



Because the web of data doesn't organize itself

*OCLC Research's contributions to
linked data in the library community*

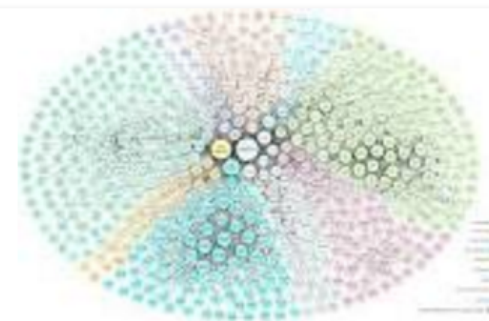


Titia van der Werf
Senior Program Officer

[All](#)[News](#)[Videos](#)[Images](#)[Shopping](#)[More ▾](#)[Search tools](#)

About 34,600,000 results (0.40 seconds)

In computing, **linked data** (often capitalized as **Linked Data**) is a method of publishing structured **data** so that it can be interlinked and become more useful through semantic queries.



[Linked data - Wikipedia, the free encyclopedia](https://en.wikipedia.org/wiki/Linked_data)

https://en.wikipedia.org/wiki/Linked_data Wikipedia ▾

[About this result](#) • [Feedback](#)

[Linked Data | Linked Data - Connect Distributed Data across ...
linkeddata.org/ ▾](#)

More specifically, Wikipedia defines **Linked Data** as "a term used to describe a recommended best practice for exposing, sharing, and connecting pieces of **data**, information, and knowledge on the Semantic Web using URIs and RDF."

[Data Sets - Guides and Tutorials - Frequently Asked Questions - Tools](#)

You've visited this page 2 times. Last visit: 5/8/14

The two models of the Web

Web of Documents

- Web pages or other documents
- Human-readable text
- Independent
- Static

Web of Data

- Statements about entities, or 'Things'
- Machine-processable data
- Integrated
- Actionable

An example: a Knowledge Card



roma



[Alle](#)

[Maps](#)

[Afbeeldingen](#)

[Nieuws](#)

[Video's](#)

[Meer ▾](#)

[Zoekhulpmiddelen](#)

Ongeveer 564.000.000 resultaten (0,50 seconden)

[Roma Capitale | Sito Istituzionale](#)

www.comune.roma.it/ ▾ [Vertaal deze pagina](#)

Roma Capitale · Archivio News · Sindaco e Giunta ... **Roma Capitale** - Piazza del Campidoglio 1 Amministrazione trasparente. pwr.c. Il sito capitolino utilizza ...

[ROMA Il Messaggero](#)

www.ilmessaggero.it/ROMA/ ▾ [Vertaal deze pagina](#)

Roma, fumo in metro a Termini: panico tra i passeggeri ... I giorni della verità/ **Roma** al bivio: rigore sui conti o spese allegre per i comunali. di Oscar Giannino ...

[Turismo Roma Capitale > sito web ufficiale](#)

www.turismoroma.it/ ▾ [Vertaal deze pagina](#)

Il sito web ufficiale turistico di **Roma Capitale**, offre tutte le informazioni turistiche della città, aggiornato e controllato dal Dipartimento Turismo **Roma Capitale**.

[AS Roma | Official Website | Rome | Football | Soccer](#)

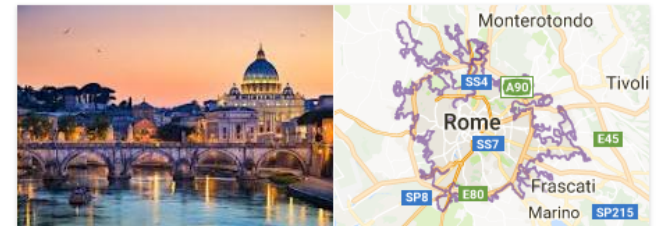
www.asroma.com/ ▾ [Vertaal deze pagina](#)

As **Roma** Homepage, English. ... Live Match Gallery: **Roma** 3 - 1 Austria Wien. an hour ago. Advertisement. AS **Roma** Newsletter. Sign up today to receive ...

[Roma - Wikipedia](#)

<https://it.wikipedia.org/wiki/Roma> ▾ [Vertaal deze pagina](#)

Roma (AFI: [ˈroma], pronuncia) è un comune italiano sui generis disciplinato da un'apposita legge dello Stato, capitale della Repubblica Italiana, nonché ...



Rome

Hoofdstad van Italië

Rome is de hoofdstad van Italië en tevens het bestuurlijk centrum van de regio Lazio en de Città Metropolitana di Roma Capitale. De stad Rome heeft ca. 2,8 miljoen inwoners, het inwonertal van de metropoolregio bedraagt 3,7 miljoen. [Wikipedia](#)

Opgericht: 21 april 753 v.Chr.

Weer: 16 °C, wind ZO met 8 km/h, 92% luchtvochtigheid

Bevolking: 2,627 miljoen (2012) Verenigde Naties

Geplande evenementen

za 22 okt. Paolo Conte

do 27 okt. Max Gazzè

di 25 okt. Peter Murphy
19:00 Quirinetta

Nog 5+ weergeven

Entities and relationships



Albert Einstein

Person

author



Relativity: The Special and General Theory

Work

about



Physics

Subject

...linked for machine understanding



<https://www.wikidata.org/wiki/Q937> and
<http://viaf.org/viaf/75121530>

Wikidata and VIAF

author



<http://experiment.worldcat.org/entity/work/data/369081611>

WorldCat Works

about



<http://id.loc.gov/authorities/subjects/sh85101653.html>

Library of Congress Subject Headings

THE OCLC RESEARCH INTERNATIONAL LINKED DATA SURVEYS FOR IMPLEMENTERS

KAREN SMITH-YOSHIMURA

D-Lib Magazine

July/August 2016

Volume 22, Number 7/8

[Table of Contents](#)

Analysis of International Linked Data Survey for Implementers

Karen Smith-Yoshimura

OCLC Research

smithyok@oclc.org

DOI: 10.1045/july2016-smith-yoshimura

[Printer-friendly Version](#)

Abstract

The International Linked Data Survey for Implementers conducted by OCLC Research in 2014 and 2015 attracted responses from 90 in indicates that most are primarily experimental in nature. This article provides an overview of the linked data projects or services inst encountered. Relatively small projects are emerging and provide a window into future opportunities. Applications that take advantag

