Extending Schema.org

Richard Wallis
Technology Evangelist
@rjw
Representing the collective collection in WorldCat Discovery and WorldCat.org

As of 11 June 2013
Representing the collective collection in WorldCat Discovery and WorldCat.org

<table>
<thead>
<tr>
<th>Bibliographic information in WorldCat</th>
<th>Licensed digital content/articles in library collections</th>
<th>Digitized local library content</th>
</tr>
</thead>
<tbody>
<tr>
<td>322+ million bibliographic records</td>
<td>980 million records</td>
<td>38 million items</td>
</tr>
<tr>
<td>2+ billion holdings</td>
<td></td>
<td>(Institutional repositories, Google, HathiTrust, OAIster)</td>
</tr>
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</table>

As of 11 June 2013
Structured Data Objectives
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• Linking with hubs of authority on the web
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- Linking with hubs of authority on the web
  - viaf.org – persons
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- Identify the entities
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Phase 3  - *Try it out!*
Semantic Web programming

Author: John Hebeler, et al
Publisher: Indianapolis, IN: Wiley, 2009.
Database: WorldCat
Summary: The next major advance in the Web 3.0 will be built on semantic Web technologies, which will allow data to be shared and re-used across application, enterprise, and community boundaries. Written by a team of highly experienced Web developers, this book explains and examines how this powerful new technology can unify and fully leverage the ever-growing data, information, and services that are available on the Internet. Read more.
Rating: ★★★★★ (not yet rated) 0 with reviews - Be the first.
Subjects: Semantic Web, Computer programming, COMPUTERS -- Online Services.
More like this: Similar Items

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Links to this item
- Books24x7
- Ebook Library
<table>
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<th>Library: oclcnum</th>
<th>&quot;428142652&quot;</th>
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<tbody>
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</tr>
<tr>
<td>dct:identifier</td>
<td>&quot;inu&quot;</td>
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<tr>
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Gaps in Schema.org coverage
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<thead>
<tr>
<th>Topic</th>
<th>Status</th>
<th>Summary</th>
</tr>
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<tbody>
<tr>
<td>Re-Design Provider / Seller vocabulary</td>
<td>Proposal</td>
<td>Address the issues / confusion in the relationship between provider and seller</td>
</tr>
<tr>
<td>Change domain of associatedMedia to Thing</td>
<td>Proposal</td>
<td>Change the domain of <a href="http://schema.org/associatedMedia">http://schema.org/associatedMedia</a> to <a href="http://schema.org/Thing">http://schema.org/Thing</a></td>
</tr>
<tr>
<td>Property-Value Pairs</td>
<td>Proposal</td>
<td>Adding support for arbitrary property-value pairs. Useful for product features and proprietary features of places.</td>
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http://lists.w3.org/Archives/Public/public-vocabs

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http://www.w3.org/community/community/schemabibex
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Not everything is appropriate for Schema.org
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So I’ll create my own vocabulary then!
I’ll create my own vocabulary
I’ll create my own vocabulary
I’ll create my own vocabulary

But doesn’t that lose all the benefits of Schema?
I’ll create my own vocabulary

But doesn’t that lose all the benefits of Schema?

Not if it is an extension vocabulary

Just add your terms with Schema at the core
I’ll create my own vocabulary

But doesn’t that loose all the benefits of Schema?

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Like frosting on a cake?
Frosting on the Schema.org Cake

BiblioGraph.net

schema.org
What is BiblioGraph.net?

This site provides a collection of schemas that are used to describe concepts, entities, and relationships for bibliographic and cultural heritage resources and collections, in libraries and associated domains. Based on the schema.org vocabulary, BiblioGraph.net adds terms and entities that are particularly relevant and important within these more specific domains.

It is designed to be used by organizations in the bibliographic field to describe resources that they curate, aggregate, describe and reference for local use, or to serve as authoritative hubs of knowledge about these items. Such organizations will benefit from the use of the BiblioGraph.net vocabulary through greater exposure, consumption, sharing, discovery, integration, navigation and display of bibliographic related information across the web.

