

# Advertising with Linked Data in Web Content

From Semantic SEO to E-Commerce on the Web 3.0

Prof. Dr. Martin Hepp  
mhepp@computer.org

## About me



# GoodRelations

The Web Vocabulary for E-Commerce

<http://purl.org/goodrelations/>



# You all use Web Search Engines...

Web Images Videos Maps News Shopping Gmail more ▾

Google

goodrelation

Search

Instant is on ▾

About 2,500,000 results (0.17 seconds)

Advanced search

Everything

Images

Videos

News

Shopping

More

Show search tools

## Starred results for goodrelation

★ [GoodRelations: An ontology for linking product descriptions and ...](http://www.heppnetz.de/projects/goodrelations/) - [www.heppnetz.de/projects/goodrelations/](http://www.heppnetz.de/projects/goodrelations/)

★ [Semantic SEO for Google with GoodRelations and RDFa | Hepp ...](http://www.heppresearch.com/gr4google) - [www.heppresearch.com/gr4google](http://www.heppresearch.com/gr4google)

## [GoodRelations: The Web Ontology for E-Commerce](#) ☆ 🔍

**GoodRelations** is a standardized language for product, price, and company data that can (1) be embedded into existing static and dynamic Web pages and that ...

[www.heppnetz.de/projects/goodrelations/](http://www.heppnetz.de/projects/goodrelations/) - [Cached](#) - [Similar](#)

## [Good Relations](#) 🔍

Group of specialist consultants operating in Public Relations.

[www.goodrelations.co.uk/](http://www.goodrelations.co.uk/) - [Cached](#) - [Similar](#)

## [Good Relations India](#) 🔍

CSR Activities. 'We have a strong commitment to CSR & undertake various charitable projects'. 'Good Relations (India) is a member of PRCAI'. Home Page ...

[www.goodrelations.co.in/](http://www.goodrelations.co.in/) - [Cached](#) - [Similar](#)

## [Good Relation Consultants - Job Placements | Consultancy ...](#) 🔍

**Good Relation** Consultants - Job Placements | Consultancy | Placement Staffing, Contract Staffing | Hiring Partner | One of Top Recruitment Company in India ...

[grconsultants.net/](http://grconsultants.net/) - [Cached](#)

## [how to make good relationship with family](#) 🔍

You need to have **good relations** with your mom-dad,wife ,childerns,relatives and with your friends. Relations are necessary to live life happily. ...

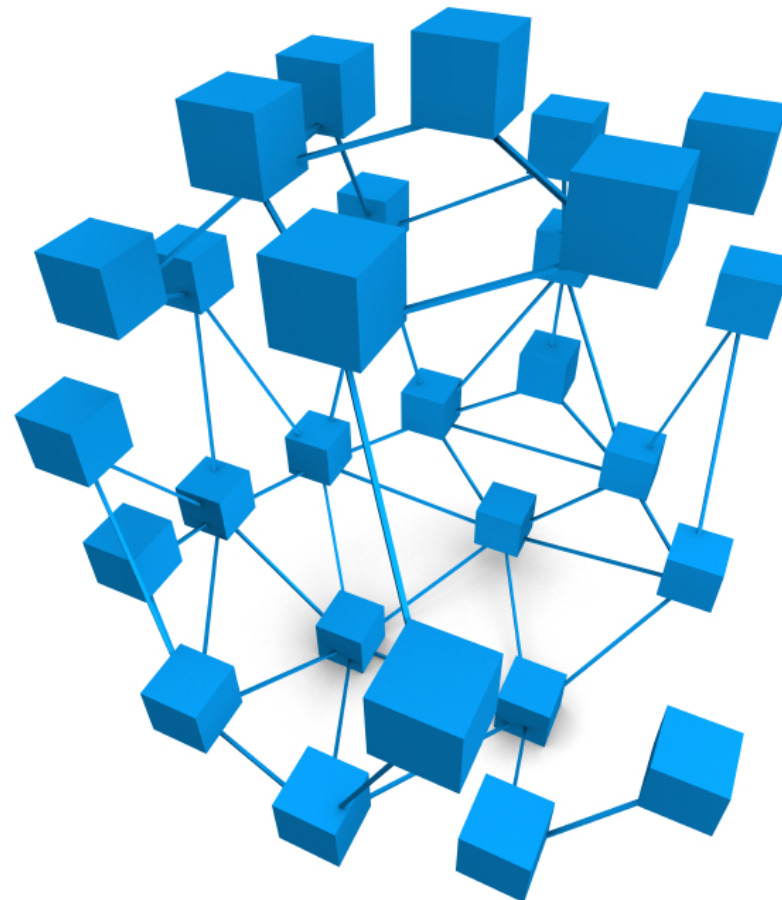
[hubpages.com/hub/how-to-make-good-relations](http://hubpages.com/hub/how-to-make-good-relations) - [Cached](#) - [Similar](#)

