



鏈結資料發展與應用

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Outline

- ▶ 語意網概論
- ▶ 鏈結資料定義與原則
- ▶ 鏈結資料發展現況與重要資料集
- ▶ 鏈結資料生命週期
- ▶ 案例一：國家圖書館鏈結資料服務
- ▶ 案例二：電影鏈結資料網
- ▶ 案例三：以鏈結資料豐富館藏查詢系統
- ▶ 結論

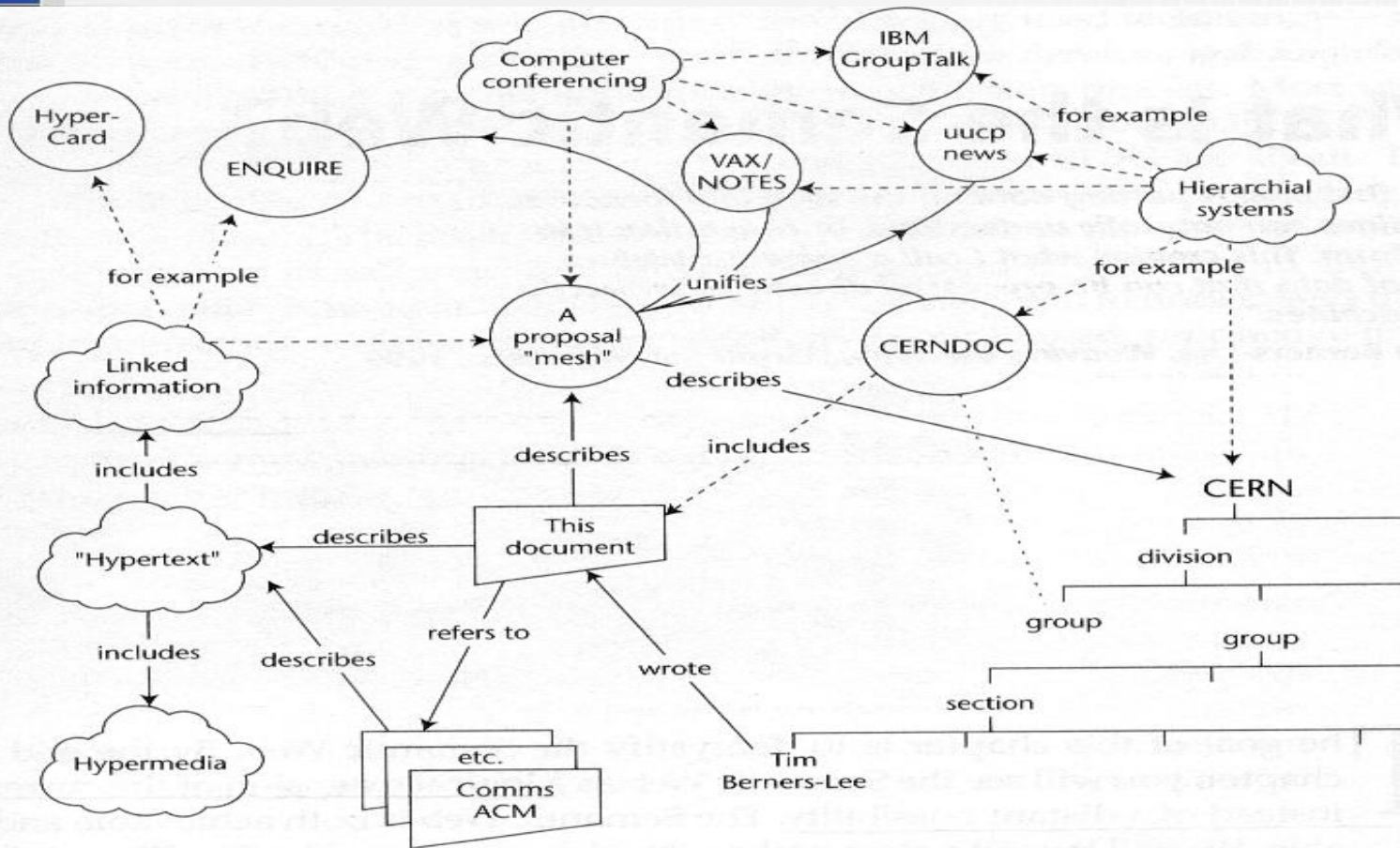


語意網概論

語意網 (Semantic Web)

- ▶ 語意網即是建構一個基礎建設，在這基礎建設下賦予資訊明確的定義，使得電腦能夠理解富含語意的文件和資料，從而促成電腦與人們的協同工作
- ▶ 以電腦能夠理解的方式來描述任何具體或抽象、實體或虛擬事物(thing)的屬性(property)，以及事物間的關聯(relationships)
 - ✿ The Beatles was a popular band from Liverpool.
 - ✿ John Lennon was a member of the Beatles.
- ▶ 鏈結資料是實現語意網的最佳實務

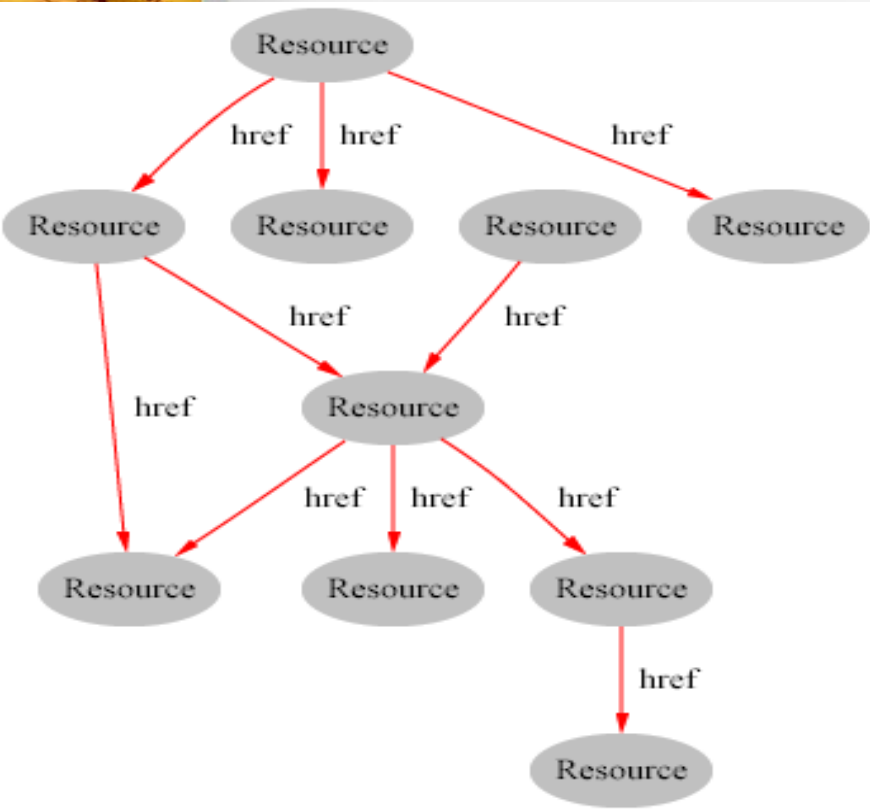
Original Web Proposal to CERN



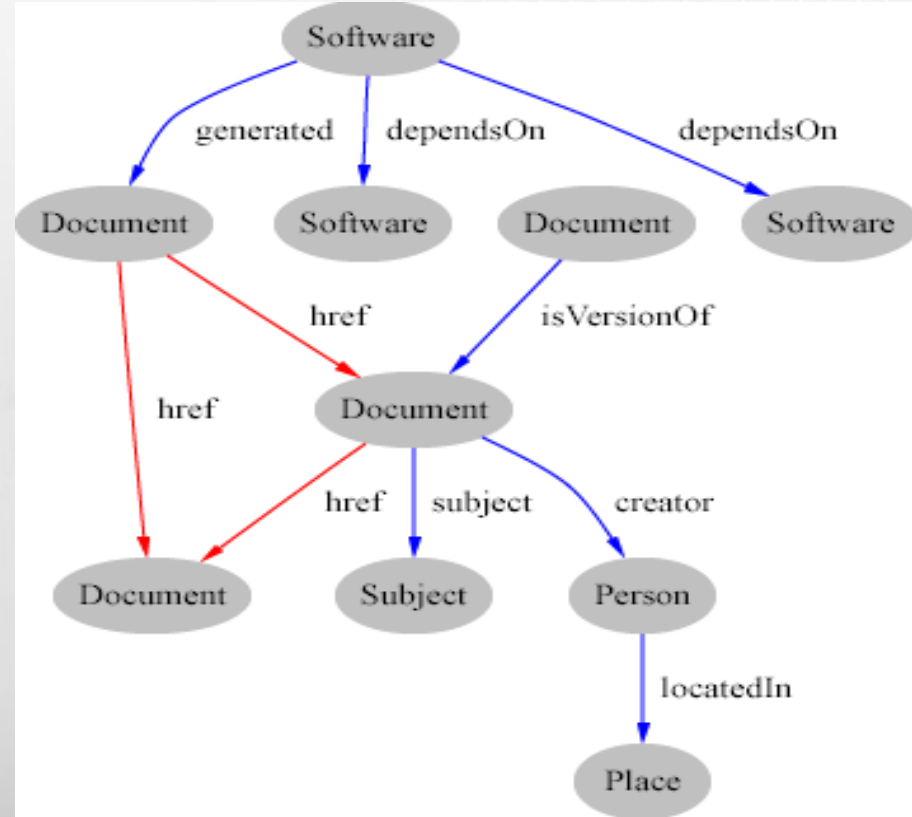
Encompass additional metadata above and beyond what is currently in the Web. This additional metadata is needed for machines to be able to process information on the Web

Web vs. Semantic Web

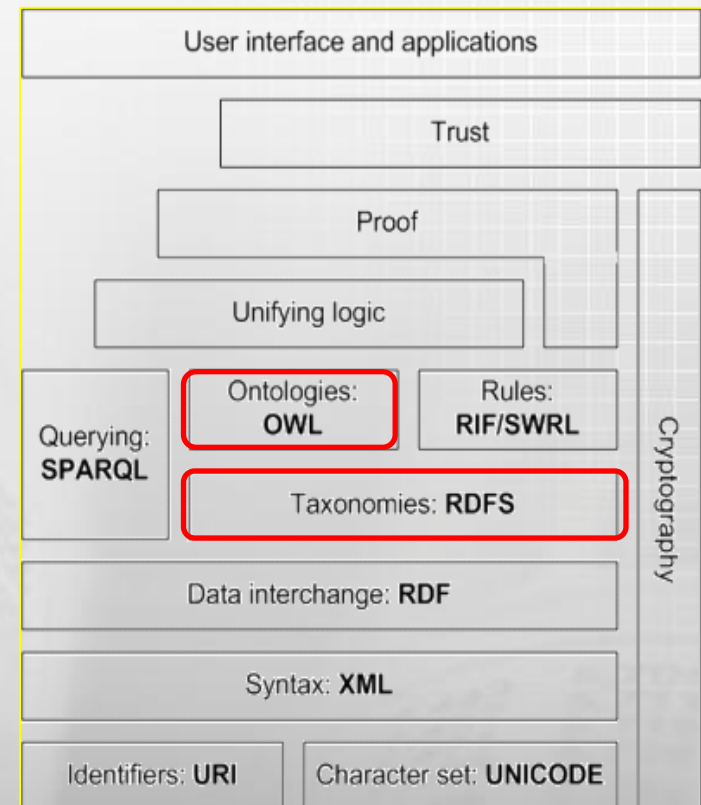
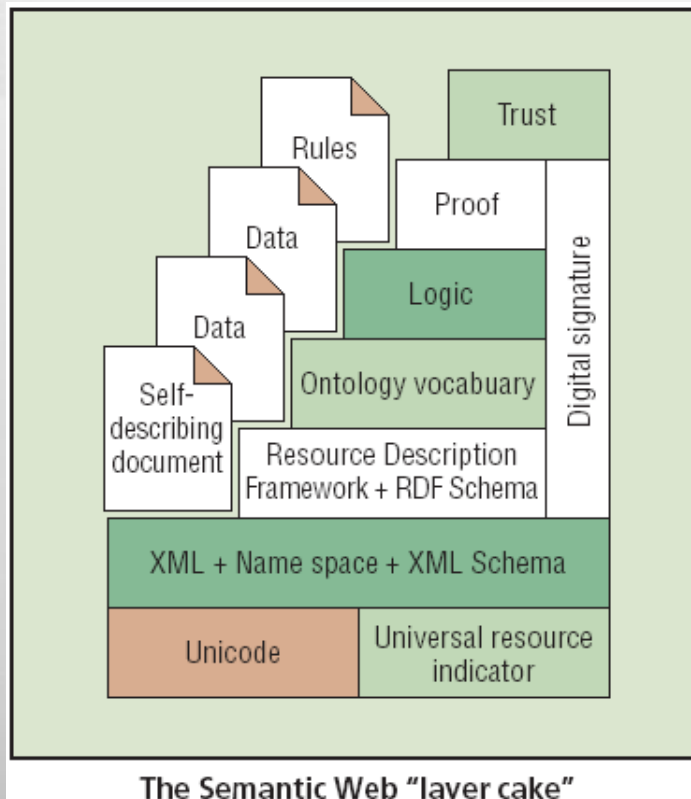
Web



