Extending Schema.org with GoodRelations and Productontology.org

Martin Hepp
mhepp@computer.org
GoodRelations

The most powerful Web vocabulary for e-commerce
A paradigm shift for e-commerce. Since 2008.

Only 5% of all potential visitors of your site will actually see your offers in their original beauty. 95% will never get beyond a reduced preview of your great products and services as provided by a Web search engine.

GoodRelations is the most powerful vocabulary for publishing all of the details of your products and services in a way friendly to search engines, mobile applications, and browser extensions. By adding a bit of extra code to your Web content, you make sure that potential customers realize all the great features and services and the benefits of doing business with you, because their computers can extract and present this information with ease.

http://purl.org/goodrelations/
Who uses GoodRelations?

- Google, Yahoo, soon Bing
- BestBuy
- Overstock.com
- Tradoria
- Sears
- Volkswagen
- ...


The Product Ontology

The Product Types Ontology: Class Definition for "Hammer"

This page is part of http://www.productontology.org/, a huge, precise dictionary of product types for advertising your products or services with the GoodRelations standard.

On this page: Usage(RDFa, Facebook)  Contact Information  Caching Policy  License  Acknowledgments  References

http://www.productontology.org/

Ontology Class: hammer

URI: http://www.productontology.org/fof/Hammer

rdfs:subClassOf #ProductOrService
rdfs:label Hammer (as a class of products of services)

Translation(s): Hamer@ang;  parebear;  Kg@email@bt-amg;  Monar@be;  Cse@bg;  꽃다고@bn;  Morzhoi@br;  Čeklo(staf)@ts;  Martell (elina)@ca;  Kladivo@cs;  Hammer@da;  Hammer@de;  Σκυπληγ@el;  Martelo@es;  Martillo@es;  Vasarei@eu;  Мартел@fa;  Vasar@fr;  Marteau (outil)@fr;  Hück@ko;  Casur@ga;  Martel@gi;  волг@hi;  Čeklo@hr;  Mard@ht;  Palu (afat)@id;  Martelo@io;  Hämmer@is;  Martello (tecnologia)@it;  헤머@ja;  Mallet@ko;  Malles@instrumentum@la;  Hummer (Handwerksgeschicht@de;  Plattukas@lt;  Åmans@lv;  ਹੁਮਰ@pa;  निर्माता@pr;  Tukul@ms;  Hammer (gereedschap)@nl;  Hammer@nn;  Hamer (redskap)@no;  Mafild@pol;  Maflo@pt;  Takana@qu;  Cloca@ro;  Monomor@ru;  Martefdd@scn;  Kladi@sv; Чекло@sl;  Čeklo@sk;  Martello@es;  Мартелло@sr;  Binalak@sv;  Çeklo@tr;  Мартello@uk;  Büs@vi;  Martily@war;  นิร्माता@yi; 穰@zh;

rdfs:comment

A hammer is a tool meant to be used for a specific purpose. It is hand-operated, but there is evidence that speaks to its origins. This hammer is used for devices that are designed to deliver blows, e.g. in the caplock mechanism of firearms. (Source: Wikipedia, the free encyclopedia, see http://en.wikipedia.org/wiki/Hammer)

Note: The extraction of the abstract from the Wikipedia page may sometimes yield imperfect results. We are improving the algorithm regularly.
Productontology.org adds the specificity of products and services to the schema.org environment

Plus: Translations in up to 100 languages
Fire Extinguisher

The Product Types Ontology: Class Definition for "Fire extinguisher"

This page is part of http://www.productontology.org/, a huge, precise dictionary of product types for advertising your products or services with the GoodRelations standard.

http://www.productontology.org/

On this page: Usage(RDFa, Facebook), Contact Information, Caching Policy, License, Acknowledgements, References

ptb:Fire_extinguisher

URI: http://www.productontology.org/id/Fire_extinguisher

rdfs:subClassOf ptb:ProductOrService

rdfs:label Fire extinguisher (as a class of products of services)

