

Aligning GoodRelations & Schema.org

PUBLIC DRAFT

Author: Martin Hepp, mfhepp@computer.org

Skype [mfhepp](#)

Note: This may not contain all subsequent editorial changes.

The Mercurial repository at <https://bitbucket.org/mfhepp/goodrelations-schema-integration> is the authoritative resource.

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Overview

This document describes a proposal on how to extend schema.org by GoodRelations elements. It discusses only issues relevant for the schema.org sponsors as a whole. **Issues about the specific support of GoodRelations by a single search engine are not included in this document but instead subject to separate, bilateral discussions.**

1 Goal

- **Maximize the amount and granularity of structured e-commerce data** on the Web.
- **Minimize Webmaster confusion** about the choice between GoodRelations and Microdata.
- **Preserve the expressive power** of GoodRelations without raising the entrance barriers for adopters.
- Preserve backward-compatibility as much as possible, i.e. **avoid major renaming of widely used, existing GoodRelations elements**. In principle, however, it is possible to have a limited amount of naming differences between the schema.org version and the original version of the same GoodRelations element, so that we can maintain consistent naming conventions in both schema.org and GoodRelations.
- Avoid future divergence, as much as possible.

2 Prerequisites for adding GoodRelations to schema.org

In this section, we describe basic modifications and extensions to the schema.org specification that are needed to add GoodRelations properties. Note that due to the substantial degree of dependencies, the best approach is to implement all of them exactly as proposed, as long as there are no prohibitive compatibility issues.

Also note that implementing this will make it super-easy to build extensions for cars, tickets, real estate, jobs, etc.

2.1 Datatypes etc.

GoodRelations requires the following datatypes:

<http://www.w3.org/2001/XMLSchema#int>
<http://www.w3.org/2001/XMLSchema#float>
<http://www.w3.org/2001/XMLSchema#boolean>
<http://www.w3.org/2000/01/rdf-schema#Literal>
<http://www.w3.org/2001/XMLSchema#dateTime>
<http://www.w3.org/2001/XMLSchema#string>
<http://www.w3.org/2001/XMLSchema#time>

- int/float work nicely with Float/Integer or Number
- literal/string work with Text

Action 1: New datatypes

Tracked in WebSchemas issue tracker as <https://www.w3.org/2011/webschema/track/issues/15>

We need

- <http://schema.org/DateTime> for xsd:dateTime

A combination of date and time of day in the form [-]CCYY-MM-DDThh:mm:ss[Z](+|-)hh:mm] (see Chapter 5.4 of ISO 8601).

-> example here please :) <-

and

- <http://schema.org/Time> for xsd:time

A point in time recurring on multiple days in the form hh:mm:ss[Z](+|-)hh:mm] (see <http://www.w3.org/TR/xmlschema-2/#time>)

-> example here please :) <-

as subtypes of <http://schema.org/DataType>.

xsd:time is really important for structured opening hours and other GoodRelations features.

Example:

```
<div itemscope itemtype="http://schema.org/Place" itemid="#store">
  <span itemprop="name">Hepp's Happy Burger Restaurant</span>
  <div itemprop="openingHoursSpecification" itemscope
    itemtype="http://schema.org/OpeningHoursSpecification">
    Opening hours: Mo-Fri,
    <link itemprop="dayOfWeek"
      href="http://purl.org/goodrelations/v1#Monday" />
    <link itemprop="dayOfWeek"
      href="http://purl.org/goodrelations/v1#Tuesday" />
    <link itemprop="dayOfWeek"
      href="http://purl.org/goodrelations/v1#Wednesday" />
    <link itemprop="dayOfWeek"
      href="http://purl.org/goodrelations/v1#Thursday" />
    <link itemprop="dayOfWeek"
      href="http://purl.org/goodrelations/v1#Friday" />
    <meta itemprop="opens" content="08:00:00">8:00 a.m. -
    <meta itemprop="closes" content="20:00:00">8:00 p.m.
  </div>
</div>
```

ACTION: Add these two datatypes to schema.org. **DONE**

Action 2: Fix problem with <http://schema.org/Boolean>

RESOLVED! We agree 'true' 'false' are preferred values, and seem to be the dominant usage pattern.

ACTION Dan update schema.org to make this more obvious to readers.

Tracked in WebSchemas issue tracker as <https://www.w3.org/2011/webschema/track/issues/14>

You have to clarify the usage of <http://schema.org/Boolean>. The schema.org sponsors should clarify whether to use the RDF-compatible text (true/false) or the URIs <http://schema.org/True> and <http://schema.org/False>.

For now, one would assume that you use the two values as individuals, e.g.

```
<link itemprop="propertyname" href="http://schema.org/True" />
<link itemprop="propertyname" href="http://schema.org/False" />
```

which is incompatible with the RDFa patterns and also less concise.

I suggest

```
<meta itemprop="propertyname" content="true" >
```

<meta itemprop="propertyname" content="false" >

A simple text amendment for <http://schema.org/True>, <http://schema.org/False>, and <http://schema.org/Boolean> would do the trick.:

Note: The recommended use of this datatype is with a string "true" or "false" indicating the value of the respective property.

Example:

```
<div itemscope itemtype="http://schema.org/Book">
<span itemprop="name">The Catcher in the Rye</span>
  Family-friendly: <meta itemprop="isFamilyFriendly" content="true"> yes
</div>
```

ACTION: Add this note to <http://schema.org/Boolean>

Action 3: Fix problem with URL values for properties

Resolved: we externalise GR URLs, revisit after 6 months in light of impl experience.

[let's discuss before raising an issue -- Dan]

Note: If we use all enumerated values from GoodRelations as external enumerations from their original namespace (e.g. <http://purl.org/goodrelations/v1#UPS> instead of <http://schema.org/UPS>, then the proposal for external enumerations described at <http://www.w3.org/wiki/WebSchemas/ExternalEnumerations> should be sufficient and this issue could be closed. We would just need pointers in the description of the properties to the respective values, e.g. "Use with GoodRelations enumerations like <http://purl.org/goodrelations/v1#UPS>".

Such schema.org elements that are actually instances of a schema.org class, e.g.

<http://schema.org/InStock>

should be listed with matching properties and not as a subtype.

