNOW" (Music/Videos), and "9.99% APR Platinum" (Credit Cards). Below the banner is a red bar with "Explore Our GeoAvenues" and the date "Friday, 03-Jul-98 02:50:07 PDT". The main content area is divided into two columns of category links. The left column includes: Arts & Literature (Literature, Poetry, Theater), Autos (Car Clubs, Racing, Sports Cars), Business & Money (Consulting, Investing, Small Business), Campus Life (Colleges, College Sports, Social Life), Computers & Technology (HTML, Software, Hardware), Entertainment (Movies, Music, TV, Games), and Family & Kids (Family, Genealogy, Parenting, Pets). The right column includes: Home & Living (Health, Home Improvement, Recipes), People & Chat (Romance, Gay & Lesbian, Teens), Shopping (Bargain Hunting, Books, Free Stuff), Society (Culture, Environment, Politics), Sports & Recreation (Baseball, Soccer, Extreme Sports), Travel (Cruises, Asia, Europe, Vacation), and Women (Careers, Issues, Pregnancy). To the right of the main content is a "GeoNews Center" section with news links like "Florida fires: 40,000 evacuated" and "CNN, Time retract nerve gas story". Below that are sections for "GeoPoll" (Which gender do you prefer your boss to be?) and "World Report" (Get the scoop on GeoCities, including a special message from Chairman and Founder David Bohnett). At the bottom right of the main content area is a "Leader of the Month" link.

The screenshot shows the Yahoo! GeoCities page. At the top, it says "Yahoo! GeoCities" and "2009-present logo." Below this is the "YAHOO! GEOCITIES" logo. The page lists various details about the site:

- Web address:** www.geocities.co.jp
- Commercial?:** Yes
- Type of site:** Web hosting
- Registration:** Yes
- Owner:** Yahoo!
- Created by:** David Bohnett and John Rezner
- Launched:** November 1994; 21 years ago
- Alexa rank:** ▼ 5,192 (February 2016)^[1]
- Current status:** Active in Japan; defunct in the United States, Canada and Europe

Yahoo bought Geocities 1999 and delete it 2009
38 Million personal home pages („the first web“) lost!
reocities.com has a copy, ca. 600GB torrent was there as well



Yahoo 1994 - started as Jerry and Dave's Bookmarks

Jerry and Dave's WWW Interface... *(Always Under construction)*

Welcome, visitor from

Last modified on Fri May 20 17:55:16 1994

There are currently 1909 entries in the hotlist database

Vous pouvez lancer des recherches dans cet index. Pour cela, entrez des mots clés de recherche :

- [Art](#)
- [Computers](#)
- [Economy](#)
- [Education](#)
- [Entertainment](#)
- [Environment and Nature](#)
- [Events](#)
- [Geography](#)
- [Government](#)
- [Health](#)
- [Humanities](#)
- [Journalism](#)
- [Law](#)
- [News](#)
- [Politics](#)
- [Reference](#)
- [Research](#)
- [Science](#)
- [Society and Culture](#)
- [todo](#)

Yahoo - A Guide to WWW

[[What's New?](#) | [What's Cool?](#) | [What's Popular?](#) | [Stats](#) | [A Random Link](#)]

[Y Top](#) | [↑ Up](#) | [🔍 Search](#) | [✉ Mail](#) | [+ Add](#) | [? Help](#)

- [Art\(466\)](#) NEW
- [Business\(6426\)](#) NEW
- [Computers\(2609\)](#) NEW
- [Economy\(743\)](#) NEW
- [Education\(1487\)](#) NEW
- [Entertainment\(6199\)](#) NEW
- [Environment and Nature\(193\)](#) NEW
- [Events\(53\)](#) NEW
- [Government\(1031\)](#) NEW
- [Health\(367\)](#) NEW
- [Humanities\(163\)](#) NEW
- [Law\(163\)](#) NEW
- [News\(185\)](#)
- [Politics\(148\)](#) NEW
- [Reference\(474\)](#) NEW
- [Regional Information\(2606\)](#) NEW
- [Science\(2634\)](#) NEW
- [Social Science\(93\)](#) NEW
- [Society and Culture\(648\)](#) NEW

23836 entries in Yahoo [[Yahoo](#) | [Up](#) | [Search](#) | [Mail](#) | [Add](#) | [Help](#)]

yahoo@akebono.stanford.edu

Copyright © 1994 David Filo and Jerry Yang



Yahoo 1995

[What's New](#) [Check Email](#) **YAHOO!** [My](#) [?](#)
[Personalize](#) [Help](#)

[Yahoo! Auctions](#)
 bid & sell for free

FAMILY GUY Win 6 days in Hawaii!
 Go to [fox.com](#) **FOX**

[Park Your Domain Free](#)

[advanced search](#)

[Yahoo! Mail](#) - Get your **free** e-mail account today!

[Shopping](#) - [Yellow Pages](#) - [People Search](#) - [Maps](#) - [Travel Agent](#) - [Classifieds](#) - [Personals](#) - [Games](#) - [Chat](#)
[Email](#) - [Calendar](#) - [Pager](#) - [My Yahoo!](#) - [Today's News](#) - [Sports](#) - [Weather](#) - [TV](#) - [Stock Quotes](#) - [more...](#)

<p>Arts & Humanities Literature, Photography...</p> <p>Business & Economy Companies, Finance, Jobs...</p> <p>Computers & Internet Internet, WWW, Software, Games...</p> <p>Education Universities, K-12, College Entrance...</p> <p>Entertainment Cool Links, Movies, Humor, Music...</p> <p>Government Military, Politics, Law, Taxes...</p> <p>Health Medicine, Diseases, Drugs, Fitness...</p>	<p>News & Media Full Coverage, Newspapers, TV...</p> <p>Recreation & Sports Sports, Travel, Autos, Outdoors...</p> <p>Reference Libraries, Dictionaries, Quotations...</p> <p>Regional Countries, Regions, US States...</p> <p>Science Biology, Astronomy, Engineering...</p> <p>Social Science Archaeology, Economics, Languages...</p> <p>Society & Culture People, Environment, Religion...</p>	<p>In the News</p> <ul style="list-style-type: none"> • King Hussein of Jordan dies • Online: Lewinsky video testimony • NASA comet mission • NBA season opens • Weekend's top movies <p>more...</p> <p>Inside Yahoo!</p> <ul style="list-style-type: none"> • Y! Personals - find a Valentine • Shop for your Valentine • Y! Clubs - create your own <p>more...</p>
---	--	--

Yahoo Inc.

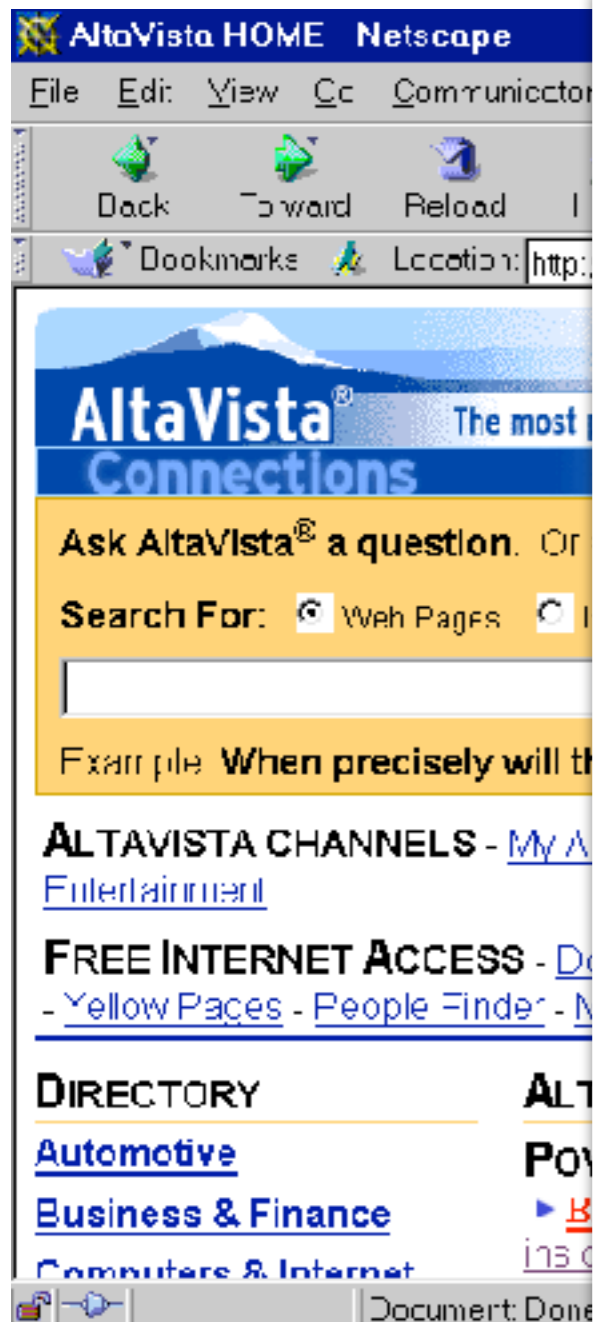
YAHOO!

Type	Public
Traded as	NASDAQ: YHOO NASDAQ-100 Component S&P 500 Component
Founded	January 1994 (as Jerry and David's guide to the World Wide Web) March 1995 (as Yahoo!)
Headquarters	Sunnyvale , California, U.S.
Area served	Worldwide
Founder(s)	Jerry Yang , David Filo
Chairman	Maynard Webb
CEO	Marissa Mayer
Key people	David Filo (Chief Yahoo!) ^[1]
Industry	Internet Computer software
Products	Yahoo News Yahoo Mail Yahoo Finance Yahoo Sports Yahoo Search Yahoo Messenger Yahoo! Answers Tumblr Flickr See Yahoo products
Revenue	▲ US\$4.96 billion (2015) ^[2]
Operating income	▼ US\$-4.74 billion (2015) ^[3]
Net income	▼ US\$-4.35 billion (2015) ^[4]
Total assets	▼ US\$45.20 billion (2015) ^[5]
Total equity	▼ US\$29.04 billion (2015) ^[6]
Employees	12,500 (2015) ^[7]

Yahoo Inc. (styled as **Yahoo!**) is an American multinational technology company headquartered in [Sunnyvale](#), California. It is globally known for its Web portal, search engine [Yahoo! Search](#), and related services, including [Yahoo! Directory](#), [Yahoo! Mail](#), [Yahoo! News](#), [Yahoo! Finance](#), [Yahoo! Groups](#), [Yahoo! Answers](#), advertising, online mapping, video sharing, fantasy sports and its social media website. It is one of the most popular sites in the United States.^[9] According to third-party web

analytics providers [Alexa](#) and [SimilarWeb](#), Yahoo! is the highest-read news and media website, with [listen](#)

AltaVista 1995-2013



Email from early January, 1995:

Thank you for your comments. As we are starting up the Beta phase of the Alta Vista project, we are trying to respond individually to some of the messages we have received.

