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Releases

This page lists schema.org releases, most recent first. New developments are discussed on Github; editorial works-in-progress are publicly staged on the webschemas.org drafting site for review and collaboration. See how we work for more background.

Release	Overview	Description
10.0 **2020-09-07**	Version 10.0 See planning pages. This release consists primarily of additions to the Pending section of schema.org, alongside some bugfixes and improvements to core terms.	**Vocabulary** **Changes in Core section:** • Issue #737: improve support for controlled taxonomies (e.g. SKOS) by supporting URLs into taxonomies for the keywords field: added URL and DefinedTerm as expected values. • Issue #2647: SkiResort should be a subclass of Resort (in addition to the existing SportsActivityLocation supertype). • Issue #2664: a parentItem of a Comment should be a Comment, not a Question. • Issue #2662: the supertype of Question should be Comment, by analogy with Answer. • Issue #881: Changed description to reviewBody in a Review example. **Changes in Pending section:** • Issue #2663: add a property eduQuestionType for questions that act as practice problems. • Issue #2678: Indicated that learningResourceType is expected on LearningResource. • Issue #2483: Add hasCourse property to

- EducationalOccupationalProgram to specify which courses are components of a program.

- Issue #2690: add a layoutImage property to FloorPlan to clearly indicate an image that depicts the floorplan.

- Issue #2670: add vocabulary to express the energy efficiency of products. Adds a hasEnergyConsumptionDetails property for use on Product to indicate an EnergyConsumptionDetails item which in turn has a hasEnergyEfficiencyCategory property whose values are drawn from enumerations. An enumeration class EnergyEfficiencyEnumeration with two initial subtypes, for EUEnergyEfficiencyEnumeration and EnergyStarEnergyEfficiencyEnumeration. The elements in the EU scheme are ordered, allowing energyEfficiencyScaleMax and energyEfficiencyScaleMin properties to specify the portion of the scale applicable to the relevant product category.

Site Improvements

- Issue #2663: Updated all examples to use https://schema.org instead of http://schema.org.

- Style Guide: Added a style guide for schema authoring to the site, giving conventions for term naming and capitalization.

9.0 **2020-07-21**	Version 9.0 See planning pages. This release consists primarily of additions to the Pending section of schema.org, alongside minimal edits to core terms to integrate the new vocabulary into the larger system.	# Vocabulary **Changes in Core section:** - Issue #2604: Improvements around enumerations. Some code improvements to present subtyped Enumerations more usefully, and addition of a StatusEnumeration type to group numerous enumerations from various kinds of status-related situations. - Issue #2512: Fixed definition of LockerDelivery and ParcelService to correctly define them as enumeration

members of DeliveryMethod.

- Issue #2268: Defined expected type of several properties in ExercisePlan to be QuantitativeValue instead of the incorrect value of QualitativeValue.

Changes in health-lifesci section:

- Issue #2268: Defined expected type of several properties in ExercisePlan to be QuantitativeValue instead of the incorrect value of QualitativeValue.

Changes in Pending section:

- Issue #1401: Add a type LearningResource to indicate CreativeWorks that have a particular and explicit orientation towards learning, education, skill acquisition and other educational purposes.
- Issue #2611: Add a Quiz type, as a kind of LearningResource, defined as a "test of knowledge, skills and abilities."
- Issue #2587: Add two properties size and pattern for type Product to support common product variant dimensions.
- Issue #1797: Add a ProductGroup type to allow modeling of a group of products ("variants") that vary along explicitly defined dimensions. Add properties variesBy and hasVariant for type ProductGroup to explicitly define the variant-identifying properties and the list of variants belonging to the group. Adds existing property isVariantOf to type Product to indicate the ProductGroup it is a variant of. Adds property productGroupID as explicit identifier for type ProductGroup. Also adds inverse property inProductGroupWithID for type Product to identify the product group it is a variant of.
- Issue #2605: Clarify the definition of Collection to make clear that it covers a broad range of kind of "Collection". Add a ProductCollection type to allow modeling of a collection of products that are commonly bundled

together. Extend the existing property includesObject for use with the type ProductCollection to indicate the (type and number of) products that are member of the collection.

- Issue #2620: Added several new examples.
- Issue #2599: Add byMonthWeek to Schedule type.
- Issue #1755: Add BoatReservation, BoatTrip (and arrivalBoatTerminal, departureBoatTerminal properties), BoatTerminal types.

Site Improvements

- Issue #2304: (implemented in PR #2654):Rationalisation of dump files. Machine readable vocabulary definition files, available from the Developers area, have been rationalised to include definitions from the core plus all sections of the vocabulary. Now download file names have been used to reflect this change. Also introduced two versions of each file, one containing http URIs the other https URIs.

8.0 **2020-05-01**	Version 8.0 See planning pages. This release consists of additions to the Pending section of schema.org.	# Vocabulary **Changes in Core section:** - N/A **Changes in Pending section:** - Issue #2543: Add a nonprofitStatus property to indicate non-profit organizations, alongside an initial enumeration of non-profit organization types, NonprofitType. - Issue #2506: Add vocabulary to help online vendors publish information about their shipping-related policies, associatted with an Offer using the shippingDetails property. Adds OfferShippingDetails and supporting properties (including deliveryTime, doesNotShip, shippingDestination, shippingLabel,

shippingRate, shippingSettingsLink, transitTimeLabel).
Also added supporting types ShippingDeliveryTime,
DefinedRegion, PostalCodeRangeSpecification,
OfferShippingDetails, ShippingRateSettings.

- Issue #2427: Simplifies education-related markup for
  describing what a learning resource teaches or
  assesses, and its educationalLevel. Allows these
  properties to be used for EducationEvents.
- Issue #2384: Add property to JobPosting for legal
  requirements relating to eligibility to work such as
  citizenship, visa or other documentation.
- Issue #2469: Add two properties to represent EIDR
  identifiers: titleEIDR and editEIDR.

7.04
2020-04-16

Version 7.04. See planning pages.
This was a minor release, with
improvements relating to the
COVID-19 response effort.

Vocabulary

Changes in Core section:

- Issue #2540: EducationalOrganization has an additional
  supertype of CivicStructure, clarifying that it can be
  used with announcementLocation.

Changes in Pending section:

- Issue #2534: Improved vocabulary for describing
  government benefits in the context of a
  SpecialAnnouncement. A new governmentBenefitsInfo
  property can now reference a GovernmentService. The
  existing serviceType property can now optionally use
  enumerated values from GovernmentBenefitsType. This
  enumerates several kinds of government benefits.
  While the list is general purpose, our priority is to
  support the COVID-19 response. We anticipate adding
  more structure here in future to better capture per-
  country systems and new kinds of benefit. As part of
  this work we also introduce a jurisdiction property as a
  superproperty of legislationJurisdiction.
- Issue #2536: Fixed a bug in the amended definition for

category.

- Issue #2626: Add a Hackathon type.
- Issue #2493: Add startTime/endTime to Schedule.

7.03 2020-04-02	Version 7.03. See planning pages. This was a minor release, with improvements relating to the COVID-19 response effort.	## Vocabulary **Changes in Pending section:** - Issue #2521: Adds a document and schema definitions capturing a 1:1 representation of a CDC CSV format for hospital reporting. - Issue #2519: Clarifies that webFeed can be expected on the SpecialAnnouncement type. - Issue #2518: Updated pending draft of 3DModel to place it under MediaObject rather than clutter CreativeWork.
7.02 2020-03-31	Version 7.02. See planning pages. This was a minor release, with improvements relating to the COVID-19 response effort.	## Vocabulary **Changes in Pending section:** - Issue #2514: Added an announcementLocation property, clarifying how a SpecialAnnouncement can reference both regions and specific places.
7.01 2020-03-22	Version 7.01. See planning pages. This was a minor release, with improvements relating to the COVID-19 response effort.	## Vocabulary **Core changes** - N/A **Changes in Pending section:** - Issue #2500: Added a SchoolDistrict type. - Issue #2497: Added datePosted to SpecialAnnouncement type.

Site Improvements

- Issue #2495: Added an example for the geographic region of a SpecialAnnouncement.

7.0
2020-03-17

Version 7.0. See planning pages.

Vocabulary

Core changes

- Issue #2448: Removed several largely un-used medical health properties whose names were inappropriately general: *action, background, cause, cost, function, indication, origin, outcome, overview, phase, population, purpose, source, subtype*. Note that we do not remove terms casually, but in the current case the usability consequences of keeping them in the system outweighed the benefits of retaining them, even if flagged as archived/superseded.
- Issue #1842: Introduced a VirtualLocation type, to support description of Events whose location is online. Added eventAttendanceMode to clarify the current attendance mode of an event (online, offline or a mix). Also added a new enumeration value for eventStatus for Event: EventMovedOnline.

Changes in Pending section:

- Issue #2490: Added (fast track) a SpecialAnnouncement type with several properties and supporting documentation, as a contribution to the global response to the COVID-19 Coronavirus pandemic. We expect to iterate on this design after implementator and publisher feedback.
- Issue #2460: Added properties to EducationalOccupationalProgram to support cases where it is not clear the distinction between classroom-based and work-based programs.
- Issue #2373: Added petsAllowed for use with

ApartmentComplex, and petsAllowed, amenityFeature and floorSize to FloorPlan. Created new properties for numberOfBedrooms and a new tourBookingPage.

- Issue #2450: Added *draft* type MediaReview, and associated MediaManipulationRatingEnumeration with two example values AuthenticContent and MissingContext. Note that this is Editorial work in progress and not a complete design. See also NiemanLab background article on this work.)

- Issue #2454: Added usageInfo, and acquireLicensePage to CreativeWork.

Site Improvements

- Reinstated 301 redirect to https for http requests.

- Issue #2412: Implemented in sdopythonapp submodule Issue #6: Enhancements to CORS support, providing appropriate responses to HTTP OPTIONS request.

6.0
2020-01-21

Version 6.0. See planning pages.

Vocabulary

Core changes

Other changes in Core section:

- Issue #637: Made itemOffered and offers fully inverseOf each other.

- Issue #2397: Reworded datePosted to avoid tying this property to overly-specific usecase (i.e. it originally assumed usage only with JobPosting).

- Issue #2433: Shortened definition of PreOrder from ItemAvailability enumeration.

- Issue #2375: Added note to descriptions for Offer and AggregateOffer indicating default businessFunction.

- Issue #2309: (implemented in PR #2380): Extended rangeIncludes of datePublished to include DateTime.

- Issue #2420: Added MusicRecording as an expected value of audio.

