# **Ask Us Anything**
## Schema Markup, Knowledge Graphs & Entity SEO

May 22, 2025

Schema App


Martha van Berkel
name
alumniOf
CISCO
founder
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Schema Markup
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Massachusetts Institute of Technology
Queen's University
provider
provider
Strategy & Innovation
Math & Engineering

Schema App


Mark van Berkel
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hadOccupation
Schema App
founder
Semantic Technology
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UNIVERSITY OF TORONTO
provider
Master of Business Administration, Strategy
provider
Master of Industrial Information Engineering

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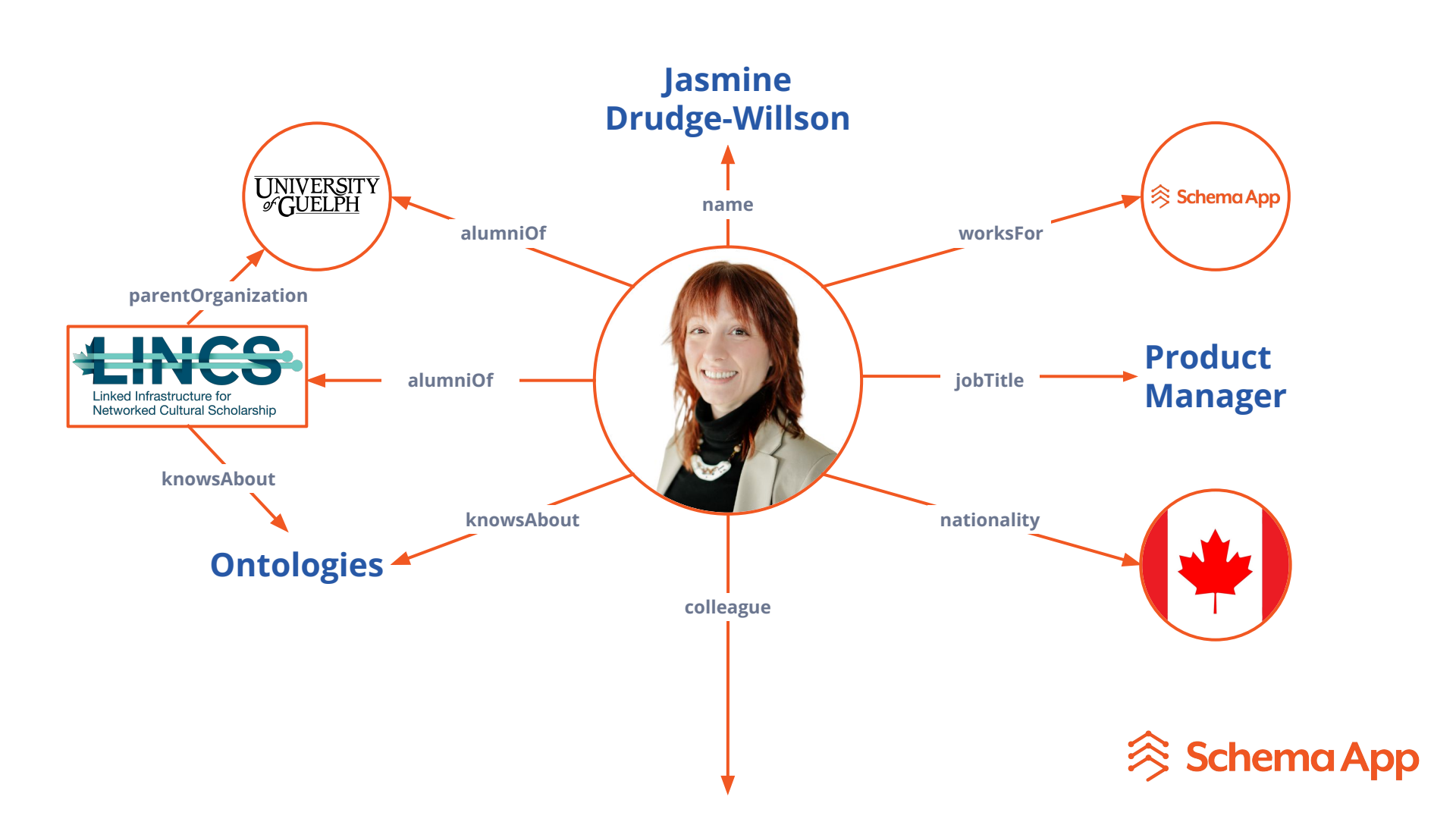
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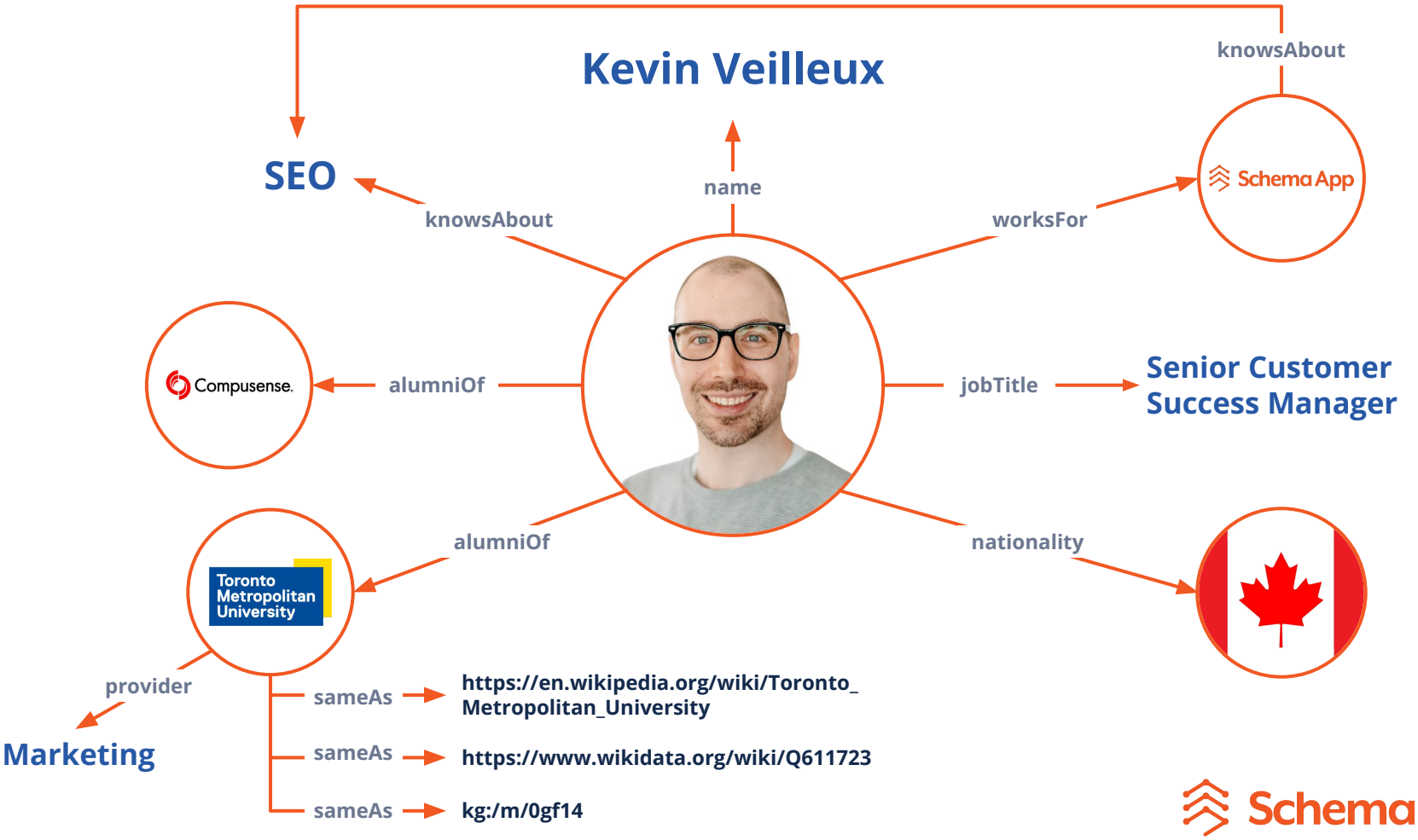
Kevin Veilleux
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# What's new in Search?

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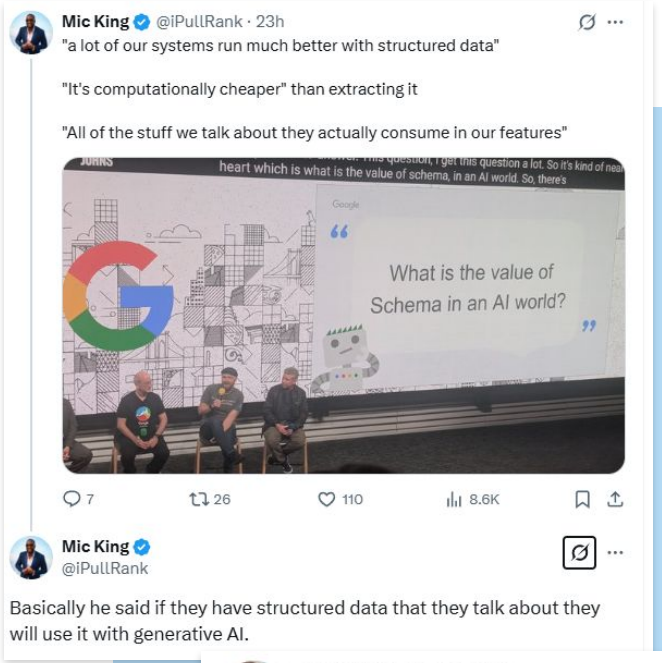
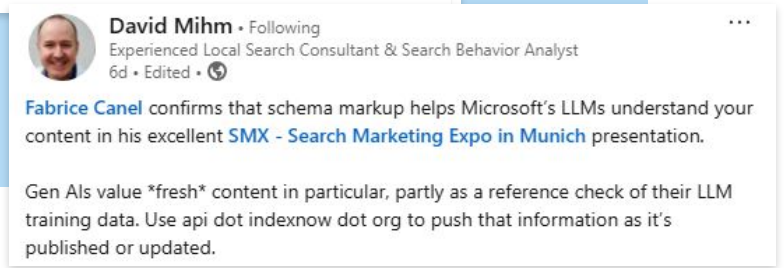
**Google** uses Schema Markup for Generative AI.

