

A paradigm shift in knowledge organization systems/structures/services (KOS)
– Potentials and new functions of KOS in the Semantic Web environment

知識組織系統（KOS）的 跨典範模式研发

——探討在語義網中KOS潛力與功能的突破

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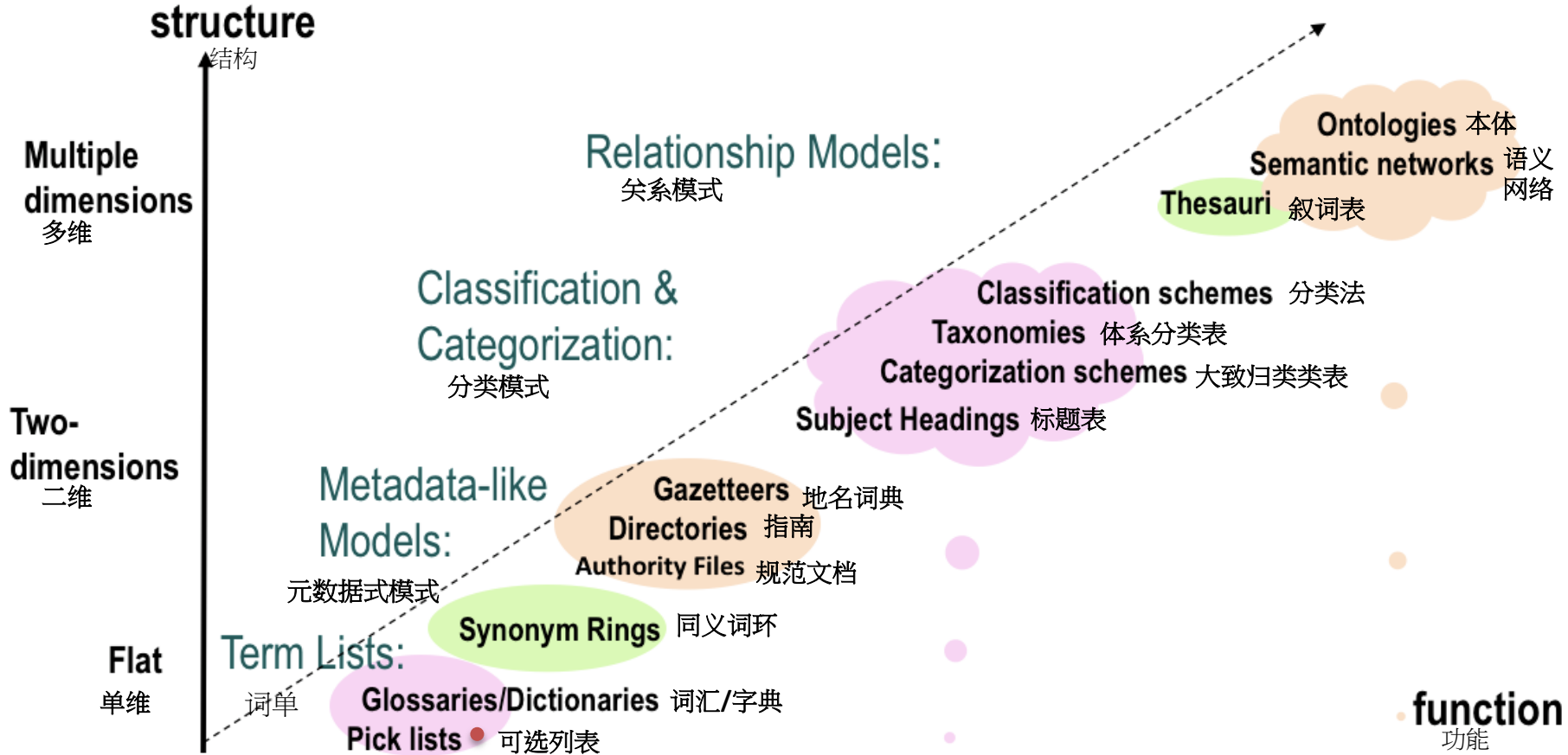
大纲

- 第一部分：追溯人類文明發展的歷史長河中對知識的劃分和組織方法
- 第二部分：分析檢索引擎採用KOS對信息進行檢索查尋和瀏覽的五代變遷
- 第三部分：細看KOS在语义网中的历程——以Getty词汇为特例

关于“知识组织系统”

- “知识组织系统” (Knowledge Organization Systems/Structures/Services) ——缩写为“KOS”。
 - 起源：“网络化的知识组织系统（NKOS）”第一次工作会议（NKOS Workshop）1997在美国召开, 开始采用KOS一词
 - 自1998年以来在美国和欧洲有NKOS workshops
 - 2015年第一次亚洲NKOS Workshop 在亚洲数字图书馆会议ICADL上举行
 - 历年会议资料见：<http://nkos.slis.kent.edu/>
- “KOS”成为各类检索语言或知识组织结构的统称，且被广泛采用。
- W3C的《SKOS简单知识组织系统》（SKOS Simple Knowledge Organization System）标准采用了KOS这一概念和术语
[SKOS是将各类KOS发布成关联数据的标准用语，2009.08.18正式成为W3C推荐标准。]

知识组织系统类型一览



Major functions	eliminating ambiguity 词义消歧	XXX		XXX	XX	XXXX	XX
	controlling synonyms 同义词控制		XXXX	XXX	XX	XXXX	XX
	establishing relationships: hierarchical 建立等级关系			X	XXXX	XXX	XXX
	establishing relationships: associative 建立 [等级以外的] 相关关系					XXXX	XXXXX
	presenting properties 揭示属性特征						XXXXX

第一部分 追溯

人類文明發展的歷史長河中 對知識的劃分和組織方法

1. 从波菲利之树 到林奈氏的科学分类体系

Porphyrian tree

波菲利之树



Porphyry (234-ca. 305 CE)
古罗马哲学家

波菲利之树是古罗马哲学家波菲利 Porphyry (234-ca. 305 CE) 在其著作 *Isagoge* 《亚里士多德〈范畴篇〉导论》中提出的一种对知识的分类体系。

将知识从“属”分支，一直分类到个体。

- genus (genos),
- species (eidos),
- difference (diaphoro),
- property (idion), and
- accident (sumbebekos).

引进了等级构架。

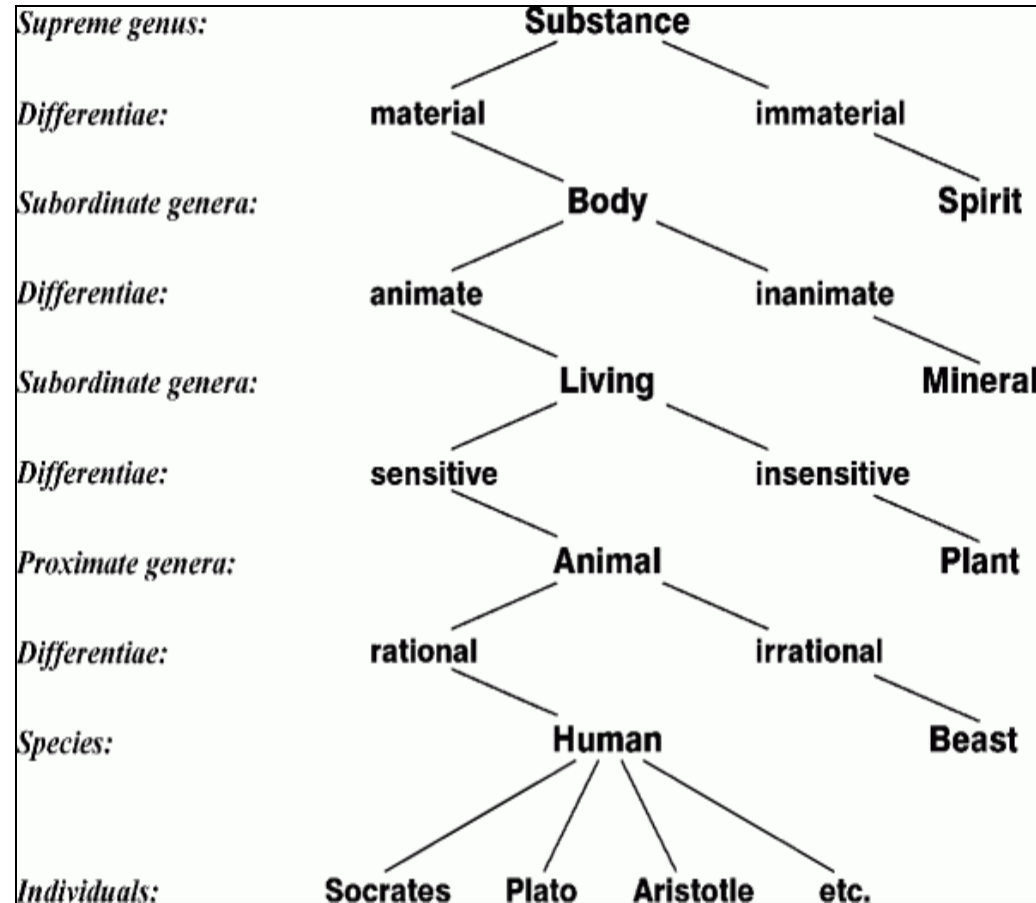


Image: A Porphyrian tree, originally draw by the 13th century logician Peter of Spain.

http://www.tertullian.org/fathers/porphyry_isagogue_01_in_tro.htm

https://en.wikipedia.org/wiki/Porphyrian_tree



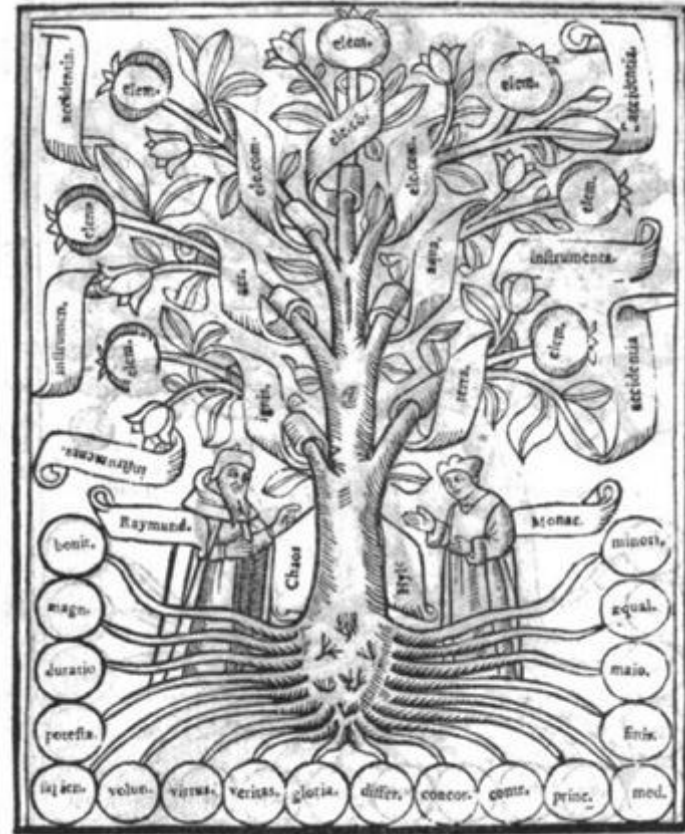
拉蒙·柳利

Ramon Llull (Catalan, 1232–1315)

加泰罗尼亚作家、逻辑学家

柳利的《科学树》

1295年到1296年之间，拉蒙·柳利发表了《*Arbor scientiae*》(Tree of science)



<http://www.historyofinformation.com/expand.php?id=3862>



“科学树”包括18个根，其中涉及到9个超然的原则和9项art原则。

Image source: a version published in Lyon, 1635, available through Google Books.



拉蒙·柳利

Ramon Llull (Catalan, 1232–1315)

加泰罗尼亚作家、逻辑学家

这部百科全书性质和开拓性的知识表达作品:

- 以“科学树”的模型展示了十六枝科学领域的科学树
- 其中每个科学通过与根，树干，树枝，树叶和果来展开
- 根代表每个科学的基本原则
- 这种植物寓言反应了亚里士多德的影响

柳利的《科学树》

Selected pages



Page 123



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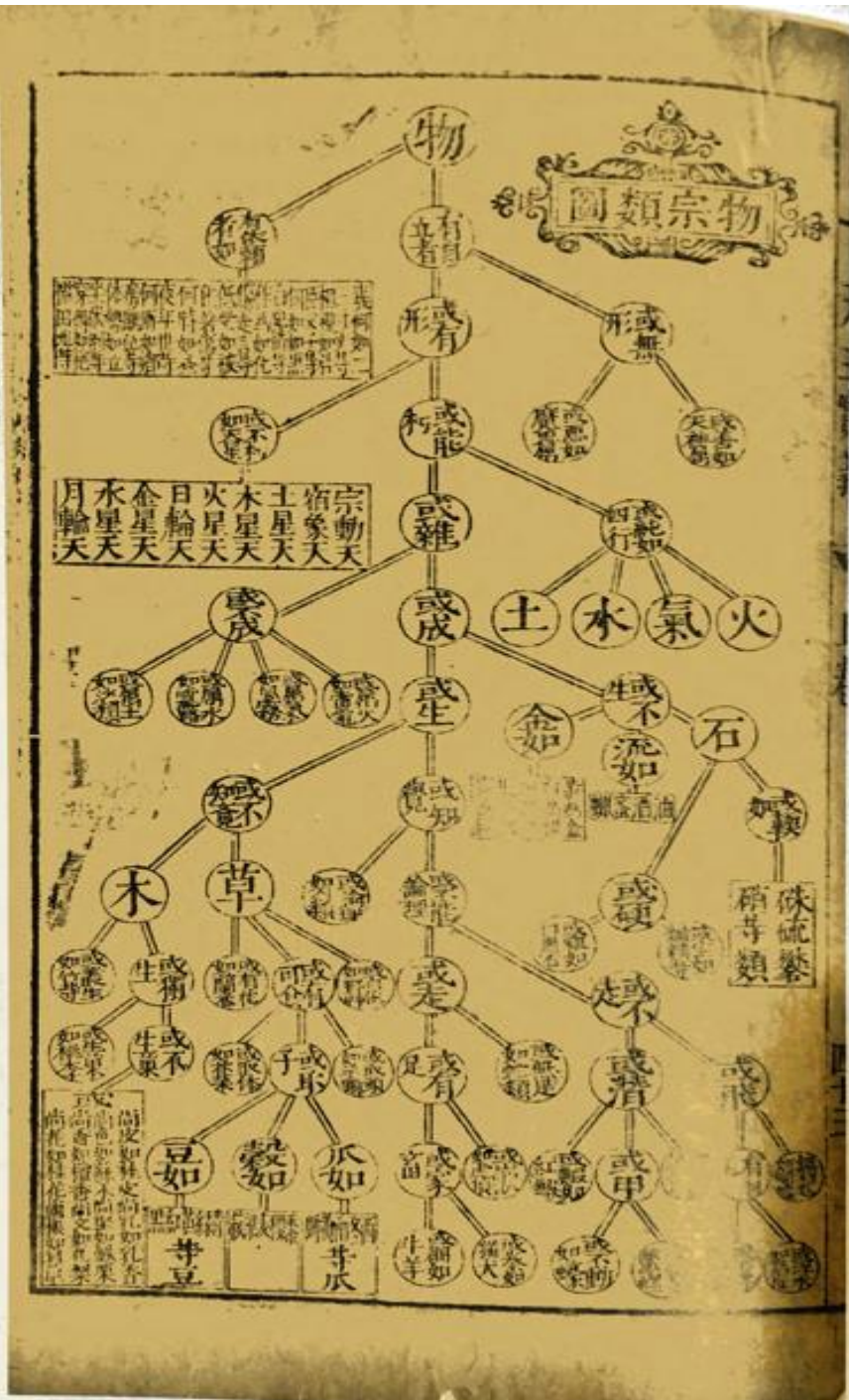
https://books.google.com.tw/books?id=I64oL87ai50C&source=gbs_navlinks_s



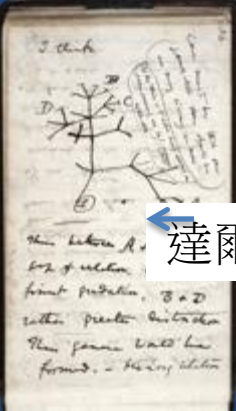
Matteo Ricci
 漢名=利瑪竇
 1552 -1610,
 意大利籍神父、传教士、学者

天主教在中国传教的开拓者之一，也是第一位阅读中国文学并对中国典籍进行钻研的西方学者。除传播天主教教义外，还传播西方天文、数学、地理等科学技术知识。

利瑪竇《天學實義》 / 《天主實義》
 明萬曆二十三年（1595）初刻于南昌
 明崇禎刊 国立故宫收藏

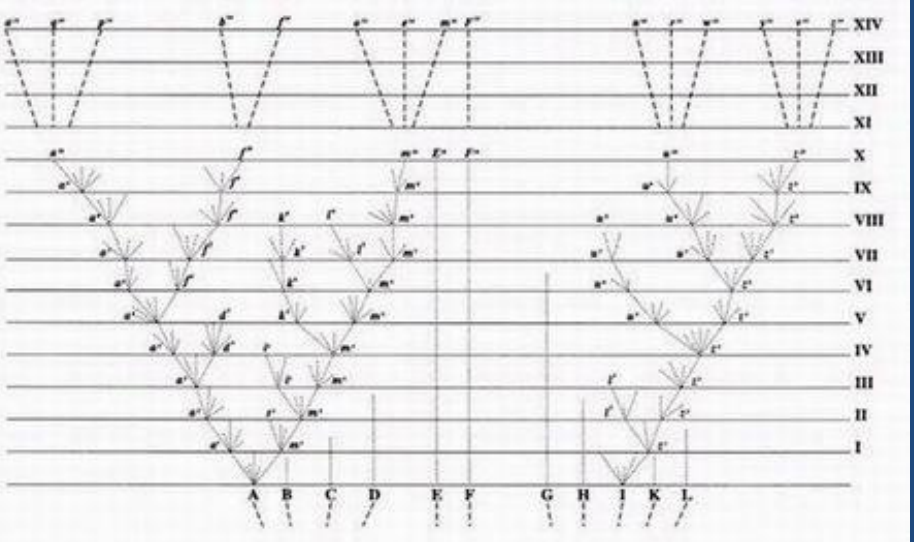


Generelle Morphologie der Organismen (1866)



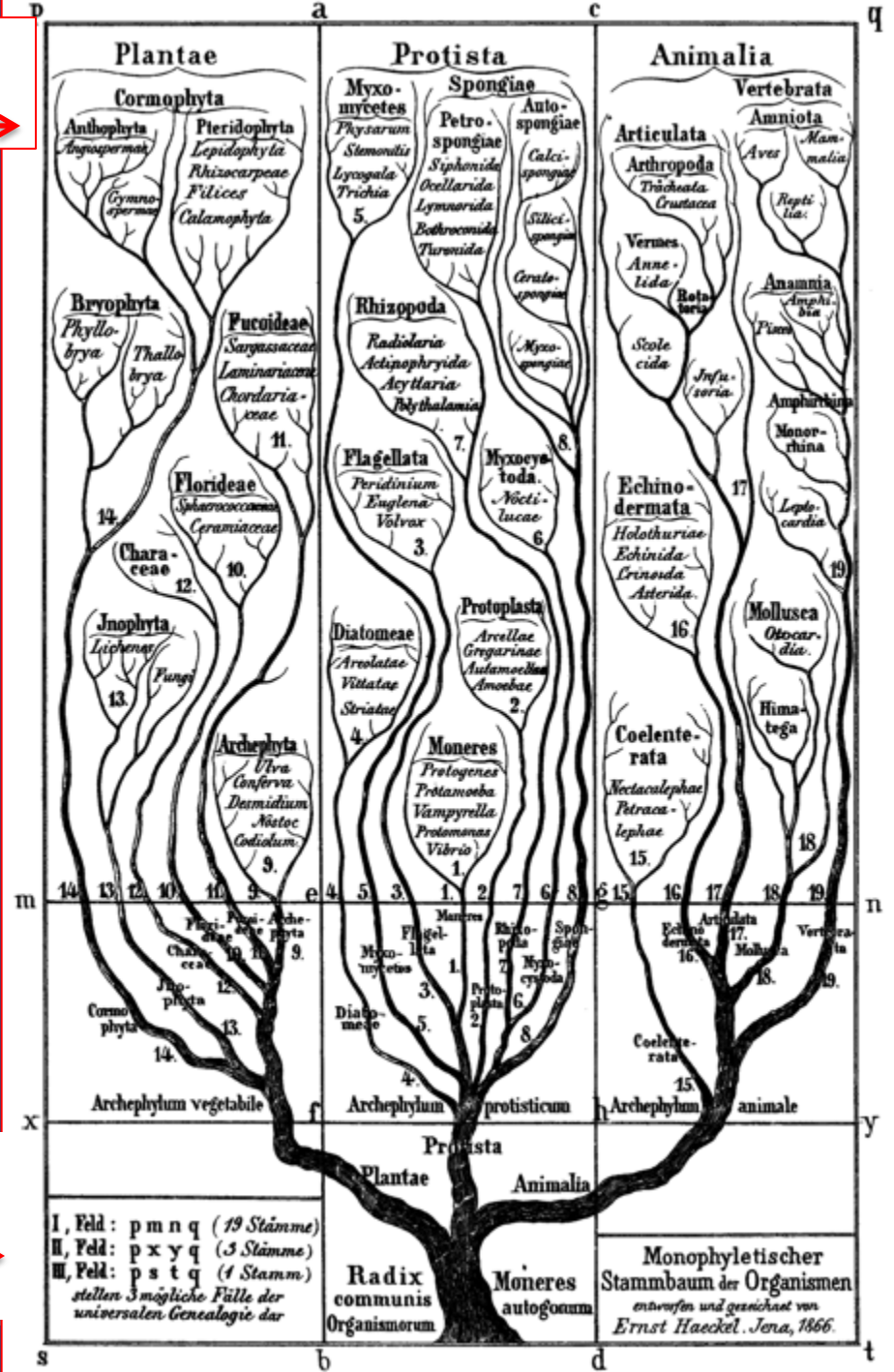
達爾文笔记 1837

達爾文《物種起源》插图, 1859



https://en.wikipedia.org/wiki/Tree_of_life_%28biology%29

恩斯特·海克尔 Ernst Haeckel (1834 – 1919) 将达尔文的进化论引入德国并在此基础上继续完善了人类的进化论理论。



I, Feld: p m n q (19 Stämme)
 II, Feld: p x y q (3 Stämme)
 III, Feld: p s t q (4 Stämme)
 stellen 3 mögliche Fälle der universalen Genealogie dar

Radix communis Organismorum

Moneres autogenum

Monophyletischer Stammbaum der Organismen entworfen und gezeichnet von Ernst Haeckel. Jena, 1866.

生物分类学的思想沿用至今，不断完善。

About TaiBIF About GBIF Taiwan Biodiversity Information Facility

物种名錄



分布區



News & Events

门、
纲、
目、
科、
属、
种

Plantae

JSON格式

- Plantae 植物界 13 phylum 26 class 162 order 464 family 2529 genus 8679 species 12 phylum 21 class 141 order 31
- Anthocerotophyta 角苔門 1 class 3 order 3 family 6 genus 19 species 1 class 1 order 1 family 1 genus 1 species
- Marchantiophyta 地錢門 2 class 13 order 51 family 123 genus 550 species 2 class 8 order 32 family 61 genus 199 species
- Rhodophyta 紅藻植物門 4 class 17 order 43 family 155 genus 388 species 2 class 12 order 27 family 59 genus 137 species
 - Banglophyceae 頸髮藻綱 1 order 1 family 3 genus 7 species
 - Compsopogonophyceae 複絲藻綱 2 order 2 family 2 genus 3 species
 - Florideophyceae 真紅藻綱 13 order 39 family 148 genus 376 species 11 order 26 family 58 genus 80 species
 - Rhodellophyceae 紅藻綱 1 order 1 family 2 genus 2 species 1 order 1 family 1 genus 1 species
 - Porphyridiales 紫球藻目 1 family 2 genus 2 species 1 family 1 genus 1 species
 - Goniotrichaceae 角毛藻科 2 genus 2 species 1 genus 1 species
- Chlorophyta 綠藻
- Bryophyta 蘚類植物
- Lycopodiophyta 石松類植物
- Psilophyta 松葉蕨
- Equisetophyta 木賊類植物
- Pteridophyta 蕨類植物
- Cycadophyta 蘇鐵類植物
- Ginkgophyta 銀杏類植物
- Coniferophyta 松柏類植物
- Magnoliophyta 被子植物

Common Names: 角毛藻
Name code in TaiBNET: 123505

Plantae 植物界
L Rhodophyta 紅藻植物門
L Rhodellophyceae 紅藻綱
L Porphyridiales 紫球藻目
L Goniotrichaceae 角毛藻科
L Chroodactylon 色指藻屬
L Chroodactylon oratum (C. Agardh) Basson, 1979 角毛藻

- Jump
- Distribution
- Synonym
- Occurrence Data
- Quote Link

Distribution

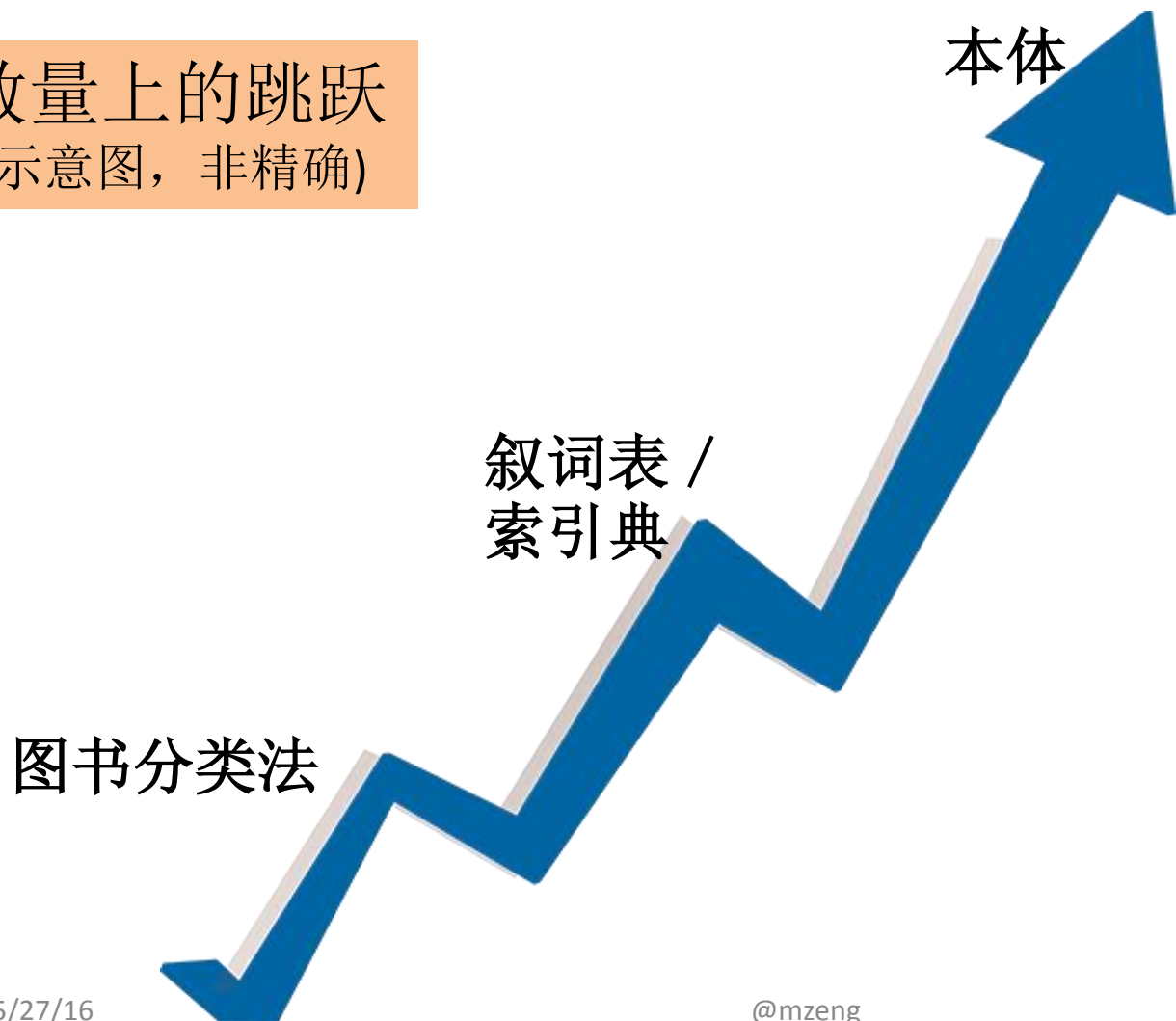


台灣生物多樣性資訊入口網

<http://taibif.tw/>

2. 现代KOS用于对文献资料和信息组织

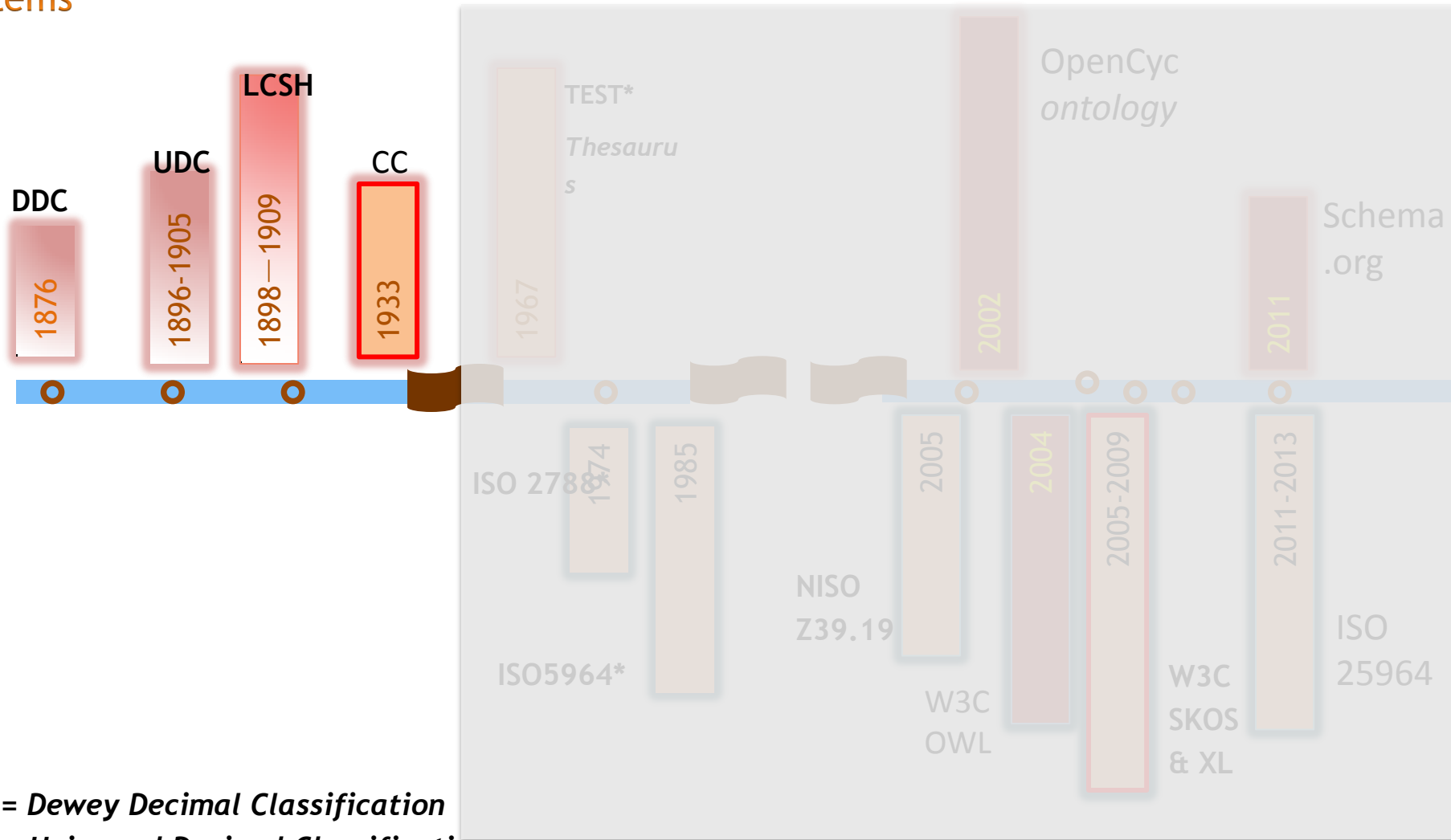
数量上的跳跃
(示意图, 非精确)



影响较大的现代KOS&国际标准 (a)

(示意图, 非精确)


Systems



- DDC = Dewey Decimal Classification
- UDC = Universal Decimal Classification
- LCSH = Library of Congress Subject Headings
- CC = Colon Classification

《杜威十进图书分类法》 (*Dewey Decimal Classification*) >1876—

Enumerated hierarchical system 列举式等级系统




000 - General knowledge

- 000.000 Knowledge & systems
- 000.010 Bibliographies
- 000.020 Library & information sciences
- 000.030 Encyclopedias & books of facts
- 000.040 Magazines, journals & serials
- 000.050 Associations, organizations & museums
- 000.060 News media, journalism & publishing
- 000.070 Timeline of the Lighted World
- 000.080 Timeline of the Obscure World
- 000.090 Persons

100 - Philosophy & psychology

- 100.000 Philosophy
- 100.010 Psychology
- 100.020 Time

Melvil Dewey



Born Melville Louis Kossuth Dewey
December 10, 1851
Adams Center, New York

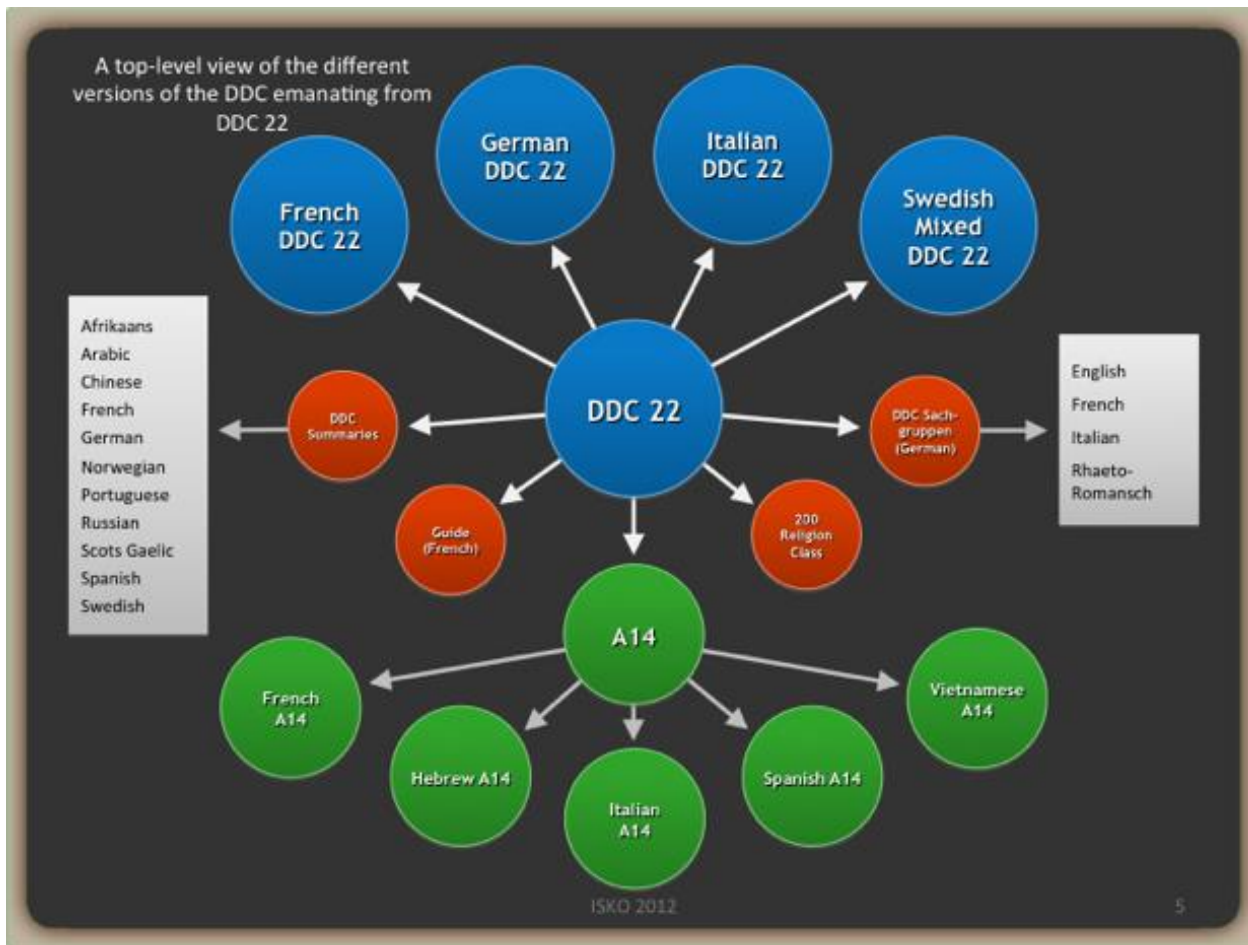
Died December 26, 1931 (aged 80)
Lake Placid, Florida

Nationality American

DDC: 世界上使用最广的图书分类法，也是无数衍生的图书分类法的根基



- In more than 30 languages
- serves library users in more than 200,000 libraries
- 135+ countries worldwide
- More than 60 of these countries use the DDC to organize their national bibliographies



- Mitchell, Zeng, and Žumer. 2011.

http://www.udcds.com/seminar/2011/media/slides/UDCSeminar2011_Mitchell_Zeng_Zumer.pdf

《冒號分類法》

(Colon Classification) 1933-

其分面和组配的理论, PMEST分面、在今天的语义网和本体思路中都可以清楚看到。

PMEST facets:

- **Personality** [P] is best thought of as "the thing itself," 主体
- **Matter** [M] is the material of which the thing is composed, 物质
- **Energy** [E] is the action performed on or by the thing, 动力
- **Space** [S] is where the action takes place, 空间
- **Time** [T] is when it takes place. 时间

WHO

WHAT


HOW

WHERE

WHEN

Synthesis power

“What distinguishes the universe of current knowledge is that it is a dynamical continuum. It is ever growing; new branches may stem from any of its infinity of points at any time; they are unknowable at present. They cannot therefore be **enumerated** here and now; nor can they be anticipated, their filiations can be determined only after they appear” (Ranganathan, 1951).