- Issue #2421: Added Person and Organization to the domain for interactionStatistic.
- Issue #2139: Added MediaGallery as a super-type of ImageGallery and VideoGallery, to allow for a mixed-media collection page type.
- Issue #2382: Added BroadcastService to the domain for inLanguage.
- Issue #1951: Added SportsEvent to the domain for sport.

Changes in Pending section:

- Issue #2372: Noted that other kinds of thing have callSign beyond radio broadcasts, in particular vehicles/boats and non-radio broadcasts. Added Vehicle, Person and BroadcastService (the latter also covers the initial type, RadioBroadcastService) to callSign accordingly.
- Issue #2384: Adds three properties to JobPosting for requirements relating to physical abilities, sensory abilities and security clearance.
- Issue #2396: Improvements to provide more information about the employer in JobPosting. Adds properties for applicationContact, employerOverview and allows DefinedTerm to be used with the industry property.
- Issue #2373: Improvements around real estate description including the addition of a property accommodationFloorPlan and type FloorPlan for use when a number of accomodation entries share a common layout. Added numberOfFullBathrooms and yearBuilt. Also noted that leaseLength is expected on Offer and that datePosted can be applied to RealEstateListing.
- Issue #2389: Changes to the pending Schedule type: adds the duration property, extends the range of byDay to allow for iCal-style rule syntax and adds the scheduleTimezone property.

- Issue #2418: Added financialAidEligible property for the types of financial aid available for an EducationalOccupationalProgram.
- Issue #2429: Added a number of properties to EducationalOccupationalProgram to help represent information for determining how long a program typically takes, when terms typically run, and when applications are accepted. Specifically: applicationDeadline, applicationStartDate, educationalProgramMode, numberOfCredits, maximumEnrollment, termDuration, termsPerYear, timeOfDay, typicalCreditsPerTerm.
- Issue #2405: Add Guide and Recommendation as new types.
- Issue #2394: Added isResizable to 3DModel.
- Issue #2381: renamed ProductReturnPolicy (and related) to MerchantReturnPolicy.
- Issue #2108: (implemented in PR #2352): Introduced new pending type PronounceableText enabling phonetic markup of text values.

Changes in bib section:

- Issue #2366: (implemented in PR #2367): Added example for Audiobook indicating a relationship with a printed counterpart.

Site Improvements

- Issue #2025: Corrected xml encoding value in schemaorg.owl file to be "UTF-8"
- Issue #1986: (implemented in PR #2378): Added test to check for duplicate entries in jsonldcontext files.
- Issue #2277: (implemented in PR #2388): Fixed error in definition of eventSchedule property.

5.0 **2019-11-01**	Version 5.0. See planning pages.	Vocabulary

Changes in Pending section:

- Issue #2372: Extended and redescribed callSign property to cover other common situations where it is applicable.
- Issue #2358: Introduced a type WebContent to allow descriptions to abstract away from the differences between url-addressable content in form of WebSite, WebPage or WebPageElement.
- Issue #2374: Introduced HealthTopicContent and an enumeration of "aspects" of the different topical aspects found in such content, as well as a property hasHealthAspect associating WebContent instances with those identified aspects.
- Issue #2373: Added properties accommodationCategory, numberOfBathroomsTotal, numberOfFullBathrooms, floorLevel, and leaseLength to Accommodation for detailed real-estate description. leaseLength also added to RealEstateListing
- Issue #2322: Linked skills description to formal definitions of competencies.

Site Improvements

- PR #2365: Split codebase that underpins the Schema.org site into a separate repository, to simplify interaction with vocabulary definition and documentation files in the schemaorg repository area.

4.0 **2019-10-15**	Version 4.0. See planning pages.	

Vocabulary

Changes in Pending section:

- Issue #2348: Added draft types for RealEstateListing, OfferForPurchase and OfferForLease.
- Issue #2289: (implemented in PR #2290): Added Types EducationalOccupationalProgram, WorkBasedProgram and associated properties.

- Issue #373: (implemented in PR #2007): Added Types PodcastSeries, PodcastSeason, PodcastEpisode and associated properties.
- Issue #2110: (implemented in PR #2142): Added property subtitleLanguage to BroadcastEvent type..
- Issue #2341: (implemented in PR #2344): Added property ineligibleRegion to ActionAccessSpecification type.
- Issue #2242: (implemented in PR #2345): Added property gender to SportsTeam type.
- Issue #2329: (implemented in PR #2330): Added property totalJobOpenings to JobPosting type.
- Issue #2296: (implemented in PR #2297): Added property employmentUnit to JobPosting type.

Changes in bib section:

- PR #2232: Simplified example for Audiobook .

Site Improvements

- Issue #2331: (implemented in PR #2332): Fixed mobile usability issues of site - identified by Google Search Console.
- PR #2312: Fixes typo for rdfs:label URI.

3.9 **2019-08-01**	Version 3.9. See planning pages.	

Vocabulary

Core changes

- Issue #2294: (implemented in PR #2295): Adding example for JobPosting.

Changes in Pending section:

- Issue #2291: Added StatisticalPopulation, Observation and supporting properties to enable statements (e.g. aggregate statistics) about sets of entities that have particular properties.
- Issue #2300: Added ratingExplanation property to

Rating (expect type Text): '*A short explanation (e.g. one to two sentences) providing background context and other information that led to the conclusion expressed in the rating. This is particularly applicable to ratings associated with "fact check" markup using ClaimReview.*'

- Issue #2289 (implemented in PR #2290): Added types for educational programs: EducationalOccupationalProgram and WorkBasedProgram plus supporting properties: hasCredential (for Organization and Person types), occupationalCredentialAwarded, programPrerequisites, timeToComplete, trainingSalary, and salaryUponCompletion.'

Site Improvements

- PR #2292: Fixed typo in Jane Doe's name in example for Person.
- PR #2285: Corrections to examples identified as errors by Travis CI scripts.
- PR #2199: Fix to grammar in description of knowsAbout.

3.8
2019-07-01

Version 3.8. See planning pages.

Vocabulary

Core changes

- Issue #2040 (implemented in PR #2041): Updated accessModeSufficient property of CreativeWork to expect type ItemList. Also updated associated examples.
- Issue #2271 (implemented in PR #2273): Fixed inconsistencies in expected types for Date and Time expecting properties that currently only expect DateTime, by adding Date to the rangeIncludes of orderDate, validFrom, validThrough, paymentDueDate, expectedArrivalFrom, expectedArrivalUntil, dateRead,

availabilityStarts, availabilityEnds, dateDeleted, dateIssued and adding Time to the rangeIncludes of checkoutTime, checkinTime, arrivalTime, departureTime, availabilityStarts, availabilityEnds, doorTime, endTime, startTime.

Changes in Pending section:

- Issue #1244: Introduced a gtin property as a simplification of the existing 4 gtin properties (gtin8, gtin12, gtin13, gtin14).
- Issue #2288: Introduced a ProductReturnPolicy vocabulary to provide information about product return policies associated with an Organization or Product.
- Issue #2173 (implemented in PR #2205): Added conditionsOfAccess property to CreativeWork to define information about conditions that affect the availability of, or method(s) of access to, the item.
- Issue #2244 (implemented in PR #2247): Added jobStartDate and jobImmediateStart properties to JobPosting.
- Issue #987 (implemented in PR #2241): Added creativeWorkStatus property to CreativeWork.

Site Improvements

- Issue #2265 (implemented in PR #2267): Fixed typo in description of subjectOf.
- Issue #2262 (implemented in PR #2269): Removed unnecessary newlines from comments cells of CSV outputs.

3.7 2019-06-01	Version 3.7. See planning pages.

Vocabulary

Core changes

- Issue #2192: Added CategoryCode to rangeIncludes for property occupationalCategory and DefinedTerm to rangeIncludes for property jobTitle.

- Issue #2251: Extended rangeIncludes for property estimatedSalary to include MonetaryAmount and Number.
- Issue #1848: Updated definitions of addressRegion and addressLocality that a street address is in a locality and a locality is in a region.
- Issue #2167: Fixed invalid JSON-LD in examples showing educationRequirements for Person and Occupation.
- Issue #1991: Fixed incorrect links (to webschemas.org) in docs/releases.html.
- Issue #1993: Updated definition and provided examples for isBasedOn property.
- Issue #2136: Fixing some typos and missing commas in example for Schedule .

Site Improvements

- Issue #2132: Added some hierarchy to the documentation page.

3.6 **2019-05-01**	Version 3.6. See planning pages.	

Vocabulary

Core changes

Moved from Pending to Core:

Other changes in Core section:

- Issue #2202: Restored estimatedSalary as a property expected on the JobPosting type.
- Issue #1469: Corrected format of example durations in timeRequired property description.
- Issue #1470: Corrected duration format in examples for timeRequired.
- Issue #2188: Added Service to rangeIncludes of orderedItem property.
- Issue #2184: Added LodgingBusiness to rangeIncludes of numberOfRooms property.

- Issue #2166: Added number formatting advice to description of Number, ratingValue, value, lowPrice, highPrice, totalPrice properties.
- Issue #2082: Fixed RDFa example for Website.
- Issue #2077: Fixed JSON-LD example for availableLanguage property.
- Issue #2055: Updated text to correctly quote Princess Leia in example for spokenByCharacter property.
- Issue #2036: Fix broken `url` term in ItemList example.
- Issue #2013: Fixed typo in hotels.html.
- Issue #2003: Improvements to descriptions of Campground and CampingPitch, identifying the differences between British English and American English for these and associated terms.
- Issue #1989: Replaced meta with link in isLiveBroadcast example.
- Issue #1937: Added a direct link to Developers page from Schemas page.
- Issue #1605: Made CatholicChurch subclass of Church.

Changes in Pending section:

- Issue #1909: Added a courseWorkload property for use with CourseInstance type.

Site Improvements

- Issue #2054: Corrected spelling in README.md file.
- Issue #2215: Corrected display of enumeration value terms that are more than 1 subclass away from a parent Enumeration value (eg. EvidenceLevelA).
- Issue #2212: Various fixes to examples. Identified by linter tests.
- Issue #2209: Updates to Travis test.
- Issue #2233: Fixed non-disply of acknowledgement text on term pages.
- Issue #2229: Stopped the duplication of references for some types in *-types.csv download files.

