



OXLOD Open Workshop

14 Nov 2017 - OeRC

Introduction and project outline – Jon Ray

Basics of Linked Data – Kevin Page

Progress report – Athanasios Velios

Bodleian Chinese catalogue – Joshua Seufert

Analysis and plans for next month – Athanasios Velios





Representing knowledge on the Web using Linked Data

(The Semantic Web and Why You Should Care)

Kevin Page

University of Oxford e-Research Centre

OXLOD briefing, March 2017

(the slide I nearly removed)

- When knowledge has been generated, we should capitalise on its value by
 - capturing it
 - publishing it
 - using it
 - linking it
 - re-using and building upon it (“unintentionally”?)

Tim Berners-Lee and the World Wide Web

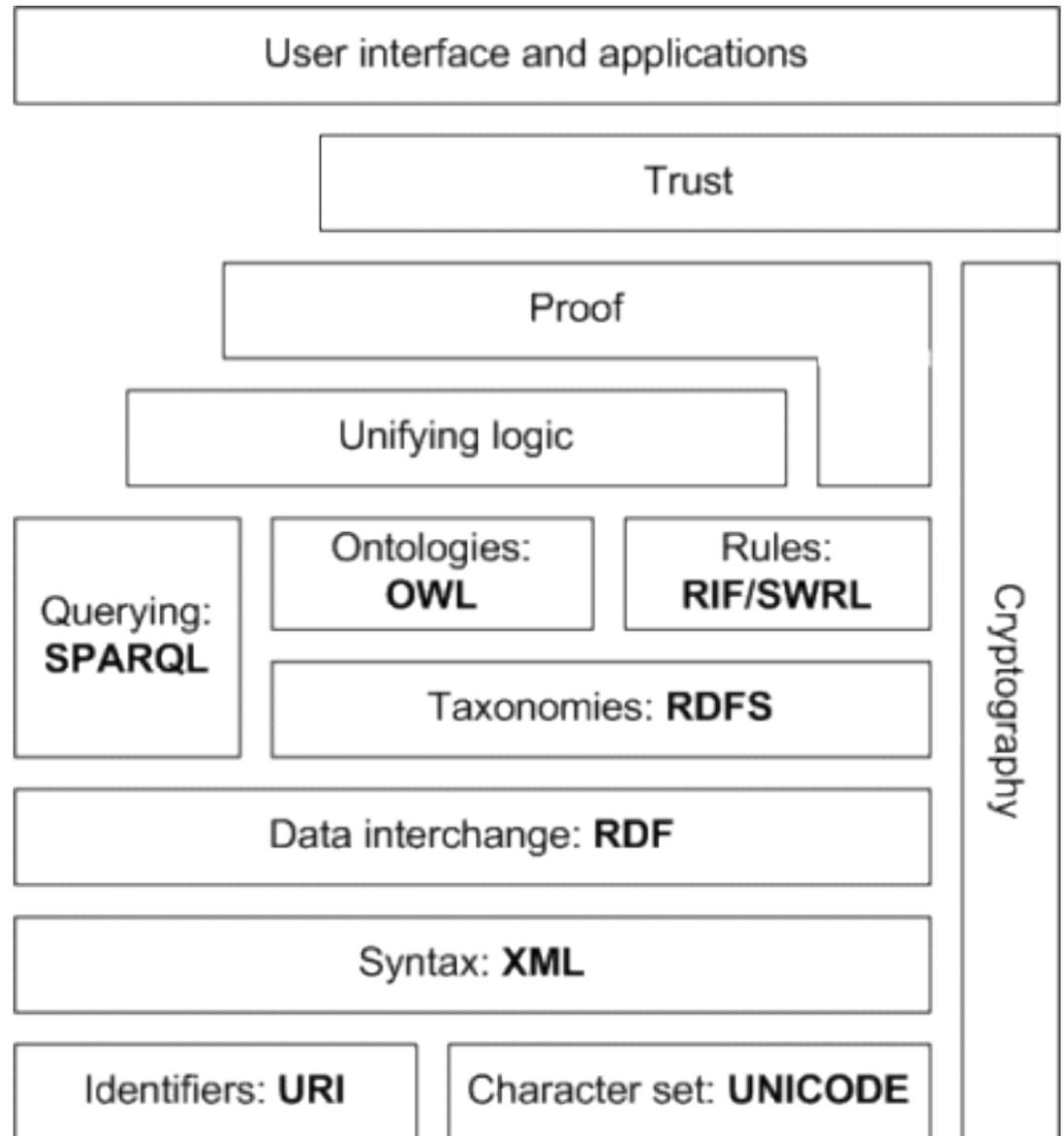


"This machine is a server - DO NOT POWER IT DOWN!!"

What is the *Semantic Web*?

- The web is the largest and most successful distributed system ever constructed
- But it is a Web of Documents
- The Semantic Web is the effort to create the equivalent Web of Data

