第5回オープンサイエンスデータ推進ワークショップ
— データマネージメントの実施および教育の現状報告 を中心に —

This photo of Ryoanji Temple is courtesy of TripAdvisor.

How many rocks of Ryōn-ji's Zen garden can be seen from any place?
Only 14, but there are 15 rocks! What does it mean?

Connecting vocabularies cross-domain - benefits and challenges

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Confucius - Correctness of words

Chinese teacher, editor and philosopher (551 BC – 479 BC)

**If names be not correct, language is not in accordance with the truth of things. If language be not in accordance with the truth of things, affairs cannot be carried on to success.*

When affairs cannot be carried on to success, proprieties and music do not flourish. When proprieties and music do not flourish, punishments will not be properly awarded. When punishments are not properly awarded, the people do not know how to move hand or foot.

Therefore a superior man considers it necessary that the names he uses may be spoken appropriately, and also that what he speaks may be carried out appropriately. *What the superior man requires is just that in his words there may be nothing incorrect.*

In *The Analects* of Confucius: Parallel English and Chinese*, S. 85)

http://juttas-schreibtipps.blogspot.jp/2012/06/uber-die-richtigstellung-der-begriffe.html

Ian Hacking - Clearness of words

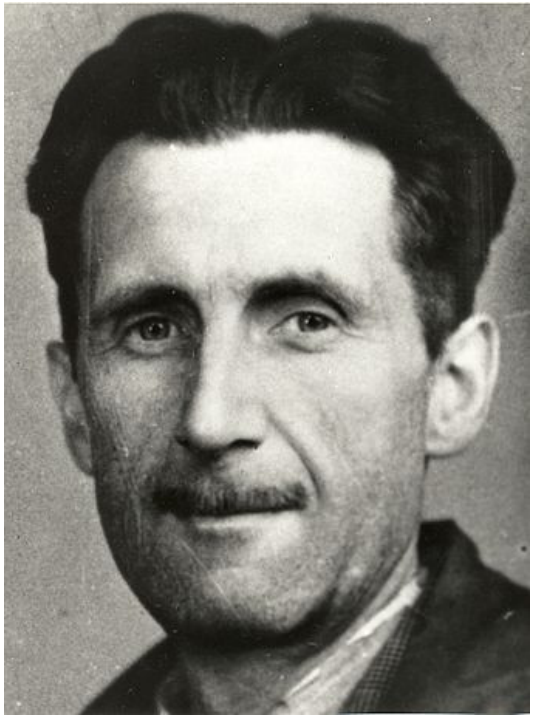
The important thing is to be able to understand anyone who has something useful to say. - There is a general moral here. Be very careful and very clear about what you say. But do not be dogmatic about your own language.
Be prepared to express any careful thought in the language your audience will understand. And be prepared to learn from someone who talks a language with which you are not familiar.

Ian Hacking (2001). "An Introduction to Probability and Inductive Logic Desk Examination Edition", p.38, Cambridge University Press

*Canadian philosopher specializing in the philosophy of science.

http://www.azquotes.com/author/6063-Ian_Hacking

George Orwell - Newspeak and PC*

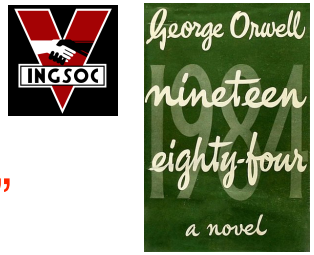


Eric Arthur Blair
(25 June 1903 – 21 January 1950)

*Political Correctness

"But if thought corrupts language, language can also corrupt thought."

"War is peace.
Freedom is slavery.
Ignorance is strength."



"Doublethink means the power of holding two contradictory beliefs in one's mind simultaneously, and accepting both of them."

"Freedom is the freedom to say that two plus two make four. If that is granted, all else follows."

https://www.goodreads.com/work/quotes/153313-nineteen-eighty-four

Terms and history of semantics

- Memory of words (Ian Hacking)

"Begriffe haben Erinnerungen an Ereignisse, die wir vergessen haben"*

Terms have a memory, the refer to a history of the term which is richer than most language users are able to estimate…

Terms have memories of events that we have forgotten.

