

DCMI – São Paulo – September 2015

# Schema.org An Extending Influence

#### **Richard Wallis**

Technology Evangelist



richard.wallis@dataliberate.com @rjw







Independent Consultant, Evangelist & Founder

Data Liberate



Independent Consultant, Evangelist & Founder Data Liberate

#### Chair of:

Schema Bib Extend W3C Community Group



Independent Consultant, Evangelist & Founder Data Liberate

#### Chair of:

Schema Bib Extend W3C Community Group

Schema.org for bibliographic data

bib.schema.org



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BiblioGraph.net

Bibliographic Schema.org extension vocabulary



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archives.schema.org?



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Currently Working With:



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#### Currently Working With:

OCLC



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archives.schema.org?

#### Currently Working With:

- OCLC
- Google on the Schema.org site and vocabulary



## AND THE COMMON THEME IS...

#### AND THE COMMON THEME IS...

## schema.org

# A general purpose vocabulary for describing things on the web

# A general purpose vocabulary for describing things on the web

Google YAHOO! Vandex

• Launched in 2011

- Launched in 2011
- Backed by Google, Bing, Yahoo!
  - Soon joined by Yandex

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- Backed by Google, Bing, Yahoo!
  - Soon joined by Yandex
- It's RDF!

```
<http://example.com/x> typeof <schema:Book>
```

- Launched in 2011
- Backed by Google, Bing, Yahoo!
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```
<http://example.com/x> typeof <schema:Book>
```

Microdata & RDFa – Shared by embedding in site HTML

- Launched in 2011
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<http://example.com/x> typeof <schema:Book>
```

Microdata & RDFa – Shared by embedding in site HTML

More recently JSON-LD

```
<script type="application/ld+json">
```

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<http://example.com/x> typeof <schema:Book>
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Coverage – what needs describing

- Launched in 2011
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```
<http://example.com/x> typeof <schema:Book>
```

Microdata & RDFa – Shared by embedding in site HTML

More recently JSON-LD

```
<script type="application/ld+json">
```

- Coverage what needs describing
  - CreativeWork, Event, Organization, Person, Place, Product, ...

- Launched in 2011
- Backed by Google, Bing, Yahoo!
  - Soon joined by Yandex
- It's RDF!

```
<http://example.com/x> typeof <schema:Book>
```

Microdata & RDFa – Shared by embedding in site HTML

More recently JSON-LD

```
<script type="application/ld+json">
```

- Coverage what needs describing
  - CreativeWork, Event, Organization, Person, Place, Product, ...
- Supporting website & community W3C + Github



#### Book

Thing > CreativeWork > Book

A book.

Usage: Between 10,000 and 50,000 domains

[more...]

Property	Expected Type	Description
Properties from Book		
bookEdition	Text	The edition of the book.
bookFormat	BookFormatType	The format of the book.
illustrator	Person	The illustrator of the book.
isbn	Text	The ISBN of the book.
numberOfPages	Integer	The number of pages in the book.
Properties from CreativeWork		
about	Thing	The subject matter of the content.
accessibilityAPI	Text	Indicates that the resource is compatible with the referenced accessibility API (WebSchemas wiki lists possible values).
accessibilityControl	Text	Identifies input methods that are sufficient to fully control the described resource (WebSchemas wiki lists possible values).
accessibilityFeature	Text	Content features of the resource, such as accessible media, alternatives and supported enhancements for accessibility (WebSchemas wiki lists possible values).
accessibilityMazard	Text	A characteristic of the described resource that is physiologically dangerous to some users. Related to WCAG 2.0 guideline 2.3 (WebSchemas wiki lists possible values).
accountablePerson	Person	Specifies the Person that is legally accountable for the CreativeWork.
aggregateRating	AggregateRating	The overall rating, based on a collection of reviews or ratings, of the item.
alternativeWeadline	Text	A secondary title of the CreativeWork.



Home / Schema.org Community Group

#### SCHEMA.ORG COMMUNITY GROUP

The Schema.org Community Group provides a forum for discussing all changes, additions and extensions to schema.org. In addition to providing a public setting for the day to day operation of the project, it serves as the mechanism for reviewing extensions and as a liaison point for all parties developing independent extensions to the schema.org core.

Note: Community Groups are proposed and run by the community. Although W3C hosts these conversations, the groups do not necessarily represent the views of the W3C Membership or staff.

#### No Reports Yet Published i

Chairs, when logged in, may publish draft and final reports. Please see report requirements.

W3C Team | Posted on: March 31, 2015

#### Call for Participation in Schema.org Community Group

#### Tools for this group i











Contact This Group

#### Participants (131)











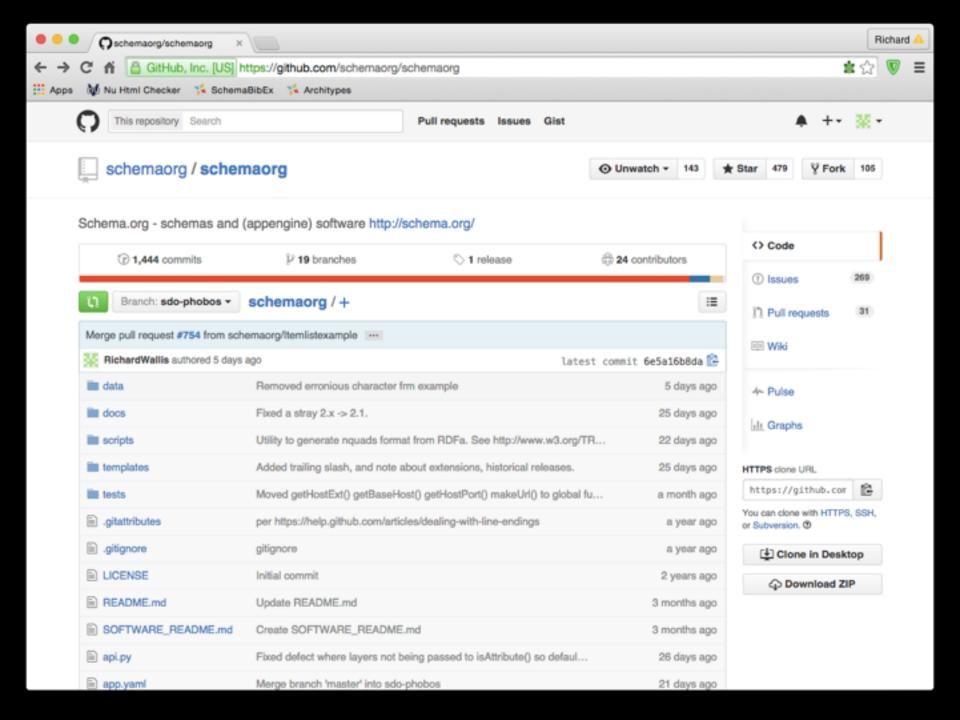


















#### Examples

Without Markup Microdata RDFa JSON-LD <a href="category/books.html">Books</a> > <a href="category/books-literature.html">Literature & Fiction</a> > <a href="category/books-classics">Classics</a> <img src="catcher-in-the-rye-book-cover.jpg"</pre> alt="cover art: red horse, city in background"/> The Catcher in the Rye - Mass Market Paperback by <a href="/author/jd\_salinger.html">J.D. Salinger</a> 4 stars - 3077 reviews Price: \$6.99 In Stock Product details 224 pages Publisher: Little, Brown, and Company - May 1, 1991 Language: English ISBN-10: 0316769487 Reviews: 5 stars - <b>"A masterpiece of literature" </b> by John Doe. Written on May 4, 2006 I really enjoyed this book. It captures the essential challenge people face as they try make sense of their lives and grow to adulthood. 4 stars - <b>"love it LOLOL111!" </b> by Bob Smith, Written on June 15, 2006 Catcher in the Rye is a fun book. It's a good book to read.

Without Markup Microdata

JSON-LD

RDFa







#### Examples

Without Markup Microdata RDFa JSON-LD <body itemscope itemtype="http://schema.org/WebPage"> <div itemprop="breadcrumb"> <a href="category/books.html">Books</a> > <a href="category/books-literature.html">Literature & Fiction</a> > <a href="category/books-classics">Classics</a> </div> <div itemprop="mainEntity" itemscope itemtype="http://schema.org/Book"> <img itemprop="image" src="catcher-in-the-rye-book-cover.jpg"</pre> alt="cover art: red horse, city in background"/> <span itemprop="name">The Catcher in the Rye</span> = <link itemprop="bookFormat" href="http://schema.org/Paperback">Mass Market Paperback by <a itemprop="author" href="/author/jd\_salinger.html">J.D. Salinger</a> <div itemprop="aggregateRating" itemscope itemtype="http://schema.org/AggregateRating"> <span itemprop="ratingValue">4</span> stars -<span itemprop="reviewCount">3077</span> reviews </div> <div itemprop="offers" itemscope itemtype="http://schema.org/Offer"> Price: <span itemprop="price" content="6.99">\$6.99</span> <meta itemprop="priceCurrency" content="USD" /> <link itemprop="availability" href="http://schema.org/InStock">In Stock </div> Product details <span itemprop="numberOfPages">224</span> pages Publisher: <span itemprop="publisher">Little, Brown, and Company</span> -<meta itemprop="datePublished" content="1991-05-01">May 1, 1991 Language: <span itemprop="inLanguage">English</span> ISBN-10: <span itemprop="isbn">0316769487</span> Reviews: <div itemprop="review" itemscope itemtype="http://schema.org/Review"> <span itemprop="reviewRating">5</span> stars -<b>"<span itemprop="name">A masterpiece of literature</span>"</b> by <span itemprop="author">John Doe</span>, Written on <meta itemprop="datePublished" content="2006-05-04">May 4, 2006 <span itemprop="reviewBody">I really enjoyed this book. It captures the essential









• • • < > I

Without Markup Microdata

RDFa

JSON-LD

