

Aim for the Stars!

The Importance of Semantic Technologies in Electronic
Lexicography and Language Technology

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April 21, 2023



Context

Context



Society for Danish Language and Literature (DSL)

Context



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Context

Ordbog over det danske Sprog (*ODS*) (Dictionary of the Danish Language)

- Historical dictionary
(1700-1955)
- 27 volumes
- 220,000 lemmas
- Richly-described entries
- *Manually* retrodigitized!



● *Afstand* /'au,sdan' / 'distance'

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1) fjernhed; længden af mellemrummet (mat.: af en ret linie) mellem to punkter. udfinde Solens Afstand fra Jorden. *Heitm. Physik.67.* (jf. *Steners. CritBet.29* og *Marg. Klopstock.Breve.(1760).40*). Sofarende . . have ofte stor Færdighed i at bedømme Afstandene. *Heib.Pros.II.369*. *Seer jeg . . en Hatfuld sydet Damp | Tidens Maal, Rummets Afstande flytte. *Ploug.VV.II.13*. Afstanden fra Kærsholm til Bøstrup Præstegaard var femseks Kilometer. *Pont.LP. VII.65.* (sj.:) han vandt Afstand (dvs.: kom længere og længere bort) fra (de angribende vilde heste). *Rist.FT.28*. | X spec. om regelmæssige mellemrum mellem (afdelinger af) soldater, som staar bag ved hinanden. *Sal. IX.531. Jf.*: Der er Gæssene . . med Retning og Afstand som en Trup Soldater. *Bogan.I.127*: det er daarlig ridning; her er ikke spor af afstand (dvs.: der er ulige stor afstand mellem de enkelte ryttere) | | efter præp. i. *Alt, hvad Naturen . . | I maalloes Afstand fra hinanden spreder. *Bogges.L. I.156*. Munken . . holder sig i en ærbødig Afstand. *Oehl.IV.161*. Medens vi talte, saa jeg i lang Afstand en Dame komme. *Goldschm.VI.274*. i

afstand (ell. † i en afstand. *Gylb.III.215. IV.280.331. VIII.223*), (sj.) ikke tæt ved ell. paa nært hold; (temmelig) langt borte. (nu oftere paa afstand). *Jeg vendte om, og som en ydmyg Slave | I Afstand troe jeg fulgte Deres Vei. *Heib. Poet.VII.272*. Vandet saae klart ud nær ved, men seet i Afstand, sort som Blæk. *HCAnd.VI.300*. Jeg elsker Franskmændene – i Afstand. *Goldschm.I.354*. De dræbte ham i Afstand med Pile. *smst.III. 197*. | efter præp. paa. *El een af Tillys Mænd er under Vaaben | Paa mange Miles Afstand. *Hauch.Æ.70*. Der skulde skydes (dvs.: ved en duel) paa 15 Skridts Afstand. *JakKnu.A.211*. paa afstand, d. s. s. i afstand. Hun havde ogsaa noget Godt i sine Øjne, naar hun var lidt paa Afstand. *Schand.BS.118*. Aftenklokken . . lød saa smukt paa Afstand. *Pont.LP.VII.89*. Enhver Voksen der har den mindste Katar bør holde sig paa Afstand fra Børnene. *Sundhedstid.1916.266*.

- *Afstand* /'au,sdan' / 'distance'

Lemma

morphological
forms

senses

glosses

usage examples

cross-lingual
references

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S

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IPA
pronunciation

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etymology

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quotes

- *Afstand* /'au,sdan'/ 'distance'

Can this information be found on the Web? → **Findability**

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- *Afstand* /'au,sdan'/ 'distance'
Is the data accessible by identifiers using an open, free and universally implemented protocol? → **Accessibility**

The screenshot shows the Danish Dictionary website (ordnet.dk) with the entry for 'Afstand'. The page title is 'ORDBOG OVER DET DANSKE SPROG HISTORISK ORDBOG 1700-1950'. The search bar contains 'afstand' and the search button is labeled 'Search'. The entry for 'Afstand' is highlighted in red and includes the following text:

Afstand, en. [ˈauˌsdan] f.t. -e [ˈauˌsdana] (efter ty. abstand (jf. lat. distantia); Moth(S740) har ordet som vbs. til **afstaa**: "fravigelse. Recessus"; ellers bruges det først ved midten af 18. aarh.; i stedet findes udtr. som Afliigheden, Distance, Fraligheden, Frastand o.l.)

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The page also features a search bar with 'afstand' entered, a search button, and a list of search results including 'Afstand sb.' and 'Fritekstsøgning (587)'. The search results list includes terms like 'Afstands-', 'Planteafstand', 'Telegraferings-', 'Stempelspillerum', 'Spydhold', 'Tandluft', 'traadfattig', 'forholdig', 'Distanceforbyrdelse', 'Distancesvømning', 'Fravilde', 'Sprængvidde', 'Fjernild', 'Afstand', 'Hareskygge', and 'rul ned'.

● *Afstand* /¹'au,sdan'/ 'distance'

Is the data described using formal, accessible, and standard data models to be shared? → **Interoperability**

Afstand, en. [ˈauˌsdan]ft. -e [ˈauˌsdana] (efter ty. *abstand* (jf. *lat. distantia*); *Moth*(5740) har ordet som vbs. til *afstaa*: "fravigelse. *Recessus*"; ellers bruges det først ved midten af 18. aarh.; i stedet findes udtr. som *Afliggenhed*, *Distance*, *Fraliggenhed*, *Frastand* oft.) S

1) *ffernhed*; længden af *mellemrummet* (mat.: af en ret linie) mellem to punkter: udfinde Solens *Afstand* fra Jorden. *Heitn. Physik*.67. (Jf. *Steners. CritBet*.29 og *Mary. Klopstock.Breve*(1760).40). *Sefarende* . . have ofte stor *Færdighed* i at bedømme *Afstandene*. *Heib.Pros*.II.369. *Seer jeg . . en *Hatfuld* sydet *Damp* | *Tidens Maal*, *Rummets Afstande* flytte. *Ploug.VV.II.13*. *Afstanden* fra *Kærsholm* til *Bøstrup Præstegaard* var femseks *Kilometer*. *Pont.LP. VII.65*. (sj.-) han vandt *Afstand* (dvs.: *kom længere og længere bort*) fra (*de angribende vilde heste*). *Rist.FT*.28. | X *spec. om regelmæssige mellemrum mellem (afdelinger af) soldater*, som *staa* *bag ved hinanden*. *Sal. IX.531*. jf.: *Der er Gæssene* . . med *Retning* og *Afstand* som en *Trup Soldater*. *Bogan.L.127*. det er *daarlig ridning*; her er ikke spor af *afstand* (dvs.: *der er ulige stor afstand mellem de enkelte ryttere*) | | S