Semantic Web



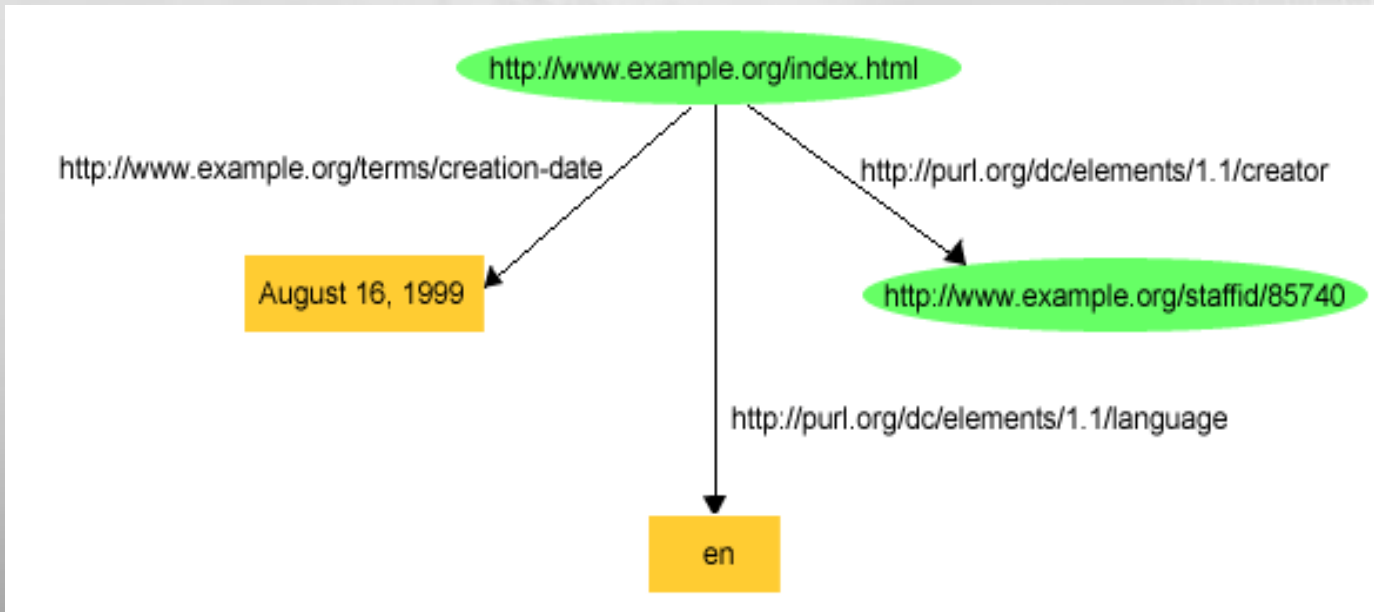
What achieves the Semantic Web?



http://en.wikipedia.org/wiki/Semantic_Web_Stack

Basic RDF Model

- ▶ A model for describing
 - ✿ resources
 - ✿ named properties
 - ✿ property values
- ▶ (resource, property, value)



Triple Notation

▶ Triple Notation of Example

- * `<http://www.example.org/index.html>`
`<http://purl.org/dc/elements/1.1/creator>`
`<http://www.example.org/staffid/85740>` .
- * `<http://www.example.org/index.html>`
`<http://www.example.org/terms/creation-date>` "August 16, 1999" .
- * `<http://www.example.org/index.html>`
`<http://purl.org/dc/elements/1.1/language>` "en" .

▶ Shorthand Triple Notation – Giving prefix (Namespace)

- * `ex:index.html dc:creator exstaff:85740` .
- * `ex:index.html exterms:creation-date` "August 16, 1999" .
- * `ex:index.html dc:language` "en" .

Meta-online Store – Findbook.tw



御手洗潔の問候

作者：島田莊司

編／譯者：郭清華

出版社：皇冠文化

ISBN：9573322897

出版日：2006.12.18

分級：普級

語言：中文

規格：中文平裝

定價：280元

特價：**82折!230元**

用紅利價：**79折!220元** (回饋4點)

運費：**0元** (限到店取貨)

參考庫存量：9本

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虛擬聯合目錄

臺灣大學整合查詢系統 - Microsoft Internet Explorer

檔案(E) 編輯(E) 檢視(V) 我的最愛(A) 工具(T) 說明(H)

← 上一頁 → 搜尋 ★ 我的最愛

網址(D) http://metacat.ntu.edu.tw/metacat/app 移至 連結 »

Y! 搜尋 登入 網頁翻譯 信箱 知識+ 拍賣 交友 購物 股市 新聞 家族 服務

 **Met@Cat**
國立台灣大學圖書館整合查詢館藏服務

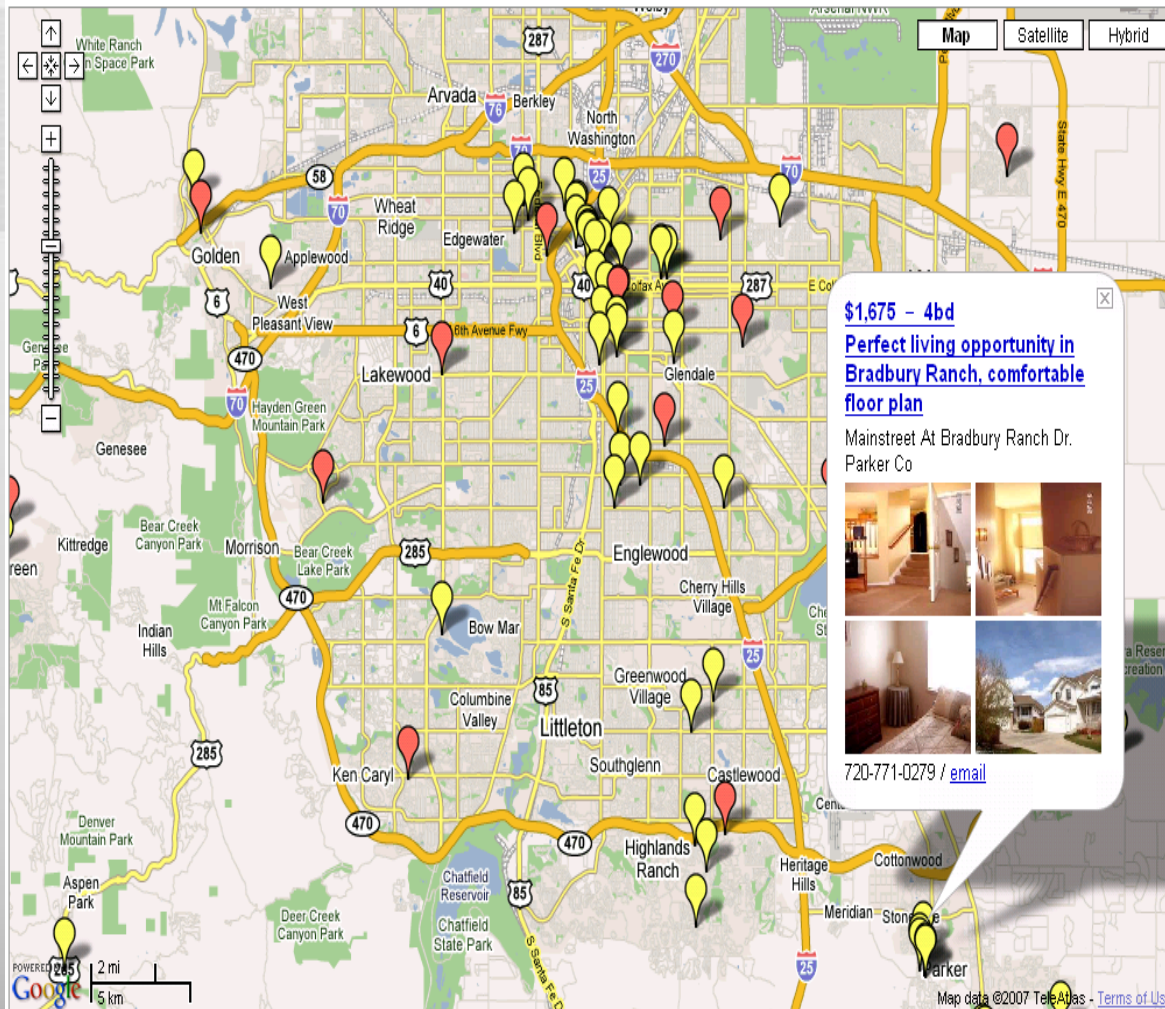
書名/期刊名 作者 標題 ISBN ISSN 關鍵字

天龍八部 查詢

目前查詢範圍：主要圖書館(三十萬冊以上)

[檢查圖書館列表](#) [更改設定](#)

Housingmaps.com -- Mashup



pics	price	bd	description	city	date
	\$1595	3bd	W/Loft New Appliances 1700+Sq Ft Remodeled Mtn Views	Highlands Rr	5/27
	\$1600	3bd	Near Dtc, Great Home/Neighborhood, 1900 Sft of Living Space	Aurora	5/27
	\$1675	4bd	Perfect living opportunity in Bradbury Ranch, comfortable floor plan	Parker	5/27
	\$1500	3bd	3BR/2BA House Avail. 6/16 Must See!	Boulder	5/26
	\$1800	2bd	Denver Dry Lofts - Live in the heart of Downtown!	Denver	5/26
	\$1850	4bd	House for Rent, Great condition, great area, July 1	Denver	5/26
	\$1500	2bd	Total Remodel in Wash Park, 2BR, 2BA, Gorgeous!	Denver	5/26
	\$1750	3bd	North Evergreen Townhome/2 Car attached garage	Evergreen	5/26
	\$1650	3bd	Comfortable Ranch House, Martin Acres, Air Conditioned	Boulder	5/26
	\$1695	4bd	Rock Creek home on Open Space	Superior	5/26
	\$1875		Heart of Cherry Creek	Denver	5/26
	\$1899	5bd	5 BR/ 3 BA mountain home	Evergreen	5/26
	\$1675	3bd	Prestigious private residence in very conv. loc. Bad credit Ok.	Parker	5/26
	\$1600	5bd	5 Bdrm, 4 Bath, 3 Car Garage, House For Rent	Denver	5/26
	\$2000	3bd	Historic home	Denver	5/26
	\$1500	5bd	Rent To Own Large Arvada Home - 2400 sq.ft.	Arvada	5/26
	\$1800	4bd	Du / Harvard Park Live On Park Perfect Location	Denver	5/26
	\$1675	1bd	New Listing >Downtown Condo< Brand New w/Fitness Center, Doorman.	Denver	5/26
			4br - Large S Boulder House		



鏈結資料定義與原則

<http://linkedatabook.com/editions/1.0/#>

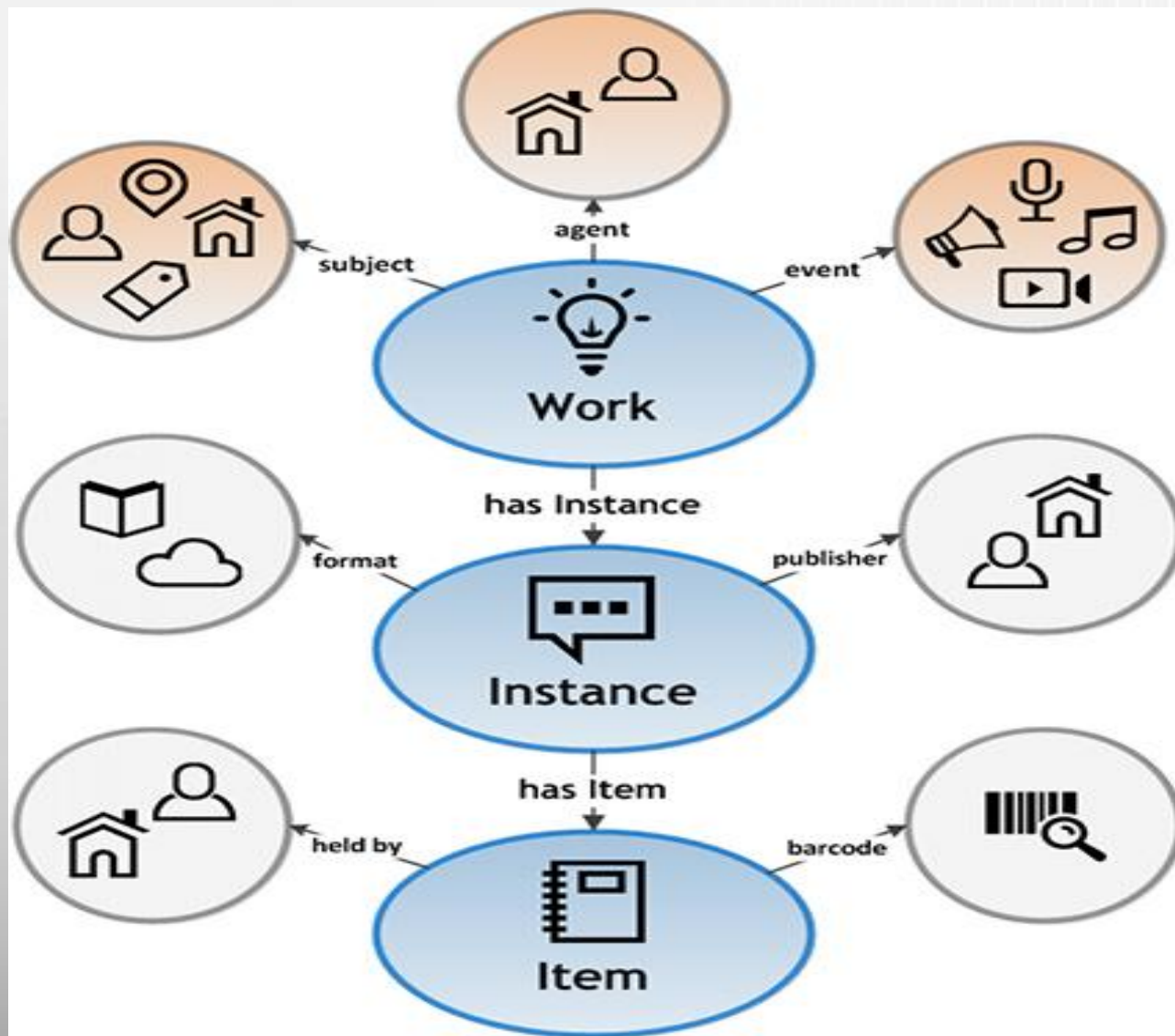
鏈結資料 (Linked Data)

- ▶ 實現語意網的最佳實務
- ▶ 用來將結構化資料發布於Web上，並加以串聯
 - ✿ 支持資源的發現、取用、整合
- ▶ 鏈結資料四原則
 - ✿ 利用URI為資源或事物命名
 - ✿ 以HTTP做為客戶端和伺服器端之間查詢及傳送URI的機制，用以查詢特定URI所代表事物的相關資訊
 - ✿ 伺服器端使用RDF與SPARQL等標準，提供更多的資訊
 - ✿ 對於特定URI所代表事物的相關資訊中，應包含與其他相關事物的連結(連結到該事物的URI)，使得事物間得以串連，以達成構築全域資料空間的目標