**Microsoft** confirmed that Schema Markup helps their LLMs understand website content.




**Source:** X post following New York Google Search Console Live Event – March 20, 2025

**Source:** LinkedIn post on Fabrice Canel's SMX Munich presentation – March 18, 2025

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# Structured Data is Critical For Modern Search Features

**Source:** X.com post on April 9th from SCL Madrid from Google


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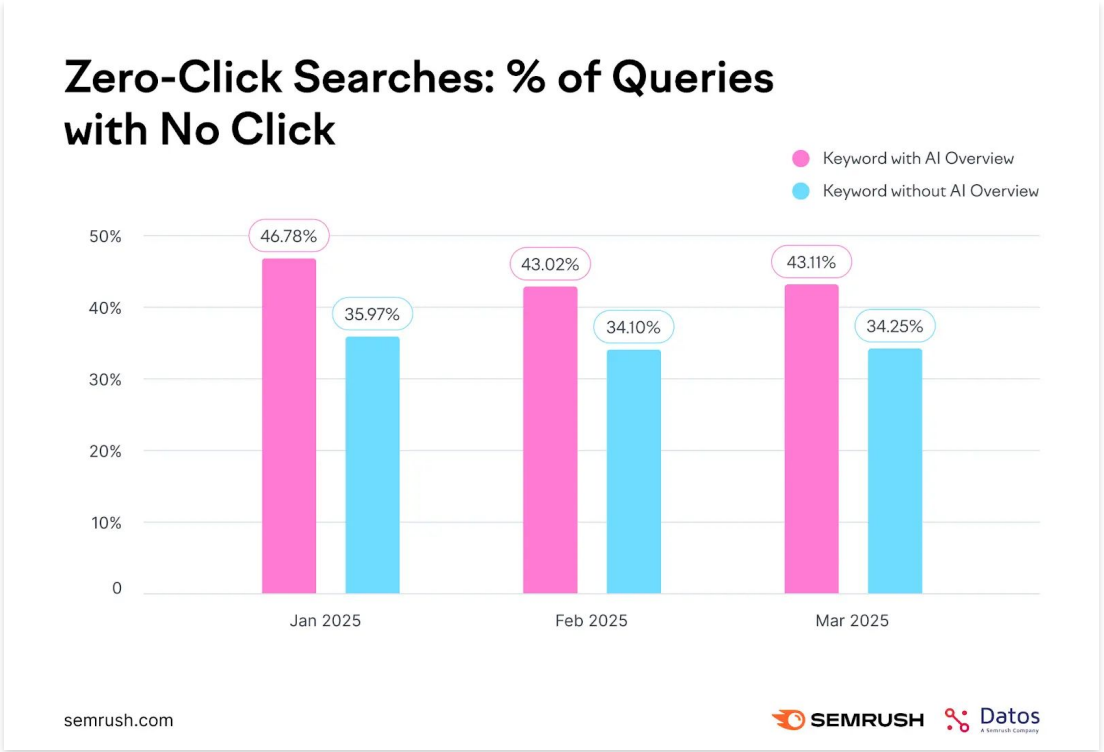
SEMRUSH

# Zero Click Search on AIO




**Source:** Semrush, May 4, 2025 – [Semrush AI Overviews Study: What 2025 SEO Data Tells Us About Google's Search Shift]

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BRIGHTEDGE

## Essential AI Search Metric:

# Citation Authority

- Pages with robust Schema Markup see higher citation rates in AIO.
- Adopt Entity-Based SEO to build comprehensive topic authority.
  - **Authoritative content is 3x more likely to be cited in AI responses** than narrowly focused pages.
  - Use Schema Markup to help search engines understand your brand and content / increase authority.

**Source:** Search Engine Journal / BrightEdge, May 12, 2025 – The Triple-P Framework: AI & Search Brand Presence, Perception & Performance

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Microsoft

# NLWeb

Open project designed to simplify the creation of natural language interfaces for websites—making it easy to turn any site into an AI-powered app.

**Source:** Microsoft, May 19, 2025 – Introducing NLWeb: Bringing conversational interfaces directly to the web - Source

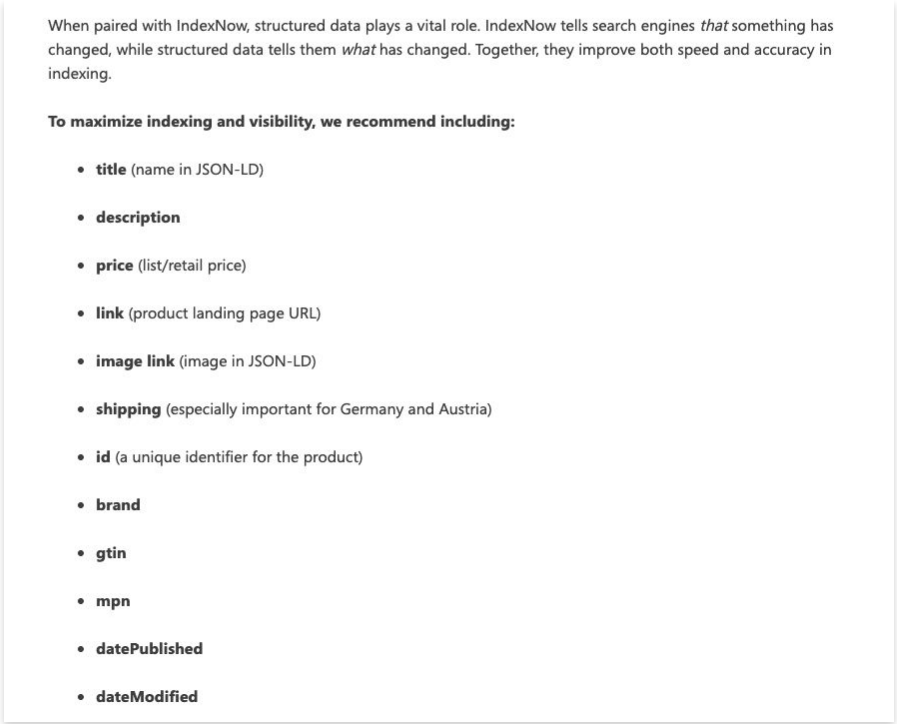
- Goal: Make it easy for any web publisher to create an intelligent, natural language experience for their site.
- Empower web publishers to participate on their terms, ensuring their website is ready to interact, transact and be discovered by other agents if they choose.
- Leverages semi-structured formats like Schema.org, RSS and other data that websites already publish.
- NLWeb is an open project / technology agnostic.
- Created by RV Guha, who created Schema.org.

Bing

# Structured Data plays a vital role in IndexNow

- IndexNow tells search engines *that* something has changed, while **structured data tells them *what* has changed**. Together, they improve both speed and accuracy in indexing.

**Source:** Microsoft Bing, May 20, 2025 – IndexNow Enables Faster and More Reliable Updates for Shopping and Ads



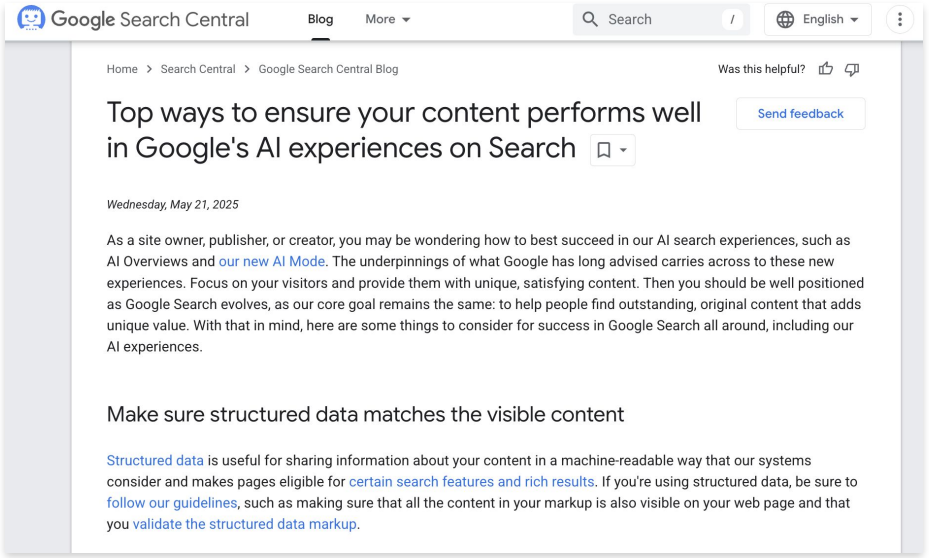
When paired with IndexNow, structured data plays a vital role. IndexNow tells search engines *that* something has changed, while structured data tells them *what* has changed. Together, they improve both speed and accuracy in indexing.

**To maximize indexing and visibility, we recommend including:**

- **title** (name in JSON-LD)
- **description**
- **price** (list/retail price)
- **link** (product landing page URL)
- **image link** (image in JSON-LD)
- **shipping** (especially important for Germany and Austria)
- **id** (a unique identifier for the product)
- **brand**
- **gtin**
- **mpn**
- **datePublished**
- **dateModified**

Structured data is **useful for sharing information about your content in a machine-readable way that our systems consider** and makes pages eligible for certain search features and rich results.

**Source:** Google Search Central Blog, May 21, 2025 – Top ways to ensure your content performs well in Google's AI experiences on Search



# What is the value of Schema Markup in this day and age?

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# Content Optimization

## SEO

Rich Results, Non Branded Queries, AI Overview

**Outcomes:**

- Clicks from Rich Results
- Traffic from non-branded queries

## Content

Entity Insights, Content Opportunities

**Outcomes:**

- Quality website traffic
- Website conversions

## AI / Innovation

AI efficiencies through reusable data layer

**Outcomes:**

- Higher accuracy & speed in LLM responses

**Content Knowledge Graph**

**Internal Entity Linking**

**External Entity Linking**

**Schema Markup**

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In this age of all things AI, how much does Schema Markup implementation even matter?

