

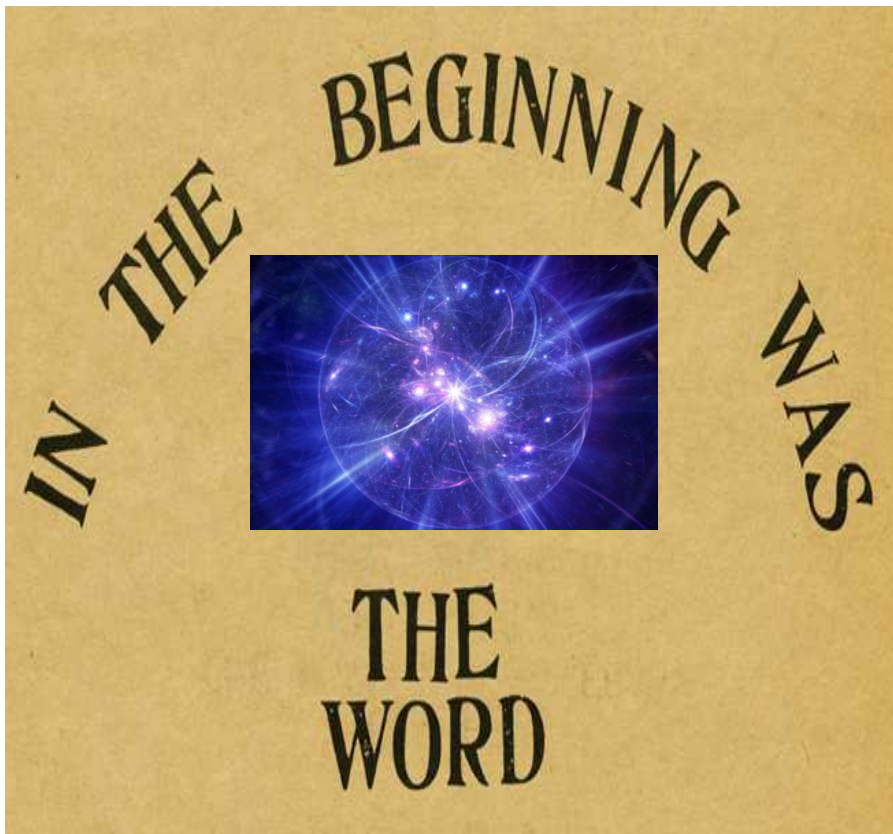


The Future of Semantic Search
Where We Are and Where We Are Going

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What is semantics?
What is the meaning of meaning?



**“He who knows does not speak,
he who speaks does not know”**

Lao Tse

**“It depends on what the
meaning of the word 'is' is”**

Bill Clinton

**“All our work, our whole life is a
matter of semantics”**

Felix Frankfurter









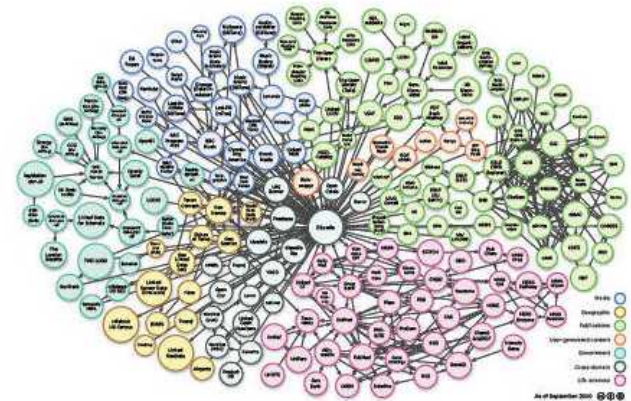
Thinking of the Web and Semantic Search

“Wholly new forms of **encyclopedias** will appear, ready made with a mesh of **associative trails** running through them, ready to be dropped into the **MEMEX** and there **amplified**”

Vannevar Bush “As We May Think” Atlantic Magazine

JULY 1945

Organizing and Searching the Web



the dilemma of searching

Meno

And how will you enquire, Socrates, into that which you do not know?

What will you put forth as the subject of enquiry?

And if you find what you want, how will you ever know that this is the thing which you did not know?

Meno

by **Plato**

Written 380 B.C.

Socrates

I know, Meno, what you mean; but just see what a tiresome dispute you are introducing.

You argue that man cannot enquire either about that which he knows, or about that which he does not know;

for if he knows, he has no need to enquire;

and if he does not, he cannot; for he does not know the very subject about which he is to enquire

a few reminders of keyword search problems:

“MS”

- acronyms and abbreviations
- [NIH Site Search](#) vs. [NIHSeek](#)

“Big Brother”

- user intent and context; disambiguation

why me?

“inflamed testicles”

- Query interpretation
- [NLM PubMed](#) vs. [WebLib PubMed Reviews Semantic Search](#)

“who performed the first us heart transplant”

- Complex queries and search logic
- database scope and user expectations : [PubMed](#) vs. [Google](#)

What is semantic search?

The screenshot shows the OntoFind search interface. The search bar contains the text "biofuels and energy independence". Below the search bar, there are several tabs for "Explore and Discover": Biofuel, Energy security, Ethanol fuel, Biofuels, and Energy economics. Each tab has a list of related terms. For example, under "Biofuel", there are "Biofuel", "biomass", "liquid fuels", and "biogas". Under "Energy security", there are "national security", "natural resource", and "energy". Under "Ethanol fuel", there are "Ethanol fuel", "Cellulosic ethanol", "Ethanol fuel in Brazil", and "Ethanol fuel in the United States". Under "Biofuels", there are "Ethanol fuel", "Biodiesel", "Food vs. fuel", and "Energy crop". Under "Energy economics", there are "Fossil fuel", "Sustainable energy", "Food vs. fuel", and "Low-carbon economy".



“**semantic search is a search or a question or an action that produces meaningful results** (even when the retrieved items **contain none of the query terms**, or the search involves **no query text** at all) ” **tamas**



Information from the Knowledge Graph in search results

This feature is being released gradually over the next few days to people using google.com in English. If you don't see this section on your result pages yet, don't worry -- we're working to get it to you as soon as we can.

When you search on Google for a person, place, or thing, you might see a section to the right of your search results that highlights facts, photos, and other snippets of information about your search. Use this section to find quick information and facts about the subject or to start exploring related subjects.

To give it a try, search for your favorite movie, landmark, historical figure, or try one of these: [[Eiffel Tower](#)], [[Wayne's World](#)], [[dalmatian](#)], [[Galileo](#)]. You can also [search by image](#) to see this section of facts and information.