- History of words in semantics and using
- Changing of meaning of words in time

Germany (2015 -2018):
Fugitive => …=> … => … => … => … => Migrant

*https://www.heise.de/tp/features/Viele-interessante-Begriffe-haben-eine-Wanderungsgeschichte-hinter-sich-3952651.html

Vocabulary Broker Components and Workflow

VB

Search

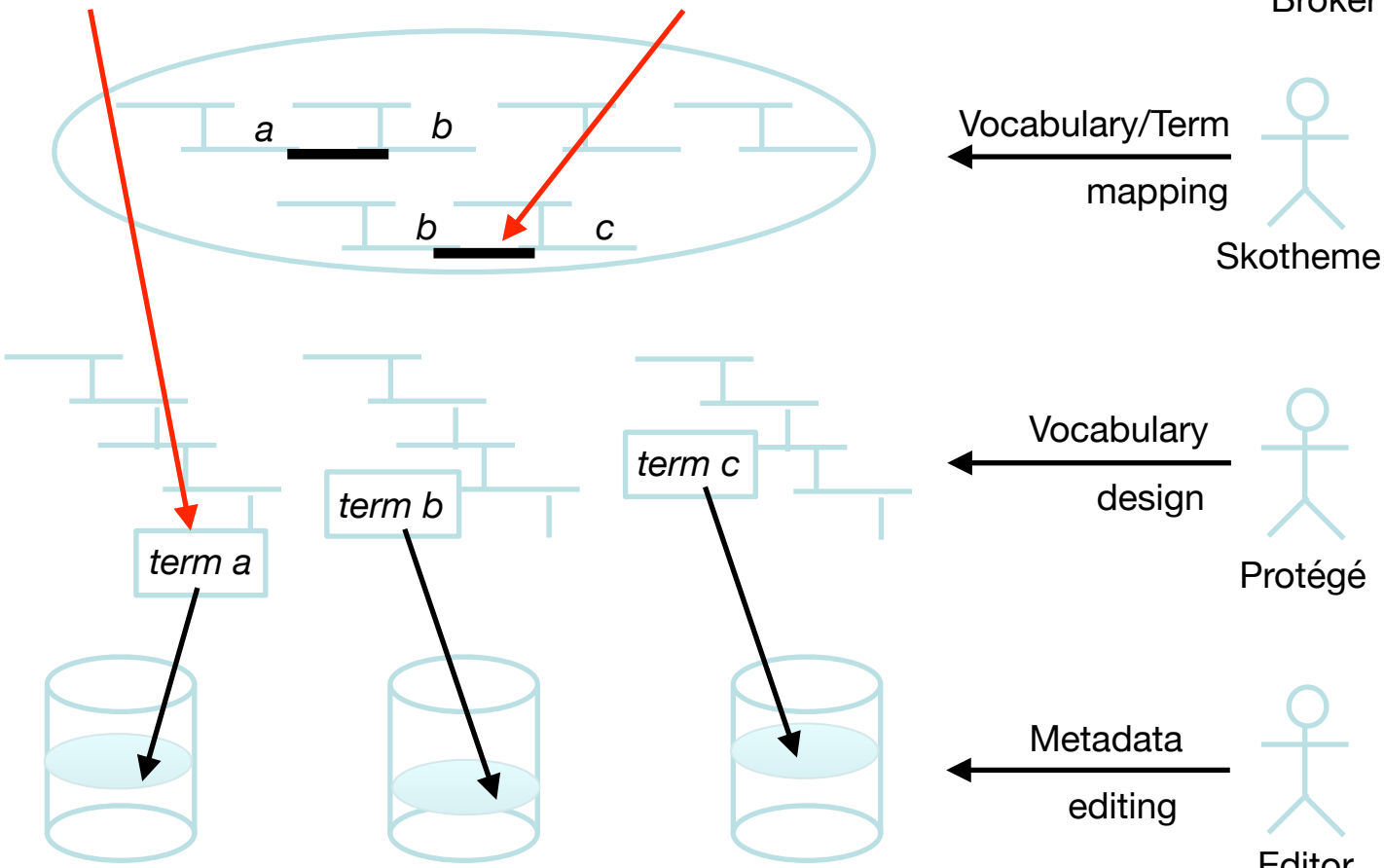
Context enrichment of terms and relationships