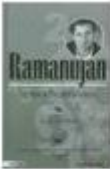



S. R. Ranganathan
Mathematician

Shiyali Ramamrita Ranganathan was a mathematician and librarian from India. His most notable contributions to the field were his five laws of library science and the development of the first major ... Wikipedia

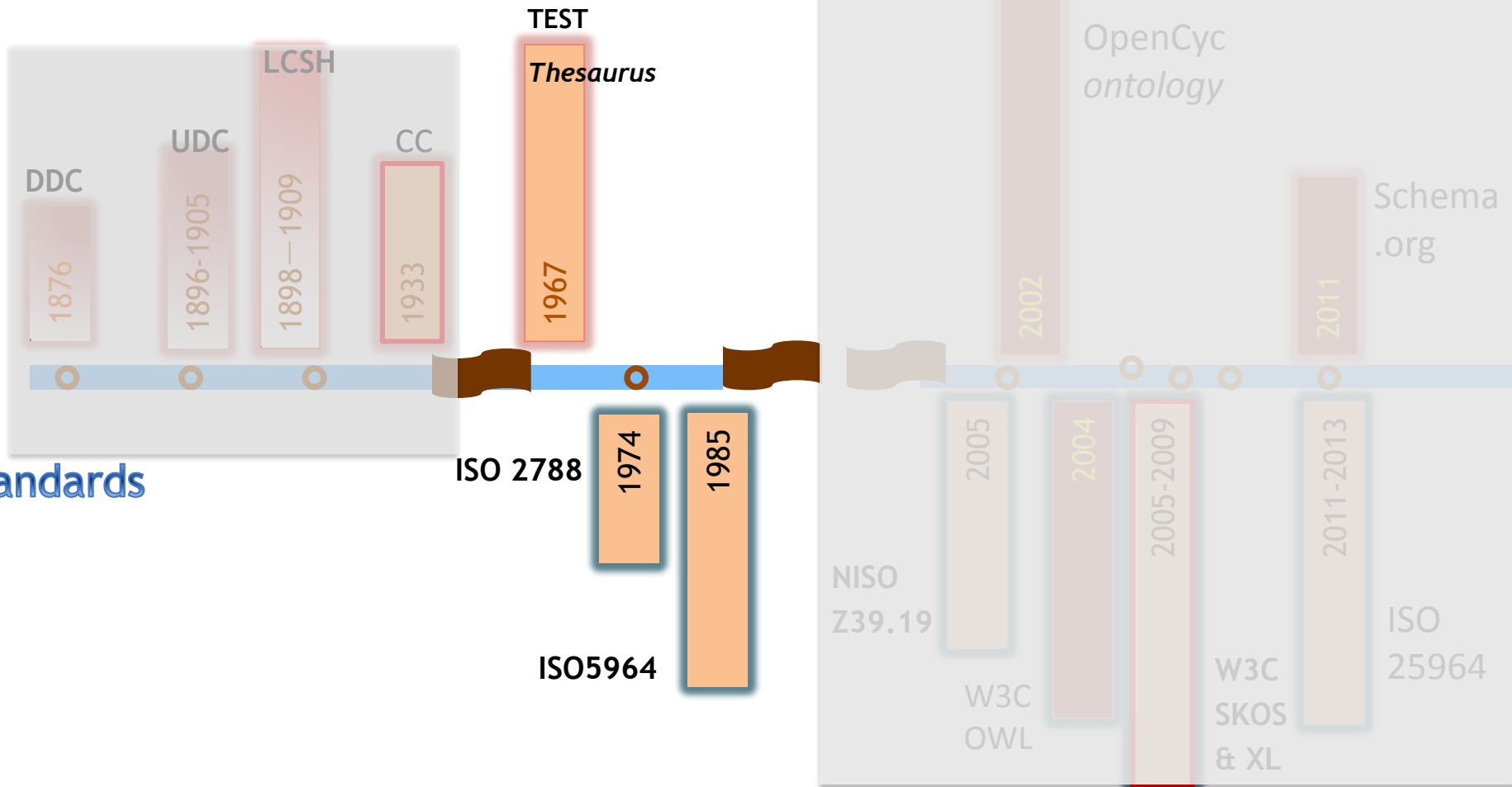
Born: August 9, 1892, Sirkazhi, India
Died: September 27, 1972, Bangalore, India
Education: Madras Christian College, University College London

Books

 The Five Laws of Library S... 1931	 Classified Catalogue Code: Wit... 1934	 Ramanujan: The Man and the M... 1967	 Document... Genesis and Deve... 1967
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影响较大的现代KOS&国际标准 (b) (示意图, 非精确)

Systems



TEST = *Thesaurus of engineering and scientific terms*

ISO 2788 (1974) *Guidelines for the Establishment and Development of Monolingual Thesauri*

ISO 5964 (1985) *Guidelines for the Establishment and Development of Multilingual Thesauri*

20世纪50年代至80年代末

- 50年代中期到后期
 - 计算技术发展
 - 科学文献快速增长
 - 适用于索引和检索的信息和通信理论逐渐确立



- Taube “组配标引之研究”
“*Studies in Coordinate Indexing*” 五卷系列 1953—1959出版。
- Eugene Garfield “科学引文索引”
“*Citation indexes for science*” 1955年在《科学》上发表。
- Gerard Salton 1958 学位论文
Automatic Indexing; 1960s 建成自动分析与检索系统 SMART (System for the Mechanical Analysis and Retrieval of Text)。
- Hans Peter Luhn “Keyword-in-context index for technical literature” 1960发表。

KWIC

Image: <http://www.crowl.org/lawrence/history/>

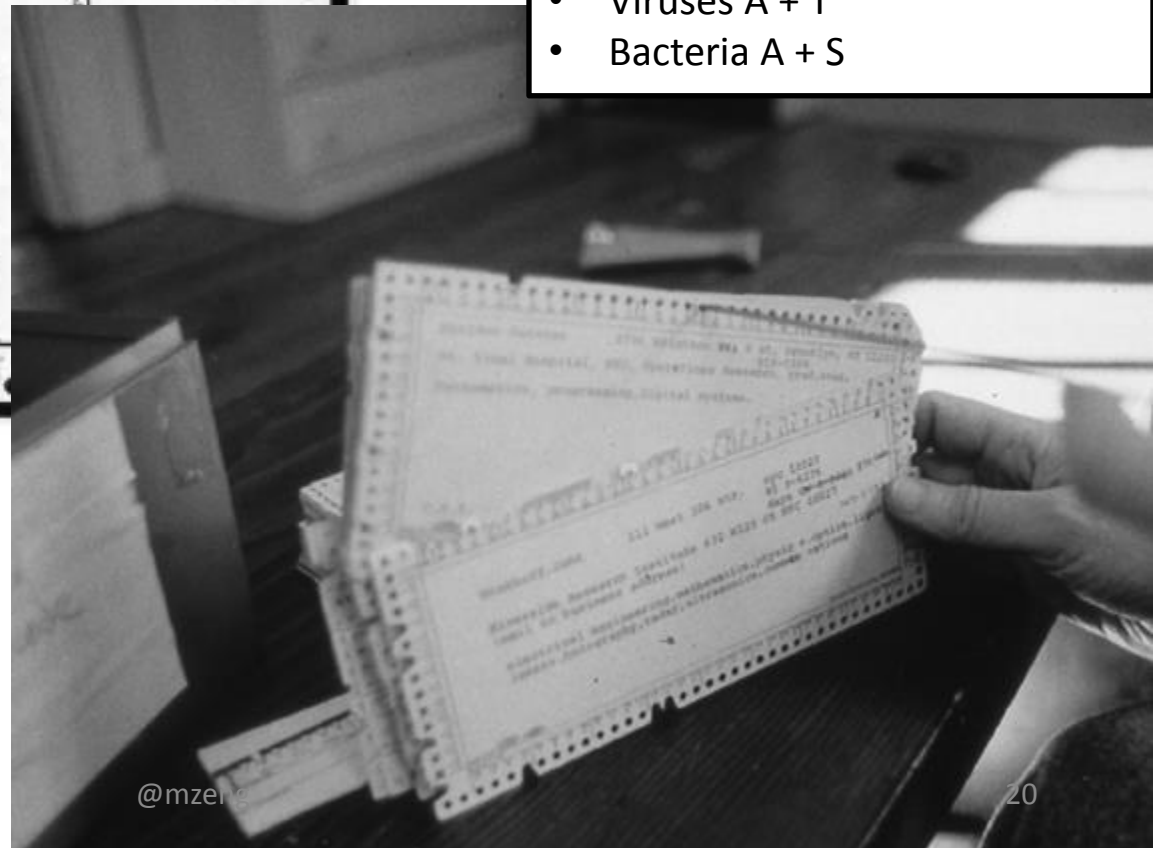
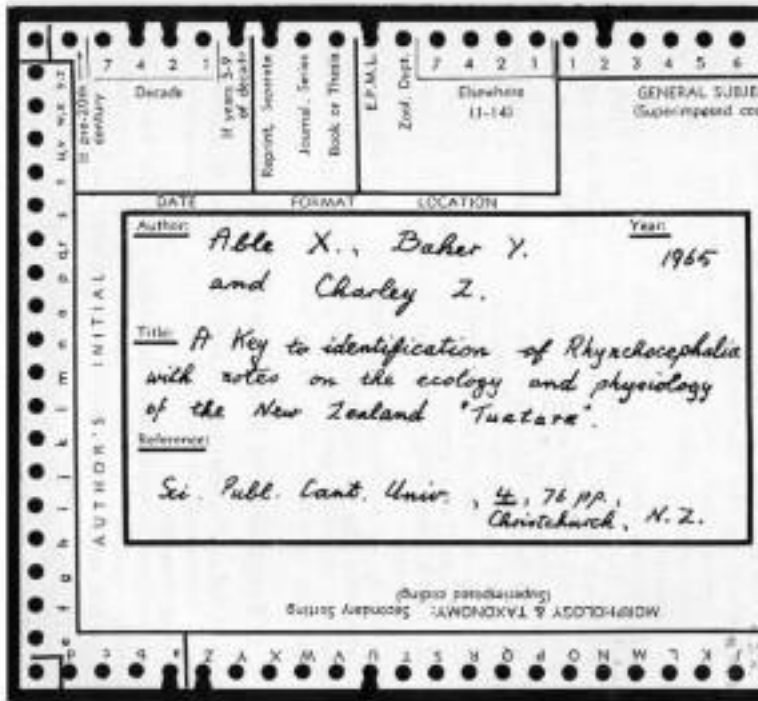
1960s-1970s

组配检索的早期： 边缘穿孔卡片标引系统

Edge-notched cards
Needle card
Punched Card

Examples from a taxonomy:

- Physiology and anatomy: blood system 8 + 5
- Physiology and anatomy: reproduction 8 + 4
- Viruses A + T
- Bacteria A + S



- The printed punched card used for the Edward Percival Marine Laboratory

- Yellow edge-notched card. Photo: Billy Klüver

- 《化工标题》 *Chemical Titles* (1960-) 正式发行
 - 计算机自动处理
 - KWIC
 - 源于汉斯·彼得·卢恩 Hans Peter Luhn's的研究

DEGRADATION OF BENZYL PENICILLIN AT PH 7.5 TO D- BENZYL PE
 Y REACTION OF D- BENZYL PENICILLOIC ACID WITH CYSTINE.* DEGR
 AT PH 7.5 TO D- BENZYL PENICILLOIC ACID. FORMATION OF D- P
 S OF TETRA CHLORO CYCLO PENTADIENONE KETALS WITH BENZOYL CYA
 N OF TETRA PHENYL CYCLO PENTADIENONE WITH NITRILES OF PYRIDI
 INTERACTION OF CYCLO PENTADIENYL SODIUM WITH ALKOXY TITAN
 TIONS.* BI CYCLO PENTADIENYL- DI PHENYL TITANIUM REAC
 HYDRO CRACKING OF NEO PENTANE AND NEO HEXANE OVER EVAPORAT
 CHEMISORPTION OF ISO PENTANE ON ALUMINIUM CHROMIUM- POTAS
 ES FROM 2- CYANO- CYCLO PENTANONE. ALKYLATION REACTIONS. P
 1+2- DI THIA- CYCLO PENTENE.*
 ON OF 2+2- DI- ALKYL-4- PENTENOIC ACIDS.* PREPARATI
 -3- HEXOS AMINES AND 3- PENTOS AMINES.* AMINO SUGAR SYNTHESI
 S IN THE GAS PHASE. T- PENTYL ALCOHOL AND HYDROGEN BROMIDE
 E (+)- AND (-)-3- CYCLO PENTYL-1- HYDROXY-2- PROPYL AMIDES O
 AND REACTIONS OF 4- NEO PENTYL-3- BUTYL-1,2- DI THIOLE-3-
 - 3 - 11 - METHYL - 2 - PENTYNYL- BARBITURIC ACID.* RESOLUTI
 PEPTIDES ISOLATED FROM PEPTIC-HYDROLYSATE OF DI PROTEINS,
 ILTIES OF COUPLING THE PEPTIDE BOND.* NEW POSSIB
 CALLY ACTIVE PEPTIDES.* PEPTIDE SYNTHESIS. SYNTHESIS OF OPT
 S. RACEMISATION DURING PEPTIDE SYNTHESIS.* AMINO- ACIDS AND
 MEDIATE PROTECTED HEPTA PEPTIDE.* STEPS TOWARDS THE SYNTHESI
 STEMATIC DEGRADATION OF PEPTIDES BY REDUCTION OF THEIR N-12-
 YSITE OF L- ARGINYL DI PEPTIDES OF ASPARAGINE, GLUT AMINE,
 ESIS.* AMINO- ACIDS AND PEPTIDES. RACEMISATION DURING PEPTI
 LINE.* AMINO- ACIDS AND PEPTIDES. SYNTHESIS OF THE LOWER HO
 SIS OF OPTICALLY ACTIVE PEPTIDES.* PEPTIDE SYNTHESIS. SYNTH
 CETALS AND ACYLAIS WITH PER ACETIC ACID.* OXIDATION OF UNSAT
 DS BY TRI PHENYL METHYL PER CHLORATE.* DEHYDROGENATION OF HE
 ZYNE INTERMEDIATES FROM PER CHLORYL AROMATIC COMPOUNDS.* PRO
 AND O- PHENYL BENZOYL PER OXIDE.* INTRAMOLECULAR RADICAL R
 ID ESTERS WITH HYDROGEN PER OXIDE.* REACTION OF UNSATURATED
 ID ESTERS WITH HYDROGEN PER. OXIDE.* REACTIONS OF DI BASIC FA
 ID ESTERS WITH HYDROGEN PER OXIDE.* REACTIONS OF SATURATED F
 BUTYLENE.* REACTIONS OF PEROXIDATIVE DEGRADATION, PEROXIDE

COMPT. REND.: 251: 1314-16 (1960): FAHIM RB
 RAZORI-60-APC RAZOUK RI EL-INANY GA
 NIKHAIL RS
 ADSORPTIVE PROPERTIES OF CARBONISED AGRICULTURAL WASTES.
 ADSORPTION OF SOME VAPORS ON CARBONISED RICE HUSKS AND
 RICE STALKS.*
 J. CHEM. UNITED ARAB REP.: 3: 11-22 (1960):
 RAZORI-60-EEC RAZOUK RI TOBIA SK ELBASSIOURY TA
 EFFECT OF EXCHANGEABLE CATIONS ON THE HEAT OF WETTING OF
 SOILS.*
 SOIL SCI.: 90: 169-72 (1960):
 BONDS OF N- HEPTANE, BENZENE, TOLUENE, ETHYL BENZENE AND
 CYCLO- HEXANE IN THE CASE OF METHYL GROUP INTERACTION IN
 THE LIQUID PHASE. INFLUENCE OF THE PHENYL GROUP AND OF THE
 RAZUGA-60-BCP RAZUYAEV GA LATIAEVA VN VYSHINSKAYA LI
 BI CYCLO PENTADIENYL- DI PHENYL TITANIUM REACTIONS.*
 DOKLADY AKAD. NAUK S.S.S.R.: 134: 612-14 (1960):
 RAZUMI-60-FAI RAZUMOV MI
 FAT ABSORPTION IN THE INTESTINE MORPHOLOGICAL

Figure 1. "Indexing scientific progress by computer." Dyson, G. Malcolm, (Director of research, Chemical Abstracts Service). New Scientist, No. 228 (30-March, 1961)

1960s: 计算机化的批量处理 (batch-processing systems)

- 美国宇航局 NASA's *STAR (Scientific and Technical Aerospace Reports)* 《科技航空航天报告》
- MEDLARS (since 1879, the National Library of Medicine had published *Index Medicus* manually. 1963 computerized)
- ERIC (Education Resources Information Center)
- *Science Citation Index* 《科学引文索引》

1970s—在线互动检索系统 (online interactive retrieval systems)

- NASA, RECON, DIALOG, MEDLINE, LEXIS, BRS 等
- 通过**DIALOG**提供的数据库数量:
 - 1972年: 3
 - 1984年: 200⁺
 - 1995年: 450⁺

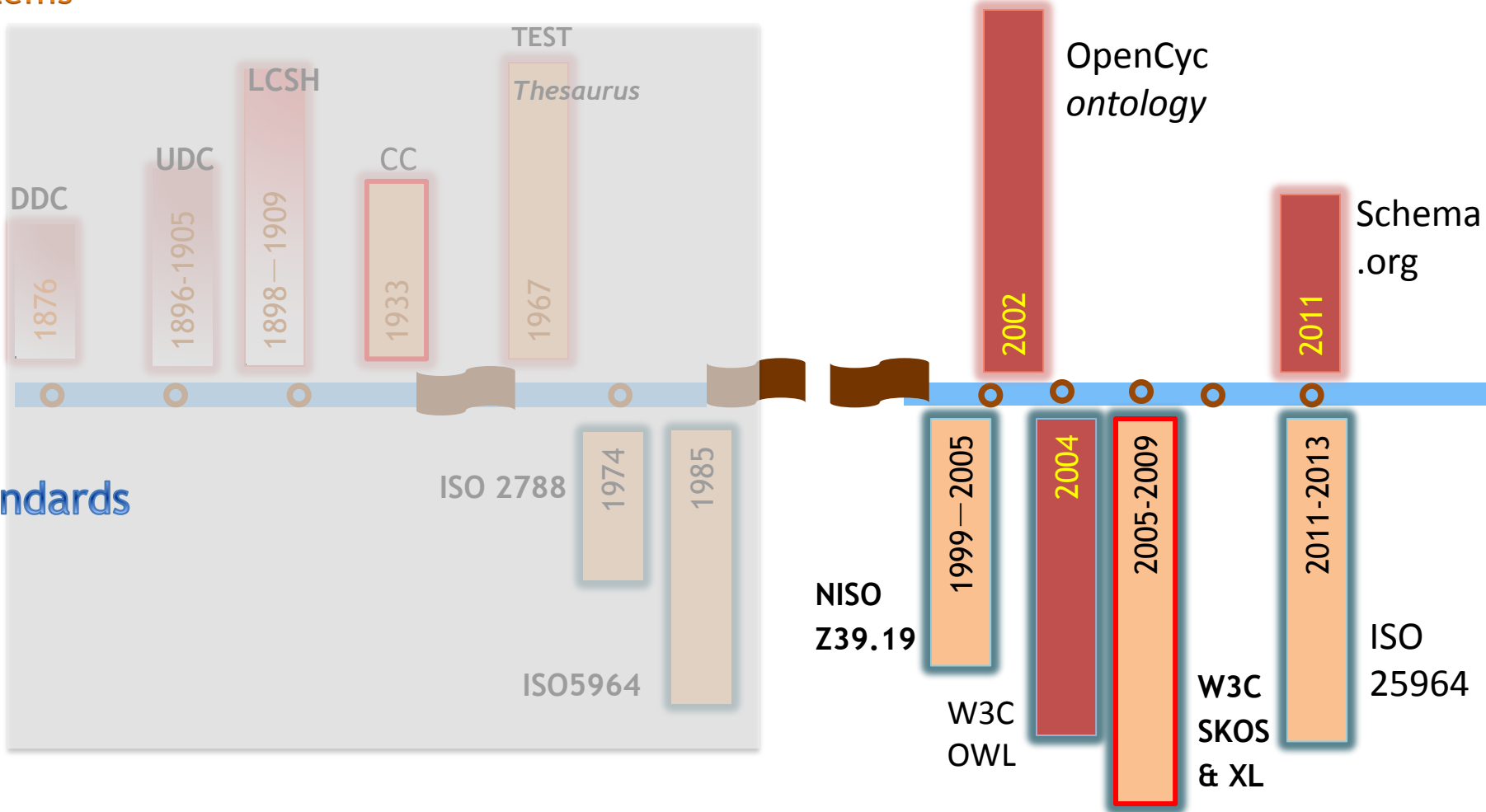
受控词汇 controlled vocabularies 的重要性: 提高信息检索效率

- 1967 Cranfield 克兰菲尔德测试
- 1969 Lancaster, 1981 Sparck Jones MEDLARS 调查
- 至1988美国和欧洲的在线数据库中使用150多个 thesauri 叙词表和其它种类的受控词汇—根据 Chan and Pollard 汇编的名单

影响较大的现代KOS&国际标准 (c-1)

(示意图, 非精确)

Systems



NISO Z39.19 (2005) *Guidelines for the Construction, Format, and Management of Monolingual Controlled Vocabularies*

ISO 25964 (2011 pt1; 2013 pt2) *Thesauri and interoperability with other vocabularies*

《ANSI/NISO Z39.19》标准 从“叙词表”（1993） 扩大到“受控语言”（2005）

- 20世纪末
 - 万维网逐渐扩大
 - 社会对整个信息工作的需求产生巨大变化
 - 网络服务所需的各类知识组织结构的兼容及其用电子词表和其他新媒体发布等需求剧增
- 美国信息标准组织NISO
 - 1999.11. 4—5召集美国标引与检索及词表类表方面的研究和实践者举行了两天“电子叙词表工作会议”
 - 讨论修订国家标准《ANSI/NISO Z39.19—1993单语种叙词表建造、格式、与管理指南》的问题。
- 原标准自1974年以来一直限叙词表 thesauri范围
- 会议经过突破性的讨论和决定，接下来好几年的工作小组的努力，终于迈出这个框架，重新起草，跨越各种受控语言，2005年正式通过并发布了新的国家标准。
- 改名为《ANSI/NISO Z39.19—2005单语种受控语言建造、格式、与管理指南》 *Guidelines for the Construction, Format, and Management of Monolingual Controlled Vocabularies*

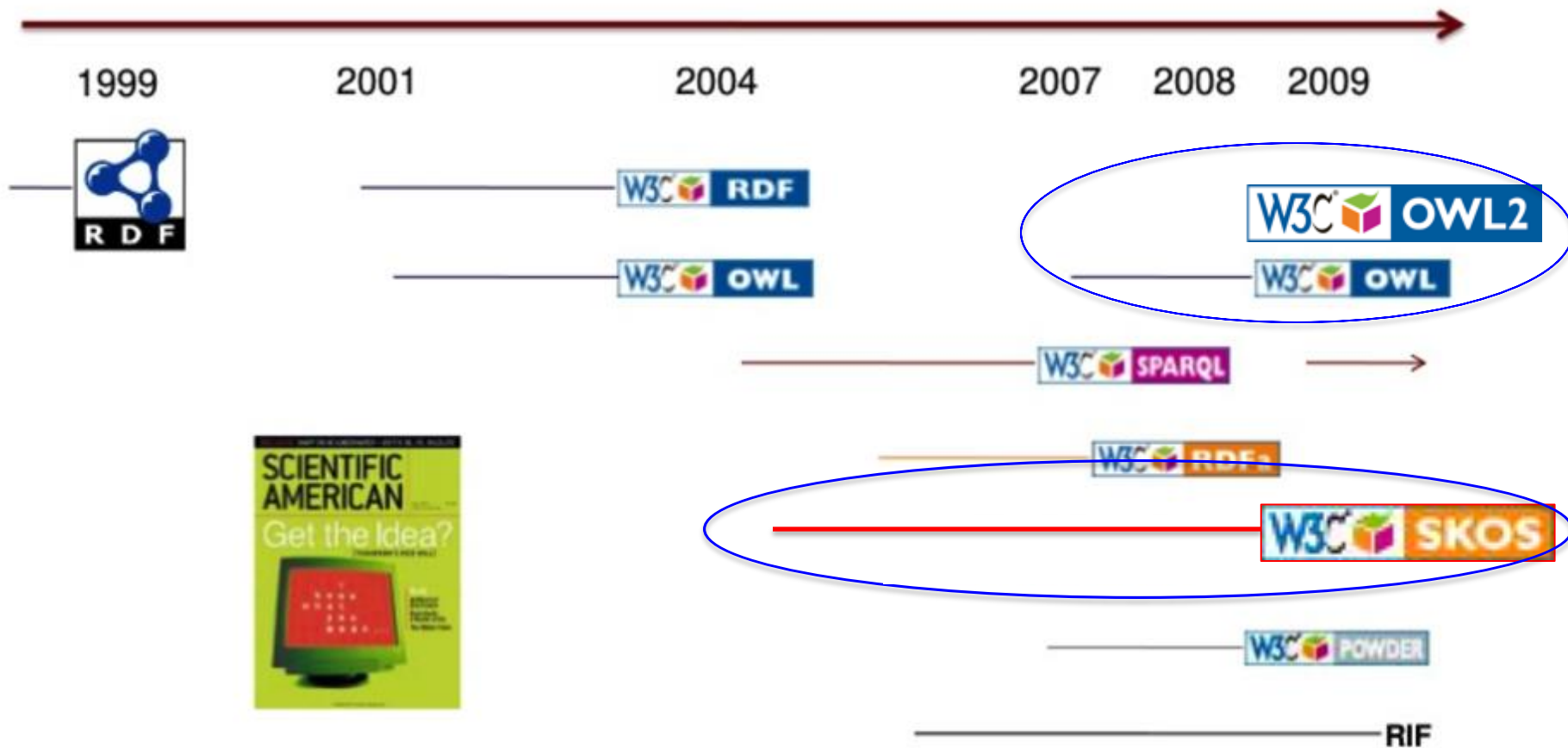
21世纪KOS新标准

- 美国国标NISO Z39.19-2005 (2005)
- 英国国标BS 8723 (2005-2008, 分五个部分)
- 国际标准组织《ISO 25964—叙词表以及与其他词汇的兼容性》(2011-2013, 分两大部分)
 - 强调是 ‘concept’ 而不是 ‘term’
- W3C推荐标准《SKOS简单知识组织系统》(SKOS=Simple Knowledge Organization System, 2005—2009由核心到完善并扩充至SKOS—XL)
- ISO 25964 SKOS extension (iso-thes) ontology (2014)

这些21世纪新型标准的特点都是在内容上以叙词表为基础展开，容纳各种语言的结构，特别是纳入分类结构和自然语言为基础的结构。

For more details: Clarke, Stella G. Dextre, and Marcia Lei Zeng. 2012. From ISO 2788 to ISO 25964: the evolution of thesaurus standards towards interoperability and data modeling. *Information Standards Quarterly*, 2012 Winter 24(1):20-26.

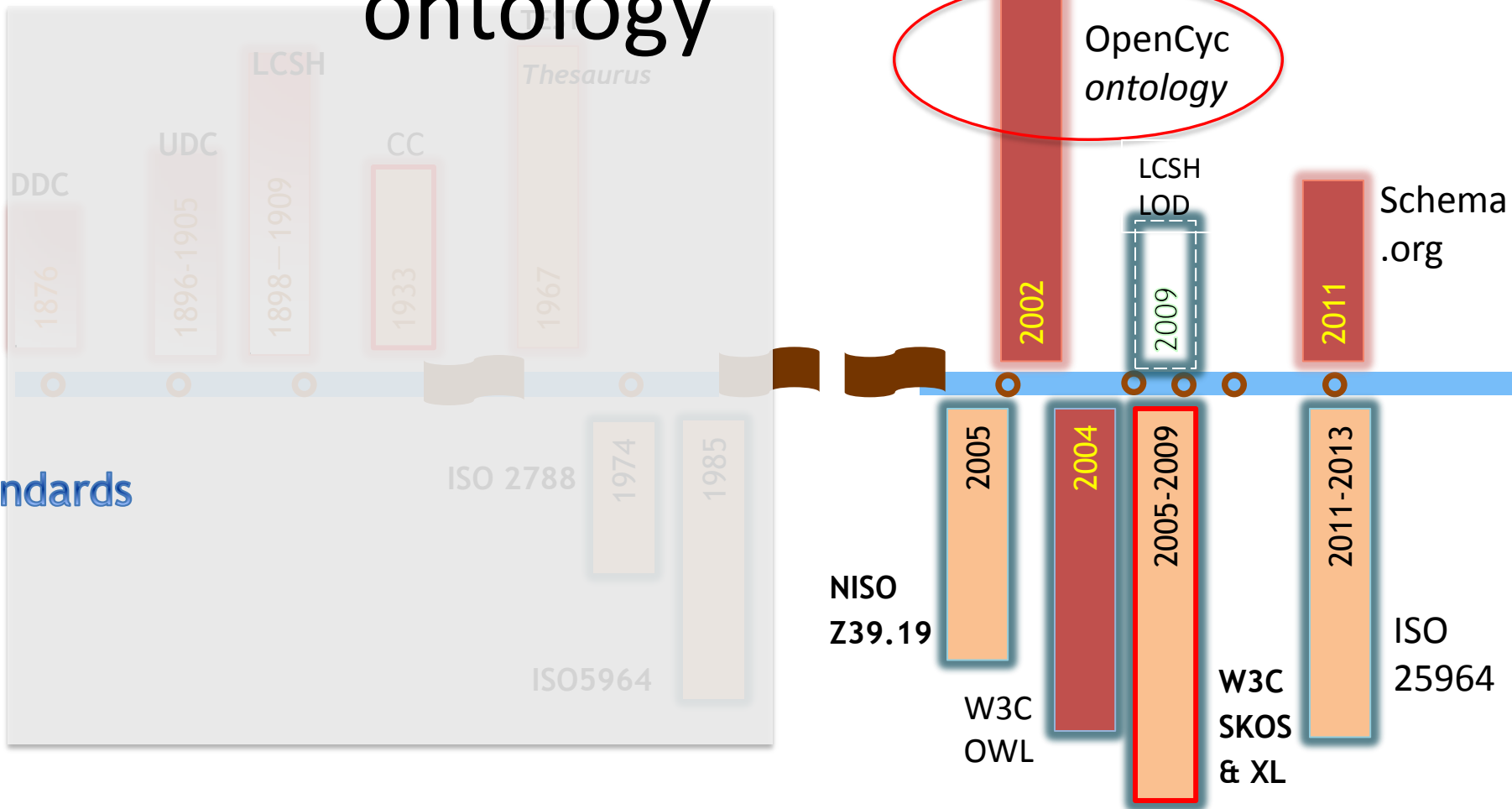
Semantic Web Technology Timeline



影响较大的现代KOS&国际标准 (c-2) (示意图, 非精确)