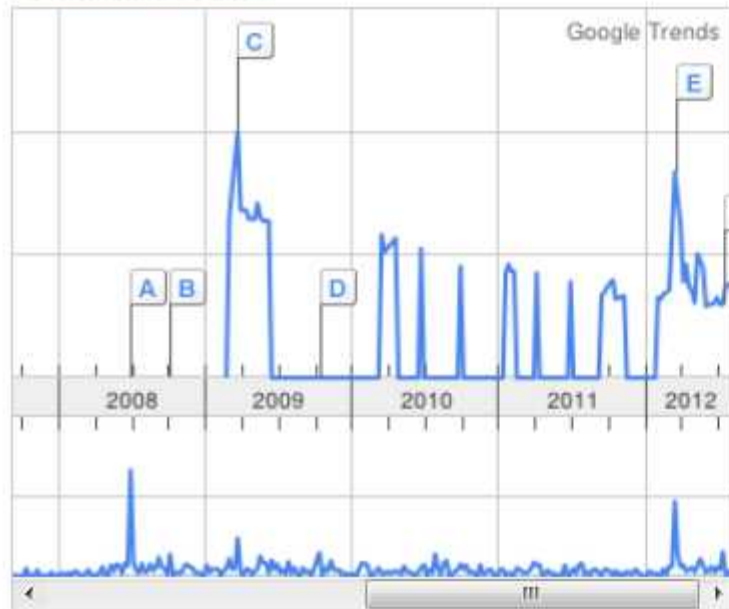


Semantic Search Trends

... Bing Decision Engine ... Google Knowledge Graph ...

a database of more than 570 million real-world people, places and things with 18 billion attributes and connections among them

semantic search



Rank by semantic search

- A [Microsoft acquires semantic search firm Powerset](#)
Forbes - Jul 2 2008
- B [Hakia Retools Semantic Search Engine to Better Battle Google, Yahoo](#)
eWeek - Oct 6 2008
- C [Google's New Semantic Search: A Test](#)
ITworld.com - Mar 25 2009
- D [LexisNexis Introduces Transparent Semantic Search Technology for Patent Research](#)
Reuters - Oct 12 2009
- E [Google plots shift to 'semantic search'](#)
ZDNet UK - Mar 15 2012
- F [Kforce to Leverage Monster's 6Sense\(R\) Semantic Search Technology Across Entire Organization](#)
MarketWatch - Jul 10 2012

Google Knowledge Graph

Projections indicate that up to 100 billion uniquely identifiable objects will be connected to the Internet by 2020

Google

Web Images Maps Shopping More Search tools

About 4,330,000 results (0.34 seconds)

Ad related to **dc seafood restaurants**

Sea Catch Restaurant - SeaCatchRestaurant.com
www.seacatchrestaurant.com/
Great Waterfront Scenery Make Reservations Online.
Official Site - Menus - Directions - Book a Reservation Here

Washington, D.C. Area Seafood Restaurants
www.opentable.com/washington-dc-seafood-restaurants
Seafood restaurants located in Washington, D.C. Area.

Seafood Restaurants in the Washington, DC area
dc.about.com › Local › Washington, DC › Food, Beverage & Dining
5+ items – Seafood Restaurants in Washington, DC, Maryland and Virginia ...
Bonefish Grill Read a restaurant review of the Bonefish Grill, a national chain ...
Dancing Crab Seafood restaurant in Washington, DC specializing in ...


Washington, DC » Restaurants » Seafood - Yelp
www.yelp.com/c/dc/seafood
The Best Seafood in Washington, DC on Yelp. Read about places like: Maine Avenue Fish Market, BlackSalt Fish Market & Restaurant, The Capital Grille, Red ...

Washington, DC - 7th Street - Legal Sea F...
www.legalseafoods.com/restaurants/washingto...
Zagat: 23 / 30 - 94 Google reviews

The Oceanaire Seafood Room
www.theoceanaire.com/
Zagat: 24 / 30 - 826 Google reviews

Sea Catch
www.seacatchrestaurant.com/
Zagat: 23 / 30 - 176 Google reviews

Map for dc seafood restaurants



Ads

McCormick & Schmick's
www.mccormickandschmicks.com/
Extensive Fresh Menu Updated Daily
Reservations Available Online.
1652 K St. NW, Washington, DC
Directions

Kellari Taverna D.C.
www.kellaridc.com/
The perfect place for lunch,
business meetings and intimate
Washington, DC
(202) 535-5274

Indigo Landing Restaurant
www.indigolanding.com/
Largest outdoor deck, overlooking
DC skyline, the perfect place to be
1 Marina Dr, Alexandria, VA
(703) 548-0001 - Directions

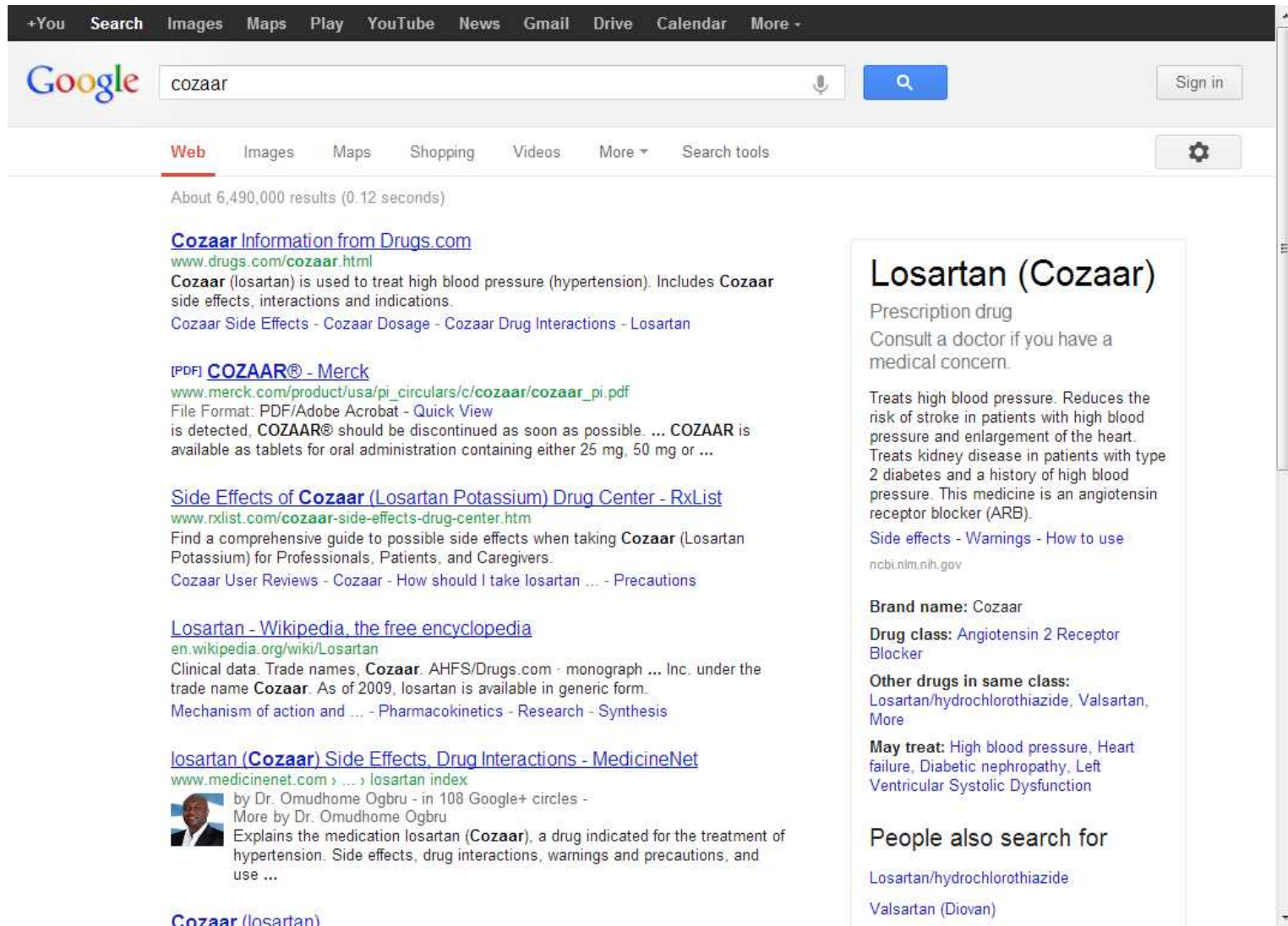
A 704 7th Street Northwest
Washington
(202) 347-0007

B 1201 F Street Northwest
Washington
(202) 347-2277

C 1054 31st Street
Northwest
Washington

Google Knowledge Graph

drug information



+You Search Images Maps Play YouTube News Gmail Drive Calendar More

Google cozaar Sign in

Web Images Maps Shopping Videos More Search tools


About 6,490,000 results (0.12 seconds)

Cozaar Information from Drugs.com
www.drugs.com/cozaar.html
Cozaar (losartan) is used to treat high blood pressure (hypertension). Includes Cozaar side effects, interactions and indications.
Cozaar Side Effects - Cozaar Dosage - Cozaar Drug Interactions - Losartan

[PDF] **COZAAR® - Merck**
www.merck.com/product/usa/pi_circulars/c/cozaar/cozaar_pi.pdf
File Format: PDF/Adobe Acrobat - Quick View
is detected. **COZAAR®** should be discontinued as soon as possible. ... **COZAAR** is available as tablets for oral administration containing either 25 mg, 50 mg or ...

