



鏈結資料與圖書館資訊組織及應用

柯皓仁

國立臺灣師範大學圖書資訊學研究所

教授兼圖書館館長

clavenke@ntnu.edu.tw

內容大綱

- ▶ 概論
- ▶ 圖書館界的鏈結資料實務
- ▶ Case study 1: Linked data in national central library
- ▶ Case study 2 – Movie Linked data
- ▶ Case 3: Linked OPAC (brief)
- ▶ 結論



概論

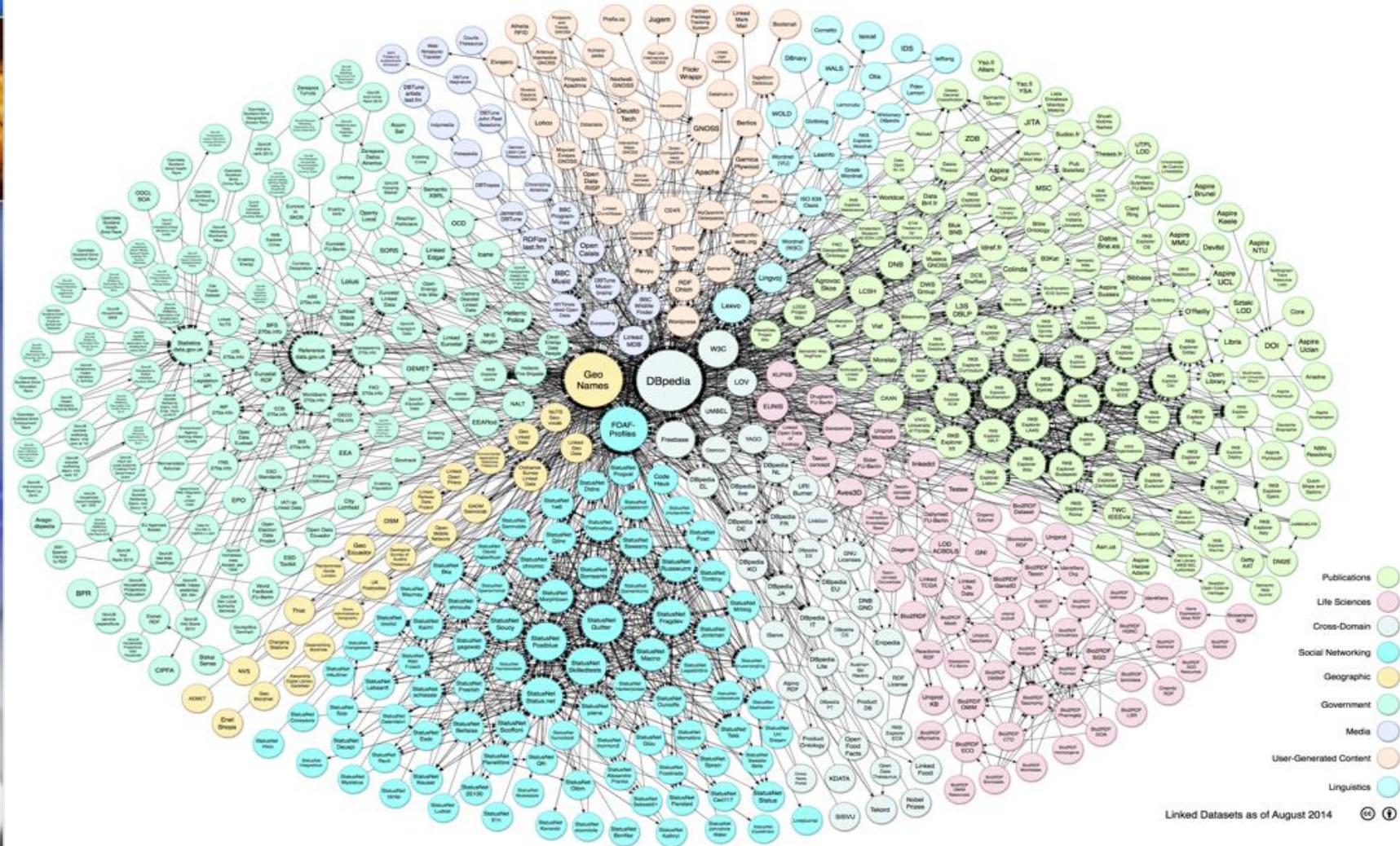
語意網 (Semantic Web)

- ▶ 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)
- ▶ 鏈結資料是實現語意網的最佳實務

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
- ▶ 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

LOD Data Cloud as of August 2014



Linked Data Statistics (2014)

Datasets by topical domain.