# They are our magic goggles...

(picture of me with funny goggles)



... into the Giant Graph of Information,



...which is

# The World Wide Web

# What's SEO?

## SEO for Researchers

- For a given Web site  $S$  with the set of individual HTML pages  $H$ , increase the arithmetic mean

$$\bar{x} = \frac{1}{n} \cdot \sum_{i=1}^n x_i$$

- of the position  $x$  in the organic search result pages  $R$  of all Web users that are searching for topics that match your profile.

# SEO for People

- Pimp up my Web site for Google

# What's SEO, Really?

# 1. Being visible for potential buyers

camcorder

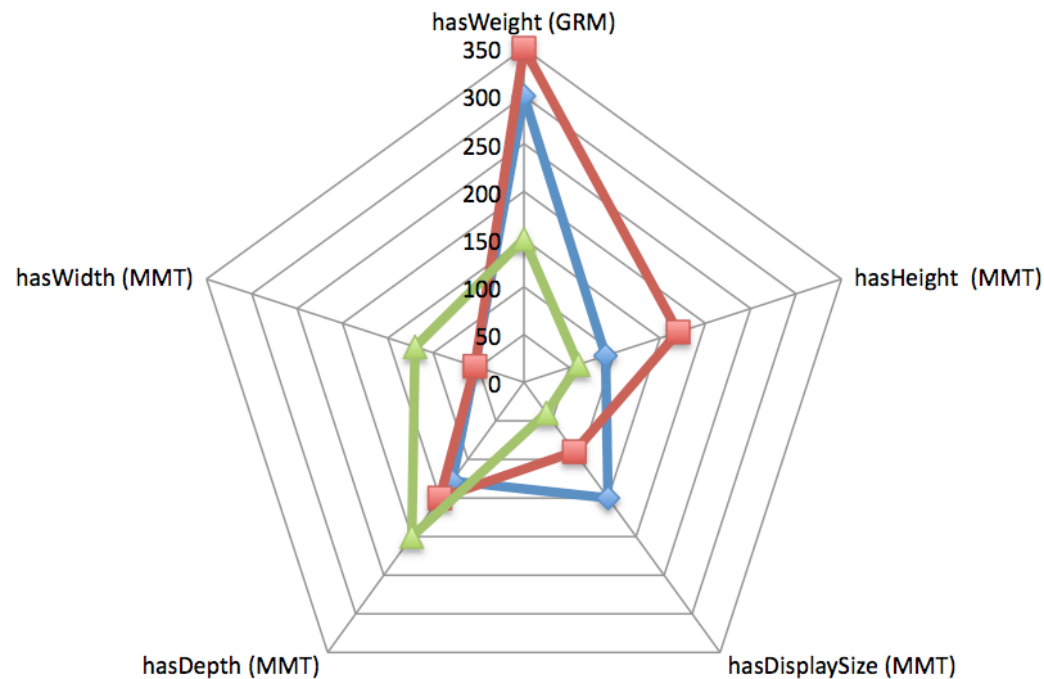
About 38,300,000 results (0.27 seconds)

The screenshot shows a Google search for 'camcorder'. The search bar contains 'camcorder' and the search button is visible. Below the search bar, it says 'About 38,400,000 results (0.21 seconds)'. There are several search results listed, including a sponsored link for 'Camcorder - Niedrigpreise' from NexTag.de, and a Wikipedia entry for 'Camcorder'. Below the search results, there is a section for 'Shopping results for camcorder' which displays five product listings with images, prices, and store counts.