Side Effects of Cozaar (Losartan Potassium) Drug Center - RxList
www.rxlist.com/cozaar-side-effects-drug-center.htm
Find a comprehensive guide to possible side effects when taking Cozaar (Losartan Potassium) for Professionals, Patients, and Caregivers.
Cozaar User Reviews - Cozaar - How should I take losartan ... - Precautions

Losartan - Wikipedia, the free encyclopedia
en.wikipedia.org/wiki/Losartan
Clinical data. Trade names, **Cozaar**. AHFS/Drugs.com - monograph ... Inc. under the trade name **Cozaar**. As of 2009, losartan is available in generic form.
Mechanism of action and ... - Pharmacokinetics - Research - Synthesis

losartan (Cozaar) Side Effects, Drug Interactions - MedicineNet
www.medicinenet.com > ... > losartan index
 by Dr. Omudhome Ogbu - in 108 Google+ circles -
More by Dr. Omudhome Ogbu
Explains the medication losartan (**Cozaar**), a drug indicated for the treatment of hypertension. Side effects, drug interactions, warnings and precautions, and use ...

Losartan (Cozaar)
Prescription drug
Consult a doctor if you have a medical concern.
Treats high blood pressure. Reduces the risk of stroke in patients with high blood pressure and enlargement of the heart. Treats kidney disease in patients with type 2 diabetes and a history of high blood pressure. This medicine is an angiotensin receptor blocker (ARB).
Side effects - Warnings - How to use
ncbi.nlm.nih.gov
Brand name: Cozaar
Drug class: Angiotensin 2 Receptor Blocker
Other drugs in same class: Losartan/hydrochlorothiazide, Valsartan, More
May treat: High blood pressure, Heart failure, Diabetic nephropathy, Left Ventricular Systolic Dysfunction

People also search for
Losartan/hydrochlorothiazide
Valsartan (Diovan)

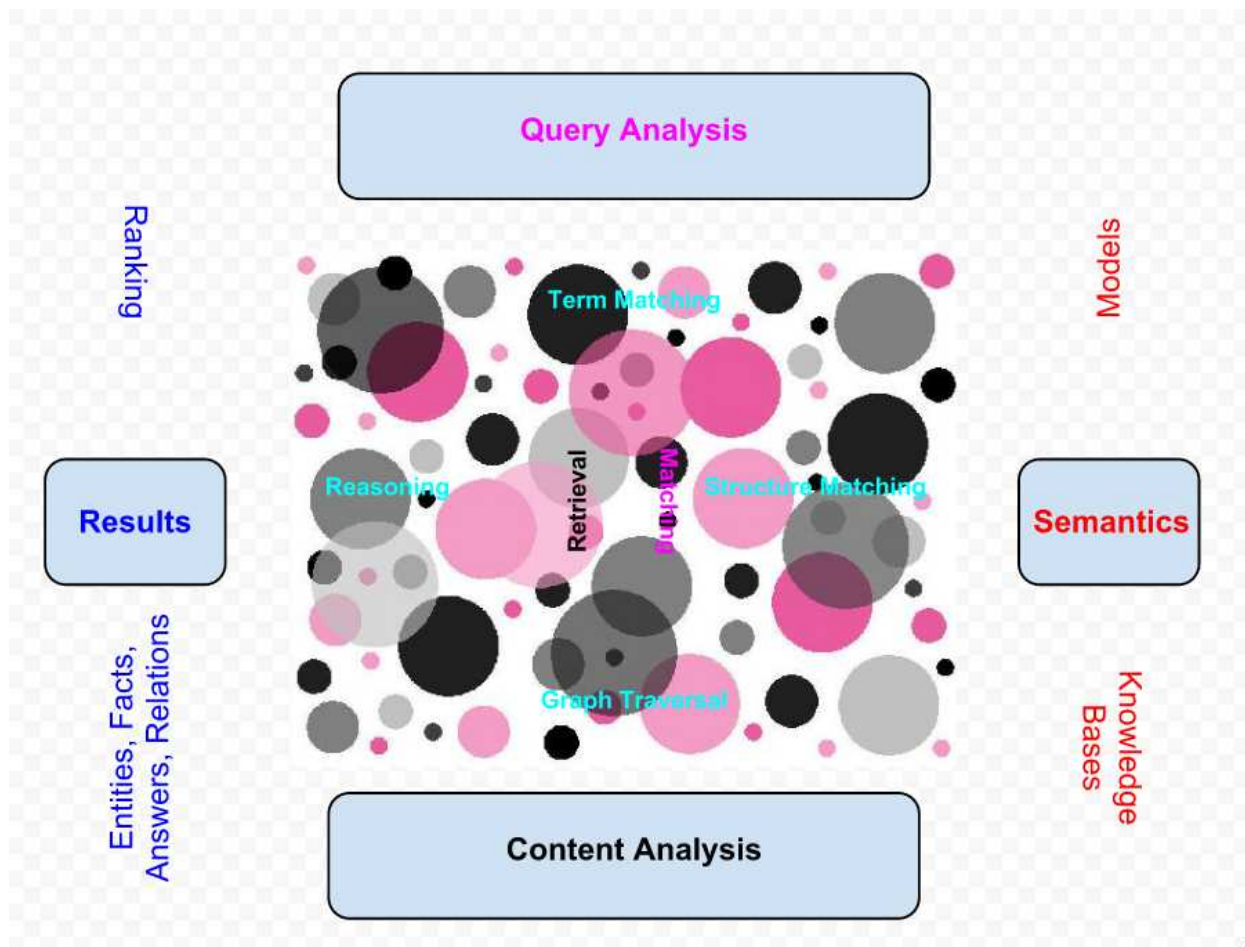
Semantic Search and Knowledge Discovery in the Biomedical Literature

“Scientists today cannot hope to manually track all of the published science relevant to their work. A cancer biologist, for instance, can find more than 2 million relevant papers in the PubMed archive, more than 200 million Web pages with a Google search, and databases holding results from experiments that produce millions of gigabytes of data.”