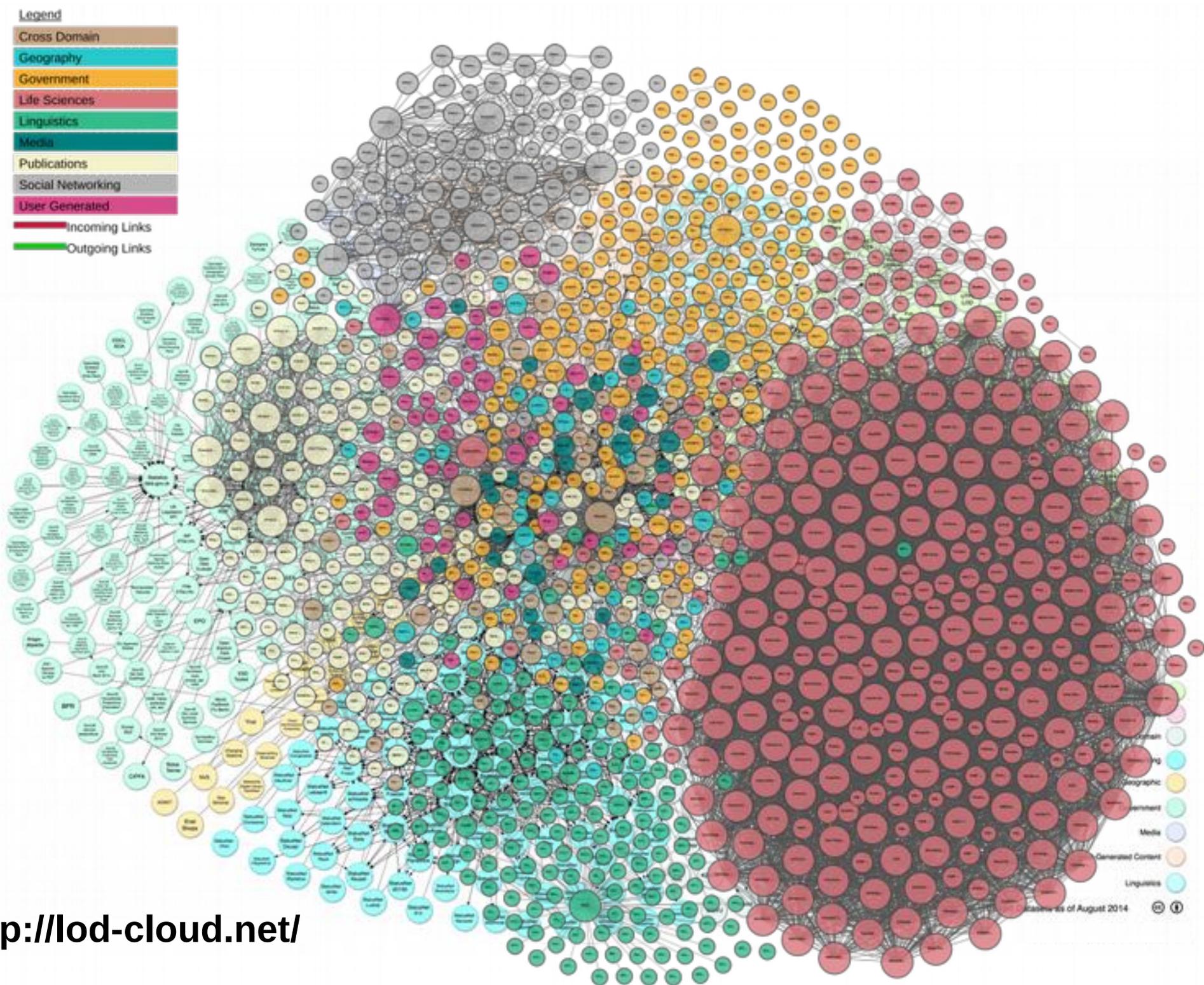
- Semantic Web activities have been baking since the late 1990s
- The infamous layer cake has evolved
- Linked Data is a more recent movement...



Linked Data

There are two words in
Semantic Web

Both are important!



<http://lod-cloud.net/>

SW vs. LD vs. LOD vs. OD

- The World Wide Web Consortium (W3C) **Semantic Web** activities and *standards* define underlying technologies
- **Data** can be **Open**, without being **Linked** – Linked Data
- **Data** can be **Linked**, without being **Open** – Open Data
- **Data** can be both **Open** and **Linked** – Linked Open Data
- Underlying technologies can support any combination – *which* combination is a matter of policy

The fundamental building block of Linked Data is RDF

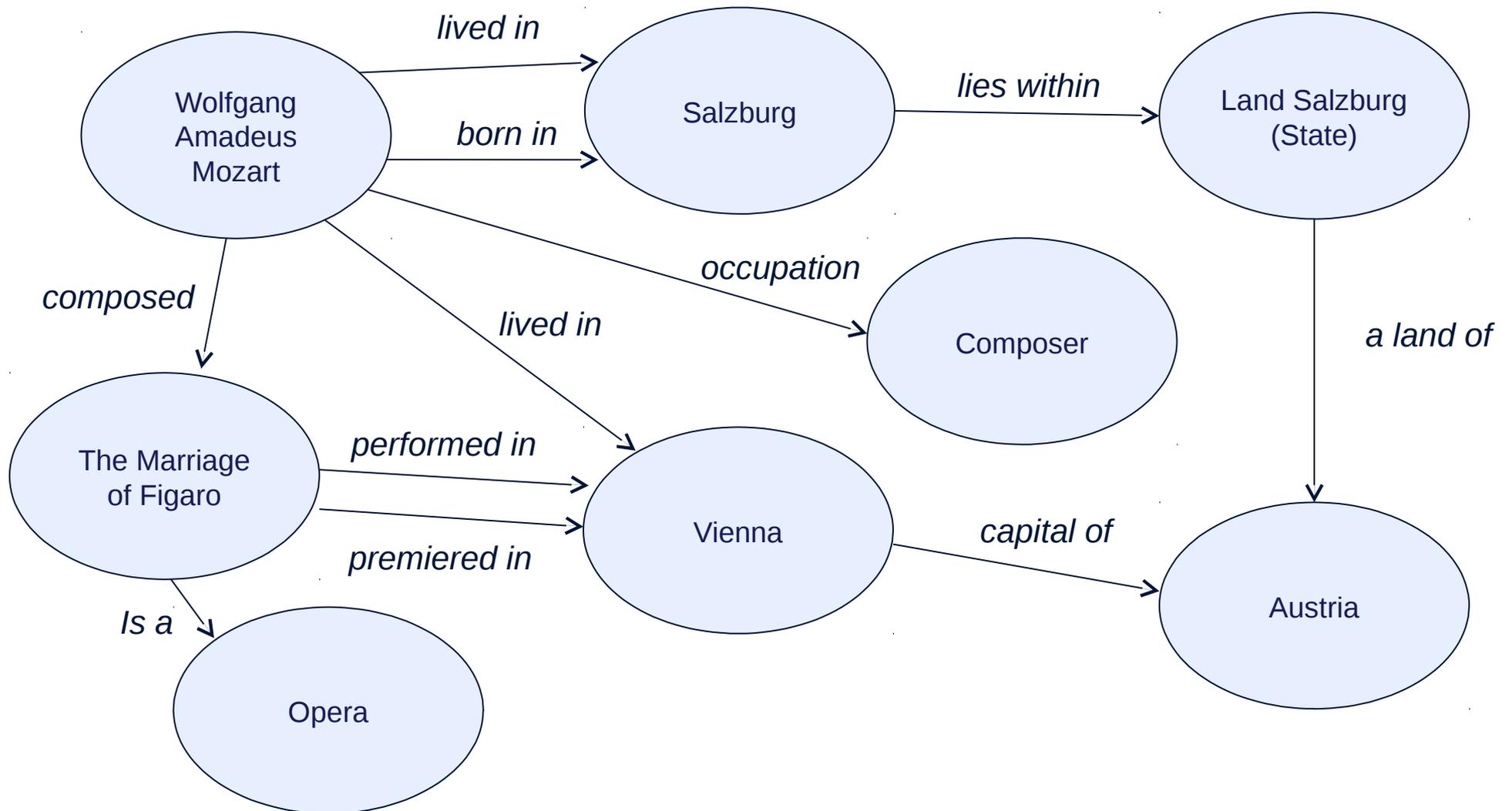


That's it.