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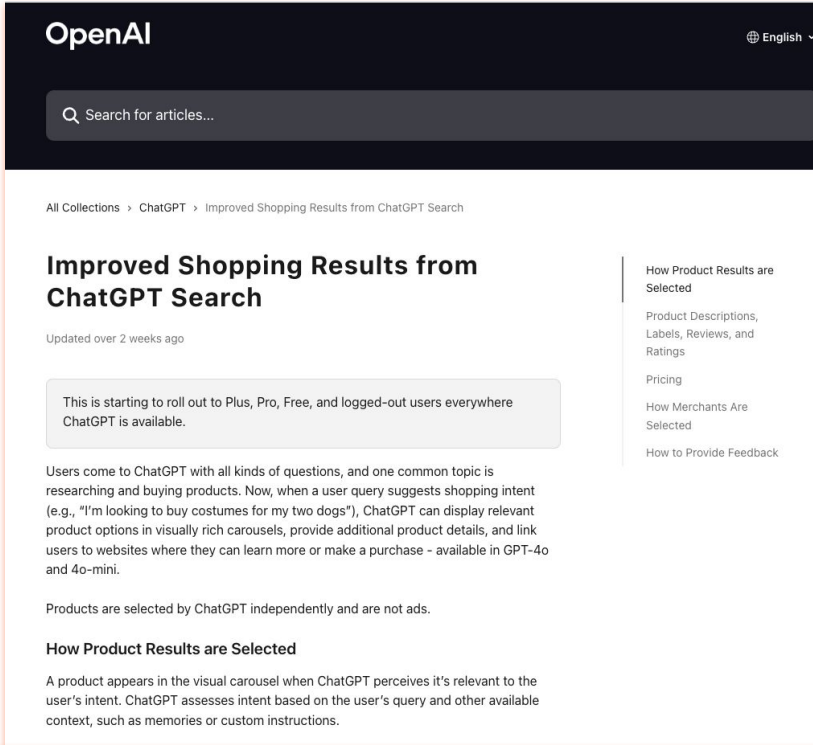
- LLMs primarily use web crawls to index data
- Gemini uses the Schema data as it forms an essential element of their Knowledge Graph
- ChatGPT recently announced that they use the Schema Markup for product listings
- Schema Markup provides a structured data format for LLM grounding during crawls




When determining which products to surface, ChatGPT considers:

- Structured metadata from third-party providers (e.g., price, product description) and other third-party content (e.g., reviews). Learn more.
- Model responses generated by ChatGPT before it considers any new search results. Learn more.
- OpenAI safety standards. Learn more.

You've mentioned that Schema Markup still works.

- How exactly did you test that?
- Do you run single variant tests, or is it based on client use cases where Schema Markup is intertwined with other SEO efforts?

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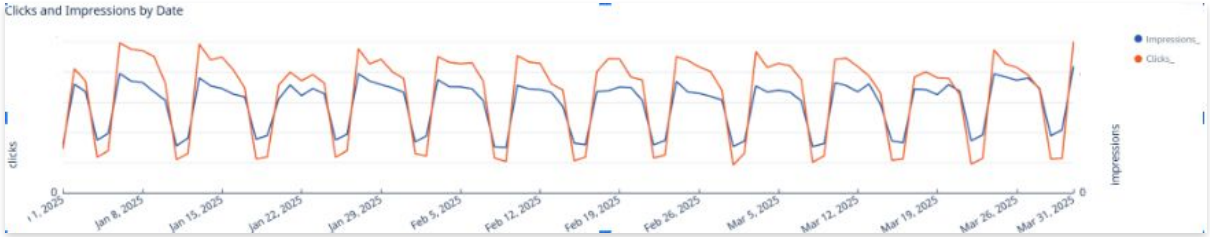
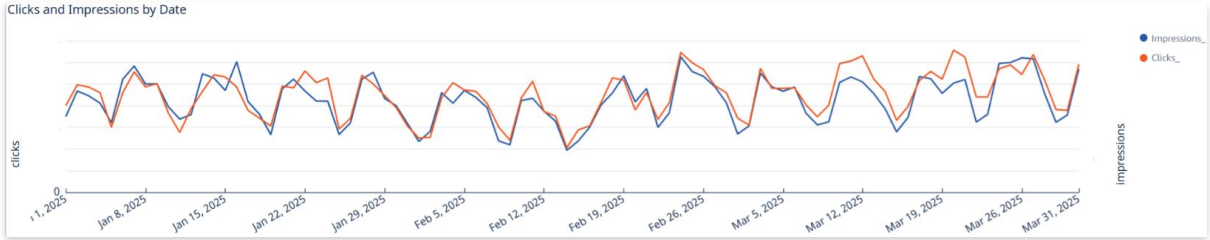
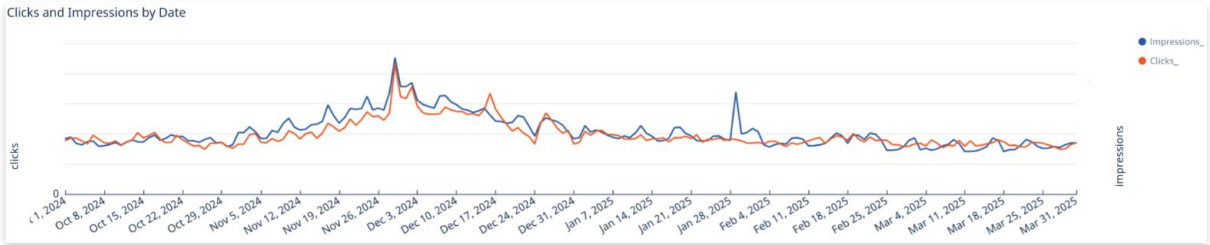
# Rich Results are still performing




**Example 1**: Review snippet rich results account for **77%** of all clicks while being awarded **49%** of the time, increasing CTR by **246%**!




**Example 2**: Job Posting rich results account for **80%** of all clicks while being awarded **31%** of the time, increasing CTR by **770%**!




**Example 3:** Product snippet rich results account for **77%** of all clicks, being awarded **23%** of the time, & increasing CTR by **976%**!

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# Schema Markup supports Non-Branded Queries

**Increase in non-branded impressions**

**Main Entity:** Assisted living

| By The Numbers | Overall Performance | Non-Branded Queries | Branded Queries |
|---|---|---|---|
| **Number of URLs** | **176** | | |
| **Clicks Growth** | -3.94% | **24.91%** | **8.20%** |
| **Impression Growth** | **23.19%** | **30.04%** | **24.59%** |

| mentions | |
|---|---|
| @type | Thing |
| name | Assisted Living |
| sameAs | https://en.wikipedia.org/wiki/Assisted_living |
| sameAs | kg:/m/03qhs2 |
| sameAs | https://www.wikidata.org/entity/Q315412 |

# What is Entity Linking?

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# What is an Entity?

An entity is a thing with specific attributes.

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Schema Markup = Language to ***define*** ***Entities*** on your website

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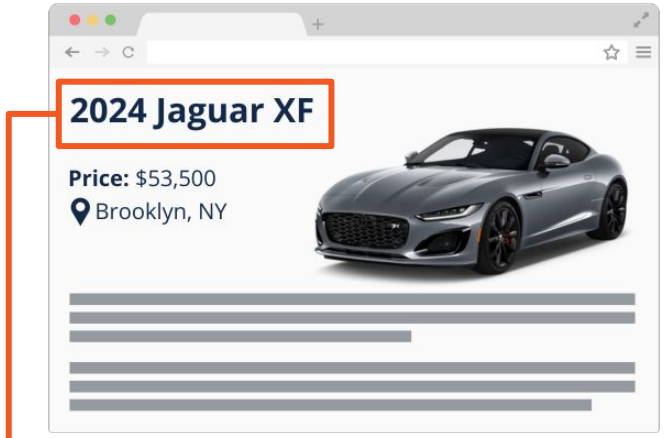
# Entity linking

- Identifying the entities mentioned in your content and
- Connecting them to corresponding entities found ***on your website*** or ***external authoritative knowledge bases*** (i.e. Wikipedia, Wikidata, or Google's Knowledge Graph) within your markup.




```
"mentions": {
  "@type": "Brand",
  "name": "Jaguar",
  "sameAs": "https://wikipedia.org/wiki/Jaguar_Cars",
  "sameAs": "https://www.wikidata.org/entity/Q30055",
  "sameAs": "kg:/m/012x34"
    }
```

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# Entity Linking

Improves the **visibility & discoverability of specific entities** (i.e. products, organizations, etc.) within search engine results

Help consumers **find the right information at the right time**, supporting them throughout their buyer journey