Systems

ontology

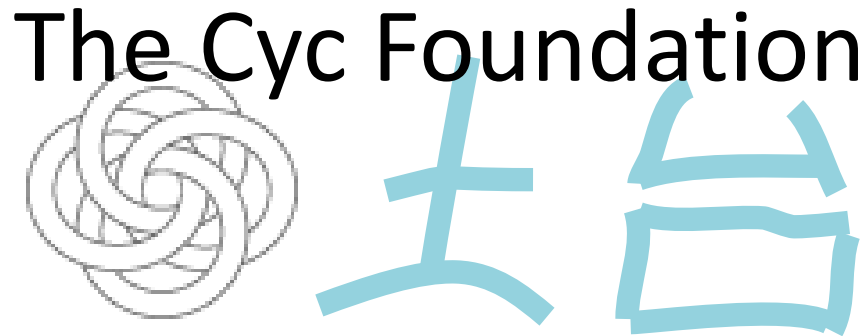


OpenCyc 开当代“本体”之先河

“Cyc”名字的来源是“encyclopedia”，发音：syke

Cyc = 致力于将各个领域的本体及常识知识综合地集成在一起，并在此基础上实现 知识推理 的人工智能项目。

目标=使人工智能的应用能够以类似人类推理的方式工作。

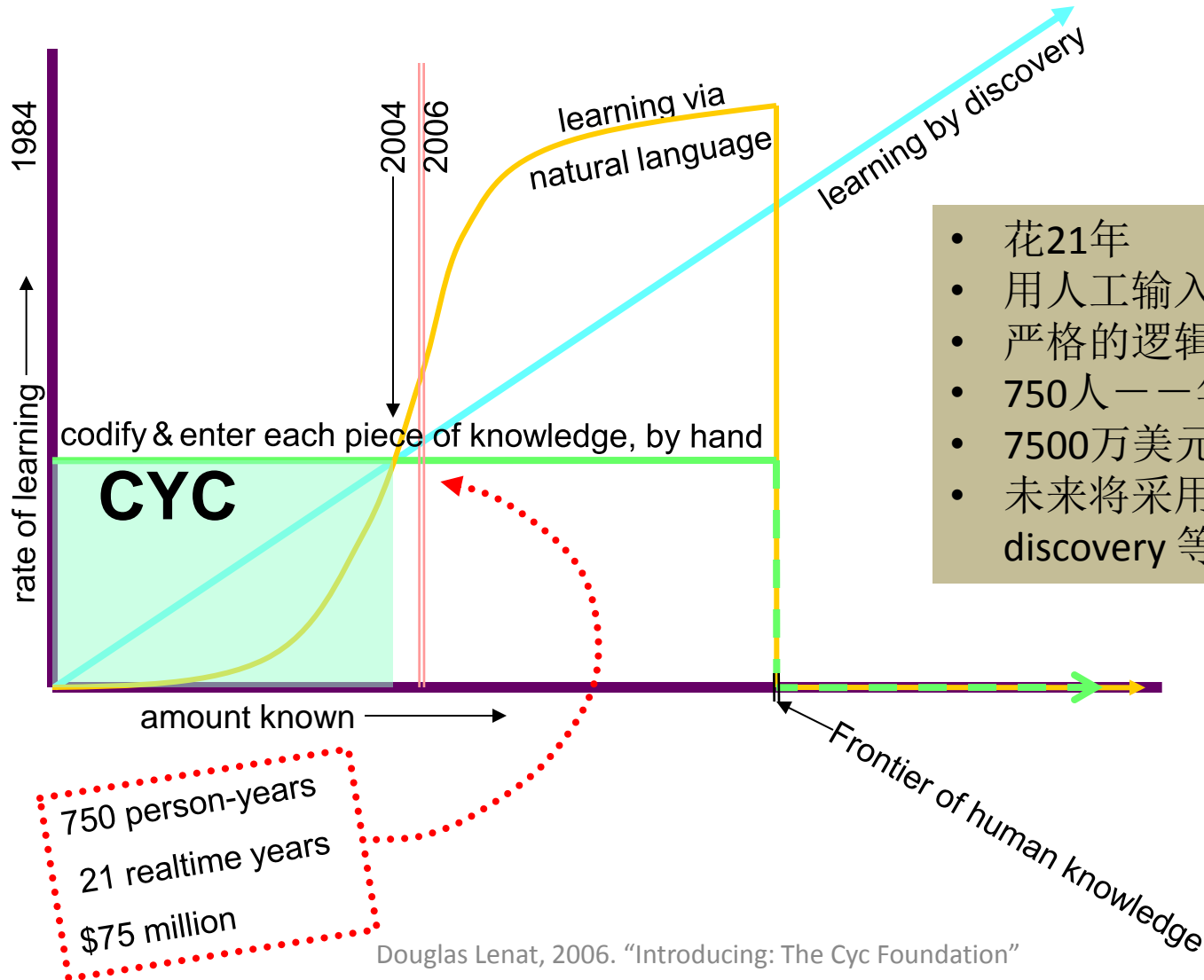


<http://www.cyc.com/>

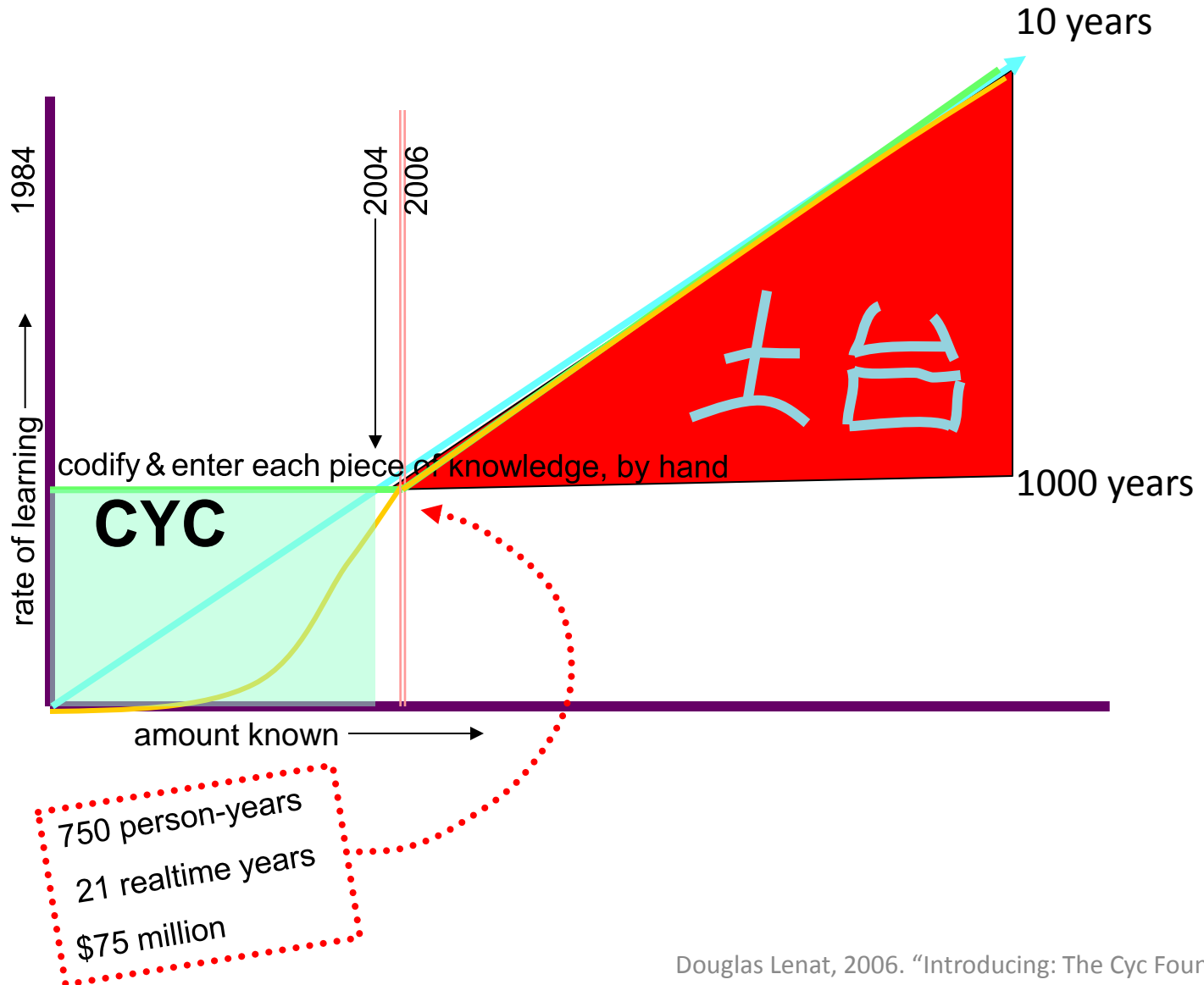
- 1984，由当时的微电子与计算机技术公司开始开发，由Douglas Lenat设立
- 1986，Douglas Lenat预测如果想要完成Cyc这样庞大的常识知识系统，将涉及25万条规则，并将要花费350个人年才能完成
- 1994，Cyc项目从该公司独立出去，并以此为基础成立了Cycorp公司。
- 2002，OpenCyc的第一个版本发布（仅包含6000个概念、60000条事实）



Building Cyc *qua* Engineering Task



Building Cyc *qua* Engineering Task



不过，世上还没有 [普遍认为也不可能] 大家都接受的本体，所以导致无数个本体的产生。

Swoogle

semantic web search 2007

Swoogle © 2004-2007

ontology [document](#) [term](#) [more...](#) <http://swoogle.um.edu/>

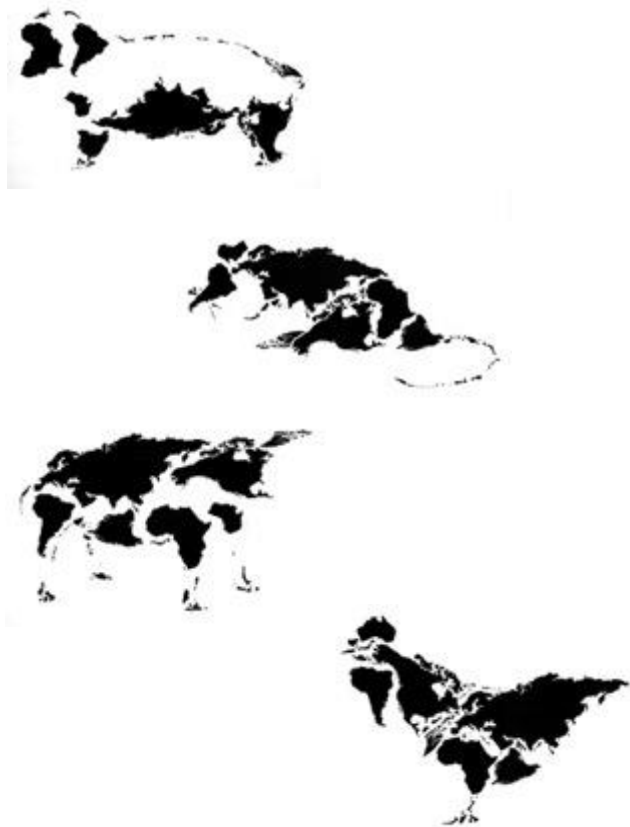
Swoogle Search

Searching over 10,000 ontologies

[manual](#) | [news](#) | [faq](#) | [web-service](#) | [submit](#) | [feedback](#) | [swoogle2005](#)

Swoogle © 2004-2007. [Privacy group](#) at UMB

This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 2.5 License](#).



Images: Kentaro Nagai. Consensual knowledge

[Twelve Animals: World maps as Chinese zodiac](#)

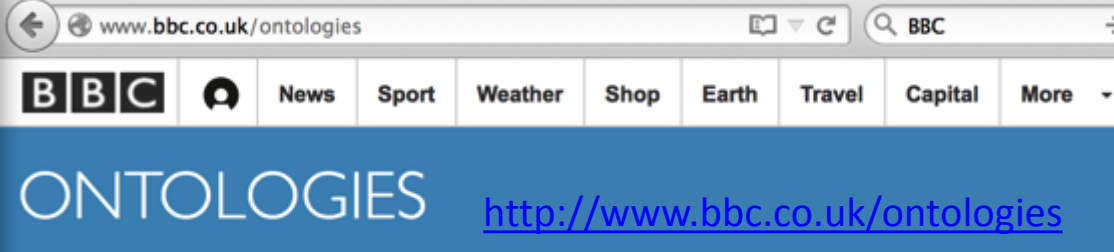
See animation: <http://www.graflexdirections.com/project/piecepeace/01/>

正式注册的本体数量

2016.05.25 data

The screenshot shows the Datahub website interface. At the top, there is a navigation bar with 'Datahub' logo and 'The easy way to get, use and share data' tagline. Below the navigation bar, there are links for 'Datasets', 'Organizations', 'About', and 'Blog'. The main content area shows a search bar with 'ontology' entered. To the left, there is a sidebar with 'Organizations' listed: 'biportal (243)', 'Global (33)', 'eagle-i (24)', and 'Linking Open Data C... (20)'. A red circle highlights the search results, which state '499 datasets found for "ontology"'. The URL 'https://datahub.io/' is also visible in the address bar.

The screenshot shows the Linked Open Vocabularies (LOV) website. At the top, there is a navigation bar with 'VOCABS', 'TERMS', and 'A'. Below the navigation bar, there is a search bar with 'ontology' entered. The search results show '330 results' for 'acco - Accomodation Ontology'. The results list several ontologies: 'acco - Accomodation Ontology', 'coll - Collections Ontology', 'mo - Music Ontology', 'stories - Stories Ontology', and 'cro - Copyright Ontology'. A red circle highlights the '330 results' count. The URL 'http://lov.okfn.org/' is visible in the address bar.



例：BBC编制了一套本体词汇，用于管理BBC丰富的数位资产

- [BBC Ontology](#)
The BBC ontology is used to describe BBC concepts in linked data and interfacing with the triplestore, the platform publish or are relevant to the BBC's content.
- [Business News Ontology](#)
The Business News Ontology describes the concepts
- [CMS Ontology](#)
An ontology to represent the content management system should an entity in the triplestore, e.g., the URI for Manchester information about Manchester United, e.g., sports statistics CMS it was created. The CMS ontology provides the information about a thing in other systems.
- [Core Concepts Ontology](#)
The generic BBC ontology for people, places, events, the BBC. This model is meant to be generic enough, and or politicians using `rdfs:subClassOf` the particular concepts
- [Creative Work Ontology](#)
This is the model we use to express the minimum metadata. The creative work ontology is continuously evolving based on which is the CreativeWork class and properties that such as title, thumbnail, URL e.t.c.
- [Curriculum Ontology](#)
This ontology aims to provide data model and vocabulary

- [Food Ontology](#)
A simple vocabulary for describing recipes, ingredients
- [Journalism Ontology](#)
An ontology which holds classes and properties which
- [Politics Ontology](#)
An ontology which describes a model for politics, sports spec, originally designed to cope with UK (England and
- [Programmes Ontology](#)
BBC Programmes aims to ensure that every programme is findable web presence. We have developed the Programme approach, enabling the interchange of programme information
- [Provenance Ontology](#)
The provenance ontology supports data management graphs we used in the store (quad store) and enable expose data to our services
- [Sport Ontology](#)
The Sport Ontology is a simple lightweight ontology
- [Storyline Ontology](#)
An ontology to represent News Storylines.
- [Wildlife Ontology](#)
A simple vocabulary for describing biological species names and ranking of taxa, as well as providing supplementary characteristics, etc.

现代KOS用于对文献资料和信息组织

数量上的跳跃
(示意图, 非精确)

图书分类法

叙词表 /
索引典

本体

- 图书馆专业人员

- 图书馆专业人员
- 资讯科学专业人员
- 数据库生产者

编制者队伍的扩

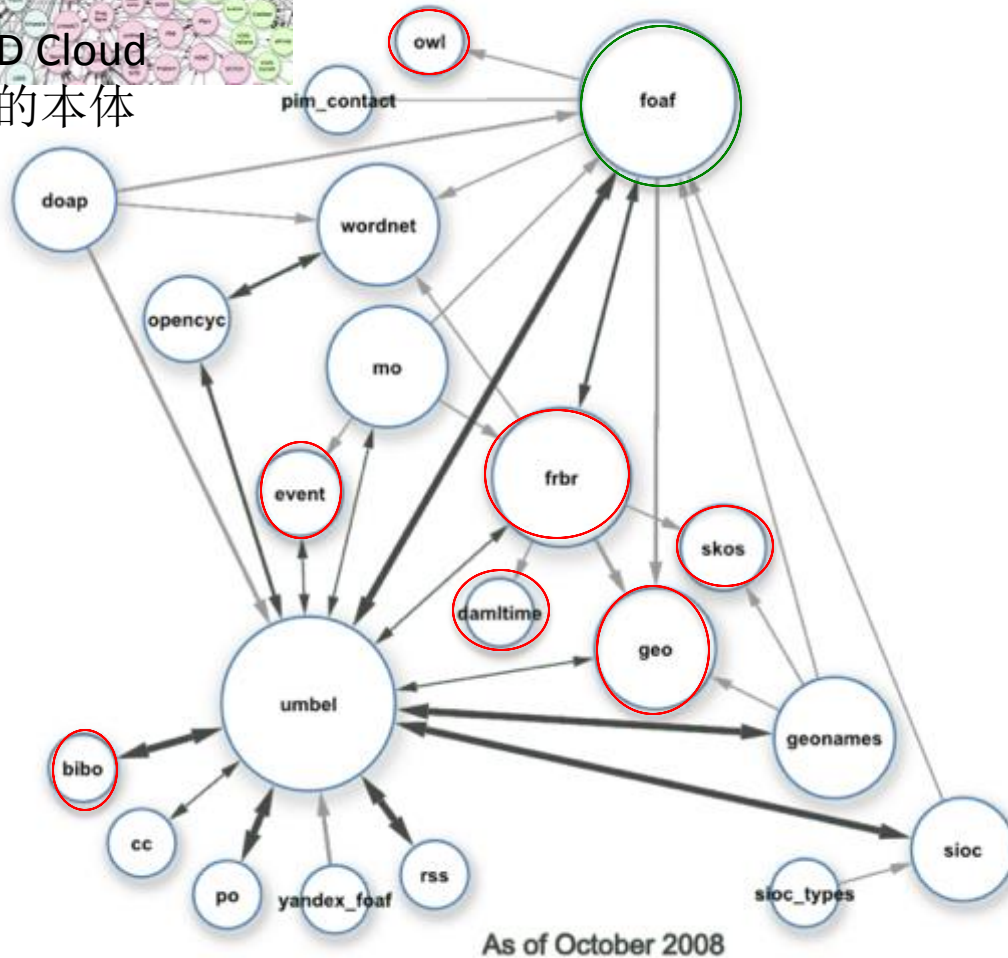
- 图书馆专业^大人员
- 资讯科学专业人员
- 数据库生产者
- 任何人 / 机构

本体软件 [Protégé 5.0.0](#)
2016.05.25 正式版发布,
Protégé 注册用户已超过
三十万。

按内容来分，ontology 本体可以分三大类：



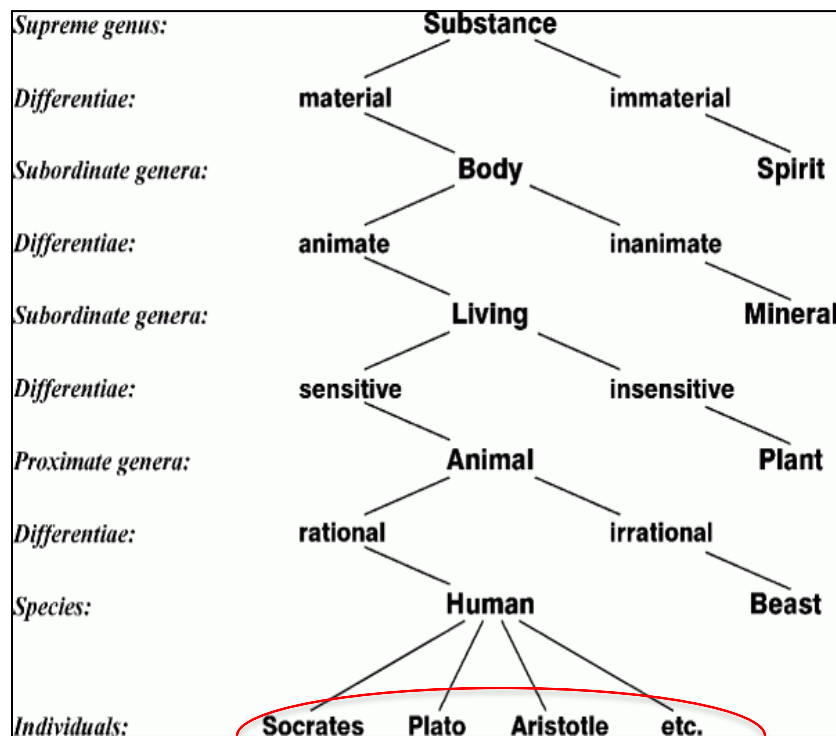
例：LOD Cloud
里用到的本体



1. 本体词汇(classes & properties), 作为知识架构, 通用 (e.g., **event**, **bibo**)
2. 本体词汇, 主要供表述分散形式的 (distributed) 具体个例使用 (e.g., **foaf**, **schema.org**)
3. 本体词汇并加上具体个例(instances)形成独立的知识库 (e.g., **OpenCyc**, **UMBEL**, **GeoNames**, **Dbpedia**)

A New Constellation in the Linking Open Data (LOD) Sky .
<http://www.mkbergman.com/457/a-new-constellation-in-the-linking-open-data-lod-sky/>

还记得波菲力树吗？



将知识从“属”分支，一直分类到个体。

- genus (genos),
- species (eidos),
- difference (diaphoro),
- property (idion), and
- accident (sumbebekos).

1. 本体词汇(classes & properties), 作为知识架构, 通用 (*e.g.*, event, bibo)
2. 本体词汇, 主要供表述分散形式的 (distributed) 具体个例使用 (*e.g.*, foaf, schema.org)
3. 本体词汇并加上具体个例(instances)形成独立的知识库 (*e.g.*, [OpenCyc](#), [UMBEL](#), [GeoNames](#), [Dbpedia](#))

例: Online Coins of the Roman Empire (OCRE)

第3类: 本体词汇(classes & properties) 加上具体个例 (instances), 形成独立的知识库

查有馬爾庫斯·奧列里烏斯 (Marcus Aurelius, 161年至180年在位) 头像的 coins

The screenshot shows the OCRE website interface. The top navigation bar includes 'OCRE', 'Browse', 'Search', 'Maps', 'Symbols', 'Contributors', 'Visualize Queries', 'APIs', and 'About'. The 'Maps' and 'Visualize Queries' options are circled in red. Below the navigation bar, there are sections for 'Data Options', 'Keyword' (with a search box), and 'Refine Results' (with various dropdown filters). The 'Filters' section is highlighted, showing 'Portrait: Marcus Aurelius' and 'Sort Category: Portrait, Ascending', both circled in red. Below the filters, there are three coin entries: 'RIC III Antoninus Pius 1220', 'RIC III Antoninus Pius 1206A', and 'RIC III Antoninus Pius 1206B'. Each entry includes details like Date, Denomination, Mint, Obverse, Reverse, and Portrait, along with images of the coins. The 'Portrait: Marcus Aurelius' filter is also reflected in the 'Refine Results' section on the left.

Filters Map Results

Portrait: Marcus Aurelius
Sort Category: Portrait, Ascending

Displaying records 1 to 20 of 1474 total results.

Portrait Ascending Sort Results

RIC III Antoninus Pius 1220

Date AD 140 - AD 144
Denomination Dupondius
Mint Rome
Obverse ANTONINVS AVG PIVS P P TR P COS III: Head of Antoninus Pius, radiate, right
Reverse AVRELIVS CAESAR AVG PII F COS S C: Head of Marcus Aurelius, bare, right
Portrait Antoninus Pius



RIC III Antoninus Pius 1206A

Date AD 140 - AD 161
Denomination Sestertius
Mint Rome
Obverse ANTONINVS AVG PIVS P P: Head of Antoninus Pius, laureate, right
Reverse AVRELIVS CAES AVG PII F COS DES S C: Bust of Marcus Aurelius, bare-headed, draped, right
Portrait Antoninus Pius



RIC III Antoninus Pius 1206B

Date AD 139
Denomination Sestertius
Mint Rome
Obverse ANTONINVS AVG PIVS P P: Head of Antoninus Pius, laureate, right
Reverse AVRELIVS CAES AVG PII F COS DES S C: Bust of Marcus Aurelius, bare-headed, draped, left
Portrait Antoninus Pius



<http://numismatics.org/ocre/results>

可视化的查寻

- 采用sparql问询语言查找
- 直接生成CSV文件
- 用FusionTable 自动生成可视化结果
- 只需几秒钟

Visualize Queries

Use the data selection and visualization options below to generate a chart based on selected data found here: <http://wiki.numismatics.org/numishare:visualize>.

Typological Analysis Measurement Analysis

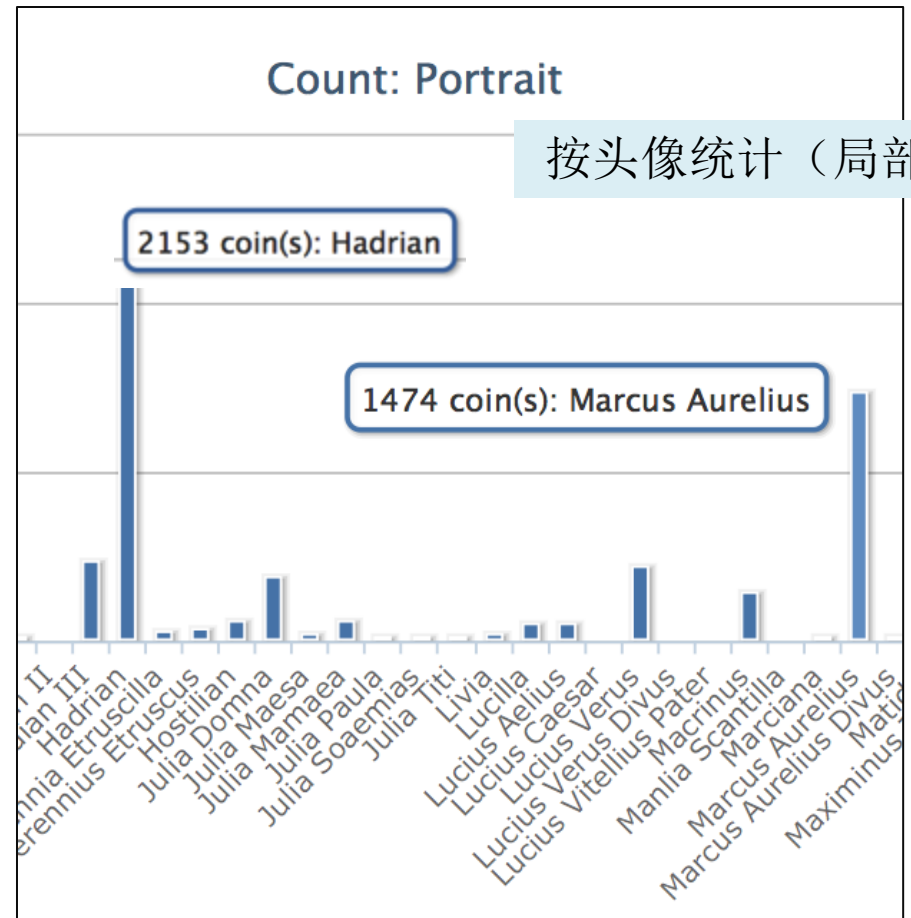
- 1. Select Numeric Response Type**
 Percentage Count
- 2. Select Chart Type**
 column bar
- 3. Select Categories for Analysis**
 Authority Deity Denomination Findspot
 Material Mint Object Type **Portrait**

Custom Queries [+Add Query](#)

- 4. Compare Queries** [+Add Query](#)

Optional Settings [Hide/Show Options](#)

[Generate Chart](#)



Online Coins of the Roman Empire (OCRE)

<http://numismatics.org/ocre/>

哈德良

馬爾庫斯·奧列里烏斯

Online Coins of the Roman Empire (OCRE)

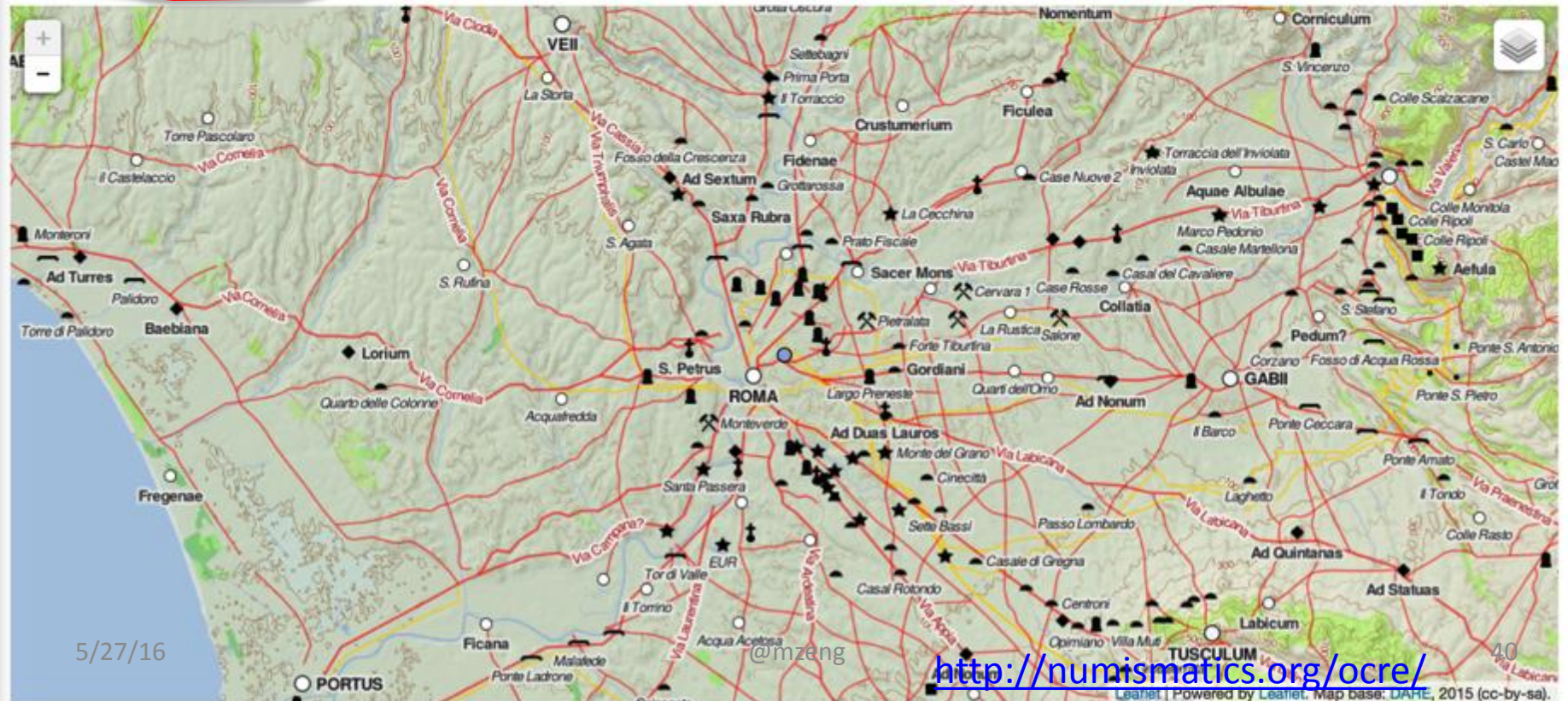
OCRE

Browse Search Maps Symbols Contributors Visualize Queries APIs About Language

Maps

For usage instructions, see <http://wiki.numismatics.org/numishare:maps>. View in fullscreen mode.

Authority ▾	Deity ▾	Denomination ▾	Findspot ▾
Issuer ▾	Manufacture ▾	Material: Gold ▾	Object Type ▾
Portrait: Marcus Aurelius ▾	Region: Italy ▾		



5/27/16

<http://numismatics.org/ocre/>

具体个例(instances) 以弗所（又译爱菲索斯）

nomisma.org/id/ephesus ← URI
Search

ephesus (nmo:Mint)

skos:prefLabel Efese (af), ኪኢስጎ (am), افسس (ar), Efes (az), Город Эфес (be), Эфес (bg), Efesos (br), Efes (bs), Efes (ca), Efes (cs), Effesus (cy), Efesos (da), Ephesos (de), Ἐφεσος (el), Ephesus (en), Efeso (eo), Éfeso (es), Efeso (eu), افسس (fa), Efesos (fi), Efesus (fo), Ephèse (fr), Éfeso (gl), οιοθακ (he), Efes (hr), Epheszosz (hu), ኪኢኩሙ (hy), Ephesos (id), Efesos (is), Efeso (it), エフェソス (ja), Efesus (jv), ງຽງເບັກ (ka), 에페소스 (ko), Ephesus (la), Efesas (lt), Efesa (lv), Эфес (mk), इफेसूस (mr), Efesus (ms), Efesos (nb), Efese (nl), Efesos (nn), Efes (pl), Éfeso (pt), Efesos (ro), Эфес (ru), Efes (sh), Efes (sk), Efes (sl), Эфес (sr), Efesos (sv), Efeso (sw), எபேசோ (ta), ເອຟີຊັສ (th), Efeso (tl), Efes (tr), Эфес (uk), افسس (ur), Efes (uz), Ephesus (vi), 以弗所 (zh)

skos:definition The mint at the ancient site of Ephesus in Ionia. (en)

dcterms:isPartOf http://nomisma.org/id/greek_numismatics

geo:location <http://nomisma.org/id/ephesus#this>

rdf:type skos:Concept

skos:altLabel Ephesos (en)

skos:broader <http://nomisma.org/id/ionia>

skos:closeMatch <http://collection.britishmuseum.org/id/place/x107267>

skos:closeMatch <http://dbpedia.org/resource/Ephesus>

skos:closeMatch <http://gazetteer.dainst.org/app/#/show/2287728>

skos:closeMatch <http://pleiades.stoa.org/places/599612>

skos:closeMatch <http://viaf.org/viaf/156158309>

skos:closeMatch <http://vocab.getty.edu/tgn/7002499>


skos:closeMatch <http://www.geonames.org/7522155>

skos:closeMatch <http://www.wikidata.org/entity/Q47611>

skos:closeMatch <https://www.freebase.com/m/02p8r>

Export

[GitHub File](#) [RDF/XML](#) [RDF/TTL](#) [JSON-LD](#) [KML](#)



Leaflet | Powered by Leaflet and Mapbox. Map base by AWMC, 2014 (cc-by-nc).

#this (geo:SpatialThing) ← 所属Class

dcterms:isPartOf <http://nomisma.org/id/ionia#this>

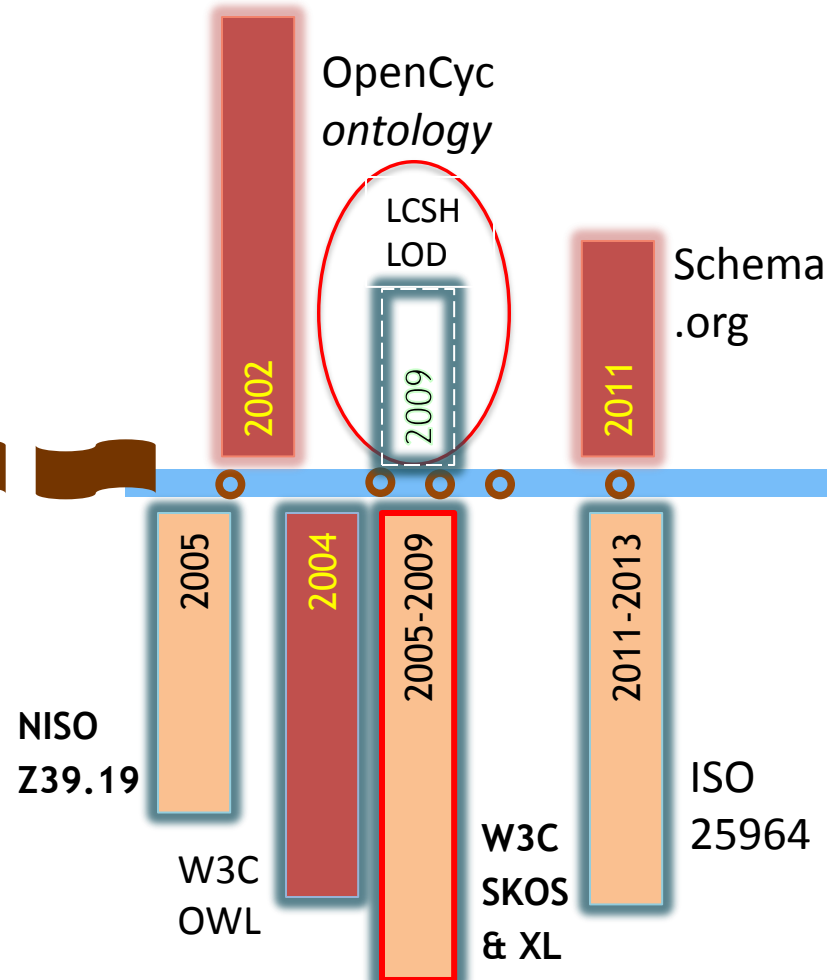
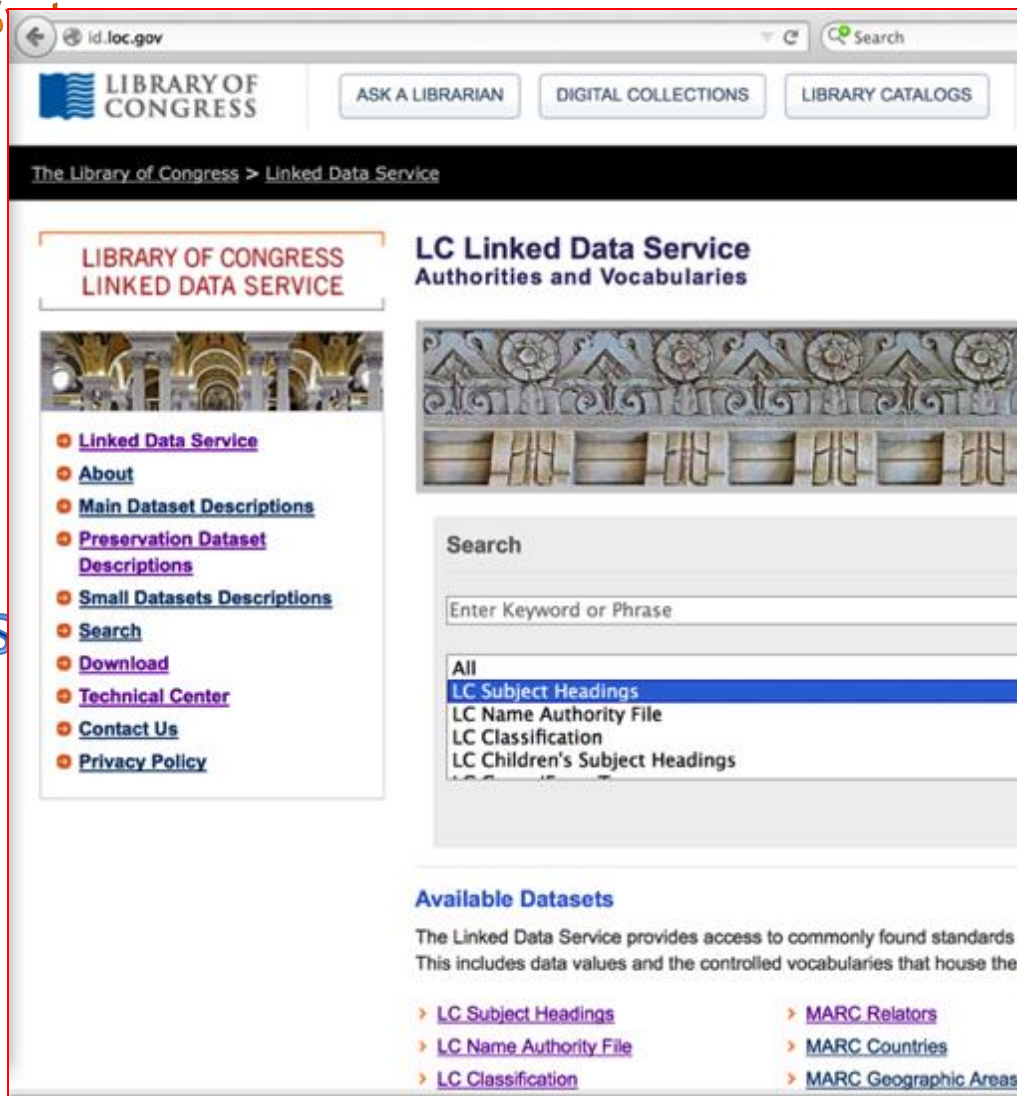
geo:lat 37.939722

geo:long 27.340833

- Modeling in an ontology (formed in classes, properties, relationships)
- Following Linked Data principles
- Using RDF triples for entities
- Querying in SPARQL language

41

影响较大的现代KOS&国际标准 (c-3) (示意图, 非精确)



- 2010 W3C LLD—IG 组6月成立，每周一次网络会议
- [2010.08在Getty ITWG介绍]
- 2011.10. W3C 发布报告，包括下列专题：