An RDF "triple"

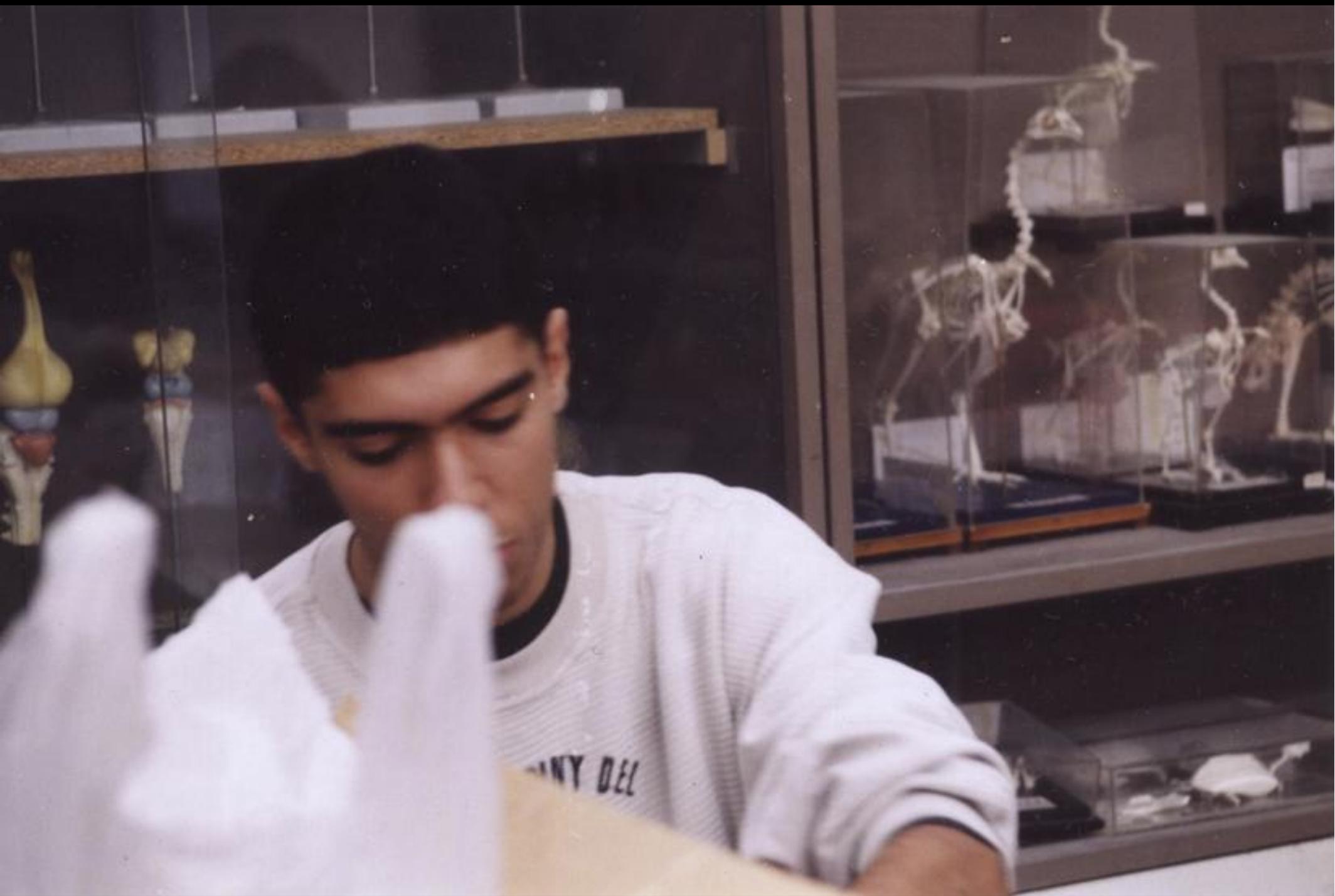
(RDF is the Resource Description Framework)

“Triples” of information, linked and expanding to the scale of the Web



Linked Data considerations

- The previous example was *very* simplistic
 - The *combination* of many specialised fields of knowledge will form a large and complex web
- Linked Data is about making associations between **information with common meaning** (semantics) where that is agreed upon
 - Not (necessarily) about forcing common meanings across information
- Linked Data is a framework for scalable semantic interoperability of digital information. **It does not mandate use of specific semantics**, only standardises the technical medium through which to link









Language of Bindings

A project to create a reference tool for bookbinding terminology from the ninth to the nineteenth century with contributors from 19 European countries. The thesaurus is based on SKOS.

- [Visit project website](#)



The Clarkson Slide Archive

Dr Christopher Clarkson was a leading authority in medieval bookbinding. The aim of this project is to digitize his slides and create associated metadata for each.

- [Link to crowdfunding](#)



Artivity

Artivity is a project in partnership with Semiodesk which aims to produce a tool for capturing contextual data produced during the creative process of artists and designers while working on a computer.

- [Artivity.io](#)
- [JISC project page](#)
- [Bitbucket repository](#)



Saint Catherine's Project

The monastery of St. Catherine in Sinai, Egypt, holds a unique library collection. Ligatus is offering conservation support through the St. Catherine's Project.

- [Visit project website](#)
- [Visit the Monastery's website](#)



Archive as Event

The online archive of the artist John Latham structured using Creative Archiving principles based on Latham's ideas.