Topic	Datasets	%
Government	183	18.05%
Publications	96	9.47%
Life sciences	83	8.19%
User-generated content	48	4.73%
Cross-domain	41	4.04%
Media	22	2.17%
Geographic	21	2.07%
Social web	520	51.28%
Total	1014	

Datasets with the ten highest indegrees

Dataset	Category	Indegree
dbpedia.org	cross-domain	207
geonames.org	geographic	141
w3.org	cross-domain	117
quitter.se	social web	64
status.net	social web	63
postblue.info	social web	56
skilledtests.com	social web	55
reference.data.gov.uk	government	45
data.semanticweb.org	publications	44
fragdev.com	social web	41
lexvo.org	cross-domain	37



圖書館界的鏈結資料實務







Library of Congress

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
  <rdf:Description rdf:about="http://id.loc.gov/authorities/subjects/sh85042531">
    <rdf:type rdf:resource="http://www.w3.org/2004/02/skos/core#Concept"/>
    <skos:prefLabel xml:lang="en" xmlns:skos="http://www.w3.org/2004/02/skos/core#
Elephants</skos:prefLabel>
    <skosxl:altLabel xmlns:skosxl="http://www.w3.org/2008/05/skos-xl#">
      <rdf:Description>
        <rdf:type rdf:resource="http://www.w3.org/2008/05/skos-xl#Label"/>
        <skosxl:literalForm xml:lang="en">Elephantidae</skosxl:literalForm>
      </rdf:Description>
    </skosxl:altLabel>
    <skos:broader rdf:resource="http://id.loc.gov/authorities/subjects/sh85096434"
xmlns:skos="http://www.w3.org/2004/02/skos/core#" />
    <skos:broader rdf:resource="http://id.loc.gov/authorities/subjects/sh85107115"
xmlns:skos="http://www.w3.org/2004/02/skos/core#" />
    <skos:narrower rdf:resource="http://id.loc.gov/authorities/subjects/sh94005716"
xmlns:skos="http://www.w3.org/2004/02/skos/core#" />
    <skos:narrower rdf:resource="http://id.loc.gov/authorities/subjects/sh88002423"
xmlns:skos="http://www.w3.org/2004/02/skos/core#" />
    <skos:narrower rdf:resource="http://id.loc.gov/authorities/subjects/sh2009008907"
xmlns:skos="http://www.w3.org/2004/02/skos/core#" />
    <skos:narrower rdf:resource="http://id.loc.gov/authorities/subjects/sh2007004090"
xmlns:skos="http://www.w3.org/2004/02/skos/core#" />
    <skos:narrower rdf:resource="http://id.loc.gov/authorities/subjects/sh92002305"
xmlns:skos="http://www.w3.org/2004/02/skos/core#" />
    <skos:narrower rdf:resource="http://id.loc.gov/authorities/subjects/sh98004270"
xmlns:skos="http://www.w3.org/2004/02/skos/core#" />
```






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 



data.bnf.fr

(BnF) Bibliothèque nationale de France

rechercher dans data.bnf.fr

français

deutsch

About data.bnf.fr

Contact

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)

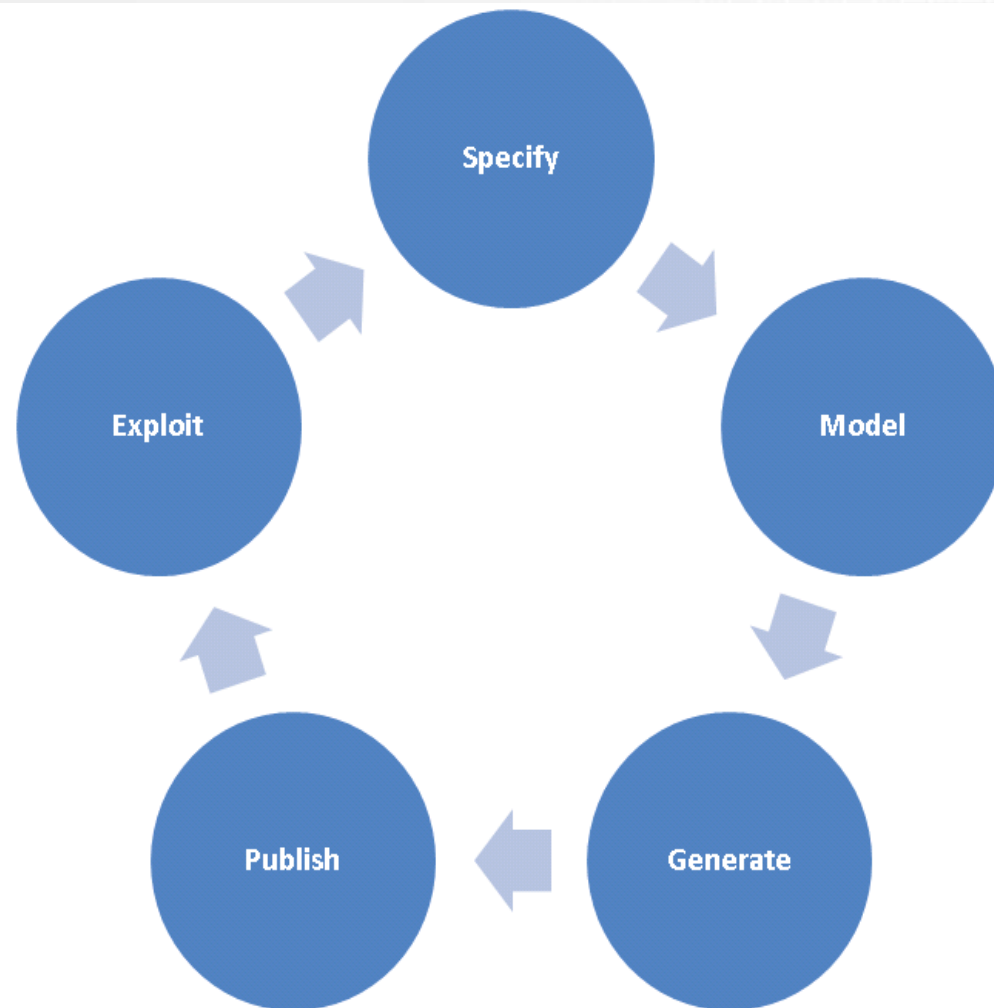


Samuel
Barber
(1910-1981)



鏈結資料生命週期

Linked Data Life Cycle



Villazón-Terrazas, B., Vilches-Blázquez, L. M., Corcho, O., and Gómez-Pérez, A. (2011).
Methodological Guidelines for Publishing Government Linked Data. Linking Government Data. DOI: 10.1007/978-1-4614-1767-5_2.