A possible solution is to change the last delimiter to indicate that this is a different form of an isA relationship, e.g. a colon:

So change the pattern from

Thing > Intangible > Enumeration > ItemAvailability > InStock

to

Thing > Intangible > Enumeration > ItemAvailability :: InStock

This is of general relevance, but since GoodRelations uses predefined individuals frequently, it should be fixed before GoodRelations elements are added to schema.org

Action: Change pattern for individuals in the HTML version of schema.org. Solved for the moment (not critical for GoodRelations integration)

2.2 Multiple Itemtypes

Action 4: New additionalType property for http://schema.org/Thing

Add a property "additionalType" with a range of URI to <http://schema.org/Thing> so that additional types for items can be signaled without breaking the frame-based model of schema.org and Microdata. The cardinality should be 0..*.

```
<div itemscope itemtype="http://schema.org/Product">
  <link itemprop="additionalType" href="http://www.productontology.org/id/Hammer" />
  <link itemprop="additionalType" href="http://www.productontology.org/id/Sledgehammer" />
  <!-- other schema.org properties go in here -->
</div>
```

For GoodRelations and www.productontology.org, this will mostly be needed for <http://schema.org/Product>, but I think a generic property attached to <http://schema.org/Thing> makes far more sense.

So add this property to <http://schema.org/Thing>

Property	Expected Type	Description
additionalType	URL	URL of an additional class from external vocabularies. This can be used for adding multiple types to a single element.

Action: Add additionalType property to <http://schema.org/Thing>. DONE - included in the 0.96 release

3 Additions to schema.org

3.1 Suggested new properties for existing classes

<http://schema.org/Offer>

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
acceptedPaymentMethod was: acceptedPaymentMethods	OK	PaymentMethod	The payment method(s) accepted by seller for this offer.	acceptedPaymentMethods
addOn	OK	Offer	An additional offer that can only be obtained in combination with the first base offer (e.g. supplements and extensions that are available for a surcharge).	
advanceBookingRequirement	OK	QuantitativeValue	The amount of time that is required between accepting the offer and the actual usage of the resource or service.	
availabilityEnds	OK	DateTime	The end of the availability of the product or service included in the offer.	
availabilityStarts	OK	DateTime	The beginning of the availability of the product or service included in the offer.	
availableAtOrFrom	OK	Place	The place(s) from which the offer can be obtained (e.g. store locations).	
availableDeliveryMethod was: availableDeliveryMethods	OK	DeliveryMethod	The delivery method(s) available for this offer.	availableDeliveryMethods
category	OK	Text	The name of a category. Greater signs or slashes can be used to informally indicate a category hierarchy.	
itemCondition	OK	Text or OfferItemCondition	A predefined value from OfferItemCondition or a textual description of the condition of the product or service, or the products or services included in the offer.	This is overlapping with itemCondition, but there is often a need for a textual description of the condition.
deliveryLeadTime	OK	QuantitativeValue	The typical delay between the receipt of the order and the goods leaving the warehouse.	
eligibleCustomerType was: eligibleCustomerTypes	OK	BusinessEntityType	The type(s) of customers for which the given offer is valid.	eligibleCustomerTypes
eligibleDuration	OK	QuantitativeValue	The duration for which the given offer is valid.	
eligibleRegion (was: eligibleRegions)	OK	Text or GeoShape	The ISO 3166-1 (ISO 3166-1 alpha-2) or ISO 3166-2 code, or the GeoShape of the geo-political region(s) for which the offer, or delivery charge specification is valid.	eligibleRegions ; add GeoShape
eligibleTransactionVolume	OK	QuantitativeValue	The transaction volume, in a monetary unit, for which the offer or price specification is valid, e.g. for indicating a minimal purchasing volume, to express free shipping above a certain order volume, or to limit the acceptance of credit cards to purchases above a certain amount.	
businessFunction	OK	BusinessFunction	The business function (e.g. sell, lease, repair, dispose) of the offer. The default is http://purl.org/goodrelations/v1#Sell .	gr:hasBusinessFunction
gtin13	OK	Text	The GTIN-13 code of the product, or the product to which the offer refers. This is equivalent to 13-digit ISBN codes and EAN UCC-13. Former 12-digit UPC codes can be converted into a GTIN-13 code by simply adding a preceding zero.	gr:hasEAN_UCC-13 (maybe: gtin13)
eligibleQuantity	OK	QuantitativeValue	The interval and unit of measurement of ordering quantities for which the offer or price specification is valid. This allows e.g. specifying that a certain freight charge is valid only for a certain quantity.	gr:hasEligibleQuantity
gtin14	OK	Text	The GTIN-14 code of the product, or the product to which the offer refers.	gr:hasGTIN-14 (maybe: gtin14)
gtin8	OK	Text	The GTIN-8 code of the product, or the product to which the offer refers. This code is also known as EAN/UCC-8 or 8-digit EAN.	gr:hasGTIN-8 (maybe: gtin8)
inventoryLevel	OK	QuantitativeValue	The current approximate inventory level for the item or items.	gr:hasInventoryLevel Slight overlap with http://schema.org/ItemAvailability but the GoodRelations approach is more precise and untangles delivery channels and stock levels
mpn	OK	Text	The Manufacturer Part Number (MPN) of the product, or the product to which the offer refers.	gr:hasMPN

priceSpecification	OK	PriceSpecification (UnitPriceSpecification, DeliveryChargeSpecification, or PaymentChargeSpecification)	One or more detailed price specifications, indicating the unit price and delivery or payment charges.	gr:hasPriceSpecification Note: This is a much more powerful way of indicating pricing than the standard price property for http://schema.org/Offer . This will likely be very handy for dealing with national requirements, e.g. for indicating shipping charges etc.
sku	OK	Text	The Stock Keeping Unit (SKU), i.e. a merchant-specific identifier for a product or service.	gr:hasStockKeepingUnit
warranty	OK	WarrantyPromise	The warranty promise(s) included in the offer.	gr:hasWarrantyPromise
includes	IGNORE	itemOffered		There is a naming clash between schema.org and GoodRelations regarding this element.
includesObject	OK	TypeAndQuantityNode	This links to a node or nodes indicating the exact quantity of the products included in the offer.	
serialNumber	OK	Text	The serial number or any alphanumeric identifier of a particular product. When attached to an offer, it is a shortcut for the serial number of the product included in the offer.	
validFrom	OK	DateTime	The beginning of the validity of offer, price specification, or opening hours data.	
validThrough	OK	DateTime	The end of the validity of offer, price specification, or opening hours data.	