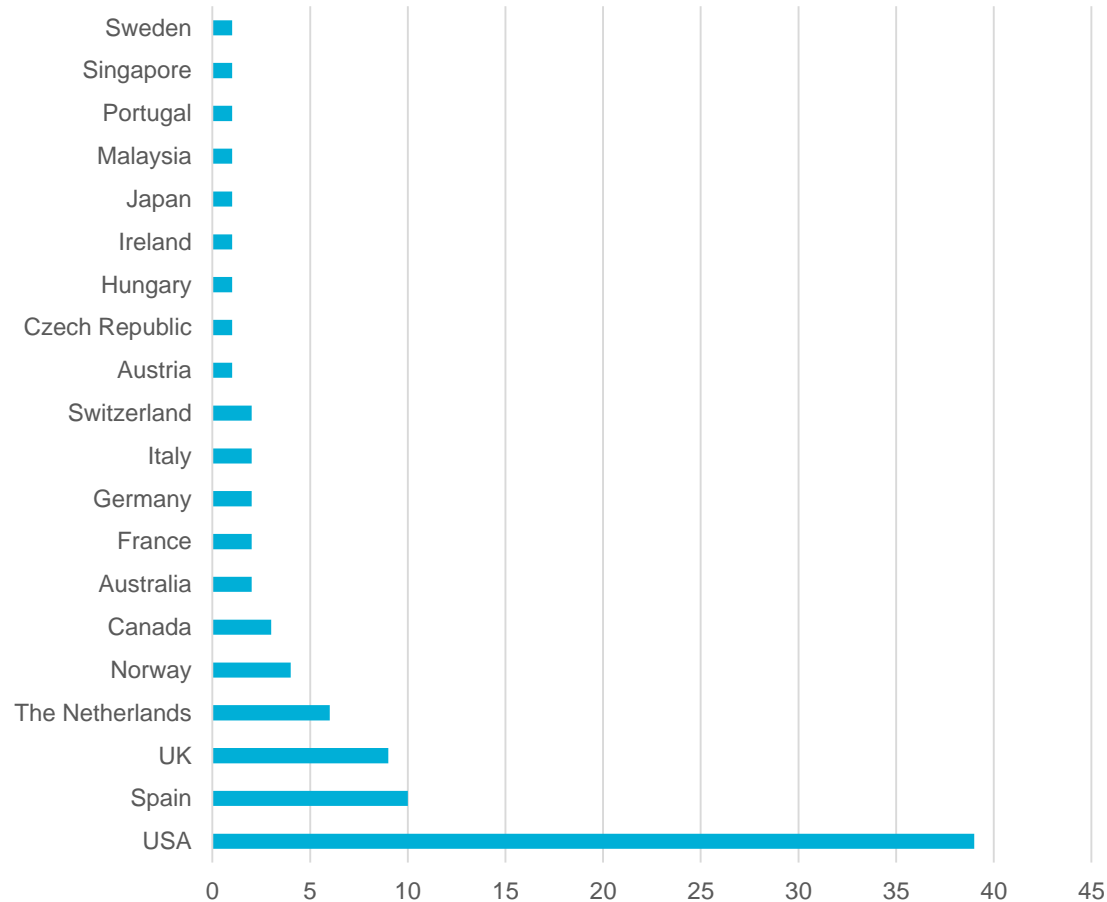
1 Introduction

The impetus for an "International Linked Data Survey for Implementers" was discussions with OCLC Research Library Partner¹ metadata consultation with OCLC colleagues and a few OCLC Research Library Partners and beta tested by several linked data implementers. W implemented a linked data project or service, or were in the process of doing so. Questions were asked both about publishing linked c

While the initial survey results received a generally appreciative response from readers, some noted and regretted the absence of sev

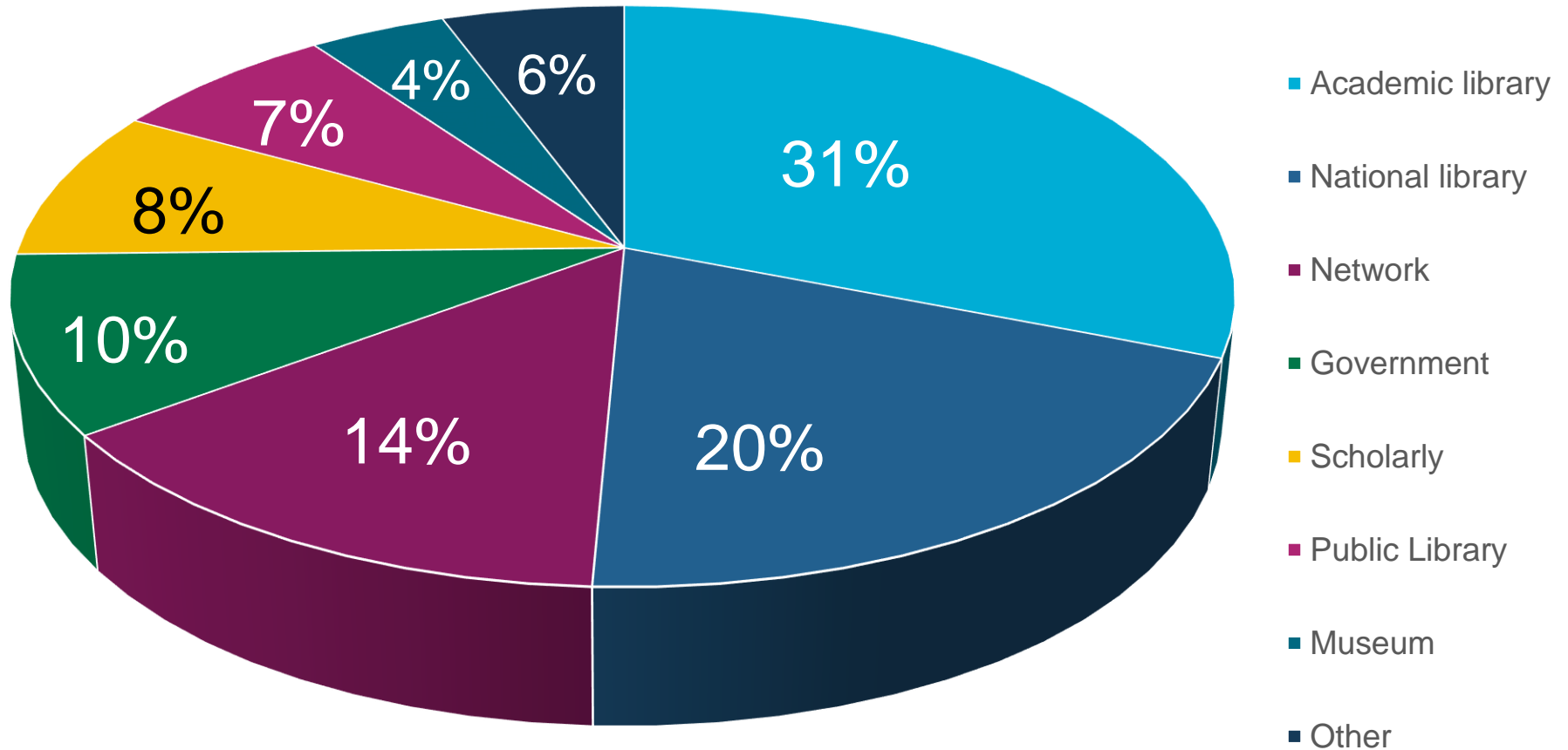
Geographic breakdown of 90 responding institutions