Implementation Plan (**As a Publisher**)

- ▶ Define your model
 - ✱ Resources, URI, properties, relationships
- ▶ **Select** or define your metadata terms (**resource properties**)
- ▶ **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 (**as a consumer**)

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 – Replace values with URIs

Subject	Predicate (Property)	Object (Property value)
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

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



CASE STUDY 1: LINKED DATA IN NATIONAL CENTRAL LIBRARY

Datasets and Formats

▶ ISO 2709

- ✿ Chinese Name Authority Control(中文人名權威控制): 262,668 records
- ✿ List of Chinese Subject Terms(中文主題詞表): 19,317 records

▶ SQL (bulk loading) and EXCEL (incremental)

- ✿ New Classification Scheme For Chinese Libraries, 2007 ed.(中文圖書分類法2007版): 23,500 records
- ✿ National Central Library Online Catalog(國家圖書館館藏書目資料): 0.7 million records (out of 4 million holding data of NCL)

URI Design

Data source	ID Field	URI
Name authority	System No.	http://catld.ncl.edu.tw/authority/AC{System No.}
Subject terms	Serial No.	http://catld.ncl.edu.tw/subject/SH{Serial No.}
Classification scheme	Classification No.	http://catld.ncl.edu.tw/classification/{Classification No.}
NCL Catalog	System No.	http://catld.ncl.edu.tw/book/{System No.}

Metadata Terms – Name Authority

Field	MARC	SKOS	MADS
標目 - 姓 / 名 Heading- Personal Name	100\$a	skos:prefLabel	mads:FullNameElement
生卒年，朝代 Dates associated with a name	100\$d		mads:DateNameElement
學科領域 Titles and other words associated with a name 372 \$a- Field of Activity	100\$c	skos:scopeNote	mads:TermsOfAddressNameElement
性別 Gender	375\$a		mads:gender

Metadata Terms – Name Authority (Cont.)

Field	MARC	SKOS	MADS
變異標目 - 姓 / 名 See From Tracing- Personal Name	400\$a	skos:altLabel	mads:hasVariant mads: PersonalName
連接 / 參見標目 700 - Established Heading Linking Entry-Personal Name 500 - See Also From Tracing- Personal Name	700/ 500\$a	skos:related	mads:hasRelatedAuthority mads:PersonalName
學歷 / 勳獎 373 - Associated Group	373\$a		mads:has Affiliation mads:Affiliation
參考資料 / 館藏資料 670 - Source Data Found (R)	670\$a		mads:hasSource mads:source

Metadata Terms – Subject Terms

Field	SKOS	MADS
主要標目 Subject terms	skos:prefLabel	mads: authoritativeLabel
原文 English Subject terms	skos:altLabel	mads:hasVariant mads:variantLabel
參考類號 Reference Classification scheme	skos:notation	
參見 Related term (see also)	skos:related	mads:hasRelatedAuthority
用 use (see)	skos:prefLabel	mads: authoritativeLabel
不用 used for (see from)	skos:altLabel	mads:hasVariant mads:variantLabel

Metadata Terms – New Classification Scheme

Field	skos	mads
類號 Classification scheme	skos:notation	mads:code
類目 Class entry	skos:prefLabel	mads:authoritativeLabel
原文 English class entry	skos:altLabel	mads:hasVariant mads:variantLabel
上層類目 Upper class entry	skos:broader	mads:hasBroaderAuthority