- 关联数据LOD的飞速发展已经使KOS成为LOD中必不可少的“值词汇”。



Library Linked Data Incubator Group: Datasets, Value Vocabularies, and Metadata Element Sets

W3C Incubator Group Report 25 October 2011

This Version:

<http://www.w3.org/2005/Incubator/lld/XGR-lld-vocabdataset-20111025/>

Latest Published Version:

<http://www.w3.org/2005/Incubator/lld/XGR-lld-vocabdataset/>

Authors

Antoine Isaac, Europeana and Vrije Universiteit Amsterdam, Netherlands
William Waites, University of Edinburgh (School of Informatics), UK
Jeff Young, OCLC Online Computer Library Center, Inc., US
Marcia Zeng, Kent State University, US (W3C Invited Expert)

4.1 Published value vocabularies

4.1.1 Classification systems

[4.1.1.1 Dewey Decimal Classification \(DDC\)](#)

[4.1.1.2 Universal Decimal Classification \(UDC\)](#)

4.1.2 Subject headings/subject authority files

[4.1.2.1 Library of Congress Subject Headings \(LCSH\)](#)

[4.1.2.2 Répertoire d'Autorité-Matière Encyclopédique et Alphabétique Unifié \(RAMEAU\)](#)

[4.1.2.3 Schlagwortnormdatei \(SWD\)](#)

[4.1.2.4 National Diet Library List of Subject Headings \(NDLSH\)](#)

4.1.3 Name authority data

[4.1.3.1 Virtual International Authority File \(VIAF\)](#)

[4.1.3.2 Union List of Artist Names \(ULAN\)](#)

[4.1.3.3 Library of Congress Name Authority File \(LC/NAF\)](#)

[4.1.3.4 GeoNames](#)

4.1.4 Thesauri

[4.1.4.1 STW Thesaurus for Economics](#)

[4.1.4.2 AGROVOC](#)

[4.1.4.3 Eurovoc](#)

[4.1.4.4 Thesaurus for Graphic Materials \(TGM\)](#)



516:

<http://bioportal.bioontology.org/>

2016.05.25 data

一半以上是由叙词表、分类法、规范文档转为轻量级本体。

结构和内容通过SKOS或OWL语言表达，但语义和逻辑性不一样，不用于推理。

Environment Ontology (ENVO) Ontology of environmental features and habitats Uploaded: 2/24/16
Cell Ontology (CL) The Cell Ontology is designed as a structured controlled vocabulary for cell types Uploaded: 2/2/16
International Classification of Diseases, Version 10 (ICD10) International Statistical Classification of Diseases and Related Health Problems (ICD-10) Uploaded: 6/9/15
Systematized Nomenclature of Medicine, International Version Cote, Roger A Uploaded: 6/9/15
Online Mendelian Inheritance in Man (OMIM) Online Mendelian Inheritance in Man, OMIM (TM) Uploaded: 6/9/15
BioAssay Ontology (BAO) The BioAssay Ontology (BAO) describes chemical biology screening assays and their results including screening (HTS) data for the purpose of categorizing assays and data analysis Uploaded: 10/20/15
The Drug Ontology (DRON)

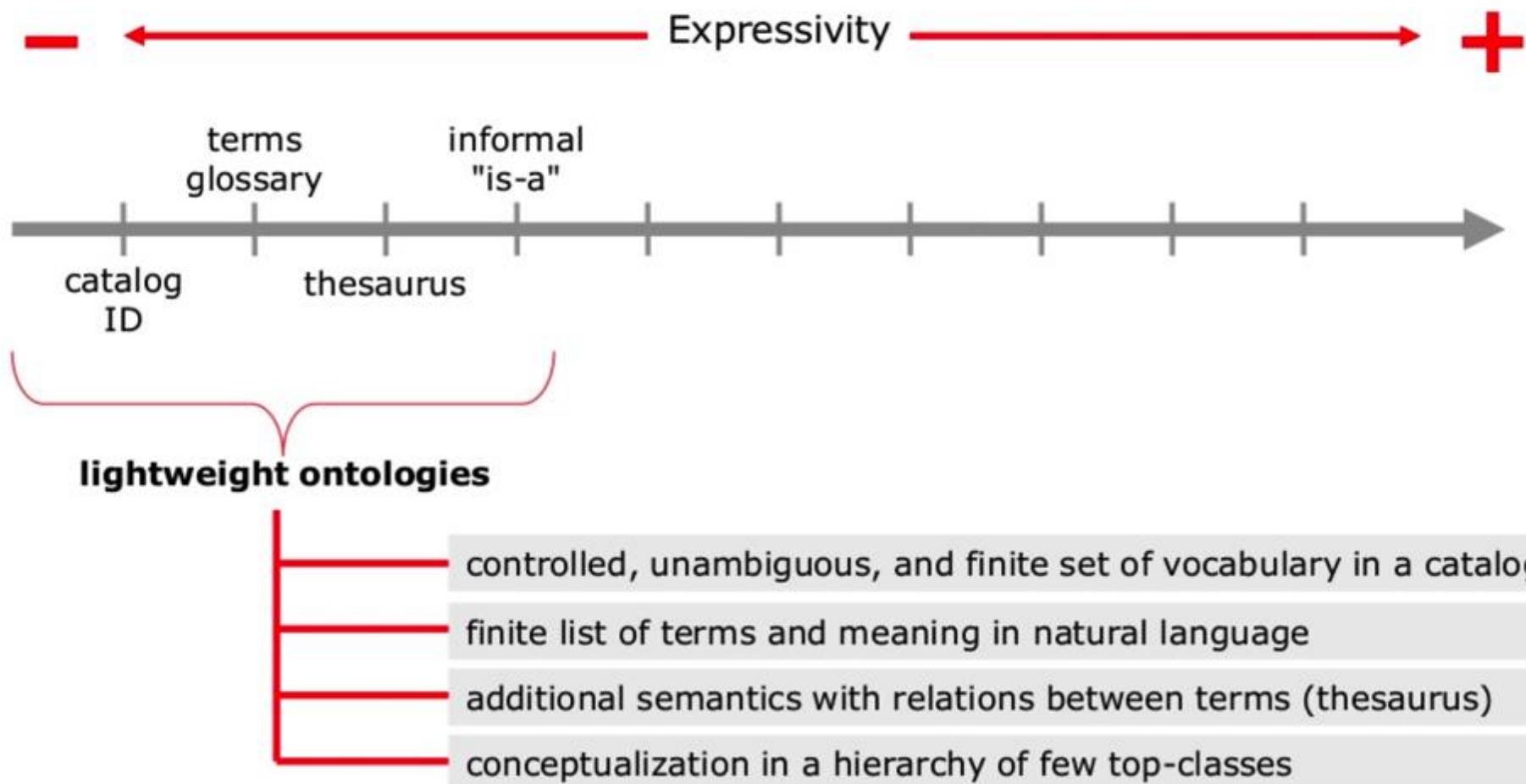
National Cancer Institute Thesaurus (NCIT) A vocabulary for clinical care, translational and basic research, and public information and administration Uploaded: 4/11/16
Medical Subject Headings (MESH) Medical Subject Headings (MeSH); National Library of Medicine; 2011 Uploaded: 6/9/15
Experimental Factor Ontology (EFO) The Experimental Factor Ontology (EFO) is an application focused ontology modelling the experimental resources at the EBI and the Centre for Therapeutic Target Validation Uploaded: 4/18/16
Human Disease Ontology (DOID) Creating a comprehensive hierarchical controlled vocabulary for human disease representation. Uploaded: 3/26/16
Read Codes, Clinical Terms Version 3 (CTV3) (RCD) Clinical Terms Version 3 (CTV3) (Read Codes) (Q199); National Health Service National Coding and Classification Uploaded: 6/9/15
Veterans Health Administration National Drug File (VANDF) NDF includes information on clinical drugs, drug classes, ingredients and National Drug Code (NDC) numbers Uploaded: 6/9/15

“轻量级”本体

虽然KOS的结构和内容都能通过SKOS或OWL表达，其语义和逻辑性却不一样

Expressivity of ontologies

In General, the more specific the ontology is, the more expressive it becomes

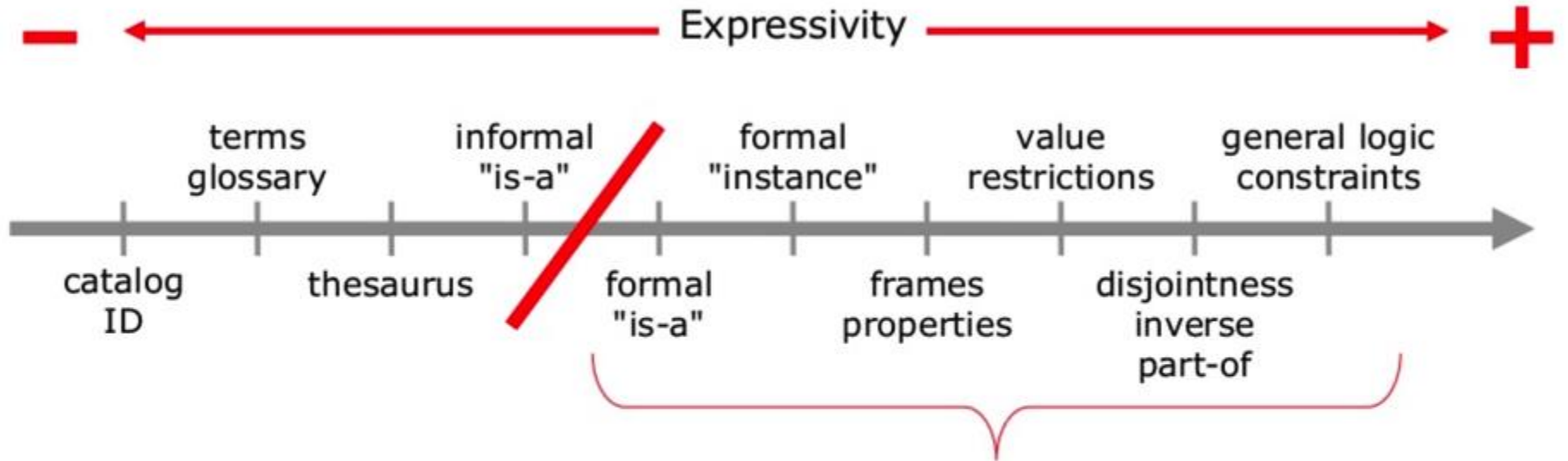


(Lassila/McGuinness, 2001)

“重量级”本体

Expressivity of ontologies

In General, the more specific the ontology is, the more expressive it becomes



heavyweight ontologies

taxonomies with strict subclass relationships

logical induction over instance checking

classes include property information

using logical quantifiers to express restrictions

more complex restrictions, e.g., disjointness

complete and complex logical expressions

(Lassila/McGuinness, 2001)

A formal ontology is a terminology with precise definitions that can be checked and used by a computer system. - John F Sowa, 2016.

BARTOC注册系统记录 KOS词汇数量: 1836

2016. 05. 27

- GeoSearch
- Title Finder
- Top-rated content
- Download
- Terminology Registries
- Contact

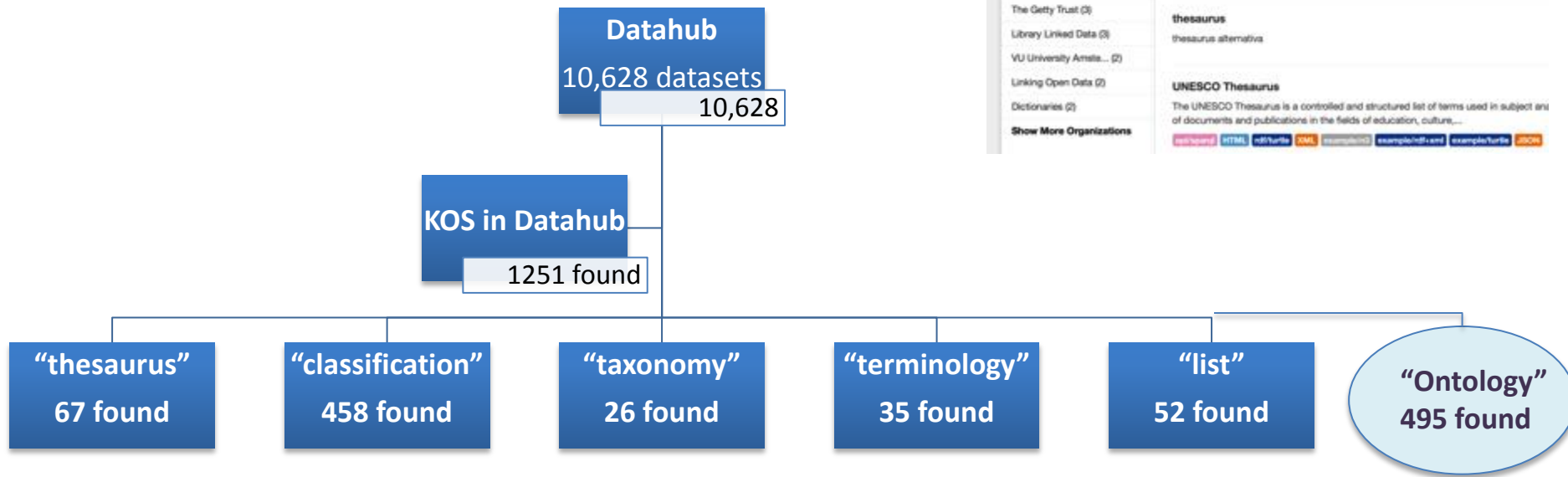
Currently indexed vocabularies
1,836



Philosophy and Psychology	67
Religion	79
Literature	122
Language	128
Arts and Recreation	250
Pure Science	334
General works, Computer science and Information	380
Technology	408
History and Geography	428
Social sciences	842

本团队2015调查统计结果

LOD KOS in the Datahub: 1251



LOD KOS 的作用? Example 1

联合国粮农组织FAO

- AGROVOC 叙词表
- 用于国际农业科学与技术信息系统 AGRIS

Alphabetical Hierarchy Group index

- Fat products
- feeds
- Fishery products
- foods
- Forest products
- Fresh products
- New products
- Non food products
- oil products
- Plant products
 - Cellulose products
 - Cereals
 - Barley
 - Coarse grains
 - Feed cereals
 - maize
 - Millet
 - oats
 - Rice**
 - Basmati rice
 - Broken rice
 - Rye
 - Sorghum grain
 - Triticales (product)
 - Wheats
 - cocoa products
 - Coconut water
 - Coffee beans
 - Cut flowers
 - Cut foliage
 - Fruits
 - Grain
 - Legumes
 - Nuts
 - oilseeds
 - Opium
 - Pseudocereals
 - Pulp
 - Spices
 - Stimulants
 - Sugarbeet
 - Sugarbeet juice
 - Sugarcane
 - Tanning agents
 - Vegetables
 - Processed products
 - Resins
 - Stored products

products > Plant products > Cereals > Rice

PREFERRED TERM

Rice

CONCEPT TYPE

Concept

BROADER CONCEPT

Cereals

NARROWER CONCEPTS

Basmati rice

Broken rice

ALTERNATIVE LABEL

Paddy

IN OTHER LANGUAGES

ryža (sk)

चावल (hi)

Riz (fr)

ryža siata (sk, replaced)

hántolatlan rizs (hu, replaced)

çeltik (tr, replaced)

Ryz nietuszczoney (pl, replaced)

Ryz brunatny (ziarno) (pl, replaced)

水稻 (zh, replaced)

Riz paddy (fr, replaced)

धान (hi, replaced)

Arroz paddy (pt, replaced)

Beras (ms, replaced)

необрушенный рис (ru, replaced)

ryže setá (cs, replaced)

Risone (it, replaced)

ข้าวเปลือก (th, replaced)

URI

http://aims.fao.org/aos/agrovoc/c_6599

Download this concept:

[RDF/XML TURTLE](#)

CLOSELY MATCHING

Arroz (es)

CONCEPT

EXACT MATCH

Reis (de)

STW
Thesaurus
for
Economics

<http://d-nb.info/gnd/4049271-0>

<http://eurovoc.europa.eu/3732>

<http://id.loc.gov/authorities/sh85113862#concept>

<http://lod.nal.usda.gov/nalt/56293>

Original thesaurus display

Broader /Narrower

Labels in different languages

URI

LOD format

Interlinking

http://aims.fao.org/skosmos/agrovoc/en/page/c_6599

Alphabetical Hierarchy Group index

Fat products
feeds
Fishery products
foods
Forest products
Fresh products
New products
Non food products
oil products
Plant products
C_6211
Products @en

↑ skos:broader

C_8171
Plant products @en

↑ skos:broader

C_1474
Cereals @en

↑ skos:broader

C_6599
Maize @en

↑ skos:broader

C_7552
Sweet corn @en

C_14385
Soft corn @en

products > Plant products > Cereals > Rice

PREFERRED TERM

Rice

CONCEPT TYPE

Concept

BROADER CONCEPT

Cereals

NARROWER CONCEPTS

Basmati rice

Broken rice

ALTERNATIVE LABEL

Paddy

IN OTHER LANGUAGES

ryža (sk)

चावल (hi)

Riz (fr)

ryža siata (sk, replaced)

hántolatlan rizs (hu, replaced)

çeltik (tr, replaced)

Ryż nieluszczoney (pl, replaced)

Ryż brunatny (ziarno) (pl, replaced)

水稻 (zh, replaced)

Riz paddy (fr, replaced)

धान (hi, replaced)

Arroz paddy (pt, replaced)

Beras (ms, replaced)

необрушенный рис (ru, replaced)

ris (cs, replaced)

Risone (it, replaced)

ข้าวเปลือก (th, replaced)

URI

http://aims.fao.org/aos/agrovoc/c_6599

Download this concept:

RDF/XML TURTLE

CLOSELY MATCHING

Arroz (es)

CONCEPT

EXACT MATCH

Reis (de)

STW

Thesaurus

for

Economics

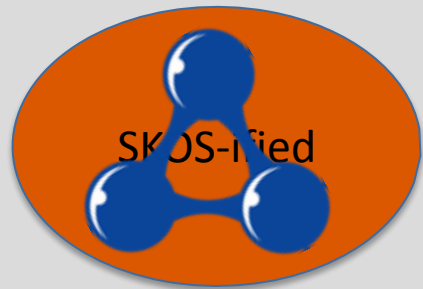
http://d-nb.info/gnd/4049271-0

http://eurovoc.europa.eu/3732

http://id.loc.gov/authorities/sh85113862#concept

http://lod.nal.usda.gov/nalt/56293

Relationships expressed in SKOS



SKOSified

http://aims.fao.org/aos/agrovoc/c_6599
rice

RDF triples - view in html table

Property	Value
rdf:type	skos:Concept
skos:broader	http://aims.fao.org/aos/agrovoc/c_1474 http://aims.fao.org/aos/agrovoc/c_1474
skos:narrower	http://aims.fao.org/aos/agrovoc/c_330606 http://aims.fao.org/aos/agrovoc/c_330653
skos:exactMatch	http://www.eionet.europa.eu/gemet/concept/7214 http://lod.nal.usda.gov/nalt/56293 http://eurovoc.europa.eu/3732 http://d-nb.info/gnd/4049271-0 http://id.loc.gov/authorities/sh85113862#concept http://www.caas.net.cn/caas/cat/c_7599 http://www.caas.net.cn/caas/cat/c_8549 http://zbw.eu/stw/descriptor/14095-0
skos:closeMatch	http://dbpedia.org/resource/Rice
dcterms:created	2011-11-20T20:36:28Z
dcterms:modified	2014-07-03T18:42:47Z
void:inDataset	http://aims.fao.org/aos/agrovoc/void.ttl#Agrovoc
skos:inScheme	http://aims.fao.org/aos/agrovoc
vocbench:hasStatus	Published

prefLabel	altLabel	Lang
ข้าว		lo
rice	paddy	en
рис (зерно)	необрушенный рис	ru
चावल	धान	hi
Arroz		es
Riso	Risone	it
Reis		de
برنج		fa
Ryż (ziarno)	Ryż brunatny (ziarno) Ryż niełuszczony	pl
ข้าว	ข้าวเปลือก	th
ryže	ryže setá	cs
Riz	Riz paddy	fr
ryža	ryža siata	sk
rizs	hántolatlan rizs	hu
벼		ko
أرز		ar
Arroz	Arroz paddy	pt
米		ja
稻米	水稻	zh
piring	çeltik	tr
	Beras	ms

SKOS-ified

很多叙词表SKOS化，作为LOD数据集不可缺少的词汇，并带来新的知识发现功能

例：联合国粮农组织FAO的国际农业科学与技术信息系统 AGRIS
<http://agris.fao.org>



Food and Agriculture Organization
of the United Nations

English Español Français العربية 中文 Русский

AGRIS

Find resources...



About

Feedback

Length-frequency compositions and weight-length relations for bigeye tuna, yellowfin tuna, and albacore (Perciformes: Scombrinae) in the Atlantic, Indian, and eastern Pacific oceans



lod:live

Zhou, Y.

Zhu, G.

Dai, X., Tuna Fishery Technical Working Group of China, Shanghai, China

Xu, L., Shanghai Ocean University, Shanghai (China). College of Marine Sciences

Abstract:

Bigeye tuna, *Thunnus obesus* (Lowe, 1839), yellowfin tuna, *Thunnus albacares* (Bonnaterre, 1788), and albacore, *Thunnus alalunga* (Bonnaterre, 1788), are very important species for world fisheries. The weight-length relations (WLRs) of the three species were studied using commonly accepted methodology. Significant differences can be found from the fork length distributions and the WLRs of the above 3 tuna species and the relations of gilled-gutted and whole weight of bigeye and yellowfin tunas collected from the Atlantic, Indian, and Eastern Pacific Oceans. Significant differences of fork length distributions can be found for bigeye tuna, yellowfin tuna, and albacore from the three areas. The data collected will be useful for the fisheries management of the three species studied

Read the article: <http://www.aiep.pl/>

即时数据混搭中
(mashup) ...

online观看:

<http://agris.fao.org/openagris/search.do?recordID=PL2009000495@mzeng>

常規本地書目數據

臨時混搭的「外來」有關信息或事實

AGRIS Find resources... About Feedback

Length-frequency compositions and weight-length relations for bigeye tuna, yellowfin tuna, and albacore (Perciformes: Scombrinae) in the Atlantic, Indian, and eastern Pacific oceans [2008]

RDF Access the resource:

背后是RDF格式的關聯數據 (Linked Data)

Zhu, G.
Xu, L., Shanghai Ocean University, Shanghai (China). College of Marine Sciences
Zhou, Y.
Dai, X., Tuna Fishery Technical Working Group of China, Shanghai, China

Abstract:
Bigeye tuna, *Thunnus obesus* (Lowe, 1839), yellowfin tuna, *Thunnus albacares* (Bonnaterre, 1788), and albacore, *Thunnus alalunga* (Bonnaterre, 1788), are very important species for world fisheries. The weight-length relations (WLRs) of the three species were studied using commonly accepted methodology. Significant differences can be found from the fork length distributions and the WLRs of the above 3 tuna species and the relations of gilled-gutted and whole weight of bigeye and yellowfin tunas collected from the Atlantic, Indian, and Eastern Pacific Oceans. Significant differences of fork length distributions can be found for bigeye tuna, yellowfin tuna, and albacore from the three areas. The data collected will be useful for the fisheries management of the three species studied

Related information in other data sources

Powered by Google™
Read the article and/or related articles:

- Length-frequency compositions and weight-length relations for ...
- Length-frequency compositions and weight-length relations for bigeye tuna, ... (Perciformes: Scombrinae) in the Atlantic, Indian, and eastern Pacific oceans ... The weight-length relations (WLRs) for bigeye tuna, yellowfin tuna, and albacore, ...
Go to the page
- [PDF] Guoping ZHU 1, 2, 3, Liuxiong XU 1, 2 *, Yingqi ZHOU 1, 2, and ...
- [PDF] IOTC-2014-WPTmT05-09 Received: 11 July 2014
- Length-frequency compositions and weight-length relations for big ...

Data from World Bank (double-click an area to zoom)

Fish species, threatened

1 247

Activities from the Web
Powered by Scirus

- www.fao.org
- www.commonoceans.org
- www.agrifedds.org
- agritrade.cta.int
- www.wcpfc.int

Thunnus albacares - Global Capture Production (FAO Fishery Statistic)

Data from TECA:

- The control of common predators of pond fish, Uganda
- Light attraction method to catch Mukene fish on Lake Victoria

Data from DBpedia:

- Pacific ocean
- Indian ocean
- Body weight

Assoc Keywords

- fishery management
- animal growth forms
- Thunnus
- Pacific Ocean
- statistical data
- Thunnus albacares
- Thunnus alalunga
- Indian Ocean
- body weight
- body measurements
- Thunnus obesus
- fishery production
- fishery data
- tuna
- animal physiology
- animal developmental stages
- Atlantic Ocean

都是根據主題詞來關聯的

From Journal: Acta Ichthyologica et Piscatoria

ISSN: 0137-1592
FREQUENCY: Semiannual (2 numbers a year)
START DATE: 1972
Language: English

online 观看:

<http://agris.fao.org/openagris/search.do?recordID=PL2009000495@mze>

每條書目數據都成為一個小型的知識網絡，讓讀者感到有觸類旁通的效果

文献记录 in RDF (machine-generated, human-readable)

Length-frequency compositions and weight-length relations for bigeye tuna, yellowfin tuna, and albacore (Perciformes: Scombrinae) in the Atlantic, Indian, and eastern Pacific oceans

at AGRIS RECORDS



<http://agris.fao.org/aos/records/PL2009000495>



Property	Value
abstract	■ Bigeye tuna, <i>Thunnus obesus</i> (Lowe, 1839), yellowfin tuna, <i>Thunnus albacares</i> (Bonnaterre, 1788), and albacore, <i>Thunnus alalunga</i> (Bonnaterre, 1788), are ... »more» (eng)
creator	■ [8 anonymous resources]
dateSubmitted	■ 2009
description	■ 2 fig., 2 tables ■ 22 ref. ■ Summary (En)
identifier	■ PL2009000495
isPartOf	■ < file:///home/fao/transfer/agris/RDF_Output/2009/http%3A%2F%2Faims.fao.org/aos/records/PL2009000495 > ■ < file:///home/fao/transfer/agris/http%3A%2F%2Faims.fao.org/aos/records/PL2009000495 >
issued	■ 2008
language	■ eng
source	■ < http://ring.ciard.net/node/10592 >
subject	■ < http://aims.fao.org/aos/agrovoc/c_15846 > ■ < http://aims.fao.org/aos/agrovoc/c_24026 > ■ < http://aims.fao.org/aos/agrovoc/c_25187 > ■ < http://aims.fao.org/aos/agrovoc/c_2940 > ■ < http://aims.fao.org/aos/agrovoc/c_29788 >

subjects are represented by the concept IDs (URIs)

叙词表概念 / 词条记录 in RDF

http://aims.fao.org/aos/agrovoc/c_5493

Pacific Ocean

Property	Value
rdf:type	skos:Concept
skos:inScheme	http://aims.fao.org/aos/agrovoc
skos:broader	http://aims.fao.org/aos/agrovoc/c_4607 http://aims.fao.org/aos/agrovoc/c_4607
skos:narrower	http://aims.fao.org/aos/agrovoc/c_32766 http://aims.fao.org/aos/agrovoc/c_32765 http://aims.fao.org/aos/agrovoc/c_32764 http://aims.fao.org/aos/agrovoc/c_32763 http://aims.fao.org/aos/agrovoc/c_50109 http://aims.fao.org/aos/agrovoc/c_50096 http://aims.fao.org/aos/agrovoc/c_29152 http://aims.fao.org/aos/agrovoc/c_469
skos:exactMatch	http://zbw.eu/stw/descriptor/17968-1 http://eurovoc.europa.eu/2112 http://lod.nal.usda.gov/nalt/657 http://cat.aii.caas.cn/concept/c_44026
skos:closeMatch	http://dbpedia.org/resource/Pacific_Ocean

prefLabel	altLabel	Lang
Tichý oceán		cs
Csendes-óceán		hu
प्रशान्त महासागर		hi
Tichý oceán		sk
Pazifik		de
тихий океан		ru
태평양		ko
Océan pacifique		fr
Oceano Pacifico		it
Ocean Spokojny Pacyfik		pl
Pacific Ocean		en
太平洋		ja
มหาสมุทรแปซิฟิก		th
اقیانوس آرام		fa
太平洋		zh
المحيط الهادي		ar
Océano pacífico	Pacífico (océano)	es
Pasifik		tr
Okyanusu		tr
Oceano Pacifico		pt
ມະຫາສະໝຸດປາຊີຟິກ		lo

Property	Value
vocbench:hasStatus	Published
dcterms:created	2011-11-20T20:19:39Z
dcterms:modified	2013-08-28T22:59:48Z
void:inDataset	http://aims.fao.org/aos/agrovoc/void.ttl#Agrovoc
http://aims.fao.org/aos/agrovoc/vocabulary	Geographical above country level

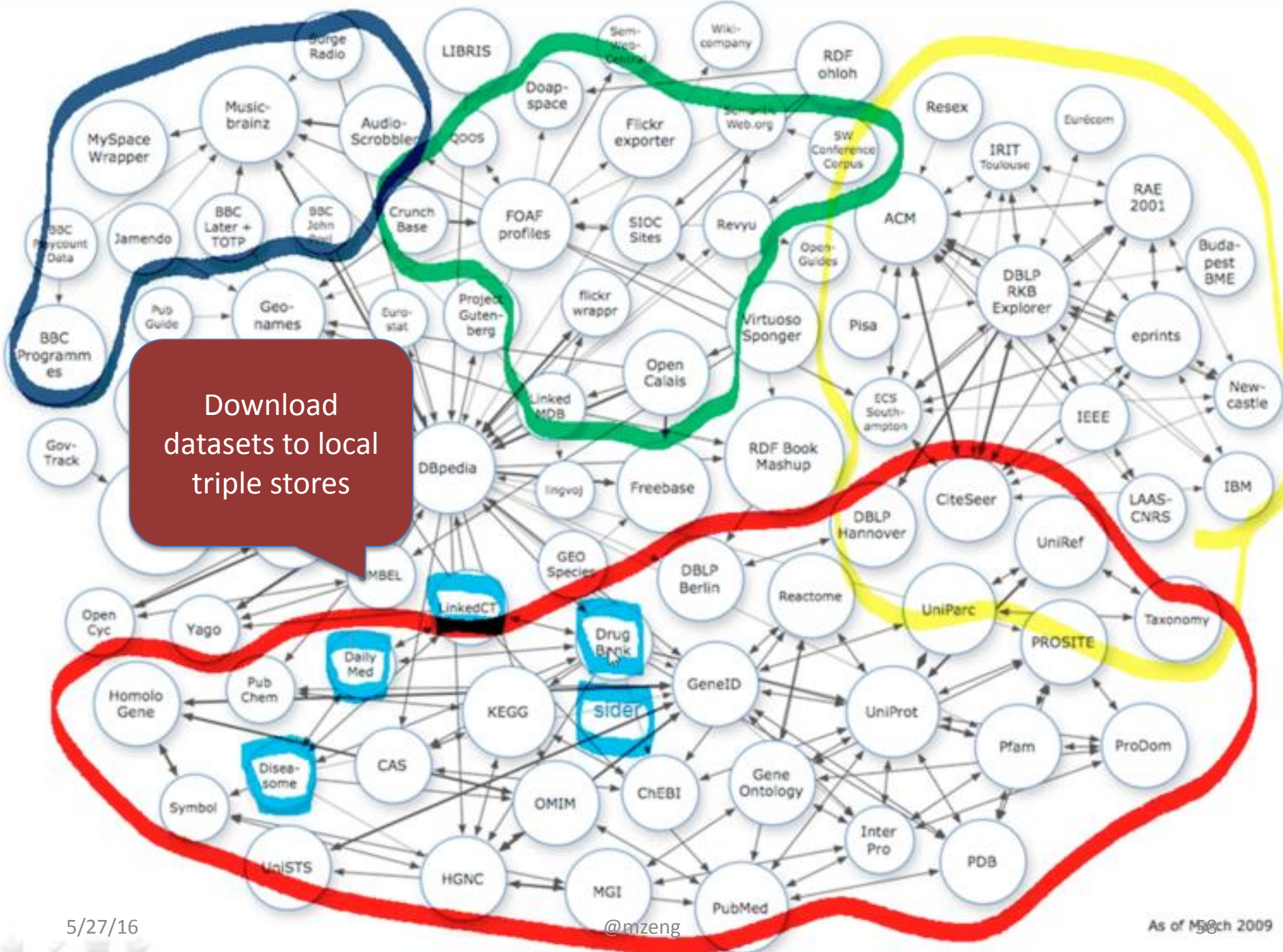
Mapping with other vocabularies

LOD KOS 的作用？

EXAMPLE 2

CROSS-DATASET SEARCHING & LINKING OF HEALTH DATA

Screenshots are from Smartlogic Webinar:
Graph Search Using Ontologies and Content
Intelligence from Smartlogic and Franz
<http://www.smartlogic.com/home/news-and-events/events-and-webinars/webinars/2671-webinar-march-6-graph-search-using-ontologies-and-content-intelligence-from-smartlogic-and-franz>



Download datasets to local triple stores

File View Display Edit Global Options Query Options Table Options Help

Cif
 SPARQL
 Use Planner
 Reindent
 Name Query
 Revisit
 Graph View
 Table View
 Outline View

Prolog
 Do Query
 Select All
 a2diabetes-and-lipitor-spar
 Graphical Query View

```

PREFIX franzOption_chunkProcessingAllowed: <franz:yes>
SELECT ?drug ?sideeffect ?trial ?title ?mesh WHERE {
  ?drug drugbank:brandName 'Lipitor' .
  ?sideeffect rdfs:label 'Type 2 Diabetes' .
  ?trial franz:discusses-drug ?drug .
  ?trial franz:discusses-side-effect ?sideeffect .
  ?trial linkedGt:brief_title ?title .
  ?trial smartlogicschema:mentions_MESH_psychiatry_and_psychology ?mesh .
} limit 5
  
```

use structured query to search data

Enter a SPARQL select or describe query in the text widget to the left, then press the Do Query button. All known namespace abbreviations will be in effect. Or first select the Prolog radio button and enter a Prolog query (perhaps with additional lisp forms as well). Basic Emacs keystrokes can be used to edit the text.