With schema.org forming its foundation, BiblioGraph.net helps remove data integration barriers by enabling search engines to consume semantic data directly, making it easier for people and systems to find the information they seek. It also helps facilitate the integration of structured data between libraries and other information hubs, providing rich discovery, navigation and browsing experience of resources offered by libraries and associated organizations.

Based on a set of shared principles BiblioGraph.net, initially sponsored by OCLC, is shared with the greater bibliographic community, with the objective of improving access to, and dissemination and discovery of, the world’s information.

We invite you to get started!

If you have any questions or comments contact info@bibliograph.net.
# Thesis

**schema:Thing > schema:CreativeWork > bgn:Thesis**

A thesis or dissertation document submitted in support of candidature for an academic degree or professional qualification.

<table>
<thead>
<tr>
<th>Property</th>
<th>Expected Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bgn:inSupportOf</td>
<td>schema:Text</td>
<td>Qualification, candidature, degree, application that Thesis supports.</td>
</tr>
<tr>
<td>schema:about</td>
<td>schema:Thing</td>
<td>The subject matter of the content.</td>
</tr>
<tr>
<td>schema:accessibilityAPI</td>
<td>schema:Text</td>
<td>Indicates that the resource is compatible with the referenced accessibility API (<a href="https://wikicms1.wikimedia.org/wiki/WebSchemas_wiki_lists_possible_values">WebSchemas wiki lists possible values</a>).</td>
</tr>
<tr>
<td>schema:accessibilityControl</td>
<td>schema:Text</td>
<td>Identifies input methods that are sufficient to fully control the described resource (<a href="https://wikicms1.wikimedia.org/wiki/WebSchemas_wiki_lists_possible_values">WebSchemas wiki lists possible values</a>).</td>
</tr>
<tr>
<td>schema:accessibilityFeature</td>
<td>schema:Text</td>
<td>Content features of the resource, such as accessible media, alternatives and supported enhancements for accessibility (<a href="https://wikicms1.wikimedia.org/wiki/WebSchemas_wiki_lists_possible_values">WebSchemas wiki lists possible values</a>).</td>
</tr>
<tr>
<td>schema:accessibilityHazard</td>
<td>schema:Text</td>
<td>A characteristic of the described resource that is physiologically dangerous to some users. Related to WCAG 2.0 guideline 2.3. (<a href="https://wikicms1.wikimedia.org/wiki/WebSchemas_wiki_lists_possible_values">WebSchemas wiki lists possible values</a>)</td>
</tr>
<tr>
<td>schema:accountablePerson</td>
<td>schema:Person</td>
<td>Specifies the Person that is legally accountable for the CreativeWork.</td>
</tr>
<tr>
<td>schema:aggregateRating</td>
<td>schema:AggregateRating</td>
<td>The overall rating, based on a collection of reviews or ratings, of the item.</td>
</tr>
<tr>
<td>schema:alternativeHeadline</td>
<td>schema:Text</td>
<td>A secondary title of the CreativeWork.</td>
</tr>
<tr>
<td>schema:associatedMedia</td>
<td>schema:MediaObject</td>
<td>A media object that encodes this CreativeWork. This property is a synonym for encoding.</td>
</tr>
<tr>
<td>schema:audience</td>
<td>schema:Audience</td>
<td>The intended audience of the item, i.e. the group for whom the item was created.</td>
</tr>
<tr>
<td>schema:audio</td>
<td>schema:AudioObject</td>
<td>An embedded audio object.</td>
</tr>
<tr>
<td>schema:author</td>
<td>schema:Organization or schema:Person</td>
<td>The author of this content. Please note that author is special in that HTML 5 provides a special mechanism for indicating authorship via the rel tag. That is equivalent to this and may be used interchangeably.</td>
</tr>
<tr>
<td>schema:award</td>
<td>schema:Text</td>
<td>An award won by this person or for this creative work. Supersedes schema:awards.</td>
</tr>
<tr>
<td>schema:citation</td>
<td>schema:Text or schema:CreativeWork</td>
<td>A citation or reference to another creative work, such as another publication, web page, scholarly article, etc.</td>
</tr>
<tr>
<td>schema:comment</td>
<td>schema:Comment or schema:CreativeWork</td>
<td>Comments, typically from users, on this CreativeWork.</td>
</tr>
<tr>
<td><strong>Property</strong></td>
<td><strong>Definition</strong></td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><code>schema:sourceOrganization</code></td>
<td>The Organization on whose behalf the creator was working.</td>
<td></td>
</tr>
<tr>
<td><code>schema:text</code></td>
<td>The textual content of this CreativeWork.</td>
<td></td>
</tr>
<tr>
<td><code>schema:thumbnailUrl</code></td>
<td>A thumbnail image relevant to the Thing.</td>
<td></td>
</tr>
<tr>
<td><code>schema:timeRequired</code></td>
<td>Approximate or typical time it takes to work with or through this learning resource for the typical intended target audience, e.g. ‘P30M’, ‘P1H25M’.</td>
<td></td>
</tr>
<tr>
<td><code>bgn:translationOfWork</code></td>
<td>The work that this work has been translated from. e.g. 物种起源 is a translationOf “On the Origin of Species” Inverse property: <code>bgn:workTranslation</code>.</td>
<td></td>
</tr>
<tr>
<td><code>bgn:translator</code></td>
<td>An agent responsible for rendering a translated work from a source work Inverse property: <code>bgn:workTranslation</code>.</td>
<td></td>
</tr>
</tbody>
</table>