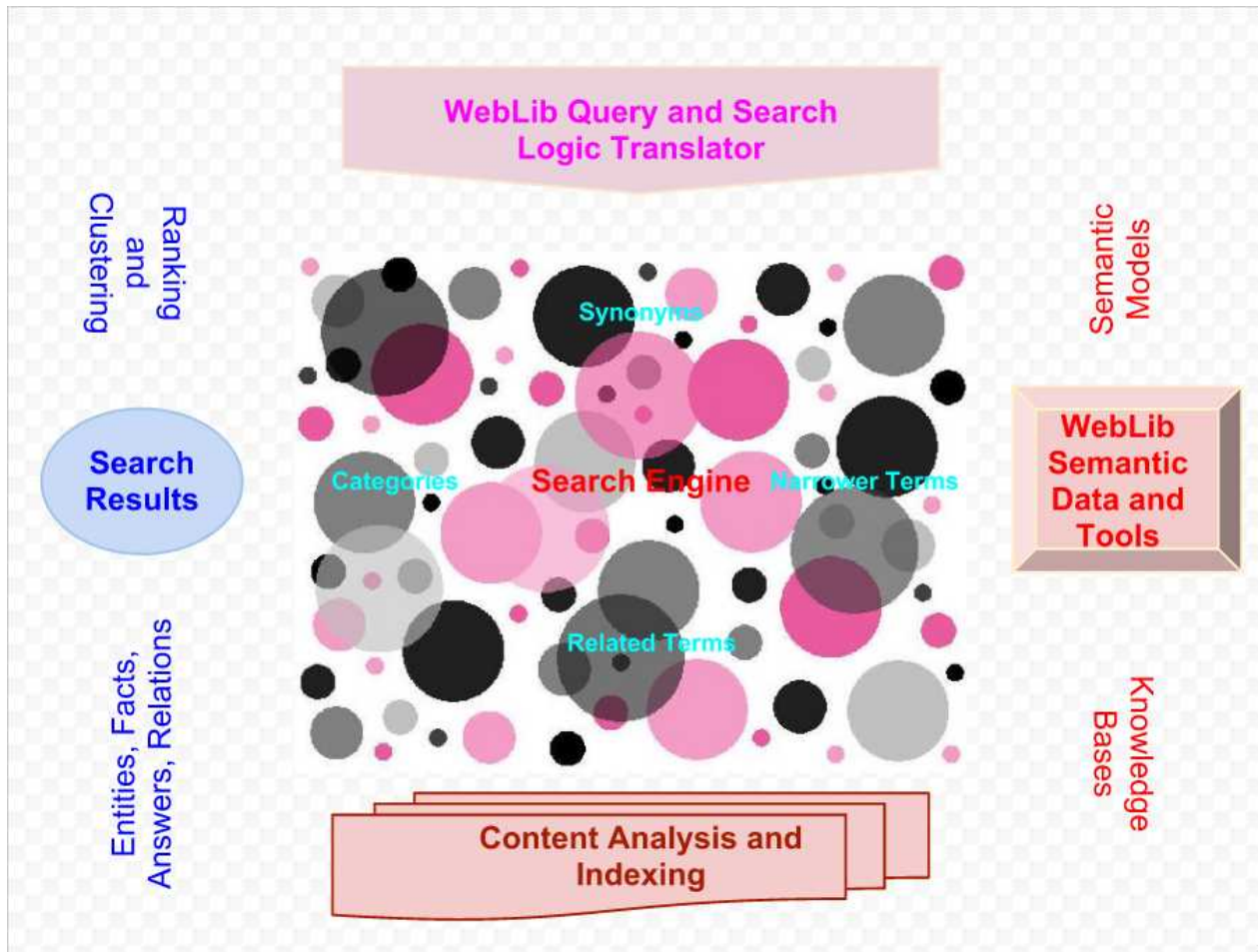
Machine Science

<http://www.sciencemag.org/content/329/5990/399.summary>

Overview of Semantic Search Approaches



WebLib's Semantic Search Technology



WebLib Semantic Search and Discovery Apps

federated search, distributed search, discovery search, enterprise search, semantic search

- [PolyMeta](#)
- [HealthMash](#)
- [NLMplus](#)
- [WebLib Green Energy Semantic Search](#)
 - [OSTI Green Energy Semantic Search](#)
 - [OntoFind](#)

HealthMash and the Biomedical Knowledge Base



- Trusted Health Information
- Health News
- Videos
- Images
- Drugs and Substances
- Clinical Trials
- Integrative Medicine
- Web
- Articles
- Books
- Blogs
- Twitter

sciatica

Search Clear Feedback

Explore and Discover

Related Concepts sciatica sciatia sciatic neuralgia sciatic nerve dysfuncti...	Health Concerns sacroiliitis slipped disk numbness back pain	Tests and Treatments physical therapy epidural steroid inject... physical examination cold pack	Drugs and Substances gabapentin duloxetine dicyclomine zinc	Alternative Medicine chiropractic acupressure acupuncture st. john's wort
---	---	--	--	--

14 Results for: sciatica...

- Contents
- Topics
- Alternative medicines
- Alternative Names
- Causes
- Complications
- Diagnosis
- Exams and Tests
- Home remedies
- Medical advice
- Outlook (Prognosis)
- Possible Complications
- Prevention

Trusted Health Information Results

Sciatica

Like 40 people like this.

Sciatica is a symptom of a problem with the **sciatic** nerve, a large nerve that runs from the lower back down the back of each leg. It controls muscles in the back of your knee and lower leg and provides feeling to the back of your thigh, part of your lower leg and the sole of your foot. When you have **sciatica**, you have pain, weakness, numbness or tingling. It can start in the lower back and extend down your leg to your calf, foot, or even your toes. It's usually on only one side of your body. **Sciatica** ...

www.nlm.nih.gov/medlineplus/sciatica.html

Health News

[Back pain - is it all in the mind? A provocative new book suggest it's not physical problems that cause ...](http://www.dailymail.co.uk/health/article-2218216/Back-pain-is-it-all-in-the-mind-A-provocative-new-book-suggest-it-s-not-physical-problems-that-cause-...)
www.dailymail.co.uk/health/article-2218216/Back-pa...

More >

Images



OntoFind and the Web Knowledge Base

OntoFind

The Semantic Search Engine

OntoFind

Refine Results

Clear

Select Sources
Hide hits

Explore and Discover:

sciatica

Sciatica + Sciatic nerve Pain Spinal disc herniation Back pain	Pain + Low back pain Back pain Neuralgia Referred pain	Vertebral column + Spinal disc herniation Degenerative disc disease Back pain Lumbar spinal stenosis	Neurological disorde ... + Spinal disc herniation Radiculopathy Lumbar spinal stenosis Piriformis syndrome	Musculoskeletal diso ... + Piriformis syndrome Radicular pain Sacroiliac joint dysfunct ... Spinal decompression
---	---	---	---	---

Google Google-Keyword 50 - 10,100,000

49 Results for: sciatica...

Topics Topics Graph

All Results (49)

sciatica... (48)

- pain relief (6)
- Sciatic Nerve Pain (5)
- Sciatica treatment (4)

▼ More

• Symptoms and Causes (8)

• leg pain... (8)

• 2012 (7)

Web Results

1 | 2 | 3 | 4 | 5 | Next >

1. [Sciatica - Wikipedia, the free encyclopedia](#) 🔍

Like 2,342 people like this.

Sciatica [1] is a set of symptoms including pain that may be caused by general en.wikipedia.org/wiki/Sciatica Google

2. [Sciatica Symptoms, Causes, Treatments, Exercise](#) 🔍

Like 619 people like this.

Learn about the symptoms and causes of **sciatica**, a painful nerve condition, from www.webmd.com/back-pain/guide/sciatica-symptoms Google

3. [Sciatica - MayoClinic.com](#) 🔍

Like 346 people like this.

News

[Do steroid injections for sciatica pain help?](#)

People with **sciatica**, pain that usually starts in the lower back and radiates ... It stems from a problem with the **sciatic** nerve, which runs from the ... www.washingtonpost.com/national/health-science/do-...