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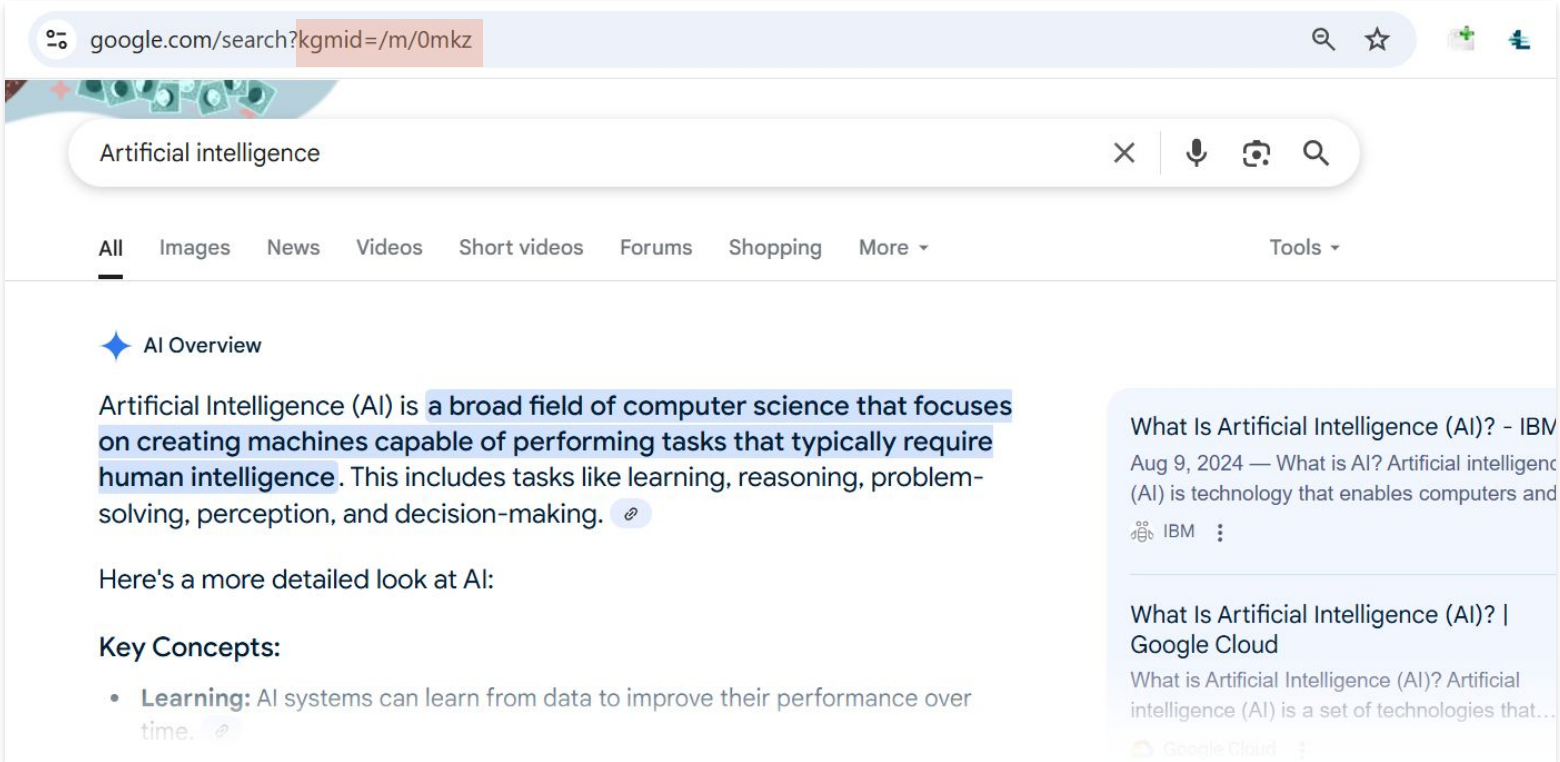
What Is a KGMID (Google Knowledge Vault ID)?

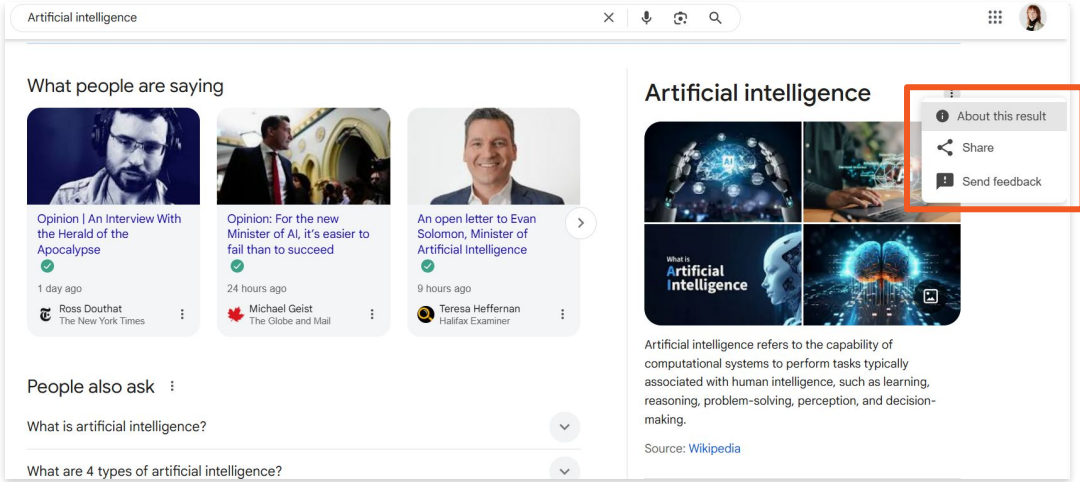
What Is the Difference Between /g and /m a KGMID ?

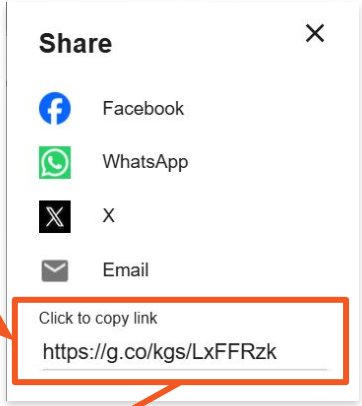
Can you provide an example of how to link entities using the Google Knowledge Graph?

# KGMID = Knowledge Graph Machine Identifier

*In Google's Knowledge Graph, every unique entity has a Machine Identifier (MID)*

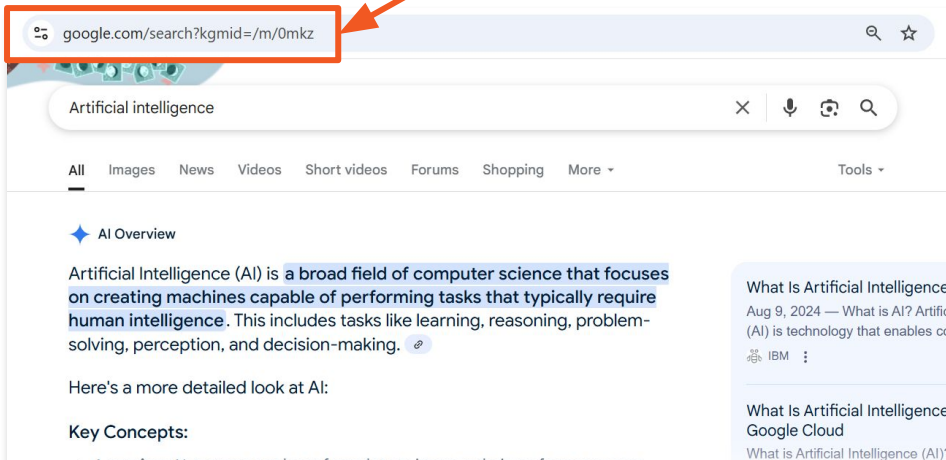




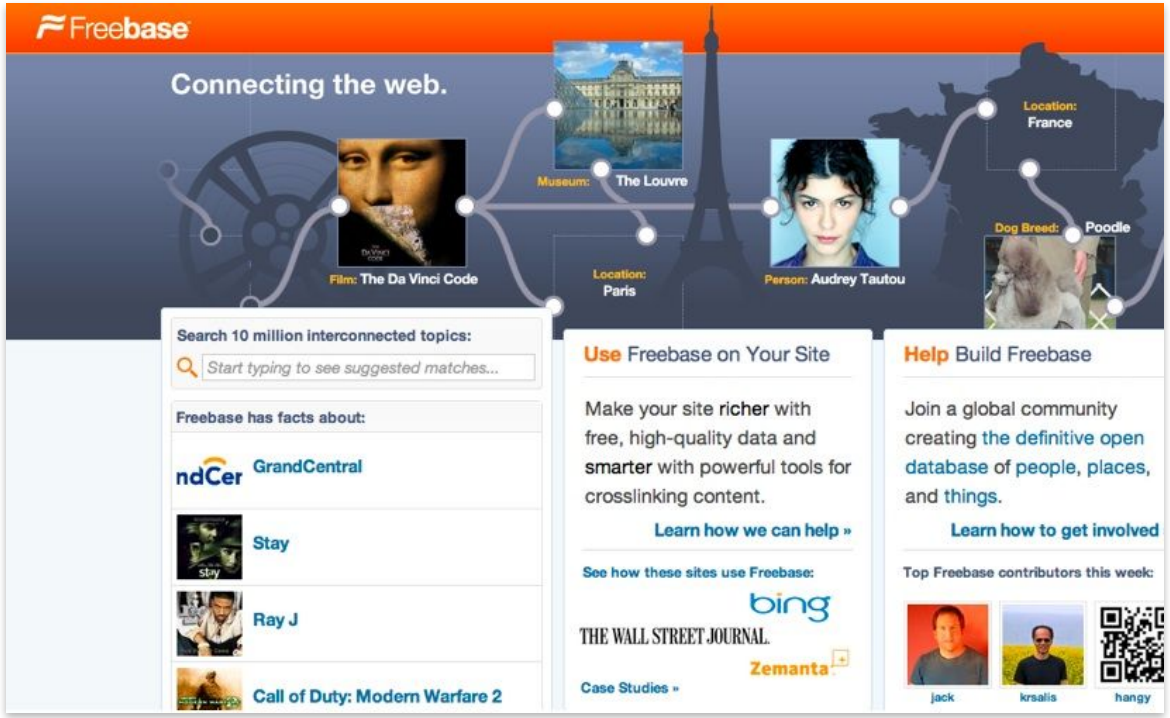




# Using Google

- Search for entity in Google
- Share knowledge panel
- Navigate to copied link
- Find ID in address bar after “kgmid=”