- Related domain and scheme
- History of terms
- Cause and effect relations, …

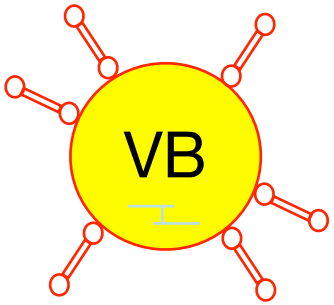
Mapping

Vocabulary

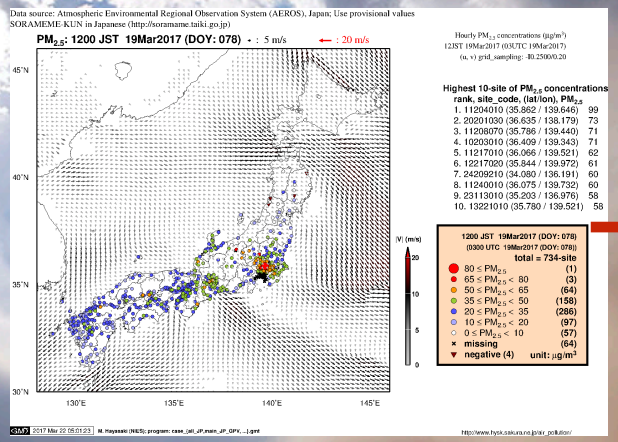
Repository



Vocabulary Broker application connecting scientific data and societal decision support



AEROS Japan: Spatial distribution of hourly concentration of PM2.5 in 12JST 19 03 2015



Dusty atmosphere above Kyoto city on 8 May 2017

Photo by Bernd Ritschel

Kyoto Tower (zoomed in)

Gobi Dessert: Fast approaching sandstorm.

Source: The Gobi March 2015: 250km Journey Through Snowstorms, Sandstorms and The Gobi Desert, Photo By Zandy Mangold. https://ullalerse.files.wordpress.com/2015/06/blog_20150605restday0101_14.jpg

Mapping the terminological ontologies corresponding to the ESPAS and SPASE information model, some almost identical concordances are found, even the related schema are different. In this case the identical keywords „Magnetic Field“ mapped with „skos:closeMatch“ come from „Observed Property“ respectively Mesurement Type.

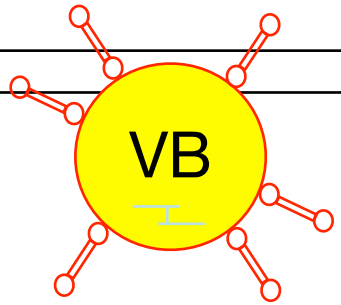
Kyoto city on 28 September 2017

Photo by Bernd Ritschel

Dust and Sundstorm (DSS) Phenomenon and Impacts

DSS phenomenon

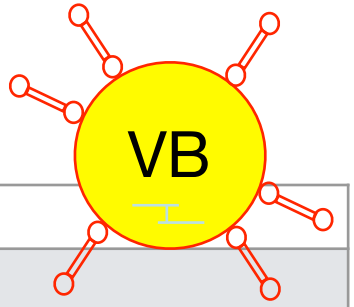
- harmful influences on the agricultural production of crops
- significant health hazard to the people
- the sand particles remain suspended in the atmosphere and affects global climate



DSS causes

- collapse of trees
- destruction of factory products
- soiling of cars and laundries
- disappearance and worse, death of the residents
- buried institutions and railway tracks
- the (most) massive damage on the agricultural sector
- airline flight cancellation
- traffic jam
- respiratory and ocular disorders in the people's health