More >

Images



On to Find with OntoFind

OntoFind

The Semantic Search Engine

biofuels and energy independence

OntoFind

Refine Results

Clear

Select Sources
Hide hits

Explore and Discover:

biofuels

energy independence (Energy policy of the United States, Energy independence, United States energy independence, North American energy independence)

Biofuel + Biomass Biogas 2000s energy crisis Liquid fuels	Energy security + National security Sustainable energy Natural resource United States energy inde ...	Ethanol fuel + Ethanol fuel Cellulosic ethanol Ethanol fuel in Brazil Ethanol fuel in the Unite ...	Biofuels + Ethanol fuel Biodiesel Food vs. fuel Energy crop	Peak oil + Peak oil Food vs. fuel 2000s energy crisis Global strategic petroleu ...
--	--	--	--	--

Google Google-Keyword 50 - 3,150,000

48 Results ⓘ for: biofuels and energy independence...

Topics Topics Graph

Web Results

1 | 2 | 3 | 4 | 5 | Next >

All Results (48)

- biofuels and energy independence (7)
- Energy Independence... (43)
- biofuels... (40)
- 2012 (26)
- country (3)
- eight-state Midwest tour (3)

1. Say Cheese: Riding Alternative Biofuel to Energy Independence 🔍

Like One person likes this.

Nov 14, 2012 ... The election may be over, but our country's need to become **energy independent**

www.huffingtonpost.com/lance-seefeldt/alternative-... Google

2. Pentagon biofuels effort aids energy independence - Politico 🔍

Like 55 people like this.

Jul 15, 2012 ... Our nation's military has long demonstrated its ability to identify strategic national www.politico.com/news/stories/0712/78517.html Google

News

Biofuels 36 minutes ago E15 Is Coming & AAA Ain't Happy, New ... The **Energy Independence and Security Act** mandated that the U.S. gradually increase its production of **biofuels**, from 4.7 billion gallons per ... www.greencarreports.com/news/1080814_e15-is-coming...

More >

Images

Refine Results:

biofuels and energy independence

OntoFind
The Semantic Search Engine

Also Consider: supply and distribution dependency (psychology)

OntoFind Refine Results Clear

Select Sources Hide hits

Google Google-Keyword 50 - 6,570,000

50 Results for: ((("biofuels" OR "bio-fuel" OR "bio-fuels" OR "biomass energy") AND ("Biomass" OR "Biogas" OR "2000s energy crisis" OR "Liquid fuels")) AND ("energy independence" OR "security of supply" OR "oil dependence" OR "oil dependency") AND ("National security" OR "Sustainable energy" OR "Natural resource" OR "O..."))

Topics Topics Graph

All Results (50)

- BioFuels... (31)
 - Advanced BioFuels (6)
- Biomass Energy... (25)
- energy independence... (25)
- National Security... (11)
- LIQUID FUELS, fuel... (11)
 - 2012 National Advanced Biofuels Conference and Expo (9)
 - Resource (2)
 - conversion (5)

More All

Web Results

1 | 2 | 3 | 4 | 5 | Next >

1. Sustainable Ethanol: Biofuels, Biorefineries, Cellulosic Biomass .

Like Be the first of your friends to like this.

Discover how the end of cheap oil is providing an opening for biofuels; how some www.amazon.com/Sustainable-Ethanol-Biorefineries-C... Google

2. Oil dependence, national security and what we can do about it

Like Be the first of your friends to like this.

Biofuels today make 2% of the transportation market. Can they make a real ... www.bakerinstitute.org/files/documents/event-prese... Google

3. Advanced Biofuels - EnergyOne - Active Management in Renewable .

Like Be the first of your friends to like this.

Biofuels are any fuel obtained by the processing **and** conversion of biomass www.energyone.com/index.php/markets/advanced-biofu... Google

4. National Algal Biofuels Technology Roadmap - EERE - U.S. .

Like 114 people like this.

National Algal Biofuels Technology Roadmap. U.S. Department of Energy, Office www1.eere.energy.gov/biomass/pdf/algal_biofuels... Google

Images



More >

Blogs

"Biofuels have the momentum": US Senate votes 54-41 to clear .

"The Senate once again backed our nation's military which considers advanced biofuels as an essential tool for our national security **and** energy independence." The bill gained support from Joe Manchin of West Virginia, who ... www.biofuelsdigest.com/bdigest/2012/11/30/biofuels...

More >

What is OntoFind?

The screenshot displays the OntoFind search engine interface. At the top, there's a search bar with the text 'haptics in cars' and buttons for 'Search', 'Search within', and 'Clear'. Below the search bar, there are suggestions: 'Did you mean? haptic in cars' and 'Also Consider: automobiles'. The main content area is titled 'Explore and Discover:' and lists related terms like 'haptics (Haptic communication, Haptic technology, Haptic perception, Hapticity)' and 'cars (Cars (film), Cars (song))'. A 'Refine search' button is present. Below this, there are five expandable category boxes: 'Haptics', 'Automobile', 'Engine technology', 'Engine components', and 'Luxury motor vehicle ...'. Each box shows a list of sub-terms. For example, 'Automobile' includes 'automobile', 'autocar', 'motor car', and 'car'. Below the categories, there are search engine logos and their respective result counts: Bing-Keyword50 - 35, Ask-Keyword50 - Results, Google-Keyword 50 - 126,000, and Yahoo-Keyword 40 - 35. The main search results section shows '81 Results' for 'haptics in cars...'. It includes a 'Topics Graph' and a list of 'All Results (81)'. The first result is '1. Haptic tech: coming to cars, phones and even clothes | SmartPlanet' with a date of 'Jun 17, 2011' and a snippet: 'A new generation of haptic feedback technology will allow us to "feel" goods in www.smartplanet.com/blog/smart-takes/haptic-tech-c...'. The second result is '2. Haptic technology - Wikipedia, the free encyclopedia'. A 'News' sidebar on the right shows a snippet: 'How Will Smart Cars Affect the Future of Driving?' and 'How Do Drivers React?- Sharing Control With Haptics: Seamless Driver ... and Acceptability of Smart Systems in Cars Rapidly developing vehicle c.moreover.com/click/here.pl?z7350062186&z=160...'. There are also 'Like' buttons and counts for each result.