```
<body vocab="http://schema.org/" typeof="WebPage">
<div property="breadcrumb">
 <a href="category/books.html">Books</a> >
 <a href="category/books-literature.html">Literature & Fiction</a> >
 <a href="category/books-classics">Classics</a>
</div>
<div property="mainEntity" typeof="Book">
<img property="image" src="catcher-in-the-rye-book-cover.jpg"</pre>
   alt="cover art: red horse, city in background"/>
<span property="name">The Catcher in the Rye</span> =
<link property="bookFormat" href="http://schema.org/Paperback">Mass Market Paperback
by <a property="author" href="/author/jd_salinger.html">J.D. Salinger</a>
<div property="aggregateRating" typeof="AggregateRating">
 <span property="ratingValue">4</span> stars -
 <span property="reviewCount">3077</span> reviews
</div>
<div property="offers" typeof="Offer">
 Price: <span property="price" content="6.99">$6.99</span>
 <meta property="priceCurrency" content="USD" />
  k property="availability" href="http://schema.org/InStock">In Stock
</div>
Product details
<span property="numberOfPages">224</span> pages
Publisher: <span property="publisher">Little, Brown, and Company</span> -
<meta property="datePublished" content="1991-05-01">May 1, 1991
Language: <span property="inLanguage">English</span>
ISBN-10: <span property="isbn">0316769487</span>
Reviews:
<div property="review" typeof="Review">
  <span property="reviewRating">5</span> stars -
 <b>"<span property="name">A masterpiece of literature</span>"</b>
  by <span property="author">John Doe</span>,
  Written on <meta property="datePublished" content="2006-05-04">May 4, 2006
  <span property="reviewBody">I really enjoyed this book. It captures the essential
```





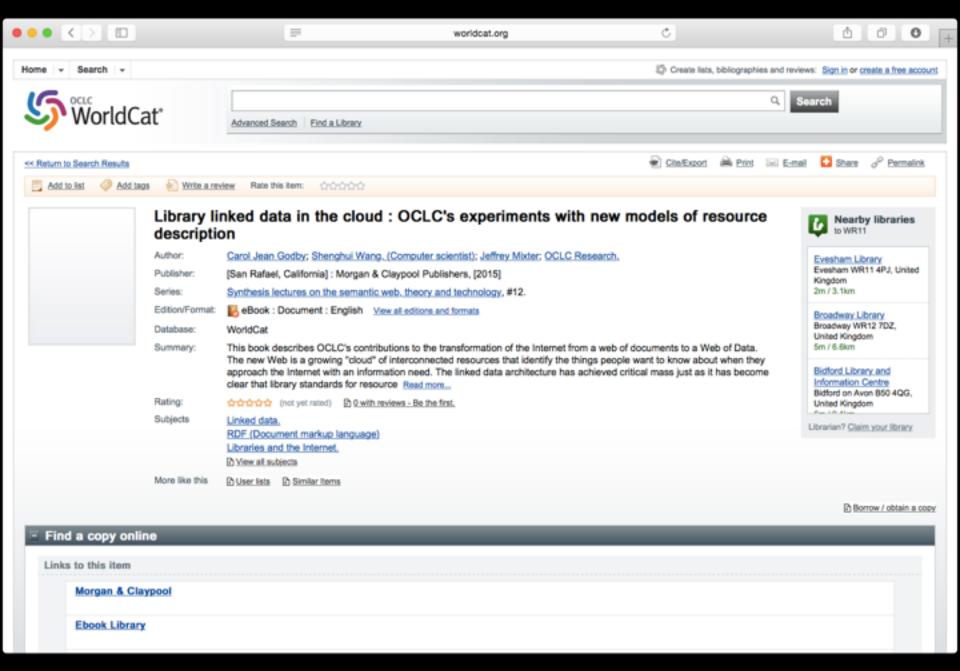


#### Examples

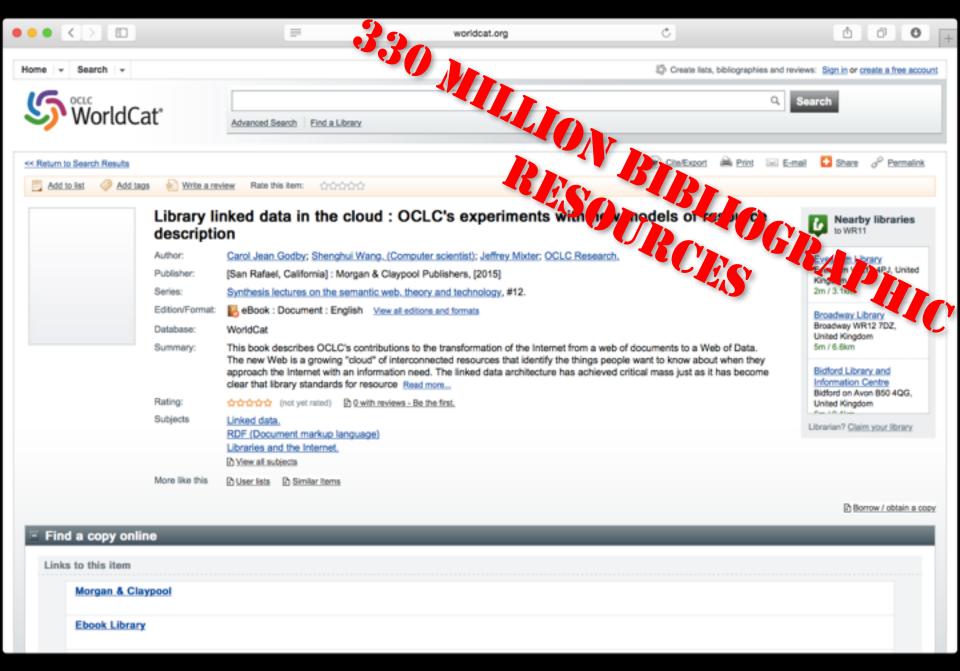
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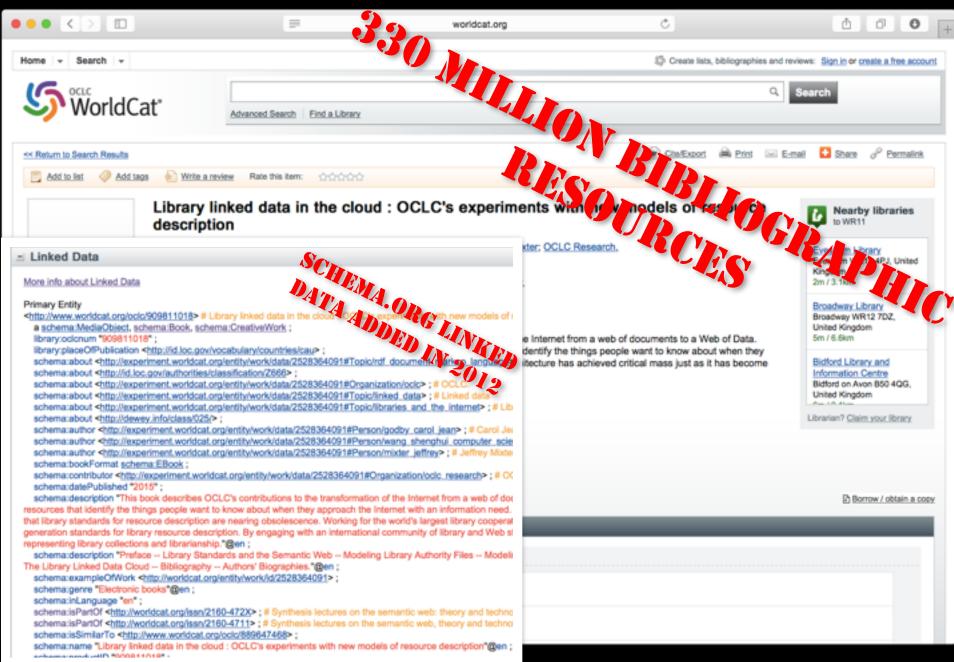
JSON-LD Without Markup Microdata RDFa