efter *præp.* i. **Alt*, hvad *Naturen* . . | I *maallas Afstand* fra *hinanden* *spred*. *Bogges.L. L.156*. *Munken* . . holder sig i en *ærbodig Afstand*. *Oehl.IV.161*. *Medens* vi talte, saa jeg i lang *Afstand* en *Dame* komme. *Goldschm.VI.274*. i *afstand* (ell. † i en *afstand*. *Cybl.III.215*. *IV.280*. 331. *VIII.223*). (sj.) *ikke tæt ved* ell. *paa nært hold*; (*temmelig*) *langt borte*. (*nu oftere paa afstand*). *Jeg vendte om, og som en *ydmig Slave* | I *Afstand* *troe* jeg fulgte *Deres Vei*. *Heib. Poet.VII.272*. *Vandet* saae *klart* ud *nær ved*, men *seet* i *Afstand*, *sort* som *Blæk*. *HCAnd.VI.300*. Jeg elsker *Franskmændene* – i *Afstand*. *Goldschm.J.354*. *De dræbte* ham i *Afstand* med *Pile*. *smst.III. 197*. | S

efter *præp.* *paa*. **Ei* een af *Tillys Mænd* er under *Vaaben* | *Paa* mange *Miles Afstand*. *Hauch.Æ.70*. *Der skulde skydes* (dvs.: *ved en duel*) *paa* 15 *Skridts Afstand*. *JakKnu.A.211*. *paa afstand*, d. s. i *afstand*. *Hun* havde ogsaa *noget Godt* i sine *Øjne*, *naar* hun var *lidt paa Afstand*. *Schand.BS.118*. *Aftenklokken* . . *lød* saa *smukt paa Afstand*. *Pont.LP.VII.89*. *Enhver Voksen* der har den *mindste Katar* bør holde sig *paa Afstand* fra *Børnene*. *Sundhedstid.1916.266*. S

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<?xml version="1.0" encoding="UTF-8" ?><SemaId="29014340"><SemaNetNo="1" SemaId="29401382" odsID="Afstand_1"><dotPlus id="2666"><SemIndhold dotBetNo="1"><dotBetNo"><dotSpace>fjernhed;</dotSpace> længden af <dotSpace>mellemrummet</dotSpace><dotLn col="0293" lin="25" orig="mellemrum-met"/>(mat.: af en ret linie) mellem to punkter.</><dotLn col="0293" lin="26"/>udfinde Solens Afstand fra Jorden, <dotLn col="0293" lin="28"/>Klopstock.Breve.(1760).40.</> Sefarende . . <dotLn col="0293" lin="29"/>have ofte stor Færdighed i at bedømme <dotLn col="0293" lin="30"/>Afstandene. <dotLn col="0293" lin="31"/>. . en Hatfuld sydet Damp | Tidens Maal, <dotLn col="0293" lin="32"/>Rummets Afstande flytte. <dotLn col="0293" lin="33"/>Poulog.VV.II.13.</> <dotLn col="0293" lin="34"/>Afstanden fra Kærsholt til Bøstrup Præstegaard.<dotLn col="0293" lin="34" orig="Præste-gaard"/>var fem-seks Kilometer. <dotLn col="0293" lin="35"/>VII.65. (sj.):</> han vandt Afstand <dotLn col="0293" lin="36"/>længere og længere bort.</> fra <dotLn col="0293" lin="37"/>vilde heste). <dotLn col="0293" lin="38" orig="regel-mæssige"/>mellemrum mellem (afdelinger af) soldater, som staar bag ved hinanden. <dotLn col="0293" lin="39"/>Der er Gæssene . . med Retning.<dotLn col="0293" lin="41" orig="Retning-og Afstand som en Trup Soldater. <dotLn col="0293" lin="42"/>Bogan.I.127.</> det er daarlige ridning; her <dotLn col="0293" lin="43"/>er ikke spor af afstand <dotLn col="0293" lin="44"/>afstand mellem de enkelte ryttere.</> <dotLn col="0293" lin="45"/>præp.</> i. <dotLn col="0293" lin="46"/>Afstand. <dotLn col="0293" lin="47"/>I. I. maalles <dotLn col="0293" lin="48"/>Afstand. <dotLn col="0293" lin="49"/>Jeg i lang Afstand en Bønde komme. <dotLn col="0293" lin="50" orig="Gold-schm.VI.274."/><dotLn col="0293" lin="51"/>Gybl.III.215. IV.280.331. VIII.223). (sj.) <dotLn col="0293" lin="52"/>afstand.</> <dotLn col="0293" lin="53"/>ikke tæt ved <dotLn col="0293" lin="54"/>langt borte. (nu oftere</> paa afstand.</> <dotLn col="0293" lin="55"/>Poet.VII.272.</> i Afstand, sort som Blæk. <dotLn col="0293" lin="56"/>Hauch.E.70. Der skulde skydes (dvs.: ved en duel) paa 15 Skridts Afstand. <dotLn col="0293" lin="57" orig="Frankemændene"/> i Afstand. <dotLn col="0293" lin="58"/>Goldschm.I.354. De dræbte ham i Afstand med Pile. <dotLn col="0293" lin="59"/>smst.III.197. i efter præp. paa. <dotLn col="0293" lin="60"/>Hauch.E.70. Der skulde skydes (dvs.: ved en duel) paa 15 Skridts Afstand. <dotLn col="0293" lin="61"/>HCAnd.VI.300. Jeg elsker Frankemændene – i Afstand. <dotLn col="0293" lin="62"/>Schand.BS.118. Aftenklokken . . lod saa smukt paa Afstand. <dotLn col="0293" lin="63"/>Pont.LP.VII.89. Enhver Voksen der har den mindste Katar bør holde sig paa Afstand fra Børnene. <dotLn col="0293" lin="64"/>Sundhedsrit.1916.266.</></pre>
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- *Afstand* /'au,sdan'/ 'distance'

Are the attributes accurate and relevant? What are the data usage terms and conditions? → **Re-usability**

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Medens vi talte, saa jeg i lang Afstand en Dame komme. *Goldschm. VI. 274. i afstand (ell. †) i en afstand. Gylf. III. 215. IV. 280. 331. VIII. 223. (sj.) ikke tæ: ved ell. paa nært hold; (temmelig) langt borte. (nu oftere paa afstand). *Jeg vendte om, og som en ydmyg Slave | i Afstand troe jeg fulgte Deres Vei. *Heib. Poet. VII. 272. Vandet saae klart ud nær ved, men seet i Afstand, sort som Blæk. HC. And. VI. 300. Jeg elsker Frankmandene - i Afstand. *Goldschm. L. 354. De dræbte ham i Afstand med Pile. smit. III. 197. i efter præp. paa. *Ei en af Tillys Mænd er under Vaaben | Paa mange Miles Afstand. *Hauch. A. 70. Der skulde skydes (dvs.: ved en due) paa 15 Skridts Afstand. *JakKnu. A. 211. paa afstand, d. s. s. i afstand. Hun havde ogsaa noget Godt i sine Øjne, naar hun var lidt paa Afstand. *Schand. BS. 118. Aftenklokken. . lød saa smukt paa Afstand. *Pont. LP. VII. 89. Enhver Voksen der har den mindste Katar bør holde sig paa Afstand fra Børnene. *Sundhedstidl. 1916. 266.********

afstand

Danish [edit]

Etymology [edit]

Equivalent to *af* ("off") + *stand* ("standing"), calque of *German Abstand* ("distance, interval"), which is in turn a calque of Latin *distantia*

Pronunciation [edit]

- IPA(key): /avstanʔ, [ˈaw,sðanʔ]

Noun [edit]

afstand *c* (singular definite *afstanden*, plural indefinite *afstande*)

1. distance

Declension [edit]

Declension of *afstand* [show ▼]

Synonyms [edit]

- distance

References [edit]

- "afstand " in *Den Danske Ordbog*
- *afstand* on the Danish Wikipedia.