Linked Data Survey Respondents

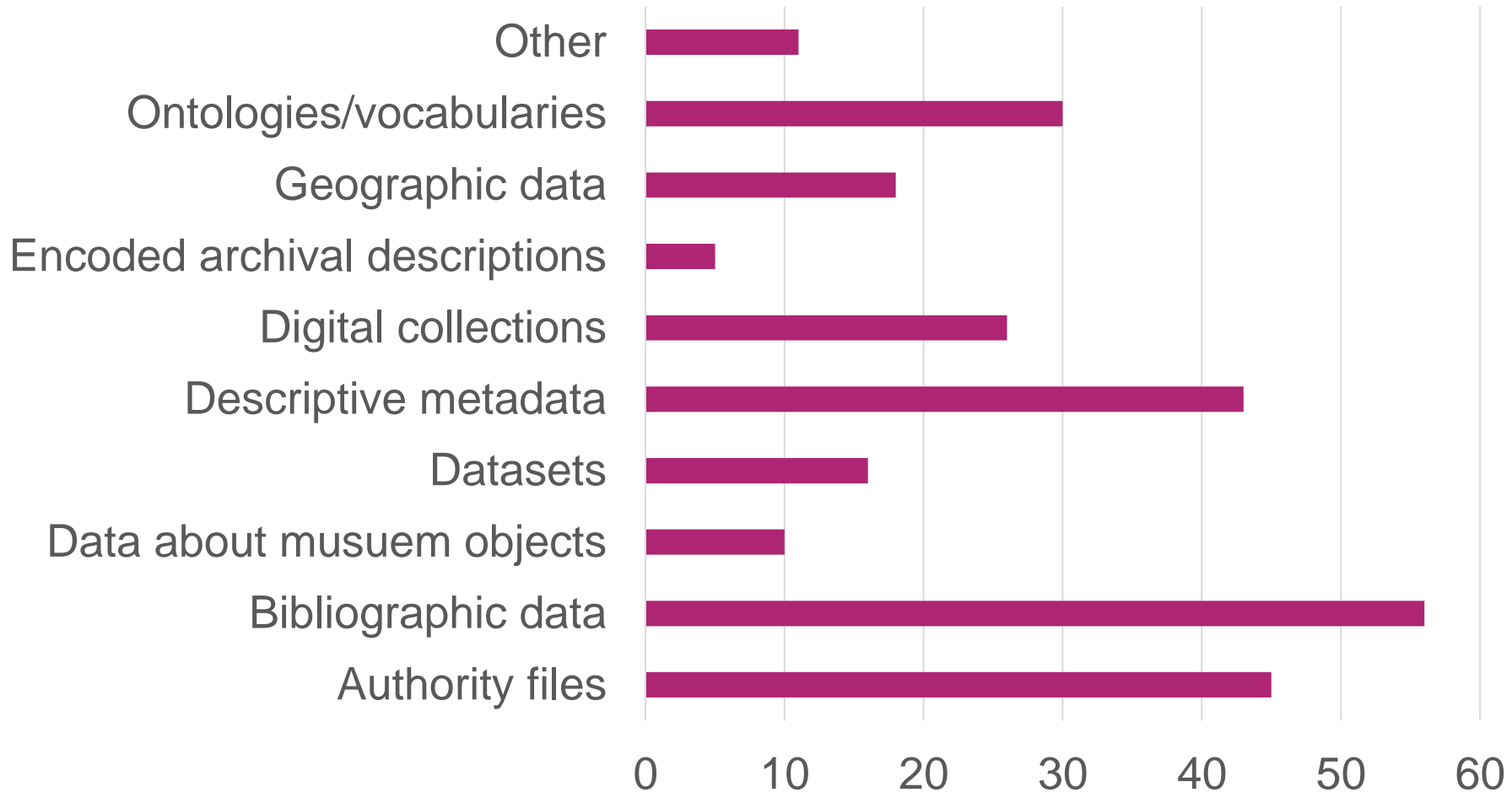


20 countries
represented

2015 responding institutions by type



What is published as linked data



Barriers to publishing linked data

- Steep learning curve for staff
- Inconsistent legacy data
- Difficulties in
 - selecting appropriate ontologies to model data
 - establishing links
- Little documentation or advice on how to build the systems

2015 linked data resources most consumed

VIAF

DBpedia

GeoNames

id.loc.gov

“Resources we convert to linked data ourselves”

Getty's Art and Architecture Thesaurus

FAST (Faceted Application of Subject Terminology)

WorldCat.org

data.bnf.fr

Deutsche National Bib Linked Data Service

Barriers to consuming linked data

- Unreliable quality of published linked data
 - not always reusable
 - lack of authority control or URIs
 - stale or obsolete datasets

Maturity

- Difficulty understanding its structure and meaning

Analysis

- Matching, disambiguating, and aligning locally produced data with third-party resources
- Mapping vocabulary
- Size of RDF datasets—too large or small

Implementation

Reasons for publishing and consuming linked data

- Expose our data to larger Web audience
- Demonstrate what can be done

Publishing

- Heard about it and wanted to try it
- Improve SEO

Both

- Create a richer user experience
- Enhance our own data
- Improve internal metadata management
- Achieve greater accuracy and scope in search results
- Experiment with data integration