Freebase™


Freebase
Connecting the web.
Film: The Da Vinci Code
Museum: The Louvre
Location: Paris
Person: Audrey Tautou
Location: France
Dog Breed: Poodle
Search 10 million interconnected topics:
Start typing to see suggested matches...
Freebase has facts about:
GrandCentral
Stay
Ray J
Call of Duty: Modern Warfare 2
Use Freebase on Your Site
Make your site richer with free, high-quality data and smarter with powerful tools for crosslinking content.
Learn how we can help »
See how these sites use Freebase:
bing
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Zemanta
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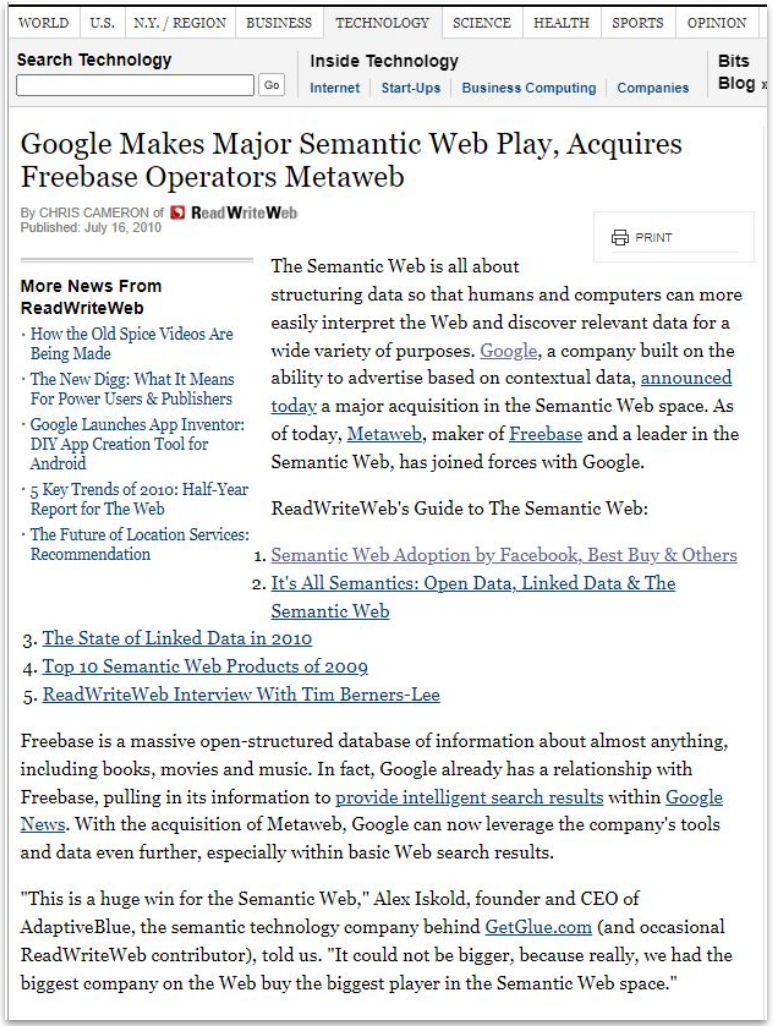
Help Build Freebase
Join a global community creating the definitive open database of people, places, and things.
Learn how to get involved
Top Freebase contributors this week:
jack
krsalis
hangy

# Google Knowledge Graph

- 2010 - Google acquires Freebase
- Freebase entities start with /m



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## Google Makes Major Semantic Web Play, Acquires Freebase Operators Metaweb

By CHRIS CAMERON of ReadWriteWeb
Published: July 16, 2010

PRINT

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- The New Digg: What It Means For Power Users & Publishers
- Google Launches App Inventor: DIY App Creation Tool for Android
- 5 Key Trends of 2010: Half-Year Report for The Web
- The Future of Location Services: Recommendation

The Semantic Web is all about structuring data so that humans and computers can more easily interpret the Web and discover relevant data for a wide variety of purposes. Google, a company built on the ability to advertise based on contextual data, announced today a major acquisition in the Semantic Web space. As of today, Metaweb, maker of Freebase and a leader in the Semantic Web, has joined forces with Google.

ReadWriteWeb's Guide to The Semantic Web:

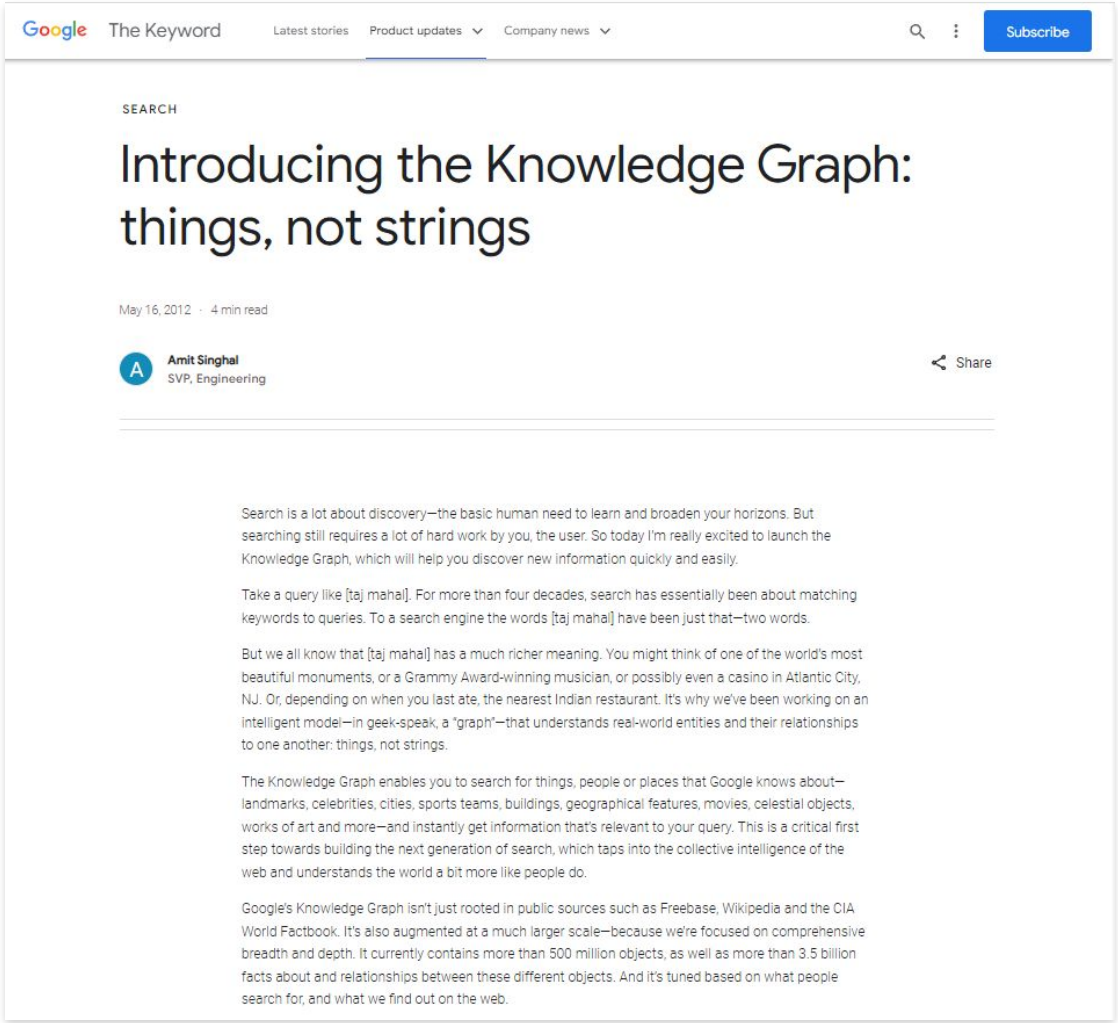
1. Semantic Web Adoption by Facebook, Best Buy & Others
2. It's All Semantics: Open Data, Linked Data & The Semantic Web
3. The State of Linked Data in 2010
4. Top 10 Semantic Web Products of 2009
5. ReadWriteWeb Interview With Tim Berners-Lee

Freebase is a massive open-structured database of information about almost anything, including books, movies and music. In fact, Google already has a relationship with Freebase, pulling in its information to provide intelligent search results within Google News. With the acquisition of Metaweb, Google can now leverage the company's tools and data even further, especially within basic Web search results.

"This is a huge win for the Semantic Web," Alex Iskold, founder and CEO of AdaptiveBlue, the semantic technology company behind GetGlue.com (and occasional ReadWriteWeb contributor), told us. "It could not be bigger, because really, we had the biggest company on the Web buy the biggest player in the Semantic Web space."

# Google Knowledge Graph

- 2010 - Google acquires Freebase
- 2012 - Google Knowledge Graph introduced
- 2015 – New Google entities start with /g



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SEARCH

## Introducing the Knowledge Graph: things, not strings

May 16, 2012 · 4 min read

Amit Singhal
SVP, Engineering

Share

Search is a lot about discovery—the basic human need to learn and broaden your horizons. But searching still requires a lot of hard work by you, the user. So today I'm really excited to launch the Knowledge Graph, which will help you discover new information quickly and easily.

Take a query like [taj mahal]. For more than four decades, search has essentially been about matching keywords to queries. To a search engine the words [taj mahal] have been just that—two words.