Five Stars



BIBFRAME Model



Items, Things, Resources

- ▶ To publish data on the Web, the **items in a domain of interest** must first be identified
 - ✿ **Things** whose properties and relationships will be described in the data
 - ✓ Web documents, real-world entities, abstract concepts
 - ✿ **Resource** is used to refer to these *things of interest*, which are, in turn, identified by HTTP URIs

Naming Things with URIs

<http://biglynx.co.uk/people/matt-briggs> ————— <http://biglynx.co.uk/people/scott-miller>

<http://xmlns.com/foaf/0.1/knows>

<http://biglynx.co.uk/people/linda-meyer>



Description of <http://biglynx.co.uk/people/matt-briggs>

<http://biglynx.co.uk/people/matt-briggs>

http://xmlns.com/foaf/0.1/topic_interest

http://dbpedia.org/resource/Wildlife_photography

<http://biglynx.co.uk/people/matt-briggs>

<http://xmlns.com/foaf/0.1/name>

Matt Briggs

RDF in human-readable format

<http://biglynx.co.uk/people/matt-briggs>

<http://xmlns.com/foaf/0.1/isPrimaryTopicOf>

<http://biglynx.co.uk/people/matt-briggs.rdf>

<http://biglynx.co.uk/people/matt-briggs>

http://xmlns.com/foaf/0.1/based_near

<http://dbpedia.org/resource/Birmingham>

<http://biglynx.co.uk/people/matt-briggs>

http://xmlns.com/foaf/0.1/based_near

<http://sws.geonames.org/3333125/>

<http://biglynx.co.uk/people/matt-briggs>

<http://www.w3.org/1999/02/22-rdf-syntax-ns#type>

<http://biglynx.co.uk/vocab/productions#Director>

<http://biglynx.co.uk/people/matt-briggs>

<http://www.w3.org/1999/02/22-rdf-syntax-ns#type>

<http://xmlns.com/foaf/0.1/Person>

<http://biglynx.co.uk/people/matt-briggs>

<http://purl.org/vocab/relationship/employedBy>

<http://biglynx.co.uk/people/dave-smith>

<http://biglynx.co.uk/people/matt-briggs>

<http://biglynx.co.uk/vocab/productions#directed>

<http://biglynx.co.uk/productions/pacific-sharks>

<http://biglynx.co.uk/people/matt-briggs.rdf>

<http://purl.org/dc/terms/creator>

<http://biglynx.co.uk/people/nelly-jones>

<http://biglynx.co.uk/people/matt-briggs.rdf>

<http://www.w3.org/1999/02/22-rdf-syntax-ns#type>

<http://xmlns.com/foaf/0.1/PersonalProfileDocument>

foaf, dc, skos, productions...: vocabulary
topic_interest, title, directed: vocabulary term

```
<rdf:Description rdf:about="http://biglynx.co.uk/people/matt-briggs">  
  <foaf:topic_interest rdf:resource="http://dbpedia.org/resource/Wildlife_photography"/>  
  <foaf:name> Matt Briggs </foaf:name>  
  <foaf:isPrimaryTopicOf rdf:resource="http://biglynx.co.uk/people/matt-briggs.rdf"/>  
  <foaf:based_near rdf:resource="http://sws.geonames.org/3333125"/>  
  <foaf:based_near rdf:resource="http://dbpedia.org/resource/Birmingham"/>  
  <rdf:type rdf:resource="http://xmlns.com/foaf/0.1/Person"/>  
  <rdf:type rdf:resource="http://biglynx.co.uk/vocab/productions#Director"/>  
  <rel:employedBy rdf:resource="http://biglynx.co.uk/people/dave-smith"/>  
  <productions:directed rdf:resource="http://biglynx.co.uk/productions/pacific-sharks"/>  
</rdf:Description>
```

```
...  
</rdf:RDF>
```

RDF in XML format

Making URIs De-referenceable

▶ De-referenceable

- ✿ HTTP clients can look up the URI using the HTTP protocol and retrieve a description of the resource that is identified by the URI
 - ✓ Resources can be classic HTML documents, real-world objects and abstract concepts

▶ Descriptions of resources are embodied in...

- ✿ HTML: read by humans
- ✿ RDF data: read by machines

▶ HTTP content negotiation

- ✿ Clients send HTTP headers with each request to indicate what kinds of documents they prefer

Providing Useful RDF Information

▶ RDF Data Model

- ✿ Triple: Subject, predicate, object
 - ✓ Two principal types of RDF triples
 - Literal triples
 - RDF links

✿ RDF Graph

▶ RDF Serialization Formats

- ✿ RDF/XML
- ✿ RDFa: embed RDF triples in HTML documents
- ✿ Turtle
- ✿ N-Triples
- ✿ RDF/JSON

Including Links to Other Things


- ▶ Set RDF links pointing into other data sources on the Web
 - ✿ Glue that connects data islands into a global, interconnected data space
 - ✿ Enable applications to discover additional data sources
- ▶ Three types of RDF links
 - ✿ Relationship Links
 - ✿ Identity Links
 - ✿ Vocabulary Links

Relationship Links

- ▶ Point at related things in other data sources
 - ✱ People, places or genes
- ▶ Relationship links enable people to point to background information about the place they live, or to bibliographic data about the publications they have written

About: [哈利·波特与凤凰社](#)

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

《哈利·波特 - 鳳凰會的密令》（Harry Potter and the Order of the Phoenix）是英国作家J.K.罗琳的系列魔幻文学作品“哈利·波特”的第五集。英文原版2003年6月21日在英国出版。 

Property	Value
dbo:abstract	<ul style="list-style-type: none"> Harry Potter and the Order of the Phoenix is a fantasy novel written by British author J. K. Rowling and the fifth novel in the Harry Potter series. It follows Harry Potter's struggles through his fifth year at Hogwarts School of Witchcraft and Wizardry, including the surreptitious return of the antagonist Lord Voldemort, O.W.L. exams, and an obstructive Ministry of Magic. The novel was published on 21 June 2003 by Bloomsbury in the United Kingdom, Scholastic in the United States, and Raincoast in Canada. It sold five million copies in the first 24 hours of publication. It is the longest book of the series. Harry Potter and the Order of the Phoenix won several awards, including the American Library Association Best Book Award for Young Adults in 2003. The book was also made into a 2007 film, and a video game by Electronic Arts. (en) 《哈利·波特 - 鳳凰會的密令》（Harry Potter and the Order of the Phoenix）是英国作家J.K.罗琳的系列魔幻文学作品“哈利·波特”的第五集。英文原版2003年6月21日在英国出版。 (zh)
dbo:author	<ul style="list-style-type: none"> dbr:J. K. Rowling
dbo:isbn	<ul style="list-style-type: none"> 0-7475-5100-6
dbo:literaryGenre	<ul style="list-style-type: none"> dbr:Fantasy literature
dbo:numberOfPages	<ul style="list-style-type: none"> 766 (xsd:positiveInteger)
dbo:previousWork	<ul style="list-style-type: none"> dbr:Harry Potter and the Goblet of Fire
dbo:publicationDate	<ul style="list-style-type: none"> 2003-06-27 (xsd:date)
dbo:publisher	<ul style="list-style-type: none"> dbr:Bloomsbury Publishing
dbo:series	<ul style="list-style-type: none"> dbr:Harry Potter
dbo:subsequentWork	<ul style="list-style-type: none"> dbr:Harry Potter and the Half-Blood Prince
dbo:thumbnail	<ul style="list-style-type: none"> wiki-commons:Special:FilePath/Harry Potter and the Order of the Phoenix.jpg?width=300

https://dbpedia.org/page/Harry_Potter_and_the_Order_of_the_Phoenix

Identity Links

- ▶ Point at URI **aliases** used by other data sources to identify the same real-world object or abstract concept
- ▶ Enable clients to retrieve further descriptions about an entity from other data sources
- ▶ Identity links have an important social function as they enable different views of the world to be expressed on the Web of Data
- ▶ Multiple URIs identifying the same entity
 - ✱ <http://www.w3.org/2002/07/owl#sameAs>
- ▶ Quality Control

Identity Links (Cont.)

[owl:sameAs](#)

- [freebase:哈利·波特与凤凰社](#)
- <http://d-nb.info/gnd/4815810-0>
- <http://musicbrainz.org/work/5074b67a-543d-4a65-a984-19a483653e9e>
- <http://musicbrainz.org/work/6d6692af-91e2-423f-b05e-301c9fb73628>
- [wikidata:哈利·波特与凤凰社](#)
- <http://viaf.org/viaf/270596747>
- [dbpedia-ar:哈利·波特与凤凰社](#)
- [dbpedia-az:哈利·波特与凤凰社](#)
- [dbpedia-be:哈利·波特与凤凰社](#)
- [dbpedia-bg:哈利·波特与凤凰社](#)
- <http://bn.dbpedia.org/resource/হ্যারি পটার অ্যান্ড দি অর্ডার অব দ্য ফিনিক্স>
- http://bs.dbpedia.org/resource/Harry_Potter_i_Red_feniksa
- [dbpedia-ca:哈利·波特与凤凰社](#)
- [dbpedia-cs:哈利·波特与凤凰社](#)
- [dbpedia-da:哈利·波特与凤凰社](#)
- [dbpedia-de:哈利·波特与凤凰社](#)
- [dbpedia-el:哈利·波特与凤凰社](#)
- [dbpedia-eo:哈利·波特与凤凰社](#)
- [dbpedia-es:哈利·波特与凤凰社](#)
- [dbpedia-et:哈利·波特与凤凰社](#)
- [dbpedia-eu:哈利·波特与凤凰社](#)
- [dbpedia-fa:哈利·波特与凤凰社](#)
- [dbpedia-fi:哈利·波特与凤凰社](#)
- [dbpedia-fr:哈利·波特与凤凰社](#)
- [dbpedia-fy:哈利·波特与凤凰社](#)
- [dbpedia-ga:哈利·波特与凤凰社](#)

Vocabulary Links

- ▶ Point from data to the definitions of the **vocabulary terms** that are used to represent the data, as well as from these definitions to the definitions of **related terms in other vocabularies**
- ▶ Vocabulary links make data self-descriptive and enable Linked Data applications to understand and integrate data across vocabularies
- ▶ Mixture of distinct terms from different RDF vocabularies that are used by a data source to publish data on the Web

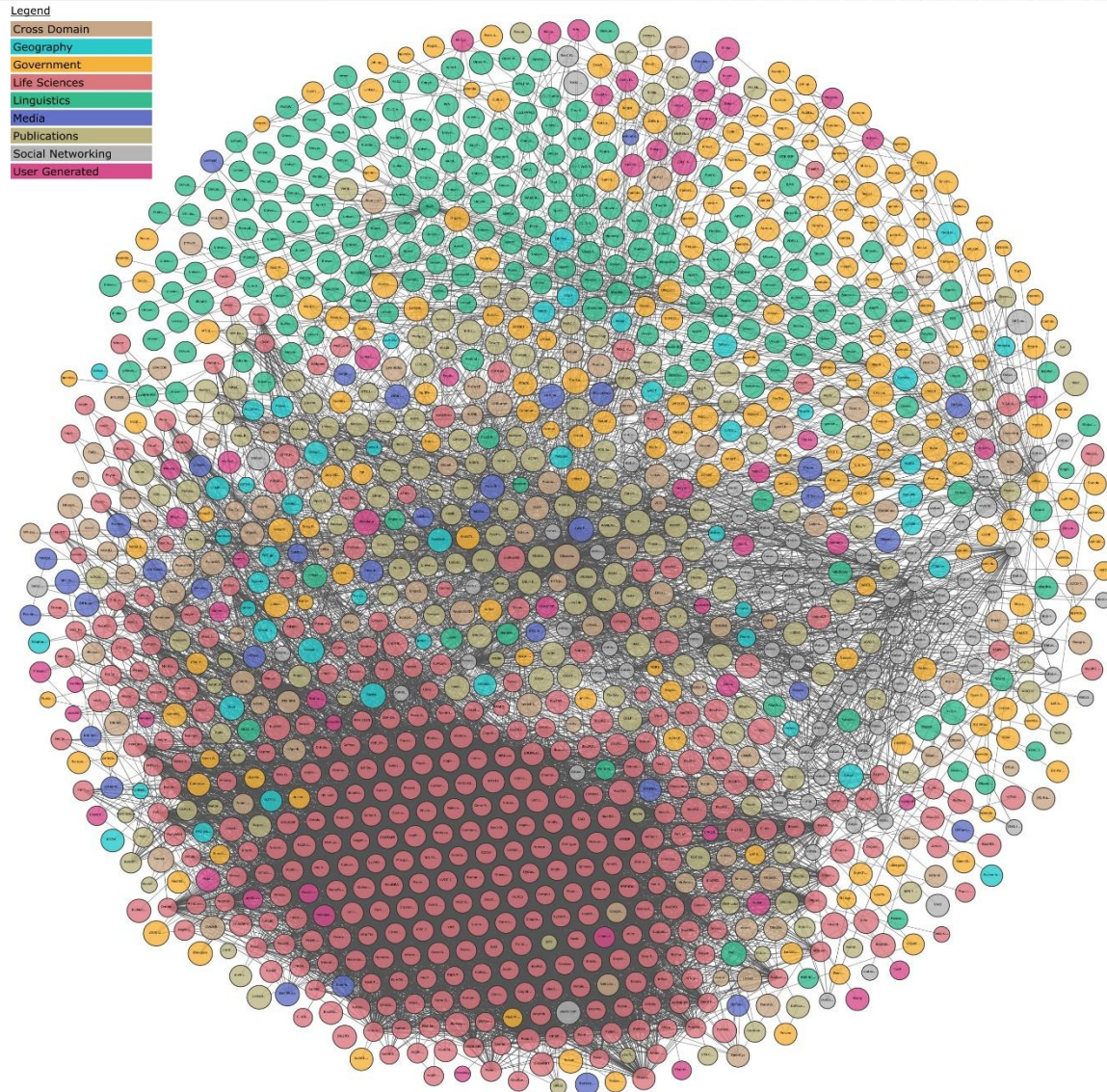
Vocabulary Links (Cont.)

dbp:author	<ul style="list-style-type: none">• dbr:J. K. Rowling
dbp:caption	<ul style="list-style-type: none">• Cover art of the original UK edition (en)
dbp:country	<ul style="list-style-type: none">• United Kingdom (en)
dbp:followedBy	<ul style="list-style-type: none">• dbr:Harry Potter and the Half-Blood Prince
dbp:genre	<ul style="list-style-type: none">• dbr:Fantasy literature
dbp:illustrator	<ul style="list-style-type: none">• Jason Cockcroft (en)
dbp:isbn	<ul style="list-style-type: none">• 0 (xsd:integer)
dbp:language	<ul style="list-style-type: none">• English (en)
dbp:name	<ul style="list-style-type: none">• Harry Potter and the Order of the Phoenix (en)
dbp:pages	<ul style="list-style-type: none">• 766 (xsd:integer)
dbp:precededBy	<ul style="list-style-type: none">• dbr:Harry Potter and the Goblet of Fire
dbp:pubDate	<ul style="list-style-type: none">• 2003-06-27 (xsd:date)
dbp:publisher	<ul style="list-style-type: none">• dbr:Bloomsbury Publishing
dbp:releaseNumber	<ul style="list-style-type: none">• in series (en)
dbp:series	<ul style="list-style-type: none">• Harry Potter (en)



鏈結資料發展現況與重要資料集

LOD Data Cloud (2022/07)



Cross-Domain & Geographic Data

▶ *DBpedia*

- ✿ A data set automatically extracted from publicly available Wikipedia dumps.