Action: Add additional properties to <http://schema.org/Offer>

<http://schema.org/Product>

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
category	OK	Text	The name of a category. Greater signs or slashes can be used to informally indicate a category hierarchy.	
color	OK	Text	The color of the product.	
itemCondition	OK	Text or OfferItemCondition	A predefined value from OfferItemCondition or a textual description of the condition of the product or service, or the products or services included in the offer.	GR has gr:condition which only accepts text; to be aligned on the GR side
depth	OK	QuantitativeValue	The depth of the product.	
brand	OK	Brand	The brand(s) associated with a product or service, or the brand(s) maintained by an organization or business person..	The expected type should be changed from http://schema.org/Organization or http://schema.org/Brand , because organizations and their brands are distinct entities - often, the Webmaster will not know the legal entity behind a certain brand. The GoodRelations property is named gr:hasBrand.
gtin13	OK	Text	The GTIN-13 code of the product, or the product to which the offer refers. This is equivalent to 13-digit ISBN codes and EAN UCC-13. Former 12-digit UPC codes can be converted into a GTIN-13 code by simply adding a preceeding zero.	gr:hasEAN_UCC-13 (maybe: gtin13)
gtin14	OK	Text	The GTIN-14 code of the product, or the product to which the offer refers.	gr:hasGTIN-14 (maybe: gtin14)
gtin8	OK	Text	The GTIN-8 code of the product, or the product to which the offer refers. This code is also known as EAN/UCC-8 or 8-digit EAN.	gr:hasGTIN-8 (maybe: gtin8)
mpn	OK	Text	The Manufacturer Part Number (MPN) of the product, or the product to which the offer refers.	gr:hasMPN
sku	OK	Text	The Stock Keeping Unit (SKU), i.e. a merchant-specific identifier for a product or service.	gr:hasStockKeepingUnit
height	OK	QuantitativeValue	The height of the product.	
isAccessoryOrSparePartFor	OK	Product	A pointer to another product (or multiple products) for which this product is an accessory or spare part.	
isConsumableFor	OK	Product	A pointer to another product (or multiple products) for which this product is a consumable.	
isSimilarTo	OK	Product	A pointer to another, functionally similar product (or multiple products).	
isRelatedTo	OK	Product	A pointer to another, somehow related product (or multiple products).	New property for GoodRelations
weight	OK	QuantitativeValue	The weight of the product.	
width	OK	QuantitativeValue	The width of the product.	
feature	OK	ProductFeature	A structured value indicating a product feature	New property for GoodRelations
Additional properties from specializations of GoodRelations can be used with their full URL, e.g. http://purl.org/vso/ns#engineDisplacement	OK	see respective external property	see respective external property	This is particularly relevant for automotive scenarios.

http://purl.org/vvo/ns#torque				
qualitativeProductOrServiceProperty	IGNORE			This is a super-property relevant only for defining vocabularies. It can be omitted from a documentation geared towards site owners.
datatypeProductOrServiceProperty	IGNORE			This is a super-property relevant only for defining vocabularies. It can be omitted from a documentation geared towards site owners.
quantitativeProductOrServiceProperty	IGNORE			This is a super-property relevant only for defining vocabularies. It can be omitted from a documentation geared towards site owners.
releaseDate	OK	Date	The release date of a product or product model. This can be used to distinguish the exact variant of a product.	

Also, the range for the **model** property of <http://schema.org/Product> must be changed to allow either **text** or <http://schema.org/ProductModel>.

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
model	OK	ProductModel or Text	The product model of the product	hasMakeAndModel Note: GR does not support Text

Add the following **three specializations** of <http://schema.org/Product>:

<http://schema.org/IndividualProduct>

A single, identifiable product instance (e.g. a laptop with a particular serial number).

Position in the schema.org hierarchy: Thing > Product > IndividualProduct

<http://schema.org/ProductModel>

A datasheet or vendor specification of a product (in the sense of a prototypical description)

Position in the schema.org hierarchy: Thing > Product > ProductModel

<http://schema.org/SomeProducts>

A placeholder for multiple similar products of the same kind.

Position in the schema.org hierarchy: Thing > Product > SomeProducts

Action: Add additional properties to <http://schema.org/Product>

Action: Change range of brand to <http://schema.org/Brand>

Action: Tolerate additional properties from specializations of GoodRelations when using full URIs, e.g.

- <http://purl.org/vvo/ns#engineDisplacement>
- <http://purl.org/vvo/ns#torque>

Action: Add three subclasses <http://schema.org/IndividualProduct>, <http://schema.org/ProductModel>, and <http://schema.org/SomeProducts> to <http://schema.org/Product>

<http://schema.org/Place>

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
category	OK	Text	The name of a category. Greater signs or slashes can be used to informally indicate a category hierarchy.	
globalLocationNumber	OK	Text	The Global Location Number (GLN, sometimes also referred to as International Location Number or ILN) of the respective organization or place. The GLN is a 13-digit number used to identify parties and physical locations.	gr:hasGlobalLocationNumber
isicV4	OK	Text	The International Standard of Industrial Classification of All Economic Activities (ISIC), Revision 4 code for a particular organization or place.	gr:hasISICv4
openingHoursSpecification	OK	OpeningHoursSpecification	The opening hours of a certain place.	gr:hasOpeningHoursSpecification A more granular way of indicating opening hours information that the standard openingHours property in schema.org.