We are putting the following hardware information on the site.

Alta Vista is a very large project, requiring the cooperation of at least 5 servers, configured for searching huge indices and handling a huge Internet traffic load. The initial hardware configuration for Alta Vista is as follows:

Alta Vista -- AlphaStation 250 4/266
4 GB disk
196 MB memory
Primary web server for gotcha.com
Queries directed to WebIndexer or NewsIndexer

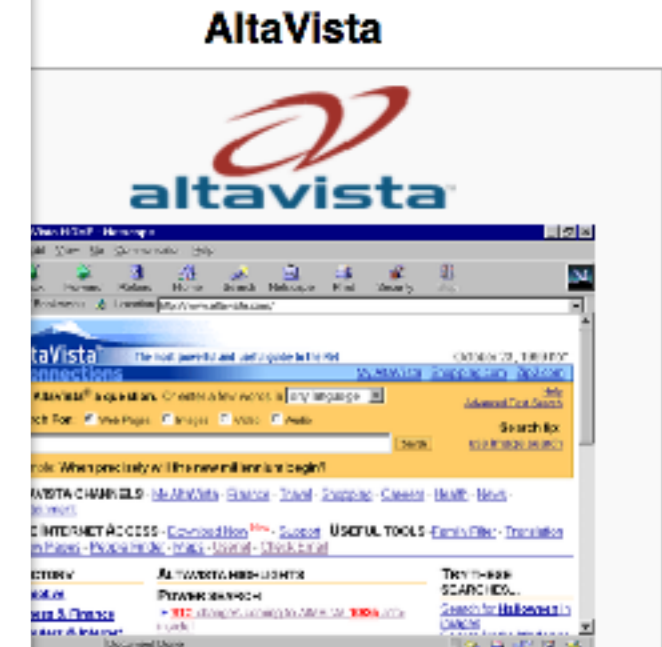
NewsServer -- AlphaStation 400 4/233
24 GB of RAID disks
160 MB memory
News spool from which news index is generated
Serves articles (via http) to those without news server

NewsIndexer -- AlphaStation 250 4/266
13 GB disk
196 MB memory
Builds news index using articles from NewsServer
Answers news index queries from Alta Vista

Spider -- DEC 3000 Model 900 (replacement for Model 500)
30 GB of RAID disk
1GB memory
Collects pages from the web for WebIndexer

webIndexer -- Alpha Server 3400 5/300
210 GB RAID disk (expandable)
4 GB memory (expandable)
4 processors (expandable)
Builds the web index using pages sent by Spider.
Answers web index queries from Alta Vista

Thank you,
Alta Vista Technical Support



The AltaVista web portal, 1999

Private company

Founded 1995

Headquarters Palo Alto, California, USA

Key people Paul Flaherty, Louis Monier,
Michael Burrows, Jeffrey Black

Parent company Overture Services, Yahoo!

Website AltaVista.com

Rank ▲ 790,820 (February 2016)^[1]

Category of site Search engine

Advertising Yes

Registration No

Available in Multilingual

Launched December 15, 1995; 20 years ago

Status Defunct (July 8, 2013)^[2]



find a business near you

what business?

- business type (toys)
 business name (Joe's Toys)

look near this location:

local address

city/state

Near My Home



Search

or browse categories...

apparel	home & real estate
auto	hotels & travel
community	money & law
computers & internet	shops & services
dining & entertainment	sports & recreation
health	



get directions



get a map

shop online



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[Detroit](#)

[Miami](#)

[So. California](#)

[Boston](#)

[Hampton Roads](#)

[New York](#)

[St. Paul](#)

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[Houston](#)

[S.F. Bay Area](#)

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Zip2 1999 - bought by AltaVista

AltaVista® Connections

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Zip2.com

Web Search

[Find a Business](#) | [Find a Person](#) | [Get Directions](#) | [Get a Map](#) |

Find a Business Near You

[Personalize](#)

Enter a category or business name

Near You City & State

Near My Home



Search

Browse Categories

[Auto](#) [Home & Real Estate](#)
[Clothes & Accessories](#) [Hotels & Travel](#)
[Community](#) [Money & Law](#)
[Computers & Internet](#) [Shops & Services](#)
[Dining & Entertainment](#) [Sports & Recreation](#)
[Health](#)

Cool Tools

[Find a Person](#)
[Get Directions](#)
[Get a Map](#)

[AltaVista MicroPortal](#)
[Babel Fish Translator](#)

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[Auto Guides](#)
[Yellow Pages](#)

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Local Portals



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[Feedback](#) [Help](#)

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Google 1998

Google!

Search the web using Google!

10 results

Google Search

I'm feeling lucky

Index contains ~25 million pages (soon to be much bigger)

About Google!

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Get Google! updates monthly!

your e-mail


Subscribe

[Archive](#)

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Google Inc.

Google

Type	Subsidiary
Industry	Internet Computer software
Founded	September 4, 1998; 17 years ago Menlo Park, California ^{[1][2]}
Founders	Larry Page Sergey Brin
Headquarters	Googleplex, Mountain View, California, U.S. ^[3]
Coordinates	 37.422°N 122.084058°W﻿ / ﻿37.422°N 122.084058°W﻿ / 37.422; -122.084058﻿ (37.422; -122.084058﻿ (
Area served	Worldwide
Key people	Sundar Pichai (CEO)
Products	List of Google products
Parent	Independent (1998–2015) Alphabet Inc. (2015–present)
Subsidiaries	List of subsidiaries
Website	www.google.com ^[4]

Footnotes / references

[4]

Google is an American [multinational technology company](#) specializing in [Internet-related services](#) and products. These include [online advertising technologies](#), [search](#), [cloud computing](#), and [software](#).^[5]

Most of its profits are derived from [AdWords](#),^{[6][7]} an online advertising service that places advertising near the list of search results.



Web 2.0 since 2000-

burst of the .com bubble

user-generated content forums, wikis, etc

unsuccessful attempts to create alternatives to Google



Wikipedia 2001

HomePage

[HomePage](#) | [Recent Changes](#) | [References](#) | [Random Page](#)

You can [edit this page right now!](#) It's a free, community project

Welcome to Wikipedia, a collaborative project to produce a complete encyclopedia from scratch. We started in January 2001 and already have **over 6,000 articles**. We want to grow so let's get to work—anyone can edit any page—copyedit, write a little, write a lot. See the [Wikipedia FAQ](#) for information on how to edit pages and other questions. If you're visiting for the first time, [welcome!](#) The content of Wikipedia is covered by the [GNU Free Documentation License](#).

Philosophy, Mathematics, and Natural Science

[Astronomy and Astrophysics](#) – [Biology](#) – [Chemistry](#) – [Earth Sciences](#) – [Mathematics](#) – [Philosophy](#) – [Ethics](#) – [Science](#) – [Statistics](#)

Social Sciences

[Anomalous Phenomena](#) – [Anthropology](#) – [Archaeology](#) – [Countries of the world](#) – [Economics](#) – [Geography](#) – [History](#) – [History of Science and Technology](#) – [Language](#) – [Literature](#) – [Psychology](#) – [Sociology](#)

Applied Arts and Sciences

[Agriculture](#) – [Architecture](#) – [Business and Industry](#) – [Communication](#) – [Computing](#) – [Education](#) – [Engineering](#) – [Family and Consumer Science](#) – [Health Sciences](#) – [Law](#) – [Library Science](#) – [Public Affairs](#) – [Technology](#) – [Transport](#)

Culture

[Classics](#) – [Critical Theory](#) – [Dance](#) – [Entertainment](#) – [Film](#) – [Games](#) – [Hobbies](#) – [Literature](#) – [Music](#) – [Opera](#) – [Painting](#) – [Performing Arts](#) – [Recreation](#) – [Religion](#) – [Sculpture](#) – [Theater and Drama](#) – [Tourism](#) – [Visual Arts and Design](#)

Other Category Schemes

[About Wikipedia category schemes](#) – [Library of Congress catalog scheme](#) – [Cweby Decimal System](#) – [Wikipedia arranged by topic](#) – [Year in Review](#) – [Historical anniversaries tables](#) – [Biographical Listing](#)

International Wikipedias

[About the International Wikipedias](#) – [\[Catalan \(Català\)\]](#) – [\[Chinese \(Mandarin\)\]](#) – [\[German \(Deutsch\)\]](#) – [\[Esperanto\]](#) – [\[French \(Français\)\]](#) – [\[Hebrew \(עברית\)\]](#) – [\[Italian \(Italiano\)\]](#) – [\[Japanese \(日本語\)\]](#) – [\[Portuguese \(Português\)\]](#) – [\[Polish \(Polski\)\]](#) – [\[Spanish \(Español\)\]](#) – [\[Swedish \(Svenska\)\]](#)

Wikipedia

[FAQ](#) – [Policy](#) – [Article news](#) – [Announcements](#) – [Requested articles](#) – [Help desk](#) – [New topics](#) – [Brilliant prose](#) – [Mailing list](#) – [Feature requests](#) – [Bug reports](#) – [Comments](#)
[Domain Resources](#) – [Wikipedia and Wikipedia](#) – [Sandboxes](#) – [License](#) – [Wikipedia:jam](#)

Today is Friday, [May 27], 2001, server time (Pacific Standard Time)

[\[Tel\]](#)



Facebook 2004



Facebook login/signup screen

Type	Public
Traded as	NASDAQ: FB NASDAQ-100 Component S&P 500 Component
Founded	February 4, 2004; 12 years ago
Headquarters	Menlo Park, California, U.S.
Coordinates	37.4843°N 122.1484°W
Area served	United States (2004–05) Worldwide, except blocking countries (2005–present)
Founder(s)	Mark Zuckerberg Eduardo Saverin Andrew McCollum Dustin Moskovitz Chris Hughes
Key people	Mark Zuckerberg (Chairman and CEO) Sheryl Sandberg (COO)
Industry	Internet
Revenue	▲ US\$17.928 billion (2015) ^[1]
Operating income	▲ US\$3.225 billion (2015) ^[1]
Net income	▲ US\$3.688 billion (2015) ^[1]

Facebook is a [corporation](#) and [online social networking service](#) headquartered in [Menlo Park, California](#), in the [United States](#). Its website was launched on February 4, 2004, by [Mark Zuckerberg](#) with his [Harvard College](#) roommates and fellow students [Eduardo Saverin](#), [Andrew McCollum](#), [Dustin Moskovitz](#) and [Chris Hughes](#).^{[8][9][10]} The founders had initially limited the website's membership to Harvard students, but later expanded it to colleges in the Boston area, the [Ivy League](#), and [Stanford University](#). It gradually added support for students at various other universities and later to high-school students. Since 2006, anyone who is at least 13 years old was allowed to become a registered user of the website, though the age requirement may be higher depending on applicable local laws.^[11] Its name comes from the [face book](#) directories often given to American university students.^[12]

Youtube 2005



first video was the visit of the founder at the zoo



Twitter 2006

[Twitter.com](https://twitter.com)

A global community of friends and strangers answering one simple question: **What are you doing?**

[Recent Public Updates](#)

[lkmutsicon96](#) [hayobethlehem](#) weather report is estimating 20degrees celcius temperatures today. ARE THEY NUTS!?! [4 minutes ago](#) from im

[Tim Huedon](#) Just got up. Not in work this

Please Sign In!