Wiktionary
The free dictionary

FAIR Principles (Wilkinson et al. (2016))

- Findability
- Accessibility
- Interoperability
- Re-usability

Language Resources

Language Resources: Conceptualization

- 1 Lexical-semantic resources

Language Resources: Conceptualization

1 Lexical-semantic resources

- Dictionaries & lexica



↔
λέγω3

Henry George Liddell, Robert Scott, *An Intermediate Greek-English Lexicon*

1. to say, speak, **Hdt.**, **Trag.**, etc.; λέγε say on, **Hdt.**; so, λέγοις ἄν **Plat.**: of oracles, to say, declare, **Hdt.**
2. λέγειν τινά τι to say something of another, esp., κακά λ. τινά to speak ill of him, abuse, revile him, **id**=**Hdt.**; ἀγαθὰ λ. τινά **Ar.**;—also, εὖ or κακῶς λ. τινά **Aesch.**, etc.
3. to call by name, **Soph.**:—to call so and so, οὔτοι γυναῖκας ἀλλὰ Γοργόνας λέγω **Aesch.**
4. λ. τινά or τινί ποιεῖν τι to tell one to do, **Soph.**, **Xen.**, etc.
5. λ. τι to say something, i. e. to speak to the point or purpose, **Soph.**; λέγω τι; am I right? **id**=**Soph.**; opp. to οὐδέν λέγει, has no meaning, no authority, **Ar.**; but οὐδέν λέγειν, also, to say what is not, to lie, **id**=**Ar.**, **Plat.**, etc.
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Liddell and Scott. *An Intermediate Greek-English Lexicon*. Oxford. Clarendon Press. 1889.

Language Resources: Conceptualization

1 Lexical-semantic resources

- Dictionaries & lexica
- Network-based resources



↔
λέγω3

Henry George Liddell, Robert Scott, *An Intermediate Greek-English Lexicon*

1. to say, speak, **Hdt.**, **Trag.**, etc.; λέγε say on, **Hdt.**; so, λέγοις ἄν **Plat.**: of oracles, to say, declare, **Hdt.**
2. λέγειν τινά τι to say something of another, esp., κακά λ. τινά to speak ill of him, abuse, revile him, **id**=**Hdt.**; ἀγαθὰ λ. τινά **Ar.**;—also, εὖ or κακῶς λ. τινά **Aesch.**, etc.
3. to call by name, **Soph.**:—to call so and so, οὔτοι γυναῖκας ἀλλὰ Γοργόνας λέγω **Aesch.**
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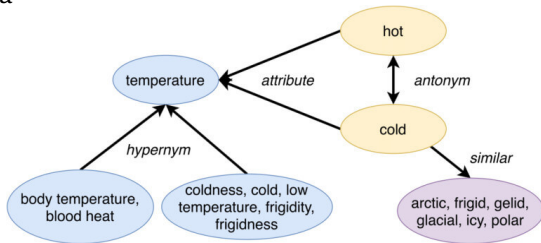
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Language Resources: Conceptualization

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- Dictionaries & lexica
- Network-based resources

WordNet



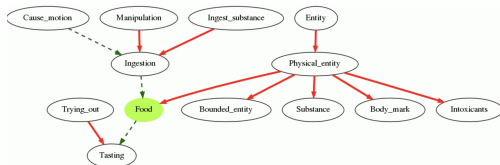
Open English WordNet: <https://en-word.net>

Language Resources: Conceptualization

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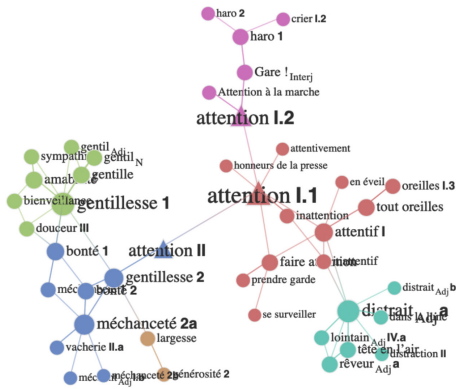
WordNet
FrameNet



Language Resources: Conceptualization

1 Lexical-semantic resources



- Dictionaries & lexica
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 - WordNet
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- Explanatory Combinatorial Dictionary




'attention' (noun) in the French Lexical Network

Language Resources: Conceptualization

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 - Network-based resources
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 - Explanatory Combinatorial Dictionary
- 2 Terminologies & Thesauri

important   [See definition of important on Dictionary.com](#)

adj. **valuable, substantial** adj. **eminent, influential, outstanding**

SYNONYMS FOR *important* ⓘ  Compare Synonyms

| | | | | |
|--------------|-------------|--------------|----------------|--------------|
| big | large | bottom-line | front-page | of substance |
| critical | meaningful | chief | grave | ponderous |
| crucial | necessary | considerable | heavy | pressing |
| decisive | paramount | conspicuous | importunate | primary |
| essential | relevant | determining | marked | principal |
| extensive | serious | earnest | material | salient |
| far-reaching | significant | esteemed | mattering much | signal |
| great | urgent | exceptional | momentous | something |
| imperative | vital | exigent | of moment | standout |
| influential | big-league | foremost | of note | weighty |

See also synonyms for: **importantly** / **unimportant**

Language Resources: Conceptualization

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🔍 ...

☰ *Syringa* 🗺️ 65 languages ▾

Article [Talk](#) Tools ▾

From Wikipedia, the free encyclopedia
(Redirected from [Lilac](#))

*"Lilac" redirects here. For other uses, see [Lilac \(disambiguation\)](#).
For other uses, see [Syringa \(disambiguation\)](#).*

Syringa is a genus of 12 currently recognized species of [flowering woody plants](#) in the olive family or [Oleaceae](#)^[1] called **lilacs**. These lilacs are native to woodland and scrub from southeastern [Europe](#) to eastern [Asia](#), and widely and commonly cultivated in [temperate areas](#) elsewhere.^{[2][3][4][5]}

The genus is most closely related to [Ligustrum](#) (privet), classified with it in Oleaceae tribus Oleaceae subtribus Ligustrinae.^[6]

Lilacs are used as food plants by the [larvae](#) of

Syringa



Syringa vulgaris,
common lilac

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- 6 Many more...

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Language Resources: Structure

- *lilac* (noun)



Language Resources: Structure

- *lilac* (noun)

| | | |
|--|---|--|
| <p>lilac noun</p> <p>li·lac (lī·lāk) -lak, -lək</p> <p></p> <p>1 a : a widely cultivated European shrub (<i>Syringa vulgaris</i>) of the olive family that has cordate ovate leaves and large panicles of fragrant pinkish-purple or white flowers</p> <p>b : a tree or shrub congeneric with the lilac</p> <p>2 : a variable color averaging a moderate purple</p> |  | <p>li·lac /'laɪlək/ noun  </p> <p>1 [countable] a small tree with pale purple or white flowers</p> <p>2 [uncountable] a pale purple colour SYN mauve</p> <p>—lilac adjective  a lilac dress</p> <p></p> |
|--|---|--|

Knowledge Representation



A Disney Cartoon character

A Roman God

A song by Björk

A dwarf planet

HMS Pluto: A ship



Knowledge Representation

- **Problem 1:** web documents do not distinguish between information content and presentation

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 - the meaning of such tags is shared → *shared semantics* tags?