Yellow Sand or Dust and Sandstorm Keywords



APEC Virtual Center for Environmental Technology Exchange http://www.apec-vc.or.jp/e/modules/tinyd01/?id=23

kosadust and sandstorm(DSS)
Taklamakan Desert
Gobi DesertLoess Plateau in inland China
erosion
fine particle ⇔ coarse particle
the prevailing westerlies
deposition
spring haze
Ministry of the Environment MOE
National Institute for Environmental Studies
sandstorm
natural phenomena⇔anthropogenic factor
particle size(distribution)
quartzfeldsparmica
kaolinite

sulfate ionnitric ion
ammonium ion
suspended particulate matter (SPM) (suspended)
visibility
LIDAR : Light Detection And Ranging
laser
radar: Radio Detection and Ranging
remote sensing
basic
neutralization
global warming effect
plankton
depletion of forests desertification
soil degradation
environmental capacity
kosa model(modeling)DSS model

→ Design of a Dust and Sandstorm Ontology

Vocabulary Broker application connecting IUGONET's scientific data, appropriate paper and data publications

IUGONET Data Repository

Vocabulary Broker

Publication

Keywords:
- *Magnetic Field*
- *Geomagnetism*
- *…*

Numerical Data:
Guam geomagnetic field 1-hour digital data in WDC format

Magnetic Field

match

Magnetosphere

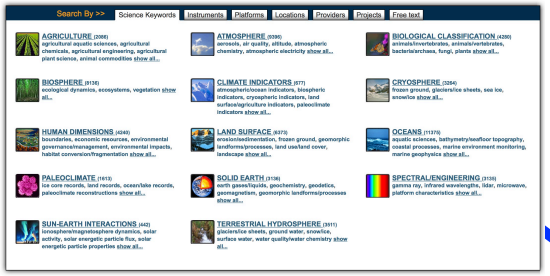
Title:
Rise time of geomagnetic sudden commencements —Statistical analysis of ground geomagnetic data

Keywords:
- *Magnetosphere*
- *Geomagnetic Storm*
- *…*

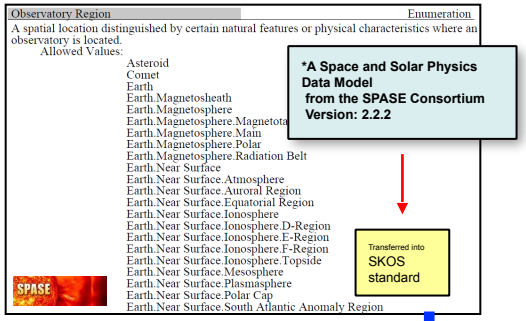
Scientific paper published in journals, such as „Earth Planet and Space" or abstracts submitted to scientific conferences, such as JpGU, AGU or EGU, more and more are tagged with domain related controlled or free keywords. These keywords mapped with appropriate keywords managed by the Vocabulary Broker almost automatically mashups the scientific data form various data repositories with related publications.