Product	Price	Stores
Sony Handycam DCR DVD650	\$269 new	113 stores
Canon VIXIA HF R100 Camcorder	\$350 new	56 stores
JVC Everio GZ-HM200BUS Camcorder	\$270 new	64 stores
Flip Video UltraHD Camcorder	\$155 new	67 stores
Panasonic SDR-S26K Camcorder	\$179 new	21 stores



## 2. Articulating the **value proposition**



**But:** Often flattened to just the price tag...

### 3. For a large number of items

Example	Number of Products
BestBuy	> 400 k
Amazon	> 4 Mio.
Typical small shops	1 ... 10 k items

# Specificity

## Key Driver of Search Costs

# Specificity

„How much you lose when you can't use a good for what it was designed.“

# Growth in Specificity

## MERCK'S WARENLEXIKON

für Handel, Industrie und Gewerbe

Beschreibung der im Handel vorkommenden Natur- und Kunst-  
erzeugnisse unter besonderer Berücksichtigung der chemisch-  
technischen und anderer Fabrikate, der Drogen- und Farbwaren, der  
Kolonialwaren, der Landesprodukte, der Material- und Mineralwaren

herausgegeben von

Prof. Dr. A. Beythien, und Ernst Dreßler,  
Direktor des chemischen Untersuchungsamtes der Stadt Dresden Drogist und gerichtlicher Sachverständiger  
für das Landgericht u. Amtsgericht Dresden

unter Mitwirkung von

Max Arnold, Verbandstoff-Fabrik-Chemnitz, Privatdozent Dr. Paul Bohrisch-Dresden,  
Heinrich Ernemann A.-G.-Dresden. Dr. Hans Hempel, Stellvertreter des Direktors am

# 1920: 5168 Types of Goods



# Examples



# Examples





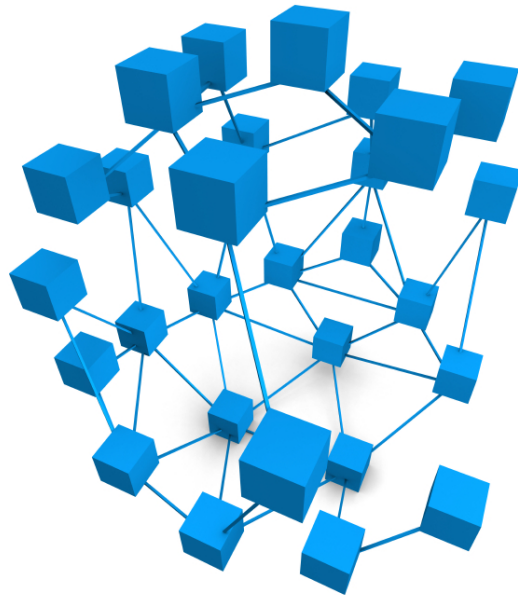
# Examples



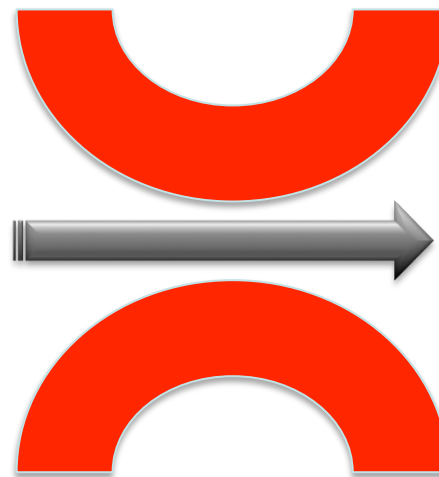
# What's the Problem?

# Loss of Variety and Detail

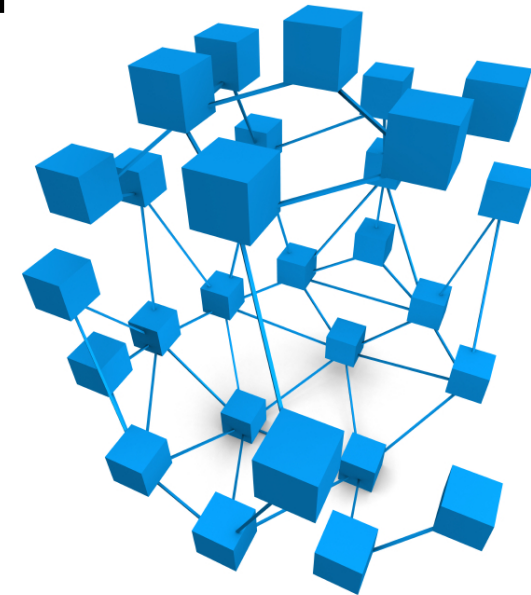
Many Different  
Products



Web Search



Variety in  
Preferences



Manufacturers & Retailers

Consumers

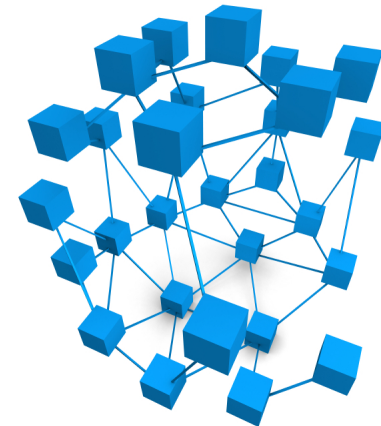
# What happens?