Heterogeneity



Linguistic Linked Data

Semantic Web

A web of data that are structured and linked together using a set of standards and technologies

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- Semantic Web: **Data, Logic, Query**

Linked Data

- Semantic web is the theoretical framework and technologies for achieving this goal

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 - ② Use HTTP URIs so that people can look up those names

Linked Data

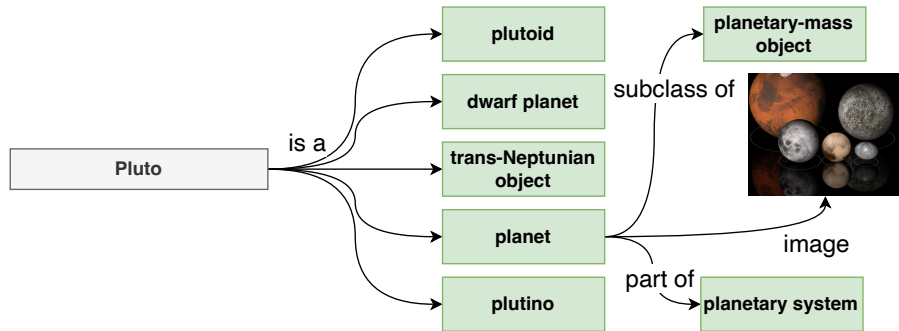
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 - 2 Use HTTP URIs so that people can look up those names
 - 3 When someone looks up a URI, provide useful information → human-readable descriptions
 - 4 Include links to other URIs so that they can discover more things.

Linked Data

The semantics is expressed with the help of knowledge representations → Ontologies



A graph composed of triples (subject, predicate, object) → Resource Description Framework (RDF) graph

Linked Data is Everywhere

Museums



Galleries



Archives



Libraries

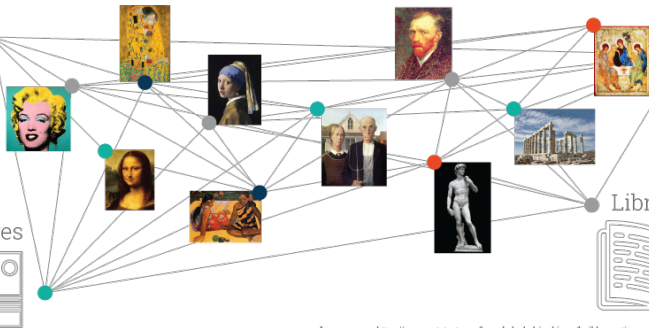
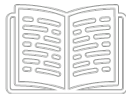


Image source: <https://www.ontotext.com/knowledgehub/webinars/build-narratives-connect-artifacts-cultural-heritage/>

Semantic Web compatible data available via endpoints.

Linguistic Linked Data

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Linked Data for linguistic data! (Cimiano et al., 2020)

- Aggregation and integration of linguistic resources (RDF)

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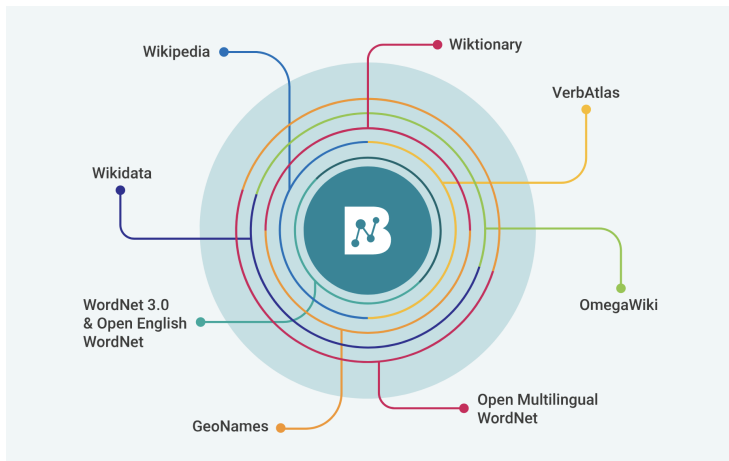
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Linguistic Linked Data: Alignment

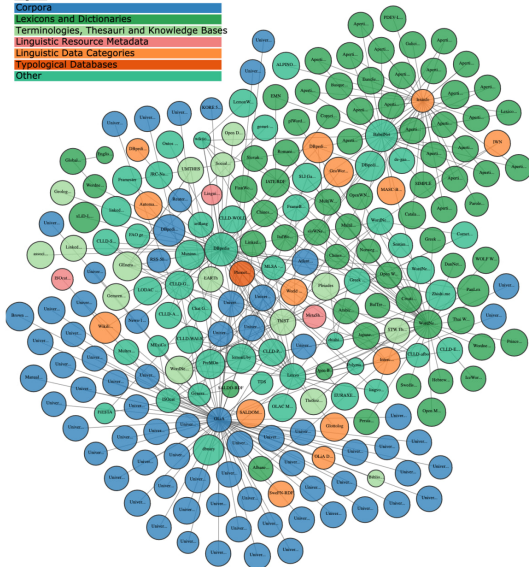


BabelNet (<https://babelnet.org>) covering 520 languages!

LOD Cloud

Legend

| |
|---|
| Corpora |
| Lexicons and Dictionaries |
| Terminologies, Thesauri and Knowledge Bases |
| Linguistic Resource Metadata |
| Linguistic Data Categories |
| Typological Databases |
| Other |

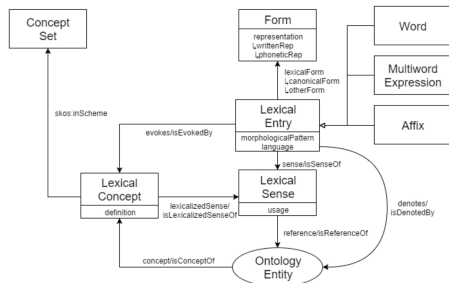


Common ontologies and vocabularies

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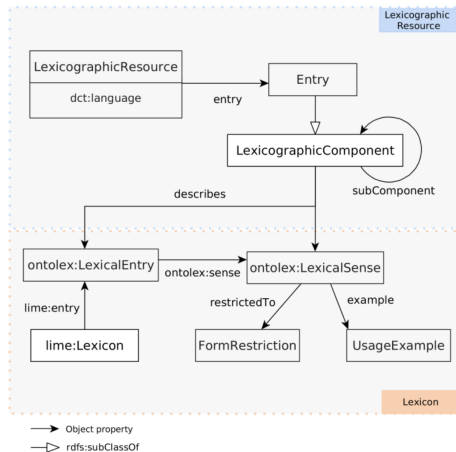
Common ontologies and vocabularies