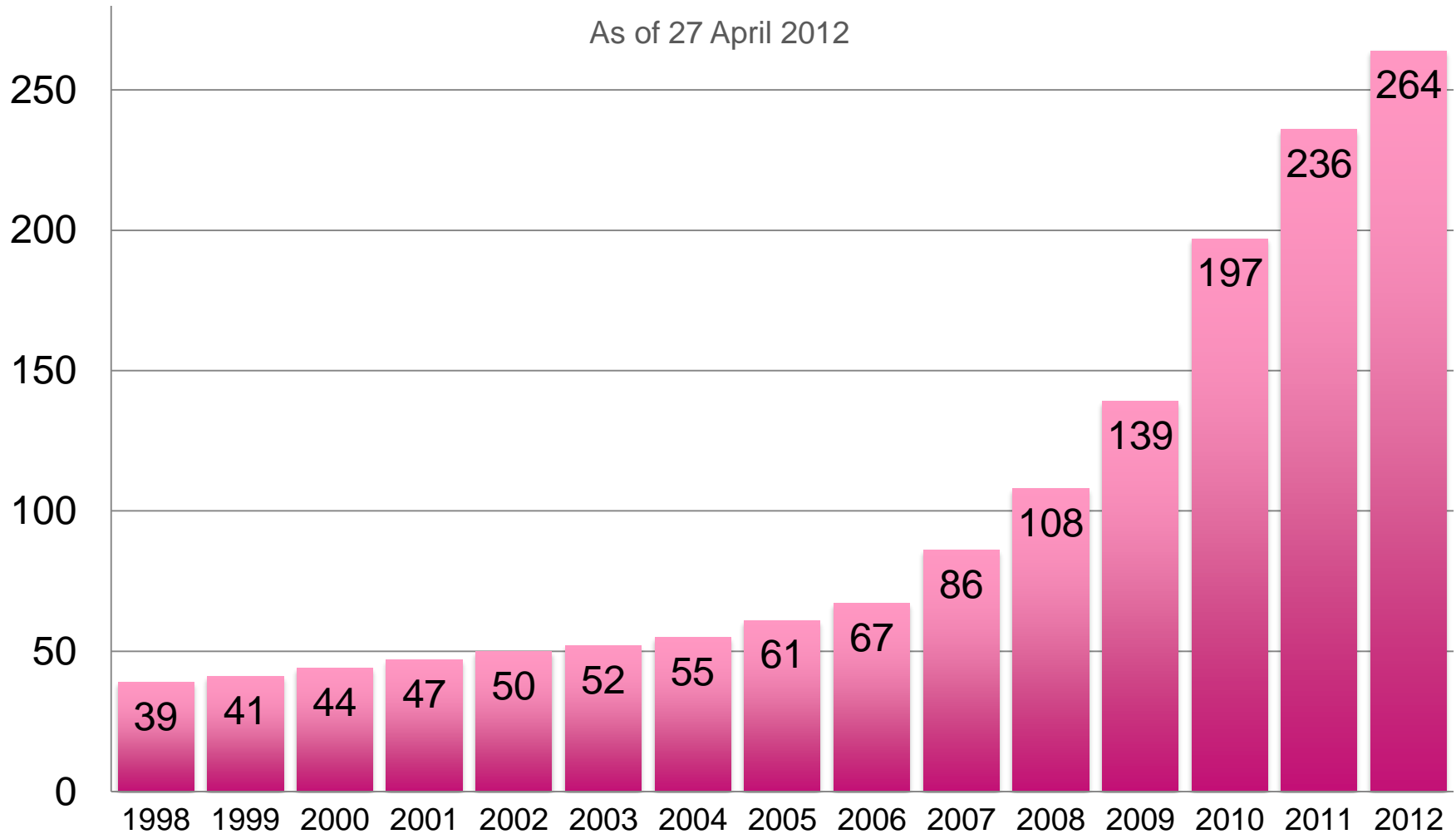
Consuming

OCLC RESEARCH'S CONTRIBUTIONS

WorldCat growth since 1998

Millions of records

As of 27 April 2012



Aggregating data

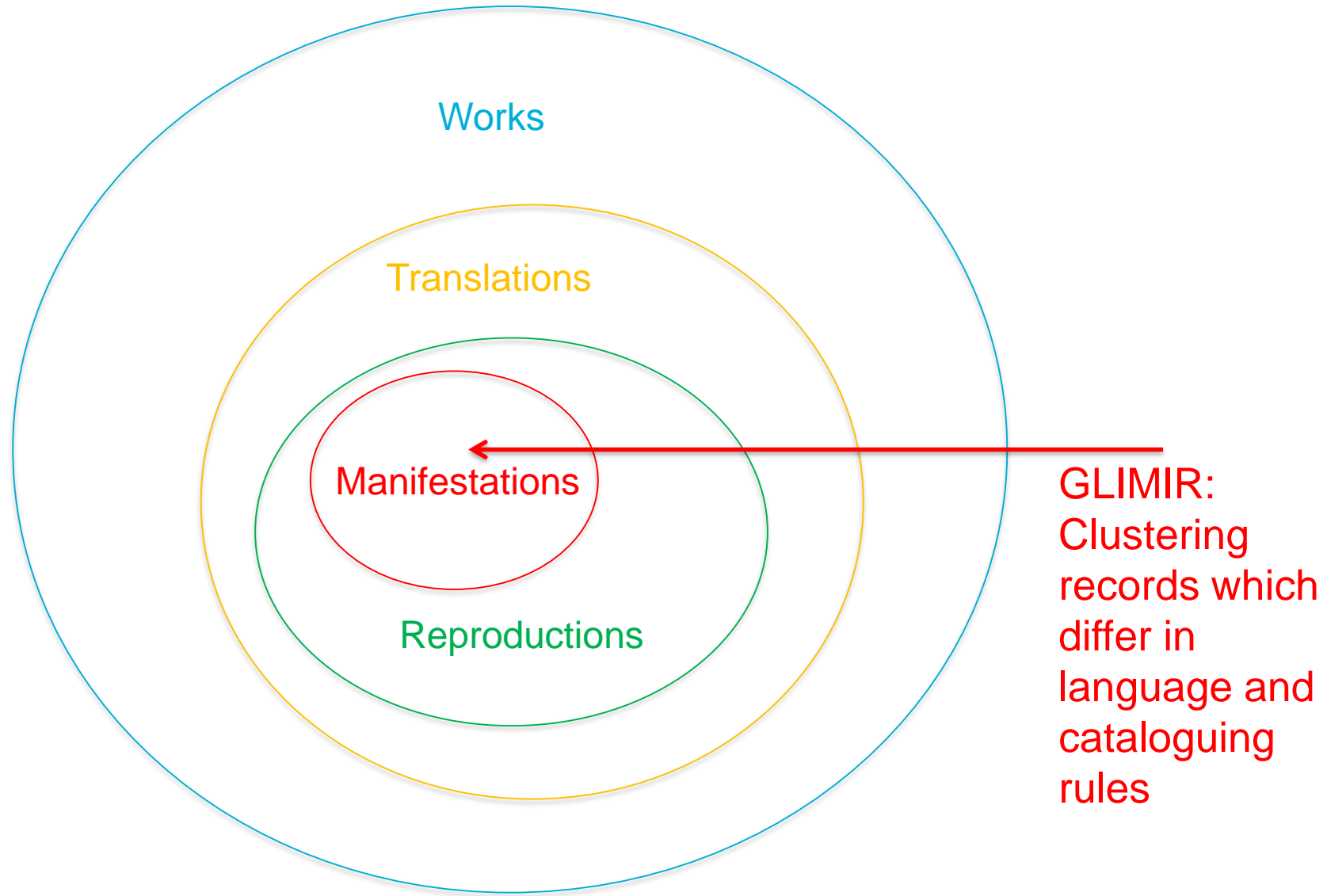
In aggregations:

- data lose their local context
- data get lost in the bigger context

Making sense of data at the aggregate level:

- FRBR
- GLIMIR
- VIAF
- FAST
- Mining for entities/names

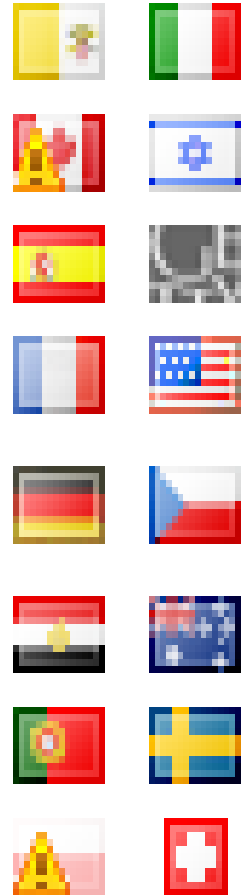
FRBRisation of WorldCat: 2006 - now



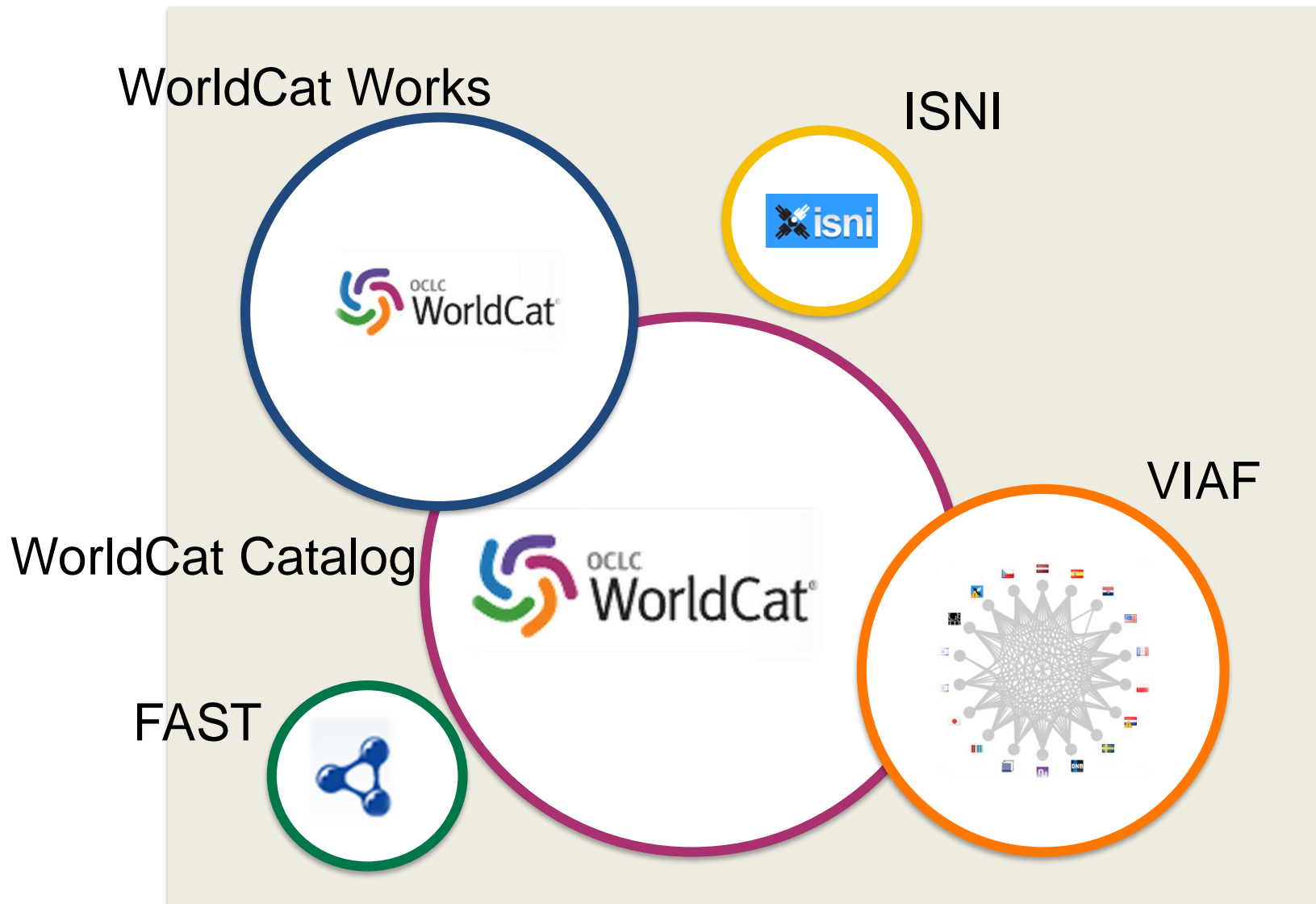
VIAF

Virtual International Authority File


- Merge of 24+ national level authority files
- Cooperative program run by OCLC
- Initiated by LoC, DNB, BnF and OCLC
- 29 million authority records
- 112 million bibliographic records
- Migrated from an OCLC Research project to an OCLC service in 2012
- VIAF is available as linked data




OCLC's linked data resources




The EntityJS explorer

EntityJS  ArchiveGrid

 SIGN OUT

lincoln

 Person

[Pres. U.S. Abraham Lincoln , 1797 - 1806](#)

[Mrs. Mary \(Todd\) Lincoln , 1810 - 1878](#)

[Lincoln Kirstein , 1907 - 1996,](#)

[Robert Todd Lincoln , 1843 - 1926](#)

[Lincoln family.](#)


[Tad Lincoln , 1853 - 1943](#)

[Nancy Hanks Lincoln , 1784 - 1818](#)

[Lincoln Steffens , 1866 - 1936,](#)

[Levi Lincoln , 1782 - 1868](#)

[George Lincoln Burr , 1857 - 1938](#)

 Organization

[William E. Barton Collection of Lincolniana \(University of Chicago\)](#)