下層類目 Lower class entry	skos:narrower	mads:hasNarrowerAuthority

Metadata Terms – NCL Catalog

Field	bibo	dc
書名Title	dcterms:title	dc:title
ISBN	bibo:isbn	dc:identifier
作者Author	bibo:authorList	dc:creator
出版者Publisher	dcterms:publisher	dc:publisher
分類號Classification Scheme	skos:notation	skos:notation
標題Subject terms	dcterms:subject	dc:subject

NCL Linked Data Service – Home Page

國家圖書館鏈結資源

書目搜尋

主題編目資源查詢

主題編目資源搜尋

使用查詢功能時，請鍵入完整或部分的查詢詞，可以使用雙引號「"」或配合布林邏輯運算符號AND、OR或NOT使用。

系統功能(請先登入)

請選擇查詢類型

所有(不分類型)

分類法2007年版

中文圖書主題詞表

人名權威

請輸入查詢詞：

查詢

本網站由國家圖書館與國立師範大學圖書館系統資訊組共同合作建置與維護，如有任何疑問和建議，歡迎與我們連絡。

A user can search New Classification Scheme, Subject Terms, and/or Name Authority Control

NCL Linked Data Service – Result List (Subject Terms)

國家圖書館鏈結資源

書目搜尋

主題編目資源搜尋

系統功能(請先登入)

條約 一共搜尋到：68筆結果。

序號	識別號	主標目	類型	URI
1	sh0001645	天津條約	主題詞表	http://catld.ncl.edu.tw/subject/sh0001645
2	sh0003928	同盟條約	主題詞表	http://catld.ncl.edu.tw/subject/sh0003928
3	sh0004464	江華條約	主題詞表	http://catld.ncl.edu.tw/subject/sh0004464
4	sh0005630	辛丑條約	主題詞表	http://catld.ncl.edu.tw/subject/sh0005630
5	sh0007284	南京條約	主題詞表	http://catld.ncl.edu.tw/subject/sh0007284
6	sh0008162	軍事條約	主題詞表	http://catld.ncl.edu.tw/subject/sh0008162
7	sh0009443	租稅條約	主題詞表	http://catld.ncl.edu.tw/subject/sh0009443
8	sh0009870	馬關係約	主題詞表	http://catld.ncl.edu.tw/subject/sh0009870
9	sh0010492	國際條約	主題詞表	http://catld.ncl.edu.tw/subject/sh0010492
10	sh0011102	條約法	主題詞表	http://catld.ncl.edu.tw/subject/sh0011102
11	sh0011103	條約論	主題詞表	http://catld.ncl.edu.tw/subject/sh0011103
12	sh0013447	媾和條約	主題詞表	http://catld.ncl.edu.tw/subject/sh0013447
13	sh0000959	不平等條約	主題詞表	http://catld.ncl.edu.tw/subject/sh0000959
14	sh0011101	條約	主題詞表	http://catld.ncl.edu.tw/subject/sh0011101
15	sh0001195	互不侵犯條約	主題詞表	http://catld.ncl.edu.tw/subject/sh0001195
16	sh0018655	麵條	主題詞表	http://catld.ncl.edu.tw/subject/sh0018655
17	sh0007345	契約	主題詞表	http://catld.ncl.edu.tw/subject/sh0007345
18	sh0013624	新約	主題詞表	http://catld.ncl.edu.tw/subject/sh0013624
19	sh0017992	舊約	主題詞表	http://catld.ncl.edu.tw/subject/sh0017992
20	sh0000158	二維條碼	主題詞表	http://catld.ncl.edu.tw/subject/sh0000158

[更多結果>>](#)

本網站由國家圖書館與國立師範大學圖書館系統資訊組共同合作建置與維護，如有任何疑問和建議，歡迎與我們連絡。

NCL Linked Data Service – Subject Term

國家圖書館鏈結資源

主題詞表

權威控制

系統功能(請先登入)

條約

分類法七版： 579.7

分類法八版： 579.7

分類法2007版： 579.7

原文：

註釋：<http://catld.ncl.edu.tw/subject/sh0011101>

用：

不用：

參見：

Term Description

檔案下載

SKOS-RDF/XML

SKOS-JSON

SKOS-N-Triples

SKOS-TURTLE

MADS-RDF/XML

MADS-JSON

MADS-N-Triples

MADS-TURTLE

Download

本網站由國家圖書館與國立師範大學圖書館系統資訊組共同合作建置與維護，如有任何疑問和建議，歡迎與我們連絡。

NCL Linked Data Service – Classification Scheme

國家圖書館鏈結資源

主題詞表

國際法 579

Broader

權威控制

--> 579.7 條約論/Treaties

Current

系統功能(請先登入)

檔案下載

SKOS-RDF/XML

SKOS-JSON

SKOS-N-Triples

SKOS-TURTLE

MADS-RDF/XML

MADS-JSON

MADS-N-Triples

MADS-TURTLE

Download

本網站由國家圖書館與國立師範大學圖書館系統資訊組共同合作建置與維護，如有任何疑問和建議，歡迎與我們連絡。

NCL Linked Data Service – MADS RDF/XML