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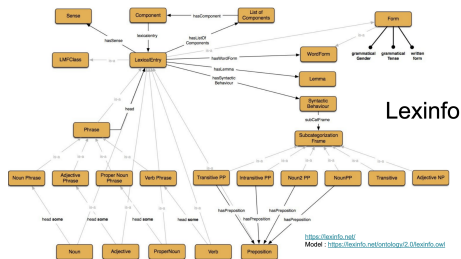
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Common ontologies and vocabularies

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- Linguistic data description: *lexinfo, frac*



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Basic Metadata: *Dublin Core, foaf, dcterms, Prov-O*
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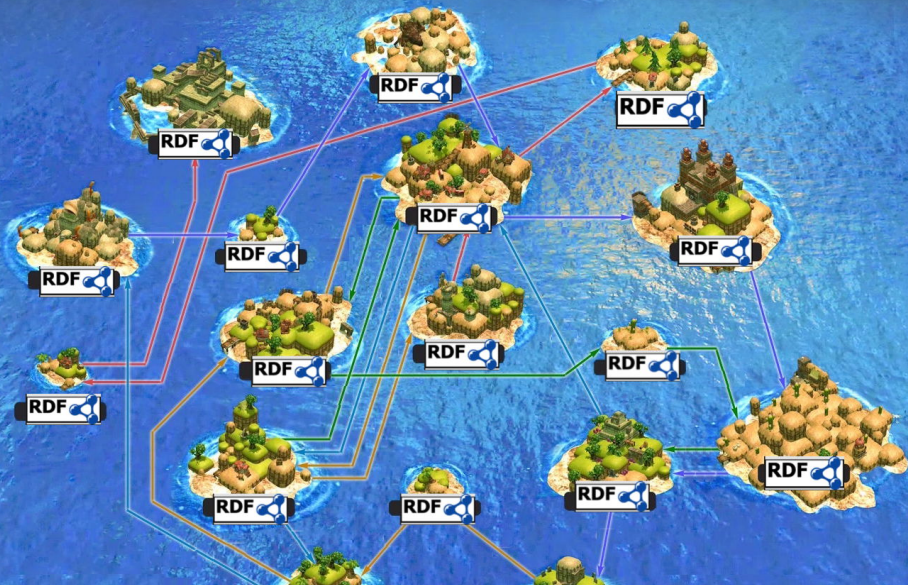
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- Corpora and Annotation:
OLiA, NIF, Web Annotation

Linguistic Linked Data: Success!



An Example in MPCD: *sar* ‘head’ (noun)

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sar (NOUN|ADV, *simplex*)

Timeline:

Frequency (per 100.000): 98.294

Forms:

Orthographic variants: *sl* (1810), *L'YŠH* (394), *L'YŠH'n'* (1)

Lemma attestations:

a. General sense: **head**

b. General sense: **top, upper side**

e. General sense: **outmost point (metaphorically)**

Additional information

Internal references:

synonym of: [kamāl](#)

synonym of: [waydān](#)

constituent of: [asar](#)

constituent of: [sarāsar](#)

Equivalents:

Avestan: [𐬰𐬀𐬎𐬎𐬀, vavaḍan-](#)

Middle Persian:

Etymology:

cognate: Avestan [sāra-](#)

Bibliography:

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Comment:

Kianoosh me fecit, Slavomír adiuvit.

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    <semantic serialId="001">
      <node serialId="001">
        <label-head</label-head>
      </node>
    </semanticCore>
    <sense>
      head (of the body): of human beings, of animals (cow, snake), of a deity
    </sense>
  </entry>
</dictionary>
```

An Example in MPCD: *sar* in OntoLex

```
:lex_sar a ontolex:LexicalEntry, ontolex:Word ;
  dcct:language <www.lexvo.org/page/iso639-3/pal> ;
  rdfs:label "sar"@pal-latn, "sl"@pal-latn, "L'YŠH"@pal-latn ;
  ontolex:canonicalForm [
    ontolex:writtenRep "sar"@pal-latn
  ] ;
  lexinfo:partOfSpeech lexinfo:noun ;
  ontolex:canonicalForm :form_sar_3_1, :form_sar_3_2 ;
  ontolex:sense :lex_sar_sense_3_1, :lex_sar_sense_3_2, :lex_sar_sense_3_3 .

:form_sar_3_1 a ontolex:Form ;
  ontolex:writtenRep "sar"@pal-latn, "sl"@pal-latn, "L'YŠH"@pal-latn ;
  lexinfo:number lexinfo:singular ;
  frac:attestation :att_GBd_284093 .

:form_sar_3_2 a ontolex:Form ;
  ontolex:writtenRep "sarān"@pal-latn, "L'YŠH'n"@pal-latn;
  lexinfo:number lexinfo:plural .

:lex_sar_sense_3_1 a ontolex:LexicalSense;
  skos:definition "head (of the body): of human beings, of animals (cow, snake), of a deity"@en ;
  ontolex:denotes <https://www.wikidata.org/wiki/Q23640> ;
  ontolex:denotes <https://dbpedia.org/page/Head> .

:lex_sar_sense_3_2 a ontolex:LexicalSense;
  skos:definition " top, upper side"@en.

:lex_sar_sense_3_3 a ontolex:LexicalSense;
  skos:definition "outmost point"@en.