- ✿ <http://en.wikipedia.org/wiki/Birmingham> →
<http://dbpedia.org/resource/Birmingham>

▶ *Freebase, UMBEL, YAGO, and OpenCyc*

▶ *Geonames*

- ✿ An open-license geographical database that publishes Linked Data about 8 million locations

Media Data

▶ British Broadcasting Corporation (BBC)

✿ <http://www.bbc.co.uk/programmes>

✿ <http://www.bbc.co.uk/music>

✿ <http://bbc.openlinksw.com/>

▶ New York Times

✿ <http://data.nytimes.com/>

▶ Thomas Reuters: *Calais*

✿ <http://www.opencalais.com/>

Wang, Chien-Ming

<http://data.nytimes.com/N49334626954019256963>

[About This Page](#)

nyt:associated_article_count	64
nyt:first_use	2005-05-18
nyt:latest_use	2009-12-13
nyt:number_of_variants	1
nyt:search_api_query	http://api.nytimes.com/svc/search/v1/article?query=+nytd_per_facet%3A%5BWang%2C+Chien-Ming%5D&rank=newest&fields=abstract,author,body,byline,classifiers_facet,column_facet,date,day_of_week_facet,des_facet,desk_facet,fee,geo_facet,lead_paragraph,material_type_facet,multimedia,nytd_byline,nytd_des_facet,nytd_geo_facet,nytd_lead_paragraph,nytd_org_facet,nytd_per_facet,nytd_section_facet,nytd_title,nytd_works_mentioned_facet,org_facet,page_facet,per_facet,publication_day,publication_month,publication_year,section_page_facet,small_image_height,small_image_url,small_image_width,source_facet,title,url,word_count,works_mentioned_facet
nyt:topicPage	http://topics.nytimes.com/top/reference/timestopics/people/w/chienming_wang/index.html
owl:sameAs	http://data.nytimes.com/wang_chien_ming_per
owl:sameAs	http://dbpedia.org/resource/Chien-Ming_Wang
owl:sameAs	http://rdf.freebase.com/ns/en.chien-ming_wang
rdf:type	http://www.w3.org/2004/02/skos/core#Concept
skos:definition - en	<p>Chien-Ming Wang joined the Yankees with a total lack of fanfare in 2005, but by this year had become manager Joe Girardi's choice to pitch on Opening Day, a spot traditionally reserved for the ace of the staff.</p> <p>Wang's pitching and personal styles are equally removed from those of previous Yankees aces, like Roger Clemens (Wang's boyhood idol) . On the mound, Wang shows as much emotion as someone taking a nap. Instead of strikeouts, he produces grounders almost as steadily as a coach tapping them to infielders.</p>
skos:inScheme	http://data.nytimes.com/elements/nytd_per
skos:prefLabel - en	Wang, Chien-Ming

<http://data.nytimes.com/N49334626954019256963.rdf>

cc:attributionName	The New York Times Company
cc:attributionURL	http://data.nytimes.com/N49334626954019256963

Libraries and Education

▶ VIAF

✿ <http://viaf.org/>

▶ American LC (Subject Heading)

✿ <http://id.loc.gov/authorities/subjects/sh85042531>

▶ OpenLibrary

✿ <http://openlibrary.org/>

▶ DBLP

✿ <http://www.informatik.uni-trier.de/~ley/db/>

▶ Talis Aspire

✿ <http://www.talisaspire.com/>

VIAF

Uniform Title Links (147)

Preferred Forms

- 100 1_ \$a Rowling, J. K. \$d 1965-
- 100 1_ \$a Rowling, Joanne K. \$d 1
- 100 1_ \$a Rowling, J. K. \$d 1965-

WORKS:

- Casual vacancy.
 - EXPRESSIONS (3)
- Harry Potter
 - Harry Potter and the chamber of secrets

```
<rdaGr2:dateOfBirth>1965-07-31</rdaGr2:dateOfBirth>  
<owl:sameAs rdf:resource="http://d-nb.info/gnd/122340469"/>  
<owl:sameAs rdf:resource="http://libris.kb.se/resource/auth/88158"/>  
<owl:sameAs rdf:resource="http://www.idref.fr/050222937/id"/>  
<owl:sameAs rdf:resource="http://data.bnf.fr/ark:/12148/cb135200136#foaf:Person"/>  
<owl:sameAs rdf:resource="http://dbpedia.org/resource/J._K._Rowling"/>
```

```
</rdf:Description>
```

```
<!--
```

Controlled and alternate headings from various authority files

```
-->
```

```
<skos:Concept rdf:about="http://viaf.org/viaf/sourceID/NDL%7C00765052#skos:Concept">  
<skos:inScheme rdf:resource="http://viaf.org/authorityScheme/NDL"/>  
<skos:prefLabel>Rowling, J. K., 1965-</skos:prefLabel>  
<skos:altLabel>Rowling, Joanne Kathleen</skos:altLabel>  
<skos:altLabel>ローリング, J. K</skos:altLabel>  
<foaf:focus rdf:resource="http://viaf.org/viaf/116796842"/>  
</skos:Concept>
```

- 100 1_ \$a Rowling, J. K.
- 100 1_ \$a Rowling, Joanne K
- 100 1_ \$a رولينج, ج. ك. \$d 1965-
- 100 1_ \$a Rowling, J.K. \$q (Joanne

EXPRESSIONS (17)

- Harry Potter and the philosopher's stone
- EXPRESSIONS (24)
- Harry Potter and the prisoner of Azkaban
- EXPRESSIONS (22)
- Harry Potter series
- Serie Harry Potter



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AUTHORS

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Only show eBooks



And Then There Were None by Agatha Christie

38 editions (3 eBooks) - first published in 1940



And Then There Were None by Agatha Christie

2 editions - first published in 2001



And Then There Were None by G.D. Hinton

1 edition - first published in 2000



And Then There Were None by Jonathon Clemmer

1 edition - first published in 2004



And then there were none by Channa Horwitz

1 edition - first published in 1978



And then there were none: a history of the Le Cadre family in the West Indies by Anthony De Verteuil

1 edition - first published in 1992

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EBOOK?

yes 24

no 77

AUTHOR

[Agatha Christie](#) 15

[Colleen McCullough](#) 3

[Walter Moyle](#) 2

[Anthony De Verteuil](#) 2

[Ronald E. Wade](#) 1

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SUBJECTS

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[Protected DAISY](#) 13

[In library](#) 12

[History](#) 9

[Fiction](#) 8

data.bnf.fr

(BnF) Bibliothèque nationale de France

rechercher dans data.bnf.fr

français

deutsch

About data.bnf.fr

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This page in the data.bnf.fr Labs

data.bnf.fr

Reference information about authors, works and topics.

Welcome to data.bnf.fr.

La Bibliothèque nationale de France vous guide dans ses ressources en regroupant sur une même page toutes les informations issues de ses différents catalogues, ainsi que de sa bibliothèque numérique Gallica.

Le projet utilise les outils du [Web sémantique](#) et s'inscrit dans une démarche d'[ouverture des données](#). data.bnf.fr et Gallica ont reçu le [Stanford Prize for Innovation in Research Libraries \(SPIRL\)](#), et data.bnf.fr est lauréat du prix [Data intelligence awards](#).

LISTE
DES AUTEURS >>>

LISTE
DES ŒUVRES >>>

LISTE
DES THÈMES >>>

Most popular authors

Victor Hugo (1802-1885)

Guillaume Apollinaire (1880-1918)

Marie de Rabutin-Chantal Sévigné (marquise de, 1626-1696)

Alexandre Dumas (1802-1870)

Boris Vian (1920-1959)

Christine de Pisan (1363?-1431?)

Pierre de Saint-Cloud

Francis Poulenc (1899-1963)

Alexandre-Jean-Baptiste Parent-Duchâtelet (1790-1836)

Théophile Gautier (1811-1872)

Most popular works

Les trois mousquetaires

Les misérables

Traité de la police

Fables

Tableaux de la nature

Mille et une nuits

Critique de la faculté de juger

Économie et société

Études philosophiques

Le monde s'effondre

Born today (09-03-1910)



Samuel
Barber
(1910-1981)



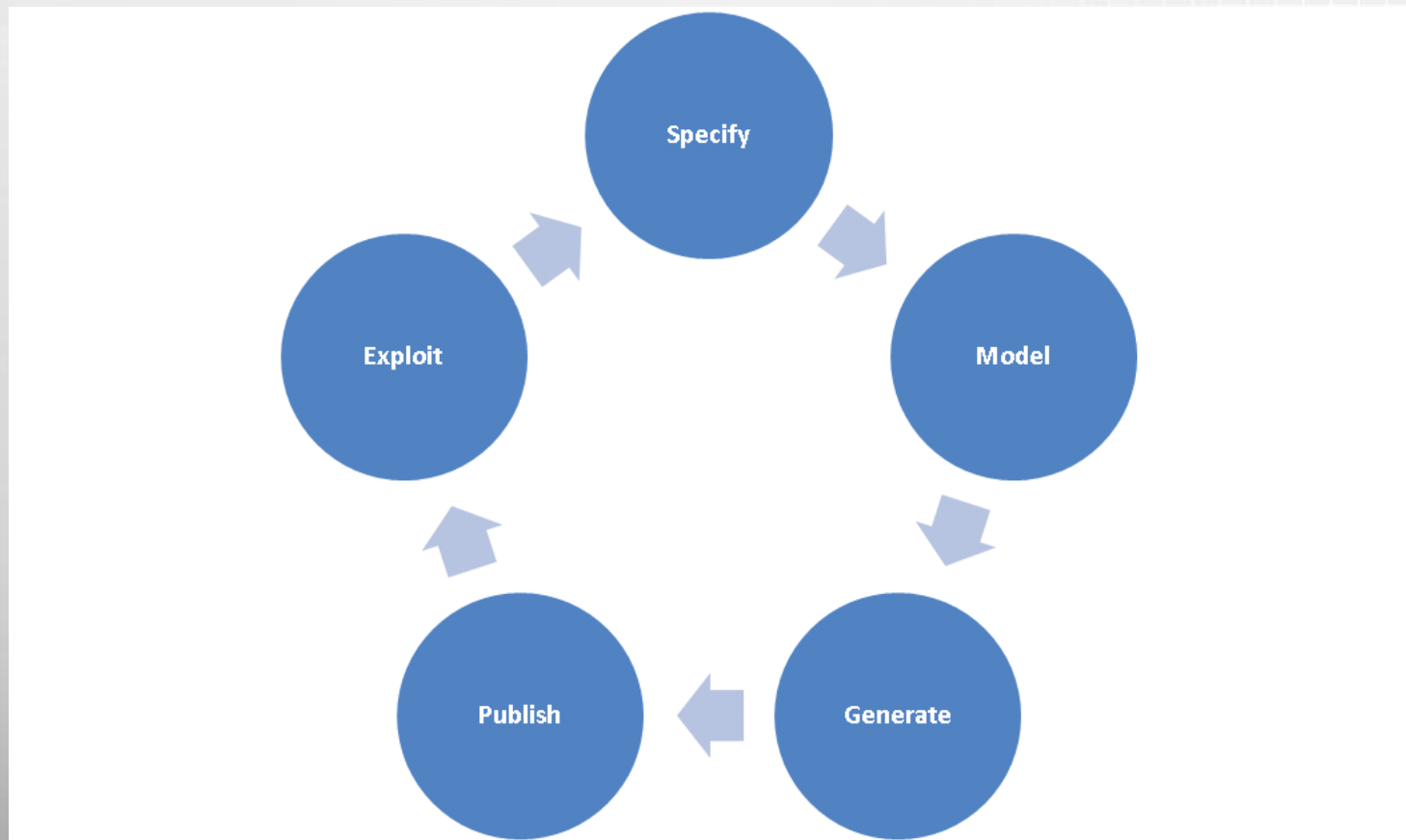
鏈結資料生命週期

Publishing Linked Data

▶ Enrich the Web of Data

- ✿ Library catalog
- ✿ Digital archives
- ✿ 「NBINet臺灣書目控制工作小組(權威建置)」 → 姓名權威、VIAF
- ✿ 《中文圖書分類法》、《中文主題詞表》
- ✿ 《全國新書資訊月刊》的書評、讀書人語，以及各種得獎紀錄
- ✿ ...