# Overly Fierce Price Competition

4022 product(s) found for "MP3 players & recorders"

[\[AC Ryan\]](#) [\[ATMT\]](#) [\[Acer\]](#) [\[Actebis\]](#) [\[Aigo\]](#) [More >>](#)



**Only 1 – 2 Product Models** Considered  
Comparison Shopping on the Small Subset

**Businesses** work hard to articulate  
their value proposition...

...but ***fail to keep their message  
intact over the wire!***

# The WWW: A Giant Data Shredder



Source:  
**Structured Data**

Recipient:  
**Unstructured Text**



# What's *Semantic* SEO?

# Semantic SEO

Using product master **data** to articulate  
your **value proposition** over the Web

## Principle: Small Data Packets Inside Your Page



```
@prefix foo: <http://www.example.com/xyz#> .-
@prefix gr: <http://purl.org/goodrelations/v1#> .-
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .-
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .-
-
foo:myCompany -
  a gr:BusinessEntity ;-
  gr:hasLegalName "Hepp Industries Ltd."^^xsd:string ;-
  gr:hasDUNS "012345678"^^xsd:string ;-
  gr:hasPOS foo:myShop ;-
  rdfs:seeAlso <http://www.heppnetz.de>.-
# you can attach address details etc. using vcard here-
-
foo:myShop -
  a gr:LocationOfSalesOrServiceProvisioning ;-
  rdfs:seeAlso <http://www.heppnetz.de/shop> ;-
  gr:hasOpeningHourSpecification foo:Workdays.-
# you can attach address details etc. using vcard here-
-
foo:Workdays -
  a gr:OpeningHoursSpecification ;-
  gr:opens "08:00:00"^^xsd:time ;-
  gr:closes "18:00:00"^^xsd:time ;-
  gr:hasOpeningHoursDayOfWeek -
    gr:Monday,-
    gr:Tuesday,-
    gr:Wednesday,-
    gr:Thursday,-
    gr:Friday .-
```

# What is GoodRelations?



## GoodRelations

The Web Vocabulary for E-Commerce

<http://purl.org/goodrelations/>

# What is GoodRelations, Take 1:



The piece of the cake that Google chose.

# What is GoodRelations, Take 2:

BestBuy

Overstock.com

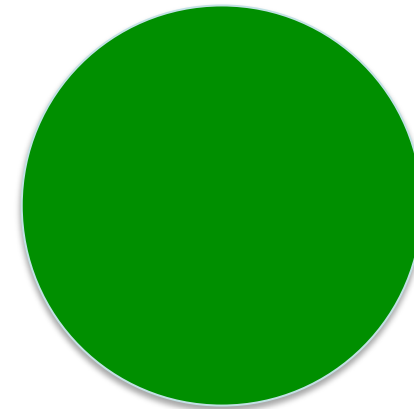
O'Reilly Media

The first **Web** ontology used by several  
Fortune 500 companies **on their Web  
sites**



# 1. A clear business value

- Preserving your value proposition over the WWW





# Semantic SEO: Immediate Effects

- Google Rich Snippets

## [Hepp Research Personal SCSI Controller Card](#)

★★★★★ 99 reviews - \$99.99 - in stock

The Hepp Research Personal SCSI is a 16-bit add-on card that allows attaching up to seven SCSI devices to your computer. Designed in 1991 by Martin Hepp, the maker of the GoodRelations vocabulary for e-commerce.