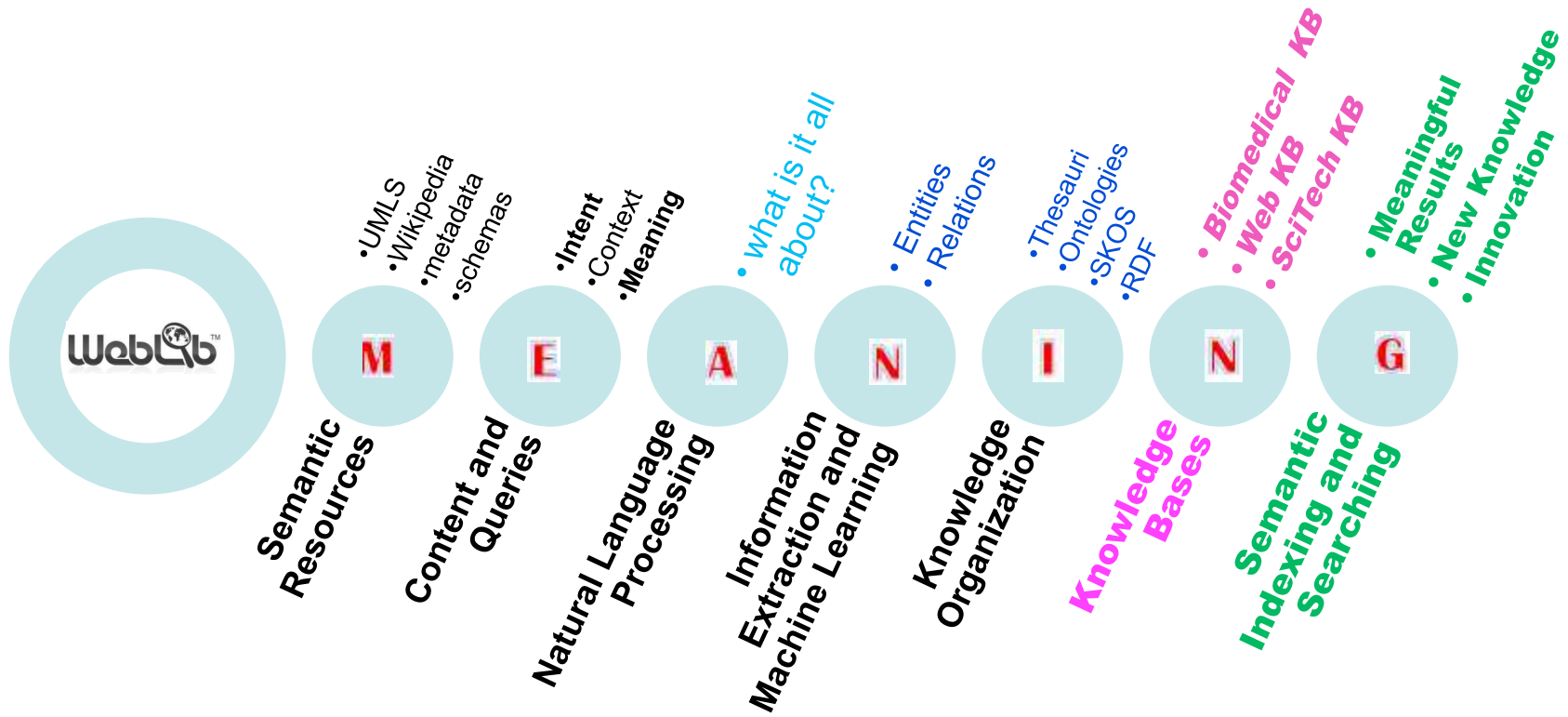
OntoFind is a **customizable semantic search engine** powered by WebLib's **Web Knowledge Base**

OntoFind facilitates **knowledge discovery** from heterogeneous information sources

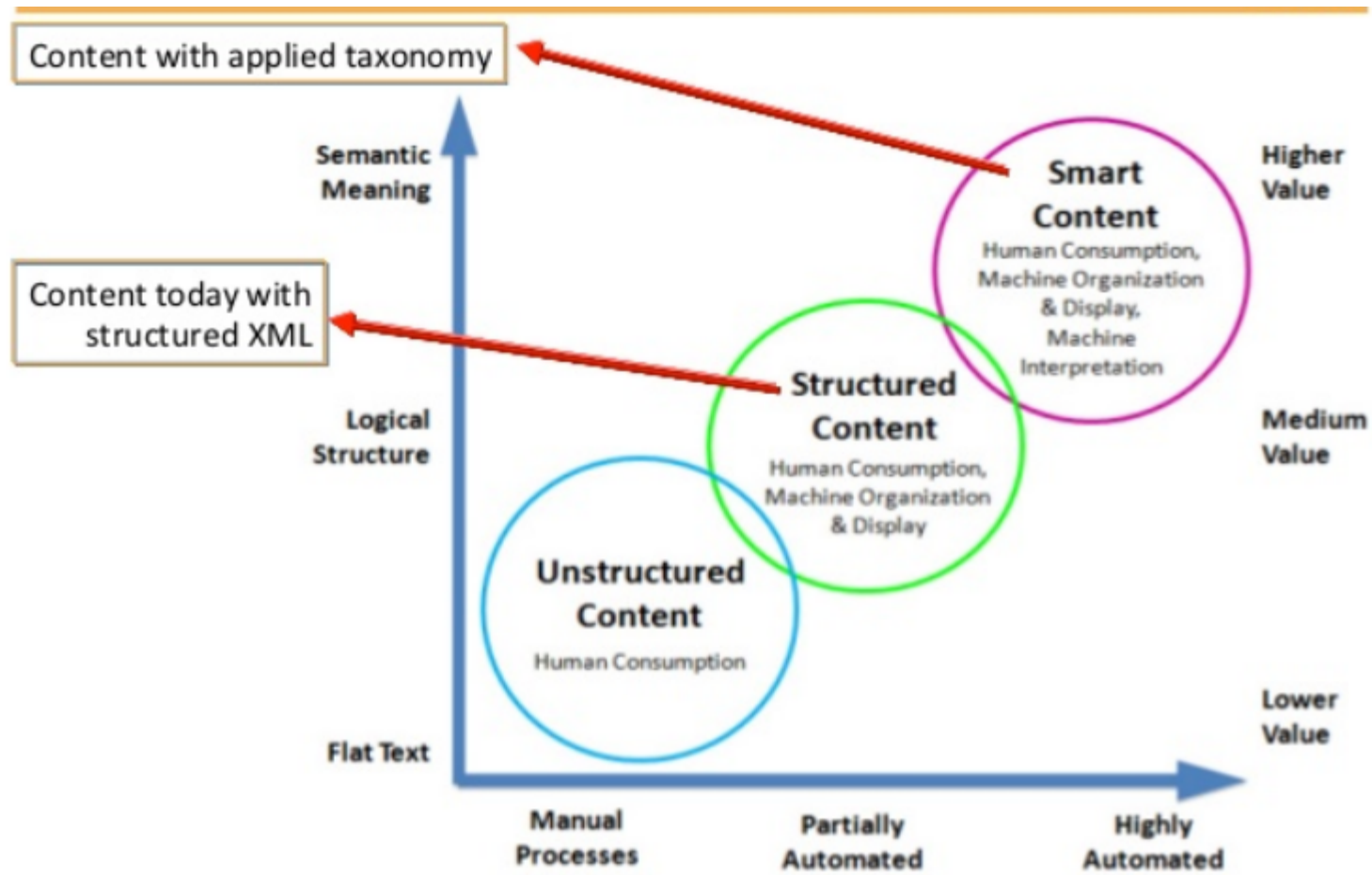
OntoFind produces more **meaningful search results** than conventional keyword searches

The **Web Knowledge Base** is available as a **web service**

Key Components of WebLib's Semantic Search and Knowledge Discovery Technology

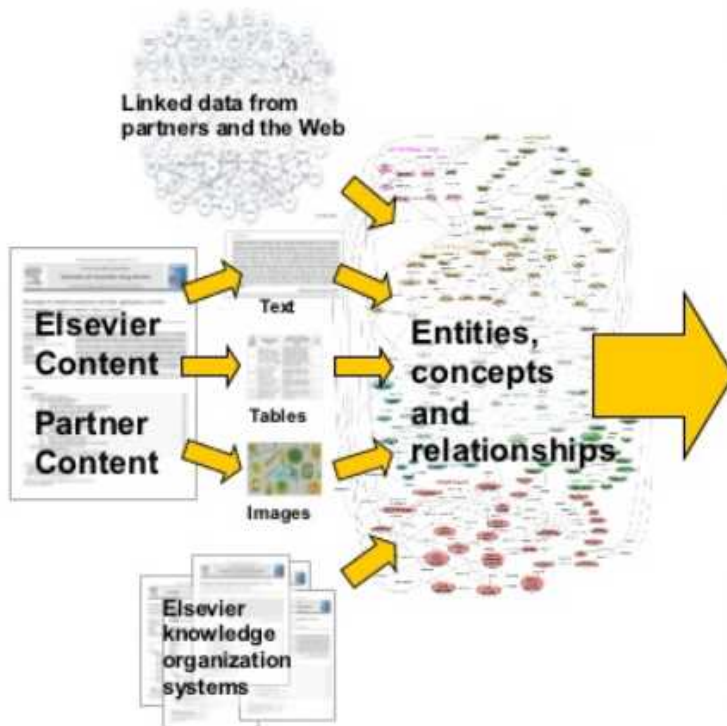


Taxonomy Powered Content



Semantic Search and Smart Content

Smart Content At Elsevier



Smart Content Applications



Better discovery through semantic search & navigation

- Faceted search & browse
- Ontology-driven navigation
- Task-specific results
- Personalized/localized results
- Link to evidenced-based content