Linked Data Life Cycles



Implementation Plan

- ▶ Define your model
 - ✿ URI, resources, relationships
- ▶ **Select** or define your metadata terms
 - ✿ Terms should be defined using an RDF-based standard (RDF or OWL)
- ▶ **Select** or define any controlled vocabularies
 - ✿ Each list of terms will be described in an RDF-compatible format (such as SKOS)
- ▶ Create links from your data (terms) to related data (terms) on the Web

From Library Record to LOD –

Take a record

Field/attribute	Value
Record ID	54321
Title	Museum archives: an introduction
Author	Wythe, Deborah
Date	2004
LCSH	Museum archives
Media/GMD	Electronic
Content form	Text

From Library Record to LOD – Disaggregate to single statements

Record	Attribute	Value
54321	(has) title	Museum archives: an introduction
54321	(has) author	Wythe, Deborah
54321	(has) date	2004
54321	(has) LCSH	Museum archives
54321	(has) media type	Electronic
54321	(has) content form	Text

From Library Record to LOD – Replace record ID with URI

URI	Attribute	Value
mlx:54321	(has) title	Museum archives: an introduction
mlx:54321	(has) author	Wythe, Deborah
mlx:54321	(has) date	2004
mlx:54321	(has) LCSH	Museum archives
mlx:54321	(has) media type	Electronic
mlx:54321	(has) content form	Text

“mlx” = QName (xmlns) = shorthand for “http://MyLibraryX.com/”

From Library Record to LOD – Replace attributes with URIs

URI	URI	Value
mlx:54321	isbd:P1014	Museum archives: an introduction
mlx:54321	rdarole:author	Wythe, Deborah
mlx:54321	isbd:P1018	2004
mlx:54321	dct:subject	Museum archives
mlx:54321	isbd:P1003	Electronic
mlx:54321	isbd:P1001	Text

From Library Record to LOD – Replace values with URIs

subject	predicate	object
mlx:54321	isbd:P1014	“Museum archives: an introduction”
mlx:54321	rdarole:author	viaf:31899419/#Wythe,+Deborah
mlx:54321	isbd:P1018	“2004”
mlx:54321	dct:subject	lcsch:/sh85088707#concept
mlx:54321	isbd:P1003	isbdmt:T1002
mlx:54321	isbd:P1001	isbdcf:T1009

From Library Record to LOD – Publish triples (linked data)

mlx:54321 | isbd:P1014 | "Museum archives: an introduction"

mlx:54321 | [rdarole:author](#) | [viaf:31899419/#Wythe,+Deborah](#) →

mlx:54321 | isbd:P1018 | "2004"

mlx:54321 | [dct:subject](#) | [lcsch:/sh85088707#concept](#) →

mlx:54321 | isbd:P1003 | isbdmt:T1002 →

mlx:54321 | isbd:P1001 | isbdcf:T1009 →

→ isbdcf:T1009 | [skos:prefLabel](#) | "text"@en

→ isbdcf:T1009 | [skos:prefLabel](#) | "tekst"@hr

英國國家圖書館鏈結書目資料之 對映

本體名稱 (縮寫)	取用詞彙元素	資料描述目標
Bibliographic Ontology (bibo)	bibo:isbn10	ISBN10
	bibo:isbn13	ISBN13
Dublin Core	dcterms:contributor	貢獻者
	dcterms:description	附註
	dcterms:extent	稽核項
	dcterms:identifier	識別機構
	dcterms:issued	日期
	dcterms:language	語言
	dcterms:publisher	出版者
	dcterms:subject	學科主題
	dcterms:title	題名
	dcterms:type	類別
dcterms:creator	機構、會議名稱	
dcterms:isPartOf	來自另一個資訊實體	

英國國家圖書館鏈結書目資料之 對映 (Cont.)

International Standard Bibliographic Description (ISBD)	isbd:P1016	出版地
	isbd:P1008	版本
	isbd:P1038	資源的材質屬性或特殊區域
	isbd:P1073	作品之特徵、目的、範圍、類型、 語言
SKOS	skos:Concept	表示為rdfs:type概念屬性
	skos:inScheme	描述權威資料來源URI
	skos:notation	表示杜威分類號
RDF Schema	rdfs:label	資源為文字描述
OWL	owl:Interval	表示時間區段
	owl:hasBeginning	
	owl:inXSDDateTime	
FOAF	foaf:Organization	表示實體為機構屬性
	foaf:Person	表示實體為個人屬性
the preliminary version of RDA	rda:placeOfPublication	做為出版地的空白節點
	rda:termsOfAvailability	表示價格，例：£18.95

德國國家圖書館鏈結書目資料之 對映

Bibliographic Ontology (bibo)	bibo:periodical	期刊
	bibo:series	叢書
	bibo:document	文件
	bibo:volume	卷冊
	bibo:coden	叢書或期刊的辨識碼
	bibo:issn	issn
	bibo:isbn	isbn
	bibo:shortTitle	題名縮寫
	bibo:contributorList	貢獻者列表
bibo:authorList	作者列表	

德國國家圖書館鏈結書目資料之 對映 (Cont.)

Dublin Core Terms

dcterms:format	格式 (例如：文件)
dcterms:hasPart	描述的資源有附件時 (物理或邏輯性質)
dcterms:identifier	識別機構
dcterms:language	語言
dcterms:replaces	取代指定的資源
dcterms:subject	學科主題 (DDC)
dcterms:title	題名
dcterms:contributor	貢獻者
dcterms:isReplacedBy	被指定資源取代
dcterms:isFormatOf	被描述的資源的其他格式
dcterms:alternative	辨別題名及替代題名時

德國國家圖書館鏈結書目資料之 對映 (Cont.)

Dublin Core Elements	dc:publisher	出版者
International Standard Bibliographic Description (ISBD)	isbd:P0005	有另一個語言的標題時
	isbd:P1008	版本
	isbd:P1016	出版地
	isbd:P1018	出版日期 (年)
RDF Schema	rdfs:type	描述資源的類別屬性
	rdf:Seq	描述的資源為容器資源 (Container)
	rdf:_n	容器內的成員，或空白節點
OWL	owl:sameAs	有外部連結之URI
FOAF	foaf:isPrimaryTopicOf	表示資源之主題

Reusing Existing Terms

- ▶ The Dublin Core Metadata Initiative (DCMI) Metadata Terms vocabulary
 - ✿ defines general metadata attributes such as title, creator, date and subject.
- ▶ The Friend-of-a-Friend (FOAF) vocabulary
 - ✿ defines terms for describing persons, their activities and their relations to other people and objects.
- ▶ The Semantically-Interlinked Online Communities (SIOC)
 - ✿ designed for describing aspects of online community sites, such as users, posts and forums.
- ▶ The Description of a Project (DOAP) vocabulary
 - ✿ defines terms for describing software projects, particularly those that are Open Source.
- ▶ The Music Ontology
 - ✿ defines terms for describing various aspects related to music, such as artists, albums, tracks, performances and arrangements.
- ▶ The Programmes Ontology
 - ✿ defines terms for describing programmes such as TV and radio broadcasts.

Reusing Existing Terms (Cont.)

▶ The Good Relations Ontology

- ✿ defines terms for describing products, services and other aspects relevant to e-commerce applications.

▶ The Creative Commons (CC) schema

- ✿ defines terms for describing copyright licenses in RDF.

▶ The Bibliographic Ontology (BIBO)

- ✿ provides concepts and properties for describing citations and bibliographic references (i.e., quotes, books, articles, etc.).

▶ The OAI Object Reuse and Exchange vocabulary

- ✿ is used by various library and publication data sources to represent resource aggregations such as different editions of a document or its internal structure.

▶ The Review Vocabulary

- ✿ provides a vocabulary for representing reviews and ratings, as are often applied to products and services.

▶ The Basic Geo (WGS84) vocabulary

- ✿ defines terms such as lat and long for describing geographically-located things.

Schema.org

Organization of Schemas

The schemas are a set of 'types', each associated with a set of properties. The types are arranged in a hierarchy. The vocabulary currently consists of 797 Types, 1453 Properties 14 Datatypes, 86 Enumerations and 462 Enumeration members.


Browse the full hierarchy in HTML:

- One page per type
- Full list of types, shown on one page

Or you can jump directly to a commonly used type:

- Creative works: `CreativeWork`, `Book`, `Movie`, `MusicRecording`, `Recipe`, `TVSeries` ...
- Embedded non-text objects: `AudioObject`, `ImageObject`, `VideoObject`
- `Event`
- Health and medical types: notes on the health and medical types under `MedicalEntity`.
- `Organization`
- `Person`
- `Place`, `LocalBusiness`, `Restaurant` ...
- `Product`, `Offer`, `AggregateOffer`
- `Review`, `AggregateRating`
- `Action`

Open Metadata Registry



open metadata registry
Supporting Metadata Interoperability

[sign in](#) / [register](#) | [about](#)

Element Sets

Label	Owner	Last Updated	Updated by	Actions
academics	Dapme Passah	2010-11-18	dapme	
Application Profile for Ceramic Resources	Chandana Patra	2010-02-02	chandana	
Application Profile: Ceramic Repository	Chandana Patra	2009-08-20	chandana	
beefschema	beefsteak	2008-09-27	beefsteak	
Class	Will Earp	2012-08-01	willearp	
conference	Sabina Necula	2012-05-19	neculasabina	
DC2AP Element Set	APRI Project	2012-03-26	Lucas Vegi	
Dublin Core Element Set	Dublin Core Metadata Initiative	2008-05-29	Jon Phipps	
esL	owner1	2012-09-29	hello	
feaa	Sabina Necula	2012-05-20	neculasabina	
FOAF (Friend Of A Friend)	Metadata Management Associates	2008-08-05	Jon Phipps	
FRAD model	Gordon Dunsire	2012-02-04	Gordon Dunsire (ifla)	
FRBR Entities for RDA	Metadata Management Associates	2010-09-17	DianeH	
FRBRer model	Gordon Dunsire	2011-09-24	Gordon Dunsire (ifla)	
FRSAD model	Gordon Dunsire	2011-09-24	Gordon Dunsire (ifla)	
hasArea	Necula Sabina	2011-07-14	sabinanecula	
hasName	Necula Sabina	2011-07-14	sabinanecula	
hasRank	Necula Sabina	2011-07-14	sabinanecula	
Healthcare	denis kosar	2012-02-16	Denis Kosar	
In-Lne	Antonio tedesco	2013-02-09	Antonio Tedesco	

70 results

Navigation: < 1 2 3 4 >

Browse...

- [Resource Owners](#)
- [Vocabularies](#)
- [Element Sets](#)
- [SPARQL](#)

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web01 Version: 2.1.17

Sindice - Data Web Services

Millions of websites mark up their content using RDF, Microformats, Microdata, Schema.org, RDFa, Opengraph and more. Sindice helps you find, understand and integrate with their content.

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Searching on about 708.26 million documents.

LATEST DATA

2013/Nov/22 11:30:15 [23 triples](#) <http://www.playapk.org...download/20129>
2013/Nov/22 11:26:46 [4 triples](#) <http://www.poleonplastering.com>
2013/Nov/22 11:23:03 [4 triples](#) <http://www.info@nanaimopcrepairs.com>
2013/Nov/22 11:19:27 [8 triples](#) <http://tradisionall.obat-acemaxss.com...>

SINDICE IS HIRING

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HIGHLIGHTS

Anything to Triples

[Anything to Triples](#)

Introduction

any23Anything to Triples. New version - **Now available**

Anything To Triples (any23) is a library and web service that allows you to query and retrieve data in RDF format from a variety of Web document following input formats:

DEVELOPERS: START CONSUMING THE WEB OF DATA

SINDICE TWEET

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02-07-2010 at 10:15am RT@mhausenblas:
<http://code.google.com/p/sindice4j/> #Java #library providing a simple interface for querying the Semantic Web index #sindice

SINDICE BLOG

[Feed](#)

[How we ingested 100M semantic documents in a day \(And where do they come from\)](#) JUL 18, 2012

How to get some unexpected big data satisfaction First: build an infrastructure to process millions of document documents. ([More →](#))

[Updates on the Sindice SPARQL Endpoint](#) MAY 18, 2012

SPARQL is really hard to beat as a tool to experiment with data integration across datasets. ([More →](#))

[Sig.ma Enterprise Edition \(EE\) available](#) AUG 24, 2011

The original Sig.ma The <http://sig.ma> service was created as a demonstration of live, on the fly Web of Data mashup. ([More →](#))

[Sindice, its startup company and 12 billion+ live triples SPARQL endpoint](#) JUN 14, 2011


Today we're happy to share two big news: 1) We're launching today our startup company set to drive commercialization of Sindice... ([More →](#))



[Sindice reindexed: find your datasets \(much\)](#) MAY 31, 2011

Sameas.org

<sameAs> interlinking the Web of Data

The Web of Data has many equivalent URIs.
This service helps you to find co-references
between different data sets.
Enter a known URI, or use Sindice to search first.

<sameAs> 

Why not try searching for the string "[Edinburgh](#)", (which we will look up for you on [Sindice](#) first)
or finding other equivalent identifiers for <http://dbpedia.org/resource/Edinburgh>?

If you want to query only for data that has come from [Freebase](#), then consult the [Freebase sameAs store](#).

The [British Library](#) has provided data for their [British Library store](#), and there is a world library store at the [World Library store](#).

Or you can look at one of the [sub-stores](#).

Now over 150 Million URIs!

Currently serving over 150 406 368 URIs which relate to over 53 054 359 apparently distinct entities

The URI colouring is the official colour of the canonical URI, as provided by CoLD - Color the Linked Data Web!

Subject List and Thesauri

▶ Non-library and General

- ✿ [DBpedia Ontology](#)
- ✿ [Freebase Types](#)
- ✿ [New York Times Subjects](#)
- ✿ Artificial Intelligence:
OpenCyc and UMBEL
 - ✓ [OpenCyc](#)
 - ✓ [UMBEL](#)

▶ Library-specific Subject Heading

- ✿ [Library of Congress Subject Headings \(LCSH\)](#)
- ✿ [National Agriculture Library \(NAL\)](#)
- ✿ [Thesaurus for Graphic Materials \(TGM\)](#)

Subject List and Thesauri (Cont.)