[www.heppresearch.com/commercecollator](http://www.heppresearch.com/commercecollator) - [Cached](#) - [Similar](#)



- Improved Yahoo Rendering

## [Heppnetz.de SearchMonkey Data - Product](#)

★★★★★ (45 Reviews) - \$34.99 as of Jan 8, 2010

**Product Name:** Personal SCSI 16-bit SCSI Controller. **Description:**

This low-cost, high ... Hepp Computertechnik. **Product Specifications.** **FAQ.** **Product Manual ...**

[www.heppnetz.de/searchmonkey/product.html](http://www.heppnetz.de/searchmonkey/product.html) - [Cached](#)



- Ranking / Information Entropy

# Semantic SEO: Near-term Effects

- Linking Datasheets & Offers
- Linking Offers & Location Info
- Semantic Affiliate Marketing



Searches delivered by RSS 2.0 or Atom Feeds

Basic Search	Basic Search - Product or Service	
Product or Service		
Shop or Store		
Advanced Search		
Product or Service		
Shop or Store		

SPARQL endpoint URI

Endpoint option  Default graph URI *restrict results to this graph*

Enter keywords

This service is provided by the E-Business and Web Science Research Group at Universität der Bundeswehr München as it is with no explicit or implicit guarantees.

## 2. A healthy ecosystem



<http://www.ebusiness-unibw.org/wiki/GoodRelations>

## 3. Six Sigma Engineering





# GoodRelations Scope

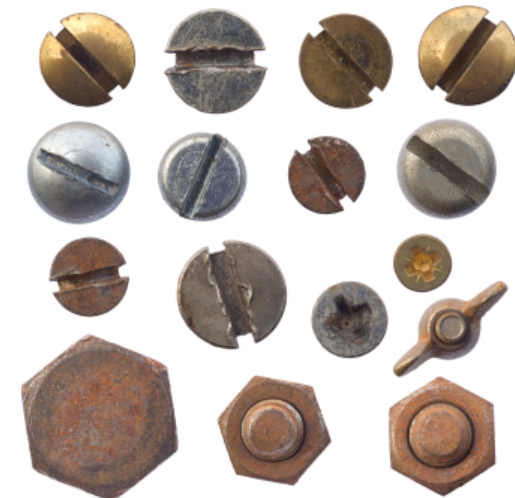
Stores



Prices



Features





# How can I use Semantic SEO?

# 1. Mark-up your “about” page

```
<!-- in RDFa 1.1, you can use the abbreviation: <div profile="http://www.heppnetz.de/grprofile/" -->
<div xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns="http://www.w3.org/1999/xhtml" xmlns:foaf="http://xmlns.com/foaf/0.1/" xmlns:gr="http://purl.org/goodrelations/v1#"
  xmlns:vcard="http://www.w3.org/2006/vcard/ns#" xmlns:xsd="http://www.w3.org/2001/XMLSchema#">

  <div about="#company" typeof="gr:BusinessEntity">
    <div property="gr:legalName" content="Hepp's Bagel Bakery Ltd. "></div>
    <div rel="vcard:adr">
      <div typeof="vcard:Address">
        <div property="vcard:country-name" content="Germany"></div>
        <div property="vcard:locality" content="Munich"></div>
        <div property="vcard:postal-code" content="85577"></div>
        <div property="vcard:street-address" content="1234 Main Street"></div>
      </div>
    </div>
    <div property="vcard:tel" content="+1 408 970-6104"></div>
    <div rel="foaf:depiction" resource="http://www.hepps-bagels.com/image_or_logo.png"></div>
    <div rel="foaf:page" resource=""></div>
  </div>
</div>
```

<http://www.myshop.com/>

## 2. Mark-up your “item” page template

```
<!-- in RDFa 1.1, you can use the abbreviation: <div profile="http://www.heppnetz.de/grprofile/" -->
<div xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns="http://www.w3.org/1999/xhtml" xmlns:foaf="http://xmlns.com/foaf/0.1/" xmlns:gr="http://purl.org/goodrelations/v1#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#">

  <div about="#offering" typeof="gr:Offering">
    <div property="rdfs:label" content="Canon Rebel T2i (EOS 550D) $899" xml:lang="en"></div>
    <div property="rdfs:comment" content="The Rebel T2i EOS 550D is Cannon's top-of-the-line consumer digital SLR camera.
It can shoot up to 18 megapixel resolution photos and features an ISO range of 100-6400. Now just $ 899 $" xml:lang="en"></div>
    <div rel="foaf:depiction" resource="http://a.img-dpreview.com/previews/CanonEOS550D/images/intro.jpg"></div>
    <div rel="gr:hasBusinessFunction" resource="http://purl.org/goodrelations/v1#Sell"></div>
    <div property="gr:hasEAN_UCC-13" content="013803123784" datatype="xsd:string"></div>
    <div rel="gr:hasPriceSpecification">
      <div typeof="gr:UnitPriceSpecification">
        <div property="gr:hasCurrency" content="USD" datatype="xsd:string"></div>
        <div property="gr:hasCurrencyValue" content="899" datatype="xsd:float"></div>
      </div>
    </div>
    <div rel="gr:acceptedPaymentMethods" resource="http://purl.org/goodrelations/v1#PayPal"></div>
    <div rel="gr:acceptedPaymentMethods" resource="http://purl.org/goodrelations/v1#MasterCard"></div>
    <div rel="foaf:page" resource="http://myshop.com/canon-rebel-t2i/"></div>
  </div>
</div>
```