```
<madsrdf:note>百度百科-胡適, http://baike.baidu.com/view/2010.htm</madsrdf:note>
<madsrdf:hasVariant rdf:parseType="Resource">
  <madsrdf:variantLabel xml:lang="zh-TW">Shichang, 1891-1962</madsrdf:variantLabel>
  <madsrdf:FullNameElement rdf:parseType="Resource">
    <madsrdf:elementValue>Shichang,</madsrdf:elementValue>
  </madsrdf:FullNameElement>
  <madsrdf:DateNameElement rdf:parseType="Resource">
    <madsrdf:elementValue>1891-1962</madsrdf:elementValue>
  </madsrdf:DateNameElement>
</madsrdf:hasVariant>
<madsrdf:identifiesRWO rdf:parseType="Resource">
  <madsrdf:RWO rdf:parseType="Resource">
    <madsrdf:Affiliation rdf:parseType="Resource">
      <madsrdf:affiliationEnded></madsrdf:affiliationEnded>
      <madsrdf:affiliationStarted>1943</madsrdf:affiliationStarted>
      <madsrdf:affiliationWith>美國國會圖書館東方部名譽顧問</madsrdf:affiliationWith>
    </madsrdf:Affiliation>
  </madsrdf:RWO>
  <madsrdf:RWO rdf:parseType="Resource">
    <madsrdf:Affiliation rdf:parseType="Resource">
      <madsrdf:affiliationEnded>192301</madsrdf:affiliationEnded>
      <madsrdf:affiliationStarted>192204</madsrdf:affiliationStarted>
      <madsrdf:affiliationWith>國立北京大學教務長</madsrdf:affiliationWith>
    </madsrdf:Affiliation>
  </madsrdf:RWO>
  <madsrdf:RWO rdf:parseType="Resource">
    <madsrdf:Affiliation rdf:parseType="Resource">
      <madsrdf:affiliationEnded>193806</madsrdf:affiliationEnded>
      <madsrdf:affiliationStarted>19370713</madsrdf:affiliationStarted>
      <madsrdf:affiliationWith>(國民政府)國防參政會參議員</madsrdf:affiliationWith>
    </madsrdf:Affiliation>
  </madsrdf:RWO>
  <madsrdf:RWO rdf:parseType="Resource">
    <madsrdf:Affiliation rdf:parseType="Resource">