Action: Add additional properties to <http://schema.org/Place>

<http://schema.org/Organization>

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
category	OK	Text	The name of a category. Greater signs or slashes can be used to informally indicate a category hierarchy.	
brand	OK	Brand	The brand(s) associated with a product or service, or the brand(s)	The expected type should be changed from http://schema.org/Organization or

			maintained by an organization or business person.	http://schema.org/Brand , because organizations and their brands are distinct entities - often, the Webmaster will not know the legal entity behind a certain brand. The GoodRelations property is named gr:hasBrand.
duns	OK	Text	The Dun & Bradstreet DUNS number for identifying an organization or business person.	gr:hasDUNS
globalLocationNumber	OK	Text	The Global Location Number (GLN, sometimes also referred to as International Location Number or ILN) of the respective organization or place. The GLN is a 13-digit number used to identify parties and physical locations.	gr:hasGlobalLocationNumber
isicV4	OK	Text	The International Standard of Industrial Classification of All Economic Activities (ISIC), Revision 4 code for a particular organization, business person, or place.	gr:hasISICv4
naics	OK	Text	The North American Industry Classification System (NAICS) code for a particular organization or business person.	gr:hasNAICS
hasPOS	OK	Place	Points-of-Sales operated by the organization or person.	
legalName	OK	Text	The official name of the organization, e.g. the registered company name.	
makesOffer	OK	Offer	A pointer to products or services offered by the organization or person.	gr:offers; note name clash
owns	OK	Product or OwnershipInfo	Products owned by the organization or person.	The range in GR will be expanded to include gr:OwnershipInfo
seeks	OK	Demand	A pointer to products or services sought by the organization or person (demand).	Currently, gr:Offering includes demand and supply, but this will be changed in GoodRelations to be compliant with this proposed new approach.
taxID	OK	Text	The Tax / Fiscal ID of the organization or person, e.g. the TIN in the US or the CIF/NIF in Spain.	
vatID	OK	Text	The Value-added Tax ID of the organisation or person.	

Action: Add additional properties to <http://schema.org/Organization>.

<http://schema.org/Person>

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
category	OK	Text	The name of a category. Greater signs or slashes can be used to informally indicate a category hierarchy.	
brand	OK	Brand	The brand(s) associated with a product or service, or the brand(s) maintained by an organization or business person.	The expected type should be changed from http://schema.org/Organization or http://schema.org/Brand , because organizations and their brands are distinct entities - often, the Webmaster will not know the legal entity behind a certain brand. The GoodRelations property is named gr:hasBrand.
duns	OK	Text	The Dun & Bradstreet DUNS number for identifying an organization or business person.	gr:hasDUNS
globalLocationNumber	OK	Text	The Global Location Number (GLN, sometimes also referred to as International Location Number or ILN) of the respective organization or place. The GLN is a 13-digit number used to identify parties and physical locations.	gr:hasGlobalLocationNumber
isicV4	OK	Text	The International Standard of Industrial Classification of All Economic Activities (ISIC), Revision 4 code for a particular organization, business person, or place.	gr:hasISICv4
naics	OK	Text	The North American Industry Classification System	gr:hasNAICS

			(NAICS) code for a particular organization or business person.	
hasPOS	OK	Place	Points-of-Sales operated by the organization or person.	
makesOffer	OK	Offer	A pointer to products or services offered by the organization or person.	gr:offers; note name clash
owns	OK	Product or OwnershipInfo	Products owned by the organization or person.	The range in GR will be expanded to include gr:OwnershipInfo
seeks	OK	Demand	A pointer to products or services sought by the organization or person (demand).	Currently, gr:Offering includes demand and supply, but this will be changed in GoodRelations to be compliant with this proposed new approach.
taxID	OK	Text	The Tax / Fiscal ID of the organization or person, e.g. the TIN in the US or the CIF/NIF in Spain.	
vatID	OK	Text	The Value-added Tax ID of the organisation or person.	

Action: Add additional properties to [http://schema.org/Brand](#)

3.2 Suggested new classes and their properties

<http://schema.org/Brand>

A brand is a name used by an organization or business person for labeling a product, product group, or similar.

Position in the schema.org hierarchy: Thing > Intangible > Brand

Properties from http://schema.org/Thing	Status	Expected Type	Description	Comments
description	OK	Text	A short description of the item.	
image	OK	URL	URL of an image of the item.	
name	OK	Text	The name of the item.	
url	OK	URL	URL of the item.	

<http://schema.org/BusinessEntityType>

A business entity type is a conceptual entity representing the legal form, the size, the main line of business, the position in the value chain, or any combination thereof, of an organization or business person.

Position in the schema.org hierarchy: Thing > Intangible > Enumeration > BusinessEntityType

Properties from http://schema.org/Thing	Status	Expected Type	Description	Comments
description	OK	Text	A short description of the item.	
image	OK	URL	URL of an image of the item.	
name	OK	Text	The name of the item.	
url	OK	URL	URL of the item.	

<http://schema.org/BusinessFunction>

The business function specifies the type of activity or access (i.e., the bundle of rights) offered by the organization or business person through the offer. Typical are sell, rental or lease, maintenance or repair, manufacture / produce, recycle / dispose, engineering / construction, or installation. Proprietary specifications of access rights are also instances of this class.

Position in the schema.org hierarchy: Thing > Intangible > Enumeration > BusinessFunction

Properties from http://schema.org/Thing	Status	Expected Type	Description	Comments
description	OK	Text	A short description of the item.	
image	OK	URL	URL of an image of the item.	
name	OK	Text	The name of the item.	
url	OK	URL	URL of the item.	

gr:License (Special Case)

For legal reasons, schema.org cannot contain elements for modeling licensing conditions, because site-owners may try to use them to express complex licensing terms for the use of their content by search engines, which cannot be properly handled by Web-scale crawlers. Thus, the class **gr:License** from GoodRelations is not available from the schema.org namespace. If you want to use gr:License, use GoodRelations in its original namespace or use the **additionalType** property in combination with the full URI <http://purl.org/goodrelations/v1#License> and the main itemtype <http://schema.org/BusinessFunction>.

<http://schema.org/DayOfWeek>

The day of the week, e.g. used to specify to which day the opening hours of a <http://schema.org/OpeningHoursSpecification> refer.

Position in the schema.org hierarchy: Thing > Intangible > Enumeration > DayOfWeek

Properties from http://schema.org/Thing	Status	Expected Type	Description	Comments
description	OK	Text	A short description of the item.	
image	OK	URL	URL of an image of the item.	
name	OK	Text	The name of the item.	
url	OK	URL	URL of the item.	

<http://schema.org/DeliveryMethod>

A delivery method is a standardized procedure for transferring the product or service to the destination of fulfilment chosen by the customer. Delivery methods are characterized by the means of transportation used, and by the organization or group that is the contracting party for the sending organization or person.

Position in the schema.org hierarchy: Thing > Intangible > Enumeration > DeliveryMethod

Properties from http://schema.org/Thing	Status	Expected Type	Description	Comments
description	OK	Text	A short description of the item.	
image	OK	URL	URL of an image of the item.	
name	OK	Text	The name of the item.	
url	OK	URL	URL of the item.	