```
<script type="application/ld+json">
  "@context": "http://schema.org",
  "@type": "WebPage",
  "breadcrumb": "Books > Literature & Fiction > Classics",
  "mainEntity":{
          "@type": "Book",
          "author": "/author/jd_salinger.html",
          "bookFormat": "http://schema.org/Paperback",
          "datePublished": "1991-05-01",
          "image": "catcher-in-the-rye-book-cover.jpg",
          "inLanguage": "English",
          "isbn": "0316769487",
          "name": "The Catcher in the Rye",
          "numberOfPages": "224",
          "offers": {
            "@type": "Offer",
            "availability": "http://schema.org/InStock",
            "price": "6.99",
            "priceCurrency": "USD"
          },
          "publisher": "Little, Brown, and Company",
          "aggregateRating": {
           "@type": "AggregateRating",
            "ratingValue": "4",
            "reviewCount": "3077"
          },
          "review": [
              "@type": "Review",
              "author": "John Doe",
              "datePublished": "2006-05-04",
              "name": "A masterpiece of literature",
              "reviewBody": "I really enjoyed this book. It captures the essential challenge people face as they
              "reviewRating": {
```









## Working with Linked Data highlights the Entities and Relationships in your data



## Working with Linked Data highlights the Entities and Relationships in your data

person •

place

object •

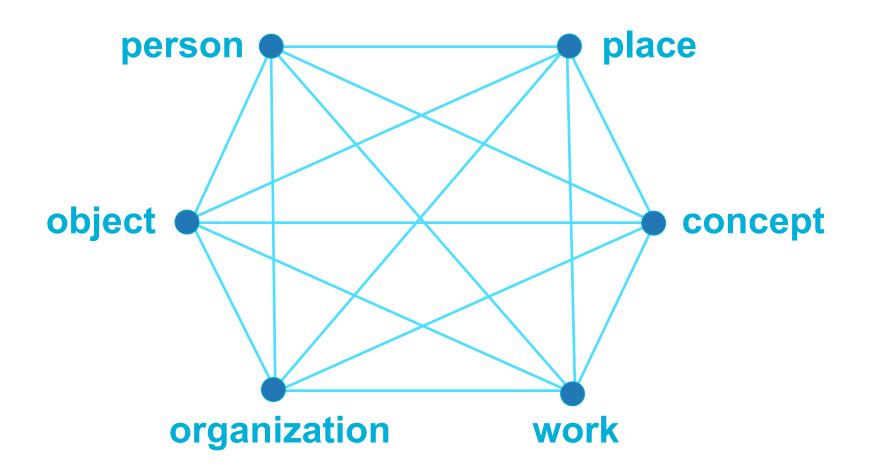
concept







## Working with Linked Data highlights the Entities and Relationships in your data





Title: "War and Peace"

Author: "Leo Tolstoy 1828-1910"

ISBN: 0307266931

Title: "War and Peace"

Author: "Leo Tolstoy 1828-1910"

ISBN: 0307266931

**Entity** (http://worldcat.org/entity/work/id/115206288)

Type: Work

Name: "War and Peace"

Author: http://worldcat.org/entity/person/id/1234

Title: "War and Peace"

Author: "Leo Tolstoy 1828-1910"

ISBN: 0307266931

**Entity** (http://worldcat.org/entity/work/id/115206288)

Type: Work

Name: "War and Peace"

Author: http://worldcat.org/entity/person/id/1234



Type: Person

Name: "Leo Tolstoy "

Born: 1828 Died: 1910

Birthplace: http://worldcat.org/entity/place/id/8976



Title: "War and Peace"

Author: "Leo Tolstoy 1828-1910"

ISBN: 0307266931

### **Entity** (http://worldcat.org/entity/work/id/115206288)

Type: Work

Name: "War and Peace"

Author: http://worldcat.org/entity/person/id/1234