- Issue #2234: Fix to JSON-LD Context file - properties with Text in their range should not have '@type: "@id"' set.
- Issue #2218: Split Travis tests into stages for easier reporting/analysis.

| 3.5 2019-04-01 | Version 3.5. See planning pages. This release moves a number of terms from Pending into the Schema.org core. It also simplifies and clarifies the Schema.org extension model, reducing our emphasis on using named subdomains for topical groups of schemas. New terms introduced in Pending area include improvements for describing projects, grants and funding agencies; for describing open-ended date ranges (e.g. datasets); and a substantial vocabulary for Educational and Occupational Credentials. | ## Vocabulary **Core changes** Moved from Pending to Core: |

Vocabulary

Core changes

Moved from Pending to Core:

- Issue #1004: BroadcastFrequencySpecification, FMRadioChannel, AMRadioChannel, broadcastFrequency, broadcastFrequencyValue, broadcastFrequencyValue, hasBroadcastChannel.
- Issue #1125: PreOrderAction.
- Issue #1262: BedType.
- Issue #1293: EndorsementRating.
- Issue #2053: SpeakableSpecification, cssSelector, xpath.
- Issue #1541: menuAddOn.
- Issue #1670: subjectOf.
- Issue #1689: EmployerAggregateRating, reviewAspect.
- Issue #1698: Occupation, educationRequirements, estimatedSalary, experienceRequirements, occupationalCategory, occupationLocation, qualifications, responsibilities, skills, hasOccupation, relevantOccupation, QuantitativeValueDistribution, median, percentile10, percentile25, percentile75, percentile90, MonetaryAmountDistribution.
- Issue #1723: FAQPage.
- Issue #1741: MediaSubscription, ActionAccessSpecification.
- Issue #243: WorkersUnion.
- Issue #743: Distillery.

Other changes in Core section:

- Issue #2017: Added Clip to expected values of video, audio properties. Also amended caption to be expected on AudioObject, documented a pattern for describing downloadable captions and their media format using another MediaObject with an encodingFormat.
- Issue #2034: Added startTime, endTime properties as expected for MediaObject type.
- Issue #2038: Add Person as an expected type for byArtist property.
- Issue #2112: Added slogan property, analogous to logo.
- Issue #2104: Improved description of elevation property.
- Issue #1030: Noted that encodesCreativeWork is inverseOf encoding.
- Issue #2021: Added startOffset and endOffset to Clip.
- Issue #1765: Removed superseded status from and generalised descriptions for spatial and temporal properties plus expanded range to CreativeWork.

Changes in Pending section:

- Issue #1365: In temporalCoverage, added proposed ISO 8601 notation for open-ended date ranges, e.g. `1972-01/..`
- Issue #383: Added initial vocabulary towards improved support description of project-based funding, for example to use with Dataset citations. See also DINGO draft, another outcome from the same Wikidata / Wikibase workshop. New types for Grant, MonetaryGrant, Project, FundingAgency, FundingScheme, and ResearchProject. Developed in collaboration with the Wikidata/Wikibase community.
- Issue #1591: Added jobLocationType property.
- Issue #2083: Added applicantLocationRequirements property.
- Issue #2085: Added membershipPointsEarned property.
- Issue #2140: Added 3DModel type.

- Issue #2109: Added callSign property, and RadioBroadcastService type.
- Issue #2111: Added broadcastSignalModulation and broadcastSubChannel for use with BroadcastFrequencySpecification.
- Issue #1758: Added ArchiveOrganization, ArchiveComponent types, and archiveHeld, holdingArchive properties.
- Issue #1759: Added collectionSize and materialExtent properties.
- Issue #1978: Educational and Occupational Credentials vocabulary and examples from the eocred-schema community group. Added a type EducationalOccupationalCredential and properties credentialCategory, educationalLevel, competencyRequired, recognizedBy. Minor changes to validIn, validFor, educationRequirements, educationalCredentialAwarded, and qualifications (linking EducationalOccupationalCredentials to JobPostings, Occupations and Courses).
- Issue #1968: Replaced use of hasPart and isPartOf properties on Trip type, with new subTrip and partOfTrip properties.
- Issue #1375: Renamed the various properties and labels from geospatiallyXyz to geoXyz for brevity, e.g. geoIntersects.
- Issue #1448: Added Manuscript, Poster, Drawing, and SheetMusic subtypes of CreativeWork.
- Issue #1976: Added ShortStory subtype of CreativeWork.
- Issue #1816: Added Play subtype of CreativeWork.

Site Improvements

- Added section to Github README discouraging large projects without prior discussion.
- Linked Travis-CI from Github README.
- Clarified and simplified the Extension mechanism.

3.4

sdo-telesto

2018-06-15

Version 3.4 (working name 'sdo-telesto'). See planning pages. Clarifications around Series. Introduced an example showing ClaimReview of a clip within a larger media object. A lot of Small fixes and maintainence edits. Numerous additions to the pending area, including employment and occupation vocabulary, a Claim type to help explore richer modeling around fact-checks, tourism-related vocabulary. Other pending area improvements include amendments to the legislation vocabulary, Trust Project additions, and the proposal of an inverse of the about property, subjectOf.

Vocabulary

Core changes

- Issue #1902: Improvements to HowTo examples. See also #1895.
- Issue #1761: Changed mis-abbreviation of Friday as "Fri" to "Fr". Per the guidelines for openingHours, Friday should be abbreviated as "Fr." In one set of examples, it was abbreviated as "Fri.".
- Issue #1820: hyperlink to new, recommended DOI resolver.
- Issue #1894: Added reference to cryptocurrencies in description for 'paymentAccepted' and 'currenciesAccepted' properties. For consistency, also added to description of properties: 'discountCurrency', 'price', 'priceCurrency', 'currency'. Updated the description additions to reference ISO 4217 formats, cryptocurrency Ticker symbols, LETS and other currency types including single inline examples for each.
- Issue #1090: Clarified Series, CreativeWorkSeries, EventSeries. The Series type is now intangible, rather than having an inappropriate CreativeWork supertype. We have two subtypes of it, CreativeWorkSeries (successor to the original definition of Series, which was too generally named), plus the proposed EventSeries type (currently in the Pending area). These domain-specific series types also have corresponding supertypes in CreativeWork and Event. See also Issue #447.
- Issue #1155: Clarified that encodingFormat, fileFormat mean the same thing, converged their definitions, and made encodingFormat the preferred term.
- Issue #1824: Fixed typos in tickerSymbol.
- Issue #1833: Added expected type ItemList to

acceptedAnswer, suggestedAnswer.

- Issue #1799: Fixed an error in an example for Question type.
- Issue #1686: Added an extra ClaimReview example based on a TV clip.
- Issue #1762: Added schema mapping declarations indicating that 'name' is a subproperty of rdfs:label, and equivalentProperty of dcterms:title.
- Issue #1729: Improvements around HowTo, including declaration of CreativeWork as its supertype, and introduction of 'step' property instead of 'steps'.
- Issue #1732: Changed HowToSection and HowToStep (which support the HowTo type) to have CreativeWork as their supertype.
- Issue #1723: Introduced FAQPage, which represents a WebPage presenting one or more "Frequently asked questions".
- Issue #1935: Extend the contentRating property to also expect the Rating type.
- Issue #2020: Extend the byArtist property to also expect the Person type.

Changes in Pending section

- Issue #1670: Add a subjectOf to Thing as an inverse property of about.
- Issue #1689: Add EmployerAggregateRating as a subtype of AggregateRating to differentiate ratings for the entity as an employer and the reviewAspect property to Review and Rating to allow authors to specify the facet or relevant part of being reviewed.
- Issue #1698: Add a Occupation type with the supporting properties, many of which existed for JobPosting. A Person's occupation can be specified with hasOccupation. The Occupation's estimatedSalary is expressed as a MonetaryAmountDistribution, a subtype of the new QuantitativeValueDistribution type.
- Issue #1787: Narrowed the range of

legislationJurisdiction to AdministrativeArea rather than Place. Broadened the range of legislationIdentifier to include URL, to match with the description of the property.

- Issue #1815: Added proposal for TouristDestination, TouristTrip, and Trip plus examples.
- Issue #1886: Add basic sdPublisher and sdDatePublished (and in #1866, sdLicense) markup, e.g. for when structured data created elsewhere.
- Issue #1866: Added a proposed sdLicense property.
- Issue #1776: Introduced DefinedTerm as a super type of the existing proposed term CategoryCode, to support non-categorical controlled terms.
- Issue #1828: Added a Claim type, to make explicit a concept suggested in the ClaimReview fact-checking markup.
- Issue #1773: Add a MediaSubscription type with the supporting properties to describe a subscription for viewing media. Also added ActionAccessSpecification to allow authors to specify when a ConsumeAction requires a subscription or a purchase.
- Issue #1744: Improvements around Legislation vocabulary. Changed definition of "Legislation" to make it clear that it is a document. Deleted numerous inverse properties. Fixed Range on legislationType (CategoryCode). Added legislationJurisdiction as a subproperty of spatialCoverage. Fixed Definitive into DefinitiveLegalValue to align with other values. Expanded the definition of legislationIdentifier to clarify that it can apply to string or URIs. Fixed and adjusted the examples accordingly.
- Issue #1709: Added an Occupation type and examples, to represent professions.
- Issue #1389: Updated SpeakableSpecification-related properties, 'xpath' and 'cssSelector' to explain how they relate to 'WebPageElement'. Allowed both properties to be expected on that type.

- Issue #1525: Improvement suggested by Trust Project, including addition of AskPublicNewsArticle, ownershipFundingInfo and diversityStaffingReport properties, editorial tweaks to dateline property. Second phase of additions included knowsAbout, knowsLanguage proposals (#1688.)
- Issue #1950: Added CorrectionComment and a property correction to point to it, as suggested by the Trust Project.

Changes in other named extensions

- Issue #1882: Fix to OccupationalTherapy - Made OccupationalTherapy a simple class instead of a typeof schema:MedicalSpecialty
- Issue #1677: Added (and #1900 improved) autos documentation.

Site Improvements

- Issue #1634: Aliased 'rdf:HTML' to 'HTML' in JSON-LD context definitions.
- Issue #1879: Fix to duplicate and missing properties listings in the CSV outputs for Types and Enumeration values (see also #1882).
- Issue #1878: Improvements towards a more responsive HTML design, thanks to Dan Scott.
- Issue #1857: Updated site search function to use Google Custom Search v2 API.
- Issue #1646: Updated various links to use https when referring to this site.
- Issue #1722: Continuous Integration tests now check RDFa syntax.
- Issue #1946: Linked experimental D3/RDFS and OWL representations from the developers page.