▶ Library Classification Schemes

- ✿ [Dewey Summaries](#)
- ✿ [Universal Decimal Classification \(UDC\)](#)

▶ Non-library-based List

- ✿ [Geoname](#)
- ✿ [BBC Wildlife Ontology](#)
- ✿ [Dublin Core Type Vocabulary](#)

▶ Library-based Lists

- ✿ [MARC Countries](#)
- ✿ [MARC Geographic Areas](#)
- ✿ [MARC Languages](#)
- ✿ [MARC Relators](#)
- ✿ [RDA Vocabularies](#)

▶ Name Authorities

- ✿ [Virtual International Authority File \(VIAF\)](#)
- ✿ [New York Times People and Organizations](#)

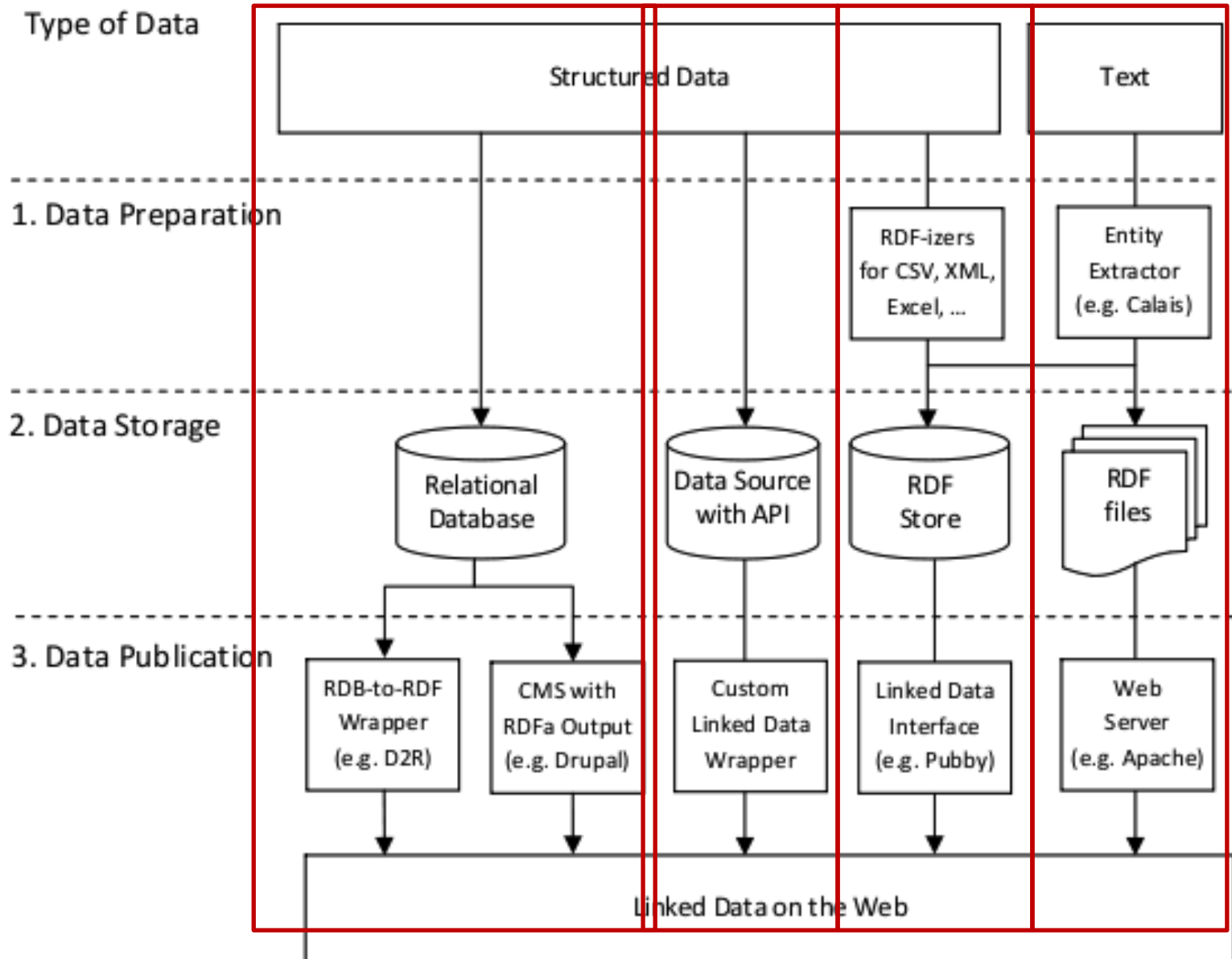
Subject List and Thesauri (Cont.)

▶ Preservation

✿ LC Preservation Level Role and Preservation Events

- ✓ [Library of Congress Preservation Events](#)
- ✓ [Library of Congress Preservation Level Role](#)

Patterns in a Nutshell



Consuming Linked Data

- ▶ Enrich your library catalog
- ▶ Browse catalog by classification
- ▶ FRBRization
- ▶ Union Catalog
- ▶ ...

Google Knowledge Graph

「達文西」相關廣告 ⓘ

[2013故宮-達文西傳奇 - monalisa500.mediasphere.com.tw](http://monalisa500.mediasphere.com.tw)

monalisa500.mediasphere.com.tw/ ▾

義大利珍藏亞洲首展；真跡首次來台！ 杜象／達利／雷捷．經典詮釋蒙娜麗莎

[李奧納多·達文西 - 維基百科](#)

zh.wikipedia.org/zh-tw/列奧納多·達·芬奇 ▾

目前已知最早有日期紀錄的達文西作品是1473年8月5日以阿莫谷 (Arno valley) 的筆及墨水繪成的畫作。在1476年至1478年間達文西接受了兩件畫約，由此臆斷當時...

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「[達文西](#)」的圖片搜尋結果 - 檢舉圖片



[蒙娜麗莎500年：達文西傳奇 - Taipei, Taiwan - Esthetics, Fairground ...](#)

<https://www.facebook.com/MonaLisa500> ▾

蒙娜麗莎500年：達文西傳奇, Taipei, Taiwan. 6129 likes · 1050 talking about this. 展覽日期：2013年10月31日~2014年2月10日，全年無休展覽時間：週一至...

[蒙娜麗莎500年：達文西傳奇 - 國立故宮博物院](#)

www.npm.gov.tw/zh-tw/Article.aspx?sNo=04005034 ▾

2013/10/24 - 本展覽主要以一種「女性姿態」的方式呈現，與文藝復興時期最具代表性的人物有關：達文西及其夥伴，以及達文西的影響力與他在不同時代的機運。

[達文西](#)

vr.theatre.ntu.edu.tw/fineart/painter-wt/davinci/davinci.htm ▾

達文西是義大利文藝復興與盛期美術家、自然科學家、工程師。繪畫方面，他把科學知識和藝術想像有機地結合起來。他的思想活躍，從不迷信教條，認為藝術應該體驗人...

李奧納多·達文西



李奧納多·達文西，又譯達芬奇，全名李奧納多·迪·瑟皮耶羅·達文西，是義大利文藝復興時期的一個博學者；除了是畫家，他還是雕刻家、建築師、音樂家、數學家、工程師、發明家、解剖學家、地質學家、製圖師，植物學家和作家。 [維基百科](#)

出生：1452年4月15日，義大利芬奇

逝世：1519年5月2日，法國昂布瓦斯

身高：1.94公尺

父母：瑟皮耶羅·達文西，卡特琳娜·達文西

作品



蒙娜麗莎
1517年



最後的晚餐
1498年



維特魯威人
1490年



抱銀鼠的女子
1490年



岩間聖母
1486年

其他人也搜尋了以下項目



米開朗基羅



拉斐爾·聖齊奧



文森·梵谷



巴勃羅·畢卡索



克勞德·莫內

[意見回饋/更多資訊](#)

Browse by Classification

圖片來源：玄奘大學圖書館

本館分類法種類如下：

[中國圖書分類法](#)
[美國國會分類法](#)

您可直接輸入分類號
查詢或利用右邊類目
查詢：

查詢書刊

清除

目前是中國圖書分類法類表

1. [總類\(000-099\)](#)
2. [哲學類\(100-199\)](#)
3. [宗教類\(200-299\)](#)
4. [自然科學類\(300-399\)](#)
5. [應用科學類\(400-499\)](#)
6. [社會科學類\(500-599\)](#)
7. [史地類\(中國\)\(600-699\)](#)
8. [史地類\(世界\)\(700-799\)](#)
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10. [美術\(900-999\)](#)

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[美國國會分類法](#)

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1. [語言文字學\(800-809\)](#)
2. [文學\(810-819\)](#)
3. [中國文學\(820-829\)](#)
4. [總集\(830-839\)](#)
5. [別集\(840-849\)](#)
6. [特種文藝\(850-859\)](#)
7. [東方文學\(860-869\)](#)
8. [西洋文學\(870-879\)](#)
9. [俄國文學\(880-889\)](#)
10. [新聞學\(890-899\)](#)



案例一：國家圖書館鏈結資料服務

<https://ld.ncl.edu.tw/>

LDT@Library



LDT@LIBRARY

Linked Open Data Taiwan @ Library

中文 | ENGLISH

臺大圖書館 國家圖書館

鏈結資源服務 下載 登入

LDT @ Library 緣起

在2018年起國內部分圖書館陸續導入了支援Linked Data的自動化系統，部分圖書館開始將編目規則轉換為RDA規範之際，在此趨勢之下使鏈結資源的具像化得以有實現的可能。有鑑於此，國家圖書館與國立臺灣大學圖書館積極合作執行本計畫，旨在承繼先前的成果，整理國內聯合權威資料庫，結合題名、主題資料，製作符合標準之鏈結數據並開發相應的「臺灣鏈結資源系統」平台，以期提供使用者更多元、詳盡的相關資訊。

本計畫旨在建置一個整合的臺灣資料鏈結資源系統，而透過這個臺灣圖書館界可共用共享的系統，使臺灣各領域的學研數據可透過網際網路和國際間各大型語意數據集形成脈絡的串連，呈現使用者更豐富的臺灣資料及更完整的華文研究資源。

資料庫總計:

362259 命名圖

20505368 三元組

17212 主題權威, 23370 分類法權威, 321677 個人名稱權威

所有(不分類型)



以王振鵠老師搜尋

王振鵠, 1924-2019

URI(s):

- <https://ld.ncl.edu.tw/authority/80991>

Instance Of:

- MADS/RDF Authority
- MADS/RDF PersonalName

Preferred name:

- 王振鵠, 1924-2019

Variants:

- Wang, Chen-ku, 1924-2019
- Wang, jhen-gu, 1924-2019
- Wang, Zhen-gu, 1924-2019
- Wang, Zhenhu, 1924-2019
- 王振鵠, (圖書館學), 1924-2019

Sources:

- 中國名人傳記中心編輯委員會編. 中華民國現代名人錄. 臺北市: 中國名人傳記中心, 民80:面79. (BRN:100037601)
- 中國圖書館學會出版委員會主編. 圖書館人物誌. 臺北市: 中國圖書館學會, 民92-.v.1面157-165. (BRN:101510102)
- 永遠的國家圖書館館長: 一生做好一件事, 展現專業價值
- 圖書館之父「聖思維爵士」王振鵠今逝世 享耆壽95歲
- 圖書館之父王振鵠今逝世享壽95歲| 綜合| 要聞| 聯合新聞網
- http://ifii-enews.blogspot.com/2014/06/blog-post_6653.html
- <https://udn.com/news/story/7266/3861595>
- <https://www.ettoday.net/news/20190609/1463658.htm>

Connected External IDs:

- VIAF

Alternate Formats:

- RDFXML
- Turtle
- N-Triples
- JSON-LD

以國際法查詢

國際法

URI(s):

- <https://ld.ncl.edu.tw/classification/150752>

Instance Of:

- SKOS Concept

Pref Label:

- 國際法

AltLabel

- International law

Codes:

- 579

ScopeNote

- 國際法，是國際社會構成分子在其相互關係上必須遵守的規則。一般而言，在國際法上能享權利義務之主體，即為獨立自主之國家，故亦稱為Law of Nations。其實，不列顛國協之自治邦，國際組織等現亦有國際人格，進一步連個人亦需負起權利義務之趨勢。



案例二：電影鏈結資料網

Overview

- ▶ Demo how to act as an linked data consumer by integrating information from several linked-data producers, including DBpedia, LinkedMDB, DBtune, and British Library
- ▶ The system is established by Drupal
- ▶ Evaluated by System Usability Scale (SUS) – 72

Data Sets

- ▶ Local DB – content from [IMDb](#)
 - ✿ Films, Directors, Actors
- ▶ Linked Data Sources
 - ✿ [Dbpedia](#) – core of LOD cloud
 - ✿ [LinkedMDB](#) – complementary movie data
 - ✿ [Dbtune](#) + MusicBrainz – Movie OST (Original Soundtrack)
 - ✿ British Library – bibliographic information

Movie-Related Metadata Terms in DBpedia

Metadata Terms	URI
rdfs:label	http://www.w3.org/2000/01/rdf-schema#
dbpedia-owl:abstract	http://dbpedia.org/ontology/abstract
dbpedia-owl:director	http://dbpedia.org/ontology/director
dbpedia-owl:producer	http://dbpedia.org/ontology/producer
dbpedia-owl:cinematography	http://dbpedia.org/ontology/cinematography
dbpedia-owl:country	http://dbpedia.org/ontology/country
dbpedia-owl:distributor	http://dbpedia.org/ontology/distributor
dbpedia-owl:editing	http://dbpedia.org/ontology/editing
dbpedia-owl:gross	http://dbpedia.org/ontology/gross
dbpedia-owl:musicComposer	http://dbpedia.org/ontology/musicComposer
dbpedia-owl:runtime	http://dbpedia.org/ontology/runtime
dbpedia-owl:starring	http://dbpedia.org/ontology/starring
dbpedia-owl:thumbnail	http://dbpedia.org/ontology/thumbnail
dbpedia-owl:wikiPageID	http://dbpedia.org/ontology/wikiPageID
dbpedia-owl:writer	http://dbpedia.org/ontology/writer
rdf:type	http://www.w3.org/1999/02/22-rdf-syntax-ns#
rdfs:comment	http://www.w3.org/2000/01/rdf-schema#
foaf:name	http://xmlns.com/foaf/0.1/
foaf:primaryTopic	http://xmlns.com/foaf/0.1/

Metadata Terms in LinkedMDB

Metadata Terms	URI
rdfs:label	http://www.w3.org/2000/01/rdf-schema#
dc:title	http://purl.org/dc/terms/title
dc:date	http://purl.org/dc/terms/date
movie:actor	http://data.linkedmdb.org/resource/movie/actor
movie:cinematographer	http://data.linkedmdb.org/resource/movie/cinematographer
movie:director	http://data.linkedmdb.org/resource/movie/director
movie:editor	http://data.linkedmdb.org/resource/movie/editor
movie:film_cut	http://data.linkedmdb.org/resource/movie/film_cut
movie:film_of_distributor	http://data.linkedmdb.org/resource/movie/film_of_distributor
movie:filmid	http://data.linkedmdb.org/resource/movie/filmid
movie:initial_release_date	http://data.linkedmdb.org/resource/movie/initial_release_date
movie:music_contributor	http://data.linkedmdb.org/resource/movie/music_contributor
foaf:made	http://xmlns.com/foaf/0.1/made
foaf:page	http://xmlns.com/foaf/0.1/page