### **Entity** (http://worldcat.org/entity/person/id/1234)

Type: Person

Name: "Leo Tolstoy "

Born: 1828 Died: 1910

Birthplace: http://worldcat.org/entity/place/id/8976

### **Entity** (http://worldcat.org/entity/place/id/8976)

Type: Place

Name: "Yasnaya Polyana"

SameAs: http://geonames.org/468686









About 183,000,000 results (0.27 seconds)

### War and Peace - Wikipedia, the free encyclopedia

en.wikipedia.org/wiki/War\_and\_Peace - Wikipedia -

War and Peace (Pre-reform Russian: Война и мирь, Voyna i mir) is a novel by the Russian author Leo Tolstoy, first published in 1869. The work is epic in scale ... War and Peace (1956 film) - Pierre Bezukhov - War and Peace (disambiguation)

#### Amazon.com: War and Peace (Vintage Classics ...

www.amazon.com > ... > World Literature > Russian ▼ Amazon.com, Inc. ▼
★★★★ Rating: 4.4 - 235 reviews

War and Peace broadly focuses on Napoleon's invasion of Russia in 1812 and follows three of the most well-known characters in literature: Pierre Bezukhov, the ...

#### BBC Radio 4 - War and Peace

www.bbc.co.uk > ... > Classic & Period \* British Broadcasting Corporation \* Dramatisation by Timbertake Wertenbaker of Leo Tolstoy's epic, which follows the fortunes of three Russian aristocratic families during the Napoleonic War.

#### War and Peace (1956) - IMDb

www.imdb.com/title/tt0049934/ - Internet Movie Database -

\*\* \* \* \* Rating: 6.8/10 - 5,960 votes

War and Peace · Green Mansions · The Unforgiven · The Nun's Story · Paris When It. Sizzles · Love in the Afternoon · War and Peace · Funny Face · Sabrina.

### War and Peace - The Literature Network

www.online-literature.com > Leo Tolstoy \*

War and Peace by Leo Tolstoy. Searchable etext. Discuss with other readers.

#### SparkNotes: War and Peace

www.sparknotes.com > SparkNotes > Literature Study Guides \* SparkNotes \* From a general summary to chapter summaries to explanations of famous quotes , the SparkNotes War and Peace Study Guide has everything you need to ace ...

#### the War and Peace Revival

www.thewarandpeacerevival.co.uk/ \*

### War and Peace

Novel by Leo Tolstoy

\*\*\* 4.4/5 - Amazon.com \*\*\* 4 1/5 - Google Books

War and Peace is a novel by the Russian author Leo Tolstoy, first published in 1869. The work is epic in scale and is regarded as one of the most important works of world literature, Wikipedia

Published: 1869 Author: Leo Toistoy

Illustrator: Leonid Pasternak

Characters: Andrei Nikolayevich Bolkonsky, Natasha Rostova, More

Original languages: Russian, French