Email or Mobile Number

Password [Forgot?](#)

Remember me

Sign In!

Want an account?

Join for Free!

It's fast and easy!

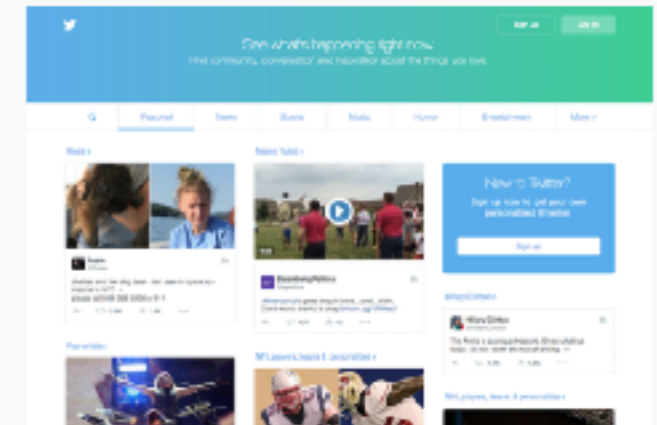
Featured!

[asruga](#)

[Tom Coates](#)

[Fapinkcap fabienne](#)

Twitter, Inc.



Twitter's homepage as of August 2015 (only in select countries)

Type Public
Traded as NYSE: TWTR [↗](#)
Founded March 21, 2006; 9 years ago^[1]
Headquarters San Francisco, California, United States^[2]

Area served Worldwide
Founder(s) Jack Dorsey, Noah Glass, Biz Stone, Evan Williams

Chairman Omid Kordestani

CEO Jack Dorsey

Industry Internet

Revenue ▲ US\$2.21 billion (2015)^[9]

Net income ▼ US\$521 million (2015)^[9]

Employees 3,638 (2015)^[4]

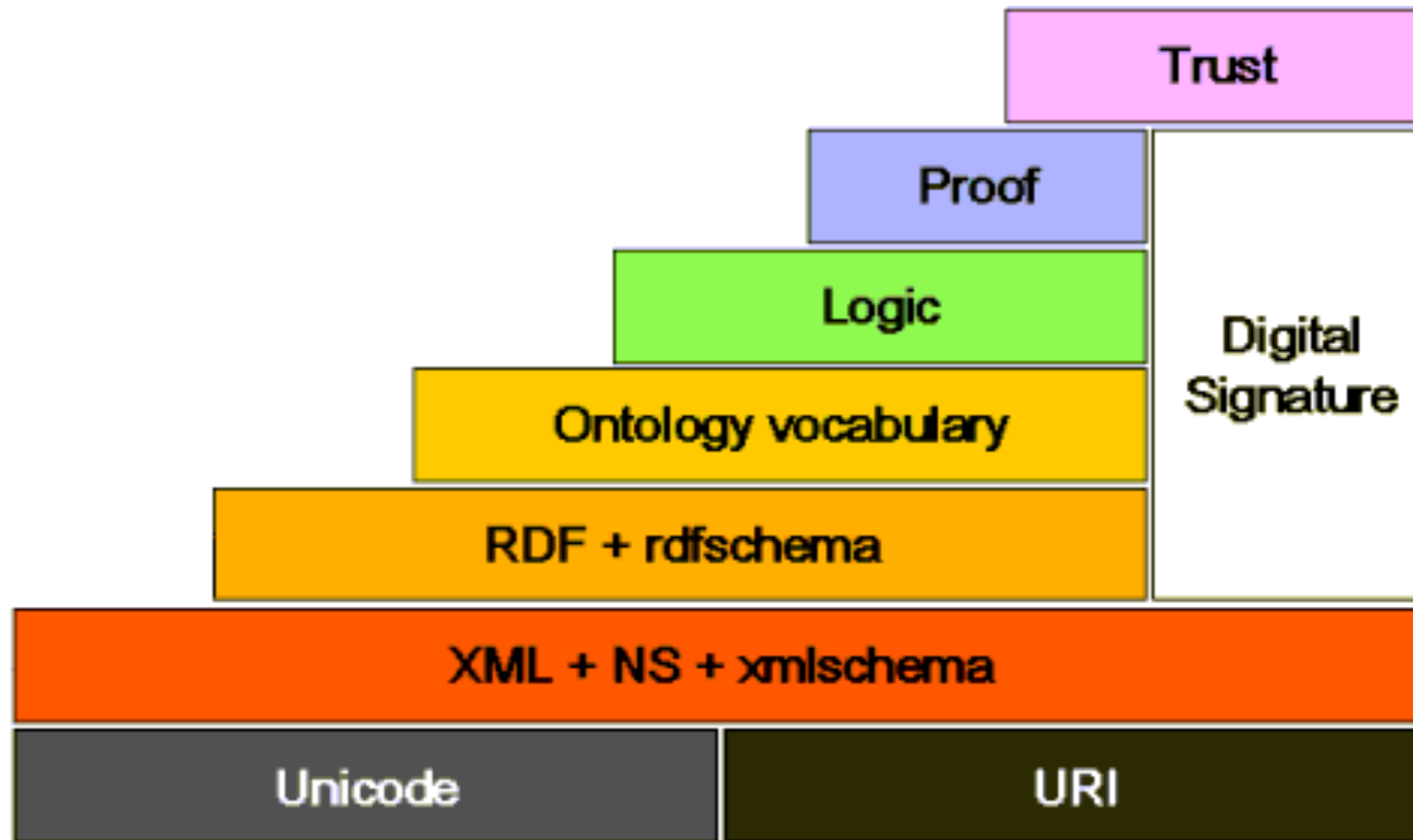
Subsidiaries Vine

Website twitter.com [↗](#)

Twitter (/twitter/) is an online [social networking](#) service that enables users to send and read short 140-character messages called "tweets".

Registered users can read and post tweets, but those who are unregistered can only read them. Users access Twitter through the website interface, [SMS](#) or mobile device [app](#).^[10] Twitter Inc. is based in [San Francisco](#) and has more than 25 offices around the world.^[11]

Semantic Web mid-2000 .. kind of first version



a lot of money was wasted to find out what one can do with this.
Quaero 2005 - 2008 The European Union spend 400 million Euro for nothing
NOBODY had the slightest idea how a search interface would look like!