:att_GBd_284093 a frac:Attestation ;
  frac:quotation "pad hamāg zamīg urwar ēdōn bē rust čiyōn mōy pad sar ī mardōmān" .
```

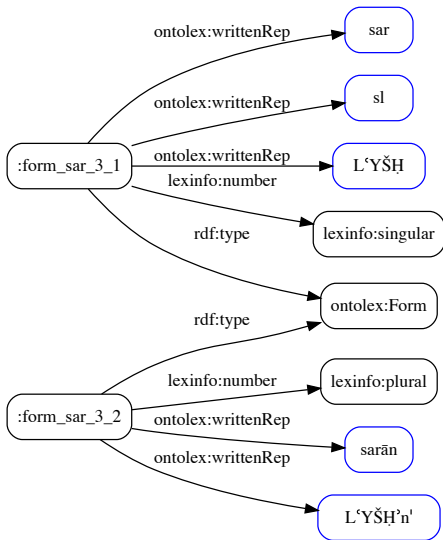
An Example in MPCD: *sar* 'head' (noun)

- Entry



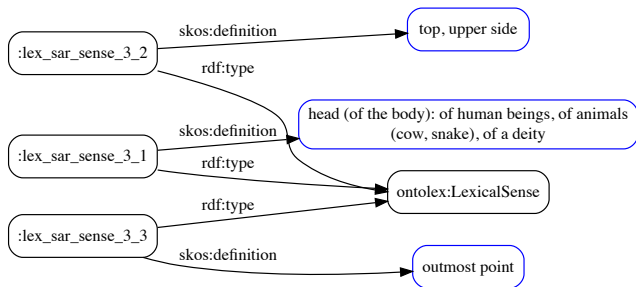
An Example in MPCD: *sar* ‘head’ (noun)

- Entry
- Forms



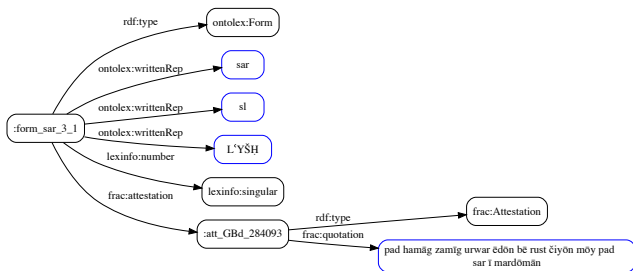
An Example in MPCD: *sar* 'head' (noun)

- Entry
- Forms
- Senses



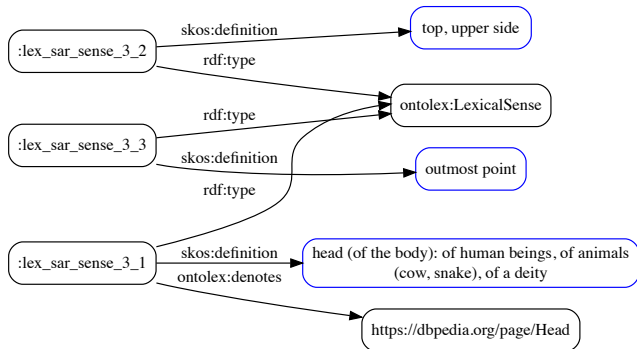
An Example in MPCD: *sar* ‘head’ (noun)

- Entry
- Forms
- Senses
- Attestation



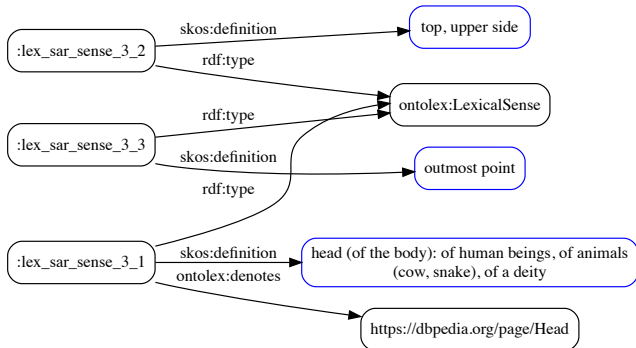
An Example in MPCD: *sar* 'head' (noun)

- Entry
- Forms
- Senses
- Attestation
- Denotation



An Example in MPCD: *sar* ‘head’ (noun)

- Entry
- Forms
- Senses
- Attestation
- Denotation
 - DBpedia



About: [Head](#)

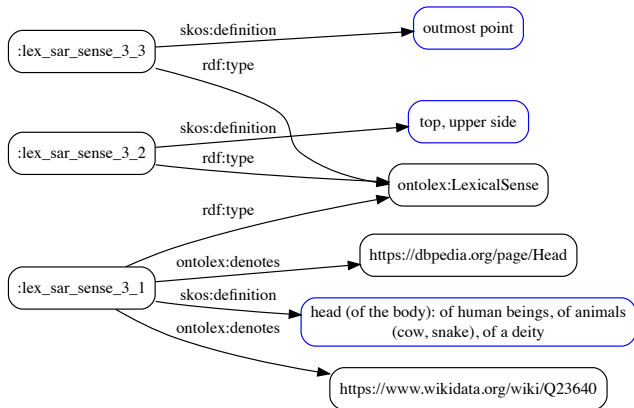
An Entity of Type: [anatomical structure](#), from Named Graph: <http://dbpedia.org>, within Data Space: <dbpedia.org>

A head is the part of an organism which usually includes the ears, brain, forehead, cheeks, chin, eyes, nose, and mouth, each of which aid in various sensory functions such as sight, hearing, smell, and taste. Some very simple animals may not have a head, but many bilaterally symmetric forms do, regardless of size.



An Example in MPCD: *sar* ‘head’ (noun)

- Entry
- Forms
- Senses
- Attestation
- Denotation
 - DBpedia
 - Wikidata



WIKIDATA

Item Discussion Read View history Search Wikidata

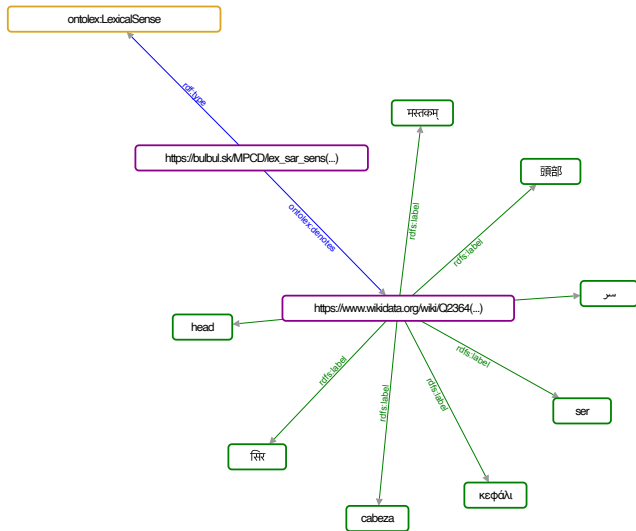
head (Q23640)

anterior anatomical region in many animals, which tends to contain sensory and nervous organs and orifices for ingestion and breathing

heads | noddles | cephalic

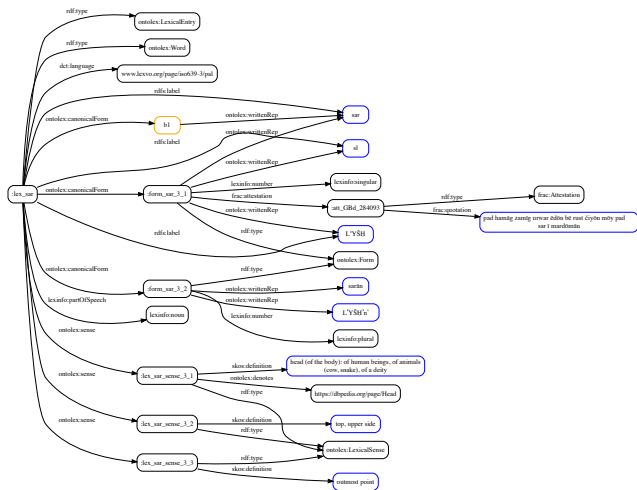
An Example in MPCD: *sar* 'head' (noun)

- Entry
- Forms
- Senses
- Attestation
- Denotation
 - DBpedia
 - Wikidata



An Example in MPCD: *sar* ‘head’ (noun)

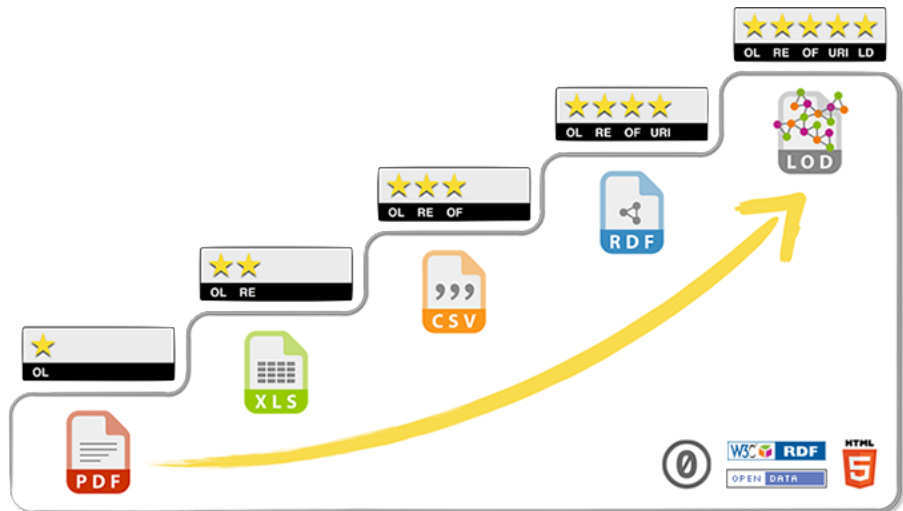
- Entry
- Forms
- Senses
- Attestation
- Denotation
 - DBpedia
 - Wikidata
- And much more!



Aim for the stars!

Linguistic Linked Data: 5 stars

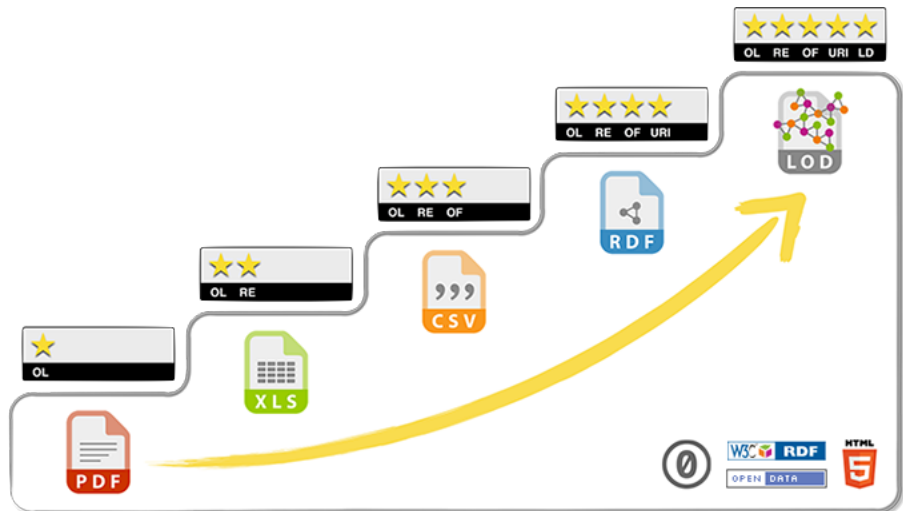