3.3 **sdo-enceladus** **2017-08-14**	Version 3.3 (working name 'sdo-enceladus'). See planning pages, specifically #1569 for details.	Vocabulary

This release introduces pending types around Review, NewsArticle and Article that allow more fine-grained distinctions to be made. It adds a TouristAttraction type to the core, and a draft PublicToilet type as a pending proposal. It adds a HowTo vocabulary that generalizes Recipe-like structured instructions, and adds some useful properties to EmailMessage. It also adds a substantial vocabulary for describing Legislation to the pending section.

Core changes

- Issue #1459: Improvements to TouristAttraction. Add a new property touristType to TouristAttraction, "Attraction suitable for type(s) of tourist. eg. Children, visitors from a particular country, etc". Extend the domain of availableLanguage to TouristAttraction, of isAccessibleForFree to Place, adapting the definitions accordingly. Add new property publicAccess to Place. "A flag to signal that the Place is accessible by public visitors."
- Issue #1525: Expanded definition of NewsArticle from "A news article.", and added a News overview document introducing some proposed additional terms, and discussing the relationship between News and related markup for Education/Learning, TV, Radio etc.
- Issue #647: Add a HowTo type, building upon and generalizing the existing Recipe vocabulary. This introduces estimatedCost, steps, supply and tool as new properties, and re-uses performTime, prepTime, totalTime. We also introduce yield, which generalizes the existing recipeYield, and note that performTime generalizes the existing cookTime. Supporting types HowToItem (with a requiredQuantity property), HowToSupply and HowToTool, HowToSection and HowToStep (a kind of ItemList) are also provided, to allow more explicitly structured steps to be described. This effort has had many contributors over the years - thanks to all who have helped!
- Issue #1590: Add bccRecipient, ccRecipient, and toRecipient for use with EmailMessage.
- Moved to Core from Pending:
  - None proposed.

Additions to Pending section

- Issue #1457: Add a Schedule type, with supporting properties: repeatFrequency, repeatCount, byDay,

byMonth, byMonthDay, exceptDate, eventSchedule. These terms are used alongside the existing startTime and endTime properties. The main purpose of this new vocabulary is to capture recurring events in a manner compatible with a subset of the iCalendar approach.

- Issue #1156: Add Legislation, LegalForceStatus, LegislationObject, LegalValueLevel and other supporting terms. These terms are based on the European Legislation Identifier (ELI) ontology and the work of the ELI taskforce. ELI is an initiative of some national legislation publishers endorsed by EU countries and Institutions, to identify, describe and link legislation on the Web.

- Issue #1624: Add a draft PublicToilet type to the pending section.

- Iussue #1577: Add estimatedSalary to JobPosting.

- Issue #1589: Add CriticReview and UserReview to distinguish common subtypes of Review.

- Issue #1576: Add EmployerReview to indicate reviews that are by a current or former employee, and that are reviews of that organization's role as an employer.

- Issue #1525: Add subtypes of NewsArticle: ReportageNewsArticle, AnalysisNewsArticle, OpinionNewsArticle, ReviewNewsArticle, BackgroundNewsArticle to distinguish common kinds of NewsArticle. Also add a subtype of Article, AdvertiserContentArticle and a News overview document. Added a subtype of Organization, NewsMediaOrganization, alongside several "best practice"-oriented properties: actionableFeedbackPolicy, correctionsPolicy, diversityPolicy, ethicsPolicy, masthead, missionCoveragePrioritiesPolicy, unnamedSourcesPolicy, verificationFactCheckingPolicy, (apart from ethicsPolicy and diversityPolicy, these are all sub-properties of publishingPrinciples). These changes were based in large part upon the work of The Trust Project.

- Issue #1437: Add SatiricalArticle type.

Site Improvements

- Issue #1582: Added dedicated documentation page describing background and examples for banking and finance terms.

3.2
sdo-callisto
(2017-03-23)
	Version 3.2 (working name 'sdo-callisto'). See planning pages, specifically #1292 for details.
	
	This release introduces new core vocabulary including mechanisms for describing fact-check reviews, courses, and menus. It also introduces a number of newly-proposed terms via the "pending" area, to encourage discussion, implementation feedback and other improvements.
		## Vocabulary
		
		Core changes
		
		- Issue #1209: Added maximumAttendeeCapacity and remainingAttendeeCapacity for describing places and events.
		- Issue #1361: Broadened about property to be applicable on events.
		- Issue #1364: Broadened genre property to be applicable on BroadcastChannel.
		- Issue #1488: Added identifier as a common super-property of numerous identifying properties.
		- Issue #1288: Added types Menu, MenuItem, MenuSection, and properties hasMenuItem, hasMenuSection. A proposed menuAddOn property has also been added to Pending for further design discussion and implementor feedback. Introduced hasMenu property that supersedes menu, both for consistency with the other new menu properties, and to avoid a property and type having essentially the same name.
		- Moved to Core from Pending:
		  - Issue #195: Added Course-description terms: Course, courseCode, coursePrerequisites, hasCourseInstance, CourseInstance, courseMode, instructor. Thanks to the Schema Course Extension community group at W3C, initiated by LRMI and led by Phil Barker.
		  - Issue #1061: Migrated ClaimReview and claimReviewed for fact-checking reviews into

Core section.

- Issue #1100: Added accessMode, accessModeSufficient, accessibilitySummary properties to support accessible digital publishing. This proposal came from the digital publishing community, and specifically from the Epub 3.1 Accessibility Working Group.

Additions to Pending section

- Issue #1541: Add a menuAddOn property (originally proposed with other menu-related terms).
- Issue #1125 Added PreOrderAction (a subtype of TradeAction)
- Issue #1253: Added several terms proposed by the FIBO project and its community group.
  - Types: BrokerageAccount, ExchangeRateSpecification, InvestmentFund, MoneyTransfer, MortgageLoan, RepaymentSpecification.
  - Properties: accountMinimumInflow, accountOverdraftLimit, amount, bankAccountType, beneficiaryBank, cashBack, contactlessPayment, currency, currentExchangeRate, domiciledMortgage, downPayment, earlyPrepaymentPenalty, exchangeRate, exchangeRateSpread, floorLimit, gracePeriod, loanMortgageMandateAmount, loanPaymentAmount, loanPaymentFrequency, loanRepaymentForm, loanType, monthlyMinimumRepaymentAmount, numberOfLoanPayments, recourseLoan, renegotiableLoan.
- Issue #1262: Added BedType.
- Issue #1293: Added EndorsementRating.
- Issue #1375 Added GeospatialGeometry and some draft definitions for associated properties, an informal collaboration with the W3C Spatial Data on the Web

Working Group. Initial properties are:
geospatiallyContains, geospatiallyCoveredBy,
geospatiallyCovers, geospatiallyCrosses,
geospatiallyDisjoint, geospatiallyEquals,
geospatiallyIntersects, geospatiallyOverlaps,
geospatiallyTouches, geospatiallyWithin.

- Issue #1389: Added new type SpeakableSpecification,
  with properties cssSelector and xpath, alongside a
  property on WebPage called speakable to refer to a
  SpeakableSpecification. The purpose (documented
  primarily on the speakable property) is to indicate
  sections of a document that are highlighted as
  particularly suitable for being spoken/read. These
  sections are indicated via URL/ID values, XPath and/or
  CSS selectors.

- Issue #1397: Added CompleteDateFeed to indicate
  completeness of feeds.

- Issue #1423: Added a draft WebAPI.

- Issue #1425: Added a draft measurementTechnique
  property, to support richer Dataset description
  particularly for scientific data.

- Issue #1495: Added a Consortium type, as well as a
  LibrarySystem type to represent a particular kind of
  Library consortium.

- Issue #743: Added a Distillery type.

- Issue #894: Added CategoryCode, CategoryCodeSet,
  codeValue and inCodeSet to explore better description
  of enumerated value lists.

- Issue #1004: Added broadcastFrequency,
  broadcastFrequencyValue and
  BroadcastFrequencySpecification for describing
  (primarily radio but also TV) frequencies. Also
  supporting types FMRadioChannel, AMRadioChannel,
  and property hasBroadcastChannel (inverse:
  providesBroadcastService).

Archived into Attic section

- The proposed variablesMeasured property has been removed from Pending. A non-plural variableMeasured property replaced it.
- broadcastSignalModulation was retired 2016-08-17 from Pending section.
- The Courses proposal while in Pending originally had additional terms - courseCredits, courseCreditsUnit, grantsCredential, previewUrl - which should be archived here.

Site improvements

- Issue #1027: Published a basic robots.txt file to avoid a template file being indexed by search engines.
- Issue #1272: Created an Internet of Things (IoT) section, mailing list and discussion document. At this stage no specific schemas are proposed, only some basic infrastructure for collaboration and schema review.
- Issue #1398: Added HTML anchor to support links to the "incoming" section of pages documenting types (see example).
- Issue #1483: Added a sitemap.xml file.
- Issue #53: Added Travis-CI monitoring for test cases and syntax checking of examples.
- Issue #1351: Improvements to the output formats of downloads section in developers page.

Quick fixes and Examples

- Issue #1475: Clarified that Event can have an audience property.
- Issue #1494: Broadened lender to allow organizations as possible values.
- Issue #1294: Restored material as a super-property of artMaterial that can be used with any Product or CreativeWork. Also marked artworkSurface as another specialized sub-property of material. The material property can now also have Product as its value,

allowing branded and manufactured materials to be described in more detail.

- Issue #1290: Add the word 'event' to isAccessibleForFree definition.
- Issue #1162: Updated text for sameAs - Freebase mention migrated to reference Wikidata.

3.1 **sdo-** **makemake** **(2016-08-09)**	Version 3.1 (working name 'sdo-makemake'). See planning pages, specifically #1212 for details. This release is primarily concerned with hotel/accomodation vocabulary, improvements around dataset, and bug fixes.	**Vocabulary** • Issue #915: Added substantial vocabulary for hotels and related accomodation, alongside a dedicated documentation page. New vocabulary includes LodgingBusiness, Accommodation, and several subtypes which can be used (via multiple typing) alongside the existing Offer type. Other terms include starRating, amenityFeature, LocationFeatureSpecification, floorSize, permittedUsage, petsAllowed, checkinTime, checkoutTime... • Issue #1203: Fixes for accidental rollbacks in 3.0. See Github for comprehensive analysis and details. Restored several definitions: paymentStatus lacked PaymentStatusType from #518; breastfeedingWarning, healthCondition, prescriptionStatus and secondaryPrevention have been migrated into health-lifesci.schema.org as planned; SocialMediaPosting has supertype of BlogPost (from #526) rather than Article; genre expects URL values (from #346); affiliation is a sub-property of memberOf (per #596); cookTime, prepTime and totalTime definitions hyperlink to ISO 8601 details; publisher property can reference Person (fix for #1198, restoring #611); videoFormat is again expected on BroadcastEvent, ScreeningEvent (and BroadcastService), rather than TelevisionStation (per #577); parentOrganization and subOrganization are noted as mutual inverses (per #g535); codeSampleType description improved per #343;

netWorth definition now correctly omits Organization (per #585).