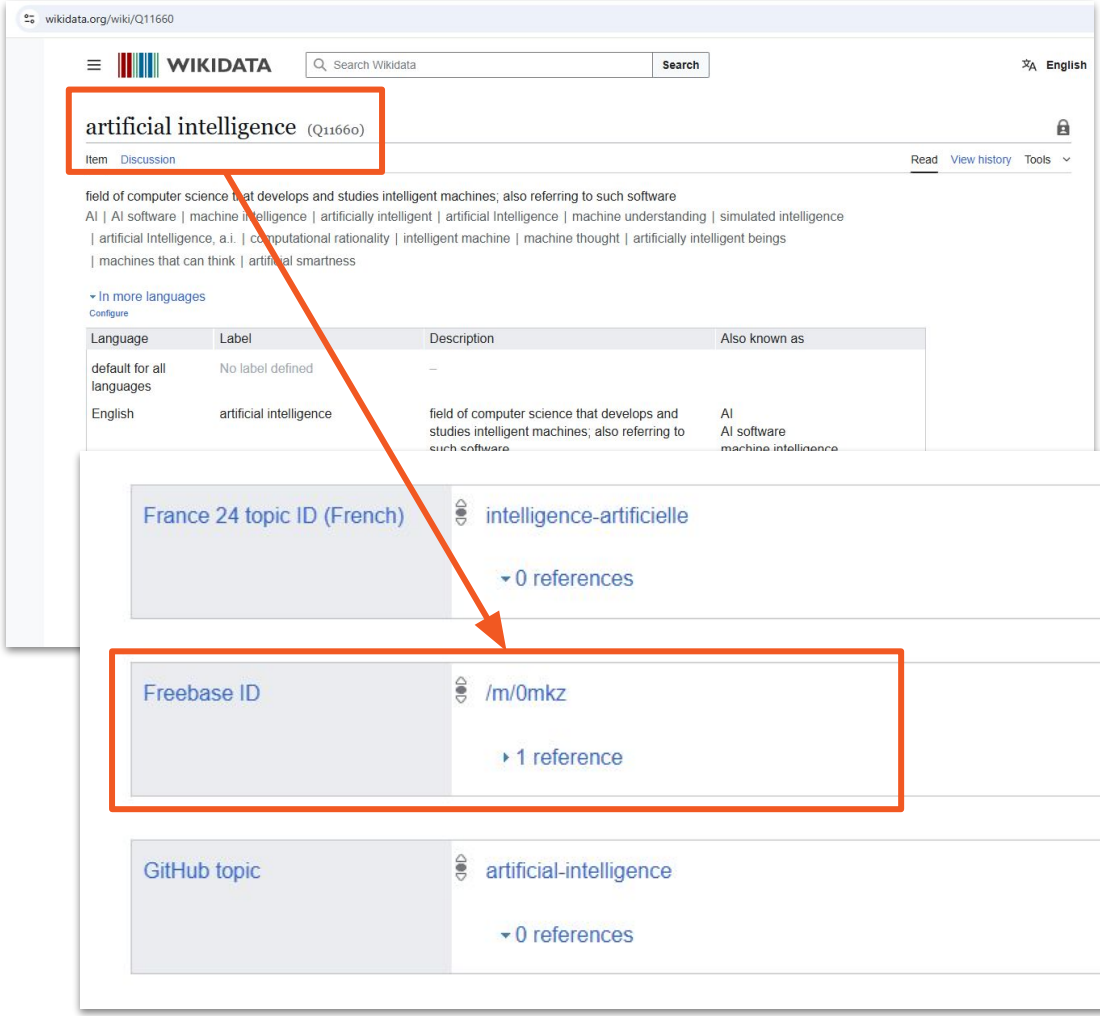
But we all know that [taj mahal] has a much richer meaning. You might think of one of the world's most beautiful monuments, or a Grammy Award-winning musician, or possibly even a casino in Atlantic City, NJ. Or, depending on when you last ate, the nearest Indian restaurant. It's why we've been working on an intelligent model—in geek-speak, a "graph"—that understands real-world entities and their relationships to one another: things, not strings.

The Knowledge Graph enables you to search for things, people or places that Google knows about—landmarks, celebrities, cities, sports teams, buildings, geographical features, movies, celestial objects, works of art and more—and instantly get information that's relevant to your query. This is a critical first step towards building the next generation of search, which taps into the collective intelligence of the web and understands the world a bit more like people do.

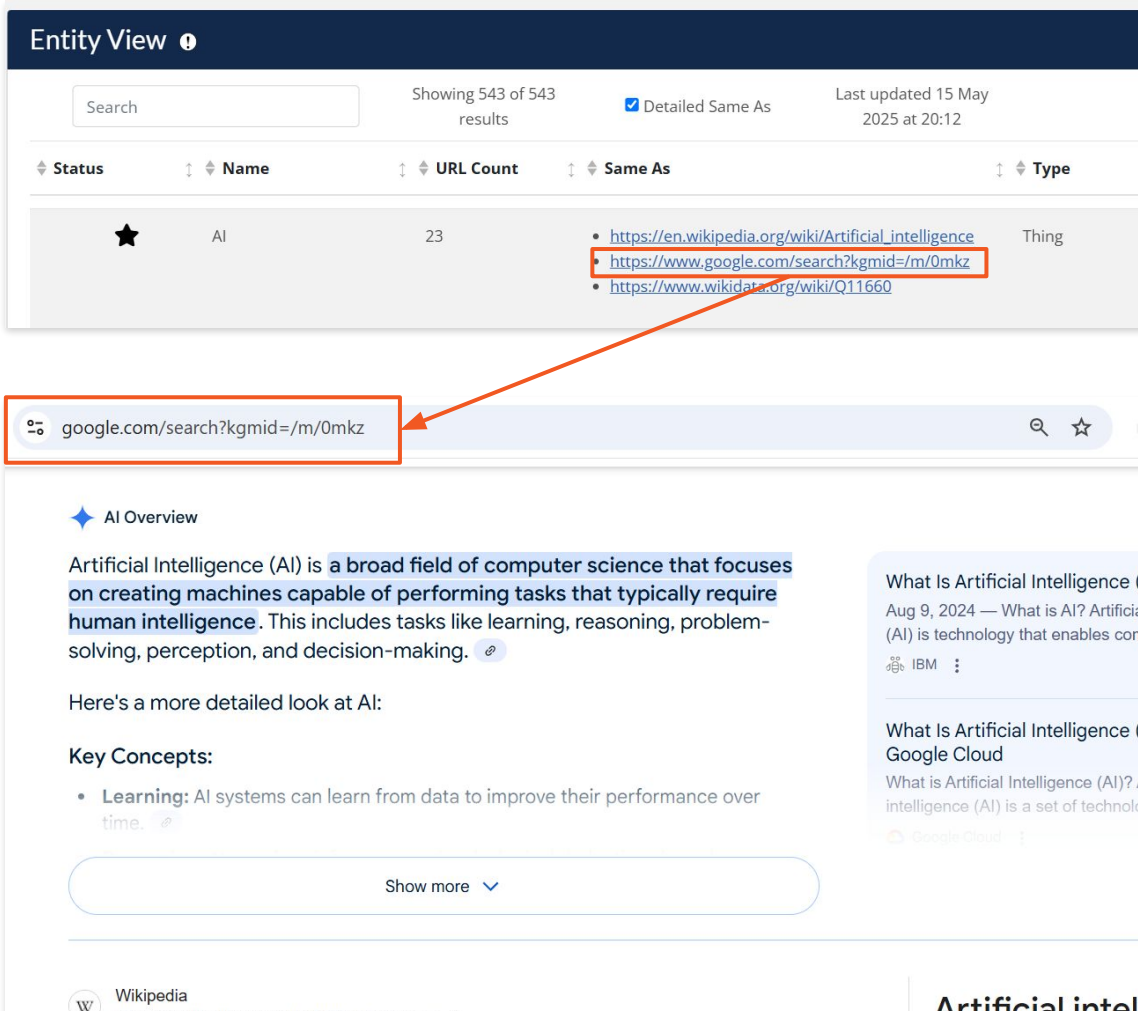
Google's Knowledge Graph isn't just rooted in public sources such as Freebase, Wikipedia and the CIA World Factbook. It's also augmented at a much larger scale—because we're focused on comprehensive breadth and depth. It currently contains more than 500 million objects, as well as more than 3.5 billion facts about and relationships between these different objects. And it's tuned based on what people search for, and what we find out on the web.

## Using Wikidata

- Search for the entity in Wikidata
- Find the Freebase ID



# Entity Linking in Schema App



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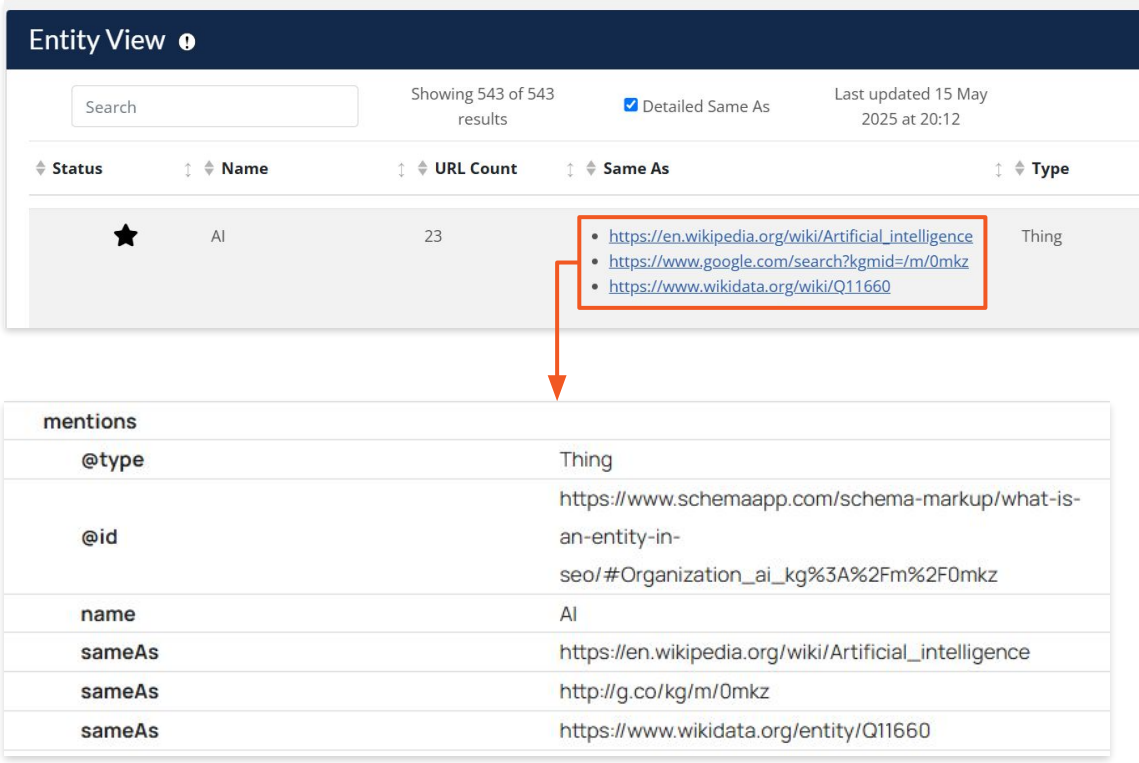


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Does the full markup snippet referenced by the @id need to be on the same page, or is it sufficient to have consistent @id's across the site, with only the most authoritative page defining the @id?