[Abraham Lincoln Presidential Library and Museum.](#)

[Chamber Music Society of Lincoln Center.](#)

[Jazz at Lincoln Center \(Organization\)](#)

[United States. President \(1861-1865; Lincoln\).](#)


[Lincoln Center Jazz Orchestra.](#)

[McLellan Lincoln Collection \(Brown University\)](#)

[Lincoln Memorial University](#)

[Lincoln University \(Pa.\)](#)

[Ford Motor Company. Lincoln-Mercury Division.](#)

 Concept

[Abraham Lincoln's political career before 1861](#)

[Lincoln automobile](#)

[Lincoln automobile](#)

[Funeral journey of Abraham Lincoln to Springfield](#)

[Lincoln Memorial \(Washington, D.C.\)](#)


[Lincoln-Douglas Debates, Ill., 1858](#)

[Lincoln Continental automobile](#)

[Lincoln Continental automobile](#)

[Lincoln Day](#)

[Lincoln \(Bomber\)](#)

 Place


[Nebraska--Lincoln.](#)

[Massachusetts--Lincoln.](#)

[Maine--Lincolnville.](#)

[Illinois--Lincoln.](#)

[England--Lincolnshire](#)

 Event


[Lincoln-Douglas Debates \(Illinois : 1858\)](#)

[Lincoln Center Festival.](#)

[Lincoln Center Festival.](#)

[Lincoln Center Festival.](#)

[Lincoln Center Festival.](#)

 Work


[Gettysburg address \(Lincoln, Abraham\)](#)


[Emancipation Proclamation \(United States. President \(1861-1865 : Lincoln\)\)](#)

[Lincoln Truck Rental photographs, 1947 Feb. 17-1958 April 19 : 73 Gilbert Street](#)


[Fort Lincoln : history and construction](#)


Show related entities

EntityJS  ArchiveGrid

 SIGN OUT

GO TO SEARCH

 **Lincoln, Robert Todd** 1843–1926

 About

Born: Aug 1, 1843


Died: Jul 26, 1926

Robert Todd Lincoln (August 1, 1843 – July 26, 1926) was an American lawyer and Secretary of War, and the first son of President Abraham Lincoln and Mary Todd Lincoln. Born in Springfield, Illinois, United States, he was two of Lincoln's four sons to live to adulthood, and the only one to survive into the 1900s.

Father:
[Abraham Lincoln](#)

Mother:
[Mary Todd Lincoln](#)

Spouse:
[Mary Eunice Harlan](#)

 About

two of Lincoln's four sons to live to adulthood, and the only one to survive into the 1900s.


Father:
[Abraham Lincoln](#)

Mother:
[Mary Todd Lincoln](#)

Spouse:
[Mary Eunice Harlan](#)

Child:
[Jessie Harlan Lincoln](#)
[Mamie Lincoln](#)
[Abraham Lincoln II](#)

Brother:
[Tad Lincoln](#)
[Edward Baker Lincoln](#)
[William Wallace Lincoln](#)

 Related People

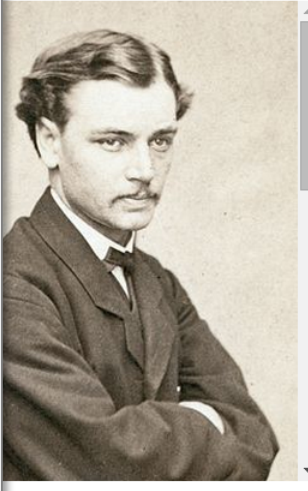
[Abraham Lincoln](#)

[Mary Todd Lincoln](#)

[William Eleazar Barton](#)

[Mrs. James G. Blaine](#)