- Issue #900: Extended isAccessibleForFree to be expected potentially on any Event or CreativeWork.
- Issue #996: Added DateTime to expected values for startDate, endDate, commentTime.
- Issue #1083: Improvements primarily around Dataset, generalized spatial property of Dataset to become spatialCoverage of any CreativeWork; similarly generalized temporal as temporalCoverage. Indicated that spatialCoverage is a subproperty of contentLocation. Broadened sponsor to apply to creative works such as datasets, and added a more specific subproperty to indicate funder. Amended definition of MediaObject to match its use as a supertype of DataDownload. Amended fileFormat to allow URL as a way of indicating niche or unregistered file formats (common for scientific datasets). Added a draft variablesMeasured property to the pending extension.

Site improvements

- Issue #1234: Enhanced incoming properties display (Instances of [...] may appear as values for the following properties) to include properties from extensions.
- Issue #479: Updated and clarified the datamodel document, including conformance section.
- Issue #1213: Fixes for site performance problems.
- Issue #1214: Fix for RDFa formatting errors in per-term pages.
- Issue #1248: Fix for Need easy way to download rdf definition files. Introduces a Vocabulary definition download section providing access to RDF representations of the vocabulary and extensions in Triple, Quad, JSON-LD, and Turtle format.

Quick fixes and Examples

- Issue #1151: Broadened version to allow textual values as well as numbers.
- Issue #1257: Fixed all labels to match corresponding term IDs exactly.
- Issue #1260: Fixed Product example, microdata was missing itemprop attribute.
- Issue #1201: Clarified deliveryLeadTime for the case of on-site pickup.
- Issue #1283: Removed Dentist from deprecated type ProfessionalService, added LocalBusiness as a supertype.

The following Early Access fixes were published between 3.0 and 3.1 releases:

- Issue #1159: Fixed problems with W3C validator, caching, and misclassification of manufacturer property which in in core rather than health-lifesci extension.
- Issue #1165: Improved wording for term pages that are not in core, to avoid publishers worrying that they need to change their markup.
- Issue #1136: Fixed term labels to always be alphanumeric (no 'bib:' prefixes etc.)
- Issue #1168: Fixed unit tests to run against extension schema data as well as core.
- Issue #1169: Fixes for property/type associations in health-lifesci and pending drafts, identified by improved unit tests.
- Issue #1174: Fix for missing definition for 'ingredients'.

3.0 **sdo-deimos** **(2016-05-04)**	Version 3.0 (working name 'sdo-deimos'). See planning pages, specifically #911 for details. This release introduces three new extensions. • The meta.schema.org extension contains terms	**Vocabulary** **Core changes** • Issue #845: Added vocabulary for suitability to restricted diets in Recipe (suitableForDiet, RestrictedDiet). • Issue #1005: Generalized some properties from Product to apply also to Service - audience, brand, logo,

primarily designed to support the implementation of the Schema.org vocabulary itself.

- The pending.schema.org extension is a staging area for work-in-progress terms which have yet to be accepted into the core vocabulary. Pending terms are subject to change and should be used with caution.
- The health-lifesci.schema.org extension is a new home for our existing Medical and healthcare related terms, as well as potential future collaborative work.

The initial releases of bib.schema.org and auto.schema.org have also been finalized.

In addition to numerous vocabulary-related improvements, we have added a new "How we work" document providing an overview of the project's approach to schema development, collaboration, versioning and change review. In particular it documents the use of the new pending extension, which gives earlier access to proposed new

isRelatedTo, isSimilarTo.

- Issue #880: Added disambiguatingDescription to explicitly indicate short Wikipedia-like disambiguating descriptions.
- Issue #1048: Added DigitalDocument and subtypes SpreadsheetDigitalDocument, PresentationDigitalDocument, TextDigitalDocument, NoteDigitalDocument. Also a hasDigitalDocumentPermission property of these whose value is a DigitalDocumentPermission type. A permissionType property of each DigitalDocumentPermission has values that are from a DigitalDocumentPermissionType enumeration: CommentPermission, ReadPermission, WritePermission. The grantee property indicates in each case the person, organization, contact point, or audience that has been granted that permission.
- Issue #888: Added PreSale to the ItemAvailability enumerated values.
- Issue #962: Broadened definition of sponsor property.
- Issue #961: Improved wording of validThrough, and added JobPosting to allow markup for job posting closing dates.
- Issue #1020: Added new subtypes of CreativeWork: Message and Conversation. Marked EmailMessage as a subtype of Message.
- Issue #1079: Created ComputerLanguage, amended programmingLanguage to expect it (and Text); amended Language to focus on natural languages. Noted that BCP 47 should be used for natural language tagging, via alternateName property. Amended availableLanguage to indicate that Text values are expected, that BCP 47 is encouraged, and to cross-reference with inLanguage.
- Issue #1092: Amended contributor, actor, translator, director, composer to apply to Event.
- Issue #969: Integrated improvements from FIBO to

schema designs, as well the parallel webschemas.org site which shows the latest work-in-progress version of the entire schema.org site.

core terminology around financial products, including the addition of MonetaryAmount (superseding DatedMoneySpecification) and CompoundPriceSpecification, alongside improved wording around CreditCard, PriceSpecification.

- Issue #923: Created schema.org entries for Monday-Friday and PublicHolidays, based on the GoodRelations originals. Also clarified OpeningHoursSpecification and added a specialOpeningHoursSpecification property to allow for general opening hours to be overridden.
- Issue #541: Added enumerations for male and female, but allow other values as well.
- see also Issue #492 below; many terms have been moved from the core into health-lifesci.

auto.schema.org

- Issue #922: Finalized first release of auto.schema.org. Removed "pre-final preview release" description.

bib.schema.org

- Issue #911: Finalized first release of bib.schema.org. Removed "pre-final preview release" description.

health-lifesci.schema.org

- Issue #492: Moved a large number of medical/health terms from core into a health-lifesci extension.

pending.schema.org

The pending extension is a staging area for work-in-progress terms which have yet to be accepted into the core vocabulary.

- Issue #1050: Added contentReferenceTime.
- Issue #1062: Added HealthInsurancePlan, a US health insurance schema.
- Issue #1110: Added accessMode, accessModeSufficient and accessibilitySummary.
- Issue #447: Added EventSeries.
- Issue #271: Added Quotation and spokenByCharacter.

- Issue #1061: Added ClaimReview and claimReviewed for fact-checking reviews.
- Issue #1059: Created pending.schema.org to enable publication of work-in-progress drafts for wider review.
- Issue #1045: Added LinkRole as a subtype of Role, and a linkRelationship property.
- Issues #243: Added WorkersUnion.
- Issue #1004: Added broadcastFrequency to BroadcastService to specify the over the air frequency.
- Issue #195: Added snapshot of the evolving Course-related terms being developed by the Course Extension community group.

Site improvements

- Issue #1059: Created hosted extensions for 'meta' vocabulary and for 'pending' vocabulary under review. Moved Class, Property, domainIncludes, rangeIncludes, inverseOf, supersededBy into meta.
- Issue #256: Implementation of HTTP HEAD for all pages.
- Issue #1095: ETag and Last-Modified headers only for successful page requests.
- Issue #1098: Added categorization of terms listed on extension home page.
- Issue #990: JSON-LD context file should enumerate all terms. This will make it easier to combine the use of schema.org with other vocabularies and extensions.
- Issue #1075: Added markdown format processing of comment fields. This makes the schema editing process easier, especially for cross-referencing related terms.
- Issue #178: Integrated rdflib python library. This improves our ability to parse RDFa and JSON-LD schema definitions, and makes unit tests easier to run.
- Issue #1109: We now display when a type is superseded.

Quick fixes and Examples

- [core] Issue #1097: partOfOrder and partOfSystem are no longer marked as sub-properties of isPartOf since they are not relations between creative works.
- [core] Issue #1102: Examples fixed to avoid 'content' attribute on span element in Microdata.
- [core] Issue #1066: Cleanup around Dataset / DataCatalog association: renamed containedDataCatalog as containedInDataCatalog, marked it as inverse of dataset and improved wording of both definitions.
- [core] Issue #1073: Removed redundant types listed for branchCode - Place already covered LocalBusiness and Store.
- [core] Issue #1081: Added AudiobookFormat to the BookFormatType, for consistency. Note that the bib extension also has a dedicated type for describing audio books.
- [core] Issue #950: isBasedOnUrl now called isBasedOn; isBasedOnUrl still exists but is marked as supersededBy isBasedOn. Extended range to include (for now just) CreativeWork, Product.
- [core] Issue #929: Marked subEvent and superEvent as inverses of each other.
- [core] Issue #929: the colleague property now also expects URL values (and for JSON-LD therefore expects things not strings by default).
- [core] Various typo fixes (including #1014).
- [core] Issue #966: Fixed bug in PropertyValue JSON-LD example.
- [core] Issue #912: Added education/learning examples (from Phil Barker / LRMI): learningResourceType, educationalAlignment, AlignmentObject, educationalFramework, alignmentType, targetName, targetUrl, audience, EducationalAudience, typicalAgeRange, timeRequired, educationalRole.
- [core] Issue #919: Fixed Javascript errors caused by

bad markup in 404 pages (published 2015-12-10).

- [core] Issue #899: Bugfix for a few pages that were returning 500 error codes (published 2015-12-10).

- [core] Issue #904: Simplified JSON-LD examples for Periodical (published 2015-12-10).

- [core] Issue #1015: Fixed spelling of "content" in FoodEstablishment example.

- [core] Issue #997: Expanded sharedContent to coverage of SocialMediaPosting example.

- [core] Issue #992: Removed an example from QAPage since the example didn't illustrate the term's use.

- [core] Issue #836: Markup fixes to examples of PropertyValue.

- [core] Issue #143: Fixed openingHours examples to use `span` element instead of `time`, and some `time` examples to use `datetime` attribute instead of `content`.

- [core] Issue #3905: CSS fix to Actions document.

- [core] Issue #511: Microdata examples fixed to use 'href' example on 'link' element instead of 'content' on 'meta'.

- [core] Issue #533: OpeningHoursSpecification example: various fixes including better use of 'time' element.