Managing Terminological Ontologies

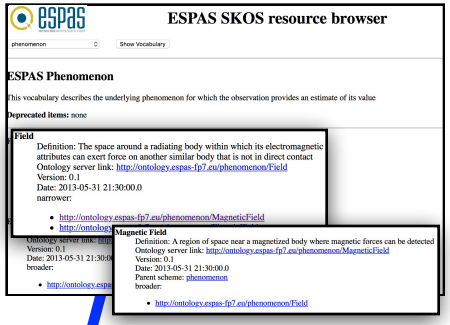
GCMD Keywords



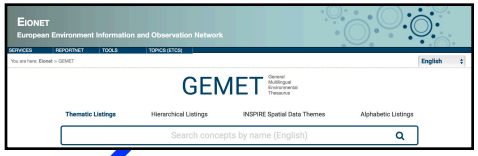
SPASE Keywords



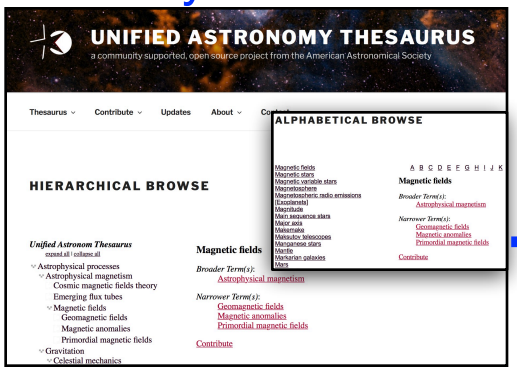
ESPAS Keywords

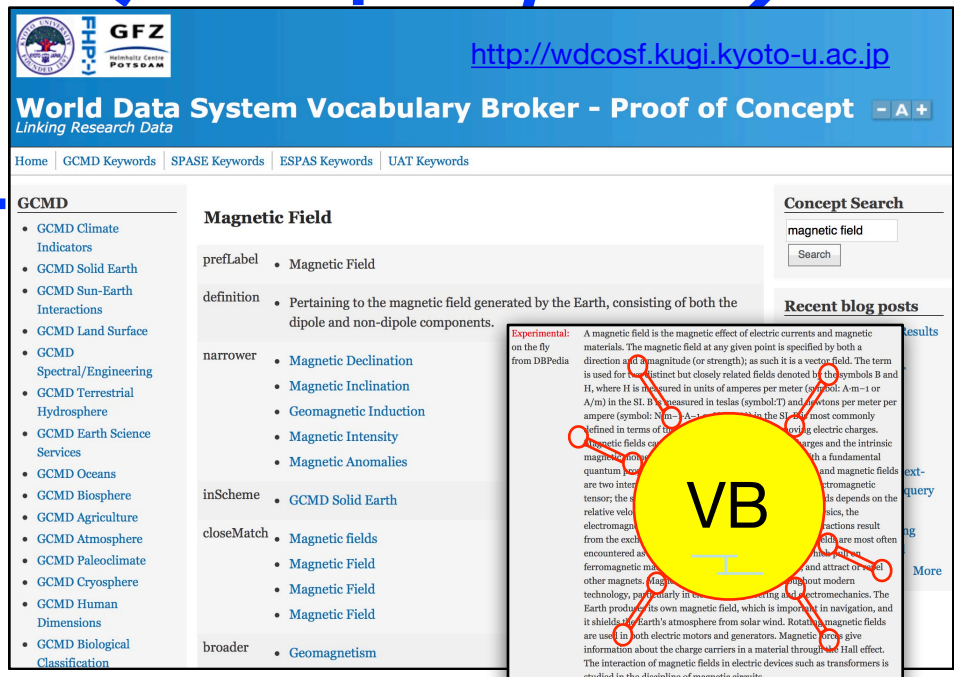


GEMETKeywords



UAT Keywords





The Vocabulary Broker manages the terminological ontologies of NASA's GCMD, from SPASE and ESPAS, UAT as well as GEMET. In addition to the initial data, a merged terminological ontology generated with the program Skotheme is also managed by the VB.

European Environment Agency

Members: 32
Total staff: 209
Office: Copenhagen

EIONET
European Environment Information and Observation Network

- EIONET is a partnership network of the European Environment Agency (EEA) and its member and cooperating countries involving approximately 1000 experts and more than 350 national institutions.

REPORTNET

http://svn.eionet.europa.eu/projects/Reportnet/wiki/SPARQL

- REPORTNET is EIONET's infrastructure software project for supporting and improving data and information flows
- Integrated suite of IT tools for the European Environmental Information System and building on a shared information infrastructure

https://www.eionet.europa.eu/gemet/en/themes/

EIONET GEMET Thesaurus

Concept
Atmospheric Ozone

atmospheric ozone

Definition:

A triatomic molecule of oxygen; a natural co ith the highest c er or stratosphere; it is found at a level between 1 which prevents , which causes skin cancer and threatens plant life, from rea shield is being d ed on Earth. The main chemicals that are depleting strato ocarbons (CFCs) ors, aerosols and as cleaners in many industries and halo nguishers. The damage is caused when these chemicals release highly reactive forms of chlorine and WRIGHT)

broader terms
- atmospheric component

narrower terms
- tropospheric ozone

related terms
- ozone

Scope note:
scope note is not available

Groups:
ATMOSPHERE (air, climate)