      <madsrdf:affiliationEnded></madsrdf:affiliationEnded>
      <madsrdf:affiliationStarted>1959</madsrdf:affiliationStarted>
      <madsrdf:affiliationWith>國家長期發展科學委員會主任委員</madsrdf:affiliationWith>
    </madsrdf:Affiliation>
  </madsrdf:RWO>
  <madsrdf:Source rdf:parseType="Resource">
    <madsrdf:citation-source>TUL Card Catalog: His My mother's betrothal, 1946; </madsrdf:citation-source>
  </madsrdf:Source>
  <madsrdf:RWO rdf:parseType="Resource">
    <madsrdf:Affiliation rdf:parseType="Resource">
      <madsrdf:affiliationEnded></madsrdf:affiliationEnded>
      <madsrdf:affiliationStarted>193205</madsrdf:affiliationStarted>
      <madsrdf:affiliationWith>獨立評論週刊創辦人</madsrdf:affiliationWith>
    </madsrdf:Affiliation>
  </madsrdf:RWO>
```


王振鵠老師的資料

主要名稱	王振鵠
其他名稱	Wang, Chen-ku.; Wang, Zhen-gu.; Wang, Zhenhu.; Wang, jhen-gu.;
生-卒年	19240718-
專長領域	圖書館學
生平	王振鵠 - 維基百科, 自由的百科全书, http://zh.wikipedia.org/wiki/王振鵠
學經歷	<p>中國圖書館學會「圖書館事業貢獻獎」, 1986- 中國圖書館學會圖書館自動化作業規劃委員會召集人, 1962- 中國圖書館學會常務理事, 1962- 中國圖書館學會常務監事, 1962- 中國圖書館學會理事長, 1991-1995 中國大學中文系畢業, -1948 中國文化大學史學研究所兼任教授, - 中華文化復興推行委員會學術出版促進委員會委員, 1981- 國立中央圖書館(第六任)館長, 19770331-19890801 國立政治大學任教, 1989- 國立臺灣大學兼任教授, - 國立臺灣師範大學圖書館館長, 1970-1977 國立臺灣師範大學社會教育學系名譽教授, - 國立臺灣師範大學社會教育學系講師, 副教授, 教授, 兼任教授, 系主任, 1960-1977 漢學研究中心主任, 19870505-19890801 漢學研究資料及服務中心(後改稱漢學研究中心)主任, 19810601-19870505 羅馬教廷「聖思維爵士勳位勳章」 梵諦岡, 198703- 美國俄亥俄大學名譽法學博士, 1988- 美國范德比大學(Vanderbit University)畢保德教育學院(George Peabody College)圖書館學碩士學位畢業, -1959 美國華人圖書館員協會(CALA)「1987年傑出服務獎」, 1987- 美國資訊科學學會臺灣分會第三屆會長, 1973-1974 考試院典試委員, 1972- 臺灣省立師範學院圖書館出版組主任, - 臺灣省立師範學院圖書館館長, 1955-1959 行政院三等功績獎章, 1987- 行政院文化建設委員會語文圖書委員會召集人, 1982- 行政院文化建設委員會語文圖書委員會委員, 1982- 行政院最優人員榮譽, 1983- 輔仁大學兼任教授, -</p>