Genres: Philosophical fiction, War novel, Historical novel, Romance

novel

#### People also search for







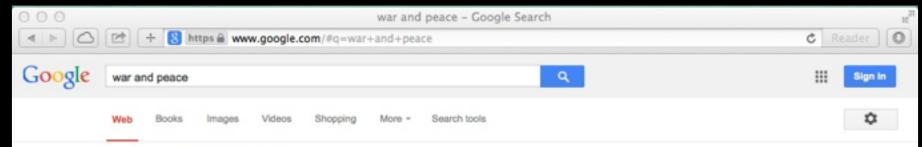
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www.amazon.com > ... > World Literature > Russian ▼ Amazon.com, Inc. ▼ ★★★★ Rating: 4.4 - 235 reviews

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www.sparknotes.com > SparkNotes > Literature Study Guides \* SparkNotes \* From a general summary to chapter summaries to explanations of famous quotes , the SparkNotes War and Peace Study Guide has everything you need to ace ...

### the War and Peace Revival

www.thewarandpeacerevival.co.uk/ =

### War and Peace

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Genres: Philosophical fiction, War novel, Historical novel, Romance

novel

#### People also search for







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the War and Peace Revival www.thewarandpeacerevival.co.uk/ >

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### Leo Tolstoy - Wikipedia, the free encyclopedia

en.wikipedia.org/wiki/Leo\_Tolstoy - Wikipedia -

Count Lev Nikolayevich Tolstoy also known as Leo Tolstoy, was a Russian novelist, short story writer, essayist, playwright and philosopher who primarily wrote ... Anna Karenina - War and Peace - Christian anarchism - The Death of Ivan Ilyich

#### Leo Tolstoy - Biography - Author - Biography.com

www.biography.com/people/leo-tolstoy-9508518 \* FYI \*

Trace the life and writing career of Russian novelist Leo Tolstoy, author of the acclaimed novels War and Peace, Anna Karenina and The Death of Ivan Ilyich.

#### Leo Tolstoy - Encyclopaedia Britannica

www.britannica.com/EBchecked/.../Leo-Tolsto... = Encyclopaedia Britannica = Leo Tolstoy, Tolstoy also spelled Tolstoi, Russian in full Lev Nikolayevich, Count (Graf) Tolstoy (born Aug. 28 [Sept. 9, New Style], 1828, Yasnaya Polyana, Tula ...

### Leo Tolstoy Quotes - BrainyQuote

www.brainyquote.com/quotes/authors/l/leo\_tolstoy.html =

Enjoy the best Leo Tolstoy Quotes at BrainyQuote. Quotations by Leo Tolstoy, Russian Novelist, Born September 9, 1828. Share with your friends.

#### Leo Tolstoy | Facebook

https://www.facebook.com/countleotolstoy =

Leo Tolstoy, Yasnaya Polyana, Russia. 1952208 likes - 26094 talking about this. This site is maintained by the author's U.S. publisher Vintage Books.

### Leo Tolstoy - The Literature Network

www.online-literature.com/tolstoy/ -

Leo Tolstoy. Biography of Leo Tolstoy and a searchable collection of works.