- [Visit project website](#)
- [Visit the archive](#)

Complete list of projects

Other Ligatus projects include:

- [Artivity](#)
- [Sir John Soane Museum - Book Survey](#)
- [Bookbinding bibliography](#)

A complete list of Ligatus projects can be found [here](#).

Teaching

Research: Ligatus has a number of research students working on bookbinding, conservation and digital documentation. [Apply here](#).

MA: Ligatus contributes to the curriculum at MA level ([MA conservation](#), [Camberwell College of Arts](#)).

Services

Ligatus offers a range of services to museums and libraries including collection surveys, consultation on conservation treatments, digital documentation for conservation and research and development. Please contact us to discuss your project.

Blog

- [19th-century German binding](#)
- [Boissonnas and Egypt Conference Invitation](#) | 2 November 2017 | Royal Geographical Society
- [Prof. Nicholas Pickwood on BBC World News](#)
- [Fifteenth-century Germanic binding](#)
- [Blocks Plakes Stones Conference](#) | Institute of English Studies
- [Selected images from the Clarkson Archive](#)
- [Progress report](#)
- [Crowdfunding for The Clarkson Slide](#)



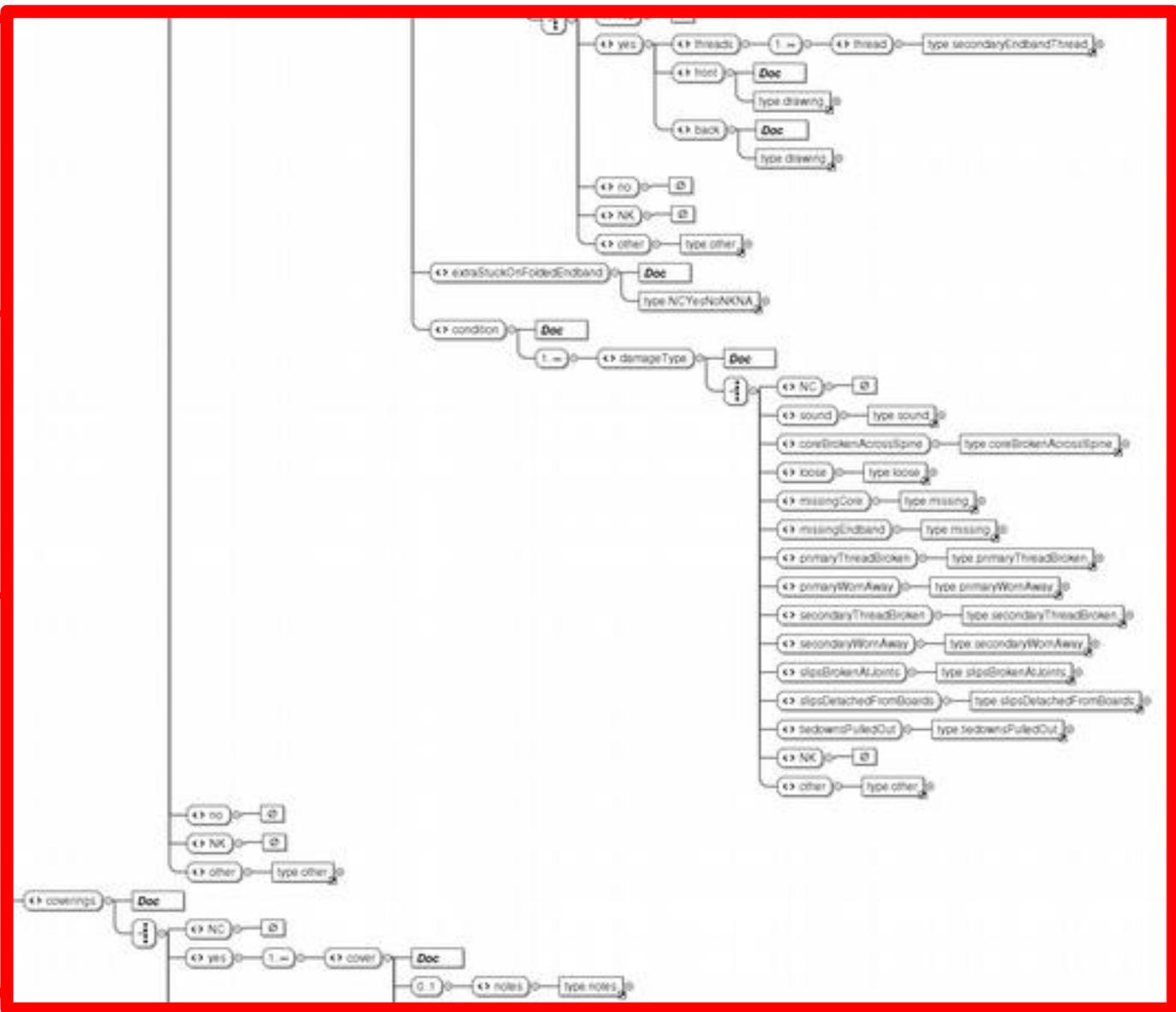








Handwritten notes on the left margin, including a vertical list of terms and a small diagram.





Documentation Network

Icon Documentation Network is a forum for conservators to discuss how to improve and share our records about condition, treatment and research

Who we are

Read more

Stakeholders

Read more

Minutes

Read more

Events

View all

News

View all

Antheia

PowerEdge R640



Antheia

Thank you Leia (Yeomans)



Software

Thank you Graham (Klyne)