**Additional Properties**

- `bgn:translationOfWork`
- `bgn:translator`
- `bgn:Agent`
- `bgn:workTranslation`
- `schema:typicalAgeRange`
- `schema:version`
- `schema:video`
- `schema:workExample`
- `schema:image`
- `schema:name`
- `schema:potentialAction`
- `schema:as`
- `schema:url`

**Inverse Properties**

- `bgn:workTranslation`

**Prefixes used:**
- `schema: http://schema.org/
- `bgn: http://bibliograph.net/`
### Thesis

**schema:Thing > schema:CreativeWork > bgn:Thesis**

A thesis or dissertation document submitted in support of candidature for an academic degree or professional qualification.

<table>
<thead>
<tr>
<th>Property</th>
<th>Expected Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Properties from bgn:Thesis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bgn:isSupportOf</td>
<td>schema:Text</td>
<td>Qualification, candidature, degree, application that Thesis supports.</td>
</tr>
<tr>
<td><strong>Properties from schema:CreativeWork</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>schema:about</td>
<td>schema:Thing</td>
<td>The subject matter of the content.</td>
</tr>
<tr>
<td>schema:accessibilityAPI</td>
<td>schema:Text</td>
<td>Indicates that the resource is compatible with the referenced accessibility API (WebSchemas wiki lists possible values).</td>
</tr>
<tr>
<td>schema:accessibilityControl</td>
<td>schema:Text</td>
<td>Identifies input methods that are sufficient to fully control the described resource (WebSchemas wiki lists possible values).</td>
</tr>
<tr>
<td>schema:accessibilityFeature</td>
<td>schema:Text</td>
<td>Content features of the resource, such as accessible media, alternatives and supported enhancements for accessibility (WebSchemas wiki lists possible values).</td>
</tr>
<tr>
<td>schema:accessibilityHazard</td>
<td>schema:Text</td>
<td>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)</td>
</tr>
<tr>
<td>schema:accountablePerson</td>
<td>schema:Person</td>
<td>Specifies the Person that is legally accountable for the CreativeWork.</td>
</tr>
<tr>
<td>schema:aggregateRating</td>
<td>schema:AggregateRating</td>
<td>The overall rating, based on a collection of reviews or ratings, of the item.</td>
</tr>
<tr>
<td>schema:associatedMedia</td>
<td>schema:MediaObject</td>
<td>A media object that encodes this CreativeWork. This property is a synonym for encoding.</td>
</tr>
<tr>
<td>schema:audience</td>
<td>schema:Audience</td>
<td>The intended audience of the item, i.e. the group for whom the item was created.</td>
</tr>
<tr>
<td>schema:audio</td>
<td>schema:AudioObject</td>
<td>An embedded audio object.</td>
</tr>
<tr>
<td>schema:author</td>
<td>schema:Organization or schema:Person</td>
<td>The author of this content. Please note that author is special in that HTML 5 provides a special mechanism for indicating authorship via the rel tag. That is equivalent to this and may be used interchangeably.</td>
</tr>
<tr>
<td>schema:award</td>
<td>schema:Text</td>
<td>An award won by this person or for this creative work. Supersedes schema:awards.</td>
</tr>
<tr>
<td>schema:citation</td>
<td>schema:Text or schema:CreativeWork</td>
<td>A citation or reference to another creative work, such as another publication, web page, scholarly article, etc.</td>
</tr>
<tr>
<td>schema:comment</td>
<td>schema:Comment</td>
<td>Comments, typically from users, on this CreativeWork.</td>
</tr>
</tbody>
</table>
Extension Vocabulary