### Leo Tolstoy - IMDb

www.imdb.com/name/nm0866243/ 
Leo Tolstoy, Writer: Anna Karenina. Count Lev Nikolaevich Tolstoy was born on
September 9, 1838, in his acceptal extent Vaccount Debags. South of Macagain

More images

### Leo Tolstoy

#### Novelist

Count Lev Nikolayevich Tolstoy, also known as Leo Tolstoy, was a Russian novelist, short story writer, essayist, playwright and philosopher who primarily wrote novels and short stories. Wikipedia

Born: September 9, 1828, Yasnaya Polyana, Russia

Died: November 20, 1910, Lev Tolstoy, Russia Spouse: Sophia Tolstaya (m. 1862–1910)

Movies: Anna Karenina, War and Peace, Frozen Land, More Plays: The Power of Darkness, The Living Corpse, The Fruits of Enlightenment

#### Books



Anna Karenina 1877



War and Peace 1869



The Death of Ivan Ilyich



The Kingdom of God Is Wi...



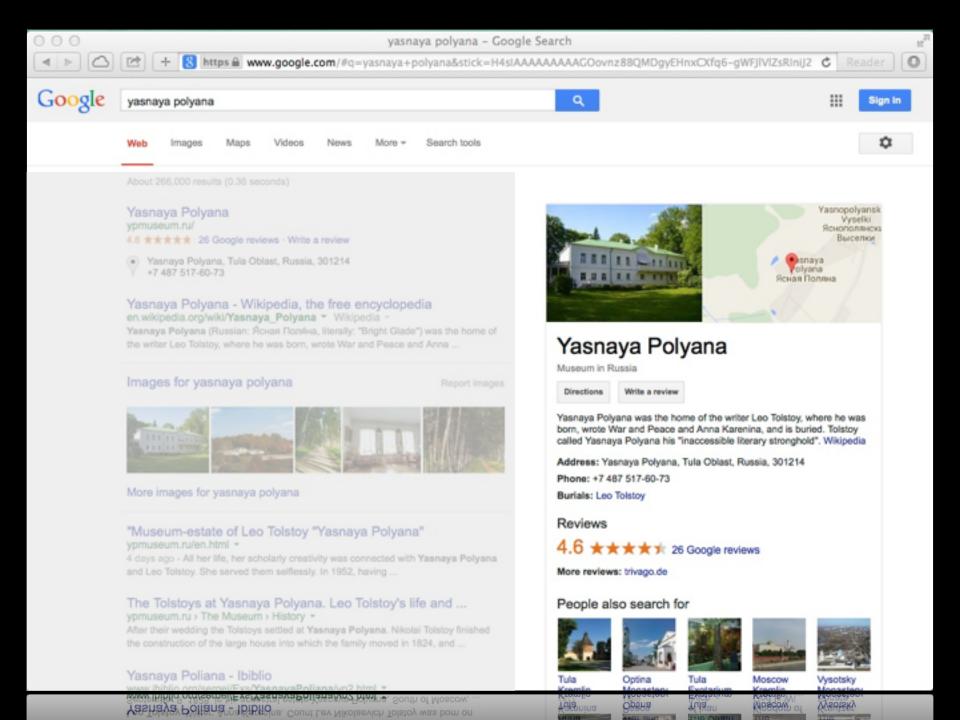
View 30+ more

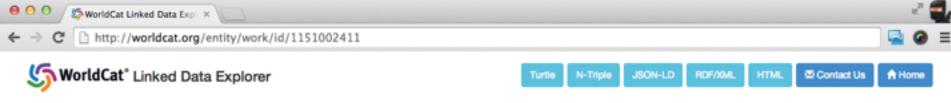
The Kreutzer Sonata

Leo Tolstoy, Writer: Anna Karenina. Count Lev Nikolaevich Tolstoy was born on September 9, 1828, in his ancestral estate Yasnaya Polyana, South of Moscow,

Karenina 1877 Peace 1869 of Ivan Ilyich Kingdom of God Is Wi...

Kreutzer Sonata



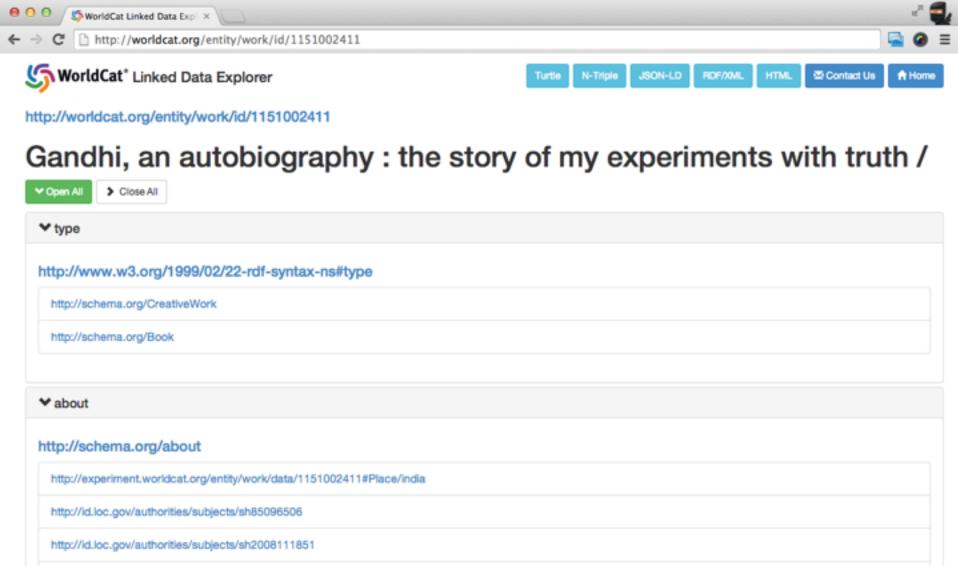


http://worldcat.org/entity/work/id/1151002411

### Gandhi, an autobiography: the story of my experiments with truth /







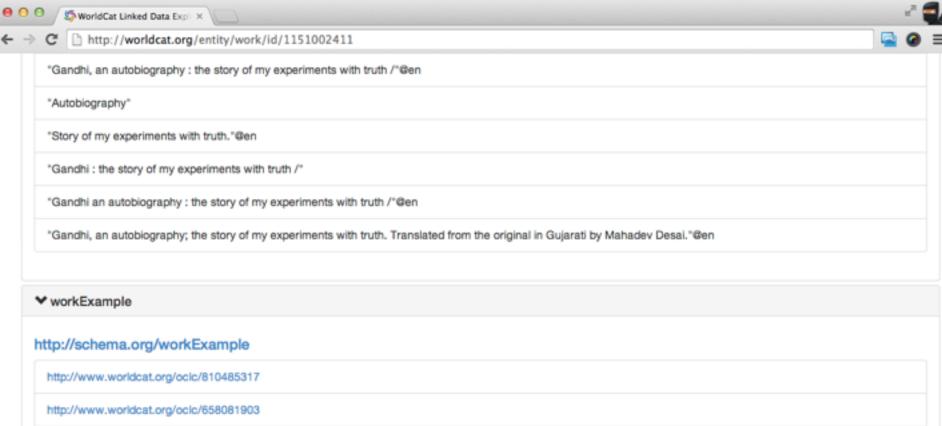
http://id.worldcat.org/fast/1354198

http://id.worldcat.org/fast/33822

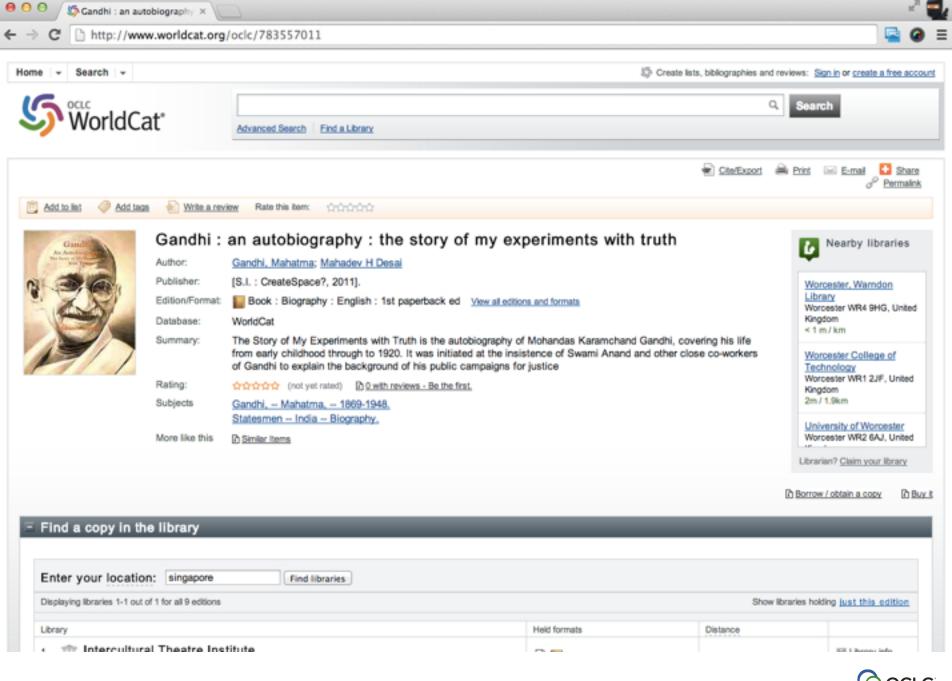
http://viaf.org/viaf/71391324

http://experiment.worldcat.org/entity/work/data/1151002411#Place/south\_africa

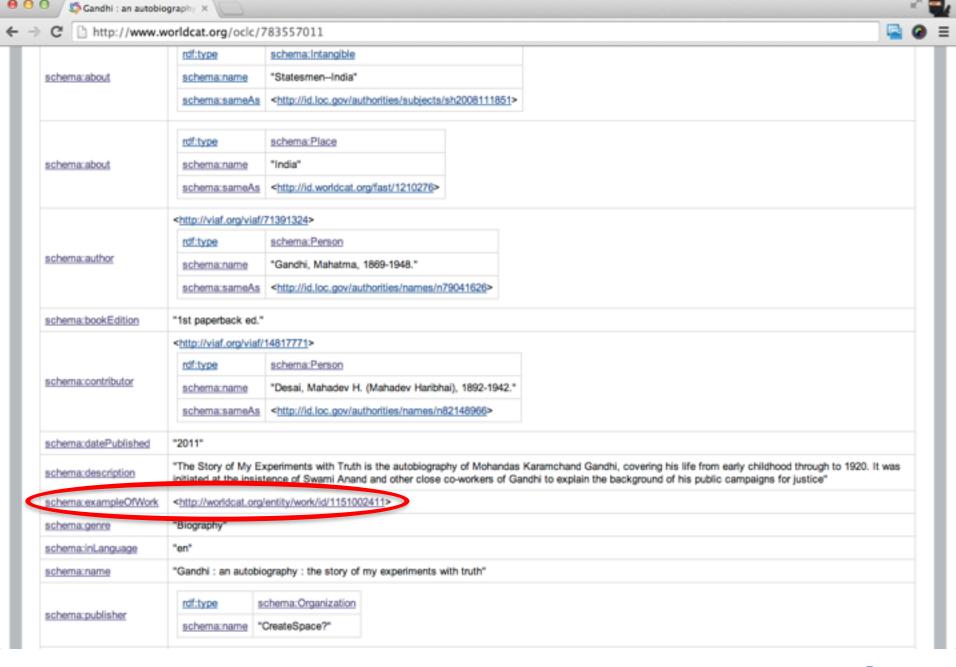
http://id.worldcat.org/fast/1204616



# http://www.worldcat.org/ocic/35561022 http://www.worldcat.org/ocic/55332397 http://www.worldcat.org/oclc/859009165 http://www.worldcat.org/ocic/817185721 http://www.worldcat.org/ocic/858088036 http://www.worldcat.org/ocic/783557011 http://www.worldcat.org/oclc/36246925 http://www.worldcat.org/oclc/855922082



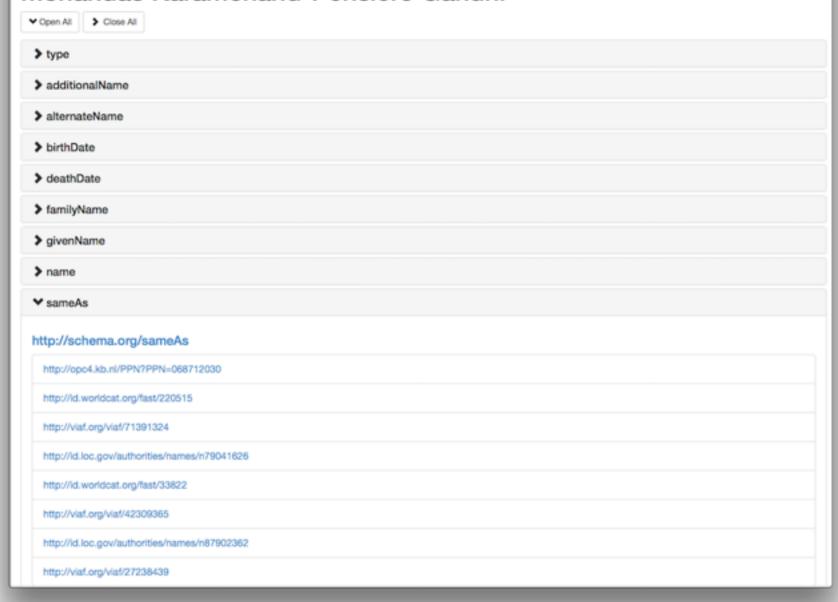






http://worldcat.org/entity/person/id/2479980438

### Mohandas Karamchand-Pensiero Gandhi







# Library Linked Data in the Cloud

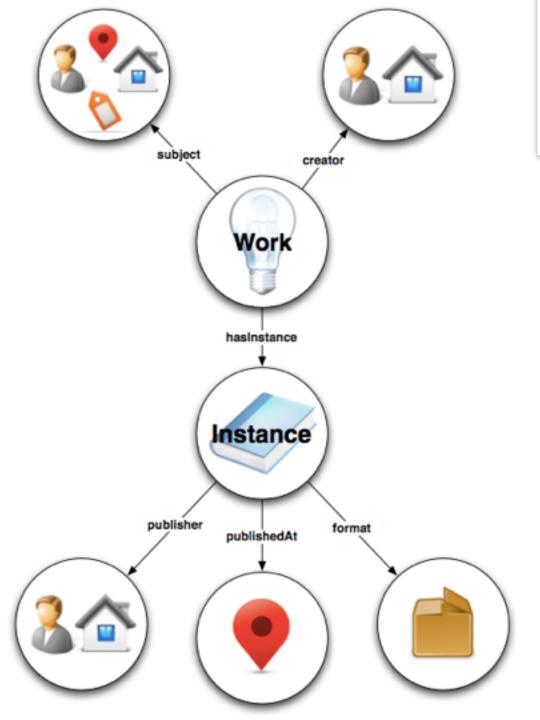
OCLC's Experiments with New Models of Resource Description

Carol Jean Godby Shenghui Wang Jeffrey K. Mixter

SYNTHESIS LECTURES ON
THE SEMANTIC WEB: THEORY AND TECHNOLOGY
Ying Ding and Paul Groth, Series Editors

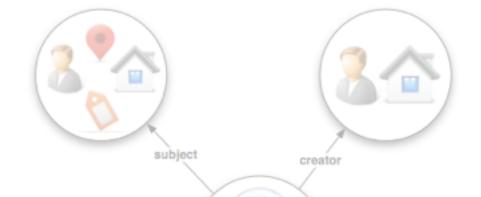