In the results table, left-click a column header cell to sort the table by that column. Left-click a node cell to visit that

5 Results

Create Visual Graph
 Add to Visual Graph
 Write Text Report
 Save as CSV

?drug	?sideeffect	?trial	?title	?mesh
Atorvastatin	second degree heart block	Trial NCT00293748	Effect of Atorvastatin (Lipitor) on Gene Expression in People With Vascular Dise	Risk Management
Atorvastatin	carotid artery disease	Trial NCT00293748	Effect of Atorvastatin (Lipitor) on Gene Expression in People With Vascular Dise	Risk Management
Atorvastatin	atherosclerotic vascular disease	Trial NCT00293748	Effect of Atorvastatin (Lipitor) on Gene Expression in People With Vascular Dise	Risk Management
Atorvastatin	Heart Failure	Trial NCT00293748	Effect of Atorvastatin (Lipitor) on Gene Expression in People With Vascular Dise	Risk Management
Atorvastatin	cerebrovascular accident	Trial NCT00293748	Effect of Atorvastatin (Lipitor) on Gene Expression in People With Vascular Dise	Risk Management

use MeSH (Medical Subject Headings) as the concepts and topic hubs

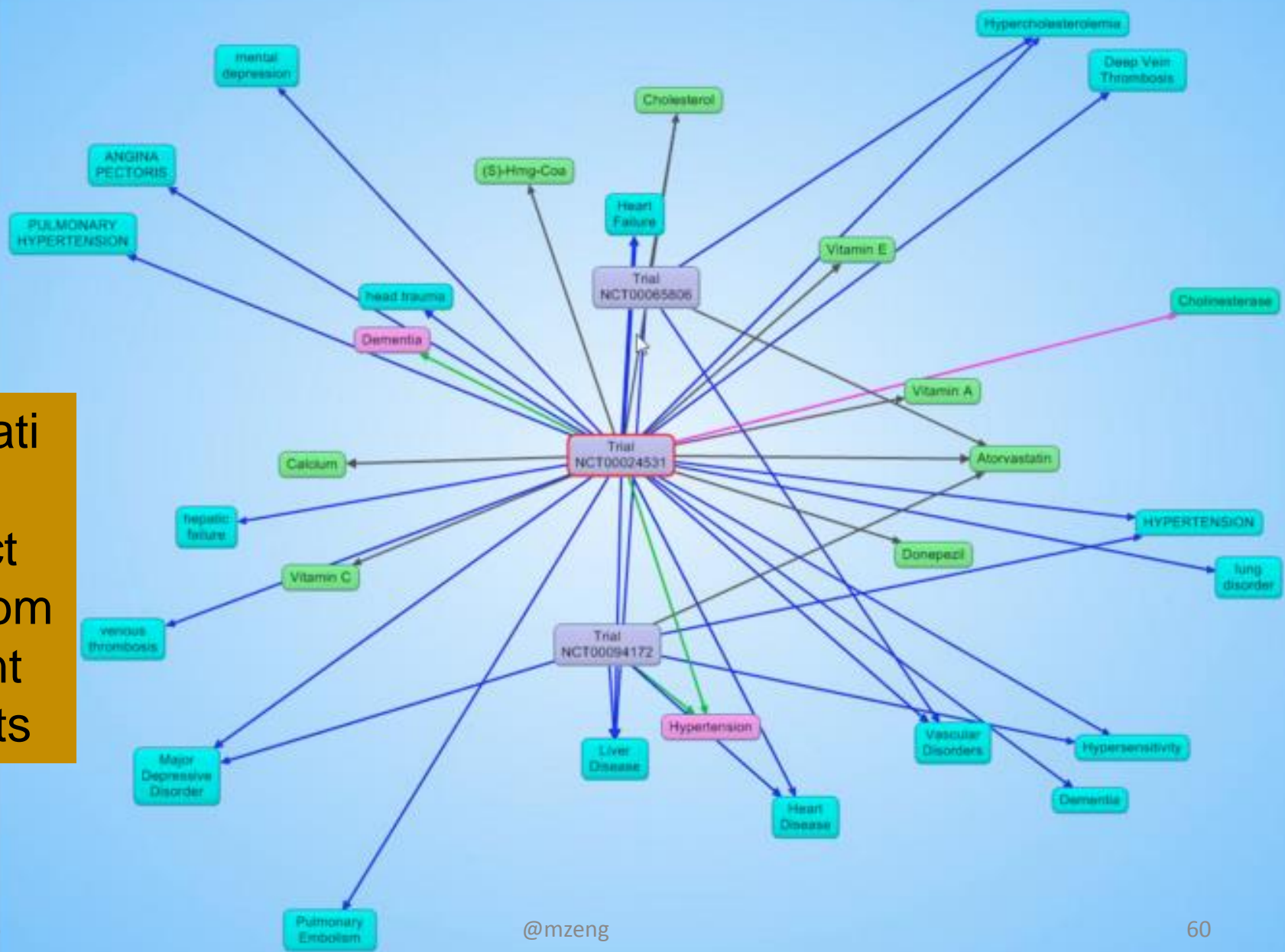
Explicit Nodes from Query

Label
Brand Name

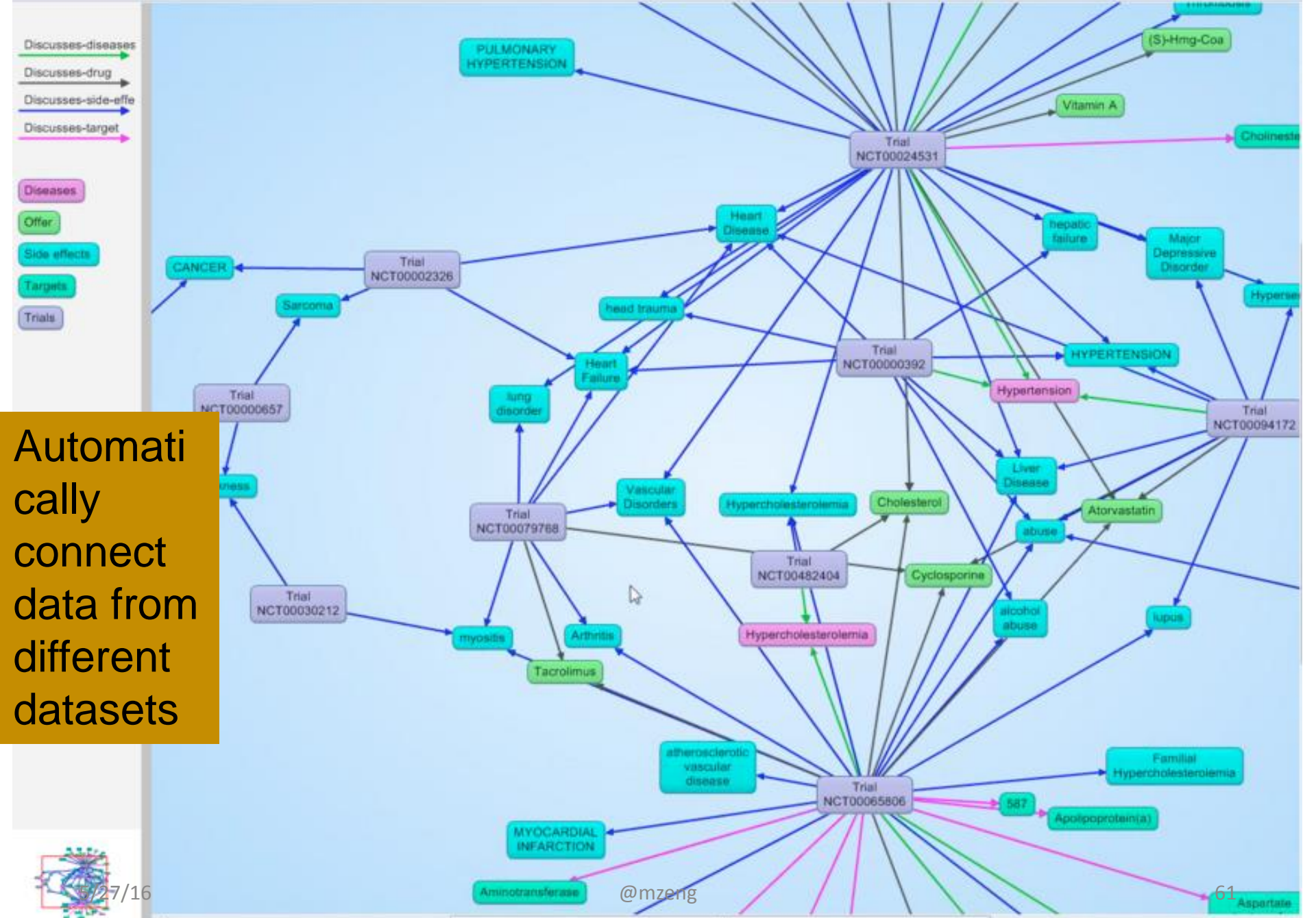
Explicit Predicates from Query

Mentions MESH psychiatry and psychology
Brief title
Discusses-side-effect
Discusses-drug
Label
Brand Name

- Discusses-diseases
- Discusses-drug
- Discusses-side-efle
- Discusses-target
- Diseases
- Offer
- Side effects
- Targets
- Trials



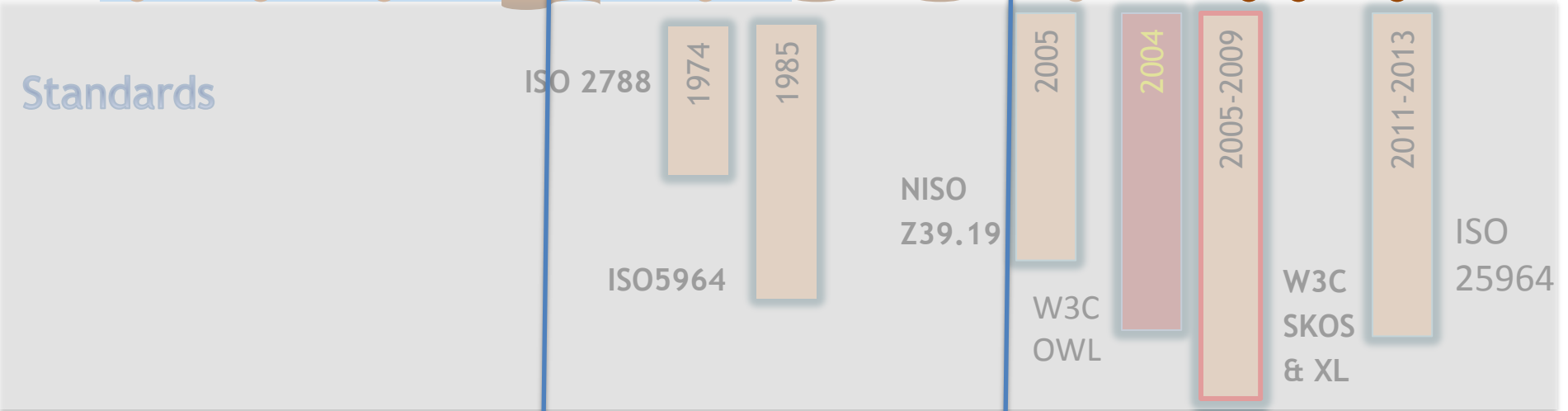
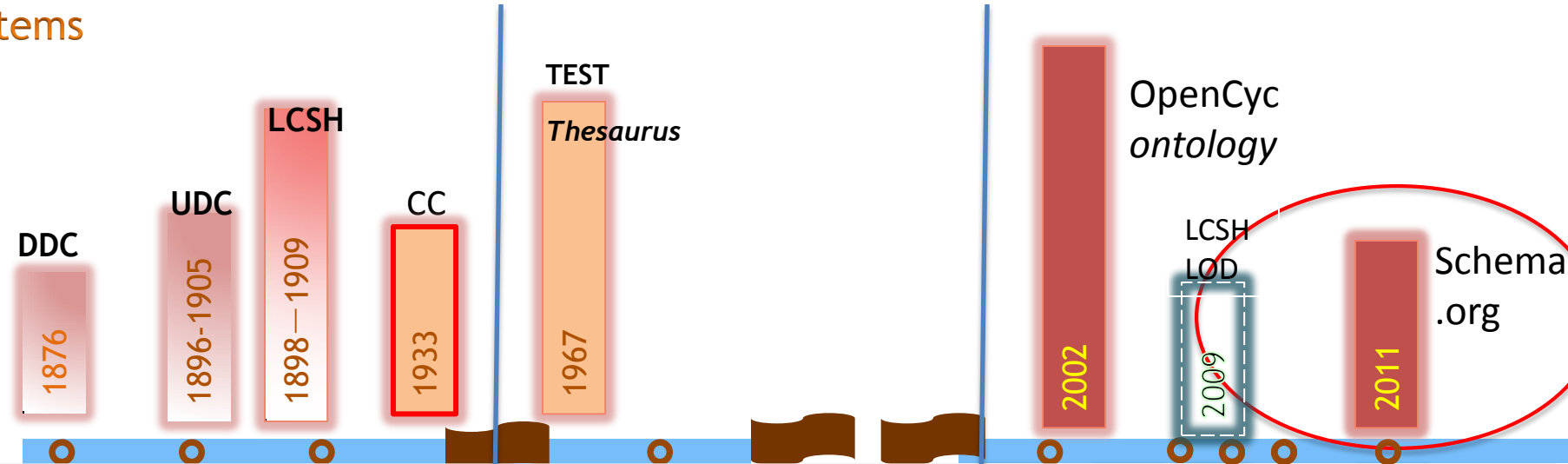
Automatically connect data from different datasets



影响较大的现代KOS&国际标准 (c-4)

(示意图, 非精确)

Systems



Standards

Thing: additionalType, alternateName, description, image, name, sameAs, url

Action: agent, endTime, instrument, location, object, participant, result, startTime

AchieveAction

LoseAction: winner

TieAction

WinAction: loser



作用：本体词汇，主要供表述分散形式的（distributed）
具体个例使用

知识库怎样建成？ — 靠大家分头行动，靠互相关联

Like

War

ReviewAction: resultReview

ConsumeAction

DrinkAction

EatAction

InstallAction

<http://schema.org/docs/full.html>

<http://img1.imgtn.bdimg.com/it/u=1043975708,1658430137&fm=15&gp=0.jpg>

Thing: additionalType, alternateName, description, image, name, sameAs, url

CreativeWork: about, accessibilityAPI, accessibilityControl, accessibilityFeature, ac

Answer: downvoteCount, parentItem, upvoteCount

Article: articleBody, articleSection, pageEnd, pageStart, pageIn

BlogPosting

NewsArticle: dateline, printColumn, printEdition, printF

ScholarlyArticle

类的等级

每类的属性，
有承袭性

其Class等级架构的基本思路来源于国际十进分类法。
但这不是分类法，是本体的做法。

Book: bookEdition, bookFormat, illustrator, isbn, numberOfPages

具体到某类

Thing > CreativeWork > Book

A book.

“Book” 的属性

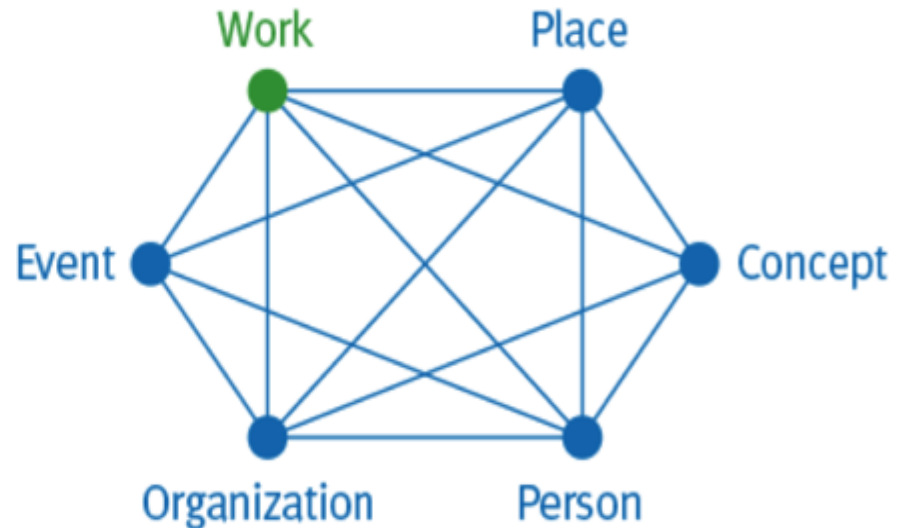
Property	Expected Type	Description
Properties from <u>Book</u>		
<u>bookEdition</u>	<u>Text</u>	The edition of the book.
<u>bookFormat</u>	<u>BookFormatType</u>	The format of the book.
<u>illustrator</u>	<u>Person</u>	The illustrator of the book.
<u>isbn</u>	<u>Text</u>	The ISBN of the book.
<u>numberOfPages</u>	<u>Integer</u>	The number of pages in the book.
Properties from <u>CreativeWork</u>		
<u>about</u>	<u>Thing</u>	The subject matter of the content.
<u>accessibilityAPI</u>	<u>Text</u>	Indicates that the resource is compatible (WebSchemas wiki lists possible values).

从“CreativeWork”上位类
承袭下来的属性

OCLC WorldCat Works
197 Million Nuggets of Linked Data 2014-
直接采用Schema.org

WorldCat Linked Data

The bibliographic metadata found in WorldCat contains a rich set of objects that can be represented in linked data. Extracting entities like works, persons, and places from that metadata will create a foundation of WorldCat linked data, which will support the introduction of Web services that offer a range of functionality and access to the data.



The Schema.org ontology, extended by other ontologies as needed, is being used as a basis for modeling WorldCat bibliographic data. This provides fullest coverage, improved functionality, and better consumption of this data for our harvest partners and library members looking to do more with structured data exposed within HTML pages (via [RDFa 1.1](#)). More detailed information about the [vocabulary](#) used by WorldCat.org linked data is available.

<https://www.oclc.org/developer/develop/linked-data.en.html>

<http://dataliberate.com/2014/04/28/worldcat-works-197-million-nuggets-of-linked-data/>

Read more: Godby, Wang, Mixer. 2015. *Library Linked Data in the Cloud – OCLC's Experiments with New Models of Resource Description*. ISBN 9781627052191

第二部分

分析檢索引擎

採用KOS對信息進行 檢索查尋和瀏覽的 五代變遷

The collage illustrates the evolution of search engines and the use of Knowledge Organization Systems (KOS). It includes:

- Search Engine Interfaces:** Screenshots of Yahoo!, Altavista, and Google search pages, showing search forms and navigation options.
- KOS Schema Diagram:** A diagram showing a hierarchy of actions and their parameters.
 - Thing:** additionalType, alternateName, description, image, name, sameAs, url
 - Action:** agent, endTime, instrument, location, object, participant, result, startTime
 - AchieveAction:** LoseAction: winner, TieAction, WinAction: lo
 - AssessAction:** ChooseAction, VoteA, IgnoreAction, ReactAction, AssessAction
- Google Search Result:** A screenshot of a Google search result for the query "krakow".
 - Search term: **Crakow**
 - Results: **krakow**, **crakows**, **krakow deli**, **krakow deli parma**
 - Count: About 74,400,000 results (0.40 seconds)
 - Message: Showing results for **krakow** Search instead for Crakow
- Other Elements:** Logos for Google, Bing, and schema.org, and a small diagram showing the relationship between these entities.

第一代 提供简单查寻服务

1996 AltaVista

The screenshot shows the AltaVista homepage with the following elements:

- Logo: **ALTA VISTA** Technology, with the tagline "View Multimedia From Our Vantage Point".
- Advertisement: "Car Buying & Car Insurance Pain Relief" with a "LOW COST" speech bubble and icons of cars.
- Text: "Click here for advertising information - reach millions every month!".
- Search Form: "Search the Web" and "Display the Results in Standard Form" with a "Submit" button.
- Text: "Search with Digital's Alta Vista [Advanced Search] [Add URL]".
- Buttons: "Contests" (Make Me Laugh...) and "Creative Web" (Create a Site...).
- Text: "Download free demo versions of AltaVista Technology software".
- Footer: "ALTA VISTA" logo and navigation links "[Creative][Search][Humor][Email]".

1997-12 NorthernLight

The screenshot shows the NorthernLight search interface with the following elements:

- Search Bar: A blue "Search" button above a text input field.
- Form: "SEARCH FOR:" label, a search input field, and a "Search" button with a red 'X' icon.
- Select: Radio buttons for "All Sources -- Search the World Wide Web & Sp...", "World Wide Web -- Search the entire World Wi...", and "Special Collection -- 1 million articles not on ot...".
- Section Header: "Discover The Difference Searching With Northern Light".
- List-Group: Three blue arrows pointing to:
 - [Custom Search Folders™](#) - Results are organized into folders to narrow your search.
 - [Fast, Accurate Results](#) - Hits that match your search requirements quickly.
 - [Special Collection](#) - information from over 1,800 journal databases and newswires not available on any other search engine.
- Feature Highlight: A dark box with "Special Collection FEATURE OF THE WEEK" and text "All articles from U.S. Pharmacy week".
- Text: "Find out about Northern Light's [Accolades](#) and...".
- Copyright: "Copyright © 1997, Northern Light Technology LLC. All rights reserved." (partially visible).

Pre-2010 images were captured from the Internet Archive <https://archive.org/>

第二代 增加浏览 (browsing) 功能



1996-10月 Yahoo!

-- browsing by categories

首创按大类浏览的服务



到1998年底，几乎所有搜索引擎都增加了“browsing”浏览功能


- [Arts and Humanities](#)
[Architecture](#), [Photography](#), [Literature](#)...
- [Business and Economy \[Xtra!\]](#)
[Companies](#), [Investing](#), [Employment](#)...
- [Computers and Internet \[Xtra!\]](#)
[Internet](#), [WWW](#), [Software](#), [Multimedia](#)...
- [Education](#)
[Universities](#), [K-12](#), [College Entrance](#)...
- [Entertainment \[Xtra!\]](#)
[Cool Links](#), [Movies](#), [Music](#), [Humor](#)...
- [Government](#)
[Military](#), [Politics \[Xtra!\]](#), [Law](#), [Taxes](#)...
- [Health \[Xtra!\]](#)
[Medicine](#), [Drugs](#), [Diseases](#), [Fitness](#)...
- [News and Media \[Xtra!\]](#)
[Current Events](#), [Magazines](#), [TV](#), [Newspapers](#)...
- [Recreation and Sports \[Xtra!\]](#)
[Sports](#), [Games](#), [Travel](#), [Autos](#), [Outdoors](#)...
- [Reference](#)
[Libraries](#), [Dictionaries](#), [Phone Numbers](#)...
- [Regional](#)
[Countries](#), [Regions](#), [U.S. States](#)...
- [Science](#)
[CS](#), [Biology](#), [Astronomy](#), [Engineering](#)...
- [Social Science](#)
[Anthropology](#), [Sociology](#), [Economics](#)...
- [Society and Culture](#)
[People](#), [Environment](#), [Religion](#)...

[My Yahoo!](#) - [Yahoo!igans! for Kids](#) - [Beatrice's Web Guide](#) - [Yahoo! Internet Life](#)

1998-12. AltaVista

早期由自愿者建立的大致归类列表，被搜索引擎采用。

Categorization system

 open directory project In partnership with **AOL Search.**

<http://dmoz.org/> [about dmoz](#) | [dmoz blog](#) | [suggest URL](#) | [help](#) | [link](#) | [editor login](#)

[advanced](#)

<p><u>Arts</u> Movies, Television, Music...</p> <p><u>Games</u> Video Games, RPGs, Gambling...</p> <p><u>Kids and Teens</u> Arts, School Time, Teen Life...</p> <p><u>Reference</u> Maps, Education, Libraries...</p> <p><u>Shopping</u> Clothing, Food, Gifts...</p> <p><u>World</u> Català, Dansk, Deutsch, Español, Français, Italiano, 日本語, Nederlands, Polski, Русский, Svenska...</p>	<p><u>Business</u> Jobs, Real Estate, Investing...</p> <p><u>Health</u> Fitness, Medicine, Alternative...</p> <p><u>News</u> Media, Newspapers, Weather...</p> <p><u>Regional</u> US, Canada, UK, Europe...</p> <p><u>Society</u> People, Religion, Issues...</p>	<p><u>Computers</u> Internet, Software, Hardware...</p> <p><u>Home</u> Family, Consumers, Cooking...</p> <p><u>Recreation</u> Travel, Food, Outdoors, Humor...</p> <p><u>Science</u> Biology, Psychology, Physics...</p> <p><u>Sports</u> Baseball, Soccer, Basketball...</p>
--	---	---

第三代

分面、多方位、高效的检索

- 1) 采用分面方法 faceted approach
 - PMEST（主体、物质、动力、空间，时间）及扩充
- 2) 提供多种查寻入口和通道，而非单一框架和路径
- 3) 将KOS 嵌入系统后端，用分类法 taxonomy 等帮助检索**后续分类 / 过滤**(filter)和浏览。
- 4) 自动分析、扩检、总结。 更好的ranking和检索效率

Northern Light Power Search, 2001

The screenshot shows a web browser window with the following elements:

- Browser Address Bar:** Shows search and power icons.
- Navigation Bar:** Includes 'Search' and 'Power' dropdown menus, and buttons for 'Publication Search', 'Industry Search', 'Current News', and 'WEFA Reports'.
- Left Sidebar:** Features a 'Northern Light' logo, a 'Home' button, and three yellow buttons labeled 'Help Center', 'Accounts', and 'Company'.
- Main Search Area:**
 - SEARCH FOR:** Four input fields for 'Words anywhere:', 'Words in title:', 'Publication name:', and 'Words in URL:'. A 'HELP' button is next to the first field.
 - Select:** Radio buttons for 'Special Collection', 'World Wide Web', and 'All Sources' (selected).
 - SELECT DATE RANGE:** A checkbox to expand the section, followed by instructions to 'Fill in one date field or both to narrow your results by date.' Input fields for 'Start date:' and 'End date:' (format *mm/dd/yy*), and a checkbox for 'Sort results by date'.
 - SELECT SOURCES:** A checkbox to expand the section, followed by 'All Sources below' and a grid of checkboxes for various source types: Journals & Magazines, News archives, Personal pages, Commercial web sites, Non-profit web sites, Educational web sites, Military web sites, and Government web sites.
 - Documents written in:** A dropdown menu set to 'Any language'.
 - Web sites from:** A dropdown menu set to 'All countries'.
 - SELECT SUBJECTS:** A checkbox to expand the section, followed by 'All Subjects' and a grid of checkboxes for various subject categories: Arts, Business & Investing, Computing & Internet, Contemporary life, Education, Entertainment, Gov't, Law & Politics, Health & Medicine, Humanities, Products & Services, Reference, Science & Mathematics, Social sciences, Sports & Recreation, Technology, and Travel.
 - LIMIT DOCUMENTS TO:** A checkbox to expand the section, followed by checkboxes for 'Company information' and 'Learning materials'.

Northern Light 率先在搜索引擎后端用分类法 taxonomy 帮助自动将资料分入多方位的类目的‘folders’.



Advanced Search

Find pages with...

all these words:

this exact word or phrase:

any of these words:

none of these words:

numbers ranging from: to

Then narrow your results by...

language:

region:

last update:

site or domain:

terms appearing:

SafeSearch: off moderate strict

reading level:

file type:

usage rights:

http://www.google.com/advanced_search?hl=en

Advanced Search

Advanced Web Search

You can use the options on this page to create a very specific search. Just fill in the fields you need for your current search.

Yahoo Search

Show results with

all of these words

the exact phrase

any of these words

none of these words

Tip: Use these options to look for an exact phrase or to exclude pages containing certain words. You can also limit your search to certain parts of pages.

Site/Domain

Any domain

Only .com domains Only .edu domains

Only .gov domains Only .org domains

only search in this domain/site:

Tip: You can search for results in a specific website (e.g. yahoo.com) or top-level domains (e.g. .com, .org, .gov).

File Format

Only find results that are:

SafeSearch Filter

Applies when I'm signed in:

Strict: filter out adult web, video and image search results - SafeSearch On

Moderate: filter out adult video and image search results only - SafeSearch On

Off: do not filter web results (results may include adult content) - SafeSearch Off

- anytime
- any
- pas
- past week
- past month
- past year

Finnish

anywhere in the page

- anywhere in the page
- in the title of the page
- in the text of the page
- in the URL of the page
- in links to the page

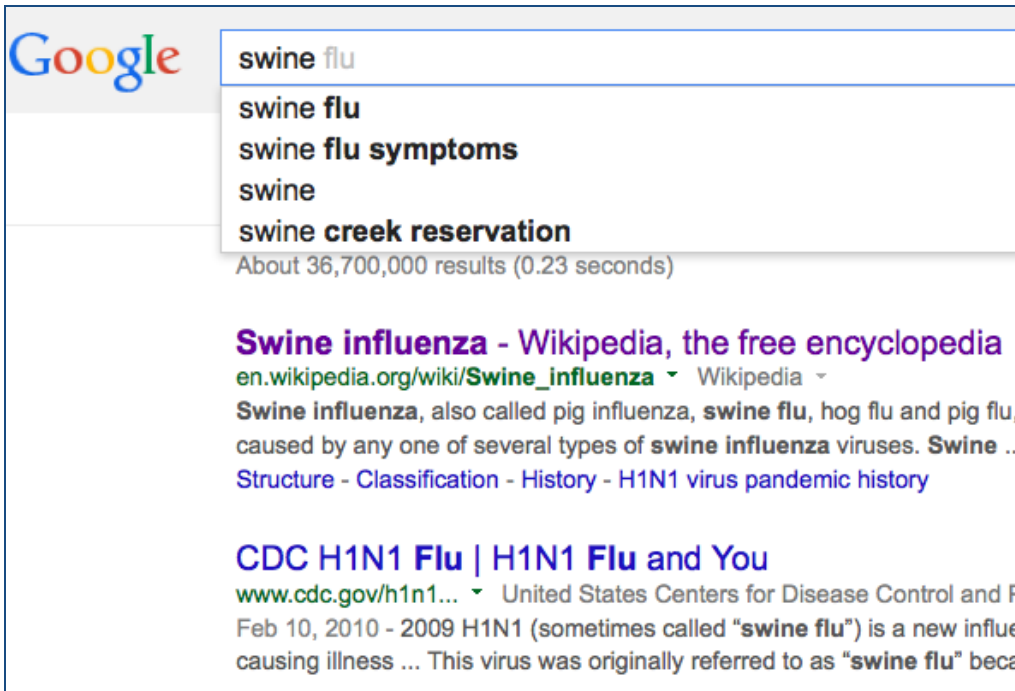
<https://search.yahoo.com//web/advanced>

自动根据使用者的提问给出建议

Query expansion, related searches

对分散式采集的资料采用同义词环

Synonym rings



Google

swine flu

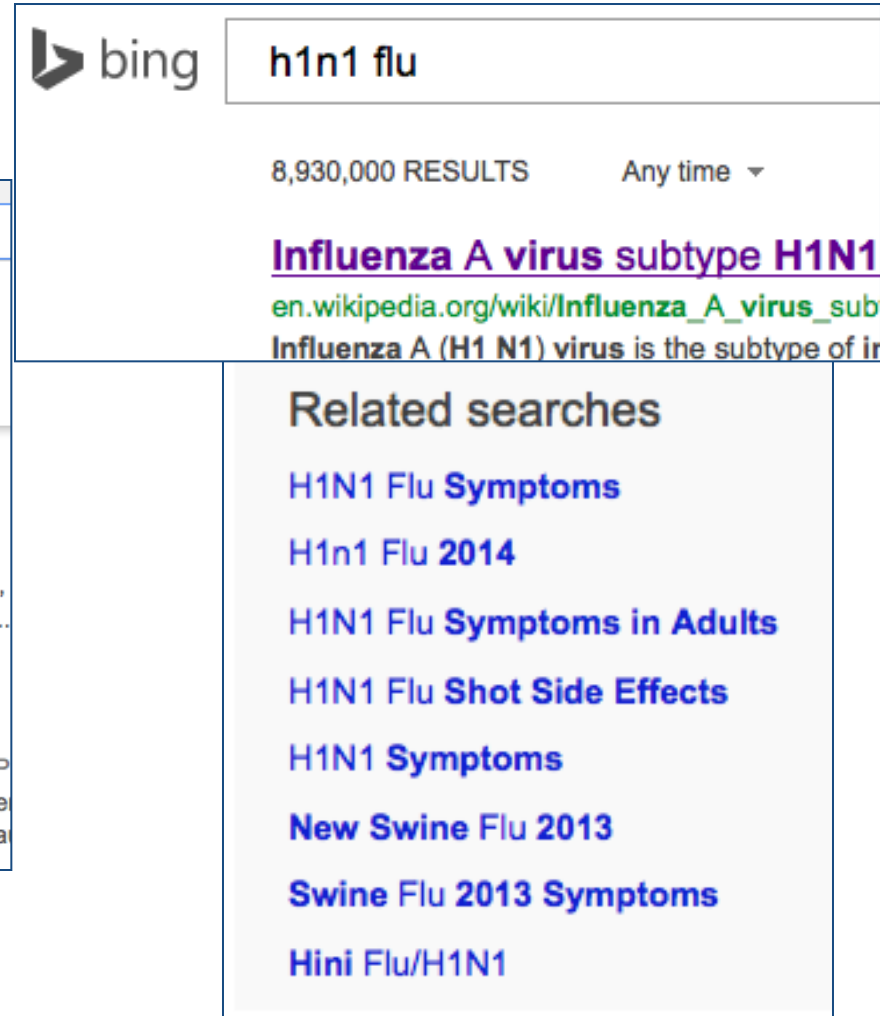
- swine flu
- swine flu symptoms
- swine
- swine creek reservation

About 36,700,000 results (0.23 seconds)

Swine influenza - Wikipedia, the free encyclopedia
en.wikipedia.org/wiki/Swine_influenza - Wikipedia

Swine influenza, also called pig influenza, **swine flu**, hog flu and pig flu, caused by any one of several types of **swine influenza** viruses. Swine ...
Structure - Classification - History - H1N1 virus pandemic history

CDC H1N1 Flu | H1N1 Flu and You
www.cdc.gov/h1n1... - United States Centers for Disease Control and P
Feb 10, 2010 - 2009 H1N1 (sometimes called "**swine flu**") is a new influe
causing illness ... This virus was originally referred to as "**swine flu**" beca



bing

h1n1 flu

8,930,000 RESULTS Any time ▾

Influenza A virus subtype H1N1
en.wikipedia.org/wiki/Influenza_A_virus_sub
Influenza A (H1 N1) virus is the subtype of ir

Related searches

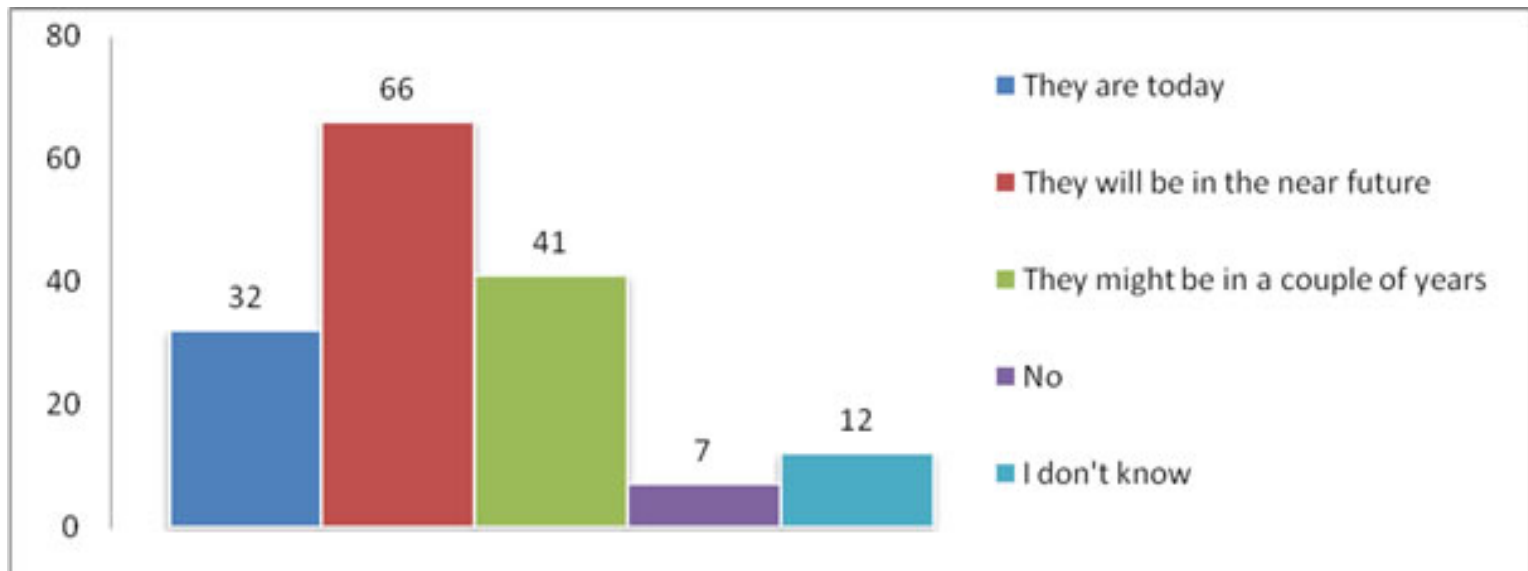
- H1N1 Flu Symptoms
- H1n1 Flu 2014
- H1N1 Flu Symptoms in Adults
- H1N1 Flu Shot Side Effects
- H1N1 Symptoms
- New Swine Flu 2013
- Swine Flu 2013 Symptoms
- Hini Flu/H1N1

Semantic Web Company "Do controlled vocabularies matter?" Survey (2011)

(Over 150 participants from 27 countries from 27 countries)

“Do you think that search engines which utilize thesauri to improve results will become main-stream?”

结论：Thesaurus based search engines will become main stream in the near future。

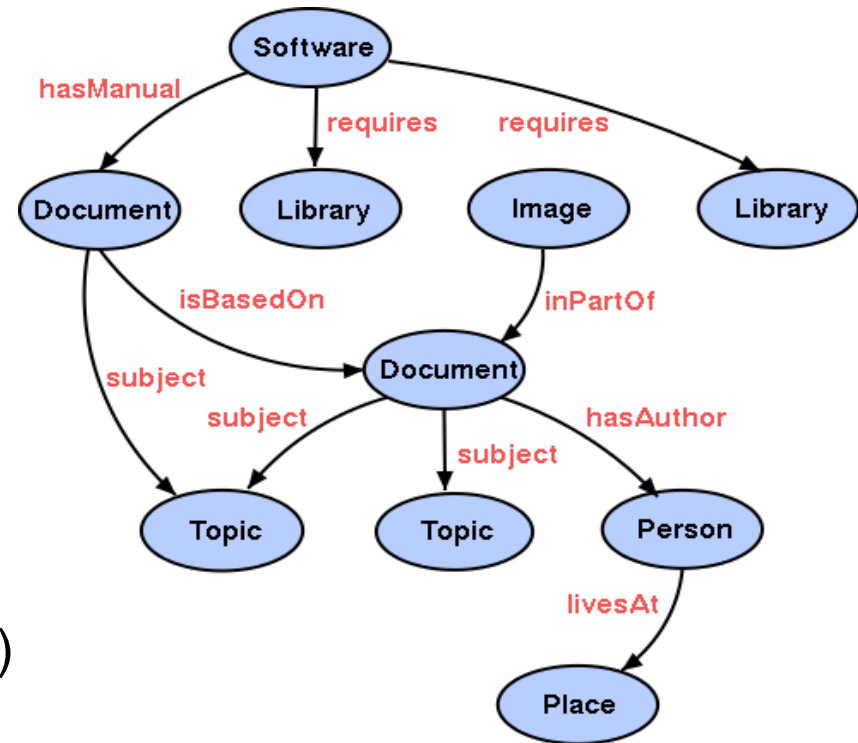


第四代

增加知识图谱，建立关联网络

向前的过滤 filter-forward

- 以知识本体构架和知识库为基础 (ontology-based)
- 物 (Thing) 的类型及其属性和关系是被定义和分类的 (classes and properties are typed), 机器可以理解并处理 (machine-processable and -actionable)
- 关联“物”，不是简单的链接字符串 (connecting things, not strings)
- 采用一系列开放标准 (open standards)
- 形成网，不止是放在网上 (of the web, not just on the web)





Ernest Gross



mzeng@kent.edu

Web Images Maps Shopping More Search tools

About 9,290,000 results (0.17 seconds)

[Ernest A. Gross - Wikipedia, the free encyclopedia](#)

en.wikipedia.org/wiki/Ernest_A._Gross

Ernest A. Gross (1906–1999) was a United States diplomat and lawyer who headed the U.S. delegation to the United Nations in the lead-up to the Korean War.