資料來源	<p>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); ;</p>
VIAF	13796192
LC 美國國家圖書館	n86110280

NCL Linked Data Service – Catalog (Result List)

國家圖書館鏈結資源

書目搜尋

主題編目資源搜尋

系統功能(請先登入)

書目查詢

使用查詢功能時，請鍵入完整或部分的查詢詞，可以使用雙引號「"」或配合布林邏輯運算符號AND、OR或NOT使用。

請輸入查詢詞：

查詢

魯迅藏外國版畫全集 =The Complete foreign prints in the collection of Lu Xun	937	9787535667946
艾神 =God Ai	574.1	9789881644213
金秀賢的全盛時代 =Kim Saa Hyun	783.28	9789869127806
現在未來式 =Now on the run	857.7	9789869014021
魅力城市 :七大世界創意之都的智慧與人文力量 = The allure of cities : the wisdom and humanity of seven UNESCO creative cities	719	9789571361055
約會小折紙 =Date a origami	947.41	9789863259558
大心印 :蓮生活佛講六祖壇經 = The great mind seal : an annotated platform sutra of the sixth patriarch by living Buddha Lian-sheng	226.62	9789866564819 (全套 :)
楊上峰作品創作理念 :屈/從的張力 = Sculpture by Yang, Shang-feng 2012	930.233	9789868182868
New GRE字彙聖經 =New GRE vocabulary bible	805.1896	9789869078702
勇者遭到背叛之後 =After that of the betrayed hero	861.57	9789863313441
英雄之心 =Hero hearts	947.41	9789863313915
夫妻甜蜜物語精選集 :新婚夫妻的性愛寶典 = The one and only step up love story sweet collection	947.41	9789863109198
再生的思考昇華 =Re. union	861.57	9789863109921

NCL Linked Data Service – Bibliographic Information

國家圖書館鏈結資源

主題詞表

權威控制

系統功能(請先登入)

書名	魯迅藏外國版畫全集 =The Complete foreign prints in the collection of Lu Xun
作者	
ISBN	9787535667946
出版項	長沙市:湖南美術出版社,2014.02
標題	版畫
分類	937



CASE STUDY 2 – MOVIE LINKED DATA

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/>>

SELECT DISTINCT ?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.

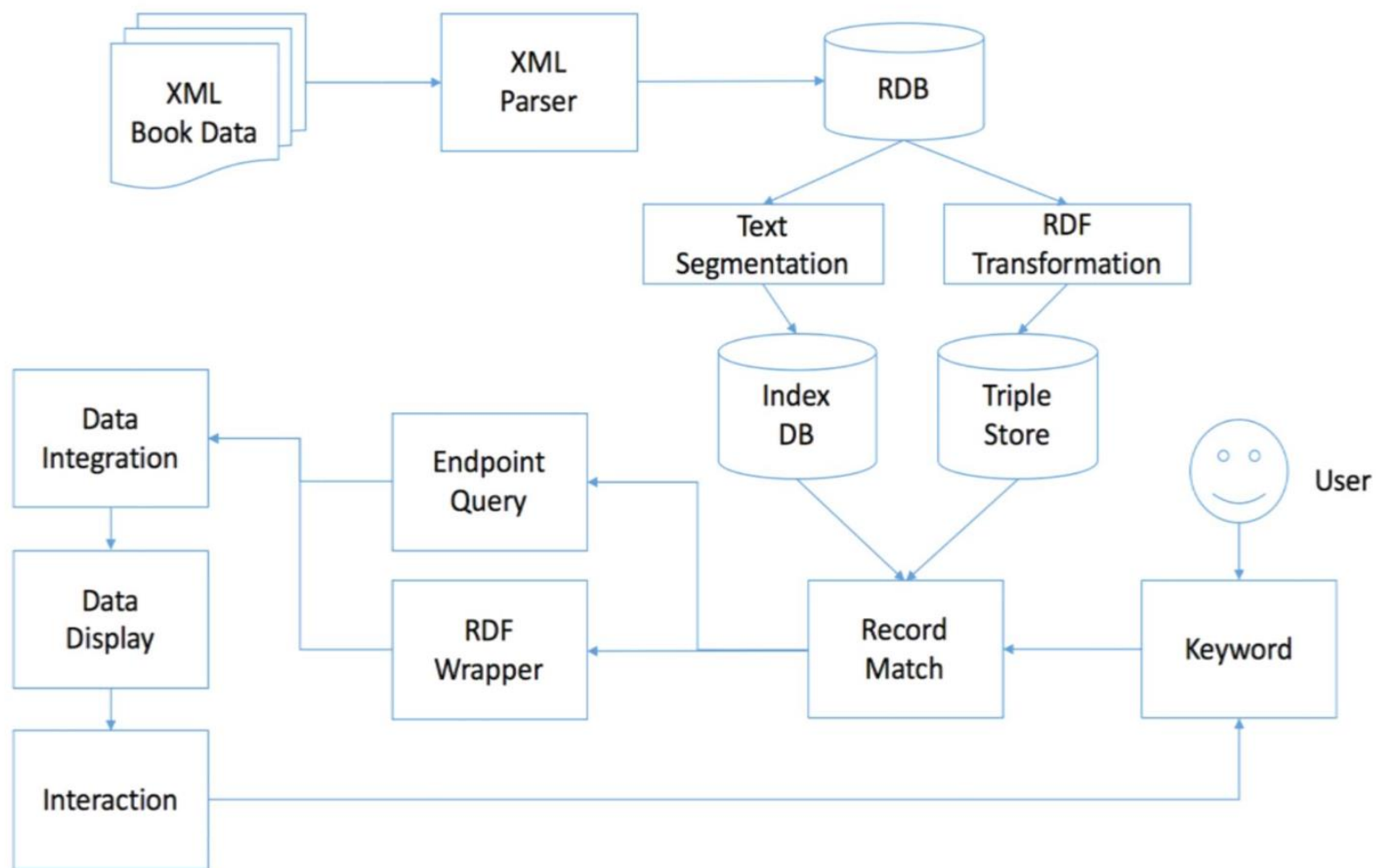