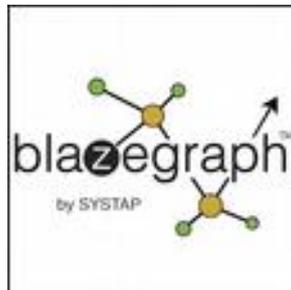


CentOS

Operating system

NGINX

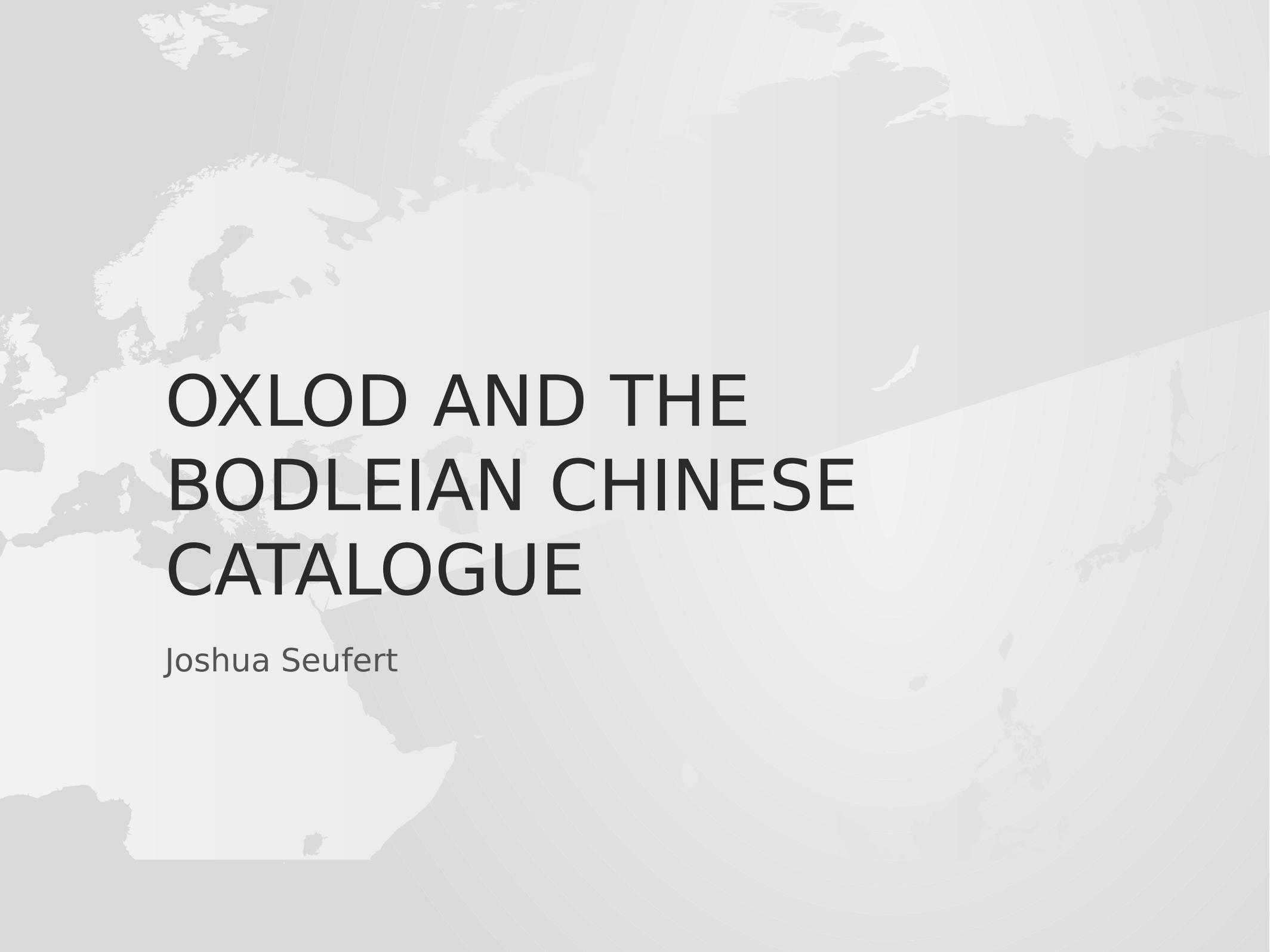
Web server



Triple store (database server)

Meetings

- Andrew Lamb (Bate collection)
- Stephen Harris (Herbaria)
- Toby Burrows (OeRC)
- Aruna Bhaugeerutty and Chris Powell (Ashmolean)
- Daniel Bone and Alexandra Greathead (Ashmolean)
- Joshua Seufert



OXLOD AND THE BODLEIAN CHINESE CATALOGUE

Joshua Seufert

- Background of the Chinese Collection at the Bodleian
- Structure of the Bodleian Chinese Catalogue
- Other sources of data and hopes of integration via OxLOD
 - Internally
 - Externally
- Results and feedback

BODLEIAN CHINESE COLLECTION

- Continuous collection of Chinese material since 1603
- Many unique surviving editions
- One of the major collections in Europe
- Collection is almost completely catalogued
- Digitization has started in 2011 and is ongoing currently
500+ editions available online

BODLEIAN CHINESE CATALOGUE SYSTEM AND NUMBERS

- NoSQL system
- *allegro* on Linux server
- UTF-8 encoded
- HTML5 and php online system for browser-based cataloguing
- Online end-user catalogue
- Fully adjustable catalogue structure
- Large scale databases possible
- PURLs for records
- Total no. of records: 423,155
- Bibliographical records: 193,370 of which:
 - works with analytics: 3,817
 - analytics: 93,178
- Piece records: 226,840
- Personal author authority: 2,672
- Corporate author authority: 23
- Subject authority records: 250

BODLEIAN CHINESE CATALOGUE STRUCTURE

UNIVERSITY OF OXFORD

- 陸氏易解 一卷 / (吳)陸績撰; (明)姚士麟輯
- 周易註 一卷 / (魏)王弼, (晉)韓康伯撰
- 周易注疏 十三卷附考證 / (魏)王弼, (晉)韓康伯注; (唐)陸德明音義; (唐)孔穎達疏
- 周易略例 一卷附考證 / (魏)王弼撰; (唐)邢

Data display

F5 F7 < >

鏈接: <http://allegro.bodleian.ox.ac.uk/chinese/20160810101940osn>

5 書名: 雙樹幻鈔 三卷

4 收於: 少室山房筆叢 四十八卷

3 收於: 少室山房集 六十四卷 / (明)胡應麟撰

2 收於: 廣雅叢書 / (民國)徐紹榮輯
影印清光緒中廣雅書局刊, 民國九年[1920]徐紹榮彙編重印本

1 收於: 廣州大典. 第1輯 / 陳建華, 曹淳亮主編
廣州: 廣州出版社, 2008
精裝30冊; 30公分
(廣州大典. 叢部)
影印本
ISBN 978-7-80731-160-7

藏館: BOD Chin.d.27062/7(6axii) [order this book](#)