Related Media

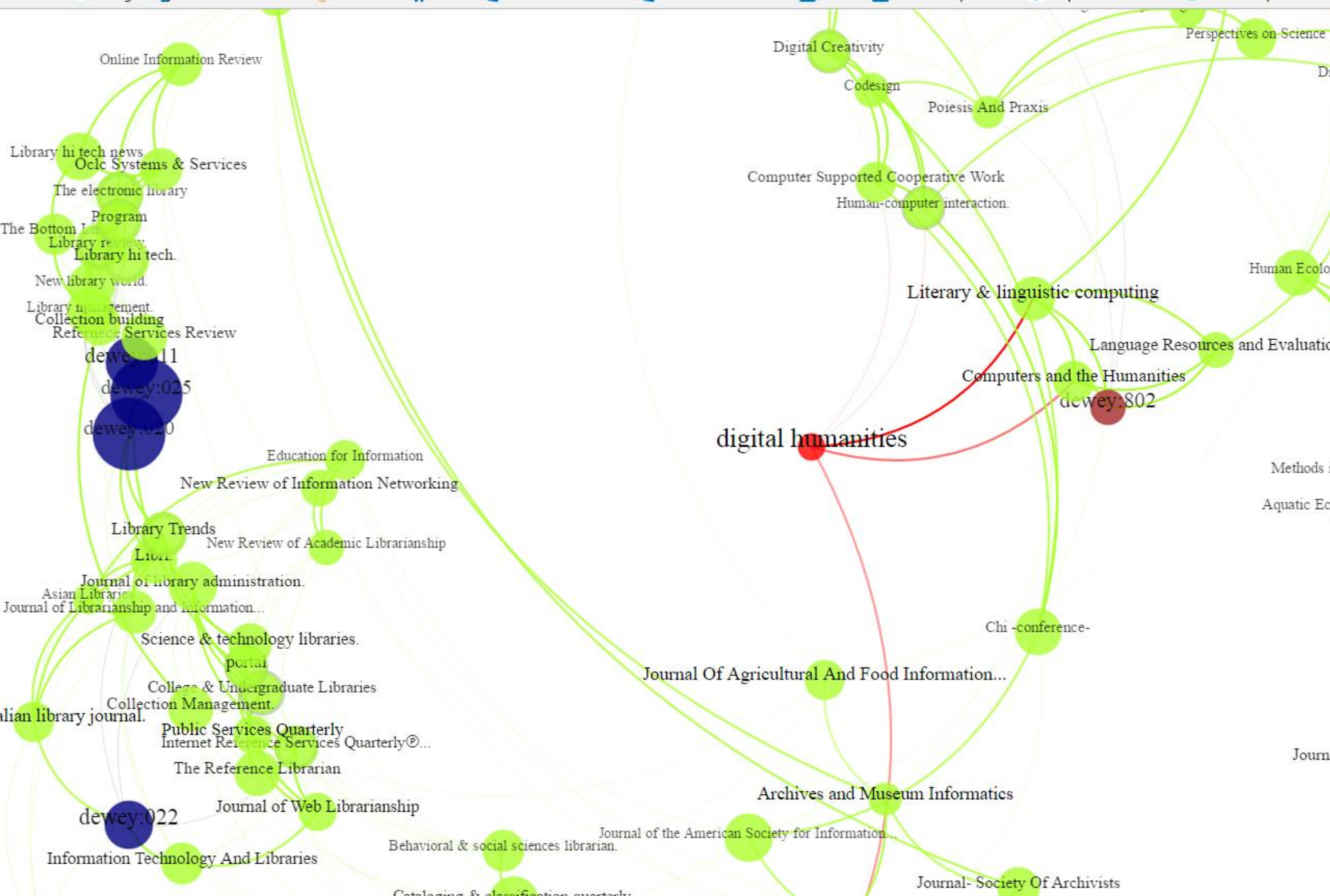


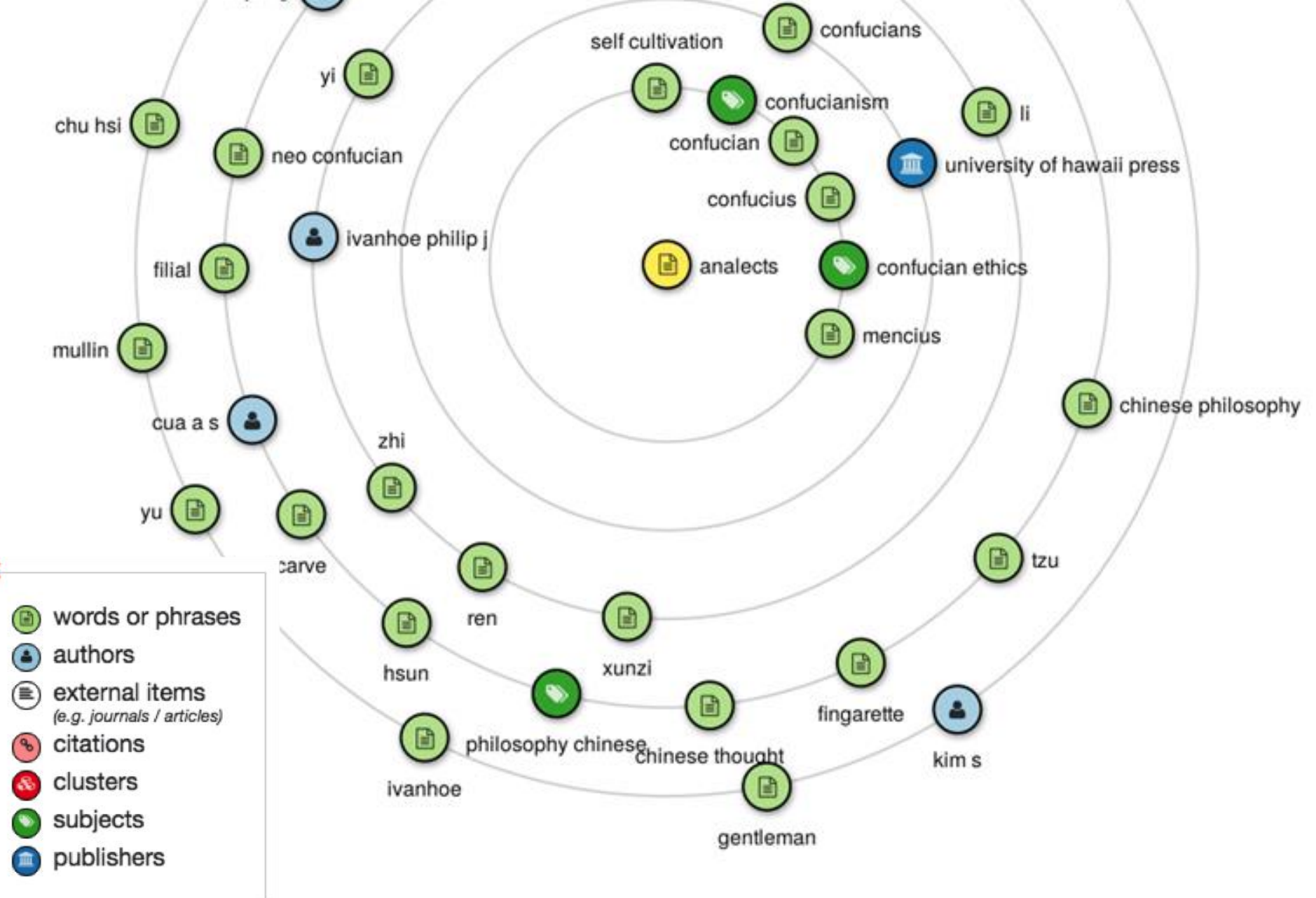
Related Places

[Chicago.](#)

[State\)](#)