Semantic Web re-named to Giant Global Graph

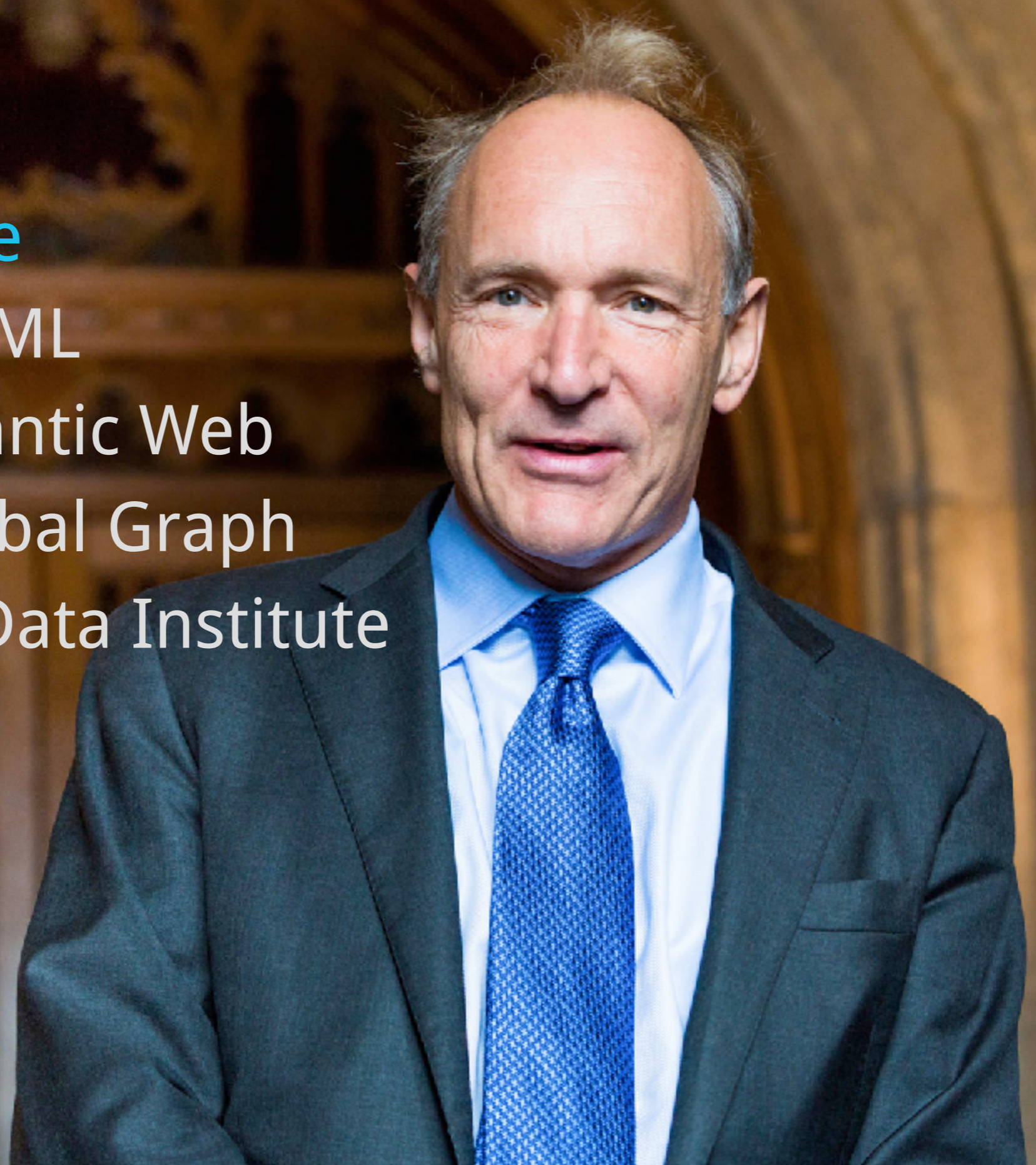
Tim Berners-Lee

1989: HTTP+HTML

2004: The Semantic Web

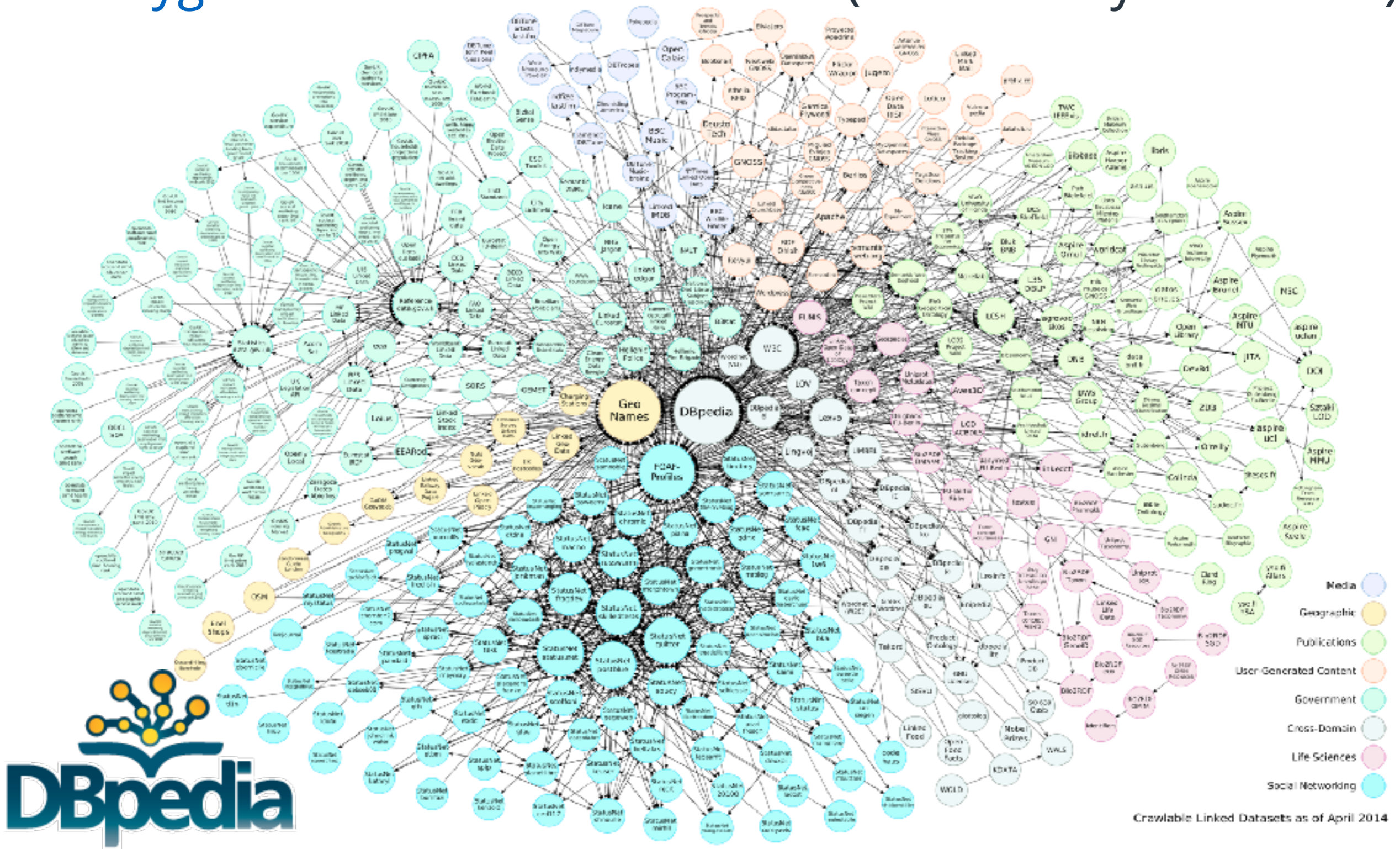
2007: Giant Global Graph

2012: @ Open Data Institute



Giant Global Graph ,second version' of Semantic Web

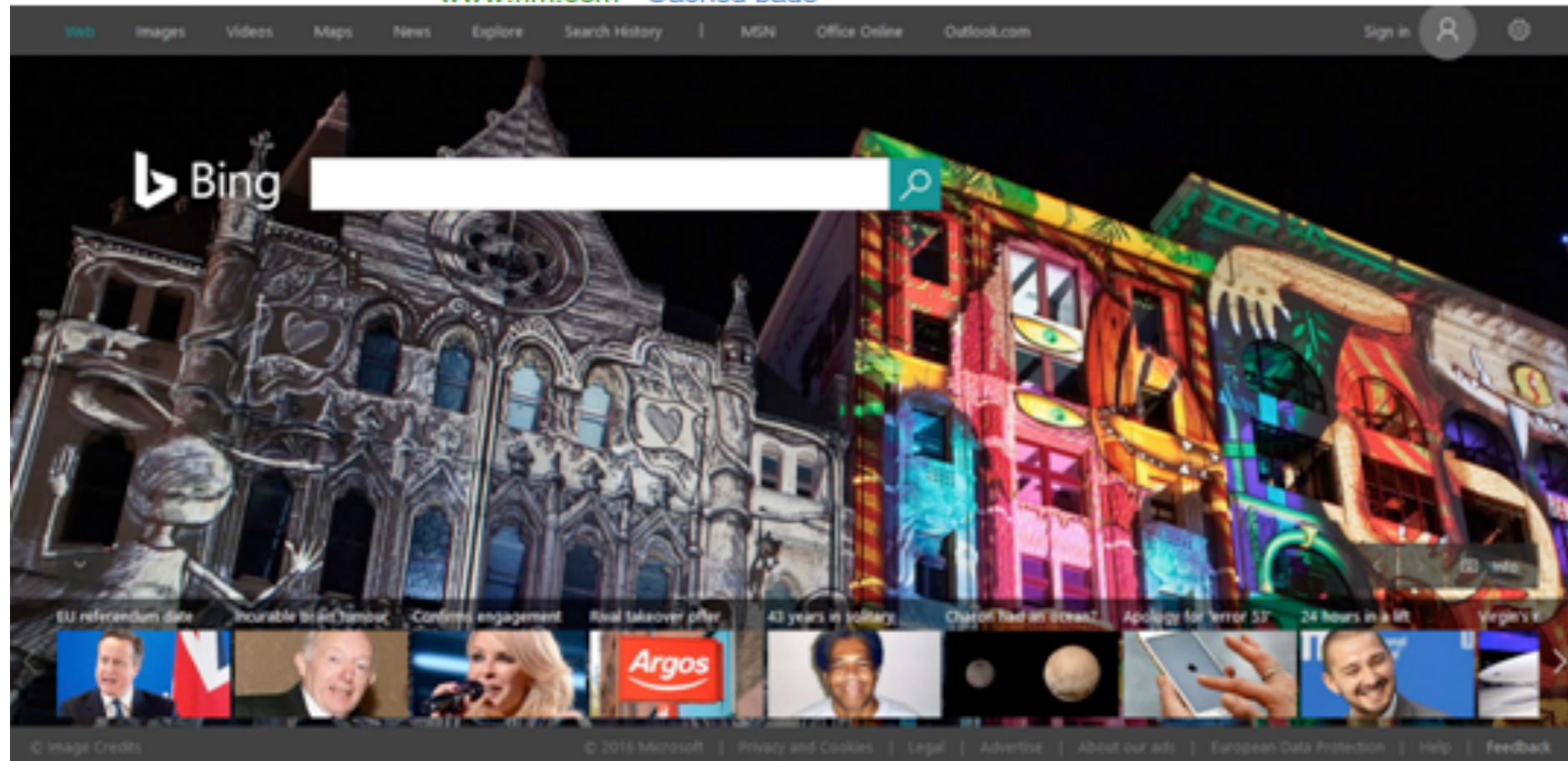
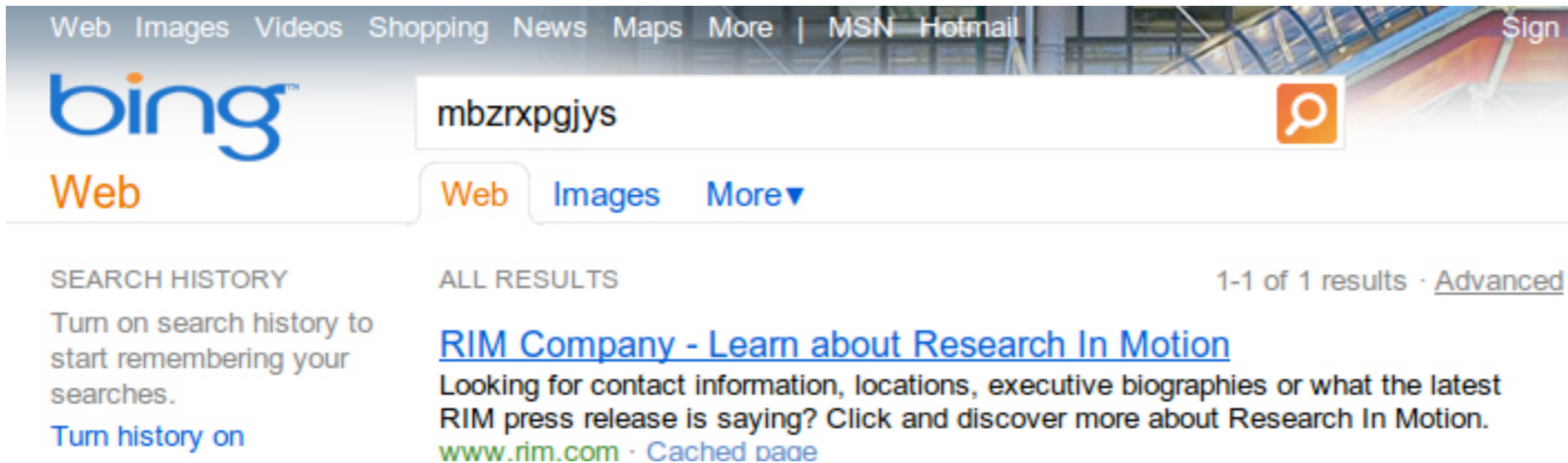
Playground of scientific interest (but nobody else cares)



Example http://dbpedia.org/page/Open_Data_Institute



Bing 2009



The Bing homepage features an image or video that changes daily	
Web address	www.bing.com
Slogan	Bing is for doing. (2012) Bing and decide (2009)
Commercial?	Yes
Type of site	Search Engine
Registration	Optional (Microsoft account)
Available in	40 languages
Written in	ASP.NET ^[1]
Owner	Microsoft
Created by	Microsoft
Launched	June 1, 2009; 6 years ago
Alexa rank	▼ 17 (December 2015) ^[2]
Current status	Active

Bing is a **web search engine** owned and operated by **Microsoft**. The service has its origins in Microsoft's previous search engines: **MSN Search**, **Windows Live Search** and later **Live Search**. Bing provides a variety of search services, including web, video, image and map search products. It uses the **ASP.NET programming language** and follows the design principles of Microsoft's "**Metro**" design language.