Thomas Jeffrey Hanks (Concord, 9 de julio de 1956) es un actor y productor estadounidense más conocido como Tom Hanks. Ganador del Óscar y del Globo de Oro, Hanks es uno de los actores (junto a Luise Rainer, Spencer Tracy y Katharine Hepburn) que han ganado dos Óscar consecutivos como Mejor actuación 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.

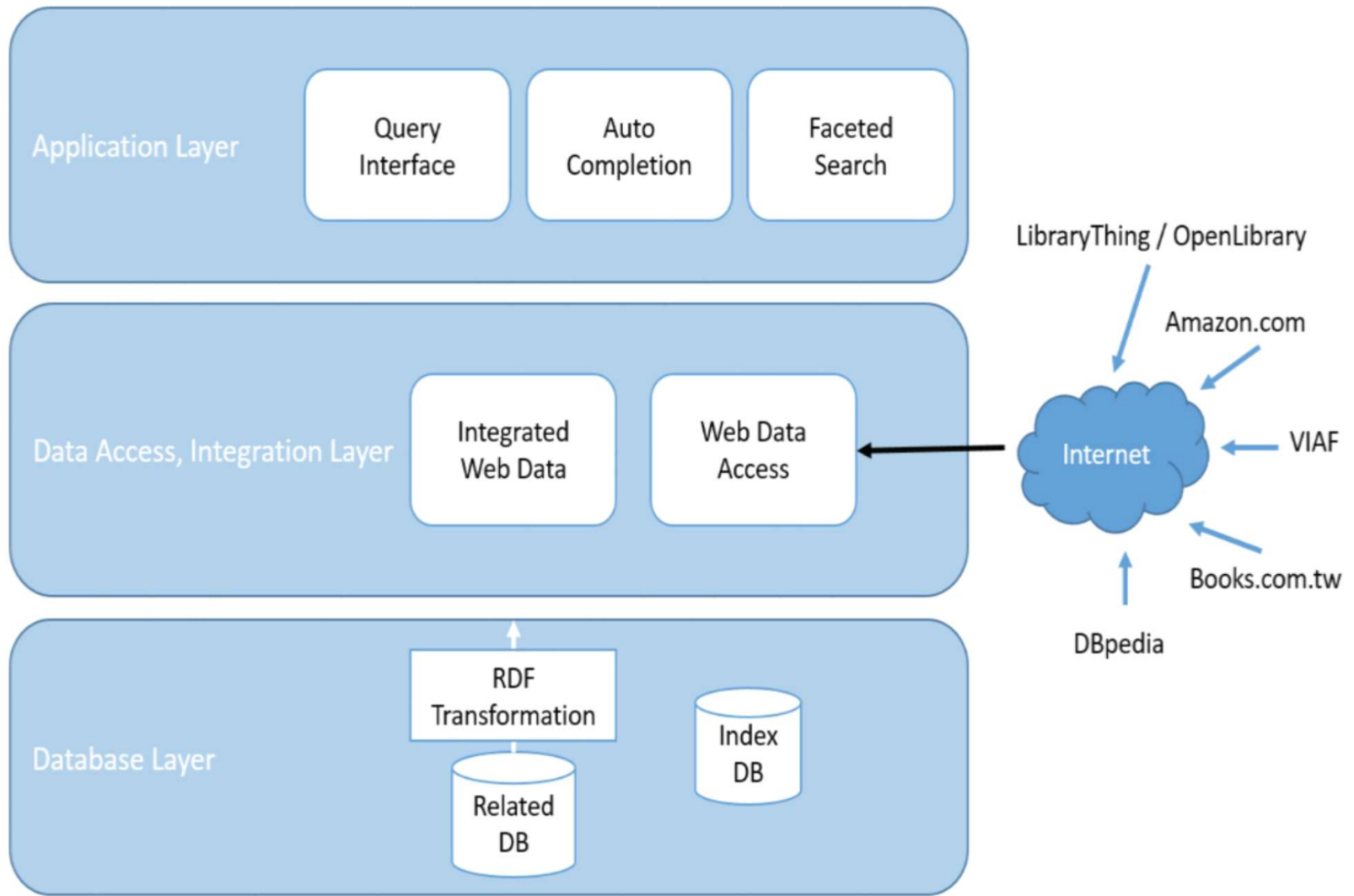


CASE 3: LINKED OPAC (BRIEF)

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 (/ˈroʊlɪn/; 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

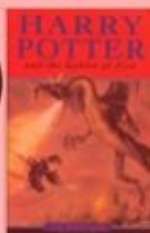
著作



[The Cuckoo's Calling](#)



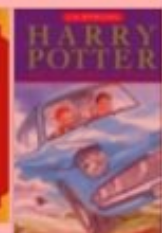
[The Silkworm](#)



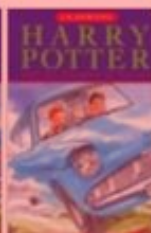
[Harry Potter and the Order of the Phoenix](#)



[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

LOCAL

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%



結論

Conclusion

▶ Conclusion

- ✿ 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

▶ Why is Linked Data important for libraries?

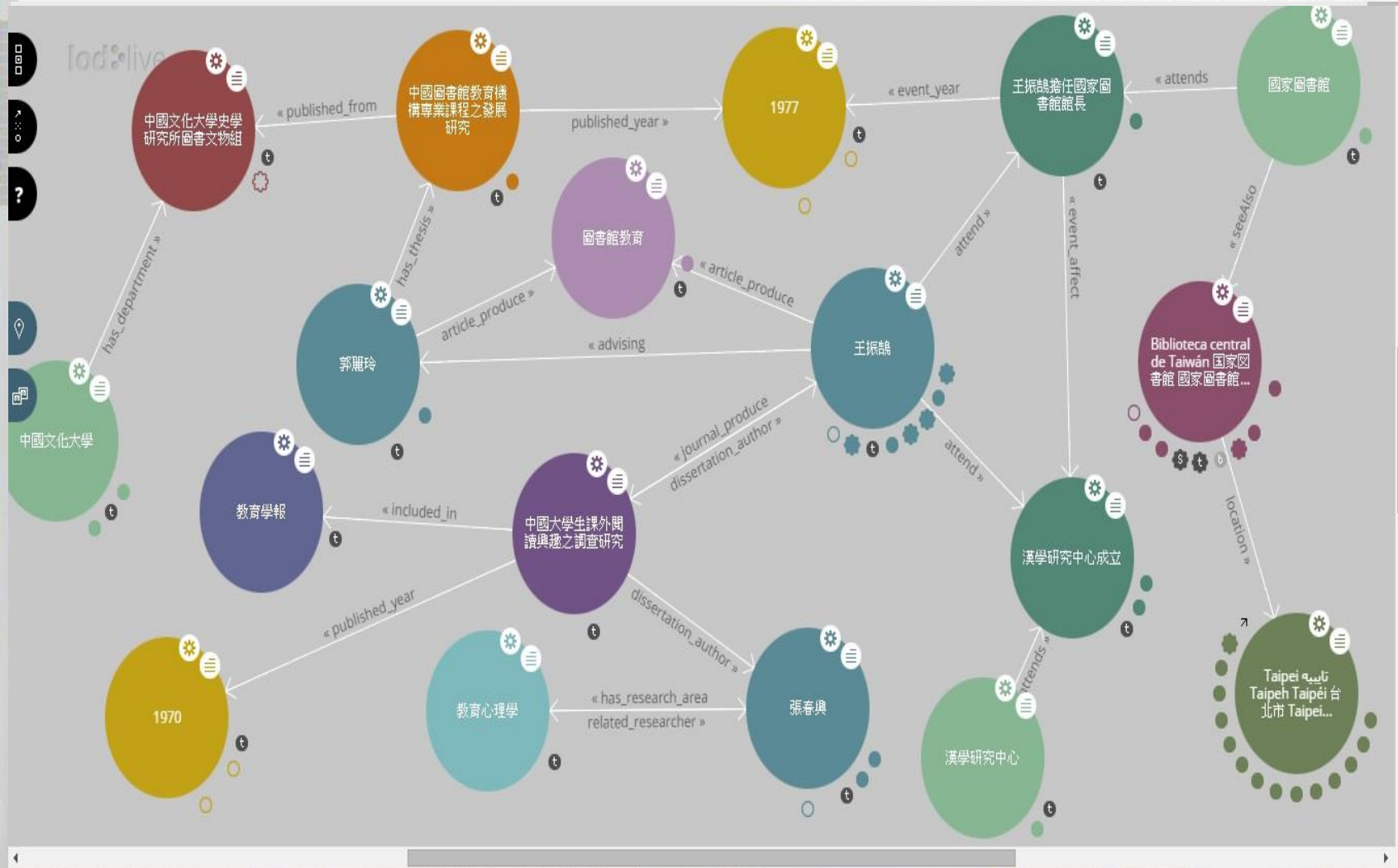
- ✿ People can more easily find library resources on the Web
- ✿ More creative applications based on library metadata
- ✿ Opportunities for cataloging efficiency and innovation

Future Plan

▶ Future Plan – Data Sets

- ✿ Ontology-Based System for the Development of Librarianship in Taiwan -- Professor Chen-Ku Wang (王振鵠)
- ✿ NTNU archives (masters in art, education...)
- ✿ *70 Years of National Taiwan Normal University* (師大70回顧叢書)
- ✿ 臺灣歷史人物文本
- ✿ Folkartist digital museums (Cloud Gate, U-Theatre)

Ontology-Based System for Taiwan Librarianship





Thank you for Listening