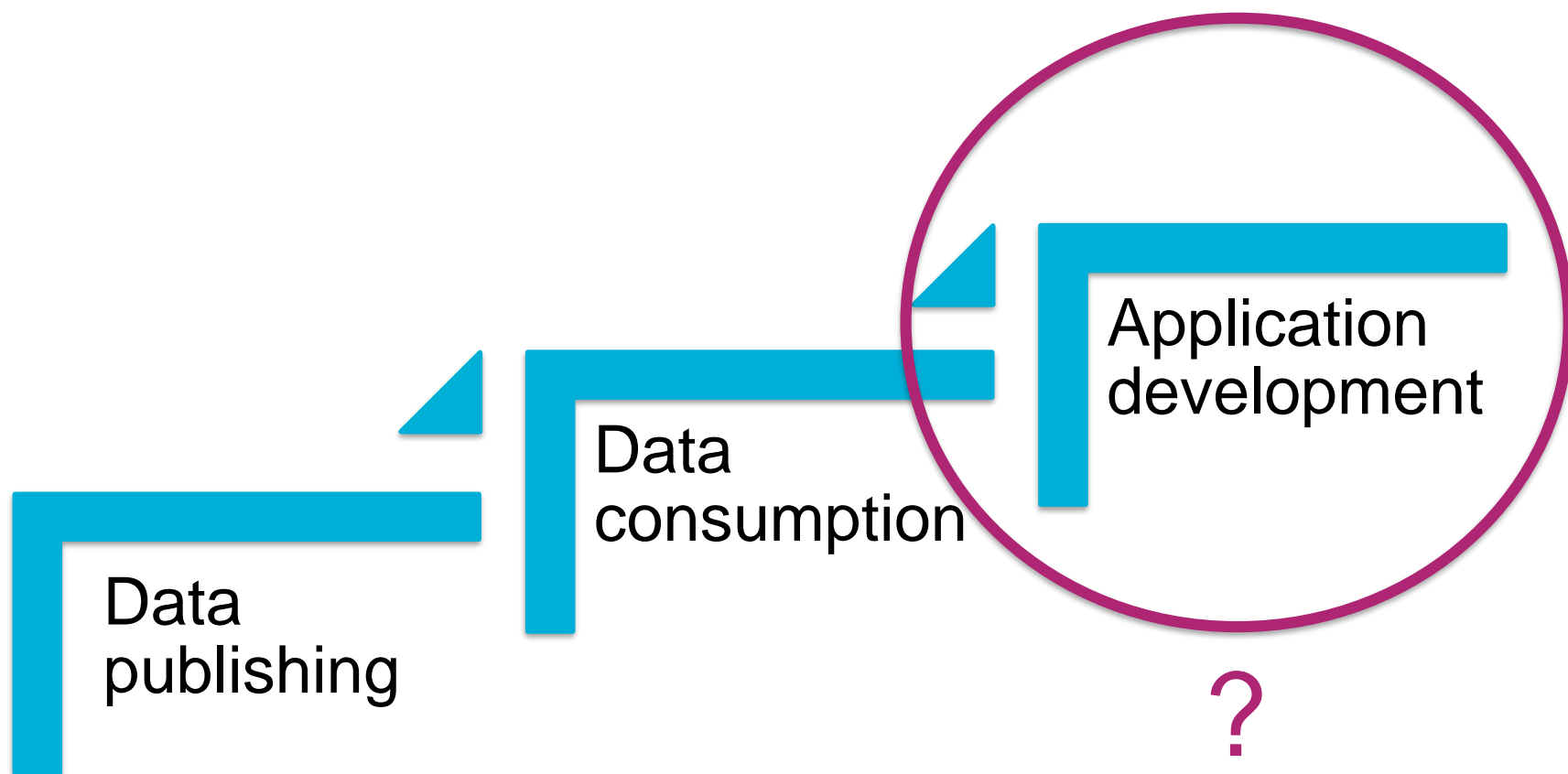
United States. War Department



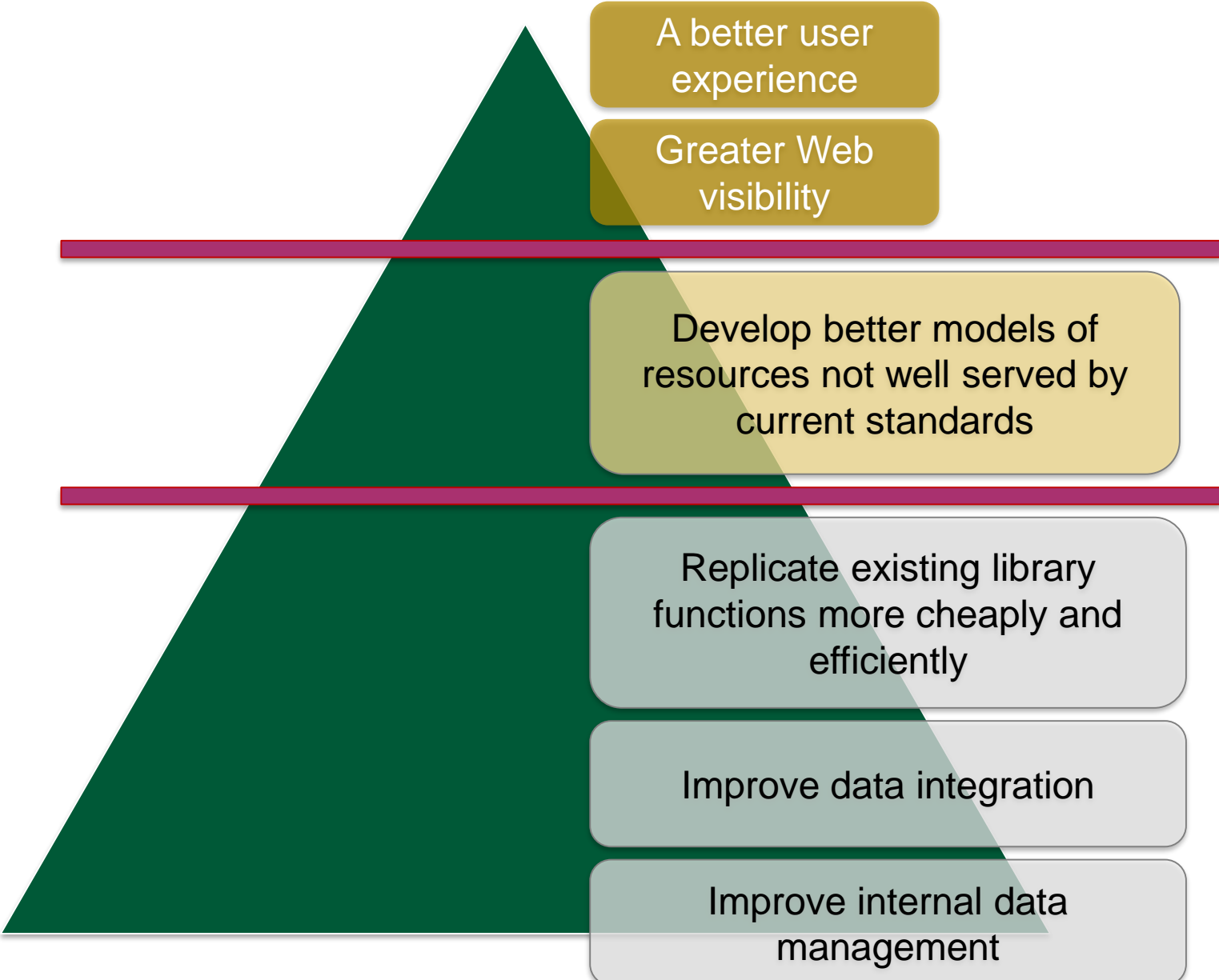


WHAT WE'VE LEARNED

Linked data in the library community: Where the effort is focused



Why linked data?



A better user
experience

Greater Web
visibility

Develop better models of
resources not well served by
current standards

Replicate existing library
functions more cheaply and
efficiently

Improve data integration

Improve internal data
management

Library linked data is not...

A silver bullet
A killer app
A panacea

But it is...

The result of cumulative and joint effort

Acknowledgements

Jean Godby

Karen Smith-Yoshimura

Together we make breakthroughs possible.

Comments?

Titia van der Werf

titia.vanderwerf@oclc.org

Together we make breakthroughs possible.