<http://www.myshop.com/products/product123>

## 3. Mark-up your “stores” page template

```
<!-- in RDFa 1.1, you can use the abbreviation: <div profile="http://www.heppnetz.de/grprofile/" -->
<div xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns="http://www.w3.org/1999/xhtml" xmlns:foaf="http://xmlns.com/foaf/0.1/" xmlns:gr="http://purl.org/goodrelations/v1#"
xmlns:vcard="http://www.w3.org/2006/vcard/ns#" xmlns:xsd="http://www.w3.org/2001/XMLSchema#">

  <div about="#store" typeof="gr:LocationOfSalesOrServiceProvisioning">
    <div property="rdfs:label" content="Pizzeria La Mamma"></div>
    <div rel="vcard:adr">
      <div typeof="vcard:Address">
        <div property="vcard:country-name" content="Germany"></div>
        <div property="vcard:locality" content="Munich"></div>
        <div property="vcard:postal-code" content="85577"></div>
        <div property="vcard:street-address" content="1234 Main Street"></div>
      </div>
    </div>
    <div property="vcard:tel" content="+33 408 970-6104"></div>
    <div rel="foaf:depiction" resource="http://www.pizza-la-mamma.com/image_or_logo.png"></div>
    <div rel="vcard:geo">
      <div>
        <div property="vcard:latitude" content="48.08" datatype="xsd:float"></div>
        <div property="vcard:longitude" content="11.64" datatype="xsd:float"></div>
      </div>
    </div>
    <div rel="gr:hasOpeningHoursSpecification">
      <div about="#mon_fri" typeof="gr:OpeningHoursSpecification">
        <div property="gr:opens" content="08:00:00" datatype="xsd:time"></div>
        <div property="gr:closes" content="18:00:00" datatype="xsd:time"></div>
        <div rel="gr:hasOpeningHoursDayOfWeek" resource="http://purl.org/goodrelations/v1#Friday"></div>
        <div rel="gr:hasOpeningHoursDayOfWeek" resource="http://purl.org/goodrelations/v1#Thursday"></div>
        <div rel="gr:hasOpeningHoursDayOfWeek" resource="http://purl.org/goodrelations/v1#Wednesday"></div>
        <div rel="gr:hasOpeningHoursDayOfWeek" resource="http://purl.org/goodrelations/v1#Tuesday"></div>
        <div rel="gr:hasOpeningHoursDayOfWeek" resource="http://purl.org/goodrelations/v1#Monday"></div>
      </div>
    </div>
    <div rel="gr:hasOpeningHoursSpecification">
      <div about="#sat" typeof="gr:OpeningHoursSpecification">
        <div property="gr:opens" content="08:30:00" datatype="xsd:time"></div>
        <div property="gr:closes" content="14:00:00" datatype="xsd:time"></div>
        <div rel="gr:hasOpeningHoursDayOfWeek" resource="http://purl.org/goodrelations/v1#Saturday"></div>
      </div>
    </div>
    <div rel="foaf:page" resource=""></div>
  </div>
</div>
```

<http://www.myshop.com/stores/>

## 4. Link the pages semantically



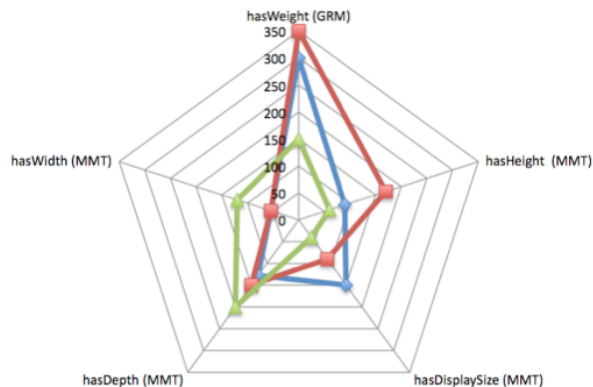


## 5. Help search engines crawl your data

- `robots.txt` with pointer to sitemap URI
- `sitemap.xml` with proper `lastmod` attribute