Better understanding through analysis and visualization

- Question & Answer
- Actionable Content & Alerts
- Tag clouds
- Heatmaps
- Animations



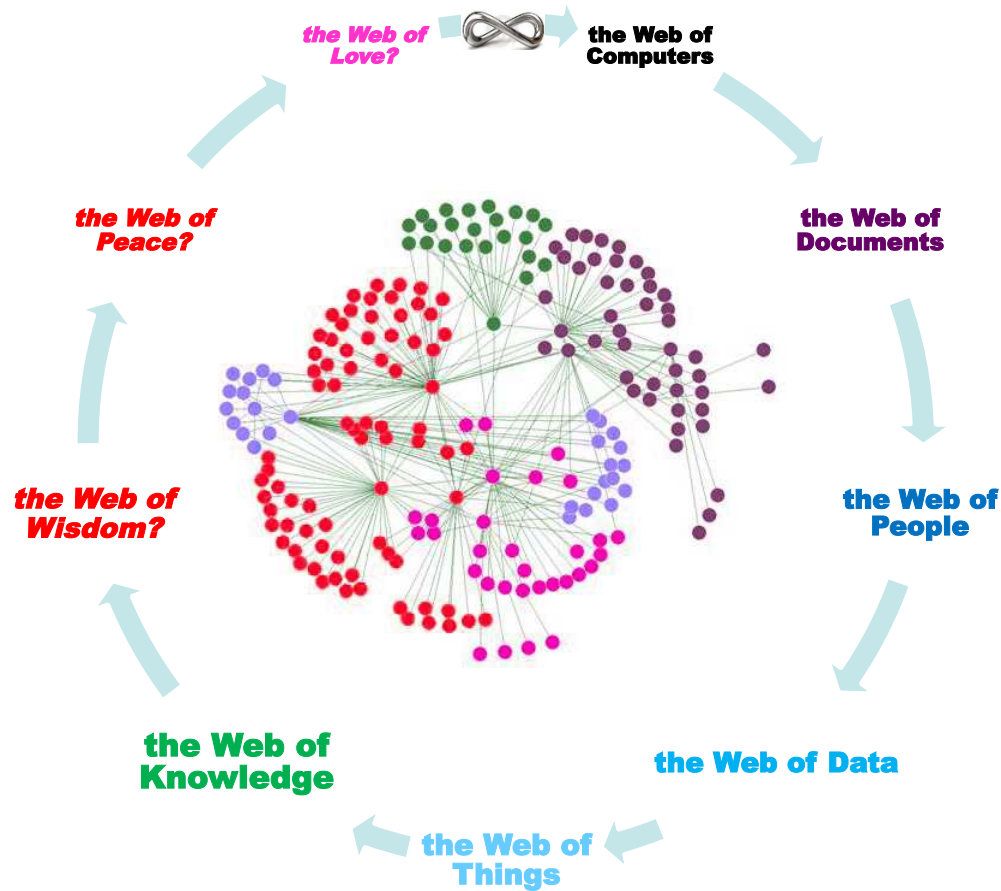
New knowledge through aggregation and synthesis

- Topic pages
- Social network maps
- Geolocation maps
- Data integration and mashups
- Text mining
- Inference and Reasoning

Where are we and where are we going?

The Wild Wild Web

where everything is getting meaningfully connected



The Tip of the Iceberg



Keyword Search vs. Semantic Search

Symbols, Strings and Operators

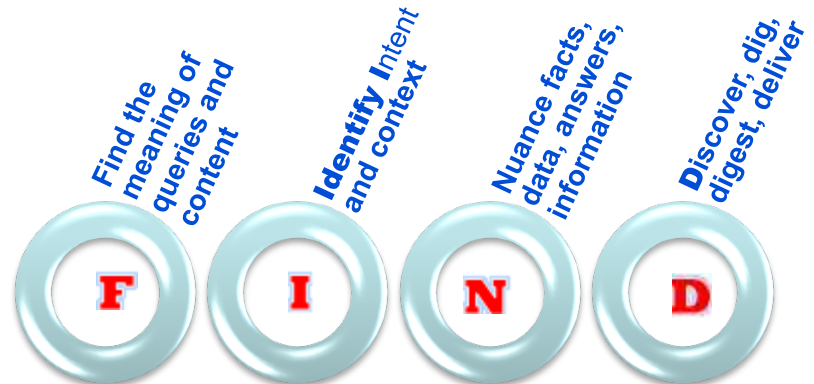
manipulating
query words

limited
utilization of
morphology
and syntax

displaying
links and text
snippets

Placing the
burden of
information
digestion on
the user

Real world Entities
and Relationships



Semantics on the Web

Diverse Definitions, Disciplines, Communities, Standards, Technologies, Tools, Applications, Solutions

- Semantic Searching on the Web vs. Searching on the Semantic Web
- Semantic University
- The Semantic Web Landscape
 - W3C Standards
 - RDF (Resource Description Framework)
 - RDFa (for marking up data inside Web pages)
 - SPARQL (SPARQL Protocol and RDF Query Language)
 - OWL (Web Ontology Language)

Semantic Web Technologies

steep learning curve, relatively slow progress, important early adopters, active standards bodies, hightec industry, trade shows, growing user communities

- Semantic Web Technologies are a family of very specific technology standards from the World Wide Web Consortium (W3C) that are designed to describe and relate data on the Semantic Web and inside enterprises, e.g.
- Ontologies
- Linked Open Data
- Semantic Web Technologies complement other Semantic Technologies on the Web
- Tim Berners-Lee's vision of an entire Web of interoperable data has not yet been realized