Translation(s):
- アンブレラ: レプリカ
- Brändsfäcken: Sv
- Kizima moto: Sw
- Boonexucru: Uk
- 飽火筒: Zh
- 飽火筒: Zh-yue

rdfs:comment

A fire extinguisher is an active fire protection device used to extinguish or control small fires, often in emergency situations. It is not intended for use on an out-of-control fire, such as one which has reached the ceiling, endangers the user (i.e. no escape route, smoke, explosion hazard, etc.), or otherwise requires the expertise of a fire department. Typically, a fire extinguisher consists of a hand-held cylindrical pressure vessel containing an agent which can be discharged to extinguish a fire. In the United States, fire extinguishers, in all buildings other than houses, are generally required to be serviced and inspected by a Fire Protection service company at least...
Bollard

The Product Types Ontology: Class Definition for "Bollard"

This page is part of http://www.productontology.org/, a huge, precise dictionary of product types for advertising your products or services with the GoodRelations

http://www.productontology.org/

On this page: Usage(RDFa, Facebook) Contact Information Caching Policy License Acknowledgments References

ptpo:Bollard

URI http://www.productontology.org/id/Bollard
rdfs:subClassOf gt:ProductOrService
rdfs:label Bollard (as a class of products or services)
Translation(s): Poller@de; Bolardo@eo; Bolardo@es; Bollard@fr; Bilva@hr; Bitt@it; ボラード@ja; ボーラード@ko; Bolder@nl; Pulfer@no; Poler@pl;

rdfs:comment
A bollard is a short vertical post. Originally it only meant a post used on a quay for mooring. The word now also describes a variety of structures to control traffic, such as posts arranged in a line to obstruct the passage of motor vehicles. In addition, bollards are used in the lighting industry to describe short fixtures. The term may be related to bole, meaning a tree trunk. (Source: Wikipedia, the free encyclopedia, see http://en.wikipedia.org/wiki/Bollard)

Note: The extraction of the abstract from the Wikipedia page may sometimes yield imperfect results. We are improving the algorithm regularly.
Potato Pancake

The Product Types Ontology: Class Definition for "Potato pancake"

This page is part of http://www.productontology.org/, a huge dictionary of product types for advertising your products or services with the GoodRelations standard.

http://www.productontology.org/

On this page: Usage(RDFa, Facebook) Contact information Caching Policy License Acknowledgments References

ptc:Potato_pancake

URI http://www.productontology.org/id/Potato_pancake

rdfs:subClassOf gr:ProductOfService

rdfs:label Potato pancake (as a class of products of services)

Translation(s): Руладлазчічі бнар; Дратаві бнар; Пломбонакі бнар; Kartoffelpuffer@nl; Kartoffelpuffer@es; Galette de pommes de terre@fr; рула@hc; Tartel di pastate@it; ポトトパンケーキ@ja; Riekkopefe@kk; Grønparekochelschen@dt; Kartappelpannekoke@no; Rastpotat@no; Placki ziemniaczane@pl; Reibekuchen@pt; Дратви бнар; Рагмунк@sv; Драгун@uk

rdfs:comment

Potato pancakes are shallow-fried pancakes of grated potato, flour and egg, often flavored with grated onion or garlic and seasoning. Potato pancakes may be topped with a variety of condiments, ranging from the savory (such as sour cream) to the sweet (such as apple sauce or sugar), or they may be served unadorned. Potato pancakes are sometimes made from mashed potatoes to produce pancake-shaped croquettes. (Source: Wikipedia, the free encyclopedia, see http://en.wikipedia.org/wiki/Potato_pancake)
Focus