- [bib] Issue #984: bug fixes for bib.schema.org/Chapter example.

| **2.2**
sdo-phobos
(2015-11-05) | Version 2.2 (working name 'sdo-phobos'). This release combines a range of small additions across several areas of schema.org with an ongoing concern for cleanup and integration of existing vocabulary. Notable additions include ExhibitionEvent, Barcode, DataFeed, containsPlace, GeoCircle, geoRadius, geoMidpoint, providerMobility and | **Vocabulary**

- Issue #773: Added actionPlatform as a simpler mechanism to specify the platform for EntryPoint targets.

- Issue #823: Marked homeLocation, workLocation as subproperties of location, and marked location as expecting textual values.

- Issue #818: Added OfferCatalog for specifying a catalog of offers by an Organization or Service.

- Issue #817: Added providerMobility to describe |

actionPlatform. A number of changes improve our handling of Service description, including the deprecation of the ProfessionalService construct. We have kept all the specific types that were previously considered ProfessionalService but discourage the use of the type 'ProfessionalService' since it is easily confused with 'Service'.

whether a service provider is at a fixed location or has a dynamic location.

- Issue #445: Added ExhibitionEvent and added a superproperty of workPresented and workPerformed to cover event-to-work relationships such as a work being exhibited.
- Issue #113: Added GeoCircle as a subtype of GeoShape, providing a more usable mechanism than circle structured text; added geoRadius, geoMidpoint to describe the size and location of these circular areas.
- Issue #323: Added locationCreated to CreativeWork.
- Issue #811: Renamed containedIn as containedInPlace, and added an inverse containsPlace.
- Issue #810: postalCode and addressCountry are now an expected property for GeoShape and GeoCoordinates. Adjusted addressCountry to allow textual values, matching the existing definition.
- Issue #801: Broadened award, category, offers to be applicable on Service. Extended itemOffered to expect Service as a possible value. Added LegalService as a supertype for Notary, Attorney. Marked ProfessionalService as deprecated, with some explanation, and added a brief account of the relationship with Service to some of the more service-oriented local business types e.g. LegalService, HomeAndConstructionBusiness. A cluster of construction-related local businesses formerly treated as ProfessionalService continue as HomeAndConstructionBusiness subtypes. Marked Attorney as deprecated in favor of LegalService per #784. Added hoursAvailable to Service.
- Issue #411 Clarification and cleanup around areaServed, now marked as a super-property of the more specific eligibleRegion and availableAtOrFrom properties. Cross-referenced eligibleRegion and ineligibleRegion. Marked serviceArea as supersededBy areaServed. Updated the associated types for

areaServed to cover those used by its sub-properties.

- Issue #808: The address property now anticipates Text values, to support unstructured address data.
- Issue #802: Referenced World Geotic System from GeoCoordinates properties (elevation, longitude, latitude); made address an expected property for GeoCoordinates and GeoShape.
- Issue #796 Added offeredBy property to relate an Offer to a Person or Organisation. Inverse of makesOffer.
- Issue #791 Added branchCode to represent codes identifying stores and other business locations.
- Issue #790 Broadened fileFormat to be usable with CreativeWork, and improved the description.
- Issue #687: Added Barcode as a subtype of ImageObject.
- Issue #688: Added DataFeed and DataFeedItem to represent a data feed of structured items and supportingData for using DataFeed to provide data to a software application.
- Issue #767: Added countryOfOrigin property to Movie, TVEpisode, TVSeason, and TVSeries.
- Issue #768: Added broadcastOfEvent property to BroadcastEvent to allow for specifying the event being broadcasted.
- Issue #432: Added Organization to domain of alumni and to range of alumniOf properties.

Site improvements

- Updated FAQ to clarify CC licensing of docs/examples and use of https: URLs in structured data.
- Updated Feedback form to permit per-term feedback and to be explicit that feedback messages may be shared with the wider community.
- Issue #769: Sorting of multi-inheritance breadcrumbs on term pages.
- Issue #761: Updated linking structure in 'more...' section of term pages.

- Listing of extension contents on extension home pages (eg. bib.schema.org)
- Term counts added to docs/schemas.html - *The core vocabulary currently consists of 638 Types, 980 Properties, and 219 Enumeration values.*
- List of enabled extensions added to docs/schemas.html.
- Various internal software fixes, unit tests and cleanup.

Quick fixes and Examples

- Issue #764 Added example for makesOffer.
- Issue #733 Added example showing library availability for Book. Also added example for Library and linked it to openingHoursSpecification as a good example for that too.
- Bulk update to examples: Various fixes to html syntax, missing quotes and <meta> tags that should be <link> tags.
- Issue #478: Replaced <meta> tags that should be <link> tags in periodical examples.
- Several small markup fixes to various examples.

See also issue list for this release.

2.1 **sdo-ganymede** **(2015-08-06)**	Version 2.1 (working name 'sdo-ganymede') includes many small fixes, some new vocabulary, as well as the first release of the 'hosted extensions' mechanism, featuring bib(liographic) and auto(mobile) extensions for final review. A pre-release of this version of schema.org was available at sdo-ganymede.appspot.com/ for review.	**Vocabulary** • Issue #611: Added Person as expected value for publisher property. • Issue #596: Documented that affiliation is a sub-property of memberOf. • Issue #207: Added a Bridge type under CivicStructure. • Issue #346: Added URL as expected value for genre property. • Issue #374: Added Report type under Article, and a reportNumber property. • Issue #577: Amended videoFormat to indicate that it is expected on BroadcastEvent and ScreeningEvent, rather than TelevisionStation. • Issue #535: Broadened domain of parentOrganization

to allow any Organization, rather than only LocalBusiness. Noted parentOrganization and subOrganization as inverses.

- Issue #531: Added the lyrics property to MusicComposition.
- Issue #518: Renamed paymentDue property to paymentDueDate. Changed paymentStatus property to expect an enumerated value of type PaymentStatusType in addition to Text. The options are: PaymentComplete, PaymentDue, PaymentPastDue, PaymentDeclined and PaymentAutomaticallyApplied.
- Issue #137: Deprecated UserInteraction and its children in favor of a new type: InteractionCounter. InteractionCounter allows for reporting aggregated statistics by service and type. Thanks elf Pavlik for collaboration.
- Issue #526: Added new types LiveBlogPosting, SocialMediaPosting, and DiscussionForumPosting, alongside supporting properties.
- Issue #334: Updated the controlled values for accessibilityHazard shown in examples to follow latest community recommendations: 'noFlashing' is now 'noFlashingHazard', 'noMotionSimulation' is 'noMotionSimulationHazard', and 'noSound' is 'noSoundHazard'.

Site improvements

- Issue #429: Hosted extensions e.g. bib.schema.org are now enabled and linked from 'core' pages with appropriate navigation and styling.
- Issue #655: Extension definitions now include an isPartOf property to link them to the extension.
- Issue #527: Added materials from Kickoff Workshop in 2011.
- Issue #78: Multiple supertypes are now displayed properly. It is possible for several schema.org types to apply to a single thing, and for a type to have multiple

parent types. This is relatively rare, but important to display. For example, anything that is a LocalBusiness is considered both an Organization and a Place; so all subtypes of LocalBusiness have both as supertypes. We can now show this more clearly, e.g. ElectronicsStore.

- Added CSS for explicit styling () in releases page during Steering Group review of candidate releases.
- Issue #557, #660, #695, #469: Several DataType-related navigation fixes, following recent modeling changes.
- Issue #548: Added a favicon.ico image. The text is *tiny* and not intended for humans to read.
- Behind the scenes: cleanup and improvements to Python code, unit tests, CSS, filetree layout.

Quick fixes and Examples

- Issue #343: Improved description of sampleType.
- Issue #498: We now write "a URL" consistently, rather than sometimes also using "an URL".
- Issue #585: Fix description of netWorth, which erroneously included Organization.
- #570: Added RDFa and Microdata examples for WatchAction.
- Added new accessibility examples.
- Numerous small documentation fixes for typos, markup validity and textual clarity.
- Fixes to several examples including byArtist, Place, Question/Answer, ...
- Issue #552, #644: Fixes for Book examples.
- Issue #382: Removed examples that don't reference WebPage from WebPage.
- Issue #643: Moved bulk of mainEntityOfPage documentation into dedicated background notes.

See also issue list for this release.

2.0 sdo-gozer	Version 2.0 consolidates and integrates schema.org's existing	**Vocabulary**

(2015-05-12) | vocabulary. This version features many updated definitions, type/property associations and term names that improve consistency and usability. It also introduces a new extension system. Version 2.0 adds various new terms including mainEntityOfPage and major contributions from the Automotive Ontology community.

- Issue #262: Added new vocabulary for Car: The new vocabulary includes a number of properties such as: numberOfAirbags, numberOfAxles, numberOfForwardGears, fuelConsumption, fuelEfficiency vehicleEngine, EngineSpecification… Thanks to Martin Hepp, Mirek Sopek, Karol Szczepański and others in the Automotive Ontology community group. We anticipate substantial additions that build on this foundation will be contributed as an extension.

- Issue #301: Added a generic property/values mechanism, building upon PropertyValueSpecification, StructuredValue and value; added PropertyValue and additionalProperty. See examples for usage. This is a lightweight mechanism to allow markup of properties that are not easily mapped to existing schema.org properties. Whenever possible, it is generally better to use a dedicated schema.org property if one exists.

- Issue #301: Added mainEntityOfPage (and an inverse, mainEntity) to indicate which of the entities mentioned in a page is its primary topic.

- Issue #225: Added a schemaVersion property, for use by applications that require more precise referencing of schema versions.

- Issue #266: Added OrderItem to allow ParcelDelivery to be tracked per item, not just on an entire Order.

- Issue #170: Clarifying CommentAction, Comment by deprecating UserComments. Several mentions of UserComments removed from other terms. 'inLanguage' supersedes 'language'. Added a resultComment property. UserInteraction and sub-types will be deprecated.

- Issue #300: Answer is now a sub-type of Comment. The 'question' property expects 'Question' type for its values (rather than Text as in AskAction previously). Added resultComment on ReplyAction. Cleaned up examples.

- Issue #130: Amended True and False to be instances

(rather than sub-types) of Boolean.

- Issue #218: Amended DataType to model it as a sub-class of Class, with each datatype e.g. Boolean, Text, Date, DateTime, Time etc. being classes that have a typeOf DataType. DataTypes can have sub-types, e.g. Integer and Float are subtypes of Number.

- Issue #328: Added ScreeningEvent to support movie/video screenings.

- Issue #314: Added MovieClip and VideoGameClip as parallels to TVClip and RadioClip.