- 周易注疏 十三卷附考證 / (魏)王弼, (晉)韓康伯注; (唐)陸德明音義; (唐)孔穎達疏
- 雙川易說 十卷首一卷 / (清)王心敬撰
- 周易述 二十三卷 / (清)惠棟著

Extras

About

- Unique structure of Chinese bibliographic data
- Thousands of linked records to describe one edition
- Records are linked in a tree structure
- Often five or more layers of records are needed to identify an individual item

OTHER SOURCES OF DATA IN AND OUTSIDE OF OXFORD

- Conspectus of Chinese shelfmarks (Provenance, collection history)
- Seals website (scans and transcription of collector seals)
- Virtual international Authority File (VIAF)
 - used by libraries and museums
- Harvard China Biographical Database (CBDB)
 - used by researchers in the field of Chinese studies

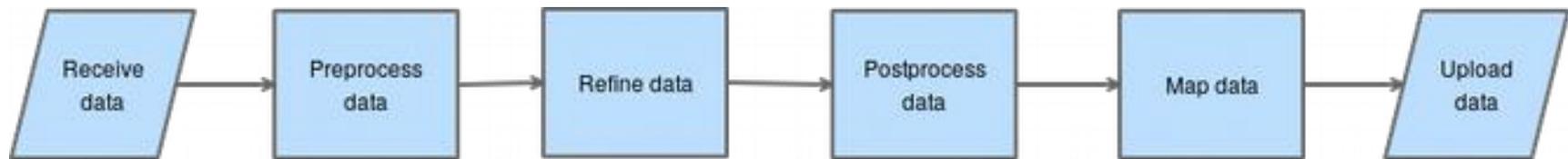


DATA EXPORT AND MAPPING

- First export in RDF / XML using DC-terms
- Second export as logically structured text file

RESULTS AND FEEDBACK

- Logical analysis of the data structure together with Athanasios worked very well
- Linking of different Bodleian resources (Chinese catalogue, Chinese shelfmark database, Seals website)
- Linking to external data provider (VIAF)
- Identification of possible problems when linking to other Oxford collections like the Eastern Art collection of the Ashmolean
- Possible solution for such problems via linking to third party data (VIAF)
- Major improvement of data quality of the original data



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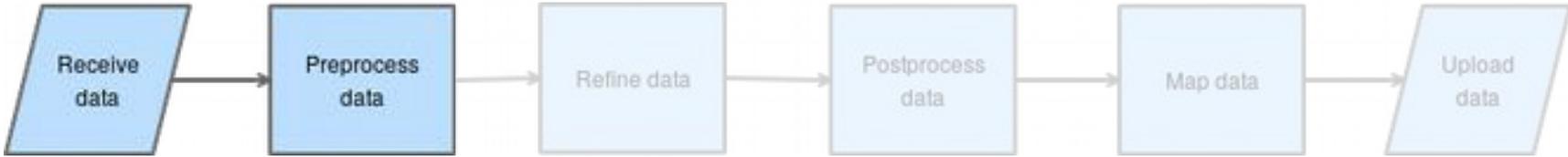
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Links on labels



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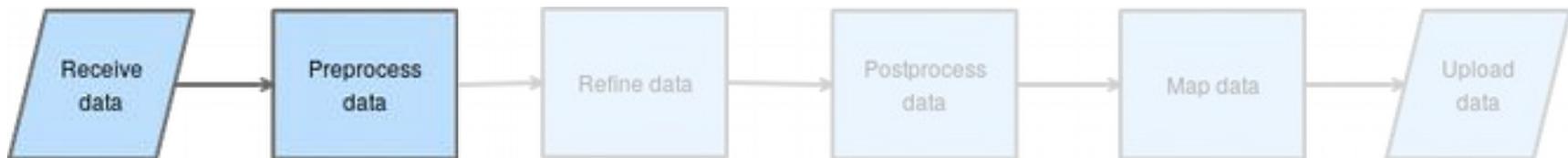
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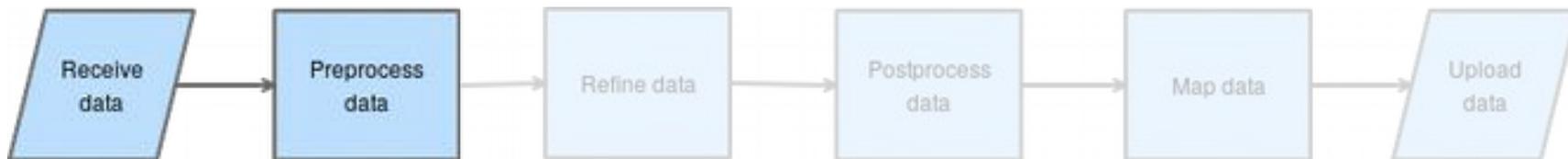
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Mixed content types