Aim for the stars! (Berners-Lee, 2006)



Linguistic Linked Data: 5 stars

Aim for the stars! (Berners-Lee, 2006)

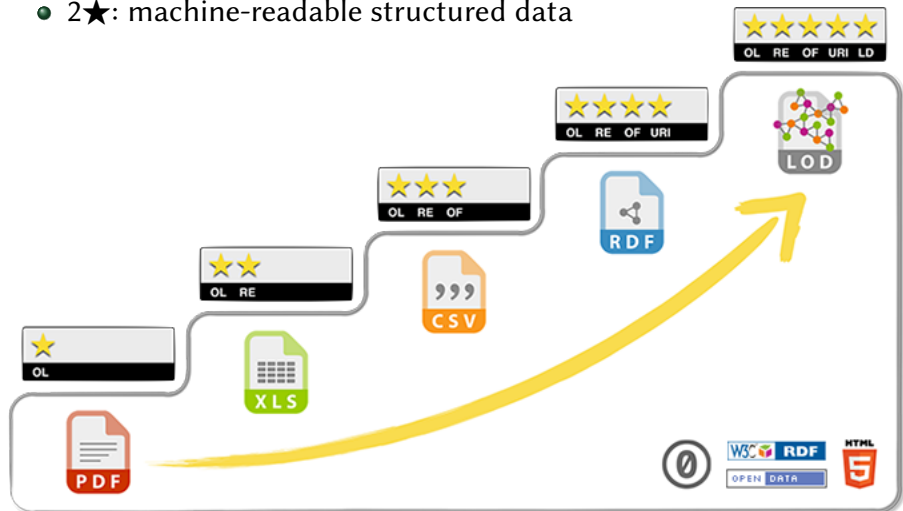
- 1★: on the web but with **open** license



Linguistic Linked Data: 5 stars

Aim for the stars! (Berners-Lee, 2006)

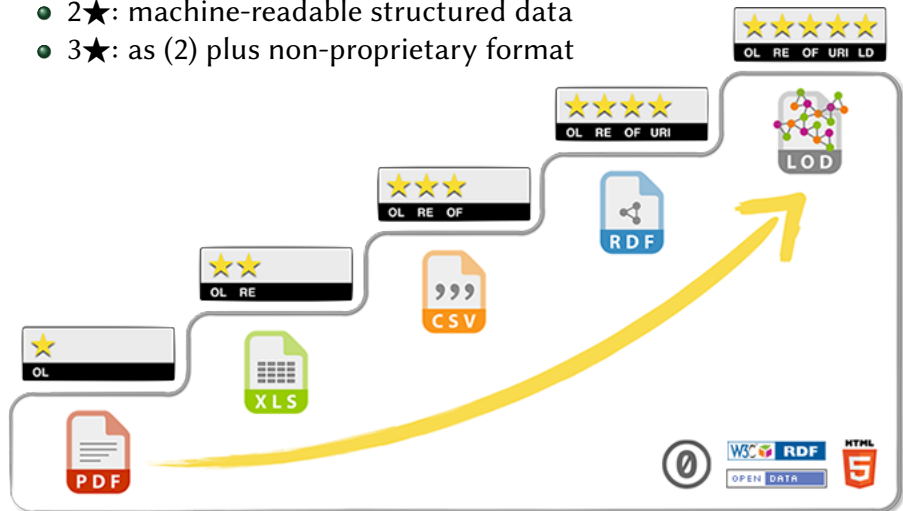
- 1★: on the web but with **open** license
- 2★: machine-readable structured data



Linguistic Linked Data: 5 stars

Aim for the stars! (Berners-Lee, 2006)

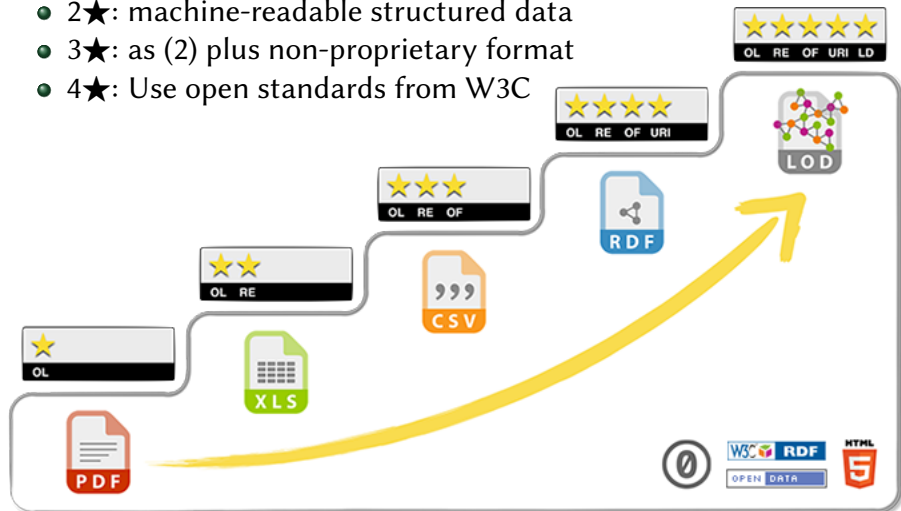
- 1★: on the web but with **open** license
- 2★: machine-readable structured data
- 3★: as (2) plus non-proprietary format



Linguistic Linked Data: 5 stars

Aim for the stars! (Berners-Lee, 2006)

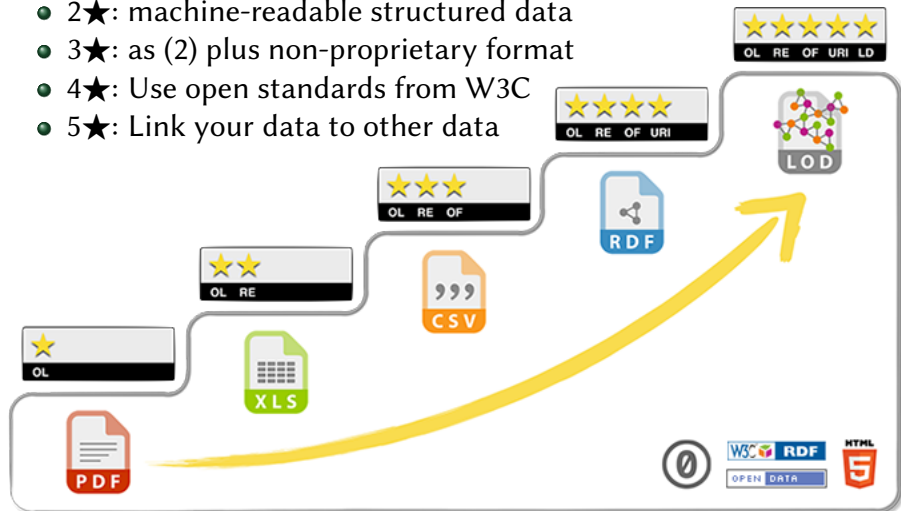
- 1★: on the web but with **open** license
- 2★: machine-readable structured data
- 3★: as (2) plus non-proprietary format
- 4★: Use open standards from W3C



Linguistic Linked Data: 5 stars

Aim for the stars! (Berners-Lee, 2006)

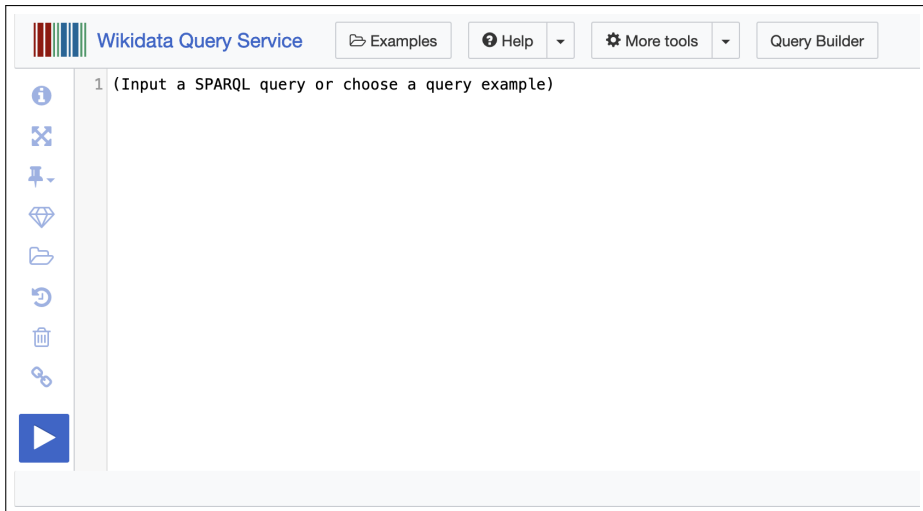
- 1★: on the web but with **open** license
- 2★: machine-readable structured data
- 3★: as (2) plus non-proprietary format
- 4★: Use open standards from W3C
- 5★: Link your data to other data



Demo

Demo: Wikidata

Wikidata SPARQL endpoint: <https://query.wikidata.org>



The screenshot shows the Wikidata Query Service interface. At the top, there is a header with the Wikidata logo, the text "Wikidata Query Service", and several navigation buttons: "Examples", "Help", "More tools", and "Query Builder". Below the header is a large text input area with the placeholder text "1 (Input a SPARQL query or choose a query example)". On the left side of the input area, there is a vertical toolbar containing various icons for editing and managing queries, including a play button at the bottom.



What does "abzūdan" mean in Zoroastrian Middle Persian?



In Zoroastrian Middle Persian, "abzūdan" (آبزودن) means "to increase" or "to augment". It is formed from the root word "āb" (آب) meaning "water" and the verb suffix "-zūdan" (زودن-) indicating action or process. The word "abzūdan" was commonly used in Middle Persian literature, particularly in religious and philosophical texts, to describe the growth or expansion of various concepts, such as knowledge, power, or virtue.