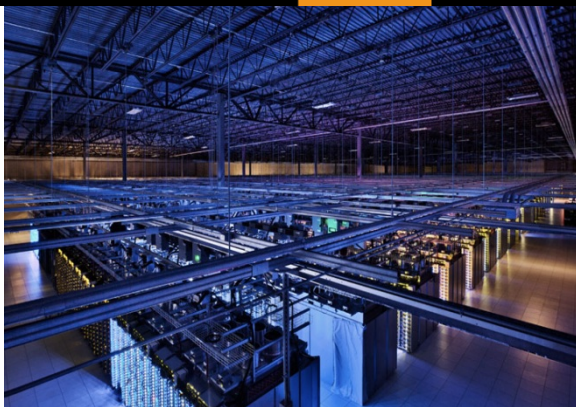
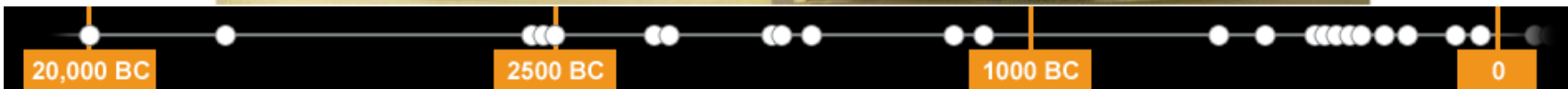
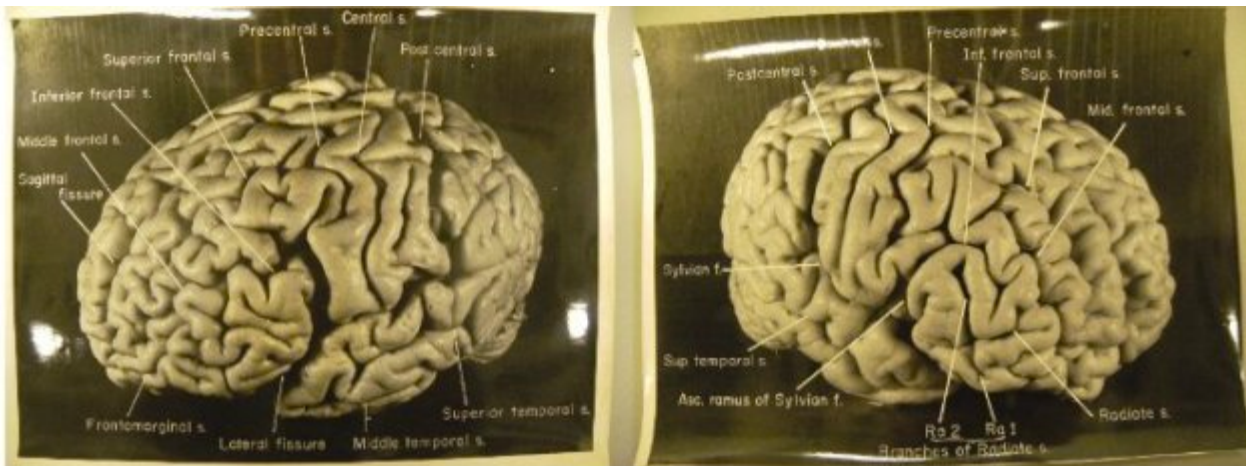
Semantic Technologies

a diverse family of technologies that seek to derive meaning and knowledge from data

- **Natural-language processing (NLP)**. is a field of information science, artificial intelligence, and linguistics concerned with the interactions between computers and human (natural) languages. **UIMA, Stanford NLP, Open NLP...**
- **Data and Text Mining, Big Data and Big Analytics**. Data mining technologies employ pattern-matching algorithms to tease out trends and correlations within large sets of data. **Hadoop, MongoDB, Oracle, IBM...**
- **Artificial intelligence and Expert Systems**. AI or expert systems technologies use elaborate reasoning models to answer complex questions automatically. These systems often include machine-learning algorithms that can improve the system's decision-making capabilities over time.
- **Database Management Systems (DBMS), NoSQL, MarkLogic...**
- **Information Retrieval, Search Engines and Semantic Search Engines, Solr/Lucene, SIRE ...**
- **Cloud Computing, Amazon EC2, Microsoft and Google...**
- **Visualization, Prefuse, KNALIJ...**

Semantic Search and Discovery Engines

Albert Einstein's Brain Google Server Farm Timeline of Computable Knowledge Watson



The State of the Semantic Arts

- The Web is becoming “**semantified**”
- Search engines, which have achieved remarkable success without semantics, are morphing into semantic search engines in order to produce better results and meet more complex information needs
- “There are no companies or products in this field that have eclipsed all others offering universal semantic processing or semantic search, yet”

Big Data, Big Analytics, Big Challenges, Big Insights, Big Bang for the Buck, Big Mistakes, Big Abuses, Big Crises

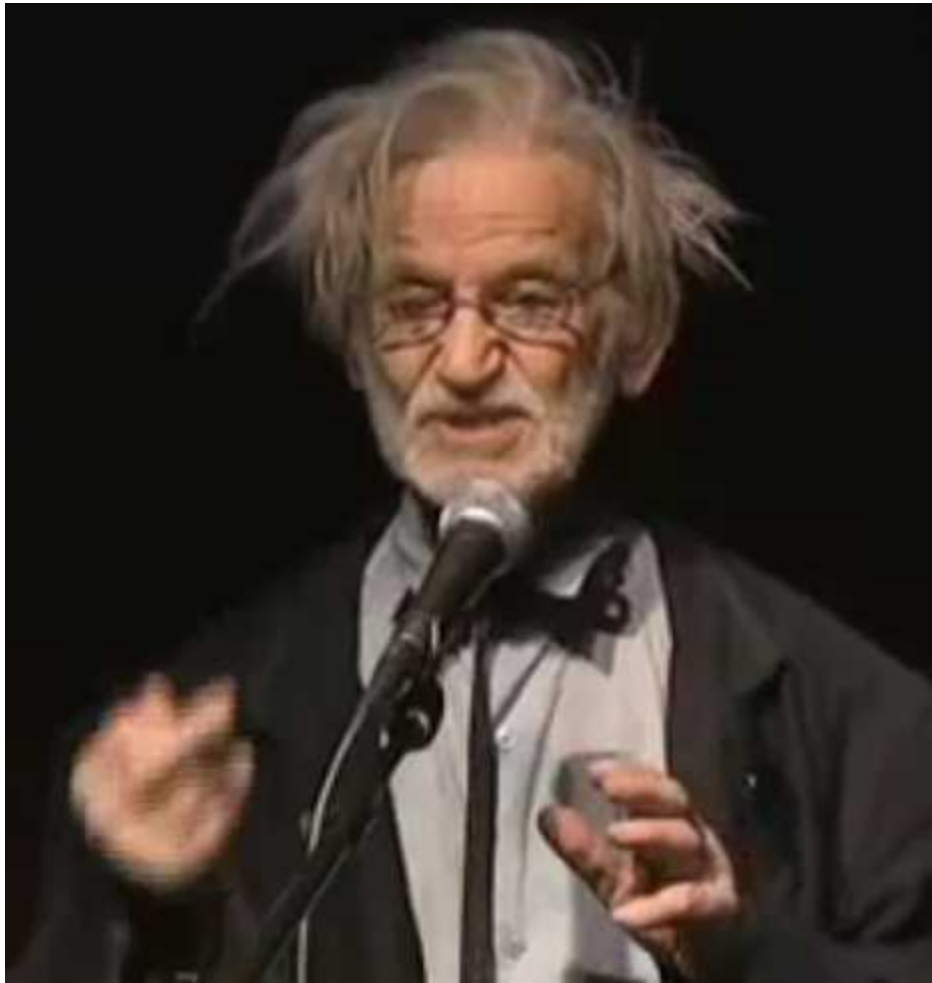
- We are in a crisis of knowledge
- Every day, we create 2.5 quintillion bytes of data (10^{18})
- 90% of the data in the world today has been created in the last two years alone
- Tens of billions of web link graph nodes indexed and over one trillion nodes discovered by the major search engines
- Access to a large amount of knowledge is critical for success at answering open-domain questions (David Ferrucci, Lead Researcher for IBM's Watson Project)
- **statistical techniques that use simple models and use lots of data trump approaches that use complex models, deep algorithms or hand-coded rules**
(Kaushik Chakrabarti, Microsoft)

worth watching and hearing

semantic search behind the scenes

- Breakfast with Google's Search Team
- Microsoft Speech Recognition
Breakthrough for the Spoken, Translated
Word

semantic search is
what semantic technologies can do today



but

what the ...

is

semantics
?

[Professor Irwin Corey explains](#)

Professor Irwin Corey at the Cutting Room NYC



Semantic Search Means Well

Google запускает семантический поиск Knowledge Graph

17 мая 2012 г.



С 16 мая 2012 года поисковая система Google начнет внедрять технологию Knowledge Graph, *говорится в*

Breakfast with Google's Search Team

Seek and Ye Shall Find

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Microsoft Speech Translation Breakthrough

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