- Issue #122: Added gtin12 property for Product.

- Issue #417: Renamed many types and properties, which had overly generic names. This is no cause for alarm, the superseded names can still be used, although we encourage consumers and producers of schema.org data to move towards the newer terminology. CreativeWorkSeason was Season, CreativeWorkSeries was Series, SoftwareSourceCode was Code, TaxiService was Taxi, actionApplication was application, actionOption was option, artMedium was material, artworkSurface was surface, availableOnDevice was device, branchOf was parentOrganization, broadcastTimezone was timezone, codeSampleType was sampleType, containsSeason was season, datasetTimeInterval was temporal, executableLibraryName was assembly, exerciseCourse was course, exerciseRelatedDiet was diet, incentiveCompensation was incentives, includedDataCatalog was catalog, isAccessibleForFree was free, jobBenefits was benefits, runtimePlatform was runtime, serviceArea was area, serviceOutput was produces, softwareRequirements was requirements, targetCollection was collection.

Site improvements

- Issue #429: Implementation of new extension system.
- Issue #6: Improved 404 handler for missing pages,

with support for old-style "/Person/Minister" extension URLs and Action-related "/query-input" pseudo-properties.

- Issue #318: Added an *experimental* JSON(-LD) view of the hierarchy. This combines D3 with RDF schema. Thanks to Gregg Kellogg and Sandro Hawke for collaboration.
- Various behind-the-scenes improvement to the site software.

Quick fixes and Examples

- Issue #119: Added a link to GS1's page giving background information on /globalLocationNumber.
- Issue #471: Added a JSON example for exampleOfWork and workExample.
- Issue #131: Amended category to be applicable to Product
- Issue #8: Fixed description of box to follow the original rNews definition (instead of accidental copy of polygon). Added explanatory text to GeoShape regarding commas/whitespace.
- Issue #224: Changed expected value of openingHours to be Text rather than Duration, since latter is for ISO formats not our custom micro-syntax.
- Issue #112: Clarified that upvoteCount and downvoteCount apply to questions, answers and comments (rather than just to questions).
- Issue #103: Clarified description of StructuredValue.
- Issue #333: Clarified description of BreadcrumbList.
- Issue #456: Generalized numberOfEmployees, to apply to Organization as well as to BusinessAudience.
- Issue #439: Clarified numberOfItems with multi-page pagination.
- Fixed the mapping from DataCatalog to dcat:Catalog
- Issue #341: Amended programmingLanguage to expect a Language rather than a Thing.
- Issue #365: Extended award for use on Organization,

Product.

- Issue #145: Marked serviceAudience as supersededBy the more general audience property.
- Issue #165: Renamed ingredients to recipeIngredient, improved the description, and added ItemList as a possible value for recipeInstructions.
- Issue #171: Removed Class as a value of query property.
- Issue #183: comment property now applicable to an RsvpAction, and can have Comment as values.
- Issue #193: aggregateRating and review properties are now expected on Brand, Event, Service.
- Issue #247: We now write "antonym" instead of the incorrect "antagonym" in several Action definitions.
- Issue #316: Marked warrantyPromise as supersededBy warranty.
- Issue #213: Amended eligibleRegion and ineligibleRegion to have the same associated types.
- Issue #315: Updated BroadcastService, marking it as a kind of Service rather than just Thing.
- Issue #426: Broadened supersededBy to be usable with classes and enumerations.
- Issue #366: Reworded description of publication to use 'item' instead of a list of types (which had omitted Book), and marked it as applicable to CreativeWork.
- Issue #288: added properties related to boarding passes to FlightReservation.
- Issue #329: expanded BroadcastService and added new types CableOrSatelliteService, BroadcastChannel, TelevisionChannel, and RadioChannel to support TV/radio schedules. Thanks, Yves Raimond for careful review.
- Issue #335: added gameLocation to VideoGameSeries.
- Issue #336: added actor and director to Series.
- Issue #364: replaced non-existent Award type with Book in WinAction type. Thanks, unor.
- Issue #386: Fixed extra spaces in labels.

See also issue list for this release.

1.93 **sdo-stantz** **(2015-02-04)**	Lots of bugfixes and small improvements, plus new terms to describe visual artworks and invoices.	

Vocabulary

- Added VisualArtwork type and supporting properties - artEdition, artform, material, surface. Thanks, Paul Watson.
- Added an Invoice type to represent invoices/bills, with additional properties totalPaymentDue, minimumPaymentDue, accountId, scheduledPaymentDate, billingPeriod, paymentStatus, referencesOrder.
- Fix to allow offers on AggregateOffer. Thanks, Simon Spero, Zinebb.
- Expanded the list of types that musicBy applies to, matching those of actor and director. Thanks, Simon Spero.
- Adding priceSpecification to TradeAction type, fixing #305.
- Adding deliveryMethod to OrderAction type, fixing #306.
- Adjusted description of width, height and depth properties to be "the ___ of the item.", rather than list specific types.

Site improvements

- Added support for linking to #examples within per-term pages. Thanks, Wes Turner.
- Add rangeIncludes to RDFa markup missing from property pages. Thanks, John Walker.

Quick fixes and Examples

- Fixes to several examples, thanks to Gregg Kellogg.
- Fixes to Book example, thanks to unor.
- Added name property in CreativeWork examples; Improved MedicalScholarlyArticle example, marking up the abstract using description - thanks to Dan Scott.
- Corrected a case typo in numberOfEmployees. Thanks,

Stéphane Corlosquet.

- Fixed mistaken use of "MovieGameSeries"; reported by both Gregg and Simon.
- Fixed valuePattern definition; it takes Text values, not Number. Thanks, Holger.
- Fixed definitions for fromLocation, toLocation; they do not support numeric values. Thanks, Simon Spero.
- Fixed producer property; it takes an Organization value, rather than applying to organizations. Thanks, unor.
- Fixed typo: clinicalPharmacology is supersededBy clinicalPharmacology. Thanks, Marc.
- Fixed an example that used "Address" instead of PostalAddress. Thanks, unor.
- Added 100+ periods / full stops (".") to end each definition.

See also issue list for this release.

1.92 sdo-venkman (2014-12-11)	ItemList and BreadcrumbList changes; Sports-related improvements; Added a Music vocabulary; Video games. Also weight/height on Person; Control and RSVP actions; Role names; Dated monetary values.	**Vocabulary** - Updated ItemList to allow for richer kinds of lists (including ordering), rather than just strings; added BreadcrumbList - The weight and height properties can now be with the Person type. Added netWorth to Person. Added EmployeeRole. - Added SportsOrganization as a super-type of SportsTeam, representing *sports organizations, including sports teams, governing bodies, and sports associations*. Added a sport property to indicate the associated sport(s) for a SportsOrganization; also added coach and athlete properties. Added numberedPosition property to OrganizationRole. Added homeTeam and awayTeam properties to SportsEvent, alongside a super-property of those, competitor. - Added a VideoGame type with two super-types: SoftwareApplication and a new Game type. We anticipate a need for future work around Game, see

issue #169. VideoGame has cheatCode, gameServer, gamePlatform, playMode and gameTip properties, plus a few supporting types. A property softwareHelp has also been added to SoftwareApplication to indicate supporting documentation.

- While integrating VideoGame an issue was raised around the need to describe series of games. As a result we have made some changes to the Series type, which previously emphasised only TV and Radio Series: added VideoGameSeries, BookSeries, and MovieSeries. The recently added Periodical type is also now modeled as a Series subtype. Some redundant type/property associations were also tidied up. The existing trailer property can now be used with VideoGame and VideoGameSeries.

- Added ControlAction (previously proposed as OperateAction). Add expectsAcceptanceOf on ConsumeAction (previously proposed as 'contingentOnOffer'). Added ineligibleRegion (on Offer, previously proposed as 'notAvailableAtOrFrom').

- Add rsvpResponse, additionalNumberOfGuests properties to the existing RsvpAction type (see also github issue and details). This change also adds an enumeration RsvpResponseType: RsvpResponseYes, RsvpResponseNo, RsvpResponseMaybe. Finally, we add a new possible ActionStatusType: FailedActionStatus, alongside an error property linking an Action to more information on the cause of the failure.

- Add roleName to Role, superceding namedPosition (see also issue and details).

- Add to MusicAlbum properties: albumProductionType, albumReleaseType, albumRelease (and inverse, releaseOf). Supporting enumerated types: MusicAlbumProductionType (CompilationAlbum, DemoAlbum, DJMixAlbum, LiveAlbum, MixtapeAlbum, RemixAlbum, SoundtrackAlbum, SpokenWordAlbum, StudioAlbum. MusicAlbumReleaseType (AlbumRelease,

BroadcastRelease, EPRelease, SingleRelease). Add new types: MusicRelease, MusicComposition, the latter with properties musicArrangement, composer, firstPerformance, includedComposition, iswcCode, lyricist, musicCompositionForm, musicalKey, recordedAs (inverse: recordingOf). Expand track to allow ItemList values, for lists of MusicRecording, and genre to apply to MusicGroup. See also details.

- Broadened the description of logo property, to match the types it applies to. See also github issue and details.

- Added a DatedMoneySpecification type for non-price monetary values, by analogy with PriceSpecification and its subtypes. Added amount and currency properties and tweaked startDate and endDate property definitions to fit.

- See also blog post...

Site improvements

- Added links to supporting blog posts for Role, Action and Periodical.
- Added "alt" attributes to all image examples.
- Fixed the Full Hierarchy page.

Quick fixes and Examples

- Several minor bugfixes.

See also issue list for this release.

1.91 (2014-09-12)	Offer/price documentation fixes, cleanup and community contributions.	- Updated text of the price property to include practical usage guidance, alongside links to information from GS1 to the gtin-related Offer properties. - Updated all our examples to follow that guidance; primarily by using priceCurrency and the content= attribute. - Noted our thanks to the OpenDomain project for our domain name. - Updated the text of the 'image' property to match its

- Changed spelling of 'supercededBy' to the more conventional supersededBy. Thanks, Sachini Aparna Herath.
- Noted that 'logo' and 'photo' are sub-properties of 'image'. Thanks, Sachini Aparna Herath, again.
- Fixed two syntax errors in examples (Store opening hours RDFa; Book, PublicationVolume Microdata). Thanks, Gregg Kellogg.
- Added Tolkien-based examples for exampleOfWork/workExample. Thanks, Dan Scott, again.
- Fixed a bug with our UTF-8 support. Thanks, Richard Wallis.

| 1.9 (2014-08-18) | Bibliographic improvements (Periodical and more) alongside seller/broker/provider clarifications. | Several bibliographic improvements, thanks to the work of the W3C BibExtend Community Group. Improved handling of Periodicals, Articles and Multi-volume Works, introducing types and supporting properties for Periodical, PublicationVolume and PublicationIssue. Adds new Article properties: pageStart, pageEnd and pagination. CreativeWork gains a convenience inverse of isPartOf called hasPart, as well as a new pair of inverses, workExample and exampleOfWork that link specific and general perspectives on creative works. Many thanks to all the BibExtend group members, to Richard Wallis for chairing, and to Dan Scott for implementing.