Metadata Terms in DBtune

Metedata Terms	URI
rdfs:label	http://www.w3.org/2000/01/rdf-schema#
dc:title	http://purl.org/dc/terms/date
mo:amazon_asin	http://purl.org/ontology/mo/amazon_asin
mo:musicbrainz	http://purl.org/ontology/mo/musicbrainz
mo:image	http://purl.org/ontology/mo/image

URI Design

Node	URI
Film	<code>http://140.122.104.69:8080/movie/{contenttype}/{moviename}</code>
Director	<code>http://140.122.104.69:8080/movie/{contenttype}/{directorname}</code>
Actor	<code>http://140.122.104.69:8080/movie/{contenttype}/{actorname}</code>

http://140.122.104.69:8080/movie/film/Guardians_of_the_Galaxy

http://140.122.104.69:8080/movie/director/James_Gunn

http://140.122.104.69:8080/movie/actor/Chris_Pratt

Mapping between Drupal Fields and Metadata Terms

Content Type	Field	Metadata Terms
Film	field_f_title	rdfs:label
	field_f_director	dbpedia-owl:director
	field_f_starring	dbpedia-owl:starring
	field_f_country	dbpedia-owl:country
	field_f_language	dbpedia-owl:language
	field_f_genre	dbpedia-owl:genre
Director	field_d_title	rdfs:label
Actor	field_a_title	rdfs:label

Link Film/Director Fields with Other Data Sources

Field	Metadata Terms	Data Source
field_f_abstract	dbpedia-owl:abstract	DBpedia
field_f_homepage	dbpedia-owl:homepage	DBpedia
field_f_runtime	movie:runtime	LinkedMDB
field_f_release_date	movie:release_date	LinkedMDB
field_f_pages	foaf:page	LinkedMDB
field_f_book	dc:title	British Library
field_f_isbn	bibo:isbn10	British Library
	bibo:isbn13	British Library
field_f_amazon	mo:amazon_asin	DBtune
field_f_musicbrainz	mo:musicbrainz	DBtune
field_f_picture	dbpedia-owl:thumbnail	DBpedia
field_d_birthdate	dbpedia-owl:birthDate	DBpedia
field_d_birthplace	dbpedia-owl:birthPlace	DBpedia
field_d_nationality	dbpedia-owl:nationality	DBpedia
field_d_residence	dbpedia-owl:residence	DBpedia
field_d_abstract	dbpedia-owl:abstract	DBpedia
field_d_picture	dbpedia-owl:thumbnail	DBpedia

SPARQL Query for Movie Data

DBpedia dataset!

PREFIX rdf:<<http://www.w3.org/1999/02/22-rdf-syntax-ns#>>

PREFIX dbpedia-owl:<<http://dbpedia.org/ontology/>>

SELECTDISTINCT ?dbp ?d_homepage ?d_title ?d_abstract ?d_image

WHERE {

?dbp rdf:type dbpedia-owl:Film;

rdfs:label "{name}";

rdfs:label ?d_title.

OPTIONAL {?dbp foaf:homepage ?d_homepage}

OPTIONAL {?dbp dbpedia-owl:abstract ?d_abstract}

OPTIONAL {?dbp dbpedia-owl:thumbnail ?d_image}

}

LinkedMDB dataset!

PREFIX rdfs: <<http://www.w3.org/2000/01/rdf-schema#>>

PREFIX movie: <<http://data.linkedmdb.org/resource/movie/>>

SELECT DISTINCT ?linkedmdb ?mdb_title ? mdb_release_date ?mdb_runtime

WHERE {

?linkedmdb rdfs:label "{name}";

rdfs:label mdb_title;

OPTIONAL {?linkedmdbmovie:initial_release_date ? mdb_release_date}

OPTIONAL {?linkedmdbmovie:runtime ? mdb_runtime}

}

SPARQL EndPoints

Data Sources	SPARQL Endpoint
DBpedia	http://dbpedia.org/sparql
LinkedMDB	http://data.linkedmdb.org/sparql
British Library	http://bnb.data.bl.uk/sparql
DBtune	http://dbtune.org/musicbrainz/sparql

Linked Movie Data System

Linked Movie Data

Film

Director

Actor

Apply

Lost Girls

[Read more](#)

Un pistolero implacable

[Read more](#)

Cracking the Da Vinci Code

[Read more](#)

Future Memory

[Read more](#)

Chex Quest 2

[Read more](#)

This Is Why I Hop

[Read more](#)

Victori: The Truth Just Can't Be One Thing

[Read more](#)

Brother

[Read more](#)

Teach

[Read more](#)

Epitaph of a Royal Gourmet

[Read more](#)

Archiri

[Read more](#)

Five Finger Fillet

[Read more](#)

Forrest Gump

Genre: Drama Romance
Director: Robert Zemeckis
Language: English
Country: USA
Starring:



Release Date: 1994

Pages

- <http://www.freebase.com/view/guid/9202a8e04000641f800000000005320c>

Books

Forrest Gump / John Escott

ISBN10:0140816127

pages:43p.

Forrest Gump / Winston Groom

ISBN10:0552996092

pages:238p.



Soundtrack

- track
- track
- track
- track
- track

Joe Abby	Rob Adams	Todd Adamson	Joe Alaskey
Markus Alexander	Sam Anderson	Neil Armstrong	Pete Auster
Peter Bannon	Kenneth Bevington	Geoffrey Blake	Jim Boeke
Charles Boswell	Jack Bowden	Grady Bowman	Arthur Bremer
Stephen Bridgewater	David Brisbin	Greg Brown	Michael Burgess
Clint Calvert	Dick Cavett	Troy Christian	Dick Clark
John Connally	Richard D'Alessandro	Jim Damron	Ed Davis
Kevin Davis	Steve DeRelian	Paulie DiCocco	Peter Dobson
Ryan Duncan	James Ent	Don Fischer	Michael Flannery

Forrest Gump is a 1994 American epic romantic dramedy film based on the 1986 novel of the same name by Winston Groom. The film was directed by Robert Zemeckis and starred Tom Hanks, Robin Wright, Gary Sinise and Sally Field. The story depicts several decades in the life of Forrest Gump, a naive and slow-witted yet athletically prodigious native of Alabama who witnesses, and in some cases influences, some of the defining events of the latter half of the 20th century in the United States; more specifically, the period between Forrest's birth in 1944 and 1982. The film differs substantially from Winston Groom's novel on which it is based, including Gump's personality and several events that were depicted. Filming took place in late 1993, mainly in Georgia, North Carolina, and South Carolina. Extensive visual effects were used to incorporate the protagonist into archived footage and to develop other scenes. A comprehensive soundtrack was featured in the film, using music intended to pinpoint specific time periods portrayed on screen. Its commercial release made it a top-selling soundtrack, selling over 12 million copies worldwide. Released in the United States on July 6, 1994, Forrest Gump received critical acclaim and became a commercial success as the top grossing film in North America released that year, being the first major success for Paramount Pictures since the studio's sale to Viacom earlier in the year. The film earned over \$677 million worldwide during its theatrical run. The film won the Academy Awards for Best Picture, Best Director for Robert Zemeckis, Best Actor for Tom Hanks, Best Adapted Screenplay, Best Visual Effects and Best Film Editing. It also garnered multiple other awards and nominations, including Golden Globe Awards, People's Choice Awards and Young Artist Awards, among others. Since the film's release, varying interpretations have been made of the film's protagonist and its political symbolism. In 1996, a themed restaurant, Bubba Gump Shrimp Company, opened based on the film, and has since expanded to multiple locations worldwide. The scene of Gump running across the country is often referred to when real-life people attempt the feat. In 2011, the Library of Congress selected Forrest Gump for preservation in the United States National Film Registry as being "culturally, historically, or aesthetically significant".

Tom Hanks

Birth Date: 1956-07-09+02:00

Birth Place: http://dbpedia.org/resource/Concord,_California

Birth Date: Los Angeles



Movie

- [A Hero's Journey: The Making of Beowulf](#)
- [A Hologram for the King](#)
- [A League of Their Own](#)
- [A Timeless Call](#)
- [AFI Life Achievement Award: A Tribute to George Lucas](#)

Thomas „Tom “ Jeffrey Hanks (* 9. Juli 1956 in Concord, Kalifornien) ist ein US-amerikanischer Schauspieler, Regisseur, Filmproduzent sowie Synchronsprecher vieler amerikanischer Film- und Fernsehproduktionen. Er gehört zu den profiliertesten Charakterdarstellern Hollywoods und wurde zweimal in Folge mit dem Oscar als bester Hauptdarsteller ausgezeichnet – für seine Hauptrollen in den Filmen Philadelphia (1993) und Forrest Gump (1994).

Thomas Jeffrey "Tom" Hanks (born July 9, 1956) is an American actor, producer, writer, and director. Hanks is best known for his roles in Big, A League of Their Own, Sleepless in Seattle, Forrest Gump, Apollo 13, Saving Private Ryan, You've Got Mail, The Green Mile, Cast Away, The Da Vinci Code, Captain Phillips, and Saving Mr. Banks, as well as the animated films The Polar Express and the Toy Story series. Hanks has earned and been nominated for numerous awards during his career, including winning a Golden Globe for Best Actor and an Academy Award for Best Actor for his role in Philadelphia and a Golden Globe, an Academy Award, a Screen Actors Guild Award, and a People's Choice Award for Best Actor for his role in Forrest Gump, and earning the Stanley Kubrick Britannia Award for Excellence in Film from the BAFTAs in 2004. Hanks is also known for his collaboration with film director Steven Spielberg on Saving Private Ryan, Catch Me If You Can, and The Terminal, as well as the 2001 mini-series Band of Brothers, which launched Hanks also as a successful director, producer and writer. In 2010, Spielberg and Hanks were executive producers on the HBO mini-series The Pacific (a companion piece to Band of Brothers). As of 2012, Hanks' films have grossed over \$4.2 billion at the United States box office alone, and over \$8.5 billion worldwide making him one of the highest-grossing actors in film history.

Thomas Jeffrey Hanks (Concord, 9 luglio 1956) è un attore, regista, sceneggiatore, e produttore cinematografico statunitense. La sua carriera ha avuto inizio negli anni ottanta quando, interpretando la serie Henry e Kip (Bosom Buddies), cominciò a essere conosciuto; da allora ha recitato in numerosi film ottenendo un grande successo di critica e di pubblico. Nel corso della sua carriera ha ricevuto 5 nomination agli Oscar, 7 ai Golden Globe, 4 ai BAFTA, 6 agli Screen Actors Guild Awards e 8 agli Emmy. È l'attuale Primo Vicepresidente dell'Academy, la società che ogni anno assegna il premio Oscar.

Thomas Jeffrey Hanks (Concord, 9 de julio de 1956) es un actor y productor estadounidense más conocido como Tom Hanks. Ganador del Óscar y del Globo de Oro, Hanks es uno de los actores (junto a Luise Rainer, Spencer Tracy y Katharine Hepburn) que han ganado dos Óscar consecutivos como Mejor actuación principal y el único intérprete masculino que lo haya hecho en la segunda mitad del siglo XX. Por su protagonismo en Ángeles y demonios (2009) se convirtió en el segundo actor mejor pagado tras ingresar cincuenta millones de dólares. La taquilla lograda por sus películas en Estados Unidos supera los 4.500 millones de dólares.

توماس جيفري "توم" هانكس (ولد في 9 يوليو 1956) هو ممثل، ومخرج، وممثل صوت، وكاتب، ومنتج أمريكي حائز على جائزة الأوسكار مرتين وجائزة إيمي وأربعة جوائز الغولدن غلوب.

本系統資料

青山剛昌



Author info:
1963年生於大栗町由良町，在當地由良台英高中畢業後，進入日本大學藝術學院。2005年5月5日，與從屬歌手高山南結婚。據悉，因為青山剛昌工作太忙，在結婚前之部份會在工作場所外出，而身為著名聲優的高山南同樣十分繁忙，因此兩人難免少難多，生活之中總是催單及遲，近期持續這樣的生後後，兩人之間已經產生無法彌補的隔溝，既然無法繼續生活下去，於是只有分手了。而青山剛昌對此既不否認也不承認，採取了「無可奈何」的態度。2007年12月，與高山南離婚。2017年12月23日：本週發售的《少年Sunday》12月第三、四週合併號《名偵探柯南》第1008回連載起，刊登了作者青山剛昌的休職公告：從下期開始，由於生完產後和左室室，將由他人代為執筆。2018年4月11日發售的《少年Sunday》2018年20號，《名偵探柯南》恢復連載。

DBpedia

JPA Publisher
magazine: 周刊少年サンデー
publisher: 小学館 | ショ
MADB
manga other data
PublicationDate: 1994-01-19
episodes: 832
Volumes: 90

名偵探柯南



Title:
名偵探柯南
Jpa Title:
名探偵コナン
Eng title:
Detective Conan
Author References:
青山剛昌
Genres:
偵探

Description:
以福爾摩斯式的推理能力而聲名大噪的高中生名偵探，工藤新一，在一次追線索時，被歹徒強行灌下不知名的藥，一夜之間變成了一個小孩！從此化名為「江戶川柯南」。

漫畫角色

Pic	Name	Description
	工藤新一	高中生偵探，就讀於東京都米花市華乃高中二年B班，是毛利蘭青梅竹馬的同學，工藤優作和工藤有希子（原姓藤村）之兒子。因擁有一流的推理能力，而被稱為「平成的福爾摩斯」、「日本警察的高智王」，是作品中登場最豐富且十三位主角中主要角色，與同為高中生偵探的服部平次並稱為「關東工藤，關西服部」。
	江戶川雫	身體變小之後，憑藉自己依舊保有的推理天份，以及使用阿笠博士為他量身打造的發明機械偵探，經常利用手錶變身的偵探毛利小五郎（偵探界公認最外顯於他人），並用頭腦變身器以其著書破案，使得原本冷靜沉著的小五郎變名大偵探「沉睡小五郎」這個封號，也多次為了解決案件而阻礙其他人以因應小五郎不在場的情況，因而被懷疑是幕後有多次犯案，並暗中調查其犯罪。
	毛利蘭	東京都米花市華乃高中二年B班的學生，空手道社的主持，是工藤新一的青梅竹馬兼初戀情人，於木蘭子及道山和葉的好友；父親是名偵探毛利小五郎，母親是知名律師妃英理；父母在她7歲時分居，和繼父毛利偵探事務所的女兒同居。
	毛利小五郎	私家偵探，是毛利蘭的父親，妃英理的丈夫（現公教育）（學司，曾任刑警，是服部一輩警探前輩十三的同事，後來因為不顧人言開辦的學業而辭職100；在自家二樓開設「毛利偵探事務所」，三樓則是居住地（一樓是自設印刷廠）。