Ernest G

www.nytimes.com

May 4, 1999

involved in

Ernest G

www.facebook.com

Ernest Gro

Harvard Law School

University

Directions

Harvard Law School is one of the professional graduate schools of Harvard University. Located in Cambridge, Massachusetts, it is the oldest continually-operating law school in the United States and is ... [Wikipedia](#)

Address: 1563 Massachusetts Ave, Cambridge, MA 02138

Enrollment: 1,733 (2011)

Hours: Closed on Saturday. - [See all](#)

Founded: 1817

Phone: (617) 495-3179

Founders: [Joseph Story](#), [Simon Greenleaf](#)

People also search for



Harvard University
Cambridge



Yale Law School
New Haven



Columbia Law School
New York City



Stanford Law School
Stanford



Brooklyn

New York City borough

Brooklyn is the most populous of New York City's five boroughs, with approximately 2.5 million residents, and the second-largest in area. [Wikipedia](#)



Ernest A. Gross

Lawyer

Ernest A. Gross was a United States diplomat and lawyer who headed the U.S. delegation to the United Nations in the lead-up to the Korean War. [Wikipedia](#)

Born: September 23, 1906 (age 106), [Brooklyn](#)

Education: [Harvard Law School](#)

People also search for



[James Eliason](#)



[Jacob Alexandromalik](#)



[Warren Austin](#)



[Charles E. Saltzman](#)

[Feedback / More info](#)



[Found Ernest Gross](#)

www.beenverified.com/

[Ernest Gross's Phone 2\)](#)

[Ernest Gross's Phone 3\) Age & More. Search Free!](#)



Harvard University

167,283 followers on Google

Harvard University is an American private research university located in Cambridge, Massachusetts, United States, established in 1636 as the Massachusetts legislature. [Wikipedia](#)

Motto: Veritas
Acceptance rate: 5.9% (2012)
Enrollment: 27,392 (2011)
Color: Crimson
Founder: [John Harvard](#)
Founded: September 8, 1636

关心“物”的关联，利用大数据生成智慧数据 向前过滤 filter—forward

In addition to:

- Viewed
- Downloaded
- Discussed
- Reviewed
- Recommended
- Cited
- liked
-

The screenshot shows an Amazon product page for 'Visual Miscellaneum'. Red arrows and circles highlight specific features:

- Frequently Bought Together:** A section showing three books: 'Visual Miscellaneum', 'The Best American Infographics 2014', and 'Information is Beautiful'. It includes a price for all three (\$55.16) and buttons to 'Add all three to Cart' and 'Add all three to Wish List'. Below are three items with checkmarks: 'This item: Knowledge is Beautiful: Impossible Ideas, Invisible Patterns, Hidden Connections—Visualized by David McCandless Flexibound \$21.69', 'Visual Miscellaneum: The Bestselling Classic, Revised and Updated: A Colorful Guide to the World's Most ... by David McCandless Flexibound \$19.76', and 'The Best American Infographics 2014 by Gareth Cook Paperback \$13.71'.
- Customers Who Bought This Item Also Bought:** A carousel of five related books: 'Visual Miscellaneum: The Bestselling Classic, ... by David McCandless Flexibound \$19.76', 'The Best American Infographics 2014 by Gareth Cook Paperback \$13.71', 'Information is Beautiful by David McCandless Hardcover \$20', 'Infographics Designers' Sketchbooks by Steven Heller Hardcover \$42.45', and 'Infographics: The Power of Visual Storytelling by Jason Lankow Paperback \$19.35'.
- Product Details:** A section listing book specifications: Flexibound: 256 pages; Publisher: Harper Design (October 21, 2014); Language: English; ISBN-10: 0062188224; ISBN-13: 978-0062188229; Product Dimensions: 7.5 x 0.9 x 9.8 inches; Shipping Weight: 1.8 pounds; Average Customer Review: 4.5 stars (20 customer reviews); Amazon Best Sellers Rank: #7,259 in Books (See Top 100 in Books). Below the rank are category rankings: #6 in Books > Humor & Entertainment > Trivia & Fun Facts; #8 in Books > Humor & Entertainment > Puzzles & Games > Trivia; #16 in Books > Humor & Entertainment > Pop Culture > Art.

打分、排名

利用大数据生成智慧数据

 **YAHOO!**
奇摩

陳澄波
Tan Ting-pho

陳澄波，臺灣著名畫家。1926年以一幅〈嘉義街外〉的作品，入選第七回日本「帝國美術院展覽會」，這是臺灣人首次以西畫跨進日本官展的門檻；其後又數度入選「帝展」和其他各項展覽。 [維基百科](#)

出生：西元 1895 年 2 月 2 日，嘉義市
逝世：西元 1947 年 3 月 25 日 (享年52歲)，嘉義市

 **陳澄波**

 陳澄波 (1895年2月2日 - 1947年3月25日)，臺灣著名畫家。1926年以一幅〈嘉義街外〉的作品，入... +

zh.wikipedia.org


出生：1895年 2月 2日 · 嘉義市
逝世：1947年 3月 25日

其他人還搜尋

 **陳儀**  **川島芳子**  **韓復榘**

資料來源: [wikipedia](#)
意見反應



 [More images](#)

Tan Ting-pho
Painter

Tan Ting-pho, was a well-known Taiwanese painter. In 1926, his oil painting Street of Chiayi was featured in the seventh Empire Art Exhibition in Japan, which was the first time a Taiwanese artist's work could be displayed at the exhibition. [Wikipedia](#)

Born: February 2, 1895, Chiayi, Taiwan
Died: March 25, 1947, Chiayi, Taiwan
Education: Tokyo University of the Arts, Taiwan Governor Mandarin School

People also search for

 **Li Mei-shu**  **Liao Chi-chun**  **Lee Shih-chiao**  **Lin Yushan**  **Chen Houei-kuen**

[Feedback](#)

陳澄波
畫家

陳澄波，嘉義人，臺灣畫家。1926年以一幅〈嘉義の町中〉的作品，入選第七回日本「帝國美術院展覽會」，這是臺灣人首次以西畫跨進日本官展的門檻；其後又數度入選「帝展」和其他各項展覽。 [維基百科](#)

出生：1895年 2月 2日 · 嘉義市
逝世：1947年 3月 25日 · 嘉義市
學歷：東京藝術大學，臺灣總督府國語學校

其他人也搜尋了以下項目 [查看更多項目 \(超過 5 項\)](#)

 **郭雪濤**  **李梅樹**  **廖繼春**  **李石樵**  **陳植棋**

Tan Ting-pho / People also search for

 **Li Mei-shu**  **Liao Chi-chun**  **Lee Shih-chiao**  **Lin Yushan**  **Chen Houei-kuen**



Thing: additionalType, alternateName, description, im

Action: agent, endTime, instrument, location, o

AchieveAction
LoseAction: winner
TieAction
WinAction: loser



人人都成为知识库的贡献者
2015-12月 report:
• 对10 million 网页抽样分析, 其中, 31.3% 采用了 <http://Schema.org> 置标, 比一年前增长22%
<http://queue.acm.org/detail.cfm?id=2857276>

[l.html](#)
[75708](#)

第五代：智慧服务？

— 認知運算時代

IBM Watson now powers a Hilton hotel robot concierge 沃森

Called Connie, it can greet and interact with guests, answering their queries.

by Gian Volpicelli (UK) · Mar 9, 2016 9:46am EST

Share Tweet Email 38



IBM/Hilton

<http://arstechnica.com/gadgets/2016/03/ibm-watson-hilton-robot-connie/>

www.news.gatech.edu/2016/05/09/artificial-intelligence-course-creates-ai-teaching-assistant

science and technology

Artificial Intelligence Course Creates AI Teaching Assistant

Students didn't know their TA was a computer

By Jason Maderer | © MAY 9, 2016 · ATLANTA, GA

f t



@mzeng

From Digital Library to Digital Librarian

A case study on Microsoft Academic Services

Kuansan Wang
Director and Principal Researcher
Internet Service Research Center
Microsoft Research, Redmond WA, USA

以下slides来自微软研究中心王冠三博士
2015.12在ICADL上的主旨发言

<http://www.icadl2015.org/KEYNOTES/talk3.pptx>

Semantic Web

- Human readable vs machine readable contents
- Human defines standard for data formats and models
- Explicit and *precise* specification of knowledge representation that everyone has to agree upon

Knowledge Web

- Machine reads human readable contents
- Machine learns to conflate different formats of the same thing
- Latent and *fuzzy* representation of knowledge learned by mining big data

Paradigm Shift in Web Search (the “Librarian”)



1. “Bing Dialog Model: Knowledge, Intent and Dialog”, MSR Faculty Summit, July 2010
2. “Introducing the Knowledge Graph: things, not strings”, Official Google Blog, May 2012
3. “Chinese Search Engine – Baidu’s Practice”, SIRIP, SIGIR 2014, July 2014



bayesian network



日本のBing.com

Sign in



Web

Images

Videos

Maps

News

Explore

1,150,000 RESULTS

Any time

Bayesian network - Wikipedia, the free encyclopedia

https://en.wikipedia.org/wiki/Bayesian_network

A **Bayesian network**, **Bayes network**, **belief network**, **Bayes(ian) model** or **probabilistic directed acyclic graphical model** is a probabilistic graphical model (a type of ...

A Tutorial on Learning With Bayesian Networks - Microsoft ...

research.microsoft.com/apps/pubs/default.aspx?id=69588

Abstract. A **Bayesian network** is a directed acyclic graph (DAG) representing relationships among variables of ...

Authors: [David Heckerman](#)

Affiliation: [Microsoft Research](#)

About: [Bayesian network](#) · [Data analysis](#) · [Bayesian statistics](#) · [Unsupervised learning](#)

[PDF] Bayesian Networks - TAU

www.eng.tau.ac.il/~bengal/BN.pdf

Bayesian Networks Introduction **Bayesian networks** (BNs), also known as **belief networks** (or **Bayes nets** for short), belong to the family of probabilistic graphical ...

[PDF] Bayesian networks - University of Washington

courses.cs.washington.edu/courses/cse515/09sp/slides/bnets.pdf

Bayesian networks A simple, graphical notation for conditional independence assertions and hence for compact specification of full joint distributions

Progressive Suggestion

Bayesian network

A **Bayesian network**, **Bayes network**, **belief network**, **Bayes(ian) model** or **probabilistic directed acyclic graphical model** is a probabilistic graphical model (a type of statistical model) that represents a set of random variables and their conditional dependencies via a directed acyclic graph (DAG).

en.wikipedia.org · Text under [CC-BY-SA license](#)



Academic conferences: [AAAI 2016](#) · [IJCAI 2016](#) · [UAI 2015](#) · [ICML 2016](#) · [NIPS 2015](#) · [ICPR 2016](#) · [AI 2016](#) · [ICASSP 2016](#) · [KDD 2016](#) · [CVPR 2016](#) · [Interspeech 2015](#) · [ECAI 2016](#) · [ICDM 2015](#) · [ACL 2016](#) · [CHI 2016](#)

Related people

[See all \(10+\)](#)



[Judea Pearl](#)



[Michael I. Jordan](#)



[Zoubin Ghahramani](#)



[Daphne Koller](#)



[Dana Pe'er](#)

Knowledge Driven Suggestions

bayesian network papers by

bayesian network papers in

bayesian network papers in cell

bayesian network papers in cacm

bayesian network papers in cacm by

bayesian network papers in cacm by **koos rommelse**

bayesian network papers in cacm by **honglak lee**

bayesian network papers in cacm by **david heckerman**

bayesian network papers in cacm by **koos rommelse** by **david heckerman**

@mzeng

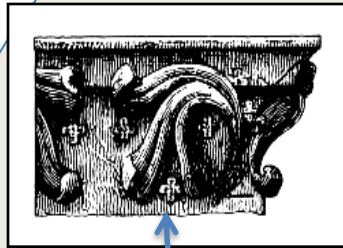
第三部分

细看

KOS在语义网中的历程

—以Getty词汇为特例

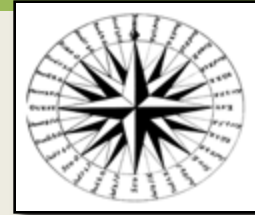
Art & Architecture
Thesaurus (AAT)



Union List of
Artist Names
(ULAN)



Getty Thesaurus of
Geographic Names (TGN)



Cultural Objects Name
Authority (CONA)



1. 发展历程简介

《艺术与建筑索引典》 Art & Architecture Thesaurus (AAT)

- ☑ 1970s 起步
- ☑ 1983 移至Getty
- ☑ 1990, 1994 出版
(书本、电子式)
- ☑ 2005-2008 AAT-Taiwan 计划开始

- ☑ 2011-07开始
试验SKOS化

- ☑ 2013 转成本体
- ☑ 2014-02发布为
LOD

受控词汇(Controlled Vocabulary)



SKOS化, “值词汇”(value vocabulary)



本体支持的知识库 (knowledge base)

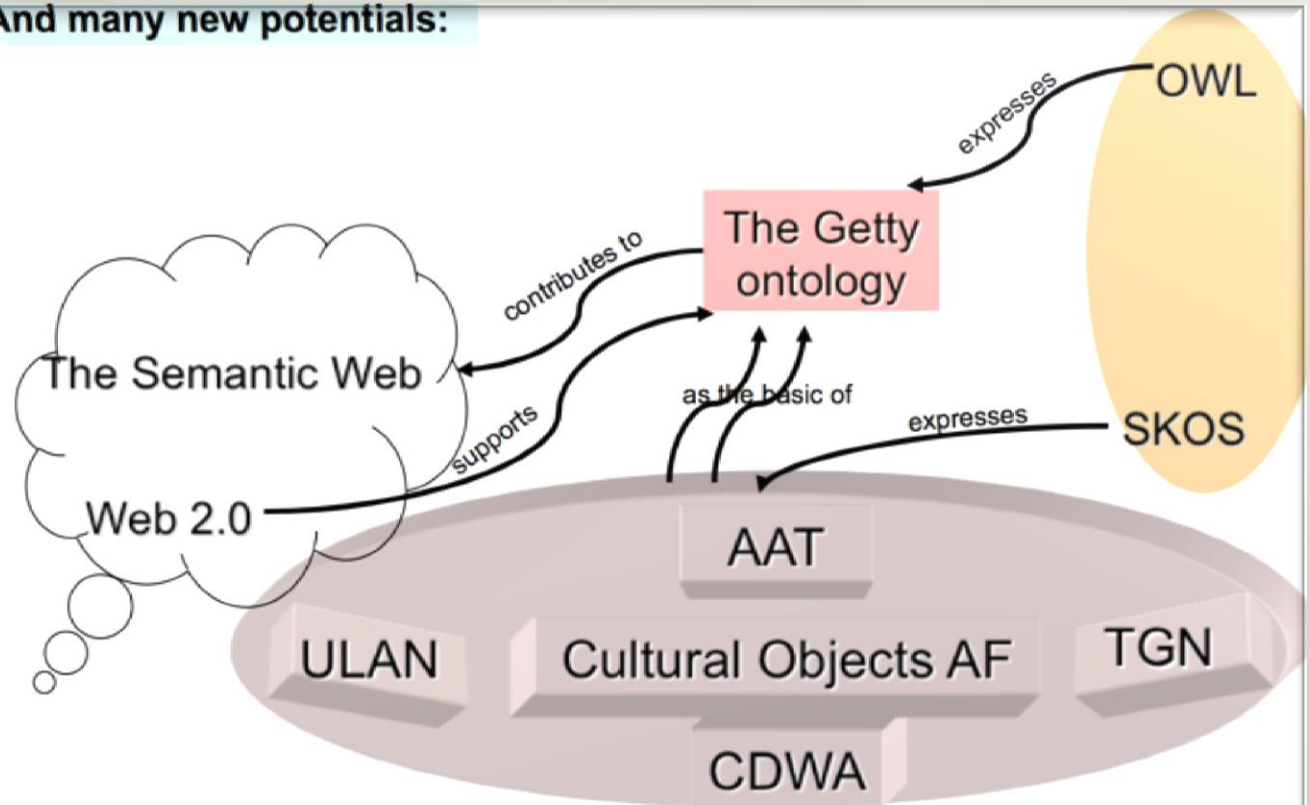
AAT 2016-05-09 统计数据: concept: 44795; term: 356569



2008: 对未来潜力的憧憬

- 认识语义技术新标准:
 - OWL本体语言
 - SKOS 知识组织系统的RDF化

And many new potentials:



SKOSifying a multilingual thesaurus

Questions you may have: 迈出第一步之前的困惑

- WHY do WE have to publish our data as "Linked Data"?
 - We have released e-versions: Web services, xml...
 - Why Getty has to do the job? Can we just let others who already SKOSified AAT do it?
 - Where this will put Getty vocabularies into the communities or big pictures?
- HOW can we make sure not to lose our rich contents in the 'triples' or 'graphs'?
 - How to update of the vocabulary when it is released to the cloud? (Time stamp, validity, synchronizing issues)
 - How about licensing?
 - (Well, Linked Data does not equal to Open Data. See also: [CC](#) | [CKAN](#))
 - Will people use our data incorrectly or inappropriately?
 - Other issues, e.g., traffic

莱坦酒杯 角状杯

HTML

XML



300198841
rhyta (drinking vessels, <vessels for serving and consuming food>, ... Furni-
Name))

Note: Refers to vessels from Ancient Greece, the eastern part of the Middle East, or the Middle East with two openings, one at the top for filling and one at the base so that liquid can
the shape of a horn or an animal's head, and were typically used as a drinking cu
another vessel. Drinking was done by holding the rhyton above the drinker's hea
liquid in the mouth.

Terms:

rhyta (preferred) (C,U,J,C,English-P,D,U,N)
(Greek (transliterated)-P,D,U,PN)
(Spanish,AD,U,SN)

rhyton (C,U,English,AD,U,SN)
(Greek (transliterated),AD,U,SN)
(Spanish,AD,U,SN)

rhytona (C,U,English,UF,U,N)
(French-P,D,U,PN)
(Spanish-P,D,U,PN)

rhea (vessels) (C,U,English,UF,U,N)

rheos (C,U,English,UF,U,N)

rheon (C,U,English,UF,U,N)

rimón (C,U,Ancient Greek,UF,U,N)

rytón (C,U,Ancient Greek (transliterated),UF,U,N)

rytons (C,U,Dutch-P,D,U,J)

ryton (C,U,Dutch,AD,U,U)

ritons (C,U,French,UF,U,N)

riton (C,U,French,UF,U,N)

ritón (C,U,Spanish,UF,U,N)

ritón (C,U,Spanish,UF,U,SN)

escacledona (C,U,Spanish,UF,U,SN)

Facet/Hierarchy Code: V,TQ

Hierarchical Position:

- Objects Facet
- Furnishings and Equipment (Hierarchy Name) (G)
- Containers (Hierarchy Name) (G)
- containers (receptades) (G)
- <containers by function or context> (G)
- <culinary containers> (G)
- <containers for serving and consuming food> (G)
- <vessels for serving and consuming food> (G)
- drinking vessels (G)
- rhyta (G)

Additional Parents:

- Objects Facet
- Furnishings and Equipment (Hierarchy Name) (G)
- Containers (Hierarchy Name) (G)
- containers (receptades) (G)
- <containers by function or context> (G)
- ceremonial containers (G)
- ceremonial vessels (G)
- rhyta (G)

- Objects Facet
- Furnishings and Equipment (Hierarchy Name) (G)
- Containers (Hierarchy Name) (G)
- containers (receptades) (G)
- <containers by form> (G)
- vessels (containers) (G)
- vasos (G)
- plastic vases (ancient vessels) (G)
- rhyta (G)

Additional Notes:

Dutch Vaten uit de Griekse oudheid in de vorm van een dierenkop, werr
of om wijn in een ander vat te gieten.

Spanish Refiérase a vasijas de la Antigua Grecia, Europa del Este, o del
son cerradas pero con dos aberturas, una en el extremo superior para pod
para que el líquido pudiera salir. A menudo tienen la forma de un cuerno o l
lo común usadas como copas para beber o para vaciar vino en otras vasijas

Related concepts:

distinguished from ... **drinking horns**
(drinking vessels, <vessels for serving and consuming
Equipment (Hierarchy Name)) [300043229]

distinguished from ... **slirrup cups**
(drinking vessels, <vessels for serving and consuming
Equipment (Hierarchy Name)) [300197140]

5/27/16 distinguished from ... **sturzbechers**
(beakers (drinking vessels), drinking vessels, ... Furni-
Name)) [300197148]

```
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      <Relationship_Type>Parent/Child</Relationship_Type>
      <Historic_Flag>Current</Historic_Flag>
      <Parent_String>drinking vessels [300194567], vessels for ser
[300198938], containers
[300197577],
(receptades) [30019719
and Equipment (Hierarch
300000000 [300000000]
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  </Preferred_Parent>
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    <Relationship_Type>Parent/Child</Relationship_Type>
    <Historic_Flag>Current</Historic_Flag>
    <Parent_String>plastic vases (ancient vessels) [300198865],
vessels (containers) [300193015], containers by form [300
(receptades) [300197197], Containers (Hierarchy Name) [300
and Equipment (Hierarchy Name) [300264551], Objects Fa
300000000 [300000000] </Parent_String>
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  </Non-Preferred_Parent>
  <Non-Preferred_Parent>
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    <Relationship_Type>Parent/Child</Relationship_Type>
    <Historic_Flag>Current</Historic_Flag>
    <Parent_String>ceremonial vessels [300198333], ceremoni
containers by function or context [300197200], containers
[300197197], Containers (Hierarchy Name) [300043611],
Equipment (Hierarchy Name) [300264551], Objects Facet
[300000000] </Parent_String>
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  </Non-Preferred_Parent>
</Parent_Relationships>
  <Descriptive_Notes>
    <Descriptive_Note>
      <Note_Text>Refers to vessels from Ancient Greece, eastern
that typically have a closed form with two openings, one at
at the base so that liquid could stream out. They are often i
an animal's head, and were typically used as a drinking cup
another vessel. Drinking was done by holding the rhyton ab
and catching the stream of liquid in the mouth.</Note_Text>
      <Note_Language>English</Note_Language>
      + <Note_Contributors>
      + <Note_Sources>
    </Descriptive_Note>
    <Descriptive_Note>
      <Note_Text>Vaten uit de Griekse oudheid in de vorm van een
gebruikt als drinkgerei of om wijn in een ander vat te gieten
      <Note_Language>Dutch</Note_Language>
      + <Note_Contributors>
      + <Note_Sources>
    </Descriptive_Note>
    <Descriptive_Note>
      <Note_Text>Refiérase a vasijas de la Antigua Grecia, Europa
Oriente, que típicamente son cerradas pero con dos abierto
superior para poder llenarlas, y otra en la base para que el
menudo tienen la forma de un cuerno o una cabeza de anir
usadas como copas para beber o para vaciar vino en otras
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      + <Note_Contributors>
      + <Note_Sources>
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  </Descriptive_Notes>
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      <Display_Name>N/A</Display_Name>
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      <Vernacular>Undetermined</Vernacular>
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    </Preferred_Term>
    <Term_Languages>
      <Term_Language>@mzeng
      <Language>English</Language>
      <Preferred>Preferred</Preferred>
      <Qualifier />
  </Terms>
</Subject>
</Vocabulary>
```

2011: 尝试用SKOS格式表达AAT内部格式

- 用最复杂的一个record为试验品

Mapping AAT to SKOS
Report of a Preliminary Study (Version 1.1)

Marcia Lei Zeng

PART II. Data Model and Output
(The technical portion)

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1 <?xml version="1.0" encoding="utf-8"?>
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7       <Relationship_Type>Parent/Child</Relationship_Type>
8       <Historic_Flag>Current</Historic_Flag>
9       <Parent_String>drinking vessels [300194567],
function or context [300197200], containers (receptac
hierarchies [300000000]</Parent_String>
10     <Hier_Rel_Type>Genus/Species-BTG</Hier_Rel_Ty
11     </Preferred_Parent>
12     <Non-Preferred_Parent>
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14       <Relationship_Type>Parent/Child</Relationship
15       <Historic_Flag>Current</Historic_Flag>
16       <Parent_String>plastic vases (ancient vessels
Name) [300045611], Furnishings and Equipment (
17       <Hier_Rel_Type>Genus/Species-BTG</Hier
18     </Non-Pre
19     <Non-Pre
20     <Parent
21       <Relationship_Type>Parent/Child</Relat
22       <Historic_Flag>Current</Historic_Flag>
23       <Parent_String>ceremonial vessels [300
[300045611], Furnishings and Equipment (Hierar
24       <Hier_Rel_Type>Genus/Species-BTG</Hier
25     </Non-Preferred_Parent>
26   </Parent_Relationships>
27   <Descriptive_Notes>
28     <Descriptive_Note>
29       <Note_Text>Refers to vessels from Anci
stream out. They are often in the shape of a h
head and catching the stream of liquid in the
30     <Note_Language>English</Note_Language>
31     <Note_Contributors>
32       <Note_Contributor>
33         <Contributor_id>10000000/VP</Contr
34       </Note_Contributor>
35     </Note_Contributors>
36     <Note_Sources>
37       <Note_Source>
38         <Source>
39           <Source_ID>2000047439/Encycloped
40         </Source>
41       </Note_Source>
42       <Note_Source>
43         <Source>
44           <Source_ID>2000046502/J. Paul Ge
45         </Source>
46       </Note_Source>
47     </Note_Sources>
48   </Descriptive_Note>

```

B. Label (cont.). A preferred Label for the Focused Concept

```
<1000198841#label>
```

```
vp:page_term_source
```

```
"3000041511_illustration
```

B. Label

An alternative label for the focused concept

```
<1000272717#label>
```

```
rdf:type skosxl:Label ;
```

```
dct:language
```

A. Concept

```
<300198841#concept>
```

```
rdf:type skos:Concept ;
```

```
skos:broader
```

```
<300194567#concept> ;
```

```
skos:narrower
```

```
<300265000#concept>;
```

```
skos:note <ex22#note> , <ex90010#note>
```

```
skos:related
```

```
<300197148#concept> , <30019714
```

```
skosxl:altLabel
```

```
<1000272718#label> , <1000272717
```

```
<1000461200#label> , <1000272716#l
```

```
<1000316909#label> , <1000316920#l
```

```
skosxl:hiddenLabel
```

```
<1000297235#label> , <1000498970
```

```
skosxl:prefLabel
```

```
<1000498969#label> , <1000316909
```

```
vp:broaderNonPreferred
```

```
<300198865#concept> , <30019833
```

```
vp:conceptFlag
```

```
<ex673#flag_h> ;
```

```
vp:recordType
```

```
"aat:concept"^^xsd:string ;
```

```
vp:subject_ID
```

```
"300198841"^^xsd:string .
```



虽然任务是与SKOS的 mapping, 本试验实际上是用Protégé做的, 产生一个带instance的本体样本。

- 从XML转为RDF TTL
- 从Getty内部模型转为SKOS
- 提出三种带有不同语义强度的模型

rhyta (drinking vessels, <vessels for serving and consuming food>, ... Furnit Name(s))

Note: Refers to vessels from Ancient Greece, eastern Europe, or the Middle East with two openings, one at the top for filling and one at the base so that liquid could flow out. Drinking was done by holding the rhyton above the drinker's head like a horn or an animal's head, and were typically used as a drinking cup or another vessel. Drinking was done by holding the rhyton above the drinker's head like a horn or an animal's head, and were typically used as a drinking cup or another vessel. Drinking was done by holding the rhyton above the drinker's head like a horn or an animal's head, and were typically used as a drinking cup or another vessel.

Terms:

- rhyta** (preferred,C,U,L,C,English-P,D,U,I, (Greek (transliterated)-P,D,U,PN) (Spanish,AD,U,SN)
- rhyton** (C,U,English,AD,U,SN) (Greek (transliterated),AD,U,SN) (Spanish,AD,U,SN)
- rhytone** (C,U,English,UF,U,N) (French-P,D,U,PN) (Spanish-P,D,U,PN)
- rhea** (vessels) (C,U,English,UF,U,N)
- rheons** (C,U,English,UF,U,N)
- rheon** (C,U,English,UF,U,N)
- jarón** (C,U,Ancient Greek,UF,U,U)
- rhótón** (C,U,Ancient Greek (transliterated),UF,U,U)
- rytons** (C,U,Dutch-P,D,U,U)
- ryton** (C,U,English,AD,U,U)
- rytonis** (C,U,French,UF,U,N)
- ryton** (C,U,French,UF,U,N)
- rytóns** (C,U,Spanish,UF,U,N)
- ritón** (C,U,Spanish,UF,U,SN)
- escanciadora** (C,U,Spanish,UF,U,SN)

Facet/Hierarchy Code: V.TQ

Hierarchical Position:

- Objects Facet
 - Furnishings and Equipment (Hierarchy Name) (G)
 - Containers (Hierarchy Name) (G)
 - containers (receptacles) (G)
 - <containers by function or context> (G)
 - <culinary containers> (G)
 - <containers for serving and consuming food> (G)
 - <vessels for serving and consuming food> (G)
 - drinking vessels (G)
 - rhyta (G)

Additional Parents:

- Objects Facet
 - Furnishings and Equipment (Hierarchy Name) (G)
 - Containers (Hierarchy Name) (G)
 - containers (receptacles) (G)
 - <containers by function or context> (G)
 - ceremonial containers (G)
 - ceremonial vessels (G)
 - rhyta (G)

Objects Facet

- Furnishings and Equipment (Hierarchy Name) (G)
- Containers (Hierarchy Name) (G)
- containers (receptacles) (G)
- <containers by form> (G)
- vessels (containers) (G)
- vases (G)
- plastic vases (ancient vessels) (G)
- rhyta (G)

Additional Notes:

Dutch Vaten uit de Griekse oudheid in de vorm van een dierenkop, van om wijn in een ander vat te gieten.
Spanish Reférase a vasijas de la Antigua Grecia, Europa del Este, o del sur cerradas pero con dos aberturas, una en el extremo superior para poder para que el líquido pudiera salir. A menudo tienen la forma de un cuerno o la común usadas como copas para beber o para vaciar vino en otras vasijas.

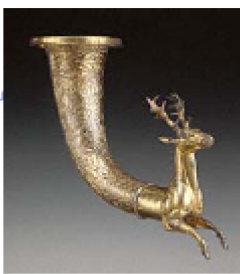
Related concepts:

- distinguished from **drinking horns** (drinking vessels, <vessels for serving and consuming Equipment (Hierarchy Name)> [300043229])
- distinguished from **drinking cups** (drinking vessels, <vessels for serving and consuming Equipment (Hierarchy Name)> [300197140])
- distinguished from **stutzbechers** (beakers (drinking vessels), drinking vessels, ... Furnit Name(s)) [300197148]

HTML

XML

RDF