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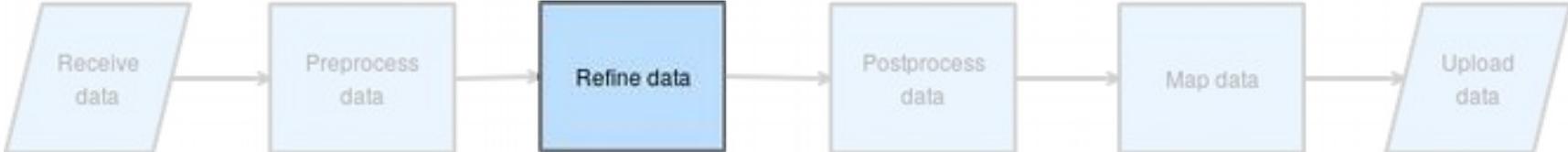
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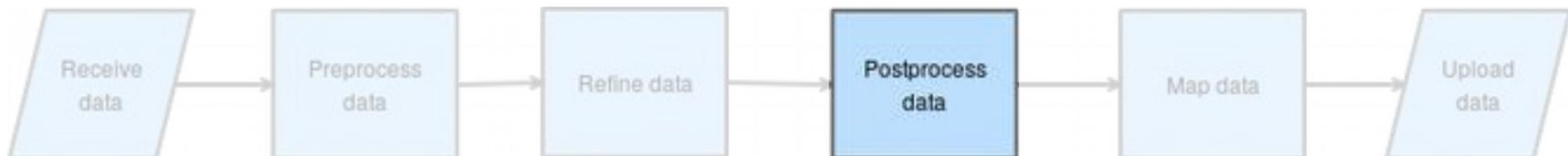
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20010709/08:50:41 osn	20090429/13:51:46 osn	錢仲聯	25935583	qian zhong lan
20090408/15:33:29 osn		邱斯嘉	4752665	qiu si jia
19940422/10:04:04 osn		瞿秋白	73861936	qu qiu bai
19980521/12:54:17 osn		白玉霜	40628553	bai yu shuang
19920404/10:24:48 osn		王詩琅	40688703	wang shi lang
19980226/10:27:10 osn		王力	194111	wang li
19970609/11:15:21 jozy		王任叔	100647818	wang ren shu
19950812/10:33:00 odh		李登輝	84366804	li deng hui
20151110/10:39:28 osn		李炳南	58933281	li bing nan
19940521/08:46:46 osn		李平心	45693715	li ping xin
19970321/13:44:03 osn	20041015/09:50:47 osn	李壬癸	13388022	li ren gui
19970716/10:23:07 jozy		張曉風	42700849	zhang xiao feng
19970213/12:15:59 jozy	20170126/15:01:15-563/1 odh	鈕萬里	66516079	qu wan li
19950914/08:45:32 osn	19960718/09:53:52 osn	夏承德	6277599	xia cheng ying
19980414/11:22:43 osn		夏仁虎	77847376	xia ren hu
19990818/14:20:11 osn		唐玉璋	265887856	tang gui zhang
19990325/13:15:46 osn		吳敬恆	16102153	wu jing heng

Automatic
VIAF match



- Remove empty fields
- Remove problematic characters
- Prepare records for mapping





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Web Editor for this group

Contact [Agnese Galeffi](#)

Functional Requirements for Bibliographic Records

by IFLA Study Group on the Functional Requirements for Bibliographic Records

Series: *IFLA Series on Bibliographic Control* 19

Publisher: Munich: K.G. Saur Verlag, 1998

The FRBR Final Report was first published in print in 1998 by K.G. Saur as volume 19 of UBCIM publications, new series, as well as PDF and HTML files on the IFLA Web site.



Current text

Including amendments and corrections to date

- ★ [PDF](#) (1.2 MB; 142 pages) (Missing sentence re-instated at end of 3rd paragraph of 3.2.2, Feb. 2009)
- ★ [HTML](#)

1998 text

Functional requirements for bibliographic records : final report / IFLA Study Group on the Functional Requirements for Bibliographic Records. — München : K.G. Saur, 1998. — viii, 136 p. — (UBCIM publications ; new series, vol. 19). — ISBN 978-3-598-11382-6.

- ★ [PDF](#) (1.7 MB)
- ★ [HTML](#)
- ★ [Errata](#) (Nov. 2007)

Cataloguing

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Web Editor for this group

Contact [Agnese Galeffi](#)

Definition of FRBRoo: A Conceptual Model for Bibliographic Information in Object-Oriented Formalism

by Working Group on FRBR/CRM Dialogue

FRBRoo

FRBR_{OO} is an ontology or high-level conceptual model for bibliographic data.

It is described in the document:

Definition of FRBR_{OO}: a Conceptual Model for Bibliographic Information in Object-Oriented Formalism

• Version 2.4: [\[PDF - English - 4MB\]](#)



Commonly known as FRBR_{OO}, this model is closely related to IFLA's **FRBR family of conceptual models**. It is the object-oriented version of these models. FRBR_{OO} version 1 was based on FRBR alone, while FRBR_{OO} version 2 is based on the three models: **FRBR**, **FRAD** and **FRSAD**.

FRBR_{OO} remains true to the original models. It does not change the concepts expressed in the original three models, nor does it transform any aspect. It provides an alternative view or interpretation of the FRBR family of models. It is an object-oriented model, that is, the ontology described in FRBR_{OO} uses an object oriented formalism instead of entity-relationship modelling. Thus, FRBR_{OO} is better suited for the implementation of FRBR concepts in object oriented tools. It also makes explicit some concepts that were implicit in the original models, thus making it easier to move from conceptual model to real-life applications.

Relationship between the library and museum conceptual models

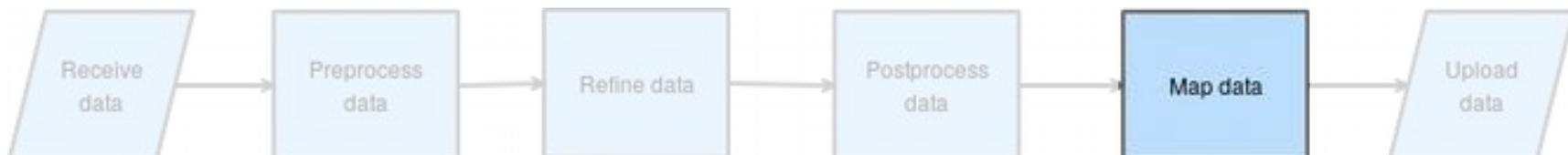
FRBR_{OO} is the result of dialogue between the conceptual modelling communities of IFLA and the International Council of Museums (ICOM). The International Committee for Documentation is the ICOM committee involved in this work; it is known as CIDOC, from the acronym of the Committee's name in French.

While the library community was developing the original FRBR entity-relationship model, the museum community was developing its own conceptual model for museum data: the CIDOC Conceptual Reference Model, or CIDOC CRM.

When the two models were completed, each community recognized the great value in harmonizing the two models to support future data integration and interoperability. A common view of cultural heritage information benefits both communities.