# Impact: High-Precision Value Articulation and AND Feeding Search Engines

**Effect 1:** Your detailed value proposition  
remains intact and accessible  
for fair and deep comparison shopping.



**Effect 2:** Google and Yahoo will show  
your page with improved rendering  
(much higher CTR!)

[Hepp Research Personal SCSI Controller Card](#)

★★★★★ 99 reviews - \$99.99 - in stock

The Hepp Research Personal SCSI is a 16-bit add-on card that allows attaching up to seven SCSI devices to your computer. Designed in 1991 by Martin Hepp, the maker of the GoodRelations vocabulary for e-commerce.

[www.heppresearch.com/commercecollator](http://www.heppresearch.com/commercecollator) - [Cached](#) - [Similar](#)



## Page Size and Loading Time: **No Problem**

Regular  
Pages

	Main Page (KB)		Product Item Page (KB)	
	HTML	Total	HTML	Total
BestBuy	102	815	236	1536
Amazon	187	736	286	712
eBay	54	445	75	849
<b>Mean</b>	<b>114</b>	<b>665</b>	<b>199</b>	<b>1032</b>

Increase  
by GoodRelations  
in RDFa

	Main Page		Product Item Page	
	HTML	Total	HTML	Total
Minimal	1,40%	0,24%	1,31%	0,25%
Full	2,19%	<b>0,38%</b>	3,22%	<b>0,62%</b>
With Features	n/a	n/a	6,03%	1,16%

# 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](#).

<http://www.productontology.org/>



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

[pto:Hammer](#)

(rdf:type owl:Class)

URI <http://www.productontology.org/id/Hammer>

**rdfs:subClassOf** [gr:ProductOrService](#)

**rdfs:label** Hammer (as a class of products of services)

**Translation(s):** [Hamor@ang](#); [مطرقة@ar](#); [Kujātis@bat-smg](#); [Monam@be](#); [Чук@bg](#); [Morzhol@br](#); [Čekić \(alat\)@bs](#); [Martell \(eina\)@ca](#); [Kladivo@cs](#);

[Hammer@da](#); [Hammer@de](#); [Σφύρι@el](#); [Martelo@eo](#); [Martillo@es](#); [Vasar@et](#); [Mailu@eu](#); [چکش@fa](#); [Vasara@fi](#); [Marteau \(outil\)@fr](#); [Höömerk@fr](#); [Casúr@ga](#); [Martelo@gl](#);

[ሠላጥ@he](#); [हथौड़ा@hi](#); [Čekić@hr](#); [Mato@ht](#); [Palu \(alat\)@id](#); [Martelo@io](#); [Hamar@is](#); [Martello \(tecnologia\)@it](#); [槌@ja](#); [Gandèn@jv](#); [망치@ko](#); [Malleus \(instrumentum\)@la](#);

[Hummer \(Handwierksgeschir\)@lb](#); [Plaktukas@lt](#); [Āmurs@lv](#); [Алх@mn](#); [हलौडा@mr](#); [Tukul@ms](#); [Hamer \(gereedschap\)@nl](#); [Hammar@nn](#); [Hammer \(redskap\)@no](#);

[Martiliu@pam](#); [Mrotek@pl](#); [موتک@ps](#); [Martelo@pt](#); [Takana@qu](#); [Ciocan@ro](#); [Молоток@ru](#); [Marteddu@scn](#); [Kladivo \(nástroj\)@sk](#); [Burris@so](#); [Чекун@sr](#); [Hammare](#)

[\(handverktug\)@sv](#); [සුத்தියව්@ta](#); [槌@te](#); [Молоток@th](#); [Binalalak@tl](#); [Çekiç@tr](#); [Молоток@uk](#); [Búa@vi](#); [Martilyo@war](#); [מַח@zh](#);