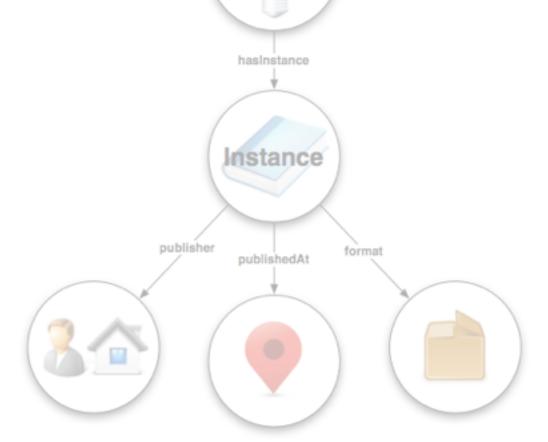




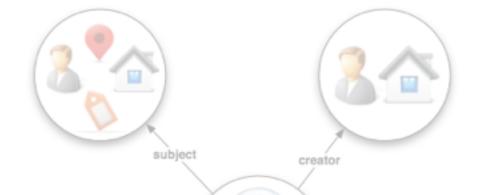




• Foundation for the future of **bibliographic** description

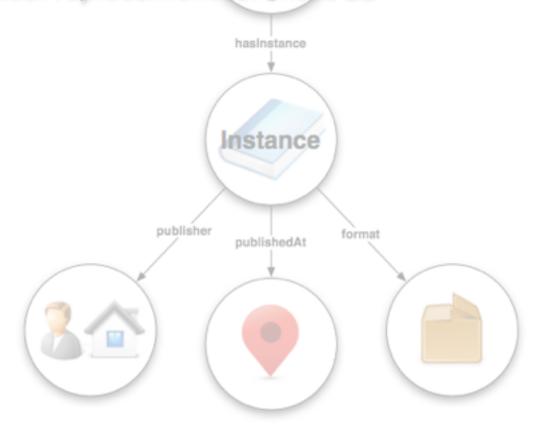




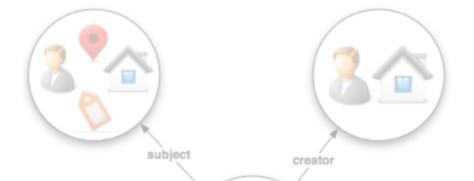




- Foundation for the future of **bibliographic** description
- Eventual replacement for Marc 21





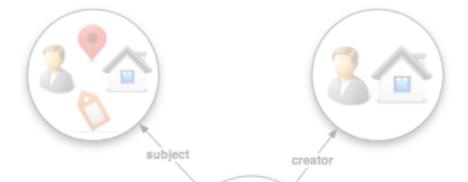




- Foundation for the future of bibliographic description
- Eventual replacement for Marc 21
- Identify information entities









- Foundation for the future of **bibliographic** description
- Eventual replacement for Marc 21
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- Foundation for the future of **bibliographic** description
- Eventual replacement for Marc 21
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- Conversion from Marc
- Publish in RDF Linked Data











- Foundation for the future of bibliographic description
- Eventual replacement for Marc 21
- Identify information entities
- Conversion from Marc
- Publish in RDF Linked Data
- White Paper

Common Ground: Exploring Compatibilities between the Linked Data Models of the Library of Congress and OCLC

http://oc.lc/CommonGround

# Contest?



# No Contest!



# No Contest!



# No Contest!



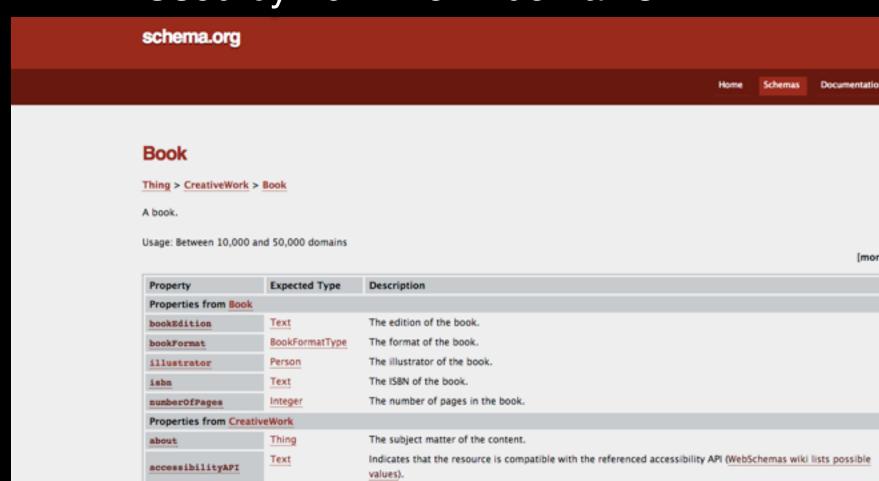
Schema.org: to share with the web

640 Types (Classes)988 Properties

accessibilityControl

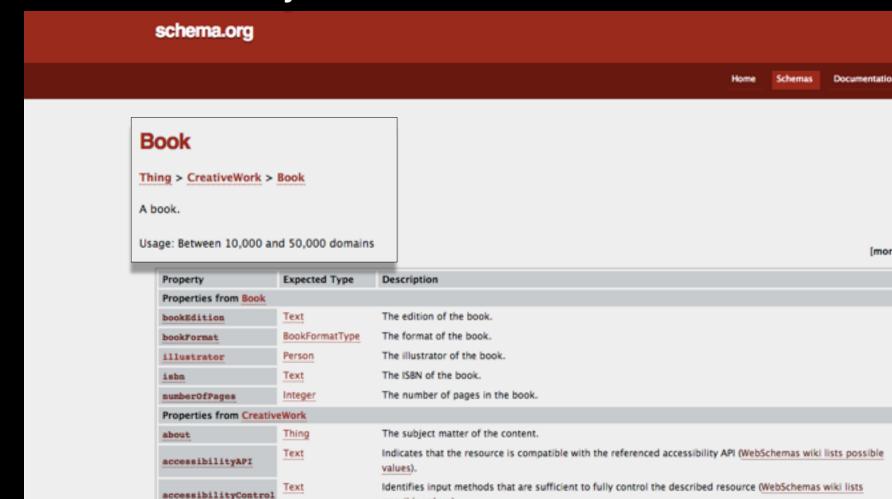
### 640 Types (Classes) 988 Properties

## Used by 10 million+ domains



Identifies input methods that are sufficient to fully control the described resource (WebSchemas wiki lists

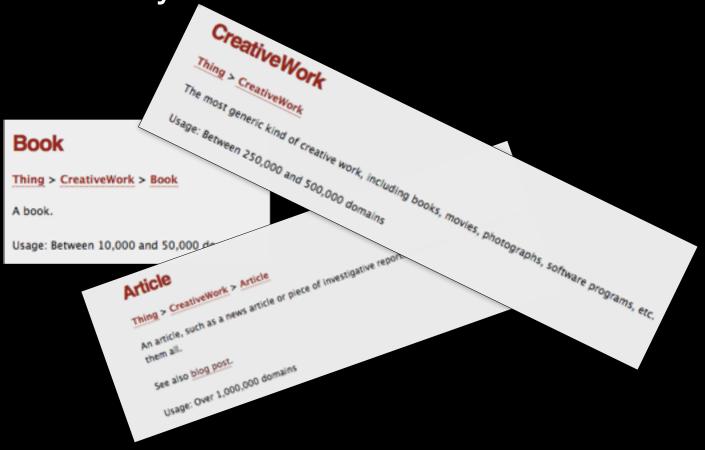
### 640 Types (Classes) 988 Properties



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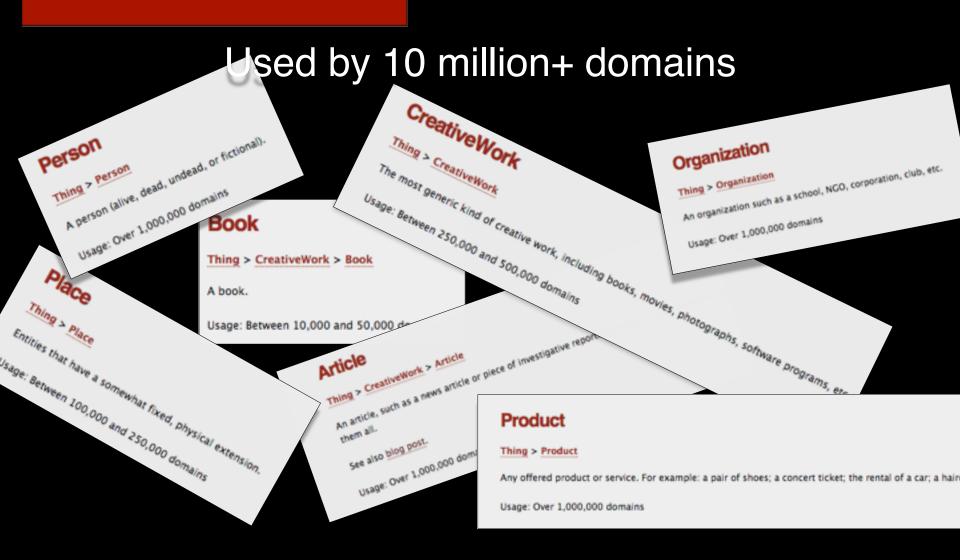
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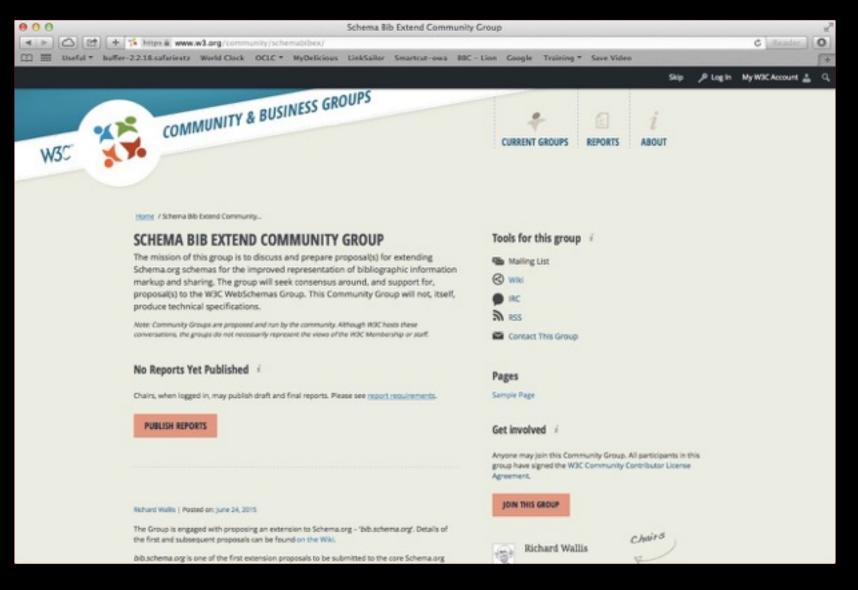


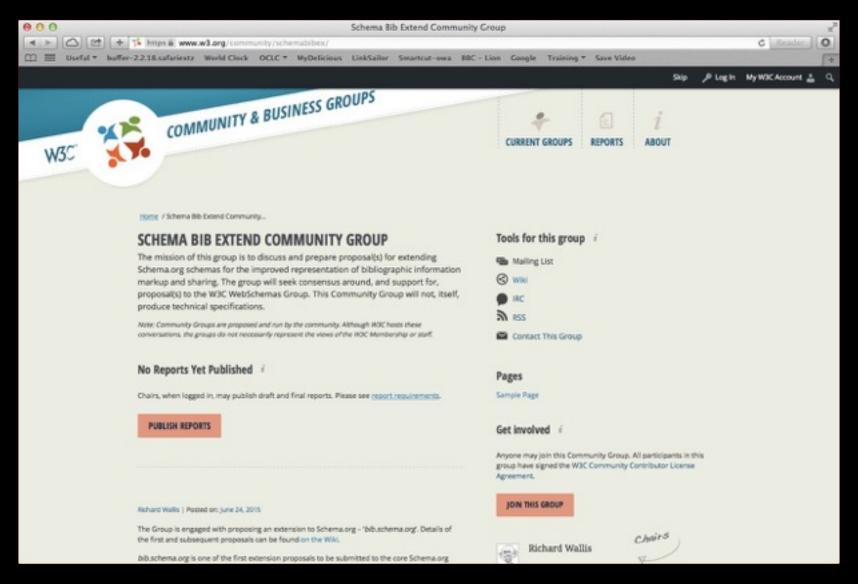
# schema.org

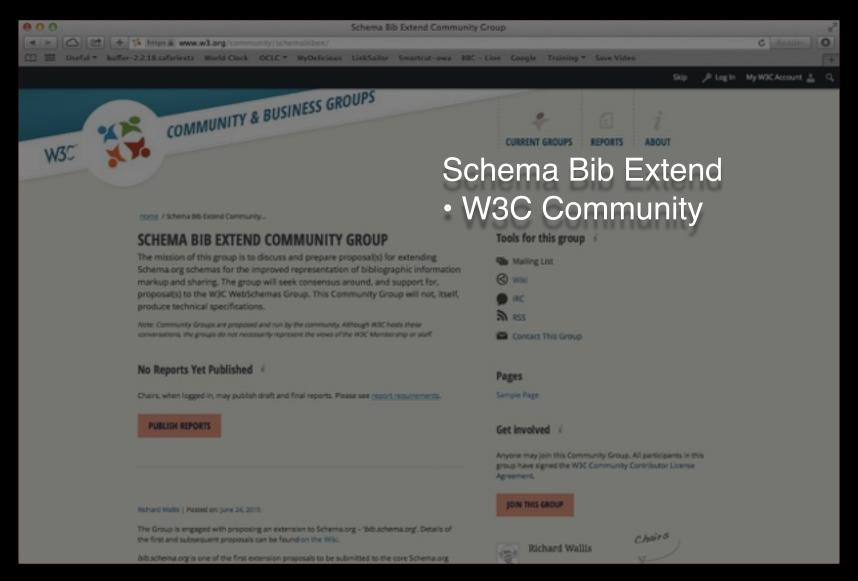
640 Types (Classes) 988 Properties

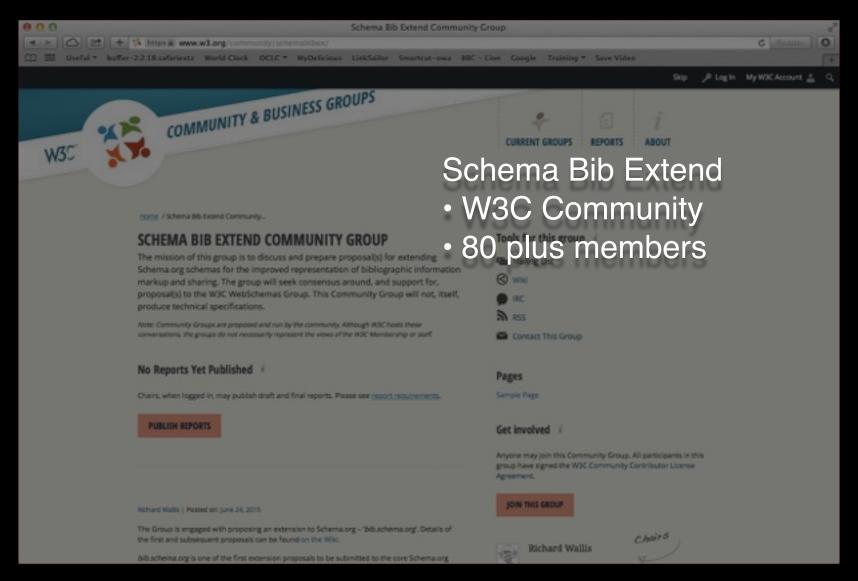


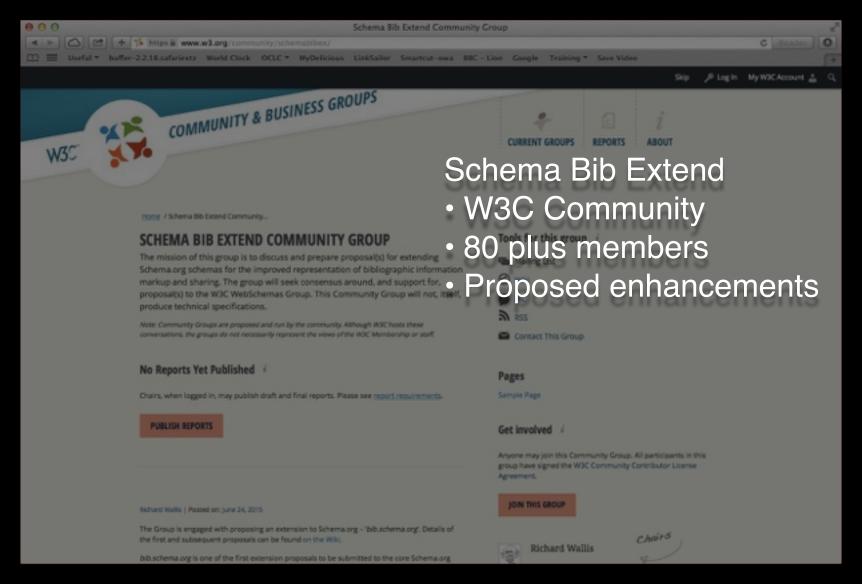
But what if it does not cover my things?

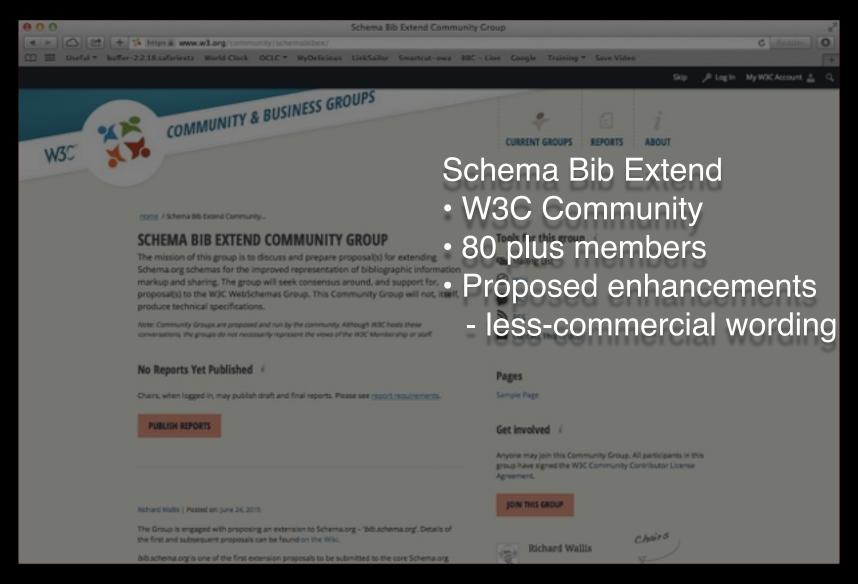


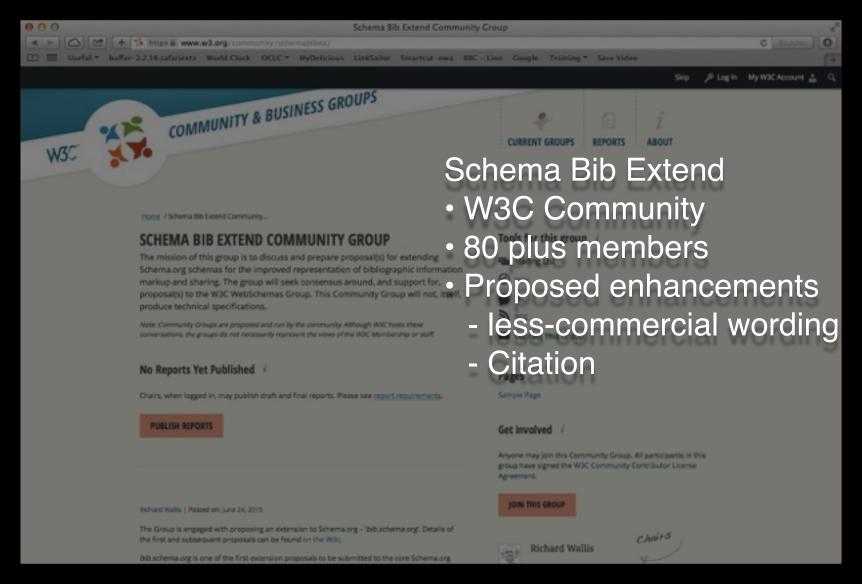


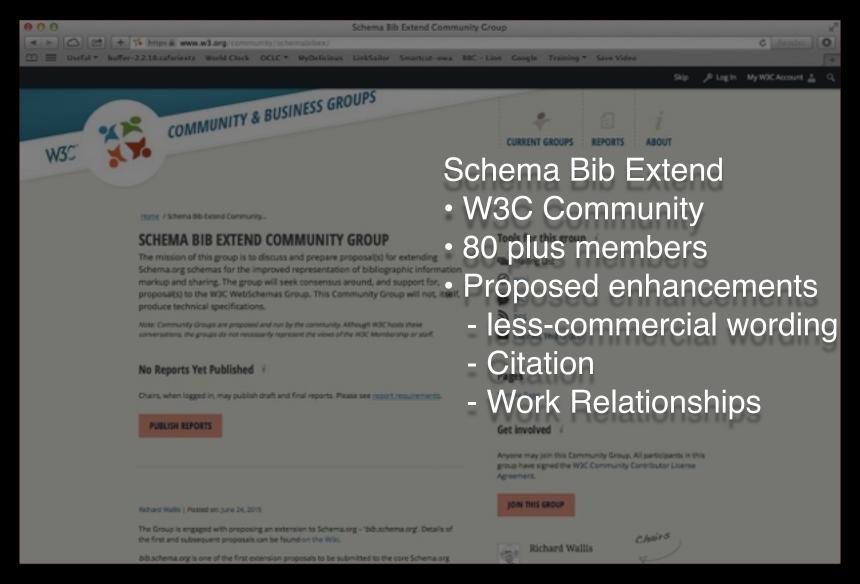


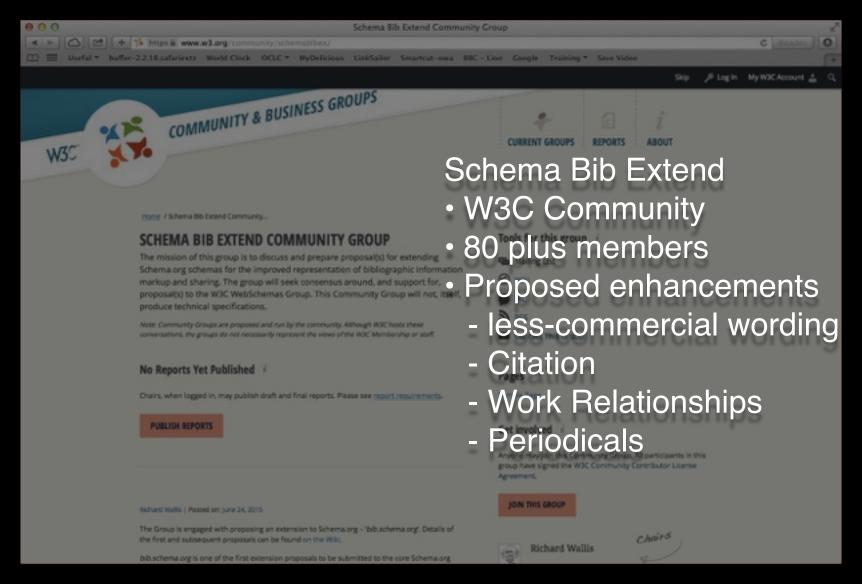


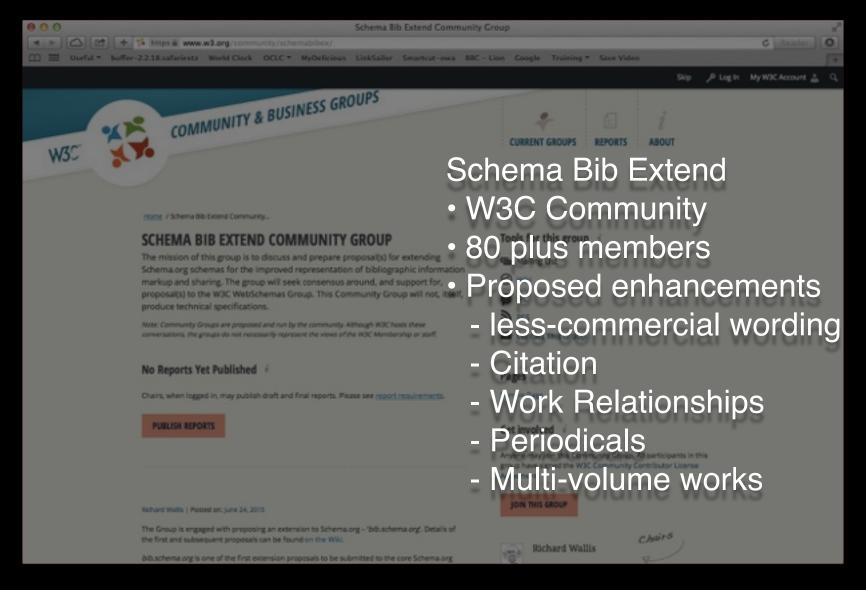


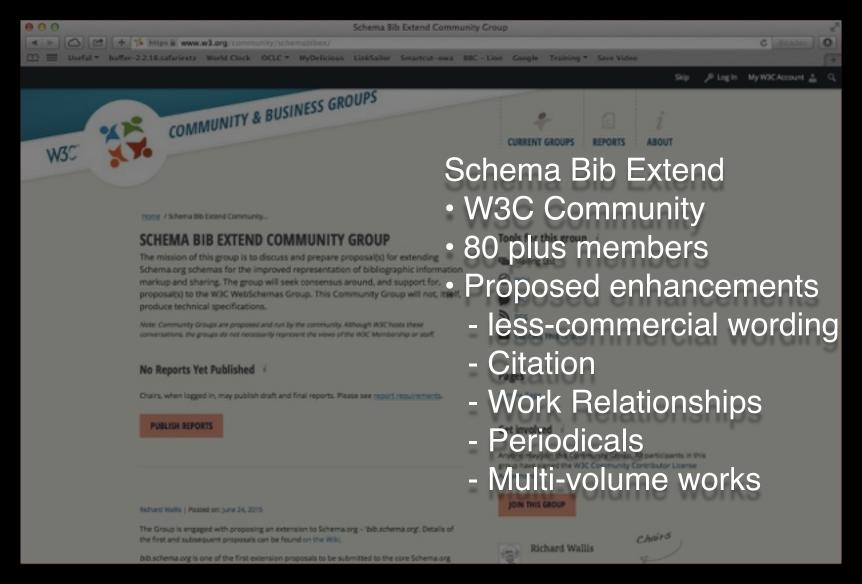




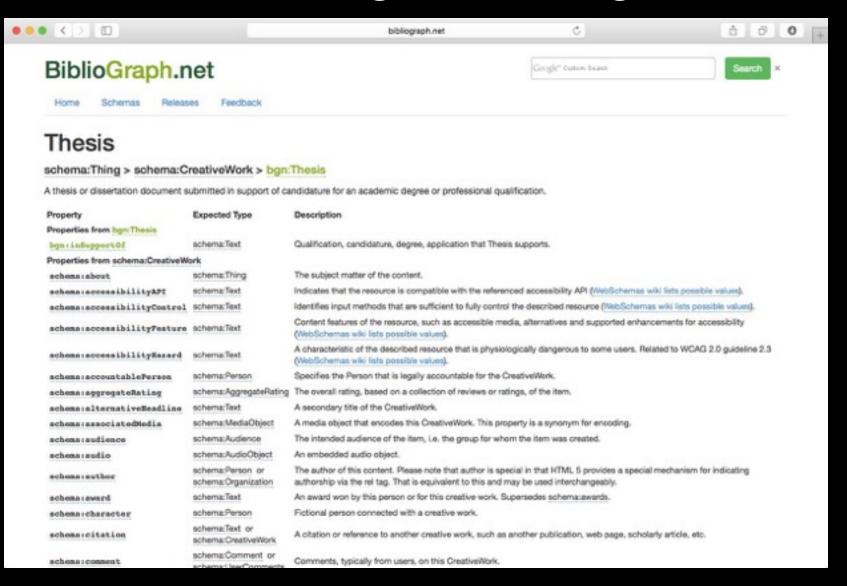


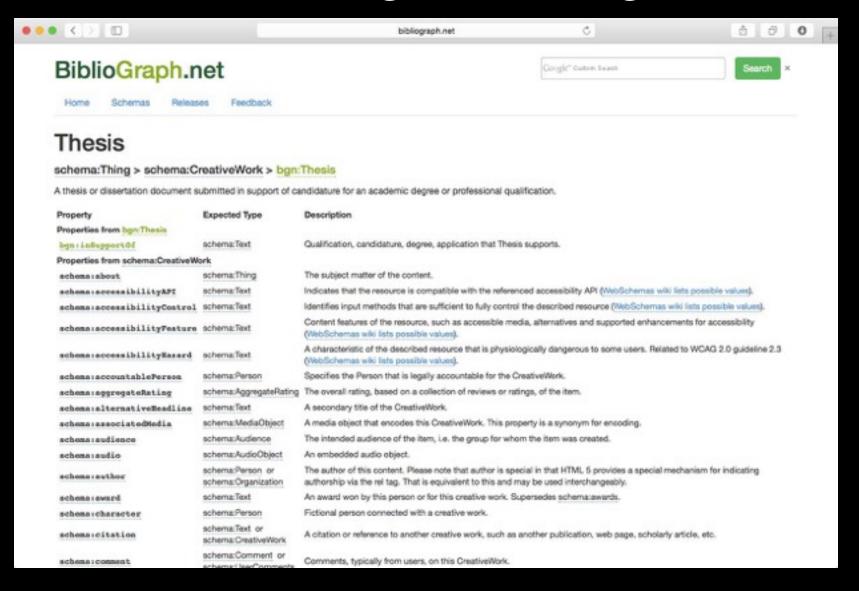