Themes:
air
chemistry
climate

broader terms
- atmospheric composition

narrower terms
- atmospheric ozone

related terms
- aerosol
- atmospheric aerosol
- carbon
- oxygen

broader terms
- atmospheric ozone

related terms
- ozone

broader terms
- oxygen

related terms
- atmospheric ozone
- tropospheric ozone

broader terms
- air

narrower terms
- atmospheric component

abic:	أوزون الغلاف الجوي
sque:	atmosferako ozono
lgarian:	Атмосферен о
talan:	ozó atmosfèric
inese:	大气臭氧
ech:	ozón atmosféri
Danish:	atmosfærisk oz
Dutch:	atmosferische ozon
English (US):	atmospheric ozone
Estonian:	atmosfääriosoon
Finnish:	ilmakehän otsoni
French:	
German:	
Greek:	
Hungarian:	
Irish:	
Italian:	
Latvian:	

broader terms
- atmosphere

narrower terms
- atmospheric composition

broader terms
- element of group VI

narrower terms
- ozone

related terms
- atmospheric component

http://www.eionet.europa.eu/gemet/concept?cp=632&langcode=en&ns=1

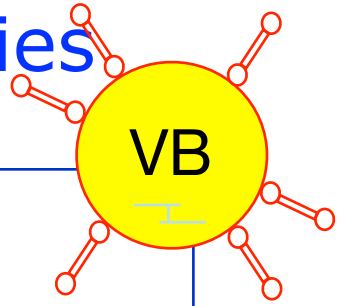
Vocabulary Broker news and next steps

- Mashup of UAT version 2.0
- Integration of (parts of) the GEMET thesaurus
- Mashup of publications and data publications of the GFZ library
  - OAI-PMH (mashup via GCMD keywords)
  - Integration of former GCMD complaint DIF documents

- Introducing of new properties into the terminological ontologies (vocabularies)
  - wdcosf.causedBy and wdcosf.effectedBy
  - history of term's semantic

Vocabular Broker Demo => http://wdcosf.kugi.kyoto-u.ac.jp

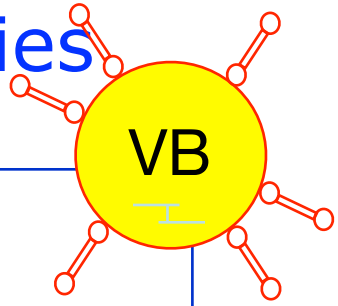
Cross-domain mashup of vocabularies



- Benefits:
  - Mashup of scientific resources, publications and applications across disciplines
  - Inferring of „unknown" cross- and trans-disciplinary relationships
  - Mashup of scientific and societal data resources for decision support and impact assessment
- Challenges:
  - Research, modelling and presentation of semantical change of terms
  - Political and ideological driven impact on the semantics of terms
  - Borders and limits of „free" science and education, especially related to humanities and societal impact

Vocabular Broker Demo => http://wdcosf.kugi.kyoto-u.ac.jp

Cross-domain mashup of vocabularies



- Bene
  - Ma … d ap
  - Inf … linary rel
  - Ma … s for de
- Chall
  - Re … ntical ch
  - Po … se
  - Bo … tion, esp … mpact

If you are interested in our expertise in information sciences, and in the reuse of our Vocabulary Broker idea and tool box for research or commercial applications and/or products please contact us.

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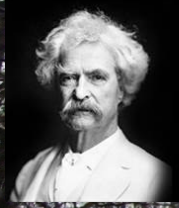
Vocabular Broker Demo => http://wdcosf.kugi.kyoto-u.ac.jp

The difference between the right word and the almost right word is the difference between lightning and a lightning bug.



Mark Twain
American Author and Humorist
(1835-1910)

QuoteHD.com

Beware of fake news.

None are more hopelessly enslaved than those who falsely believe they are free.

Johann Wolfgang von Goethe
(1749-1832)

ありがとうございました。

質問が ありますか。

berndritschel@yahoo.de

Thank you, Questions?