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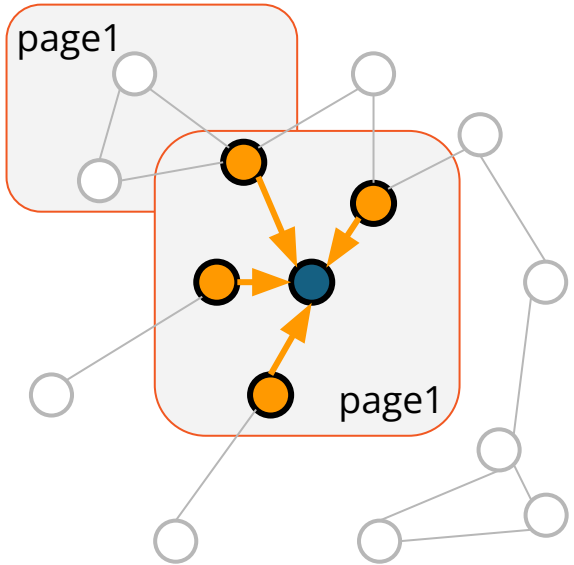
# @id Legos

- Knowledge Graph systems @id can be used like lego blocks across the site.
- @id references across the site are built up into Google's knowledge graph
- We decided to take a "second-degree" default view of the data items properties
  - Show immediate properties of referenced data items that may only be shown on the other page
    - Its "ok", we show references :)
- Google's rules can supercede this in case it validations show errors

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# How do you build a content knowledge graph for a website?

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# 4 Steps to Building a Content Knowledge Graph

**Step 1.**
Knowledge Creation

- Have high-quality content on your website
- Markup your content using the Schema.org vocabulary

**Step 2.**
Knowledge Hosting

- Ensure the Schema Markup you've authored for your website can be retrieved

**Step 3.**
Knowledge Curation

- Ensure your data is accessible, correct and complete

**Step 4.**
Knowledge Deployment

- Publish your Schema Markup externally for search engines / LLMs to consume

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I've been implementing Schema Markup for over 10 years, but I still don't fully understand the actual implementation of a knowledge graph.

Is it used in the background to direct entity markups, or is it actually deployed on the website itself?

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# Types of Knowledge Graphs

## Open Knowledge Graphs

- Published online
- Content accessible for public good
  - DBPedia
  - Wikidata

## Enterprise Knowledge Graphs

- Internal to a company
- Applied for commercial use-cases
  - Amazon
  - Uber
  - LinkedIn
  - Wells Fargo

**Google's Knowledge Graph**

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# Types of Knowledge Graphs

## Content Knowledge Graphs

- Represent the content on your website
- Can be published externally (for search engines)
- Can be kept internal
- Mostly controlled by website owner
- Can be part of an Enterprise KG

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How can Schema Markup help with answer engine optimization (AEO)?

Do LLMs use Schema Markup in AI Overviews or in answering follow up questions like in ChatGPT or Perplexity?

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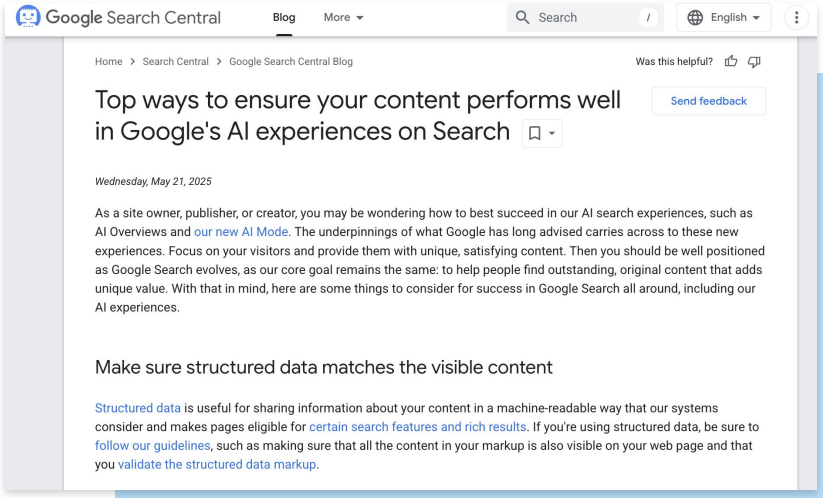
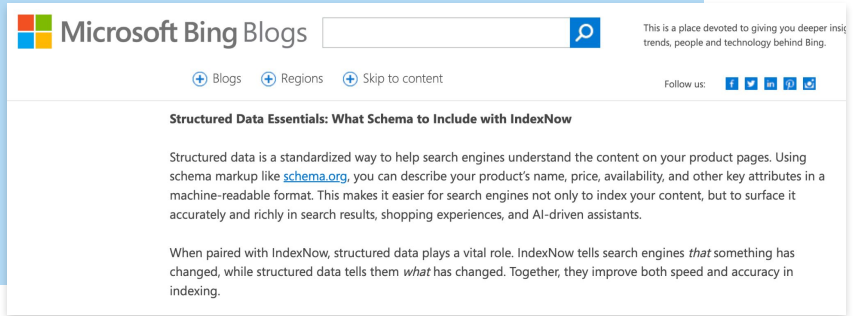
This May, **Google** & **Microsoft** both reiterated the importance of Structured Data for ensuring your content performs well on their AI experiences

**Source:** Google Search Central Blog, May 21, 2025 – Top ways to ensure your content performs well in Google's AI experiences on Search

**Source:** Microsoft Bing Blogs, May 19, 2025 – IndexNow Enables Faster and More Reliable Updates for Shopping and Ads

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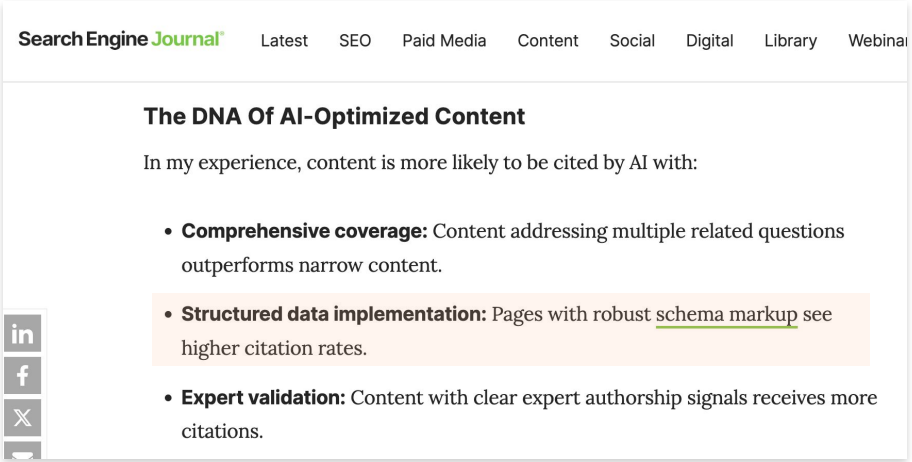
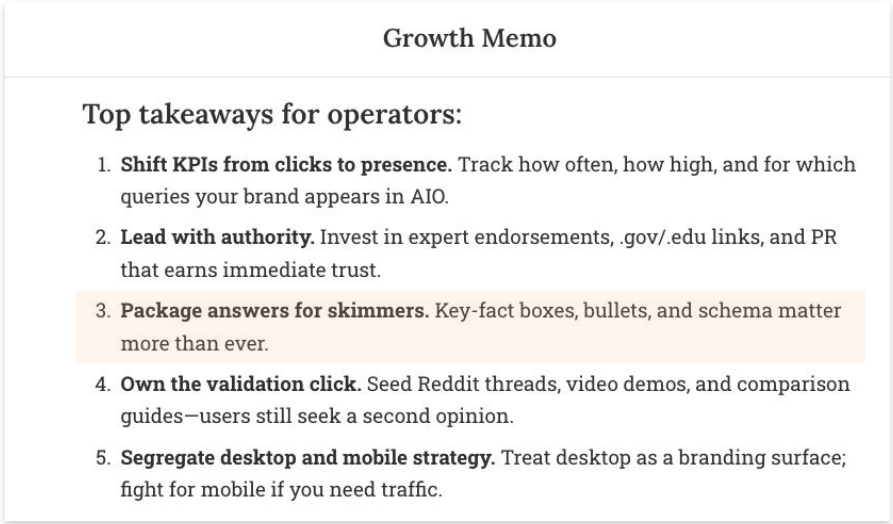



**Source:** Search Engine Journal / BrightEdge, May 12, 2025 – [The Triple-P Framework: AI & Search Brand Presence, Perception & Performance]




**Source:** Growth Memo / Kevin Indig, May 12, 2025 – [The first-ever UX Study of Google's AI Overviews: The Data We've All Been Waiting For]

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Content people do keyword research.

How do we see that evolving with entities?

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**Keywords:**

- What you write
- Are at the text level
- May not capture intent or semantic meaning
- Keyword themes (topics!) are more important than individual terms

**Entities:**

- What machines understand
- Are at the knowledge level (e.g. capital of Ontario = Toronto)
- Establish context, relationships, semantic relevance beyond simple keyword matching

Getting the right Content to the right users is fundamentally semantic, not keyword-centric.

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Is it better to convert all the content on a page or article into structured data, or focus more on an overview of the content, such as the outline of the page and its topics, and/or how entities are connected?

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# It depends!

**Converting All Content - There's diminishing returns and higher maintenance effort.**

- Google is really good at extracting data from your pages so its not recommended for Rich Results or SEO
- Schema to fulfill rich result features and then add topics mentioned or key business entities is still quite comprehensive
- For add-ons tools like onsite search (Vertex AI or NLWeb), that extra markup may have value beyond Google Search.
- Page structure I'd probably steer away form

Schema App

If large language models (LLMs) are hesitant to read JavaScript, is it better to implement Schema Markup in a more robust way, such as using PHP during page creation?

What are the best strategies to prepare data for a large language model (LLM)?

Schema App

# How to Prepare Your Data for LLMs

- **Server Side rendering** - JavaScript rendering support is limited
- **Custom Tool integrations** – require you to have a data store, an API method and to create the custom tools in the LLM toolkit.
- **MCP (Model Context Protocol)** – provide a shared specification of interacting with APIs and data resources. It can greatly simplify the access pattern.
- **Schema.org** – well understood by LLMs and a great semantic data layer to build with LLMs.