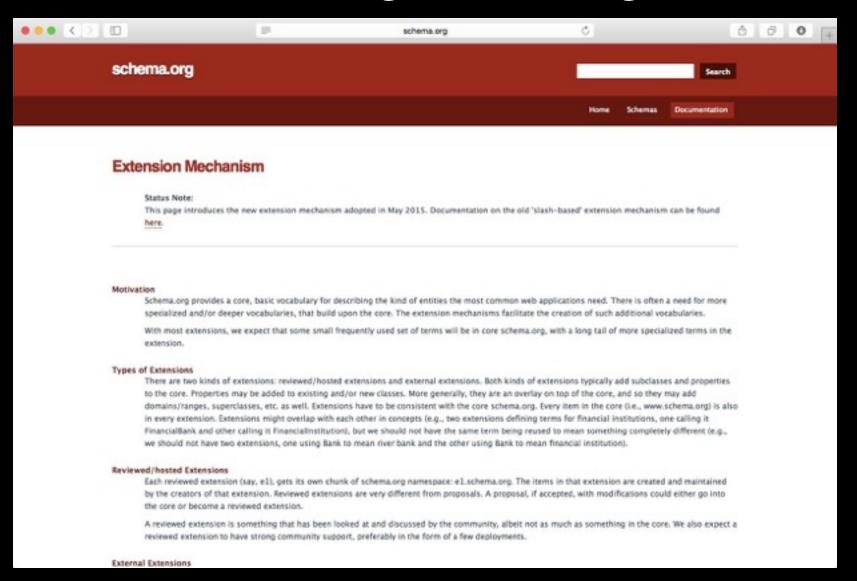


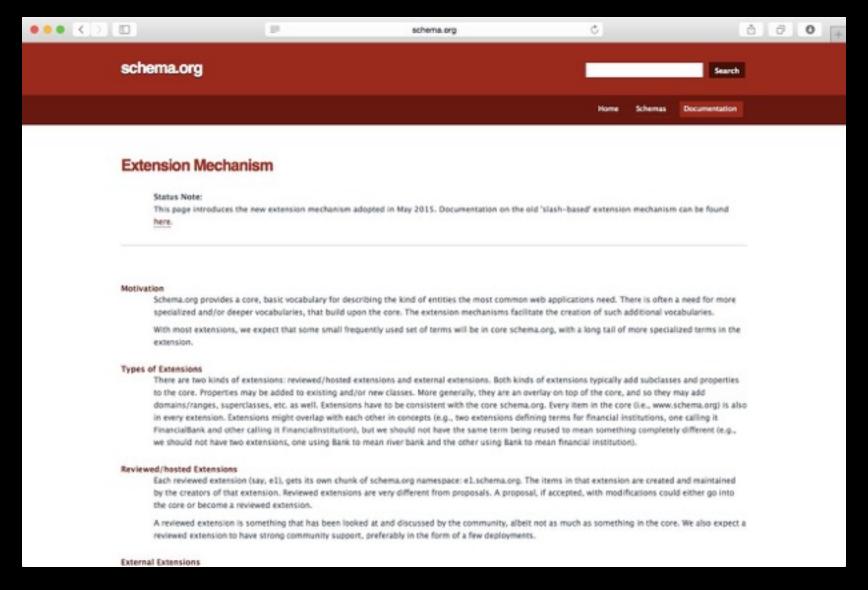
But what if it still does not cover my things?



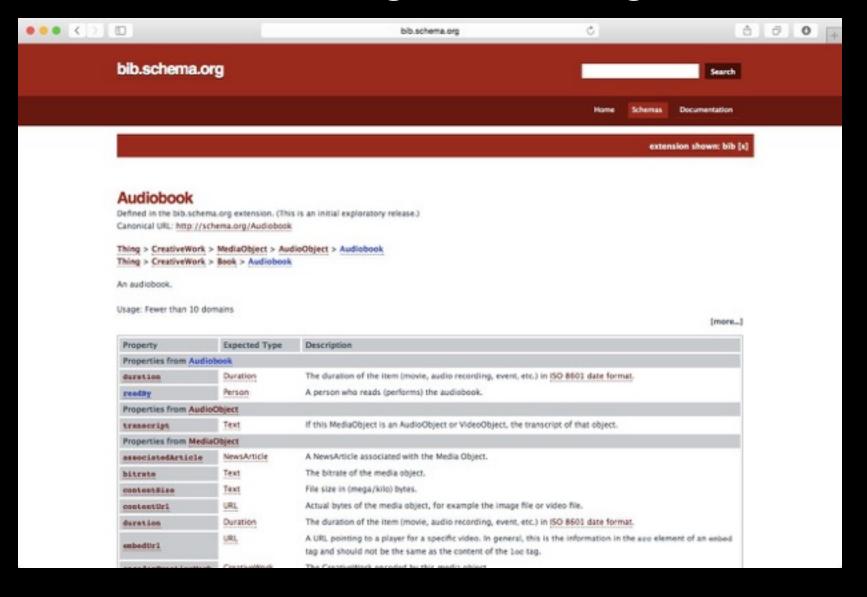


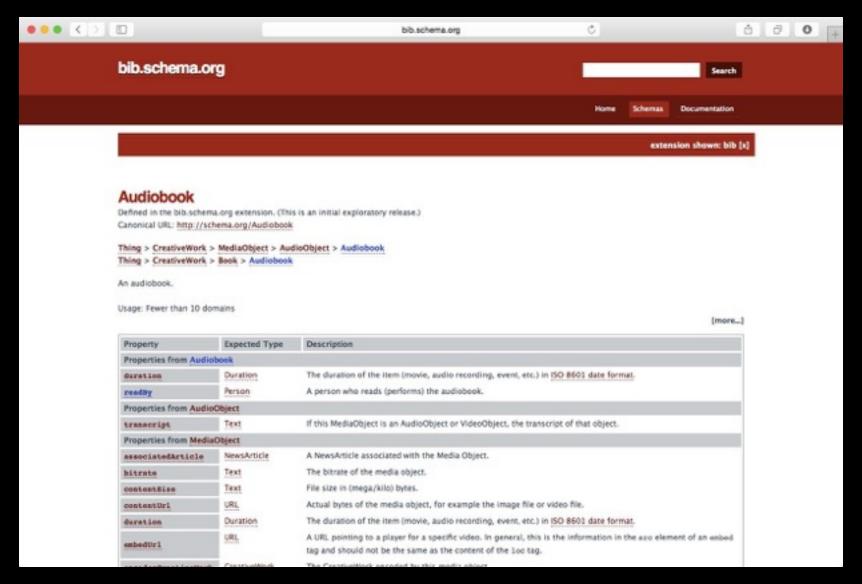
# You could build your own extension



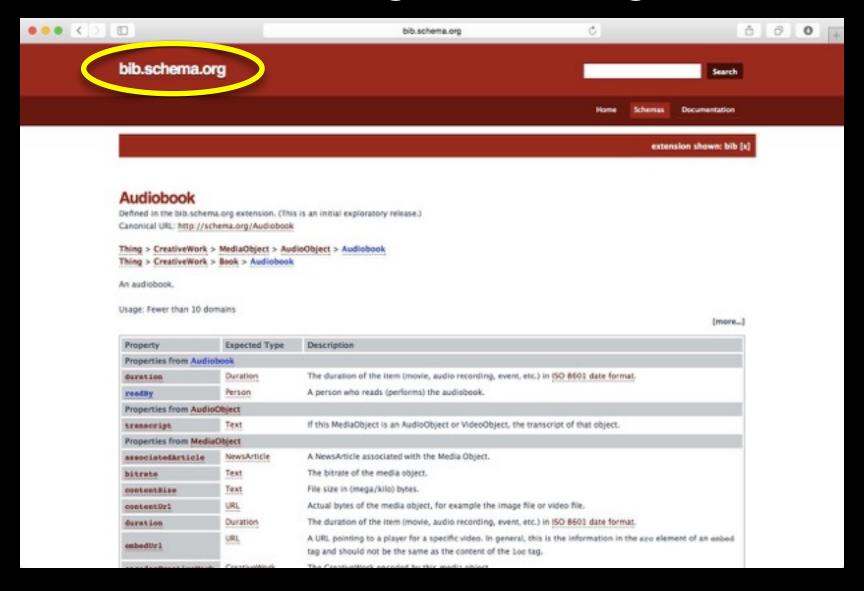


#### ... from May 2015





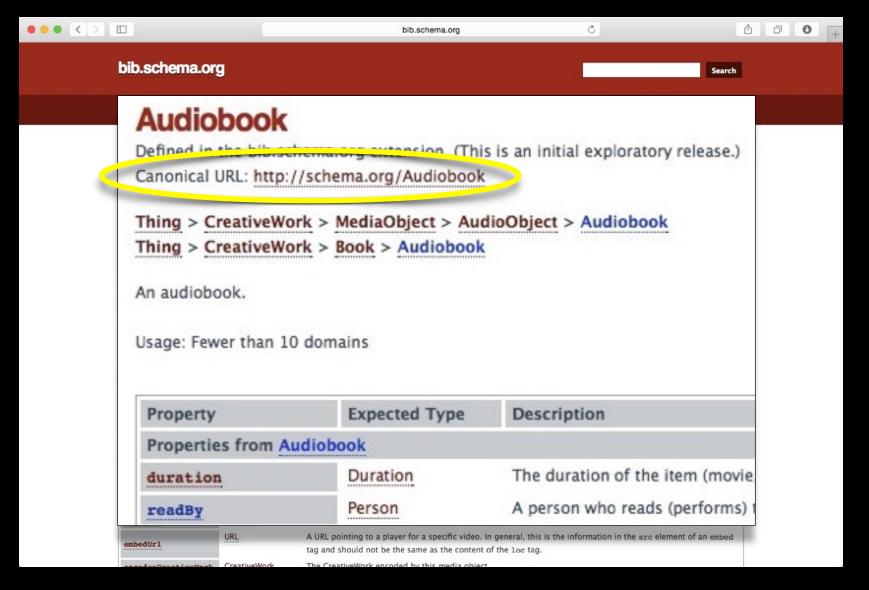
**Reviewed / Hosted Extensions** 



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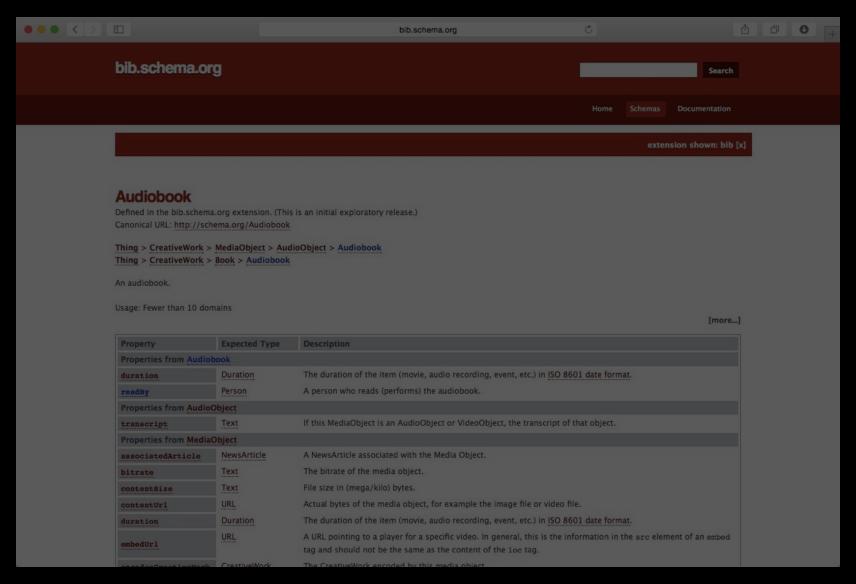
**Reviewed / Hosted Extensions** 



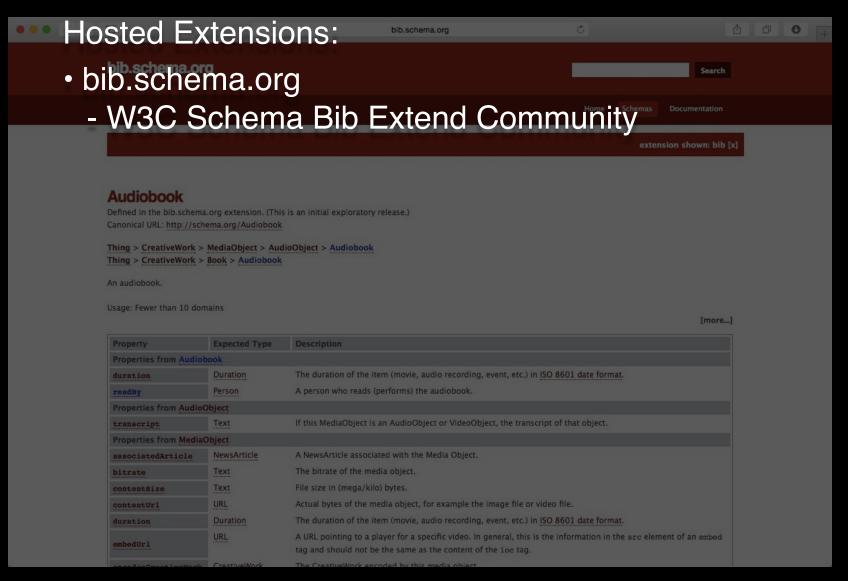
**Reviewed / Hosted Extensions** 



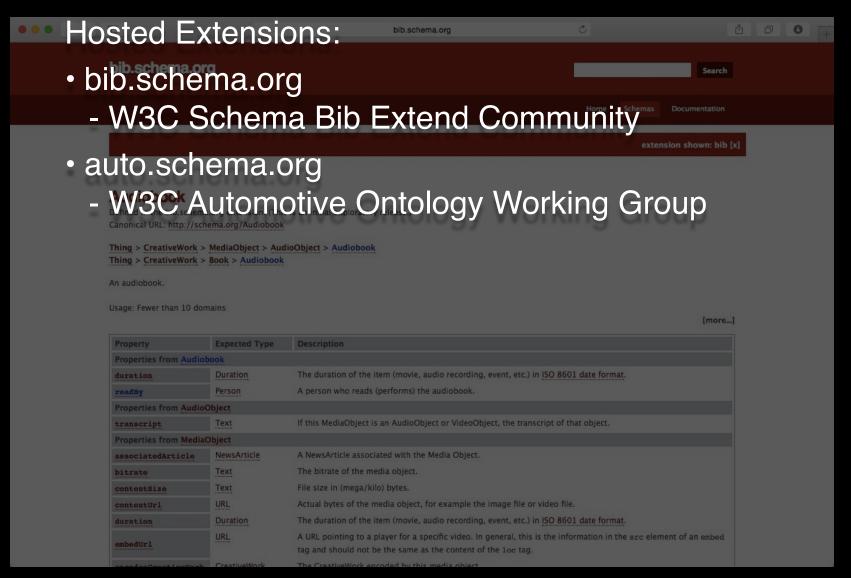
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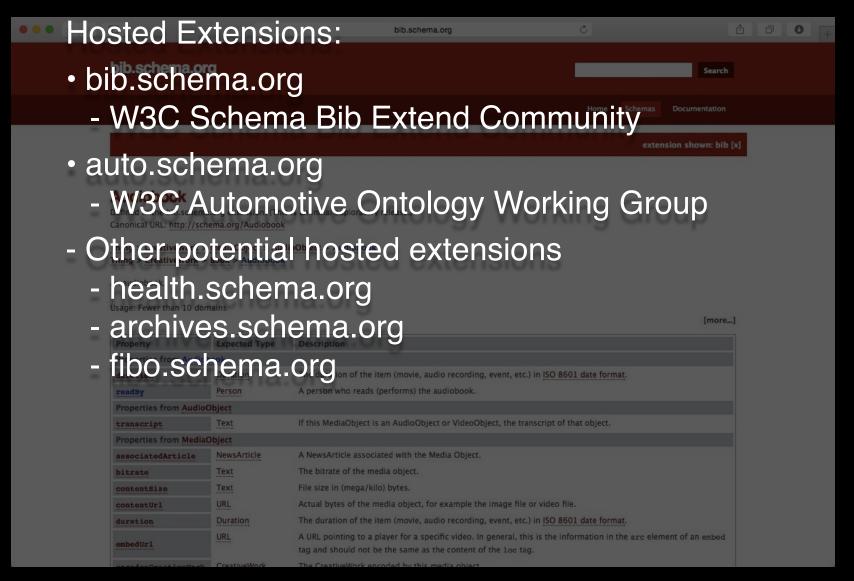
**Reviewed / Hosted Extensions** 



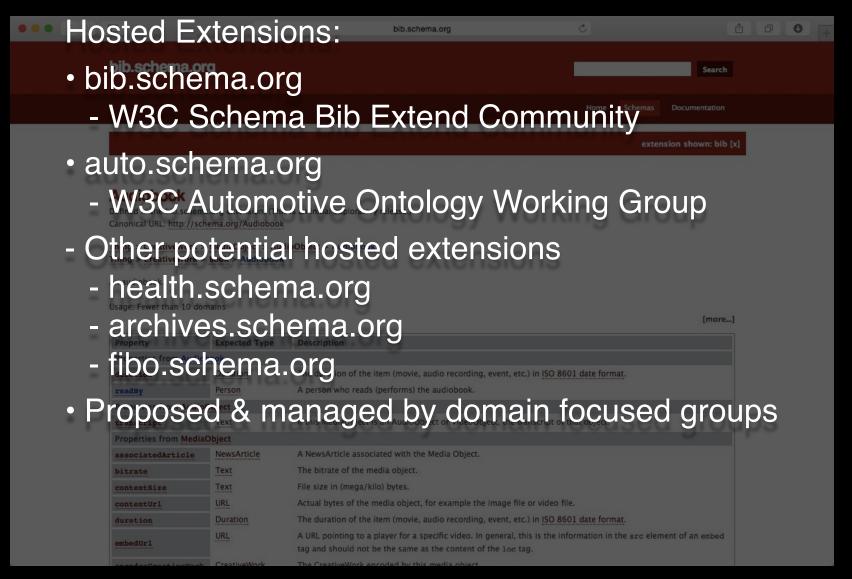
**Reviewed / Hosted Extensions** 



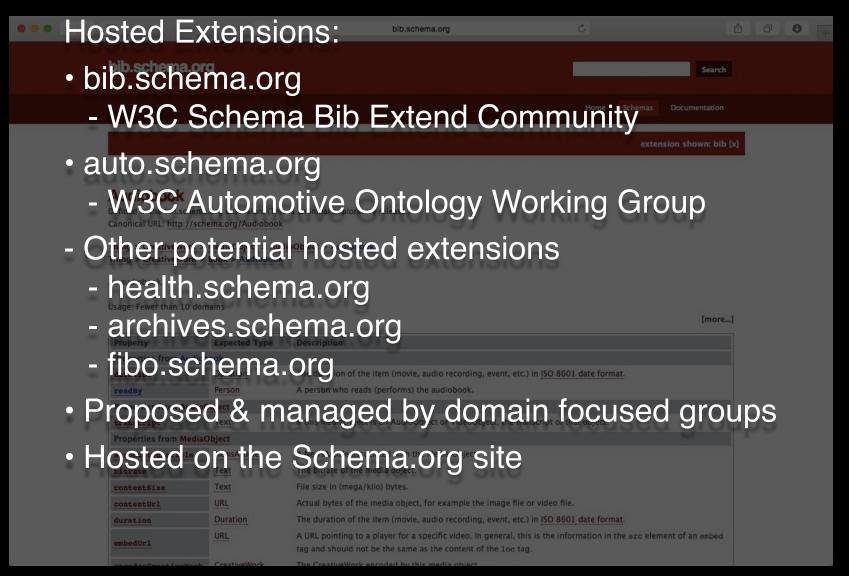
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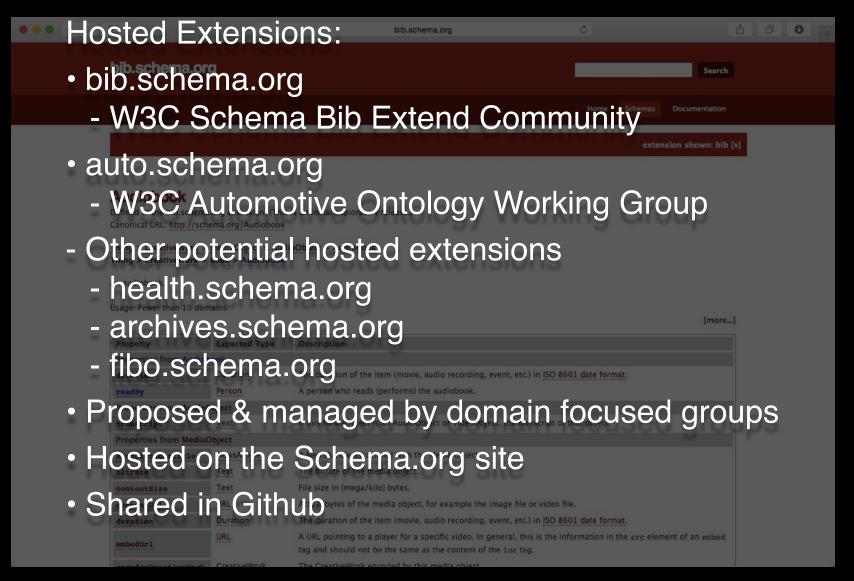
**Reviewed / Hosted Extensions** 



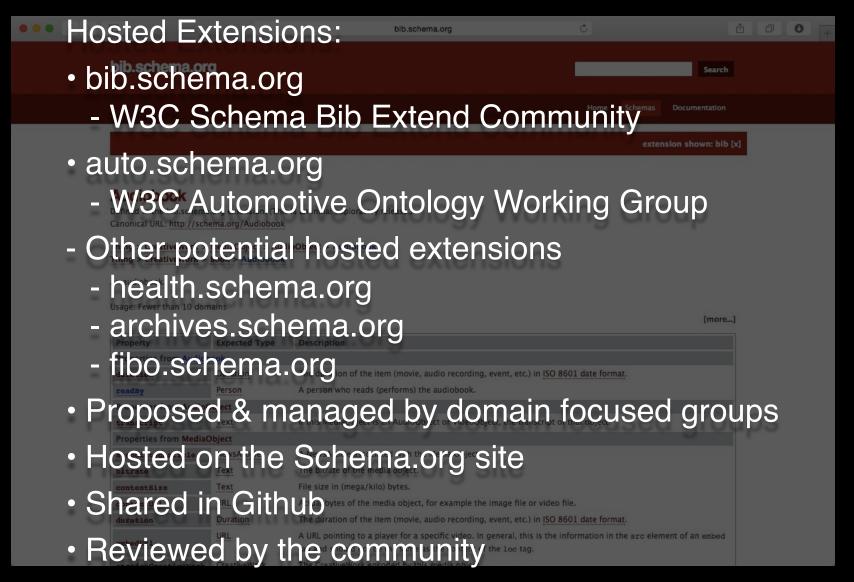
**Reviewed / Hosted Extensions** 



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#### **Reviewed / Hosted Extensions**

- Created & managed by domain focused groups
- Extension specific namespace

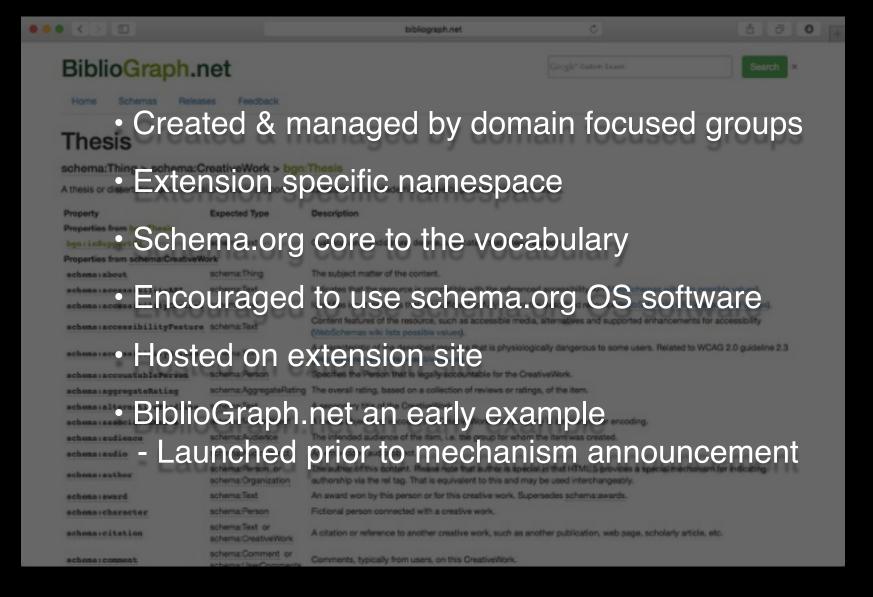
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- BiblioGraph.net an early example

## Extending Schema.org External Extensions



Used by millions of domains

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Do you have an extension in mind?

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#### **An Extending Influence**

- Used by millions of domains
- schema.org
  - http://www.w3.org/community/schemaorg
  - http://github.com/schemaorg/schemaorg
- auto.schema.org
  - http://www.w3.org/community/gao/
- bib.schema.org
  - http://www.w3.org/community/schemabibex
- Others
  - Archives <a href="http://www.w3.org/community/architypes">http://www.w3.org/community/architypes</a>
  - FIBO <a href="http://www.edmcouncil.org/financialbusiness">http://www.edmcouncil.org/financialbusiness</a>
  - Health <a href="https://www.w3.org/community/schemed/">https://www.w3.org/community/schemed/</a>
  - GS1 <a href="http://www.gs1.org/">http://www.gs1.org/</a>
  - .....



DCMI – São Paulo – September 2015

# Schema.org An Extending Influence

schema.org

#### **Richard Wallis**

Technology Evangelist

Data Liberate

richard.wallis@dataliberate.com @rjw