**schema.org:** Broad, entry-level schema for the basics of many domains

**schema:Person**

**schema:Organization**

**schema:Product**

**schema:Place**

**schema:Offer**

**GoodRelations:** Powerful E-Commerce Schema and Extension
Small Overlap

Only 5 overlapping classes between schema.org and GoodRelations

315 Classes

schema.org

GoodRelations
27 Classes

5
Extending Schema.org with GoodRelations
Scenario 1: Using GoodRelations in Microdata syntax

You can use GoodRelations directly in Microdata syntax:

```html
<div itemscope itemtype="http://purl.org/goodrelations/v1#Offering" itemid="#offer">
  <div itemprop="name">Hepp Personal SCSI Controller Card</div>
  <div itemprop="description">The Hepp Personal SCSI is a 16-bit add-on card that allows attaching up to seven SCSI devices to your computer.</div>
  <link itemprop="hasBusinessFunction" href="http://purl.org/goodrelations/v1#Sell" />
  <div itemprop="hasPriceSpecification" itemtype="http://purl.org/goodrelations/v1#UnitPriceSpecification">
    <meta itemprop="hasCurrency" content="USD">$
    <span itemprop="hasCurrencyValue">99.99</span>
    <time itemprop="validThrough" datetime="2012-11-30T23:59:59Z"></time>
  </div>
</div>

Condition: <div itemprop="condition">used</div>
EAN/UPC: <span itemprop="hasEAN_UCC-13">1234567890123</span>
MPN: <span itemprop="hasMPN">PSCSI</span>
Article No. <span itemprop="hasStockKeepingUnit">123-456</span>
Availability: <span itemscope itemtype="http://purl.org/goodrelations/v1#QuantitativeValue">
  <meta property="hasMinValue" content="1">In-stock
</span>
</div>
```
Scenario 2: Using GoodRelations properties to extend schema.org types

You can use GoodRelations elements to extend schema.org types by details that are not covered by schema.org, e.g. shipping charges or eligible countries:

```html
<div itemscope itemtype="http://schema.org/Offer" itemid="#offer">
  <div itemprop="name">Hepp Personal SCSI Controller Card</div>
  <div itemprop="description">The Hepp Personal SCSI is a 16-bit add-on card that allows attaching up to seven SCSI devices to your computer.</div>
  <link itemprop="http://purl.org/goodrelations/v1#hasBusinessFunction" href="http://purl.org/goodrelations/v1#Sell" />
  <!-- Shipment fees -->
  Delivery costs to
    <meta itemprop="eligibleRegions" content="DE">Germany:
    <meta itemprop="hasCurrency" content="EUR">Euro:
    <span itemprop="hasCurrencyValue">10.00</span>
    <link itemprop="appliesToDeliveryMethod" href="http://purl.org/goodrelations/v1#UPS" >(via UPS)
  </div>
  <!-- other offer properties follow here -->
  ...
</div>
```
Scenario 3: Using schema.org properties to extend GoodRelations types

You can use schema.org properties and types in combination with GoodRelations types. This is in particular recommended for attaching images, addresses, and geo-location information information, because such will then all come from a single complementing vocabulary instead of from various Web vocabularies (vCard, geo, WGS84, FOAF, ...).

```html
<div itemscope itemtype="http://purl.org/goodrelations/v1#BusinessEntity">
  <span itemprop="legalName">ACME Bagel Bakery Ltd.</span>
  Contact Details:
  <div itemscope itemprop="http://schema.org/address"
    itemtype="http://schema.org/PostalAddress">
    Main address:
    <span itemprop="streetAddress">Bagel Street 1234</span>
    <span itemprop="postalCode">12345</span>
    <span itemprop="addressLocality">Munich, Germany</span>
  </div>
  <!-- The following properties use full URIs because they are attached to a **GoodRelations type** but come from schema.org -->
  Tel: <span itemprop="telephone">+49-89-12345678-0</span>,
  Fax: <span itemprop="faxNumber">+49-89-12345678-99</span>,
  E-mail: <span itemprop="email">contact@example.org</span>
</div>
```
Schema.org with productontology.org

```html
<div itemscope itemtype="http://schema.org/Product">
    <link itemprop="http://www.w3.org/1999/02/22-rdf-syntax-ns#type" href="http://www.productontology.org/id/Fire_extinguisher" />
    <!-- other schema.org properties go in here -->
</div>
```
What we need from schema.org?

• Tolerate secondary type property
  – rdf:type
  – secondaryType for http://schema.org/Thing
• Tolerate full URIs for external properties
• In particular in validation tools
• 1-page statement on Webmaster blog
• Microdata support for GoodRelations
Outlook

• Full integration?
  – No fragmentation
  – No significant renaming
  – Attribution?

• Integrating GoodRelations modules
  – Tickets
    • http://purl.org/tio/ns
  – Vehicles
    • http://purl.org/vso/ns
Additional Resources

- http://wiki.goodrelations-vocabulary.org/Microdata
- http://wiki.goodrelations-vocabulary.org/GoodRelations_and_schema.org
- http://wiki.goodrelations-vocabulary.org/GoodRelations_for_Semantic_SEO
- http://www.productontology.org
- http://purl.org/tio/ns (Tickets extension)
- http://purl.org/vso/ns (Extension for cars, boats, bikes – rental and sales)
Thank you!