```
<?xml version="1.0" encoding="utf-8" ?>
<Vocabulary xmlns:xsi="https://www.w3.org/2001/XMLSchema-instance"
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        <Historic_Flag>Current</Historic_Flag>
        <Parent_String>drinking vessels [300194567], vessels for serving food [300198938], containers [300197577], receptacles [30019719 and Equipment (Hierarchy [300000000] [300000000] </Hier_Rel_Type> </Hier_Rel_Type>
      </Preferred_Parent>
      <Non-Preferred_Parent>
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        <Relationship_Type>Parent/Child</Relationship_Type>
        <Historic_Flag>Current</Historic_Flag>
        <Parent_String>plastic vases (ancient vessels) [300198865], vessels (containers) [300193015], containers by form [300197197], Containers (Hierarchy Name) and Equipment (Hierarchy Name) [300264551], Objects Facet [300000000] [300000000] </Parent_String>
        <Hier_Rel_Type>Genus/Species-BTG</Hier_Rel_Type>
      </Non-Preferred_Parent>
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        <Parent_String>ceremonial vessels [300198333], ceremonial containers by function or context [300197200], containers [300197197], Containers (Hierarchy Name) [300045611], Equipment (Hierarchy Name) [300264551], Objects Facet [300000000] </Parent_String>
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    </Parent_Relationships>
    <Descriptive_Notes>
      <Descriptive_Note>
        <Note_Text>Refers to vessels from Ancient Greece, eastern that typically have a closed form with two openings, one at at the base so that liquid could stream out. They are often i

```

skos:altLabel	escanciadora
skos:altLabel	rhea
skos:altLabel	rheon
skos:altLabel	rheons
skos:altLabel	rhyton
skos:altLabel	rhytons
skos:altLabel	rhótón
skos:altLabel	ritón
skos:altLabel	rytons
skos:altLabel	ryton
skos:altLabel	rytons
skos:altLabel	jarón
is skos:broader of	<http://karma.getty.edu/2020/resource/AAT/Subject/300265000>
skos:broader	<http://karma.getty.edu/2020/resource/AAT/Subject/300194567>
gvp:broaderNonPreferred	<http://karma.getty.edu/2020/resource/AAT/Subject/300198333>
gvp:broaderNonPreferred	<http://karma.getty.edu/2020/resource/AAT/Subject/300198865>
is gvp:bigRelationshipType of	<http://karma.getty.edu/2020/resource/AAT/Subject/300194567>
is gvp:bigRelationshipType of	<http://karma.getty.edu/2020/resource/AAT/Subject/300198333>
is gvp:bigRelationshipType of	<http://karma.getty.edu/2020/resource/AAT/Subject/300198865>
gvp:bigRelationshipType	<http://karma.getty.edu/2020/resource/AAT/Subject/300265000>
gvp:facetCode	V.TQ
is gvp:historicFlagCurrent of	<http://karma.getty.edu/2020/resource/AAT/Subject/300194567>
is gvp:historicFlagCurrent of	<http://karma.getty.edu/2020/resource/AAT/Subject/300198333>
is gvp:historicFlagCurrent of	<http://karma.getty.edu/2020/resource/AAT/Subject/300198865>
gvp:historicFlagCurrent	<http://karma.getty.edu/2020/resource/AAT/Subject/300265000>
rdfs:label	SUBJECT #300198841
skos:note	Refers to vessels from Ancient Greece, eastern Europe, or the Middle East openings, one at the top for filling and one at the base so that liquid could at an animal's head, and were typically used as a drinking cup or for po by holding the rhyton above the drinker's head and catching the stres
skos:note	Reférase a vasijas de la Antigua Grecia, Europa del Este, o del Medio (con dos aberturas, una en el extremo superior para poder llenarlas, y otra e menudo tienen la forma de un cuerno o una cabeza de animal y eran por lo para vaciar vino en otras vasijas.
skos:note	Vaten uit de Griekse oudheid in de vorm van een dierenkop, werden vaak geeten.
skos:prefLabel	rhyta
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is skos:related of	<http://karma.getty.edu/2020/resource/AAT/Subject/300043229>
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skos:related	<http://karma.getty.edu/2020/resource/AAT/Subject/300043229>
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skos:related	<http://karma.getty.edu/2020/resource/AAT/Subject/300197148>
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is gvp:subjectId of	<http://karma.getty.edu/2020/resource/AAT/Term/100027235/70411>

第一轮试验:

- 转成RDF
- 仍用关系型数据库 RDBMS

第二步：从SKOS化的“值词汇”彻底转向本体

在试验中遇到若干问题

- How to represent lookup lists, associative relationships, N-ary relations, revision
- Tool limitations – no functionality for language attributes from a database
- Use RDBMS or triple store?
- Environment limitations – RDF uses more space on filesystems
- Need for a semantic/ontology expert to connect data to established standards
- What to do with lookup lists

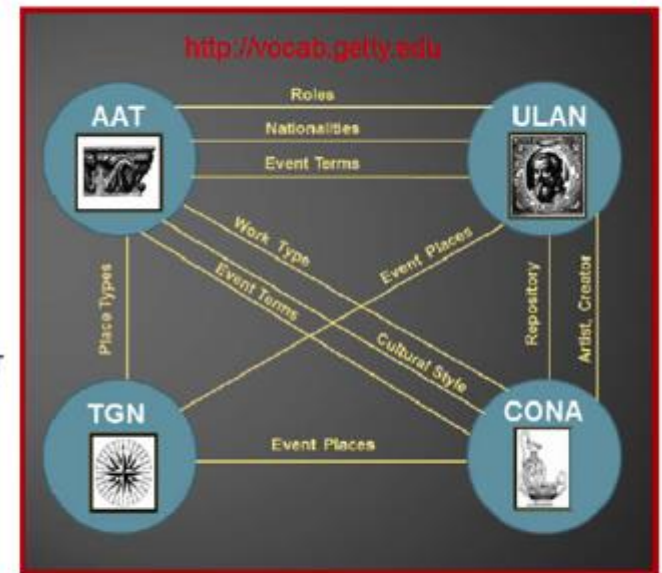
2013 Ontotext Corp 的 Vladimir Alexiev 加入，负责建造本体

更重要的：

认识到关联数据的巨大潜力

Opportunities for Connecting Data

- Language list made into its own hierarchy in AAT
- Languages coordinated with IANA Subtag Registry
- TGN place types connected to AAT subjects
- ULAN roles connected to AAT subjects
- ULAN nationalities connected to AAT subjects
- ULAN events connected to AAT subjects
- ULAN places connected to TGN subjects



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KOS for Entity Names and Concepts



ID: 700001931

Images: 1

Work

Gezicht op Olinda, Brazilië (easel painting (painting by form); Frans Jansz. Post 1662; Rijksmuseum (Amsterdam, North Holland, Netherlands); SK-A-742; RM001)

Titles:

Gezicht op Olinda, Brazilië (preferred,C,U,RP,Dutch-P,U,U)

View of Olinda, Brazil (C,U,DE,English-P,U,U)

Catalog Level: item

Work Types:

easel painting (painting by form) [3001774351] (preferred)
..... (Objects Facet, Visual and Verbal Hierarchy Name, works, <visual works by material of form> (visual works by material of form))

Concept

Classifications:

paintings (preferred)

Creation Date: 1662

Agent

Creator Display:

Frans Jansz. Post (Haarlem 1612 - Haarlem 1680-02-16) [preferred,VP]
painter Post, Frans (Dutch painter and draftsman, 1612-1680) [5000170]

Locations:

Current: Rijksmuseum (Amsterdam, North Holland, Netherlands) [500246547]
Repository Numbers: SK-A-742; RM001

Place

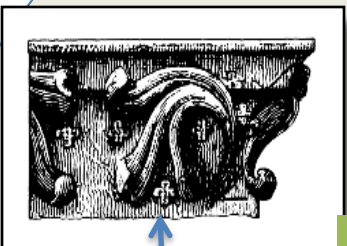
Display Materials: oil on canvas

oil paint (paint) [300015050]
.....(Materials Facet, Materials (Hierarchy Name), materials (matter), <materials by form>, <coating by form>, <material by composition or origin>)
canvas [300014078]
.....(Materials Facet, Materials (Hierarchy Name), materials (matter), <materials by form>, <material by composition or origin>, <fiber and fiber products>, fiber products, textile materials, <textile materials by product>)
5/27/16 @mzeng

Concept

Dimensions: 107.5 x 172.5 cm

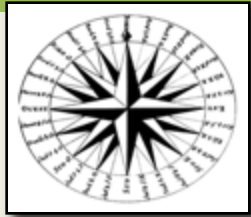
Art & Architecture Thesaurus (AAT)



Union List of Artist Names (ULAN)



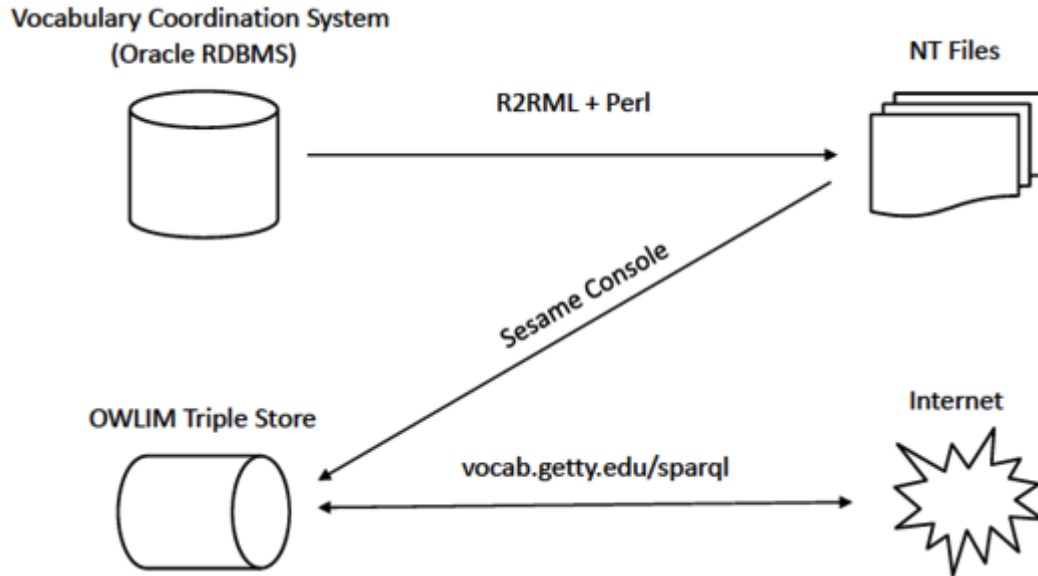
Getty Thesaurus of Geographic Names (TGN)



Cultural Objects Name Authority (CONA)



将数据从关系型数据库 RDBMS 转到 RDF Triples



- R2RML standard developed by the W3C for mapping RDBMS tables to RDF triples
- Use perl RDF-RDB2RDF module for implementing R2RML scripts
- Custom scripts for creating staged download files in N3, NT, RDF and JSON serializations
- Use OWLIM triple store and customized Forest application for HTTP server to handle user requests

rhyta (drinking vessels, <vessels for serving and consuming foods>, ... Furnishings and Equipment (Hierarchy Name))

Note: Refers to vessels from Ancient Greece, eastern Europe, or the Middle East with two openings, one at the top for filling and one at the base so that liquid can be poured. The vessels were typically used as a drinking or a ceremonial vessel. Drinking was done by holding the rhyton above the drinker's head and pouring the liquid into the mouth.

HTML



rhyta

Source: <http://vocab.getty.edu/aat/300198841>

RDF

Subject (100 of 193) Predicate Object All Website | Hierarchy | Download in: [JSON](#) | [RDF](#) | [N3/Turtle](#) | [N-Triples](#)

Inference

Statements in which the resource exists as a subject.

Predicate	Object
rdf:type	gvp:Concept
rdfs:seeAlso	http://www.getty.edu/vow/AATFullDisplay?find=&logic=AND&note=&subjectid=300198841
dcterms:contributor	aat_contrib:10000000, aat_contrib:10000088, aat_contrib:10000131, aat_contrib:10000205, aat_contrib:10000250

- Terms:**
- rhyta** (preferred) (C,U,J,C,English-P,D,U,N) (Greek (transliterated)-P,D,U,PN) (Spanish,AD,U,SN)
 - rhyton** (C,U,English,AD,U,SN) (Greek (transliterated),AD,U,SN) (Spanish,AD,U,SN)
 - rhytons** (C,U,English,UF,U,N) (French-P,D,U,PN) (Spanish-P,D,U,PN)
 - rhea (vessels)** (C,U,English,UF,U,N)
 - rheos** (C,U,English,UF,U,N)
 - rheon** (C,U,English,UF,U,N)
 - rhōn** (C,U,Ancient Greek,UF,U,U)
 - rhōtōn** (C,U,Ancient Greek (transliterated),UF,U,U)
 - rytons** (C,U,Dutch-P,D,U,U)
 - ryton** (C,U,Dutch,AD,U,U)
 - ritons** (C,U,French,UF,U,N)
 - riton** (C,U,French,UF,U,N)
 - ritón** (C,U,Spanish,UF,U,N)
 - ritón** (C,U,Spanish,UF,U,SN)
 - escacledora** (C,U,Spanish,UF,U,SN)

- Facet/Hierarchy Code:** V,1Q
- Hierarchical Position:**
- Objects Facet
 - ... Furnishings and Equipment (Hierarchy Name) (G)
 - ... Containers (Hierarchy Name) (G)
 - ... Containers (receptacles) (G)
 - ... <containers by function or context> (G)
 - ... <culinary containers> (G)
 - ... <containers for serving and consuming> (G)
 - ... <vessels for serving and consuming> (G)
 - ... drinking vessels (G)
 - ... rhyta (G)

xl:prefLabel aat_term:1000198841-el-Latn, aat_term:1000198841-en, aat_term:1000316909-es, aat_term:1000316909-fr, aat_term:1000498969-nl, aat_term:1000589081-zh-Hant, aat_term:1000589085-zh-Latn-pinyin-x-notone, aat_term:1000589090-zh-Latn-wadegile,

gvp:parentString	drinking vessels, <vessels for serving and consuming food>, <containers for serving and consuming food>, culinary containers, <containers by function or context>, containers (receptacles), Containers (Hierarchy Name), Furnishings and Equipment (Hierarchy Name), Objects Facet
gvp:parentStringAbbrev	drinking vessels, <vessels for serving and consuming food>, ... Objects Facet

98333, aat:300198865

98865

gvp:prefLabelGVP	aat_term:1000198841-en
gvp:prefLabelLoC	aat_term:1000198841-en
dcterms:source	aat_source:2000030301-subject-300198841, aat_source:2000051089-subject-300198841, aat_source:2000052378
dc:identifier	300198841
gvp:aat2100_distinguished_f...	aat:300043229, aat:300197140, aat:300197148
prov:wasGeneratedBy	aat_rev:5000057716

- Additional Parents:**
- Objects Facet
 - ... Furnishings and Equipment (Hierarchy Name) (G)
 - ... Containers (Hierarchy Name) (G)
 - ... Containers (receptacles) (G)
 - ... <containers by function or context> (G)
 - ... ceremonial containers (G)
 - ... ceremonial vessels (G)
 - ... rhyta (G)

第二轮：直接发布成LOD

- Objects Facet
 - ... Furnishings and Equipment (Hierarchy Name) (G)
 - ... Containers (Hierarchy Name) (G)
 - ... Containers (receptacles) (G)
 - ... <containers by form> (G)
 - ... vessels (containers) (G)
 - ... vases (G)
 - ... plastic vases (ancient vessels) (G)
 - ... rhyta (G)

Additional Notes:

Dutch ... Vaten uit de Griekse oudheid in de vorm van een dierenkop, werd of om wijn in een ander vat te gieten.

Spanish ... Refiérase a vasos de la Antigua Grecia, Europa del Este, o del son cerradas pero con dos aberturas, una en el extremo superior para poder para que el líquido pudiera salir. A menudo tienen la forma de un cuerno o un objeto común usadas como copas para beber o para vaciar vino en otras vasijas.

- Related concepts:**
- distinguished from ... **drinking horns** (drinking vessels, <vessels for serving and consuming Equipment (Hierarchy Name)>) [300043229]
 - distinguished from ... **stirrup cups** (drinking vessels, <vessels for serving and consuming Equipment (Hierarchy Name)>) [300197140]
 - distinguished from ... **sturzbechers** (beakers (drinking vessels), drinking vessels, ... Furnishings and Equipment (Hierarchy Name)) [300197148]

@mzeng

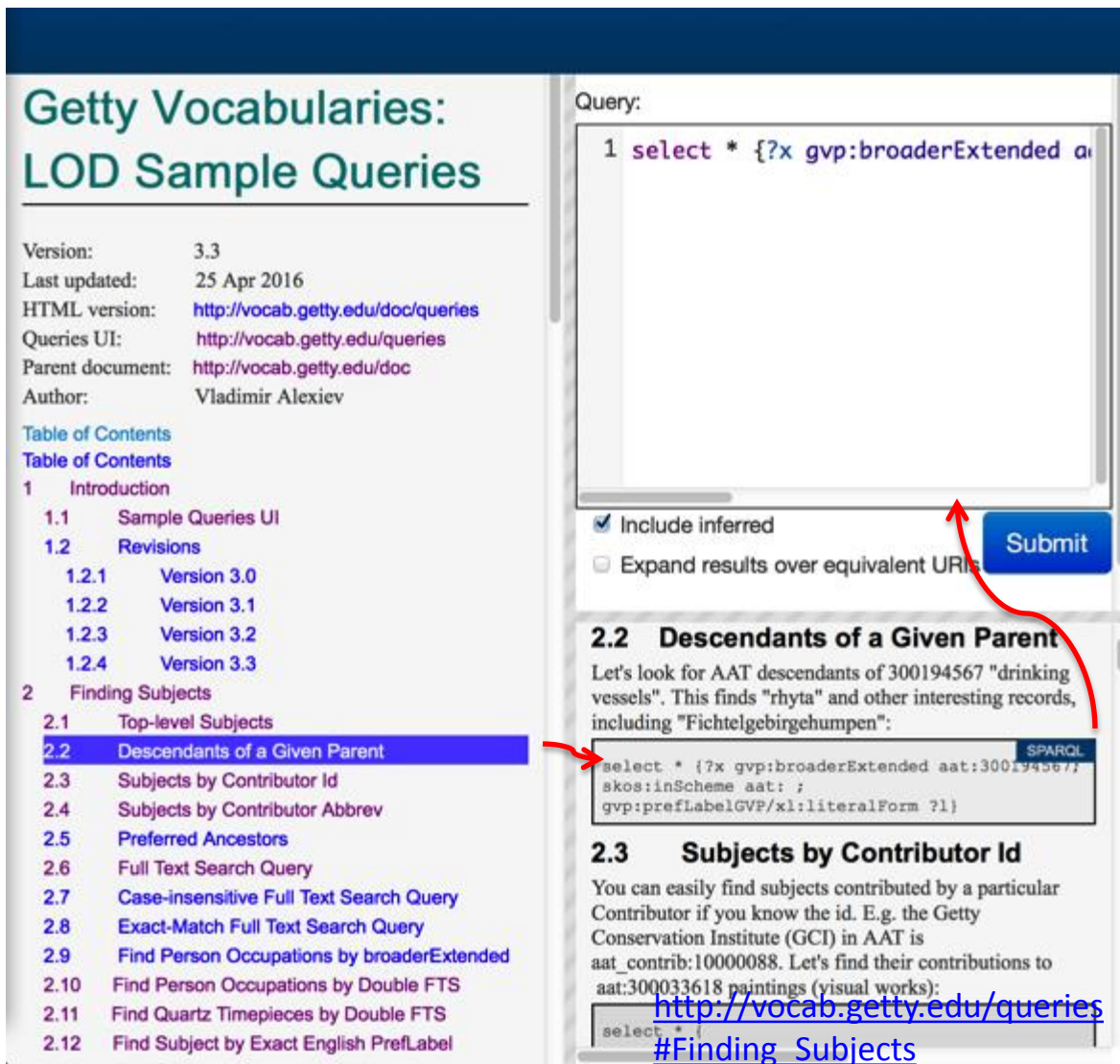
- AAT release: 2014.02
- TGN release: 2014.08
- ULAN released: 2015.04
- CONA: [2016.01]

ODC BY 1.0

开放下载，抽取、查寻

- 本体修改多次，目前版本为3.3版

除了SKOS和SKOS-XL外，还用到十几种其它的本体/词汇：FOAF, PROV, Schema, DC, DCT, ISO, RDF, RDFs, OWL, BIBO, WGS, XSD...



Version: 3.3
Last updated: 25 Apr 2016
HTML version: <http://vocab.getty.edu/doc/queries>
Queries UI: <http://vocab.getty.edu/queries>
Parent document: <http://vocab.getty.edu/doc>
Author: Vladimir Alexiev

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- 2 Finding Subjects
 - 2.1 Top-level Subjects
 - 2.2 Descendants of a Given Parent
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 - 2.10 Find Person Occupations by Double FTS
 - 2.11 Find Quartz Timepieces by Double FTS
 - 2.12 Find Subject by Exact English PrefLabel

Query:

```
1 select * {?x gvp:broaderExtended aat:300194567 ; skos:inScheme aat: ; gvp:prefLabelGVP/xl:literalForm ?l}
```

Include inferred
 Expand results over equivalent URIs

Submit

2.2 Descendants of a Given Parent
Let's look for AAT descendants of 300194567 "drinking vessels". This finds "rhyta" and other interesting records, including "Fichtelgebirgehumpen":

2.3 Subjects by Contributor Id
You can easily find subjects contributed by a particular Contributor if you know the id. E.g. the Getty Conservation Institute (GCI) in AAT is aat_contrib:10000088. Let's find their contributions to aat:300033618 paintings (visual works):

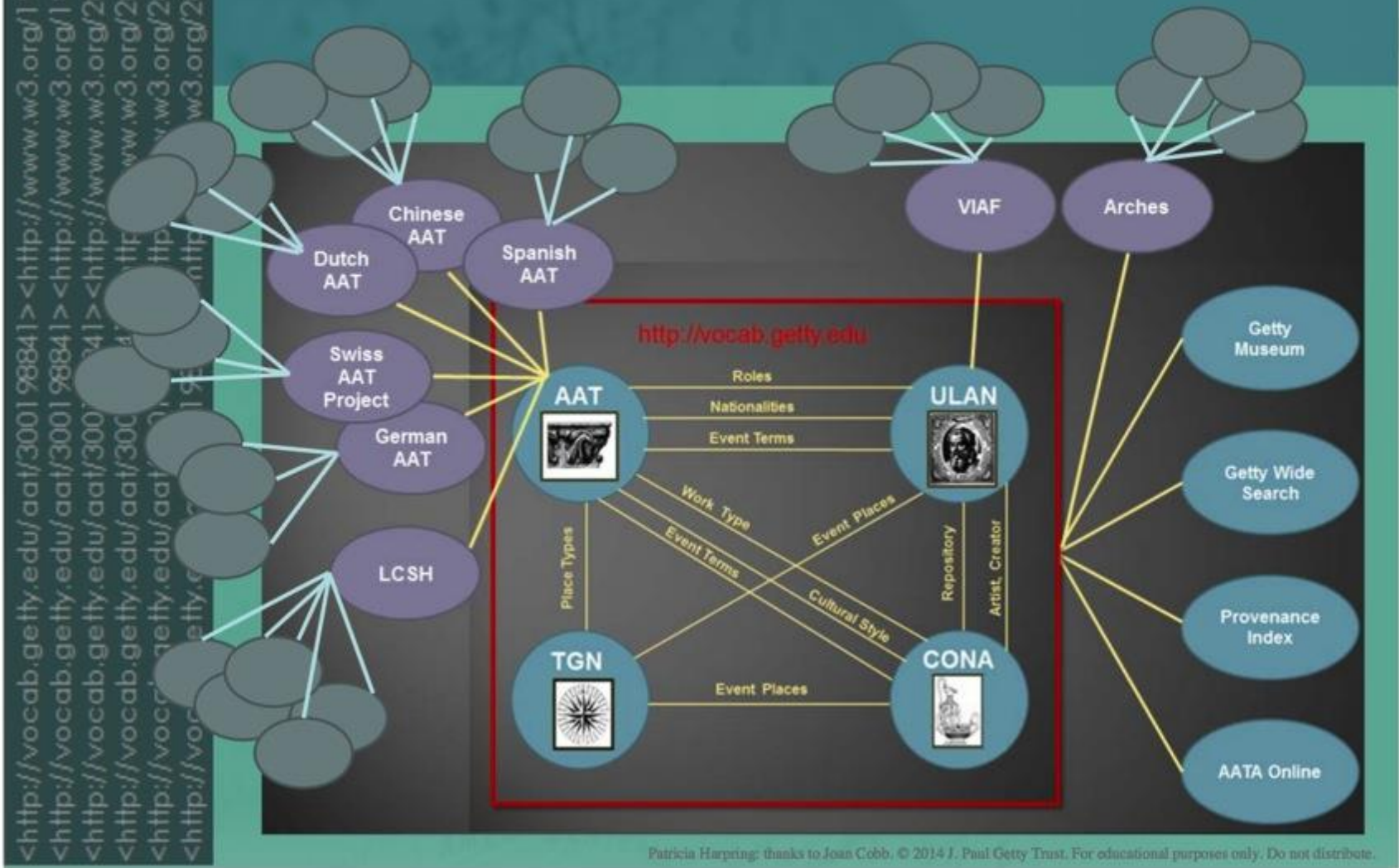
http://vocab.getty.edu/queries#Finding_Subjects

More at

<https://share.getty.edu/display/ITSLODV/AAT+Semantic+Representation>

Impact?

Linking Possibilities: Our Partner's Partners



快速建成微型词表 (micro-thesaurus)

1. 为希望成为 LOD 的数据库提供词汇

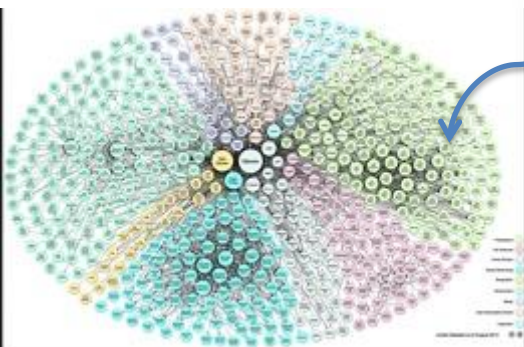
- 获取词汇，产生微词表
- 或通过 API 与 Getty 词汇 mapping (e.g., 用 OpenRefine) 将本地词转换成规范词

<input type="checkbox"/>		Top of the AAT hierarchies
<input type="checkbox"/>	 Objects Facet
<input type="checkbox"/>	 Object Genres (Hierarchy Name)
<input type="checkbox"/>	 object genres (object classifications)
<input type="checkbox"/>	 <object genres by function>
<input type="checkbox"/>	 accessories
<input type="checkbox"/>	 aids to navigation
<input type="checkbox"/>	 beacons [N]
<input type="checkbox"/>	 buoys [N]
<input type="checkbox"/>	 lighthouses [N]
<input type="checkbox"/>	 light stations [N]
<input type="checkbox"/>	 navigational instruments
<input type="checkbox"/>	 amulets
<input type="checkbox"/>	 Thor's hammers (ar...
<input type="checkbox"/>	 armrests (object genre...
<input type="checkbox"/>	 backdrops
<input type="checkbox"/>	 backrests
<input type="checkbox"/>	 ceremonial objects
<input type="checkbox"/>	 baptismal syringes
<input type="checkbox"/>	 bow stands [N]
<input type="checkbox"/>	 brush aspergilla [N]
<input type="checkbox"/>	 calumets [N]
<input type="checkbox"/>	 ceremonial chairs [N]
<input type="checkbox"/>	 ceremonial containe...
<input type="checkbox"/>	 ceremonial costume...
<input type="checkbox"/>	 ceremonial sound de...
<input type="checkbox"/>	 ceremonial watercra...
<input type="checkbox"/>	 ceremonial weapons
<input type="checkbox"/>	 déblés [N]



aat:300264447	agere lfa@en
aat:300262796	aids to navigation@en
aat:300210466	aigrettes (plumes)@en
aat:300181617	airport beacons@en
aat:300181651	airway beacons@en
aat:300263682	akonkromfi@en
aat:300210415	albs@en
aat:300198819	alms dishes@en
aat:300210416	almuces (hoods)@en
aat:300263075	aloalo@en
aat:300391092	altar belis@en
aat:300391083	altar candlesticks@en
aat:300262580	altar crosses@en
aat:300198805	altar cruets@en
aat:300075940	altarpieces@en
aat:300264259	alusi@en
aat:300210417	amices@en
aat:300198899	ampullae@en
aat:300266585	amulets@en

2. 帮助LOD数据产品成为五星级



Search Creators ▾

kaiser johann wilhelm

Search

Help

Return to search results

Next >



View

Public Domain marked

View item at
Rijksmuseum

Share

Cite on Wikipedia

Translate details

Select language ▾

Powered by Microsoft®
Translator

Het melkmeisje

Title:

Hollandse meesters

Description:

Een melkmeisje schenkt melk in een kom. Rechts van haar een venster. De prent maakt deel uit van een serie van 25 prenten naar Hollandse meesters. Boven de afbeelding: PL III.

Creator:

[Kaiser, Johann Wilhelm \(I\)](#) (Kaiser, Johann Wilhelm (I)) From: 1813-01-05— To: 1900-11-29

Contributor:

[Johannes Vermeer](#) (Johannes Vermeer)

Date of creation:

1823 - 1900

<http://vocab.getty.edu/aat/300041273>

Type:

prints (visual works); fine art prints

Format:

chine collé; height 256 MM; width 176 MM; plaatrand hoogte 256 MM; plaatrand breedte 176 MM

Subject:

<http://iconclass.org/47I22311>

Identifier:

<http://hdl.handle.net/10934/RM0001.COLLECT.130468>

3. 使LOD数据服务增加功能 (例如 多语种自动扩检或聚集)

ephesus (nmo:Mint)

skos:prefLabel Efese (af), Ἔφεσος (am), أفسس (ar), Efes (az), Город Эфес (be), Эфес (bg), Efesos (br), Efes (bs), Efes (ca), Efez (cs), Effesus (cy), Efesos (da), Ephesus (de), Ἐφεσος (el), Ephesus (en), Efeso (eo), Éfeso (es), Efeso (eu), افسس (fa), Efesos (fi), Efesus (fo), Ephèse (fr), Éfeso (gl), εφεζ (he), Efez (hr), Epheszosz (hu), ነቀነቤሽ (hy), Ephesos (id), Efesos (is), Efeso (it), エフェソス (ja), Efesus (jv), ວຽງເບີກ (ka), 에페소스 (ko), Ephesus (la), Efesas (lt), Efesa (lv), Эфес (mk), इफेसूस (mr), Efesus (ms), Efesos (nb), Efeso (nl), Efesos (nn), Efez (pl), Éfeso (pt), Efesos (ro), Эфес (ru), Efes (sh), Efez (sk), Efez (sl), Эфес (sr), Efesos (sv), Efeso (sw), எபேசஸ் (ta), ເອຟີຊັສ (th), Efeso (tl), Efes (tr), Эфес (uk), افسس (ur), Efes (uz), Ephesus (vi), 以弗所 (zh)

skos:definition The mint at the ancient site of Ephesus in Ionia. (en)

dcterms:isPartOf http://nomisma.org/id/greek_numismatics

geo:location <http://nomisma.org/id/ephesus#this>

rdf:type skos:Concept

skos:altLabel Ephesos (en)

skos:broader <http://nomisma.org/id/ionia>

skos:closeMatch <http://collection.britishmuseum.org/id/place/x107267>

skos:closeMatch <http://dbpedia.org/resource/Ephesus>

skos:closeMatch <http://gazetteer.dainst.org/app/#/show/2287728>

skos:closeMatch <http://pleiades.stoa.org/places/599612>

skos:closeMatch <http://viaf.org/viaf/156158309>

skos:closeMatch <http://vocab.getty.edu/tgn/7002499>

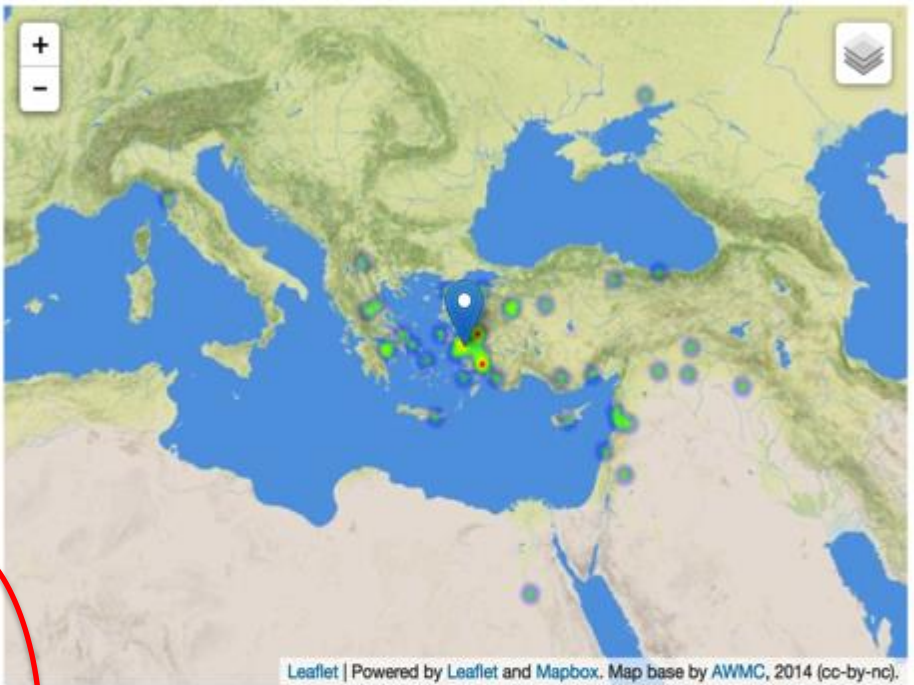
skos:closeMatch <http://www.geonames.org/7522155>

skos:closeMatch <http://www.wikidata.org/entity/Q47611>

skos:closeMatch <https://www.freebase.com/m/02p8r>

Export

[GitHub File](#) [RDF/XML](#) [RDF/TTL](#) [JSON-LD](#) [KML](#)



Leaflet | Powered by Leaflet and Mapbox. Map base by AWMC, 2014 (cc-by-nc).

#this (geo:SpatialThing)

dcterms:isPartOf <http://nomisma.org/id/ionia#this>

geo:lat 37.939722

geo:long 27.340833

- 继续关联
- 多语种扩充

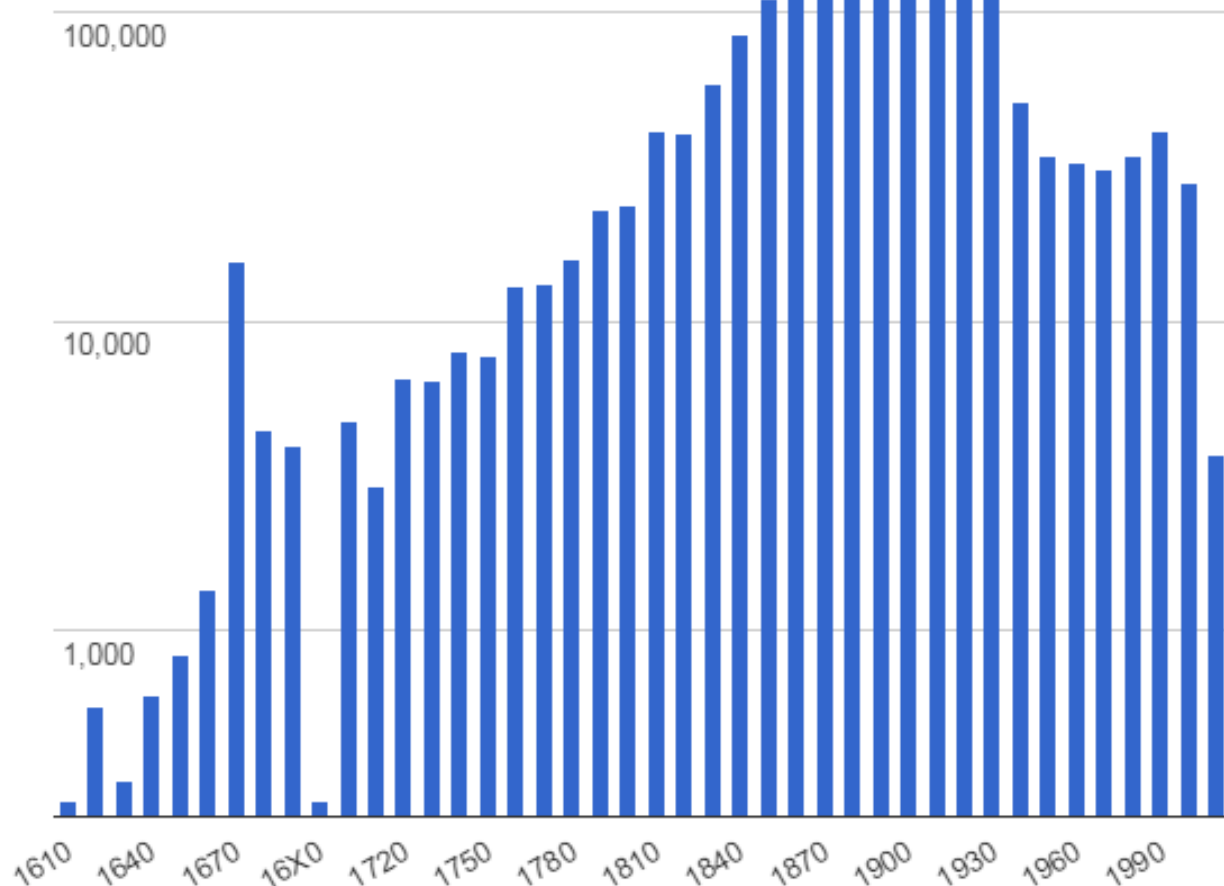


4. 帮助LOD数位图书档案 开发已拥有数据

图： 欧洲报纸1610年以来的
的出版历史
(根据Europeana拥有的数
据库)

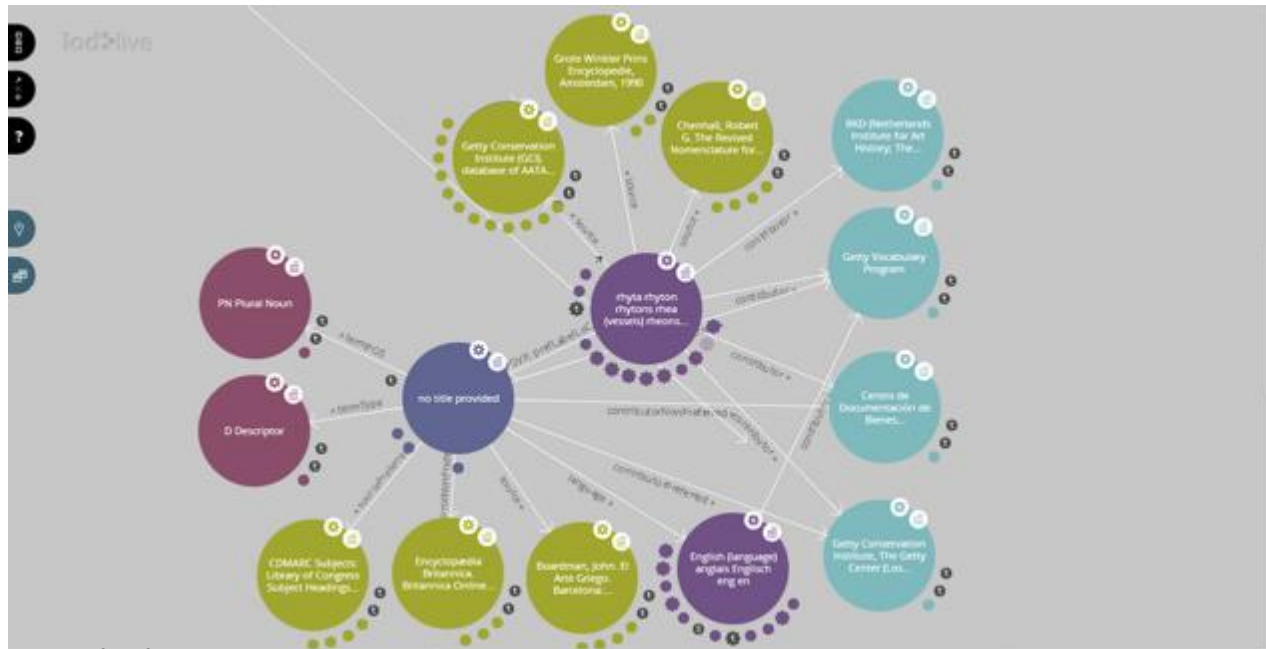
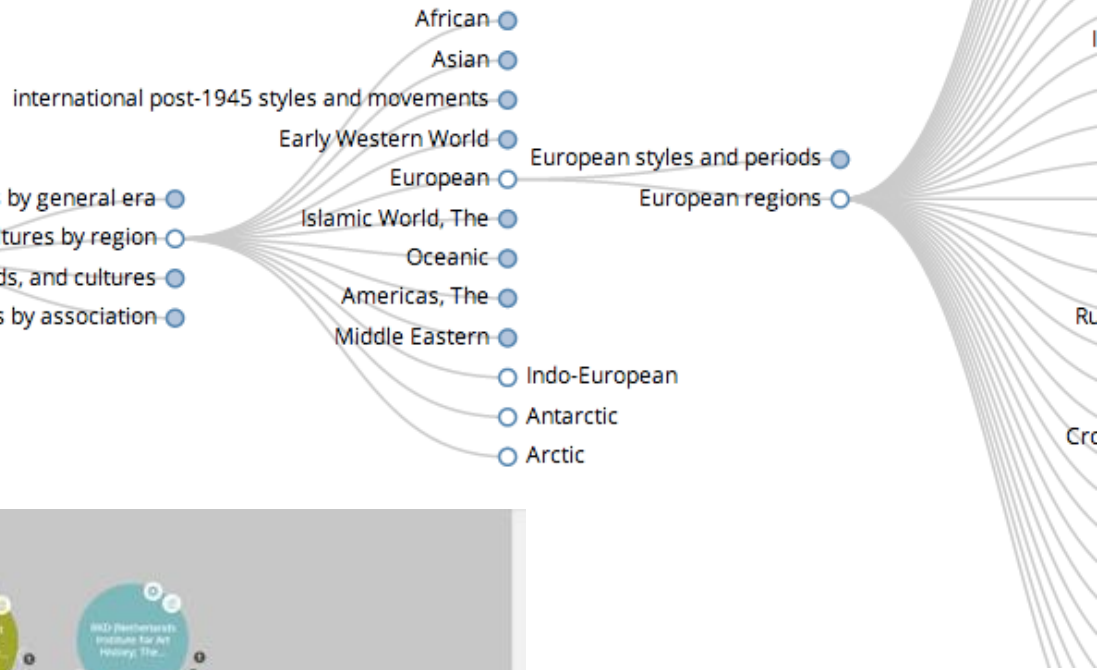
Search millions of historic newspapers on Europeana using a simple query
like {skos_concept:"http://vocab.getty.edu/aat/300026656"}

- 深入探索



帮助LOD数位图书档案 开发已拥有数据

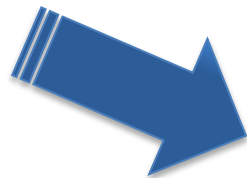
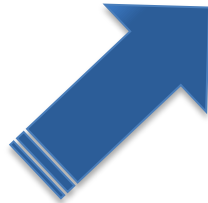
- 揭示数据库内容
 - styles, periods, and cultures by general era
 - styles, periods, and cultures by region
 - generic styles, periods, and cultures
 - styles, periods, and cultures by association
- 显示的关联的潜力



- 跨语种查寻
Europeana

Getty Vocabularies: LOD Sample Queries

5. 针对非常复杂的问题
提问，然后获取数据，
进行研究，揭示未知事实



[4 TGN-Specific Queries](#)

[4.1 Places by Type](#)

[4.2 Places, with English or GVP Label](#)

[4.3 Places by Direct and Hierarchical Type](#)

[4.4 Breakdown of Sovereign States by Type](#)

[4.5 Inhabited Places That Were Sovereign States](#)

[4.6 Places by Type and Parent Place](#)

[4.7 Places by Type, with placeTypePreferred](#)

[4.8 Places by Triple FTS](#)

[4.9 Places by FTS Parents](#)

[4.10 Capitals by Association](#)

[4.11 Members of the European Union](#)

[4.12 Members of the United Nations](#)

[4.13 Geo Chart with sgvizler](#)

[4.14 Column Chart with sgvizler](#)

[4.15 Countries and Capitals By Type and Containment](#)

[4.16 Places by Coordinate Bounding Box](#)

[4.17 Places Within Bounding Box](#)

[4.18 Places by Type Within Bounding Box](#)

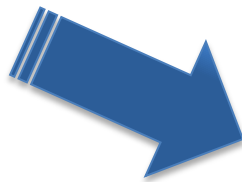
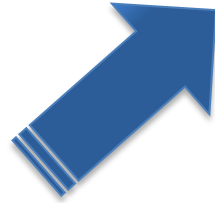
[4.19 Places Outside Bounding Box \(Overseas Possessions\)](#)

[4.20 Places Nearby Each Other](#)

@zhang

Getty Vocabularies: LOD Sample Queries

针对非常复杂的问题
提问，然后获取数据，
进行研究，揭示未知
事实



5 ULAN-Specific Queries

5.1 Agents by Type

5.2 Associative Relations of Agent

5.3 Female Artists

5.4 Female Artists as a Hobby

5.5 Native American Painters

5.6 Names of Native American Painters

5.7 Architects Born in the 14th or 15th Century

5.8 Indian and Pakistani Architectural Groups

5.9 Non-Italians Who Worked in Italy

5.10 Artists Associated to a Given Patron or His Family

5.11 German, Dutch, Flemish printmakers, listed with their teachers

5.12 Artists Whose Identity May be Associated or Confused With Another

5.13 Ordered Hierarchy of Given Subject

5.14 Ancient Artists or Groups by Nationality

5.15 Art Repositories in the USA by State

5.16 Popes and Their Reigns

5.17 Pope Reign Durations

例：1800到1950年间出生的法国艺术家之间的师生关系。

query

http://vocab.getty.edu/queries#German_Dutch_Flemish_printmakers_listed_with_their_tea

针对非常复杂的问题提问，
然后获取数据，进行研究，
揭示未知事实

Teacher-student
among French a
between 1800 and 1950

For

This
follow
by A

Leg

student_of_apprentice of

Occurrences Count

teachers

students

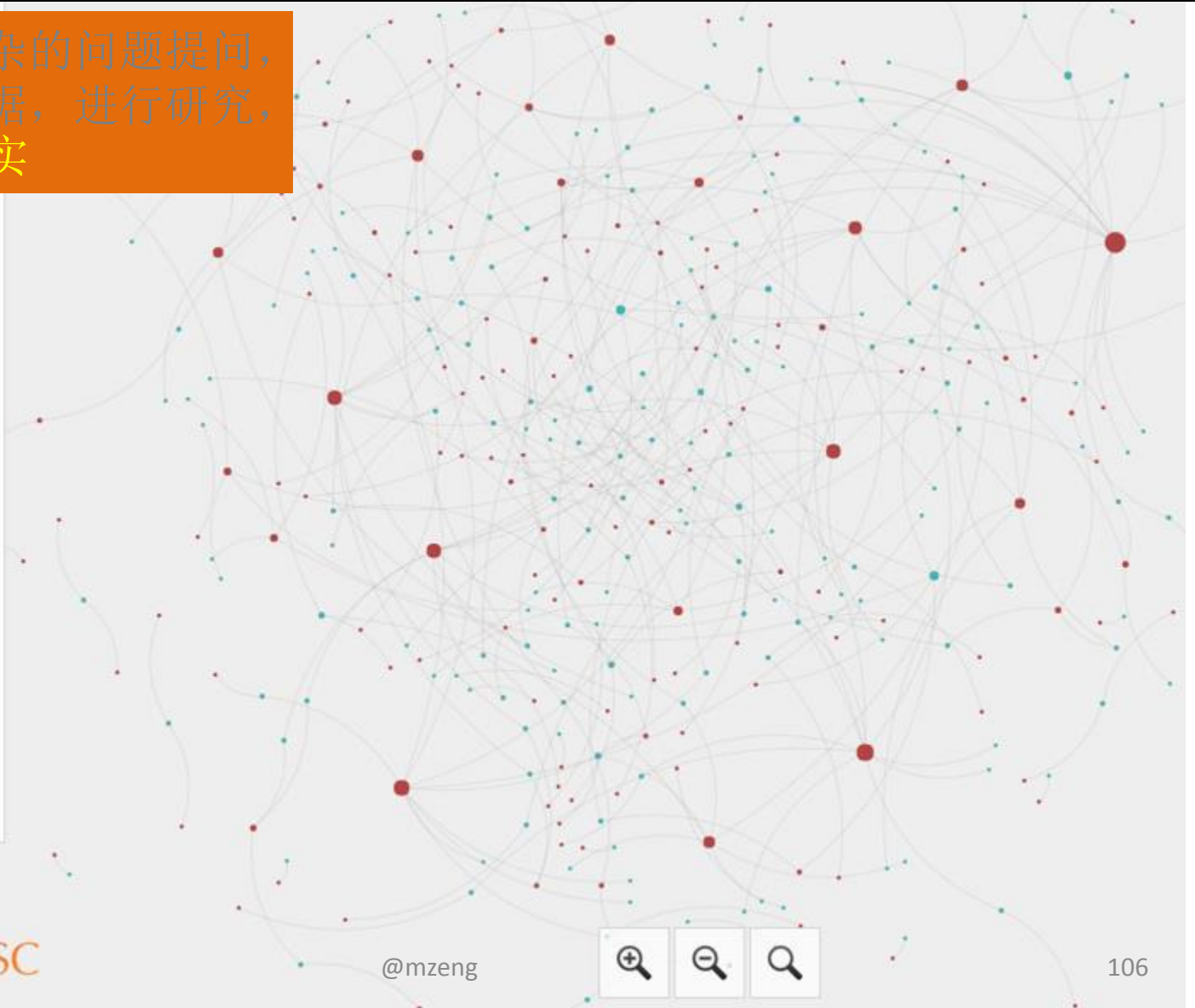
How ?

- 1st step: In SPARQL endpoint at vocab.getty.edu, use a query like this [example](#) and download json.
- 2nd step: insert the json file in OpenRefine and extract data (nationality, date, etc.) using split function and regex if needed.
- 3rd step: Export csv data with comma-separated value and use [table2net](#) to create a .gexf file (use bipartite Network).
- 4th step: Open .gexf file in [Gephi](#) and play with classemment and partition to adjust edges before using Force atlas 2 as spatialisation.
- 5th step: in the preview, change the settings as you like
- 6th step: After downloading the plugin sigma.js, export your project and put it on a local server to try.

This example is based on requests by Vladimir Alexiev, available on the Getty's website. Thanks.

Search:

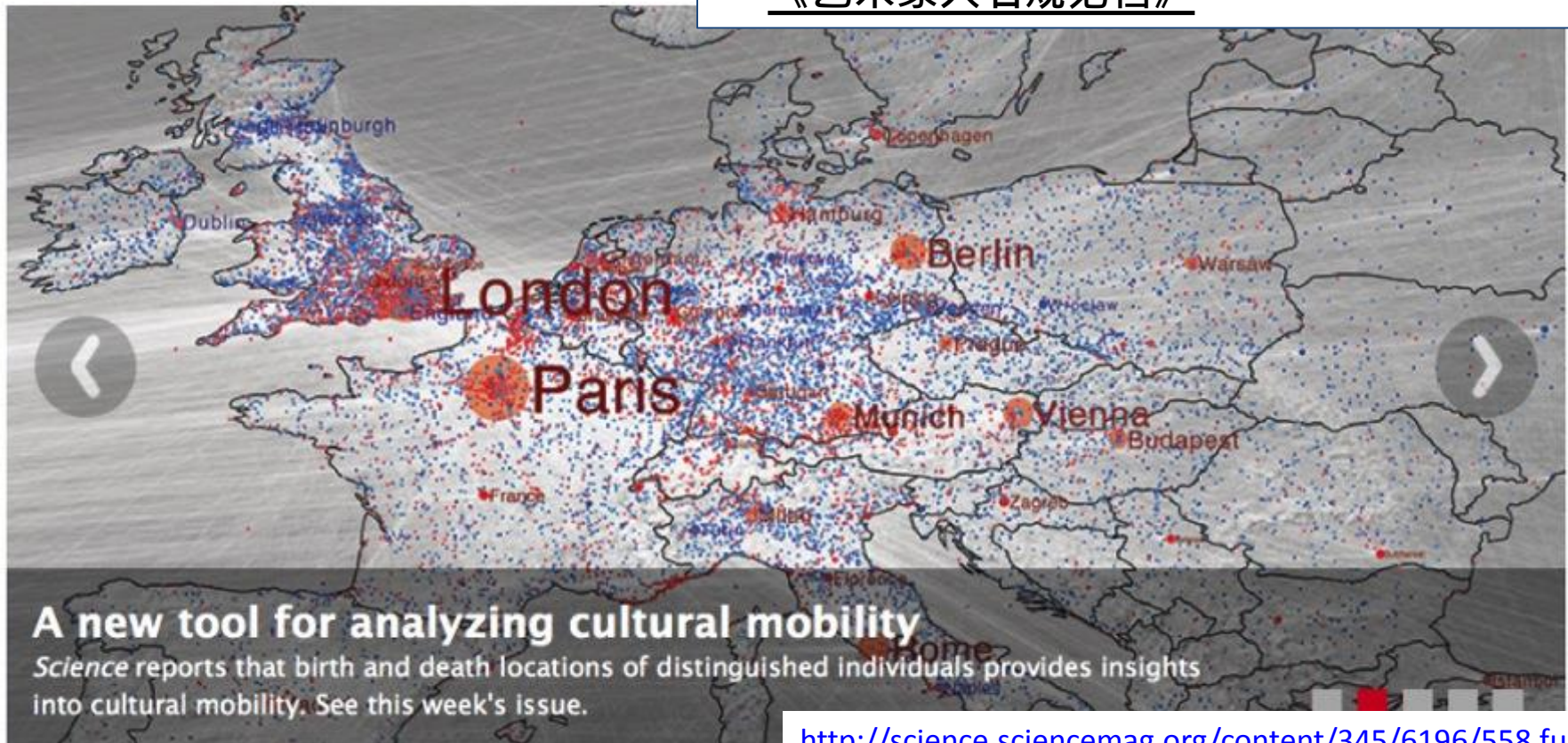
Search by name



采用KOS作数位人文研究 用数据绘制三千年文化史图

其数据来源：

- Freebase (now Wikidata)
- Allgemeines Künstlerlexikon/ Artists of the World,
- Union List of Artist Names (ULAN®)
《艺术家人名规范档》



<http://science.sciencemag.org/content/345/6196/558.full>

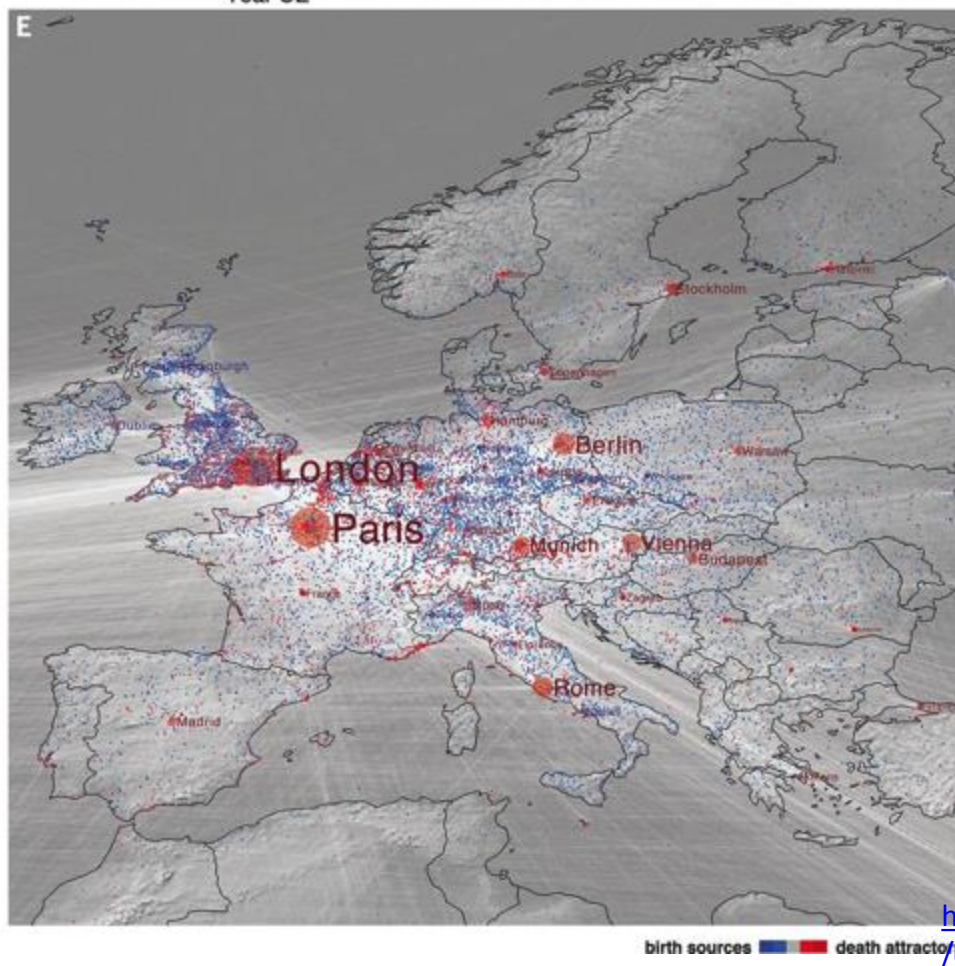
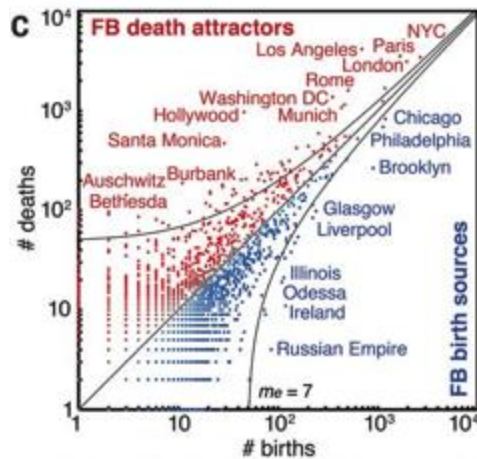
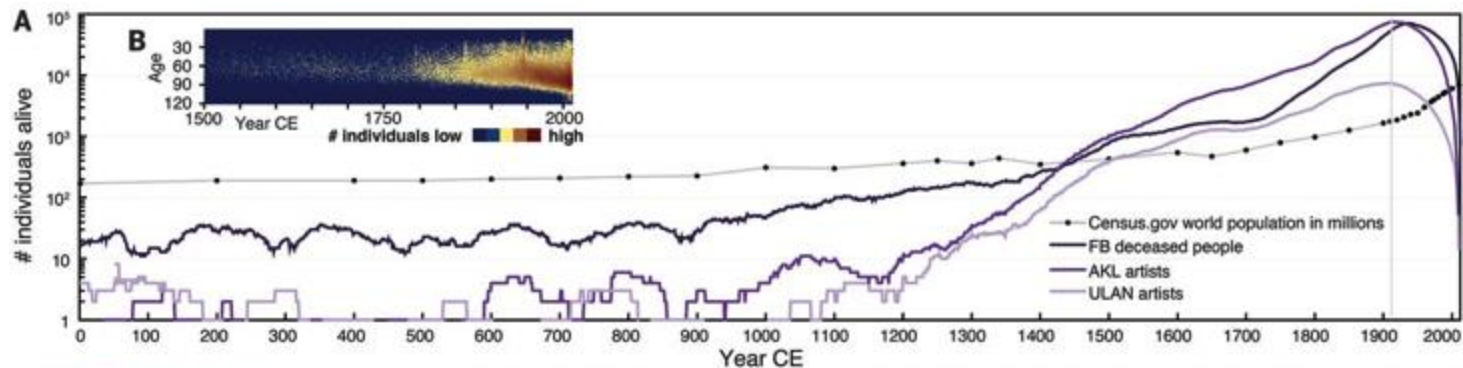


Fig. 1
 Birth and death data of notable individuals reveal interactions between culturally relevant locations over two millennia.

<http://science.sciencemag.org/content/345/6196/558.full>

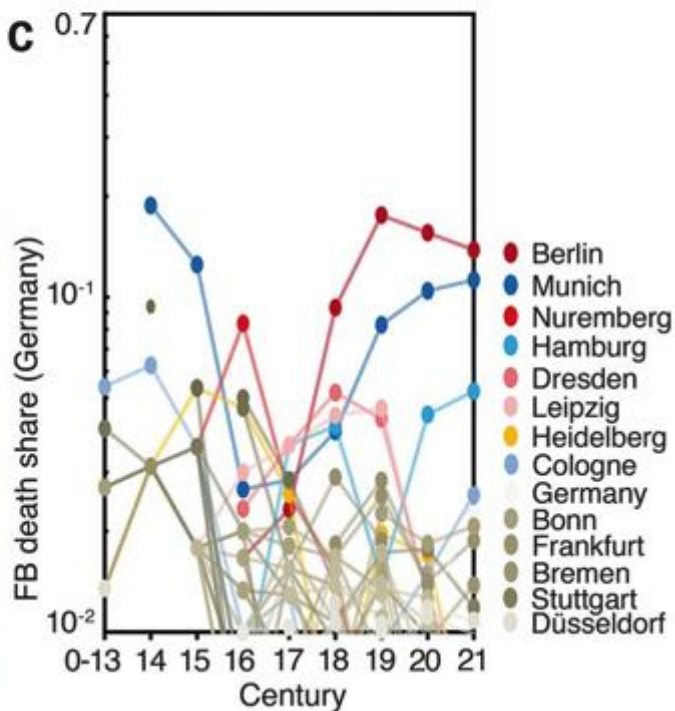
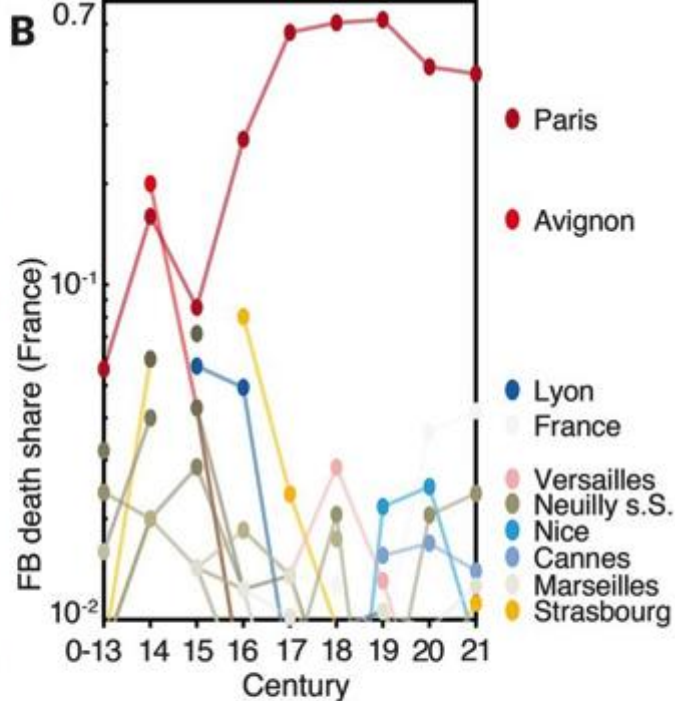
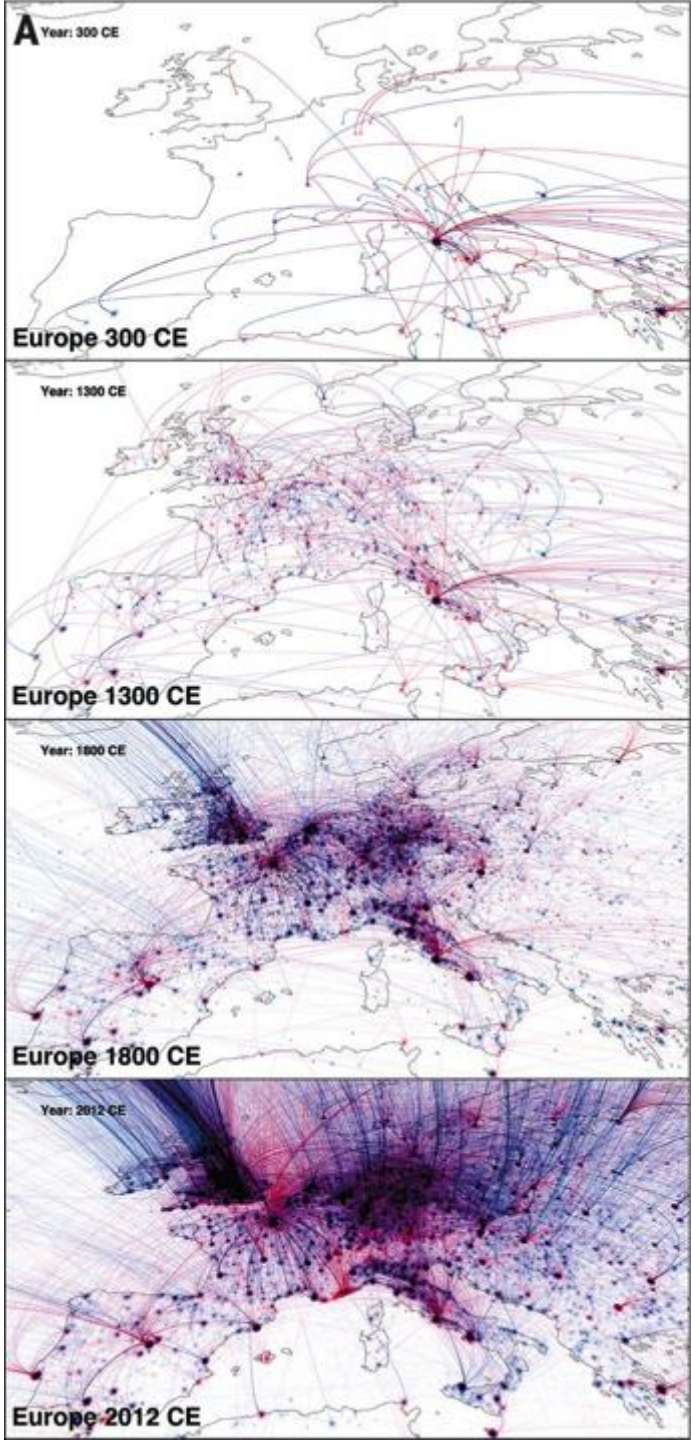
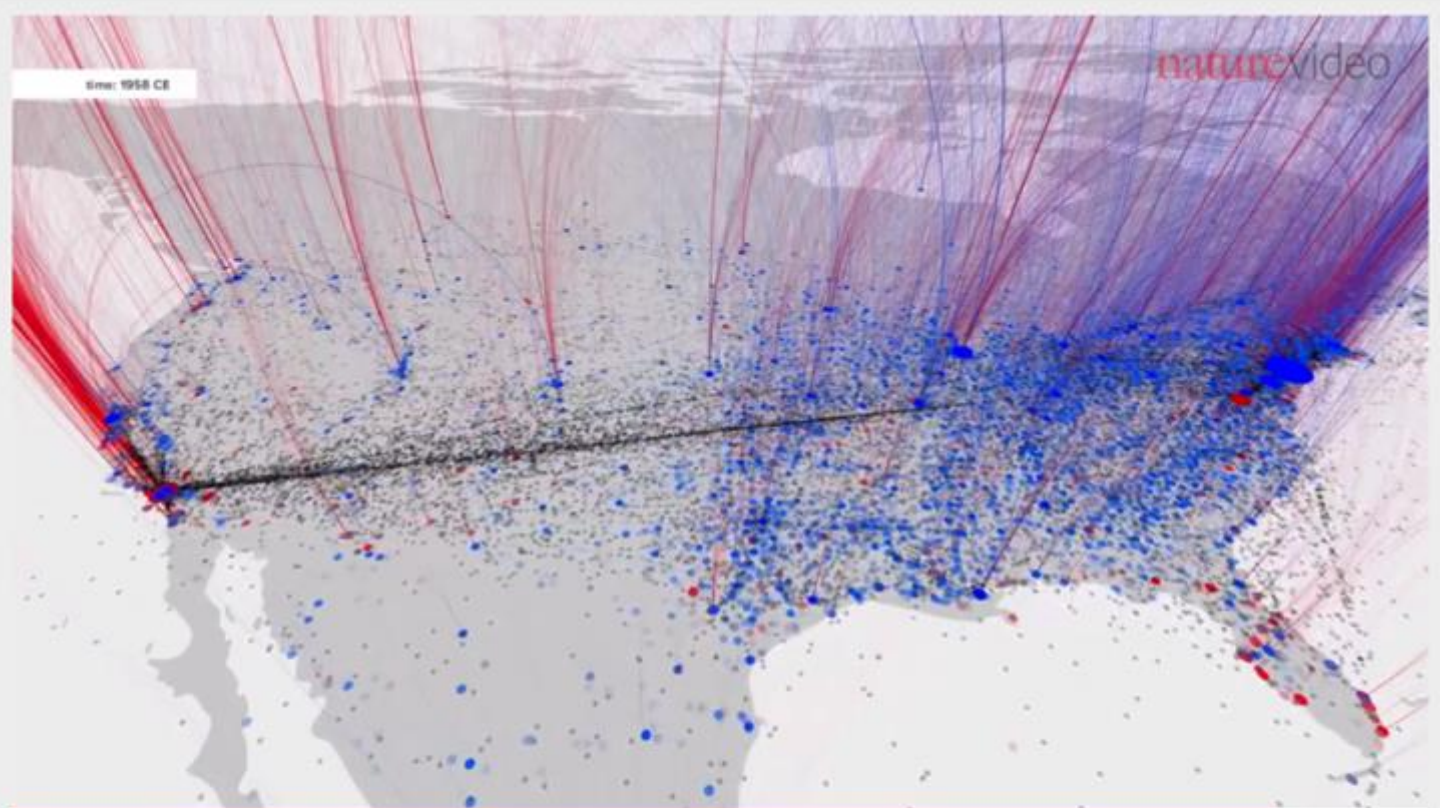


Fig. 3
The visualization of birth-death network dynamics offers a meta-narrative of cultural history.

<http://science.sciencemag.org/content/345/6196/558.full>



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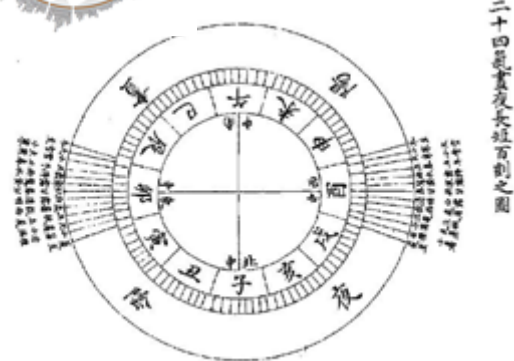
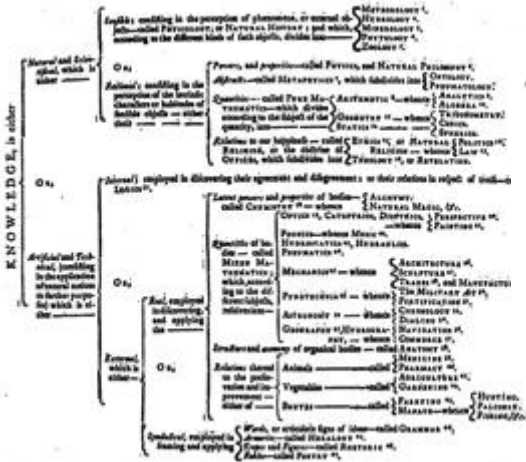
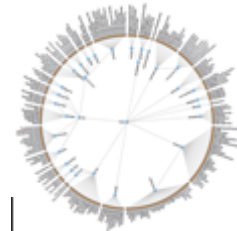
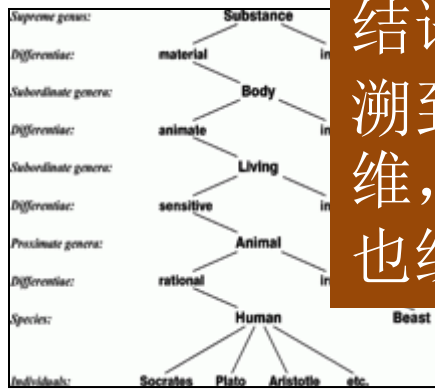
Published on Jul 31, 2014

<https://www.youtube.com/watch?v=4gIhRkCcD4U>

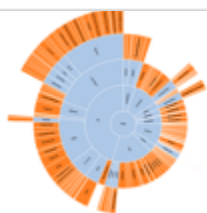
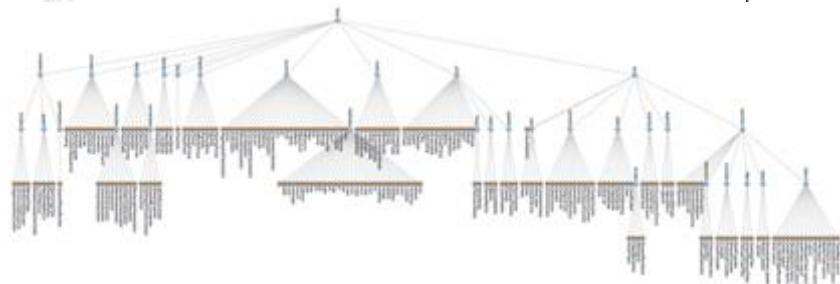
@mzeng



结语：1. 当今KOS的基本方式都可以追溯到古代对知识的组织方式和逻辑思维，甚至连计算机de各种可视化表现也缘于先人的智慧。

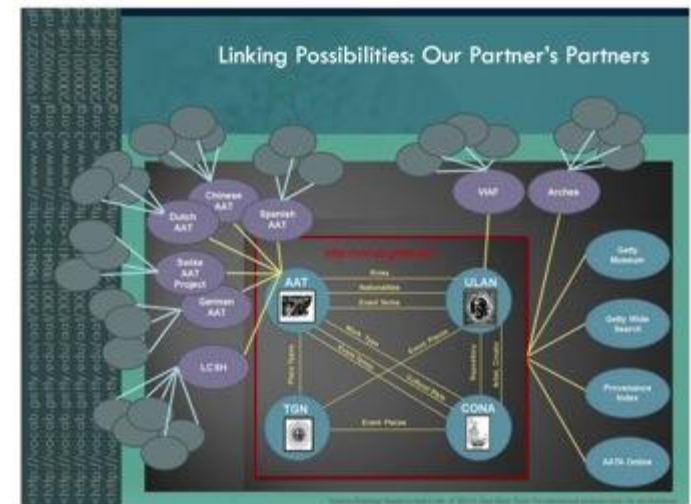
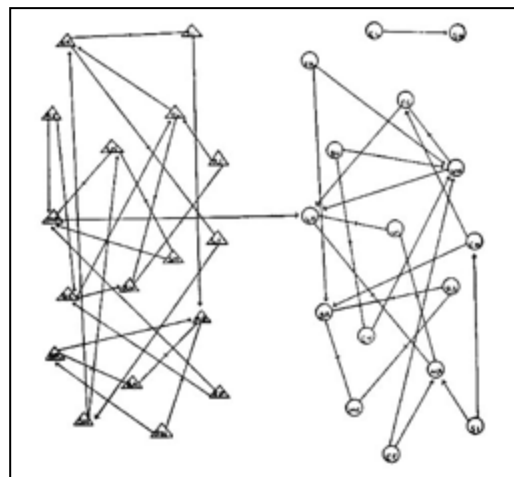
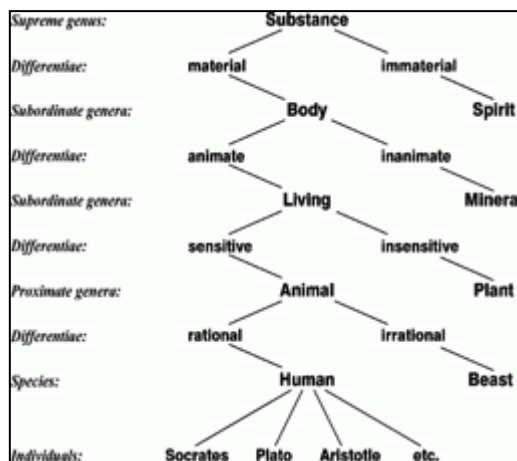


二十四氣晝夜長短百刻之圖



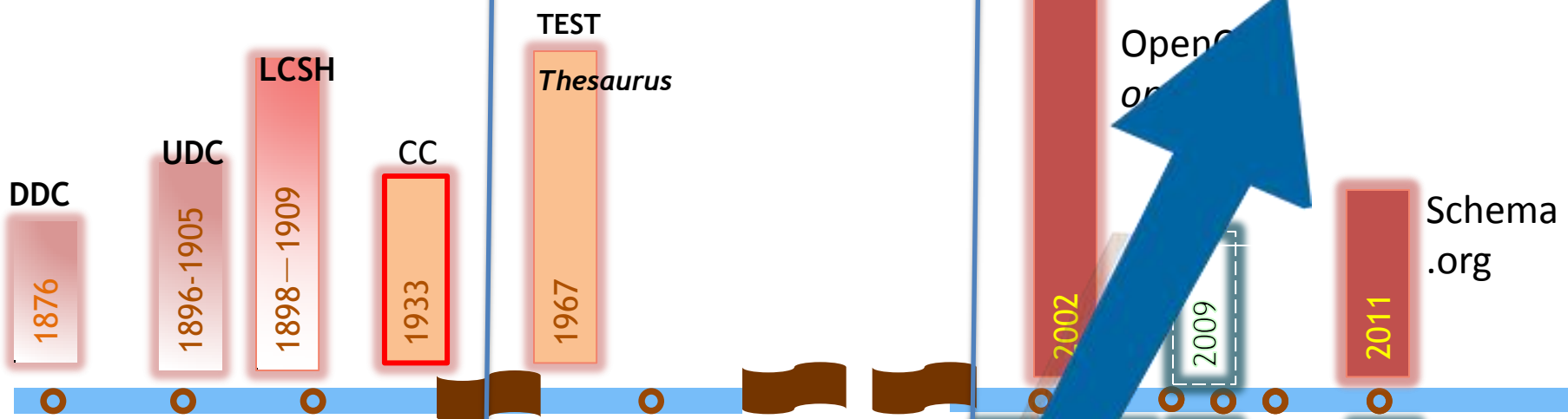
结语： 2. KOS及应用的主流动向

- 从树(tree)到网(network)
- 从规范控制(authority control)到概念模型建设(conceptual modeling)
- 从词汇(vocabularies)到知识库(knowledge base)
- 从格式上的转换到功能上的突破



结语：3. KOS应时代需求而发展；当今正处于一个范式转变的阶段

Systems



Standards

我们必须跳出传统的定界，意识到KOS的潜力，探索其功能的突破。



謝謝！

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