Demo: ChatGPT

W

Parse "frahangān frahang dēn māzdēs̄n , " in Zoroastrian Middle Persian



Here's the parse of the phrase "frahangān frahang dēn māzdēs̄n" (frahangān frahang dēn māzdēs̄n):

- "frahangān" (frahangān): This is a plural noun that means "scholars" or "experts". It is derived from the root word "frahang" which means "knowledge" or "learning".
- "frahang" (frahang): This is a singular noun that means "knowledge" or "learning". It is the root word from which "frahangān" is derived.
- "dēn" (dēn): This is a noun that means "religion" or "faith". In this context, it refers to the Zoroastrian religion.
- "māzdēs̄n" (māzdēs̄n): This is an adjective that means "Zoroastrian". It is derived from the name of the god Ahura Mazda, who is the central deity in the Zoroastrian religion.

So, the full phrase "frahangān frahang dēn māzdēs̄n" can be translated as "Zoroastrian scholars of knowledge and faith".

Use knowledge graphs to enrich and assess large language models (Mountantonakis and Tzitzikas, 2023).

GPT•LODS

Annotated ChatGPT Response with links to Hundreds of Knowledge Graphs

User Prompt: Which is the birth place of **Aristotle**

ChatGPT Annotated Response:

Aristotle was born in **Stagira**, **Greece**.

All Entities Information

Find and Check Related Facts

Export as HTML+RDFa

Ask ChatGPT Again

Key Takeaways

- 1 Make your data compatible with linked data principles



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- 2 Aim for the stars!



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- 3 Take AI seriously but not too much.









Key Takeaways

- 1 Make your data compatible with linked data principles
- 2 Aim for the stars!
- 3 Take AI seriously but not too much.
- 4 Join the linguistic linked data communities:
[www.w3.org/
community/ld4lt/
wiki/Main_Page](http://www.w3.org/community/ld4lt/wiki/Main_Page)



References I

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