Prof. Dr. Martin Hepp
Chair of General Management and E-Business
Universitaet der Bundeswehr Muenchen
Werner-Heisenberg-Weg 39
D-85579 Neubiberg, Germany
Phone: +49 89 6004-4217
Fax: +49 89 6004-4620

http://www.unibw.de/ebusiness/
http://purl.org/goodrelations/
mhepp@computer.org
Bonus track
Power Use-Case: Datasheets

Manufacturer Web Site: Datasheet
http://www.acme.com

High-quality picture
Product page with details
weight: 250 g
color: blue

EAN: 1234567890123
GTIN14: 12345678901234
MPN: ACME123
brand: ACME

Many Shop Sites (with incomplete product features)
http://www.shop-one.com
Shop 1: Offer page
price: $ 99.99
EAN: 1234567890123

http://www.shop-two.de
Shop 2: Offer page
price: $ 99.99
MPN: ACME123
brand: ACME

http://www.shop-three.co.uk
Shop 2: Offer page
price: $ 99.99
GTIN14: 12345678901234

Search Engine or Browser plug-in
Example: Offer

**Thing > Intangible > Offer**

An offer to sell an item—for example, an offer to sell a product, the DVD of a movie, or tickets to an event.

<table>
<thead>
<tr>
<th>Property</th>
<th>Expected Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>description</td>
<td>Text</td>
<td>A short description of the item.</td>
</tr>
<tr>
<td>image</td>
<td>URL</td>
<td>URL of an image of the item.</td>
</tr>
<tr>
<td>name</td>
<td>Text</td>
<td>The name of the item.</td>
</tr>
<tr>
<td>url</td>
<td>URL</td>
<td>URL of the item.</td>
</tr>
</tbody>
</table>

Properties from **Offer**

<table>
<thead>
<tr>
<th>Property</th>
<th>Expected Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>aggregateRating</td>
<td>AggregateRating</td>
<td>The overall rating, based on a collection of reviews or ratings, of the item.</td>
</tr>
<tr>
<td>availability</td>
<td>ItemAvailability</td>
<td>The availability of this item—for example in stock, Out of stock, Pre-order, etc.</td>
</tr>
<tr>
<td>itemCondition</td>
<td>OfferItemCondition</td>
<td>The condition of the item for sale—for example New, Refurbished, Used, etc.</td>
</tr>
<tr>
<td>itemOffered</td>
<td>Product</td>
<td>The item being sold.</td>
</tr>
<tr>
<td>price</td>
<td>Number or Text</td>
<td>The offer price of the product.</td>
</tr>
<tr>
<td>priceCurrency</td>
<td>Text</td>
<td>The currency (in 3-letter ISO 4217 format) of the offer price.</td>
</tr>
<tr>
<td>priceValidUntil</td>
<td>Date</td>
<td>The date after which the price is no longer available.</td>
</tr>
<tr>
<td>reviews</td>
<td>Review</td>
<td>Review of the item.</td>
</tr>
<tr>
<td>seller</td>
<td>Organization</td>
<td>The seller of the product.</td>
</tr>
</tbody>
</table>

More specific types

- AggregateOffer
Example: GoodRelations Offer

An offering represents the public, not necessarily binding, not necessarily exclusive, announcement by a gr:BusinessEntity to provide (or seek) a certain gr:BusinessFunction for a certain gr:ProductOrService to a specified target audience. An offering is specified by the type of product or service or bundle it refers to, what business function is being offered (sales, rental, ...), and a set of commercial properties. It can either refer to
(1) a clearly specified instance (gr:Individual),
(2) a set of anonymous instances of a given type (gr:SomeItems),
(3) a product model specification (gr:ProductOrServiceModel),
see also section 3.3.3 of the GoodRelations Technical Report). An offering may be constrained in terms of the eligible type of business partner, countries, quantities, and other commercial properties. The definition of the commercial properties, the type of product offered, and the business function are explained in other parts of this ontology in more detail.

Example: Peter Miller offers to repair TV sets made by Siemens, Volkswagen Innsbruck sells a particular instance of a Volkswagen Golf at $10,000.

Discussions and Links
Click here for additional resources