Mapping

- Bibliographic
 - F2 Expression (F24 Publication Expression + subrecords E22 Self Contained Expression)
 - F5 Item (with a shelfmark)
- Authority records
 - E41 Appellation / E21 Actor
- Old shelfmarks
 - E42 Identifiers
- Seals
 - E25 Man-Made Feature / E36 Visual Item





Model Overview



Enter subject

[http://allegro.bodleian.ox.ac.uk/chinese/Backhouse 3](http://allegro.bodleian.ox.ac.uk/chinese/Backhouse%203)



Choose a Template:

Template 1

Expand All

Collapse All

Mark same instances



Backhouse 3@en [F5_Item]

P102_has_title

[湘陳氏@cn \[E35_Title \]](#)

[湘陳氏續栢齋主人@cn \[E35_Title \]](#)

P56_bears_feature

<http://allegro.bodleian.ox.ac.uk/chinese/Backhouse%203/seal/1> [E25_Man-Made_Feature]

P138i_has_representation

<http://www.bodley.ox.ac.uk/users/djh/seals/b3-1.jpg> [E36_Visual_Item]

<http://allegro.bodleian.ox.ac.uk/chinese/Backhouse%203/seal/2> [E25_Man-Made_Feature]

P138i_has_representation

<http://www.bodley.ox.ac.uk/users/djh/seals/b3-2.jpg> [E36_Visual_Item]



Model Overview



Enter subject

http://allegro.bodleian.ox.ac.uk/chinese//20170727152929osn



Choose a Template:

Template 1

Expand All

Collapse All

Mark same instances



20170727152929osn [F2_Expression]

P102_has_title

zhu ke zhen quan ji. di 5 juan [E35_Title]

P139_has_alternative_form

zhu ke zhen quan ji. di 5 juan [E35_Title]

R17i_was_created_by

uuid:AP [F28_Expression_Creation]

R19_created_a_realization_of

uuid:AQ [F1_Work]

P94i_was_created_by

uuid:AR [E65_Creation]

P14_carried_out_by

竺可桢 [E39_Actor]

P1_is_identified_by

竺可桢 [E41_Appellation]

P139_has_alternative_form

zhu ke zhen [E41_Appellation]

R6i_is_carried_by

Chin.d.27708/5@en [F5_Item]

```

SELECT ?oldlabel ?prefidlabel ?titlelabel
{
  ?appellation rdfs:label ?oldlabel .
  ?item <http://www.cidoc-crm.org/cidoc-crm/P1_is_identified_by> ?appellation .
  ?item <http://www.cidoc-crm.org/cidoc-crm/P48_has_preferred_identifier> ?prefid .
  ?prefid rdfs:label ?prefidlabel .
  ?expression <http://www.cidoc-crm.org/frbr/R6i_is_carried_by> ?item .
  ?expression <http://www.cidoc-crm.org/cidoc-crm/PI02_has_title> ?title .
  ?title rdfs:label ?titlelabel
}
LIMIT 100

```

Old shelfmark	Shelfmark	Book title
Chin.600	Sinica 100	五經旁訓
Ser.d.623	Sinica 100	五經旁訓
Vet.Or.d.Chin.116	Sinica 100	五經旁訓
I.H.E.Ia22	Ps.Chin.e.1	詩篇，官話
I.H.E.I1	O.T.Chin.d.3	聖經舊遺詔創世傳 = Genesis
I.H.E.I7	Ps.Chin.f.1	舊約詩篇
I.H.E.Ia19	Ps.Chin.f.2	舊約聖詩
I.H.E.Ib15	Ps.Chin.d.5	舊約詩篇
I.H.E.I8	O.T.Chin.d.4	聖經舊遺詔出麥西傳 = Exodus
I.H.E.I13	O.T.Chin.d.5	聖經舊遺詔諭利未記
Chin.530d	MS.Chin.e.9	和珅奏章 ^不分卷^
S.C.29245c	MS.Chin.e.9	和珅奏章 ^不分卷^
Chin.594f	MS.Chin.e.15	闢釋氏諸妄 ^一卷^
S.C.29246r	MS.Chin.e.15	闢釋氏諸妄 ^一卷^

```

SELECT ?oldlabel ?prefidlabel ?visualitem
{
  ?appellation rdfs:label ?oldlabel .
  ?item <http://www.cidoc-crm.org/cidoc-crm/P1_is_identified_by> ?appellation .
  ?item <http://www.cidoc-crm.org/cidoc-crm/P48_has_preferred_identifier> ?prefid .
  ?prefid rdfs:label ?prefidlabel .
  ?item <http://www.cidoc-crm.org/cidoc-crm/P56_bears_feature> ?feature .
  ?feature <http://www.cidoc-crm.org/cidoc-crm/P138i_has_representation> ?visualitem
}
LIMIT 100

```

Old shelfmark	Shelfmark	Photograph
Chin.c.453	Sinica 6031	< http://www.bodley.ox.ac.uk/users/djh/seals/s6031-1.jpg >
Chin.c.453	Sinica 6031	< http://www.bodley.ox.ac.uk/users/djh/seals/s6031-2.jpg >
Chin.c.453	Sinica 6031	< http://www.bodley.ox.ac.uk/users/djh/seals/s6031-3.jpg >
Chin.c.453	Sinica 6031	< http://www.bodley.ox.ac.uk/users/djh/seals/s6031-4.jpg >
Chin.e.436	Sinica 6066	< http://www.bodley.ox.ac.uk/users/djh/seals/s6066.jpg >
Chin.423	Sinica 618	< http://www.bodley.ox.ac.uk/users/djh/seals/s618.jpg >
Ser.d.253	Sinica 618	< http://www.bodley.ox.ac.uk/users/djh/seals/s618.jpg >
Chin.434c	Sinica 629	< http://www.bodley.ox.ac.uk/users/djh/seals/s629-1.jpg >
Chin.434c	Sinica 629	< http://www.bodley.ox.ac.uk/users/djh/seals/s629-2.jpg >
Chin.434c	Sinica 629	< http://www.bodley.ox.ac.uk/users/djh/seals/s629-3.jpg >
Chin.434c	Sinica 629	< http://www.bodley.ox.ac.uk/users/djh/seals/s629-4.jpg >
Ser.d.262	Sinica 629	< http://www.bodley.ox.ac.uk/users/djh/seals/s629-1.jpg >
Ser.d.262	Sinica 629	< http://www.bodley.ox.ac.uk/users/djh/seals/s629-2.jpg >
Ser.d.262	Sinica 629	< http://www.bodley.ox.ac.uk/users/djh/seals/s629-3.jpg >

TODO:

- Map wider set of fields
- Restructure data for refining and mapping
- Fix VIAF and consider Harvard integration
- Automate Seals integration (or fix HTML)

- Integration with other datasets
 - e.g. Ashmolean Chinese



Next Open Workshop

12 December 2017 - OeRC