WolframAlpha 2009 „Knowledge Engine“, not a SE

WolframAlpha

unemployment rate NYC, Chicago, Seattle

Input interpretation

New York City, New York
Chicago, Illinois
Seattle, Washington

unemployment rate

Results

New York City, New York, United States	8.8%
Chicago, Illinois, United States	10.3%
Seattle, Washington, United States	6.6%

(December 2011)

History

— New York City, New York, United States
— Chicago, Illinois, United States
— Seattle, Washington, United States

(from Jan 1990 to Dec 2011) (in percent)
(not seasonally adjusted)

Log scale

Wolfram Alpha

Web address www.wolframalpha.com

Slogan Making the world's knowledge computable.^[1]

Commercial? Yes

Type of site Answer engine

Registration Optional

Written in Wolfram Language

Owner Wolfram Alpha LLC

Created by Wolfram Research

Launched May 18, 2009^[2] (official launch) (6 years, 9 months, 3 weeks and 5 days)
May 15, 2009^[3] (public launch)

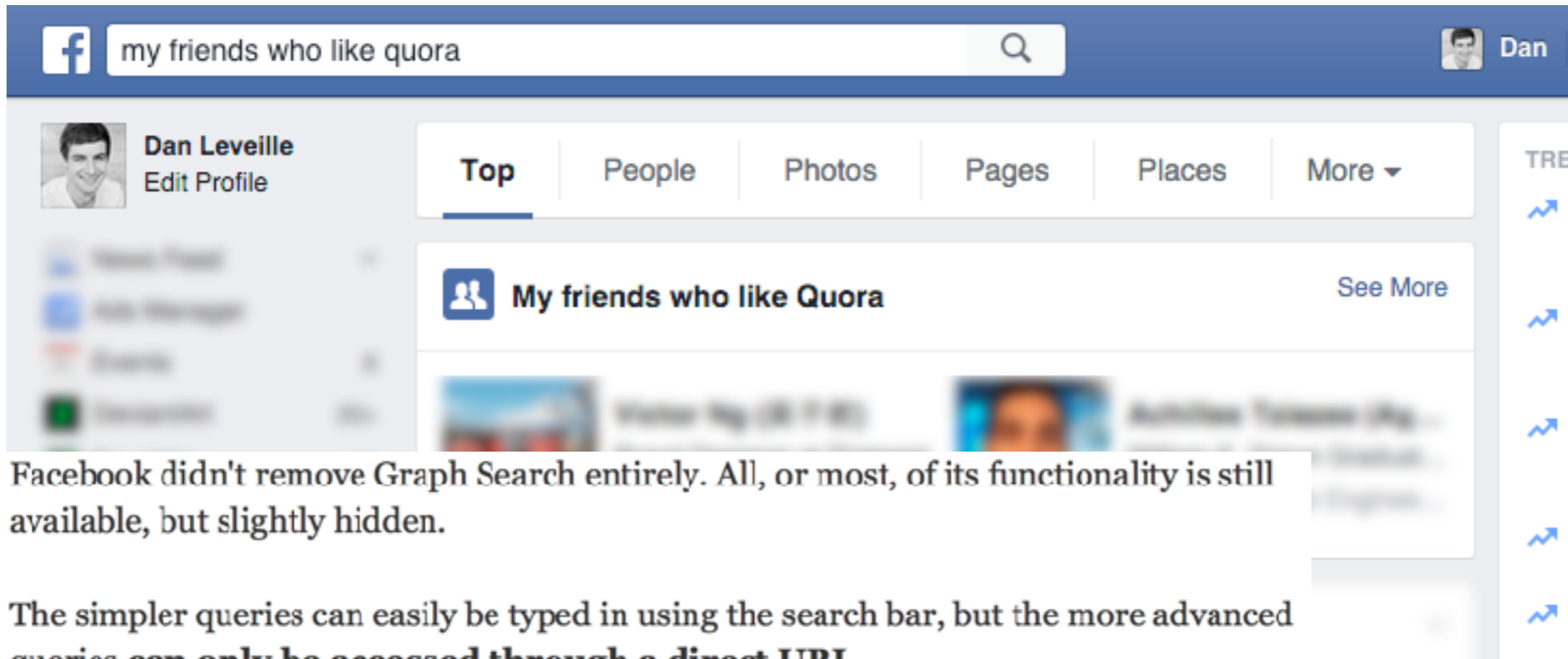
Alexa rank ▼1,932 (March 2015)^[4]

Current status Active

Wolfram Alpha (also styled **WolframAlpha** and **WolframAlpha**) is a computational knowledge engine^[5] or **answer engine** developed by **Wolfram Research**, which was founded by **Stephen Wolfram**. It is an online service that answers factual queries directly by computing the answer from externally sourced "curated data",^[6] rather than providing a list of documents or web pages that might contain the answer as a **search engine** might.^[7]



Facebook Graph Search 2012-2014



Facebook didn't remove Graph Search entirely. All, or most, of its functionality is still available, but slightly hidden.

The simpler queries can easily be typed in using the search bar, but the more advanced queries **can only be accessed through a direct URL.**

My friends who like Quora:

[facebook.com/search/255232486973/likers/me/friends/intersect](https://www.facebook.com/search/255232486973/likers/me/friends/intersect)

My male friends:

[facebook.com/search/males/me/friends/intersect](https://www.facebook.com/search/males/me/friends/intersect)

My friends who live near Los Angeles:

[facebook.com/search/110970792260960/residents-near/present/friends/intersect](https://www.facebook.com/search/110970792260960/residents-near/present/friends/intersect)

My male friends who live near Los Angeles that like Quora:

[facebook.com/search/255232486973/likers/males/110970792260960/residents-near/present/me/friends/intersect](https://www.facebook.com/search/255232486973/likers/males/110970792260960/residents-near/present/me/friends/intersect)



Semantic Web „v3.0“ - but we do not call it like that

schema.org

Search

Home

Schemas

Documentation

Organization of Schemas

The schemas are a set of 'types', each associated with a set of properties. The types are arranged in a hierarchy. The core vocabulary currently consists of 642 Types, 992 Properties, and 219 Enumeration values.

Browse the full hierarchy:

- [One page per type](#)
- [Full list of types, shown on one page](#)

Google suggested an RDF schema...

Or you can jump directly to a commonly used type:

- Creative works: [CreativeWork](#), [Book](#), [Movie](#), [MusicRecording](#), [Recipe](#), [TVSeries](#) ...
- Embedded non-text objects: [AudioObject](#), [ImageObject](#), [VideoObject](#)
- [Event](#)
- [Health and medical types](#): notes on the health and medical types under [MedicalEntity](#).
- [Organization](#)
- [Person](#)
- [Place](#), [LocalBusiness](#), [Restaurant](#) ...
- [Product](#), [Offer](#), [AggregateOffer](#)
- [Review](#), [AggregateRating](#)
- [Action](#)

Using the [extension mechanism](#) the core vocabulary is extended by the following hosted extensions:

- [auto.schema.org](#)
- [bib.schema.org](#)

See also the [releases](#) page for recent updates and project history.

We also have a small set of [primitive data types](#) for numbers, text, etc. More details about the data model, etc. are available [here](#).



Semantic Web is actually widely used through schema.org

ebay Shop by category Search... All Categories Search Advanced

Back to search results Used in category: Business & Industrial > Manufacturing & Metalworking > Welding > Protective Gear > Welding Goggles
Clothing, Shoes & Accessories > Costumes, Reenactment, Theater > Accessories > Glasses

BUY 3, GET 1 FREE (add 4 to cart) See all eligible items >

New Welding Cutting Welders Safety Goggles Glasses Flip Up Dark Green Lenses
★★★★★ 8 ratings

Item condition: **New**

Quantity: More than 10 available / 1,128 sold

List price: **\$6.98**

You saved: **\$2.96 (42% off)**

Now: **US \$4.02** **Buy It Now** **Add to cart**

147 watching [Add to watch list](#) [Add to collection](#)

1,128 sold Experienced seller More than 95% positive feedback

Shipping: **\$15.62** International Priority Shipping to Germany via the Global Shipping Program | See details
Item location: Aurora, Nebraska, United States
Ships to: United States and many other countries | See details

Import charges: **\$0.00** (amount confirmed at checkout) | No additional import charges on delivery

Delivery: Estimated between **Mon, Mar. 28** and **Tue, Apr. 5** | Includes international tracking

Have one to sell? **Sell now**

schema.org

priceCurrency

Thing > Property > priceCurrency

The currency (in 3-letter ISO 4217 format) of the price or a price component, when attached to PriceSpecification and its subtypes

Usage: Between 500,000 and 1,000,000 domains

Values expected to be one of these types

[Text](#)

Used on these types

[Offer](#)

[PriceSpecification](#)

[Reservation](#)

[Ticket](#)

```
<div class="u-cb socr vi-bbox-socr15 "></div>
```

```
<div class="u-cb">
```

```
<div class="vi-bbox-dspn u-flL lable binLable" id="prcIsum-lbl">Now:</div>
```

```
<div id="vi-mskumap-none" style="" class="u-flL w29 vi-price" itemprop="offers" itemscope="itemscope" itemtype="http://schema.org/Offer">
```

```
<span class="notranslate" id="prcIsum" itemprop="price" style="">US $4.02</span>
```

```
<div id="isum-shipCostDiv" class="sh-CostBB"></div>
```

```
<span itemprop="availability" content="http://schema.org/InStock"></span>
```

```
<span itemprop="priceCurrency" content="USD"></span>
```



Library:



**with
XML/JSON
API:**



**with API+
Harvester:**



on Hardware:



Google gives up GSA in 2017 - replaced by cloud services

Software:

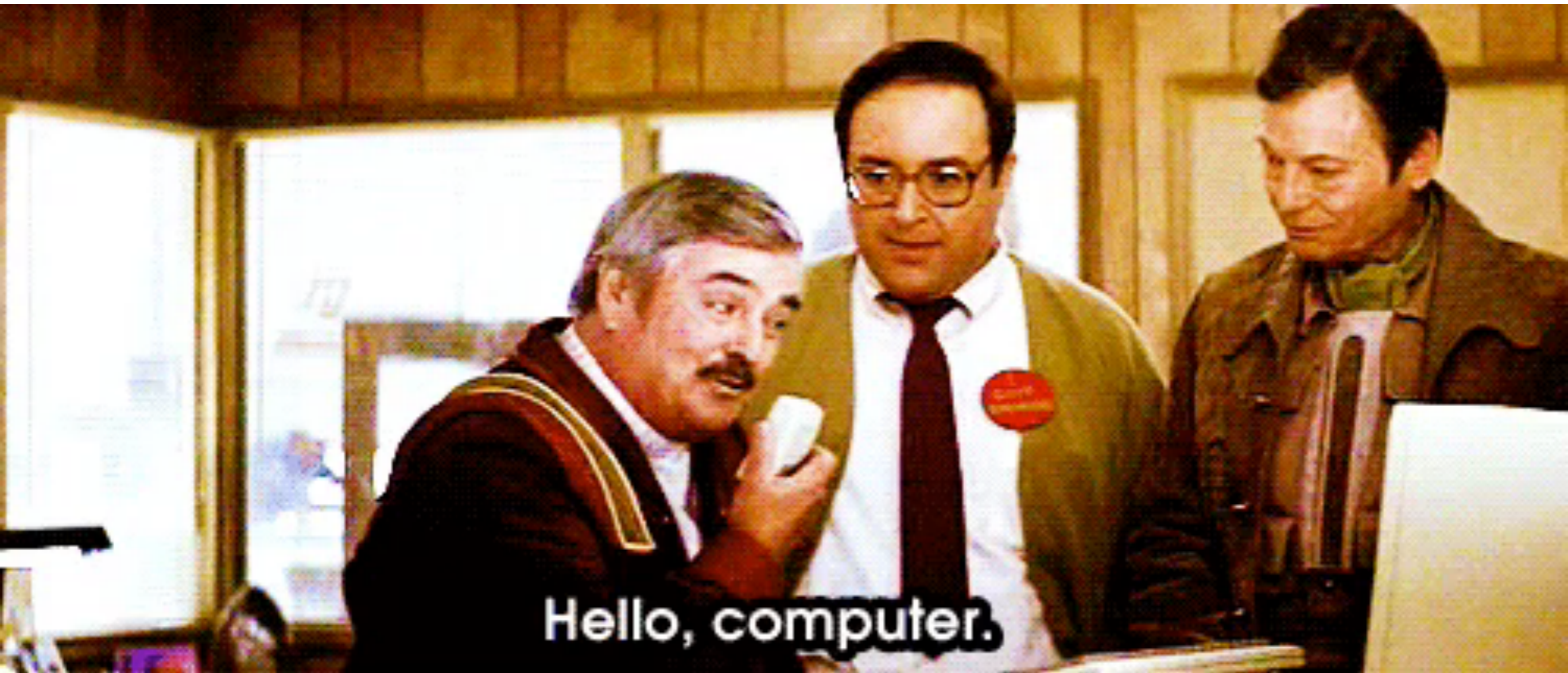


Acquired by Microsoft and removed from market

Software:



The Future from the past

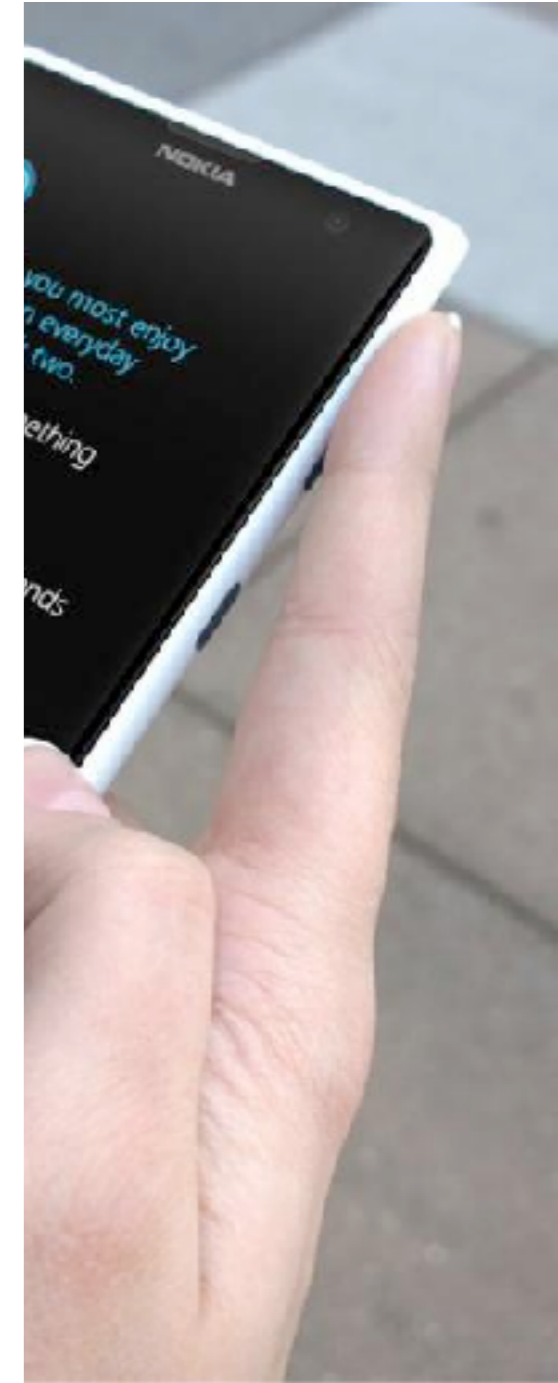


Star Trek IV 1986 - nobody uses a keyboard in the future



Voice Search Smart Phone becomes Search Interface

"Sing Me a Song"



The Future of Search Engine Technology

**It will always be about
answering questions!**



The Future of Search Engine Technology

maybe future search engines fill the gaps in the currently not-answered questions.



The Future of Search Engine Technology

**most common questions
are completely
answered:**

weather?

sports?

how can i connect to someone?

what to do next?

world knowledge

how can I?

where can I buy?

what should I buy?



Recommendation Engines are based on Search Engine Tec

what should I buy?

Frequently Bought Together



Total price: **\$15.97**

Add both to Cart

Add both to List

<http://www.amazon.com/Black-Welding-Cup-Goggles-50mm/dp/B002DLYR8A/>

Wird oft zusammen gekauft



Gesamtpreis: **15,60**

Beide

en



<http://www.amazon.de/gp/product/B001BB1VPU/>



Suggestion Engines What questions do people ask?

Which
Question do
People Ask?

who



who am i

who is perfect

who let the dogs out

who club augsburg

[Weitere Informationen](#)



Suggestion Engines What questions do people ask?

Which
Question do
People Ask?

where



where is the love

where is my mind

where to invade next

where are you now

[Weitere Informationen](#)

Zum Start der Suche Eingabetaste drücken



Suggestion Engines What questions do people ask?

Which
Question do
People Ask?

what



what do you mean

what the font

what is my ip

what does the fox say

[Weitere Informationen](#)



Suggestion Engines What questions do people ask?

Which
Question do
People Ask?

how



how i met your mother

how deep is your love

how hot

how to be single

[Weitere Informationen](#)



Suggestion Engines What questions do people ask?

Which
Question do
People Ask?

singapore is



singapore is a **fine city**

singapore is **in what country**

singapore is **located where**

singapore is **the best**

[Weitere Informationen](#)

if a search engine gets a lot of attention...
it **learns...** and gets stronger!



The Future of Search Engine Technology

**future search engines
will answer to all
questions!**

maybe even
before we ask

the more we search, the
more the search engine
operator knows about us



Ask Me Anything about

Search Engines History and Future

(altavista -> Google -> Bing -> Wolfram Alpha -> Social Graph -> ?)

Michael Christen M.Sc., mc@yacy.net, @0rb1t3r

Why not trying to run a search engine yourself using free software?!



Web Search Engine
<http://yacy.net>



Twitter Search Engine
<http://loklak.org>



Ask me anything about Search Engines

What can I ask about
Search Engines?

SEO (= Google
Optimization)

Ranking /
Relevancy

Online
Marketing

Big Data /
Scaling

Microservices
(Solr,
Elasticsearch)