- Adds your domain specifics
Extension Vocabulary

- Adds your domain specifics
- Mostly Schema.org
Extension Vocabulary

• Adds your domain specifics
• Mostly Schema.org
• Only need to fill in the gaps
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• Only need to fill in the gaps
• Search engines will understand most
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- Eases adoption
- Repeatable pattern
Namespace Proliferation
Namespace Proliferation
The Enemy of Adoption
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The Enemy of Adoption
Namespace Proliferation
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British Library Data Model

@prefix blt: <http://data.bl.uk/schema/bibliographic#>.
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>.
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>.
@prefix owl: <http://www.w3.org/2002/07/owl#>.
@prefix xsd: <http://www.w3.org/2001/XMLSchema#>.
@prefix dct: <http://purl.org/dc/terms/>.
@prefix isbd: <http://iflastandards.info/ns/isbd/elements/>.
@prefix skos: <http://purl.org/ontology/skos/core/>.
@prefix bibo: <http://purl.org/ontology/bibo/>.
@prefix rda: <http://RDVocab.info/ElementsGr2/>.
@prefix bio: <http://purl.org/vocab/bio/0.1/>.
@prefix foaf: <http://xmlns.com/foaf/0.1/>.
@prefix event: <http://purl.org/NET/c4dm/event.owl#>.
@prefix org: <http://www.w3.org/namespace/organization/>.
@prefix geo: <http://www.w3.org/2003/01/geo/wgs84_pos/>.
Namespace Proliferation
The Enemy of Adoption

Which bits can I use?

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Which bits can I use?
Which bits can’t I use?

This is overwhelming!
I’ll move on ....
@prefix schema: <http://schema.org/>
@prefix bgn: <http://bibliograph.net/>
• Not as good as a single namespace
• Not as good as a single namespace
• But next best thing and understandable by:
• Not as good as a single namespace
• But next best thing and understandable by:
  • my domain
• Not as good as a single namespace
• But next best thing and understandable by:
  • my domain
  • the rest of the world - mostly
• Not as good as a single namespace
• But next best thing and understandable by:
  • my domain
  • the rest of the world - mostly
An extension to Schema.org...
An extension to Schema.org...
• to fill in some [temporary?] domain specific gaps
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- to fill in some [temporary ?] domain specific gaps
- light weight access to rich data
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- **not a standalone vocabulary** – needs Schema.org
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An extension to Schema.org...

- an example of how others might do it.
OCLC Entity Based Data Strategy
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✓ VIAF, ISNI, FAST Publish Linked Data
OCLC Entity Based Data Strategy

- VIAF, ISNI, FAST Publish Linked Data
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2012
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- 2014
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Structured Data Objectives

Conclusions

- Linked Data
  - RDF – RDFa, RDF/XML, JSON-LD, Turtle, nTriples
  - Canonical URIs
- Schema.org + BiblioGraph.net

Core widely adopted & understood – 15% of web sites

fairly obvious
Structured Data Objectives

- Widely distributed & understood
  - Web standard data access patterns
  - Common vocabularies on the web
  - Visibility in search engines

Conclusions

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  - Canonical URIs
- Schema.org + BiblioGraph.net
  - Core widely adopted & understood – 15% of web sites

Extending Schema.org

Richard Wallis
Technology Evangelist

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@rjw