<http://schema.org/ParcelService> as a subclass of <http://schema.org/DeliveryMethod>

A private parcel service as the delivery mode available for a certain offer.

Position in the schema.org hierarchy: Thing > Intangible > Enumeration > DeliveryMethod > DeliveryMethodParcelService

Properties from http://schema.org/Thing	Status	Expected Type	Description	Comments
description	OK	Text	A short description of the item.	
image	OK	URL	URL of an image of the item.	
name	OK	Text	The name of the item.	
url	OK	URL	URL of the item.	

<http://schema.org/Demand> (new)

A demand entity represents the public, not necessarily binding, not necessarily exclusive, announcement by an organization or person to seek a certain type of goods or services. For describing demand using this type, the very same properties used for <http://schema.org/Offer> apply.

Position in the schema.org hierarchy: Thing > Intangible > Demand

Note: Replicate all properties (existing **and those coming from GoodRelations above**) from <http://schema.org/Offer> for this type; omitted in here for brevity. Exceptions are

- price
- priceCurrency
- priceValidUntil
- review
- reviews
- aggregateRating

which are omitted for the Demand type, since they will rarely be useful for this type. The reason for these omissions are as follows:

- **price, priceCurrency, and priceValidUntil:** The more advanced price modeling using the new priceSpecification property is more suited for modeling demand.
- **review, reviews, aggregateRating:** These properties may be useful for describing the products sought, but will then be added to the <http://schema.org/Product> and not the demand type.

<http://schema.org/IndividualProduct> as a subclass of <http://schema.org/Product>

A single, identifiable product instance (e.g. a laptop with a particular serial number).

Position in the schema.org hierarchy: Thing > Product > Individual

Note: Replicate all properties (existing **and those coming from GoodRelations above**) from <http://schema.org/Product> for this type; omitted in here for brevity.

<http://schema.org/OwnershipInfo> (new)

A structured value providing information about when a certain organization or person owned a certain product.

Position in the schema.org hierarchy: Thing > Intangible > StructuredValue > OwnershipInfo

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
typeOfGood	OK	Product	The product that this structured value is referring to.	Will be added to GoodRelations shortly.
acquiredFrom	OK	Organization or Person	The organization or person from which the product was acquired.	Will be added to GoodRelations shortly.
ownedFrom	OK	DateTime	The date and time of obtaining the product.	Will be added to GoodRelations shortly.
ownedThrough	OK	DateTime	The date and time of giving up ownership on the product.	Will be added to GoodRelations shortly.

<http://schema.org/OpeningHoursSpecification>

A structured value providing information about the opening hours of a place or a certain service inside a place.

Position in the schema.org hierarchy: Thing > Intangible > StructuredValue > OpeningHoursSpecification

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
dayOfWeek	OK	DayOfWeek	The day of the week for which these opening hours are valid.	gr:hasOpeningHoursDayOfWeek
opens	OK	Time	The opening hour of the place or service on the given day(s) of the week.	
closes	OK	Time	The closing hour of the place or service on the given day(s) of the week.	
validFrom	OK	DateTime	The beginning of the validity of offer, price specification, or opening hours data.	
validThrough	OK	DateTime	The end of the validity of offer, price specification, or opening hours data.	

Example:

```
<div itemscope itemtype="http://schema.org/Place" itemid="#store">
  <span itemprop="name">Hepp's Happy Burger Restaurant</span>
  <div itemprop="openingHoursSpecification" itemscope
    itemtype="http://schema.org/OpeningHoursSpecification">
    Opening hours: Mo-Fri,
    <link itemprop="dayOfWeek"
      href="http://purl.org/goodrelations/v1#Monday" />
    <link itemprop="dayOfWeek"
      href="http://purl.org/goodrelations/v1#Tuesday" />
    <link itemprop="dayOfWeek"
      href="http://purl.org/goodrelations/v1#Wednesday" />
    <link itemprop="dayOfWeek"
      href="http://purl.org/goodrelations/v1#Thursday" />
    <link itemprop="dayOfWeek"
      href="http://purl.org/goodrelations/v1#Friday" />
    <meta itemprop="opens" content="08:00:00">8:00 a.m. -
    <meta itemprop="closes" content="20:00:00">8:00 p.m.
  </div>
</div>
```

<http://schema.org/PaymentMethod>

A payment method is a standardized procedure for transferring the monetary amount for a purchase. Payment methods are characterized by the legal and technical structures used, and by the organization or group carrying out the transaction.

Position in the schema.org hierarchy: Thing > Intangible > Enumeration > PaymentMethod

Properties from http://schema.org/Thing	Status	Expected Type	Description	Comments
description	OK	Text	A short description of the item.	
image	OK	URL	URL of an image of the item.	
name	OK	Text	The name of the item.	

url	OK	URL	URL of the item.	
-----	----	-----	------------------	--

<http://schema.org/CreditCard>

A credit or debit card type as a standardized procedure for transferring the monetary amount for a purchase.

Position in the schema.org hierarchy: Thing > Intangible > Enumeration > PaymentMethod > CreditCard

Properties from http://schema.org/Thing	Status	Expected Type	Description	Comments
description	OK	Text	A short description of the item.	
image	OK	URL	URL of an image of the item.	
name	OK	Text	The name of the item.	
url	OK	URL	URL of the item.	

<http://schema.org/PriceSpecification>

A structured value representing a monetary amount. Typically, only the subclasses of this type are used for markup.

Position in the schema.org hierarchy: Thing > Intangible > StructuredValue > PriceSpecification

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
priceCurrency	OK	Text	The currency (in 3-letter ISO 4217 format) of the price.	gr:hasCurrency Note: Remove the word "offer" from the description of the global priceCurrency property in schema.org.
price	OK	Number	The price.	gr:hasCurrencyValue If this property is used, one can assume the minPrice and the maxPrice to be the same as the point value. In GoodRelations, gr:hasCurrencyValue is a subproperty of both gr:hasMinCurrencyValue and gr:hasMaxCurrencyValue.
minPrice	OK	Number	The lowest price if the price is a range.	gr:hasMinCurrencyValue Note: Schema.org has a similar property lowPrice, but I think the meaning is narrower than this one, so I would keep them separate.
maxPrice	OK	Number	The highest price if the price is a range.	gr:hasMaxCurrencyValue Note: Schema.org has a similar property highPrice, but I think the meaning is narrower than this one, so I would keep them separate.
eligibleTransactionVolume	OK	PriceSpecification	The transaction volume, in a monetary unit, for which the offer or price specification is valid. This is mostly used to specify a minimal purchasing volume, to express free shipping above a certain order volume, or to limit the acceptance of credit cards to purchases above a certain amount.	
eligibleQuantity	OK	QuantitativeValue	The interval and unit of measurement of ordering quantities for which the offer or price specification is valid. This allows e.g. specifying that a certain freight charge is valid only for a certain quantity.	gr:hasEligibleQuantity
validFrom	OK	DateTime	The beginning of the validity of offer, price specification, or opening hours data.	
validThrough	OK	DateTime	The end of the validity of offer, price specification, or opening hours data.	
valueAddedTaxIncluded	OK	Boolean	Specifies whether the applicable value-added tax (VAT) is included in the price specification or not.	