Provider/Seller vocabulary: this update also clarifies how to use a set of related terms, integrating sections of schema.org that had developed separately. Full details are documented at W3C and in Github, alongside an overview document. The provider property describes a service provider, service operator, or service performer, while seller describe the entities which sell or offer a service on behalf of an actual service provider. We introduce a more general broker property (replacing the over-specific bookingAgent), as well as deprecating vendor and merchant in favour of seller. Regarding flights and parcel |

delivery, carrier is superseded by provider. Please also note that flightNumber should now be written in full (i.e. "UA110" rather than just "110"). See the supporting documents for details.

Finally, episodeNumber, seasonNumber and clipNumber (for TV/Radio) have been harmonized with the periodicals design (issueNumber and volumeNumber). In each case, both Integer and Text values are anticipated. A common superproperty, position can also be used. This reflects implementation experience and establishes a model that can be applied elsewhere, e.g. ongoing work on describing music.

This update also improves the display and navigation of supersededBy relations between schema.org properties (e.g. see seller).

The Terms of service document was also updated to note that Yandex is now a schema.org Sponsor and to adopt the patent terms used by W3C.

(announcement)

1.8 **(2014-07-28)**	Added WebSite type; broadened isPartOf property.	Added a new CreativeWork type, WebSite: "A WebSite is a set of related web pages and other items typically served from a single web domain and accessible via URLs." Also adopts the suggestion made by the BibExtend group and other collaborators, to broaden the isPartOf property, which now relates any CreativeWork to any other CreativeWork. This release also makes the Potential Actions documentation available in HTML. Several markup fixes from Stéphane Corlosquet, alongside improvements to the consistency of encoding / associatedMedia property definitions thanks to Dan Scott. (announcement)
1.7 **(2014-07-08)**	Allows image with ImageObject; adds Event organizers, Map improvements.	This release amends the image property, noting that ImageObject is a reasonable value. It also adds an organizer property to Event. Changes around Map: we add and prefer a 'hasMap' property which supersedes the older 'map' property, and we add a mapType property which comes with some enumerated values: ParkingMap, SeatingMap, TransitMap,

		VenueMap. A Map might be (but needn't be) also an ImageObject. (announcement)
1.6 **(2014-06-16)**	Roles, various fixes, site navigation improvements.	This release introduced the notion of a Role type to schema.org. See the blog post for details. The Role mechanism applies across all of schema.org, and allows simple statements to be elaborated or qualified, for example with temporal information. Other changes in this release include the addition of a license property, and some documentation of properties used internally by schema.org's documentation system (Property, Class, supersededBy, inverseOf). Fixed an embarrassing typo - "dead" - in the diet property - thanks, Dan Scott. Various other small changes - listed in the preview announcement. (announcement and candidate release)
1.5 **(2014-05-27)**	Tweaks and fixes.	Tweaks to definition of 'keywords' to indicate that comma-separated entries are expected. Several typo fixes from Stéphane Corlosquet. Adds a new icaoCode text-valued property for Airport. Updated description for flightNumber to note "not including the airline IATA code". Added missing Actions-related definitions (urlTemplate, valueName). (announcement)
1.4 **(2014-05-16)**	Examples, examples, examples.	Added two examples to accompany workPerformed. Added several local business, company contact and music event examples. Several glitch and typo fixes including MedicalEnumeration, thanks to Dan Scott. announcement blog post
1.3 **(2014-05-01)**	Added workPerformed.	Added workPerformed, a relationship between an Event and a CreativeWork that is performed at the event.
1.2 **(2014-04-16)**	Potential Actions.	Introduces vocabulary that enables websites to describe the actions they enable and how these actions can be invoked. (announcement and blog post)
1.1 **(2014-05-04)**	Reservations, Q/A and more.	Added a Reservation schema. Question/Answer sites. Order changes. Added EmailMessage.

1.) This release of schema.org adds a finalized Reservations schema, which refines earlier proposals discussed in the Web Schemas community over the last year. See wiki for details.

The Reservations vocabulary includes: Reservation, ReservationPackage, ReservationStatusType, Ticket, Flight, EventReservation, FlightReservation, TrainReservation, BusReservation, TaxiReservation, LodgingReservation, RentalCarReservation, ProgramMembership, Seat, Vehicle, Airline, FoodEstablishmentReservation, TrainTrip, Car, BusTrip, Taxi.

2.) Q/A sites

A simple vocabulary for Question/Answer and FAQ sites. It adds types for Question, Answer, and QAPage.

3.) Adds a type EmailMessage, analogous to the existing WebPage type.
(candidate release drafted as '1.0g'; not formally announced but included in the change to github-based publishing)

1.0f **(2014-02-05)**	Not-for-profit Offer and other fixes.	This version adapts the wording around the Offer type to suit non-profit scenarios, such as libraries. Thanks to Dan Scott and the BibExtend group for these proposals. This change broadens the definition of Offer and makes associated changes to ItemAvailability and OfferItemCondition, typically rewording "the item for sale" to simply say "the item". The itemOffered property is now defined more appropriately as "The item being offered." rather than "...sold.". The "seller" property is now defined as "The organization or person making the offer.", a compromise to support its use for more kinds of offer. (candidate release and announcement)

1.0e (2013-12-04)	Accessibility properties and Order type.	This release includes a schema for describing Orders, as well as the Accessibility properties for CreativeWork (see discussion). The W3C WebSchemas wiki has the Order proposal and draft schema. For Accessibility, see the blog post for more background on the collaborations involved. See also wiki materials and the draft schema. (announcement)
1.0d (2013-11-21)	TV/Radio; Civic Services; ContactPoint Event and Organization improvements.	TV/Radio improvements in collaboration with BBC and EBU - see guest blog post by Yves Raimond. For example see TVEpisode. For Background see the TV/Radio wiki entry. Civic Services (which includes ContactPoint) was blogged when first discussed. See also wiki entry. Example type: GovernmentService. Event improvements: wiki entry. Organization improvements: wiki entry. In particular, this update added department, and subOrganization properties. (blog announcement).
1.0c (2013-08-07)	Actions (in the past).	Introduced a (past-tense) Actions vocabulary (see wiki) This updated added an Action type, supporting properties, and a substantial set of subtypes. It was followed in 2014 by a mechanism for describing potential actions. (announcement)
1.0b (2013-07-24)	Added sameAs; broadened citation.	Adds sameAs property to Thing that makes it easier to indicate identifying URLs for entities being described (wiki). The citation property has been moved up to CreativeWork, from MedicalScholarlyArticle (wiki). Thanks to the BibExtend group for suggesting this small but useful improvement. (announced)
1.0a (2013-04-05)	Adds LRMI, Datasets, Audience, Technical Publishing vocabulary and more.	For LRMI (Learning Resource Metadata Initiative), a collaboration co-led by Association of Educational Publishers (AEP) and Creative Commons: Added several properties, mainly to CreativeWork. Added AlignmentObject type, for aligning content to educational coding schemes. (see wiki).

Added Dataset type (collaboration building upon work at W3C and elsewhere). See also blog, wiki.

Added Audience and related types, useful for LRMI and other applications (wiki.

Added Technical Publishing vocabulary: TechArticle, APIReference, Code. See also early blog post and Wiki entries for TechArticleSchema, APIReferenceSchema and CodeSchema. (announcement)

Version	Summary	Description
0.99 (2012-11-08)	Added Good Relations e-commerce vocabulary.	Added substantial e-commerce vocabulary based on Good Relations; re-engineered site to accept RDFa/RDFS schema definitions from community.(wiki) (announcement blog post and email from Martin Hepp)
0.98 (2012-10-18)	Fix for requiresSubscription property.	A minor bugfix release, which improved the documentation of requiresSubscription property. We now encourage its Boolean value to be represented as true/false rather than yes/no.
0.97 (2012-07-26)	Added DateTime, Time datatypes.	Added two datatypes in preparation for Good Relations integration. (announcement)
0.96 (2012-07-18)	Added additionalType property.	Added additionalType property (wiki). "An additional type for the item, typically used for adding more specific types from external vocabularies in microdata syntax. This is a relationship between something and a class that the thing is in. In RDFa syntax, it is better to use the native RDFa syntax - the 'typeof' attribute - for multiple types. Schema.org tools may have only weaker understanding of extra types, in particular those defined externally." (announcement)
0.95 (2012-06-26)	Added Medical/Health vocabulary.	This release added substantial vocabulary in the medical/health domain (around 100 classes, 200 properties). The additions are mainly organized beneath the MedicalEntity type. An overview document is also provided. From the blog post: "This collaborative project drew upon search expertise from the schema.org partners but also gained immeasurably through feedback from expert reviewers including the US NCBI;

		physicians at Harvard, Duke and other institutions, as well as from several health Web sites. Contributions from the W3C Healthcare and Lifesciences group and Web Schemas community also helped bridge the complex worlds of Web standards, search and medicine/healthcare." (announcement)
0.91 (2012-04-21)	Removed plural 's' suffix from repeatable properties; added Comment type, SoftwareApplication vocabulary.	Added new properties per Singularity proposal: 23 changes: actor, album, attendee, award, blogPost, colleague, contactPoint, employee, encoding, episode, event, founder, map, member, parent, performer, photo, review, season, sibling, significantLink, subEvent, track. Each of these originally had a plural 's' to indicate repeatability. After discussion in the W3C WebSchemas group, the consensus was that this was confusing and worthwhile changing. This revision added a new type, 'Comment', whose super-type is CreativeWork (wiki) Also adds SoftwareApplication and supporting vocabulary (wiki, original proposal), including MobileApplication, WebApplication subtypes. Converged URL/Url spelling. After WebSchemas discussion, consensus was: For each of embedURL, contentURL, downloadURL, ensure there is an equivalent property named with mixed-case: 'embedUrl', 'contentUrl', 'downloadUrl'.

Note: this table is not currently complete – it misses 0.92–0.94 and any changes between 2011–06–02 and 2012–04–21(0.91). See also Linked Open Vocabularies entry.

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