Search
Suggestions

Semantic
Search
in Practice

Social Impact
of Search
Engines

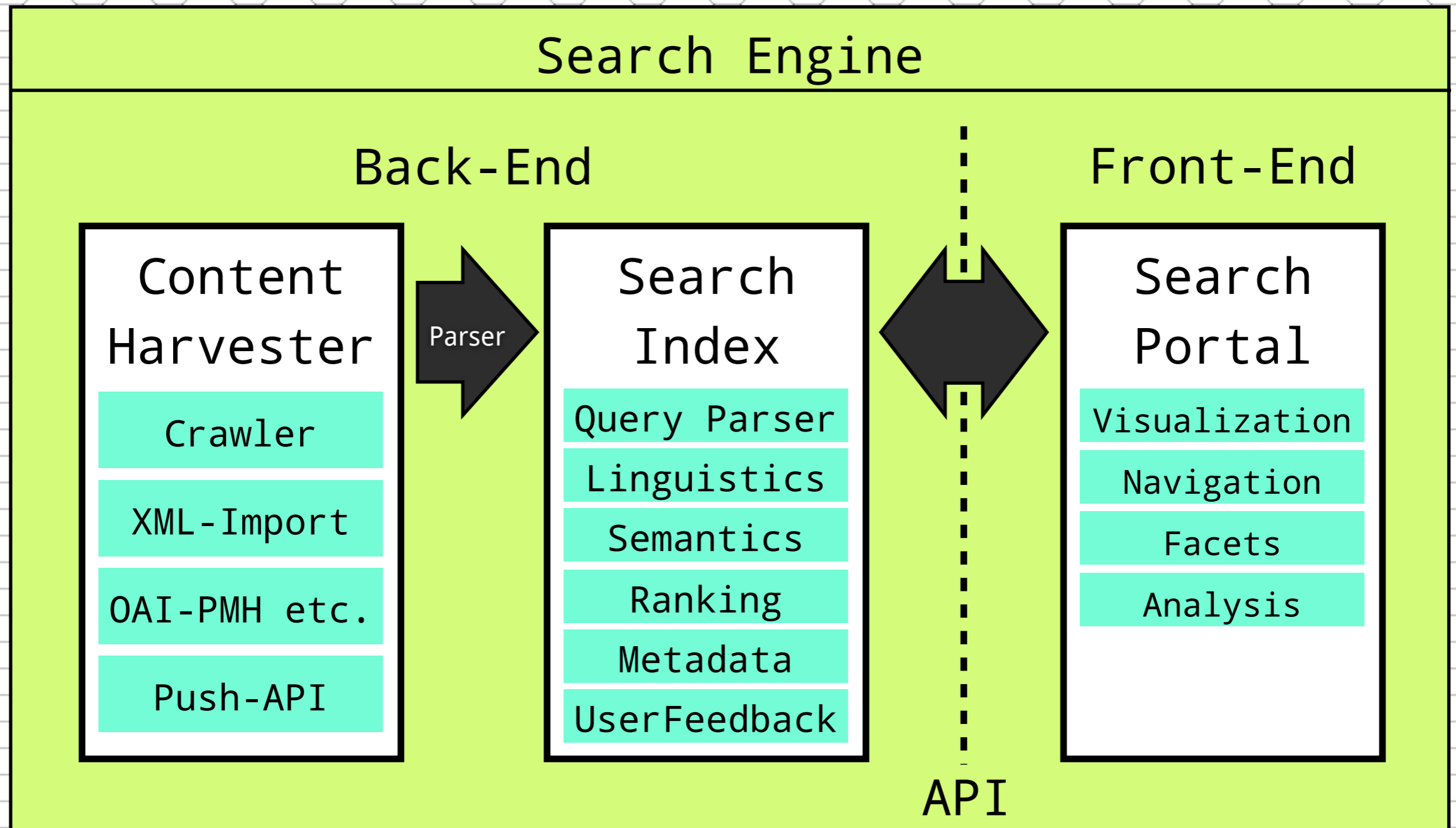
Information
Retrieval
Theory



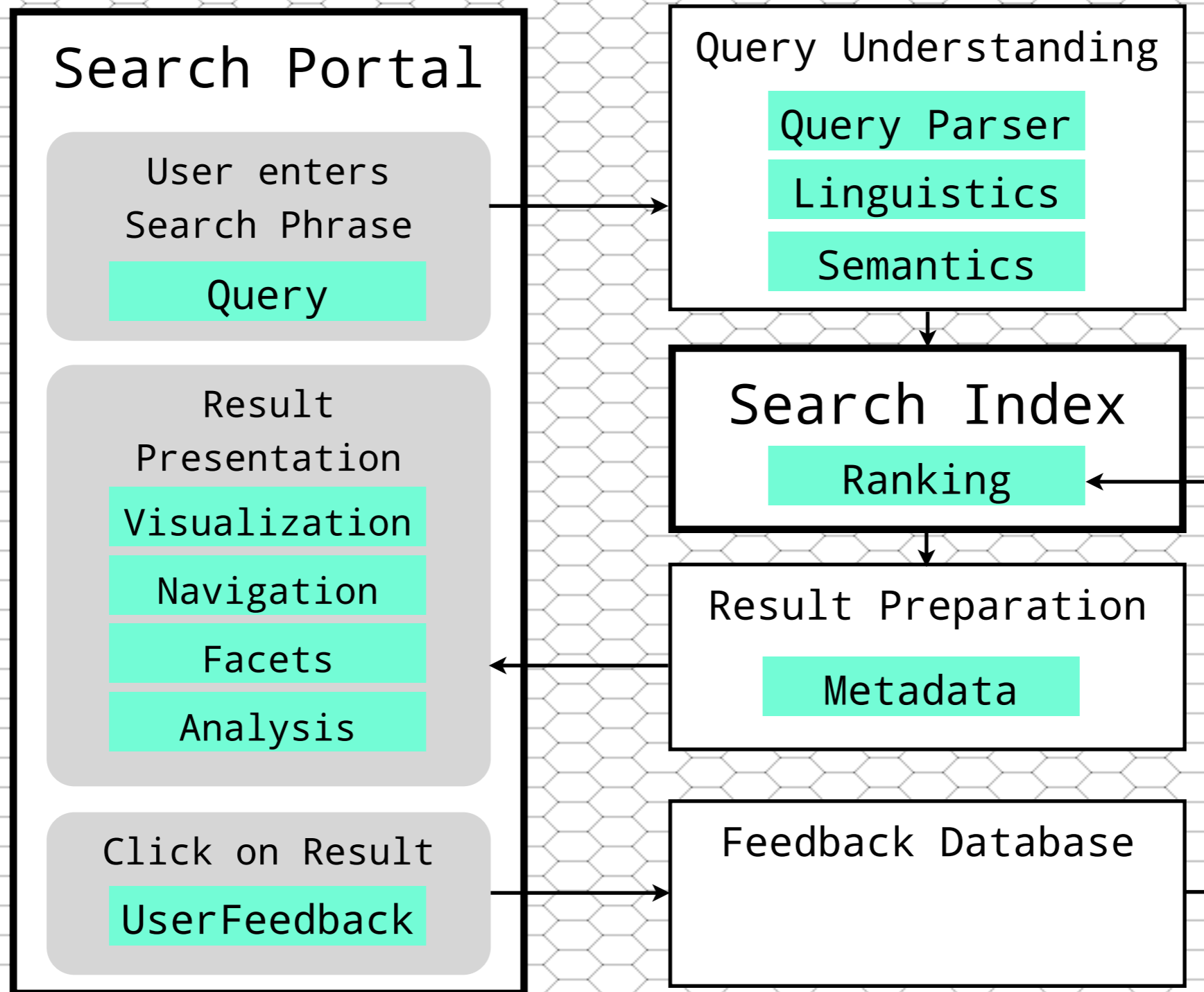
Add-on Information Retrieval vs. Data Retrieval

	Information Retrieval i.e. Search Engines	Data Retrieval i.e. Databases
Purpose	retrieve information based on query keywords	retrieve records based on well-formed terms
Query Language	human language, limited formal syntax, i.e. search modifier	formal language, logic, regular expressions
Expectation	information about the content, fuzzyness accepted	exact evaluation, single error means failure
Order	a result ranking based on user expectation, implicit order	none or explicit order may be given in query
Users	Humans (sometimes Software)	Machines / Software
Semantics	enrichment about result domain using facets by default	result grouping possible on demand

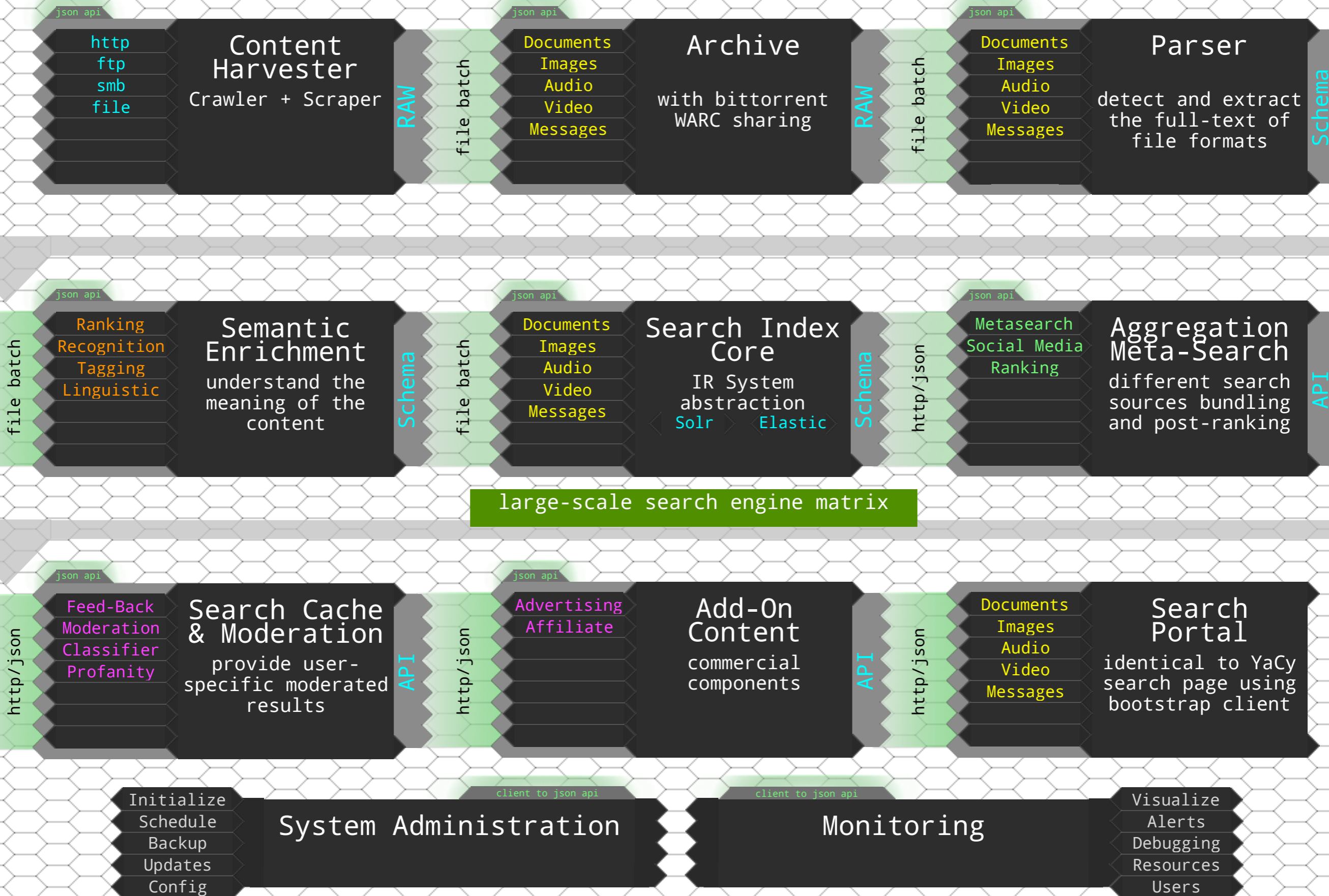
Add-on Search Engine Portal Prototype Concept