<http://schema.org/UnitPriceSpecification> as a subclass of <http://schema.org/PriceSpecification>

The price asked for a given offer by the respective organization or person.

Position in the schema.org hierarchy: Thing > Intangible > StructuredValue > PriceSpecification > UnitPriceSpecification

Properties: All properties from <http://schema.org/PriceSpecification> plus the following:

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
billingIncrement	OK	Number	This property specifies the minimal quantity and rounding increment that will be the basis for the billing.	
unitCode was: unitOfMeasurement	OK	Text	The unit of measurement for a given using the UN/CEFACT Common Code (3 characters).	gr:hasUnitOfMeasurement Note: A list of all codes is here: (scroll down to "Recommendation N° 20 ", "Codes for Units of Measure Used in International Trade"): http://www.unece.org/tradewelcome/areas-of-work/un-centre-for-trade-facilitation-and-e-business-uncfact/outputs/cefactrecommendationsrec-index/list-of-trade-facilitation-recommendations-n-16-to-20.html
priceType	OK	Text	A short text or acronym indicating multiple price specifications for the same offer, e.g. SRP for the suggested retail price or INVOICE for the invoice price, mostly used in the car industry.	We could also change the range to a type PriceType with predefined individuals for common prices, like SRP.

<http://schema.org/DeliveryChargeSpecification> as a subclass of <http://schema.org/PriceSpecification>

The price for the delivery of an offer using a particular delivery method.

Position in the schema.org hierarchy: Thing > Intangible > StructuredValue > PriceSpecification > DeliveryChargeSpecification

Properties: All properties from <http://schema.org/PriceSpecification> plus the following:

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
appliesToDeliveryMethod	OK	DeliveryMethod	The delivery method(s) to which the delivery charge specification applies.	
eligibleRegion (was: eligibleRegions)	OK	Text or GeoShape	The ISO 3166-1 (ISO 3166-1 alpha-2) or ISO 3166-2 code, or the GeoShape of the geo-political region(s) for which the offer, or delivery charge specification is valid.	gr:eligibleRegions; add GeoShape

<http://schema.org/PaymentChargeSpecification> as a subclass of <http://schema.org/PriceSpecification>

The costs of settling the payment using a particular payment method.

Position in the schema.org hierarchy: Thing > Intangible > StructuredValue > PriceSpecification > PaymentChargeSpecification

Properties: All properties from <http://schema.org/PriceSpecification> plus the following:

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
appliesToPaymentMethod	OK	PaymentMethod	The payment method(s) to which the payment charge specification applies.	

<http://schema.org/ProductFeature> (new) subclass of <http://schema.org/StructuredValue>

A property-value pair representing a product feature.

Position in the schema.org hierarchy: Thing > Intangible > StructuredValue > ProductFeature

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
propertyName	OK	Text	The name of the feature	New in GoodRelations.
propertyValue	OK	Number or Text	The value of the feature	New in GoodRelations
unitText	OK	Text	A textual description of the unit of measurement.	New in GoodRelations. Useful if the source database does not provide a standard unit code.
unitCode	OK	Text	The unit of measurement given using the UN/CEFACT Common Code (3 characters).	gr:hasUnitOfMeasurement

Note: This new approach is strategically very promising, since it allows shops and vendor pages to expose rich product data without cleansing it completely as simple property-value pairs.

<http://schema.org/ProductModel> as a subclass of <http://schema.org/Product>

A datasheet or vendor specification of a product (in the sense of a prototypical description)

Position in the schema.org hierarchy: Thing > Product > ProductModel

Note: Replicate all properties (existing **and those coming from GoodRelations above**) from <http://schema.org/Product> for this type; omitted in here for brevity.

Additional properties:

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
isVariantOf	OK	ProductModel	A pointer to a base product from which this product is a variant. It is safe to infer that the variant inherits all product features from the base model, unless defined locally.	This is not transitive.
predecessorOf	OK	ProductModel	A pointer from a previous, often discontinued variant of the product to its newer variant.	
successorOf	OK	ProductModel	A pointer from a newer variant of a product to its previous, often discontinued predecessor.	

<http://schema.org/QualitativeValue>

A predefined value for a product characteristic, e.g. the the power cord plug type "US" or the garment sizes "S", "M", "L", and "XL".

Position in the schema.org hierarchy: Thing > Intangible > Enumeration > QualitativeValue (**DISCUSS**)

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
equal	OK	QualitativeValue	This ordering relation for qualitative values indicates that the subject is equal to the object.	
greater	OK	QualitativeValue	This ordering relation for qualitative values indicates that the subject is greater than the object.	
greaterOrEqual	OK	QualitativeValue	This ordering relation for qualitative values indicates that the subject is greater than or equal to the object.	
lesser	OK	QualitativeValue	This ordering relation for qualitative values indicates that the subject is lesser than the object.	
lesserOrEqual	OK	QualitativeValue	This ordering relation for qualitative values indicates that the subject is lesser than or equal to the object.	
nonEqual	OK	QualitativeValue	This ordering relation for qualitative values indicates that the subject is not equal to the object.	
valueReference	OK	StructuredValue or Enumeration	A pointer to a secondary value that provides additional information on the original value, e.g. a reference temperature.	In GoodRelations, the range is the union of QuantitativeValue and QualitativeValue, but the additional schema.org types may prove useful in the future.

Note: This element will be very important for future fashion use-cases!