### rdfs:comment

A hammer is a tool meant to deliver an impact to an object. The most common uses are for driving nails, fitting parts, forging metal and breaking up objects. Hammers are often designed for a specific purpose, and vary widely in their shape and structure. The usual features are a handle and a head, with most of the weight in the head. The basic design is hand-operated, but there are also many mechanically operated models for heavier uses, such as steam hammers. The hammer may be the oldest tool for which definite evidence exists. Stone hammers are known which are dated to 2,600,000 BCE. The hammer is a basic tool of many professions. By analogy, the name hammer has also been 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.  
der Bundeswehr



# 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/> Share on

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

### [pto:Bollard](#)

URI <http://www.productontology.org/id/Bollard>

**rdfs:subClassOf** [gr:ProductOrService](#)

**rdfs:label** Bollard (as a class of products of services)

**Translation(s):** [Poller@de](#); [Bolardo@eo](#); [Bolardo@es](#); [Bollard@fr](#); [Bitva@hr](#); [Bitta@it](#); [ボラード@ja](#); [블라드@ko](#); [Bolder@nl](#); [Puller@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.*



Image credit: This work has been released into the public domain by its author, KVDP at the wikipedia project.  
[http://en.wikipedia.org/wiki/File:Retractable\\_Bollard.JPG](http://en.wikipedia.org/wiki/File:Retractable_Bollard.JPG)



# 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/>

Share on    

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

[pto:Fire\\_extinguisher](#)

(rdf:type owl:Class)

URI [http://www.productontology.org/id/Fire\\_extinguisher](http://www.productontology.org/id/Fire_extinguisher)

rdfs:subClassOf [gr:ProductOrService](#)

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

Translation(s): [مطفأة حريق@ar](#); [□□□□□□□□□□□□□□□□@bn](#); [Extintor@ca](#); [Hasičí přístroj@cs](#); [Ildslukker@da](#); [Feuerlöscher@de](#); [Fajroestingilo@eo](#);

[Extintor@es](#); [Palosammutin@fi](#); [Extincteur@fr](#); [අවුරුදු@he](#); [अग्निशमन यंत्र@hi](#); [Tűzoltóberendezés@hu](#); [Pemadam api@id](#); [Estintore@it](#); [消火器@ja](#); [소화기@ko](#);

[Feierlöscher@lb](#); [Gesintuvas@lt](#); [Brandblusser@nl](#); [Brannslökningsapparat@no](#); [Gašnica@pl](#); [Extintor@pt](#); [Thasnuna@qu](#); [Огнетушитель@ru](#); [Hasiaci prístroj@sk](#);

[Brandsläckare@sv](#); [Kizima moto@sw](#); [தீயணைப்பூச்சி@ta](#); [Вогнегасник@uk](#); [滅火器@zh](#); [滅火筒@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



Image credit: Photo taken by icsan, available under CC BY 2.0 from <http://www.flickr.com/photos/icsan/3025912014>

# Bramborák

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

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/>

Share on    

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

[pto:Potato\\_pancake](#)

(rdf:type owl:Class)

URI [http://www.productontology.org/id/Potato\\_pancake](http://www.productontology.org/id/Potato_pancake)

rdfs:subClassOf [gr:ProductOrService](#)

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

Translation(s): [Raiwadadschi@bar](#); [Дранікі@be](#); [Bramborák@cs](#); [Kartoffelpuffer@de](#); [Kartoffelpuffer@es](#); [Galette de pommes de terre@fr](#); [לביבית@he](#); [Tortel di patate@it](#); [ポテトパンケーキ@ja](#); [Rievkoche@ksh](#); [Gromperekichelchen@lb](#); [Aardappelpannenkoekje@nl](#); [Røstipotet@no](#); [Placki ziemniaczane@pl](#); [Reibekuchen@pt](#); [Драніки@ru](#); [Raggmunk@sv](#); [Деруни@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 ungarished. 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](http://en.wikipedia.org/wiki/Potato_pancake))



Image credit: Photo by Oleh Petriv/Ludek, available under CC BY 2.5  
<http://cs.wikipedia.org/wiki/Soubor:Bramboracky.jpg>

## [www.productontology.org](http://www.productontology.org)

- 300 – 600k precise OWL DL class definitions
- Compatible with GoodRelations and Facebook Open Graph Protocol
- Tightly coupled with the evolution of Wikipedia
- Up to 100 translations

Hashtag: **#goodrelations**  
User ID: **@mfhepp**

# Thank you!

Prof. Dr. Martin Hepp  
Chair of General Management and E-Business  
Universität der Bundeswehr München  
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](mailto:mhepp@computer.org)