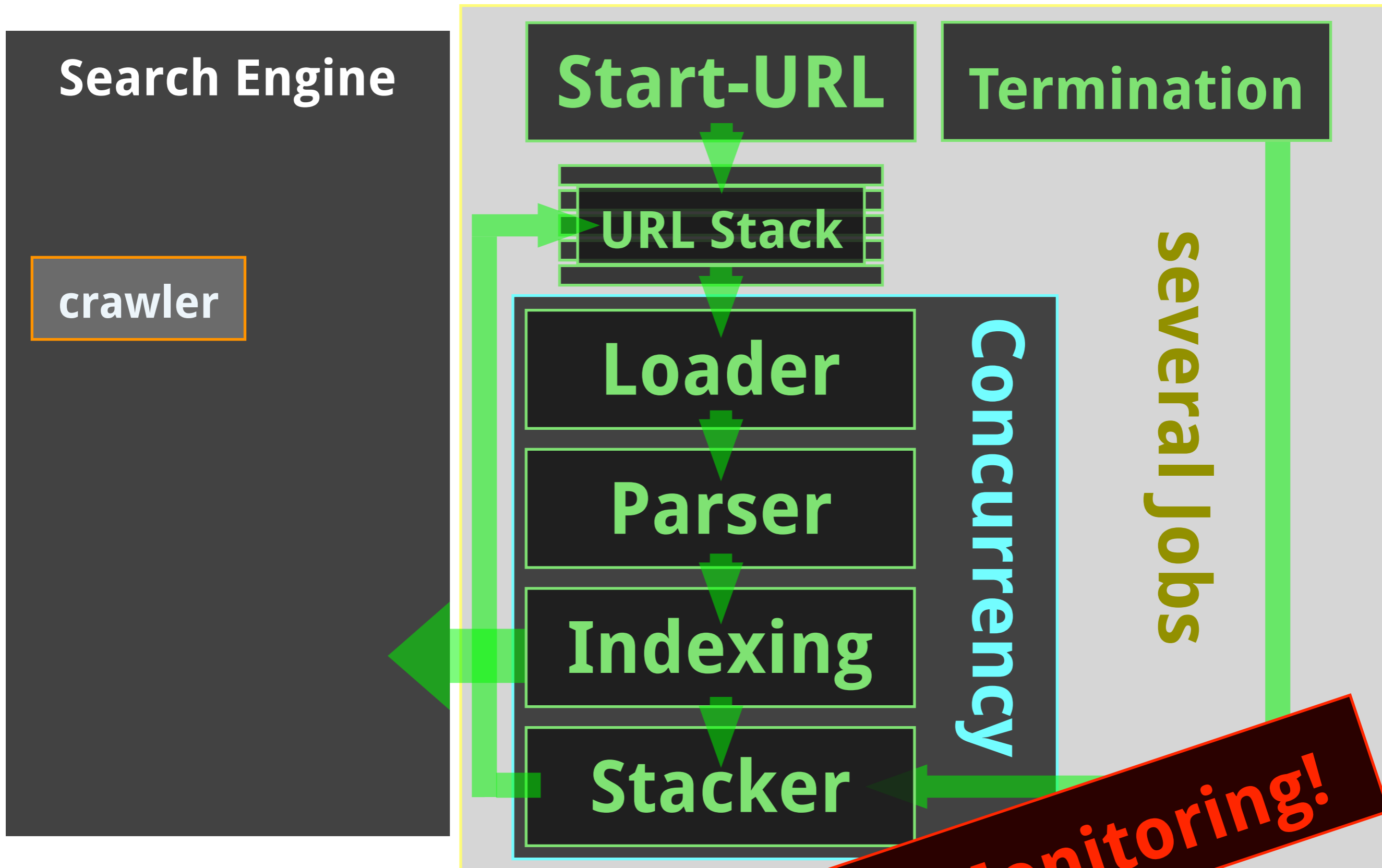
Add-on Search Engine Portal Prototype Data Flow



Add-on Search Engine Portal Prototype Components

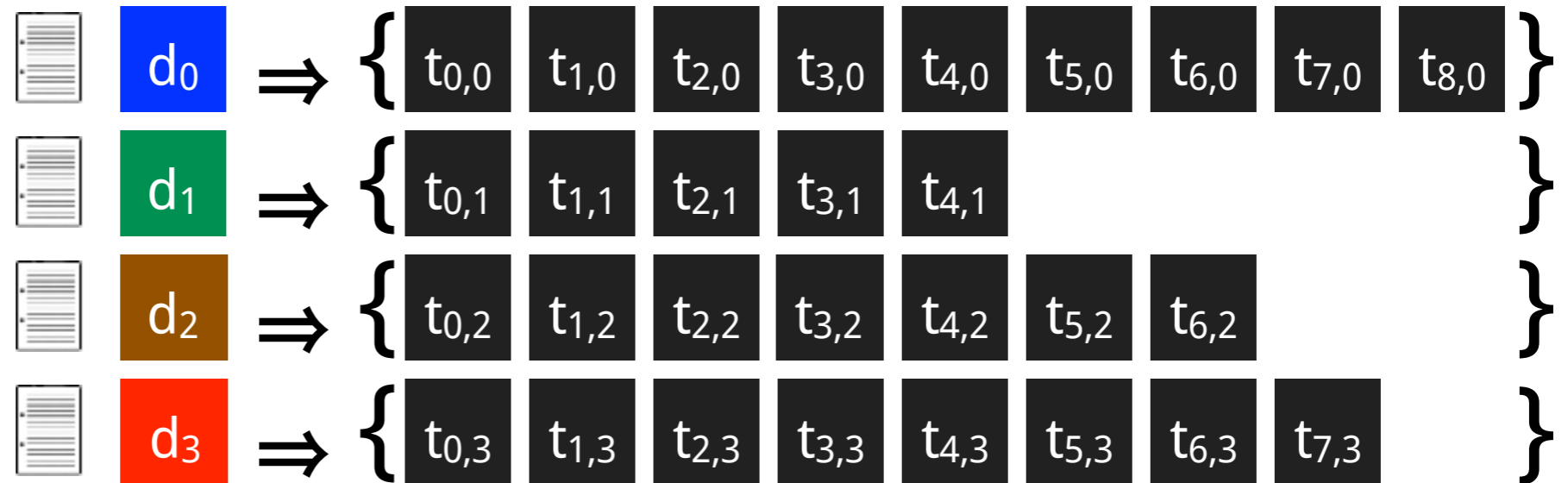


Add-on Search Engine Crawler Concept



Add-on Information Retrieval Indexing Process

Corpus: every document is a ,bag of words'

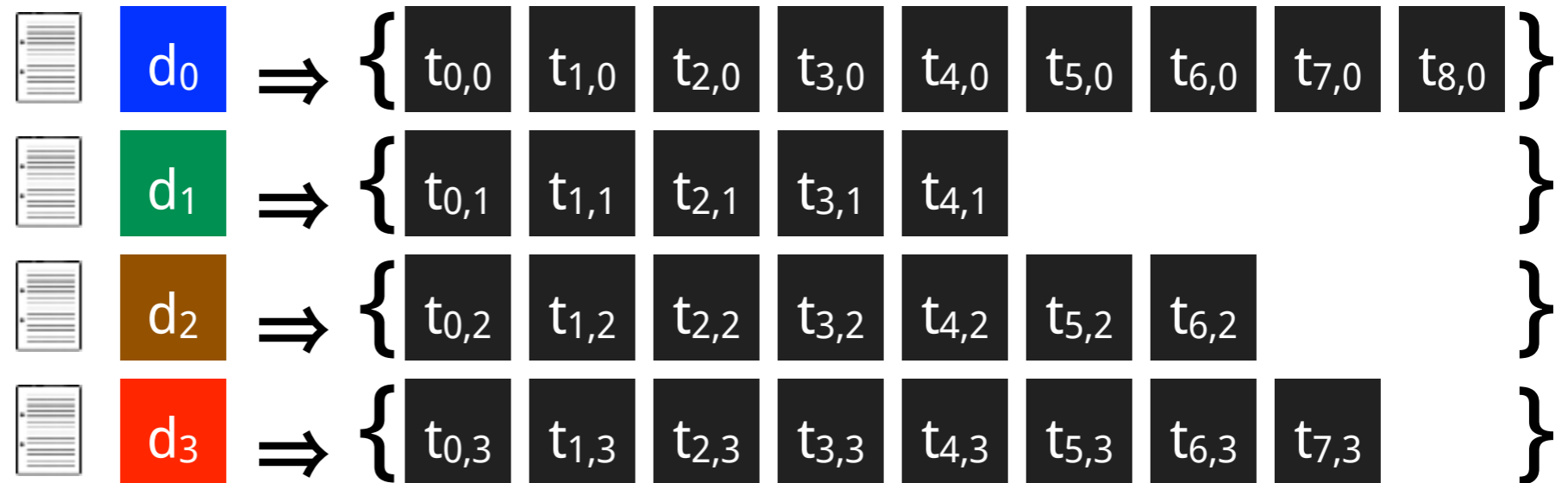


Index: all same words are referenced by a list of doc-ids

- **Indexing** is the process to create an *inverted index* from a (set of) document(s).

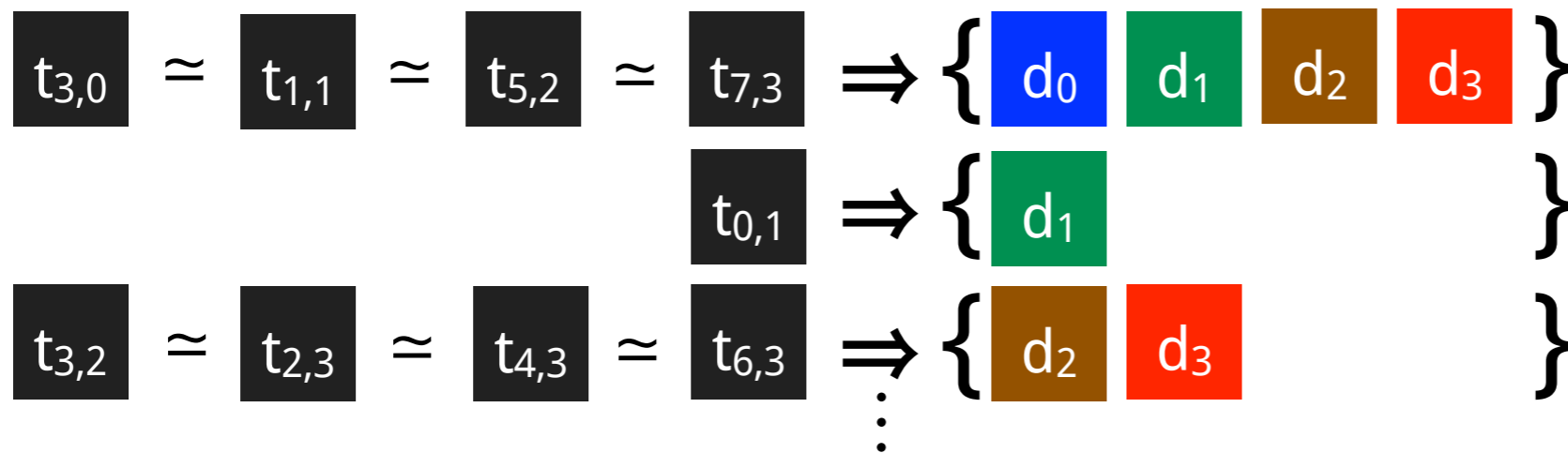
Add-on Information Retrieval Indexing Process

Corpus: every document is a ,bag of words'



Index: all same words are referenced by a list of doc-ids

- **Indexing** is the process to create an *inverted index* from a (set of) document(s).



Terms are equal, ≈ ' in the context of stemming rules, synonyms, localization techniques, phonetic rewrites, partial match algorithms, stopword rules, and other techniques

- An **inverted index** consist of **inverted lists** sorted by **document identifier**.