<http://schema.org/QuantitativeValue>

A point value or interval for product characteristics and other purposes

Position in the schema.org hierarchy: Thing > Intangible > StructuredValue > QuantitativeValue

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
value	OK	Number	The value of the product characteristic.	gr:hasValue
minValue	OK	Number	The lower value of the product characteristic.	gr:hasMinValue
maxValue	OK	Number	The upper of the product characteristic.	gr:hasMaxValue
unitCode	OK	Text	The unit of measurement given using the UN/CEFACT Common Code (3 characters).	gr:hasUnitOfMeasurement
valueReference	OK	StructuredValue or Enumeration	A pointer to a secondary value that provides additional information on the original value, e.g. a reference temperature.	In GoodRelations, the range is the union of QuantitativeValue and QualitativeValue, but the additional schema.org types may prove useful in the future.

<http://schema.org/SomeProducts> as a subclass of <http://schema.org/Product>

A placeholder for multiple similar products of the same kind.

Position in the schema.org hierarchy: Thing > Product > SomeProducts

Note: Replicate all properties (existing **and those coming from GoodRelations above**) from <http://schema.org/Product> for this type; omitted in here for brevity.

Also, the **inventoryLevel** property from <http://schema.org/Offer> should include <http://schema.org/SomeProducts> as a compatible domain type to be in sync with GoodRelations.

<http://schema.org/TypeAndQuantityNode>

A structured value indicating the quantity, unit of measurement, and business function of goods included in a bundle offer.

Position in the schema.org hierarchy: Thing > Intangible > StructuredValue > TypeAndQuantityNode

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
amountOfThisGood	OK	Number	The quantity of the goods included in the offer.	
businessFunction	OK	BusinessFunction	The business function (e.g. sell, lease, repair, dispose) of the offer. The default is http://purl.org/goodrelations/v1#Sell .	gr:hasBusinessFunction
unitCode	OK	Text	The unit of measurement given using the UN/CEFACT Common Code (3 characters).	gr:hasUnitOfMeasurement
typeOfGood	OK	Product	The product that this structured value is referring to.	

<http://schema.org/WarrantyPromise>

A structured value representing the duration and scope of services that will be provided to a customer free of charge in case of a defect or malfunction of a product.

Position in the schema.org hierarchy: Thing > Intangible > StructuredValue > WarrantyPromise

Properties from GoodRelations	Status	Expected Type	Description	Comments, e.g. different naming in GoodRelations
durationOfWarranty	OK	QuantitativeValue	"The duration of the warranty promise. Common unitCode values are ANN for year, MON for months, or DAY for days.	
warrantyScope	OK	WarrantyScope	The scope of the warranty promise.	gr:hasWarrantyScope

<http://schema.org/WarrantyScope>

A range of services that will be provided to a customer free of charge in case of a defect or malfunction of a product.

Position in the schema.org hierarchy: Thing > Intangible > Enumeration > WarrantyScope

Properties from http://schema.org/Thing	Status	Expected Type	Description	Comments
description	OK	Text	A short description of the item.	
image	OK	URL	URL of an image of the item.	
name	OK	Text	The name of the item.	
url	OK	URL	URL of the item.	

Action: Add additional classes and properties to schema.org.

3.3 Suggested new individuals

<http://schema.org/BusinessEntityType>

<http://schema.org/Business> - Business entity type: Business

<http://schema.org/Enduser> - Business entity type: End-user

<http://schema.org/PublicInstitution> - Business entity type: Public Institution

<http://schema.org/Reseller> - Business entity type: Reseller

<http://schema.org/BusinessFunction>

<http://schema.org/ConstructionInstallation> - Business Function: Construction and installation

<http://schema.org/Dispose> - Business Function: Disposal

<http://schema.org/LeaseOut> - Business Function: Rental

<http://schema.org/Maintain> - Business Function: Maintenance

<http://schema.org/ProvideService> - Business Function: Service
<http://schema.org/Repair> - Business Function: Repair
<http://schema.org/Sell> - Business Function: Sell

<http://schema.org/DayOfWeek>

<http://schema.org/Monday> - Day of the week: Monday
<http://schema.org/Tuesday> - Day of the week: Tuesday
<http://schema.org/Wednesday> - Day of the week: Wednesday
<http://schema.org/Thursday> - Day of the week: Thursday
<http://schema.org/Friday> - Day of the week: Friday
<http://schema.org/Saturday> - Day of the week: Saturday
<http://schema.org/Sunday> - Day of the week: Sunday
<http://schema.org/PublicHolidays> - Day of the week: Public Holidays

<http://schema.org/DeliveryMethod>

<http://schema.org/DirectDownload> - Delivery Mode: Direct download (gr:DeliveryModeDirectDownload)
<http://schema.org/Freight> - Delivery Mode: Freight (gr:DeliveryModeFreight)
<http://schema.org/Mail> - Delivery Mode: Mail / Postal service (gr: DeliveryModeMail)
<http://schema.org/OwnFleet> - Delivery Mode: By own fleet (gr: DeliveryModeOwnFleet)
<http://schema.org/PickUp> - Delivery Mode: In-store pick-up (gr: DeliveryModePickUp)

<http://schema.org/ParcelService>

<http://schema.org/DHL> - Delivery Mode: DHL (tm)
<http://schema.org/FederalExpress> - Delivery Mode: Federal Express (tm)
<http://schema.org/UPS> - Delivery Mode: UPS (tm)

<http://schema.org/PaymentMethod>

<http://schema.org/DirectDebit> - Payment method: Direct debit
<http://schema.org/ByBankTransferInAdvance> - Payment method: By bank transfer in advance
<http://schema.org/ByInvoice> - Payment method: By invoice
<http://schema.org/Cash> - Payment method: Cash
<http://schema.org/CheckInAdvance> - Payment method: Check in advance
<http://schema.org/COD> - Payment method: Cash on delivery
<http://schema.org/GoogleCheckout> - Payment method: Google Checkout (tm)
<http://schema.org/PayPal> - Payment method: PayPal (tm)
<http://schema.org/PaySwarm> - Payment method: PaySwarm (tm)

<http://schema.org/CreditCard>

<http://schema.org/AmericanExpress> - Payment method: American Express (tm)
<http://schema.org/DinersClub> - Payment method: Diners Club (tm)
<http://schema.org/Discover> - Payment method: Discover (tm)
<http://schema.org/VISA> - Payment method: VISA (tm)
<http://schema.org/JCB> - Payment method: JCB (tm)
<http://schema.org/MasterCard> - Payment method: MasterCard (tm)

<http://schema.org/WarrantyScope>

<http://schema.org/PartsAndLabor-BringIn> - Warranty scope: Parts and labor, bring-in service.
<http://schema.org/PartsAndLabor-PickUp> - Warranty scope: Parts and labor, pick-up service.
<http://schema.org/Labor-BringIn> - Warranty scope: Labor, bring-in service.