Schema App

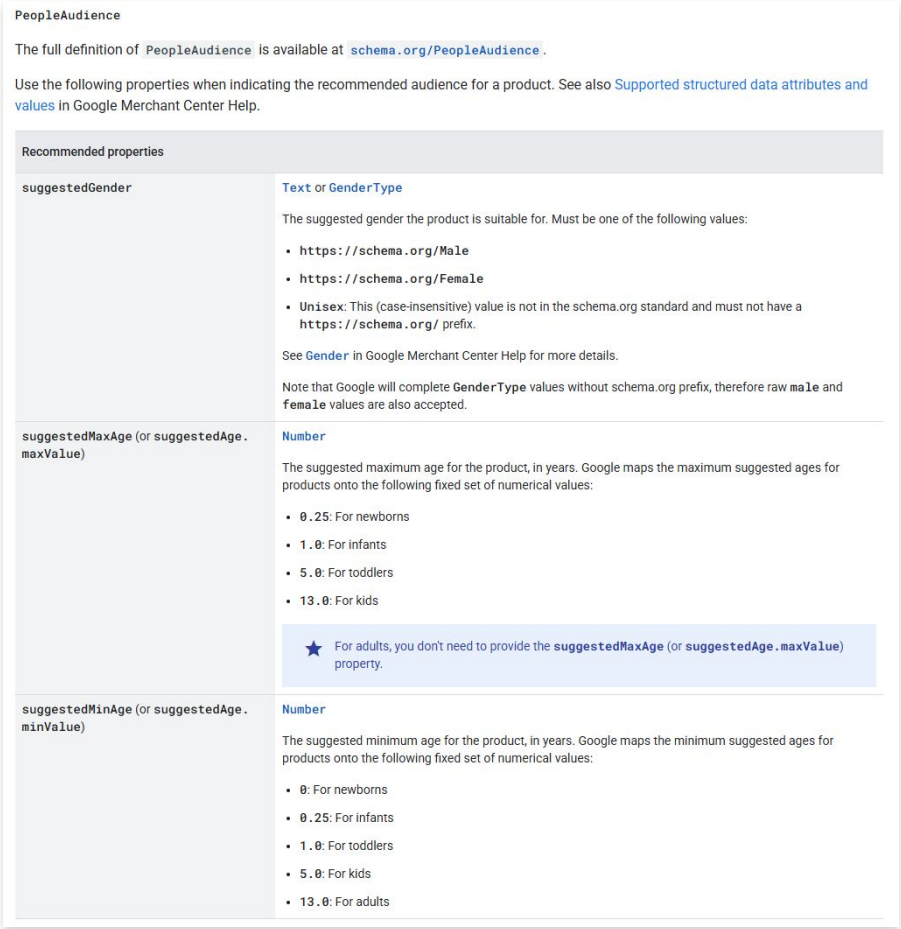
Are there ways to use Schema creatively to describe appropriate use cases or audiences of a target, on your product page?

e.g. highlighting if a product is a great christmas or birthday gift, or is great for people of certain demographics

Schema App

# Audience on Product Pages

- Google's documentation provides some of these details!
- Consider combining with HowTo.



PeopleAudience

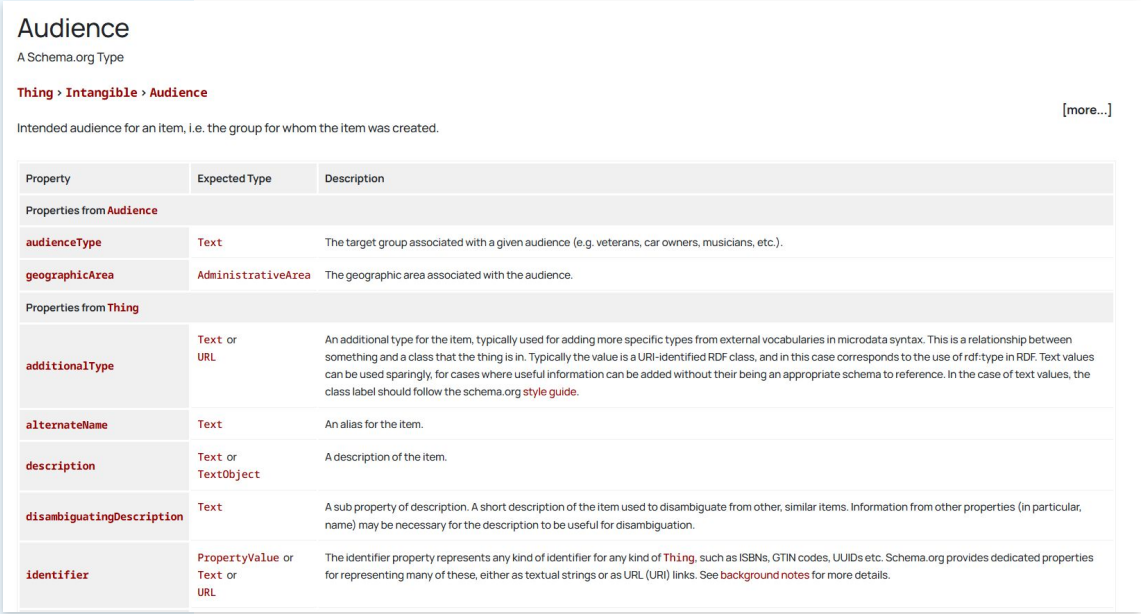
The full definition of `PeopleAudience` is available at `schema.org/PeopleAudience`.

Use the following properties when indicating the recommended audience for a product. See also Supported structured data attributes and values in Google Merchant Center Help.

| Recommended properties | |
|---|---|
| `suggestedGender` | `Text` or `GenderType`<br><br>The suggested gender the product is suitable for. Must be one of the following values:<br>• **`https://schema.org/Male`**<br>• **`https://schema.org/Female`**<br>• **`Unisex`**: This (case-insensitive) value is not in the schema.org standard and must not have a **`https://schema.org/`** prefix.<br><br>See `Gender` in Google Merchant Center Help for more details.<br><br>Note that Google will complete **`GenderType`** values without schema.org prefix, therefore raw **`male`** and **`female`** values are also accepted. |
| `suggestedMaxAge` (or `suggestedAge.maxValue`) | `Number`<br><br>The suggested maximum age for the product, in years. Google maps the maximum suggested ages for products onto the following fixed set of numerical values:<br>• **`0.25`**: For newborns<br>• **`1.0`**: For infants<br>• **`5.0`**: For toddlers<br>• **`13.0`**: For kids<br><br>★ For adults, you don't need to provide the **`suggestedMaxAge`** (or **`suggestedAge.maxValue`**) property. |
| `suggestedMinAge` (or `suggestedAge.minValue`) | `Number`<br><br>The suggested minimum age for the product, in years. Google maps the minimum suggested ages for products onto the following fixed set of numerical values:<br>• **`0`**: For newborns<br>• **`0.25`**: For infants<br>• **`1.0`**: For toddlers<br>• **`5.0`**: For kids<br>• **`13.0`**: For adults |

# Content Intended for Specific Personas

- More broadly, consider creating Audience Schema Markup to define your users Personas and apply it to applicable pages!
- Consistent, well-defined Audience Schema Markup within the Content Knowledge Graph provides another mode of segmenting your content.



## Audience

A Schema.org Type

Thing › Intangible › Audience

[more...]

Intended audience for an item, i.e. the group for whom the item was created.

| Property | Expected Type | Description |
|---|---|---|
| Properties from Audience | | |
| audienceType | Text | The target group associated with a given audience (e.g. veterans, car owners, musicians, etc.). |
| geographicArea | AdministrativeArea | The geographic area associated with the audience. |
| Properties from Thing | | |
| additionalType | Text or URL | An additional type for the item, typically used for adding more specific types from external vocabularies in microdata syntax. This is a relationship between something and a class that the thing is in. Typically the value is a URI-identified RDF class, and in this case corresponds to the use of rdf:type in RDF. Text values can be used sparingly, for cases where useful information can be added without their being an appropriate schema to reference. In the case of text values, the class label should follow the schema.org style guide. |
| alternateName | Text | An alias for the item. |
| description | Text or TextObject | A description of the item. |
| disambiguatingDescription | Text | A sub property of description. A short description of the item used to disambiguate from other, similar items. Information from other properties (in particular, name) may be necessary for the description to be useful for disambiguation. |
| identifier | PropertyValue or Text or URL | The identifier property represents any kind of identifier for any kind of Thing, such as ISBNs, GTIN codes, UUIDs etc. Schema.org provides dedicated properties for representing many of these, either as textual strings or as URL (URI) links. See background notes for more details. |

Are there any updates or improvements to the "Speakable" Schema Markup, particularly for local SEO?

Can you provide insights or updates on the implementation of Speakable Schema Markup?

Schema App

# "Speakable" Schema Markup

- No updates from Google
- Still focused on news-style content
- Only available to users in the US using a Google Assistant device
- Could be good for accessibility

Schema App

As an SEO Manager at a CPG company, I prioritize optimizing for Amazon, with brand websites being secondary.

How do I best grasp the relationship between these platforms, and what are the must-haves vs. nice-to-haves when it comes to schema implementation on both?

Schema App

# Must-haves vs. nice-to-haves for Schema Implementation for Amazon

## Required

- Include all of the known product identifiers, SKU, GTIN to create identity references
- Add the Amazon Standard Identification Number https://schema.org/asin to the Product or Offer(s)

## Recommended

- If conversions are on Amazon, your Products brand pages on your site should point to the Amazon url in your Offer data item
(Product > offers > Offer > url)

Schema App

# Lightning Q&A

**Drop your questions in the chat!**

Schema App

**Lightning Q&A**

# What tips do you have for creating an entity strategy?

Schema App

**Lightning Q&A**

If you have configurable products, is it better to use schema to show the available product options, or individual part numbers?

Schema App

**Lightning Q&A**

For the mentions property in schema markup, is it correct that the value should be an entity of type Thing (or a subtype), rather than just plain text?

Schema App

**Lightning Q&A**

# Best way to implement Schema Markup to keep up with the rapidly changing landscape of AI

Schema App

# Live Q&A

**Drop your questions in the chat!**

Download our FREE **Schema Markup Checklist** to assess the current state of your markup, discover best practices to implement semantic Schema Markup and build a content knowledge graph

**Scan the QR code**
or visit **https://bit.ly/Get-Schema-Markup-Checklist**
to download your Checklist

Schema App