DBpedia

漫畫資訊

Manga/vol	ZH volumes title	Eng volumes title	Jpa volumes title	NTNU
名偵探柯南/卷1	現代的福爾摩斯	Haisei no hōmuzu	平成のホームズ	V
名偵探柯南/卷2	變成小孩子的名偵探	Chōsaku natta na tantei	小さくなった名探偵	V
名偵探柯南/卷3	失去聲量的名偵探	Nakamahazuru no mei tancei	仲間はずれの名探偵	V
名偵探柯南/卷4	第6回的標本	6-Pon-me no entotsu	6頁目の標本	V
名偵探柯南/卷5	另一層夕陽	MSHitori no han'nin	もう一人の犯人	V
名偵探柯南/卷6	連環偵探雙偵探偵探	Tantei o mei tantei ni	連環偵探名探偵に	V
名偵探柯南/卷7	活畫的偶像偵探	Chi nura neta adoru	血染られたアイドル	V
名偵探柯南/卷8	和你相像的人	Anata ni nita hito	あなたに似た人	V
名偵探柯南/卷9	不幸的偵探	Fukōna gokai	不幸な探偵	V
名偵探柯南/卷10	好聽的謊言	Wari no i bibō	響のいばり	V
名偵探柯南/卷11	完美的不在場證明	Kanpekin aritai	完璧なアリバイ	V
名偵探柯南/卷12	照片說話了	Shashin wa kataru	写真は語る	V
名偵探柯南/卷13	行蹤不明的男子	Yakue tumei no otoko	行方不明の男	V
名偵探柯南/卷14	可憐的少女	Kawaisōna shōjo	かわいそう少女	V
名偵探柯南/卷15	跟蹤驚天的男子!	Ōtoko o oei	大偵を跟え!	V
名偵探柯南/卷16	像惡魔一樣的女人	Akumanoiyōna/na	悪魔のような女	V
名偵探柯南/卷17	恐怖詭異屋	Kyōfu no yakata	恐怖の館	V
名偵探柯南/卷18	照片偵探	Shashin tantei	写真探偵	V

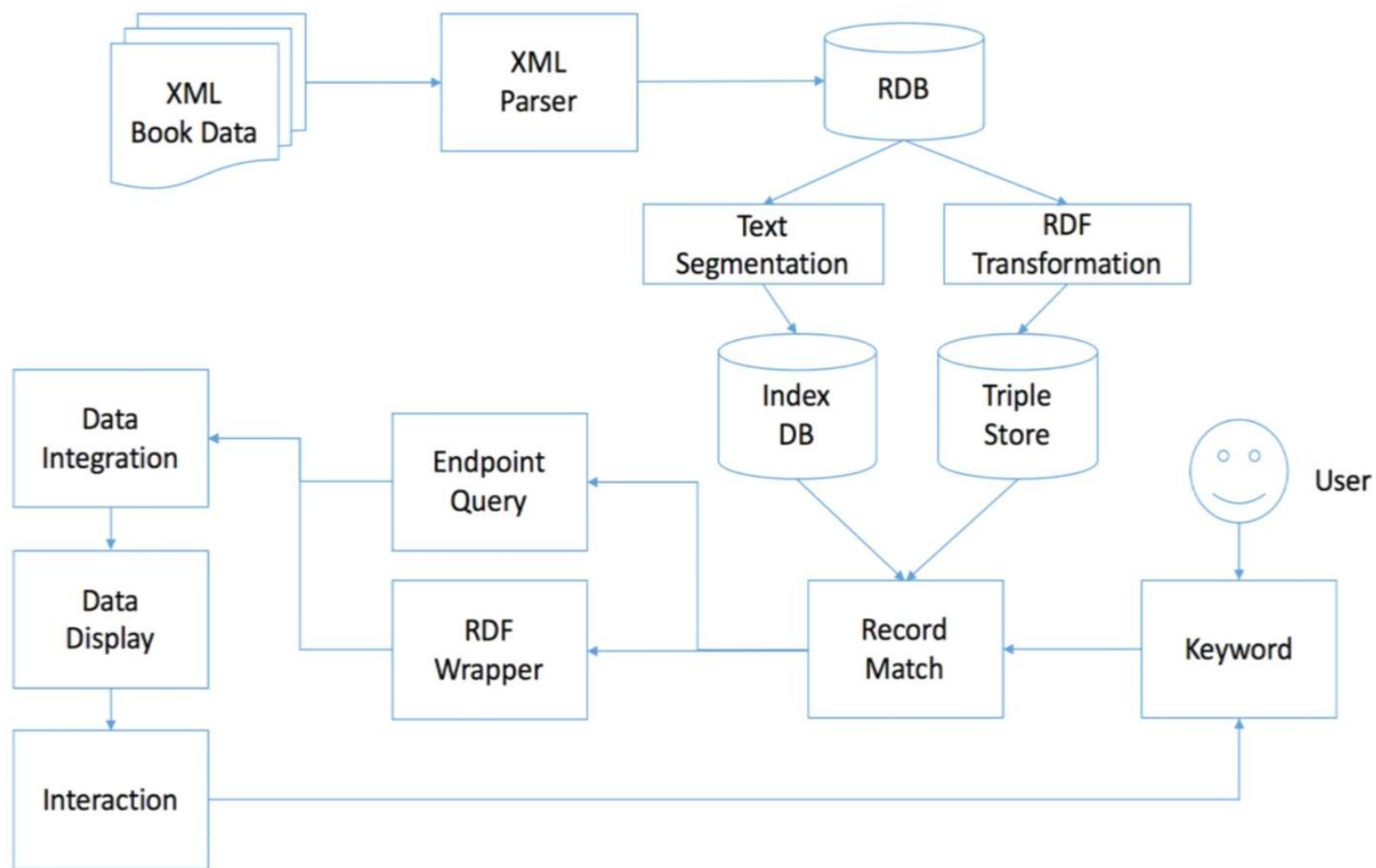
本系統資料

這不是電影、是漫畫

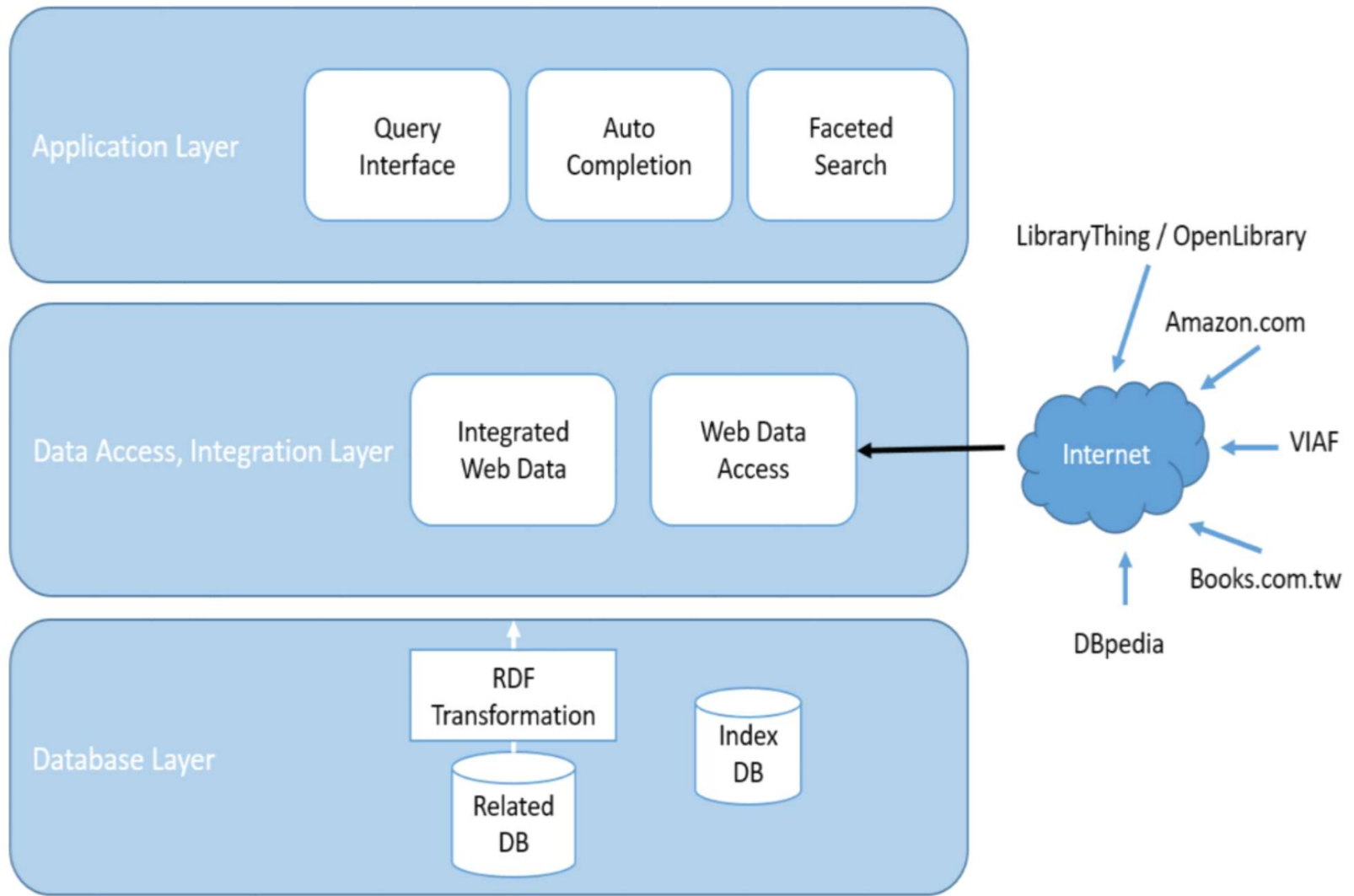


案例三：以鏈結資料豐富館藏查詢系統

系統運作流程圖



系統架構圖



作者檢索介面

館藏目錄系統

Title: Type in the book title...

Author: J. K. Rowling



J. K. Rowling

Joanne "Jo" Rowling, OBE FRSL (/ˈrɒlɪnz/; born 31 July 1965), pen name J. K. Rowling and Robert Galbraith, is a British novelist best known as the author of the Harry Potter fantasy series. The books have gained worldwide attention, won multiple awards, and sold more than 400 million copies. They have become the best-selling book series in history and been the basis for a series of films which became the highest-grossing film series in history.

- 國籍：United Kingdom, Portugal
- 出生：1965-07-31

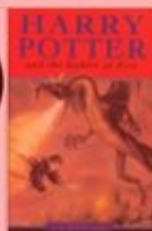
著作



[The Cuckoo's Calling](#)



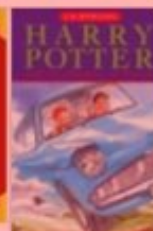
[The Silkworm](#)



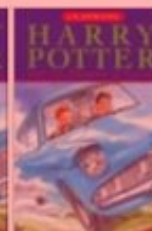
[Harry Potter and the Order of the Phoenix](#)



[Fantastic Beasts and Where to Find Them](#)



[Harry Potter and the Chamber of Secrets](#)



[Harry Potter](#)



[The Casual Vacancy](#)

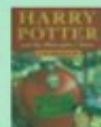


[Harry Potter and the Half-Blood Prince](#)



[Quidditch Through the Ages](#)

共有174筆紀錄



J. K. Rowling

[Harry Potter and the Sorcerer's Stone](#)

LOCAL

依年代篩選...

- 1983:1
- 1987:1
- 1989:3
- 1993:1
- 1997:1
- 1998:5



Book Cover
From LibraryThing

題名 Harry Potter and the Order of the Phoenix
 作者 Rowling, J. K.
 出版社 Bloomsbury
 出版年 2004
 註記 <http://140.122.104.78/opac/amazon/0747561079>
 ISBN-13 9780747561071
 ISBN-10 0747561079

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書目紀錄下載：[RDF](#) | [JSON](#)

這部作品有被改編為電影，請參見[維基百科](#)

系列作品介紹

[Harry Potter and the Goblet of Fire](#)

DBpedia

--本作品--



[Harry Potter and the Half-Blood Prince](#)

LibraryThing

詳細資訊

作品介紹

作者介紹

媒體類型：Paperback

頁數：768 pages

高：19.812 cm

長：12.9032 cm

寬：4.0894 cm

ISBN：0747561079

AMAZON

說明：Biography J K (Joanne Kathleen) Rowling was born in the summer of 1965 at Yate General Hospital in England and grew up in Chepstow, Gwent where she went to Wyedean Comprehensive. Jo left Chepstow for Exeter University, where she earned a French and Classics degree, and where her course included one year in Paris. As a postgraduate she moved to London to work at Amnesty International, doing research into human rights abuses in Francophone Africa. She started writing the Harry Potter series during a Manchester to London King's Cross train journey, and during the next five years, outlined the plots for each book and began writing the first novel. Jo then moved to northern Portugal, where she taught English as a foreign language. She married in October 1992 and gave birth to her daughter Jessica in 1993. When her marriage ended, she returned to the UK to live in Edinburgh, where "Harry Potter & the Philosopher's Stone" was eventually completed and in 1996 she received an offer of publication.



amazon.com

Customer Reviews

Average Customer Review

★★★★★ (7,540 customer reviews)

7,540 Reviews

評價： 5 star  71%
 4 star  16%

Conclusion and Issues

- ▶ Linked Data is a set of best practices to realize Semantic Web
- ▶ Linked Data improves the access, discovery, and integration of Web data by using open standards
- ▶ Linked Data → Linked Open Data → Big Data

Conclusion and Issues (Cont.)

- ▶ Why is Linked Data important for libraries?
 - ✿ People can more easily find library resources on the Web
 - ✿ More creative applications based on library metadata
 - ✿ Opportunities for cataloging efficiency and innovation
- ▶ Issues
 - ✿ Where to find relevant datasets
 - ✿ How to build links automatically
 - ✿ Killer applications
 - ✿ Quality