Action: No action needed. The enumerations remain in the GoodRelations namespace.

3.4 Other changes

3.4.1 Expand notion of a product

The definition of <http://schema.org/Product> should be updated to include commodity services, e.g.

A product is anything that is made available for sale—for example, a pair of shoes, a concert ticket, or a car. Commodity services, like haircuts, can also be represented using this type.

Action: Update textual definition of <http://schema.org/Product>

3.4.2 Common superclass for organization and person

It would be useful to have a common superclass like <http://schema.org/BusinessEntity> or <http://schema.org/Agent> that combines <http://schema.org/Organization> and <http://schema.org/Person>, because in some cases, the data sources may not support that distinction (e.g. a list of eBay member of which you do not know whether they are a company or a private seller).

Action: Add common superclass <http://schema.org/Organization>. This is a separate issue with no direct dependencies to the GoodRelations integration.

3.4.3 OWL Mapping

It may be useful to add mapping axioms to the OWL version of schema.org, but this is secondary. We can also provide the mapping axioms in GoodRelations or as a separate file for interested audiences.

3.5 Changes in GoodRelations

The respective work will be done directly in a GoodRelations service update once the integration into schema.org is final.

Change Tracking

1. After a discussing between Martin Hepp and Dan Brickley, we now propose to use the original GoodRelations namespace for the enumerations, i.e. the individuals of certain value or type classes. So the whole section 3.3. can be omitted. For an example, see http://wiki.goodrelations-vocabulary.org/Cookbook/Schema.org#Offer_with_Delivery_Charges_and_Business_Function
2. Changed all property names from plural to singular so that we will be consistent with the preferred naming pattern in schema.org
3. Added model / modelLink property to <http://schema.org/Product>
4. New property releaseDate for <http://schema.org/Product>. The release date of a product or product model. This can be used to distinguish the exact variant of a product.
Range: Date
5. The range of eligibleRegion is now "Text or GeoShape".
6. condition vs. itemCondition: I consolidated the two properties into one by expanding the range from OfferItemCondition to "Text or OfferItemCondition" and expanding the domain from <http://schema.org/Offer> to <http://schema.org/Offer>, <http://schema.org/Demand>, and <http://schema.org/Product>
7. Changed range of brand property: The range of the brand property has been changed from <http://schema.org/Organization> to <http://schema.org/Brand>, because organizations and their brands are distinct entities - often, the Webmaster will not know the legal entity behind a certain brand.
8. The open issue on whether to extend the model property or to implement a modelLink property for <http://schema.org/Product> has been solved by extending the range for the existing model property to allow either text or <http://schema.org/ProductModel>. This achieves compatibility with GR without introducing another property.
9. Renamed <http://schema.org/Individual> to <http://schema.org/IndividualProduct> and <http://schema.org/SomeItems> to <http://schema.org/SomeProducts>
10. Renamed <http://schema.org/DeliveryModeParcelService> to <http://schema.org/ParcelService>
11. Renamed <http://schema.org/PaymentMethodCreditCard> to <http://schema.org/CreditCard>
12. Polished the wording for price and priceCurrency, since they can appear in multiple contexts. New wording is "The offer price of a product or a price component, when attached to `PriceSpecification` and its subtypes." and "The currency (in 3-letter ISO 4217 format) of the offer price or a price component, when attached to `PriceSpecification` and its subtypes."
13. Implemented minPrice and maxPrice as proposed. Note: Schema.org has a similar property lowPrice / highPrice, but I think the meaning is narrower than this one, so I would keep them separate.
14. Fixed minor bug: gr:billingIncrement corrected to billingIncrement
15. Changed text for <http://schema.org/ProductFeature>. The new text is "A property-value pair representing a product feature."
16. Updated the text for businessFunction so that it matches the agreed usage of GR elements from the purl.org namespace: "The default is <http://schema.org/Sell>." --> "The default is <http://purl.org/goodrelations/v1#Sell>."
17. Fixed inconsistent text for typeOfGood: The new text is "The product that this structured value is referring to."
18. Changed durationOfWarrantyInMonths with a range of Number to durationOfWarranty with a range of QuantitativeValue. This allows using year, months and day as the unit of measurement, e.g. for "30-day money back guarantee"
19. Added missing text for the class <http://schema.org/QuantitativeValue> in the Google Docs document
20. Renamed property purchasedFrom to acquiredFrom, because one can acquire products also by other means than purchase (e.g. as a gift)
21. Simplified the pattern for <http://schema.org/ProductFeature>: Dedicated properties propertyName and propertyValue for the name and value of the property-value pair. If the value is a range, simply use propertyValue as text ("3 - 5") instead of overloading minValue and maxValue from <http://schema.org/QuantitativeValue>.
22. Added <http://schema.org/SomeProducts> to the domain of the inventoryLevel property
23. Extended the range of the seller property to include individuals (<http://schema.org/Person>), as e.g. in eBay scenarios
24. Polished the text for gtin8, gtin13, gtin14, and mpn properties
25. Fixed the domain and range for eligibleTransactionVolume. The domain is now Offer, Demand, or PriceSpecification. The range is PriceSpecification. Note that for constraints on the quantity of a good, use eligibleQuantity.
26. Consolidated the text of multiple occurrences of the eligibleQuantity property
27. Added the missing <http://schema.org/License> type to the domain of validThrough and validFrom
28. Fixed text for the billingIncrement property
29. Fixed text for the eligibleRegion property in the documentation
30. Changed the text for <http://schema.org/Product> to also allow commodity services: "A product is anything that is made available for sale—for example, a pair of shoes, a concert ticket, or a car. Commodity services, like haircuts, can also be represented using this type."
31. Fixed text and superclass for <http://schema.org/WarrantyPromise>
32. Renamed the property warrantyPromise to warranty in order to avoid the name class with the type <http://schema.org/WarrantyPromise>.
33. Removed gr:License from the proposal.

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