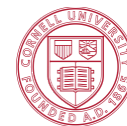


# Linked Data for Libraries (LD4L): Data, Tools, and Discovery

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OR2016

June 15, 2016



Cornell University  
Library



HARVARD  
LIBRARY



STANFORD UNIVERSITY LIBRARIES

# Linked Data for Libraries (LD4L)

- Just completed (3/31/16) a two-year \$999K Mellon grant to Cornell, Harvard, and Stanford
- Partners assembled ontologies and created linked data and tools to provide relationships, metadata, and broad context for Scholarly Information Resources
- Leveraged existing work by both the VIVO project and the Hydra Partnership

Vision: Enable libraries and their users to easily create, use, and benefit from LD specifically designed for libraries and scholars, and from broader sources of LD on the web.



# LD4L Research Outputs

- LD4L Ontology – modification/extensions to BIBFRAME: [github.com/ld4l](https://github.com/ld4l)
- Recommendations to Library of Congress on BIBFRAME, leading to ongoing revisions
- Conversion of 23 million Cornell, Harvard, and Stanford catalog records to ~3 billion triples of resolvable LD available at [draft.ld4l.org/downloads/index.html](https://draft.ld4l.org/downloads/index.html)
- Demonstration search over LD at [search.ld4l.org](https://search.ld4l.org)
- Contributions to Hydra: ActiveTriples gem; work on LD annotations (available at [github.com/ld4l](https://github.com/ld4l))
- Demonstration of links to external web URIs (e.g. MusicBrainz/LinkedBrainz)



open repositories

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Library:  Stanford University LIBRARIES

# LD4L Labs and LD4P

- Beginning April 1, 2016, the Mellon Foundation funded two new linked data grants for two years at \$1.5 million each
- LD4L Labs is a collaboration of Cornell, Harvard, Stanford, and Iowa focused on building new LD tools and services
- LD4P is a collaboration of Stanford and five partners piloting a range of projects on metadata production using linked data

# LD4L Labs

1. Create a modern, efficient, extensible, community-supported, and well-documented MARC to BIBFRAME converter to support the revised BIBFRAME ontology
2. New LD creation and editing tools based on Vitro
3. New Hydra-based LD tools to support the organization, annotation, and description of scholarly information resources
4. Improve discovery and understanding by using LD for better search results, to visualize context, and to link to resources on the web
5. Pilot tools and services to support LD URI resolution and reconciliation

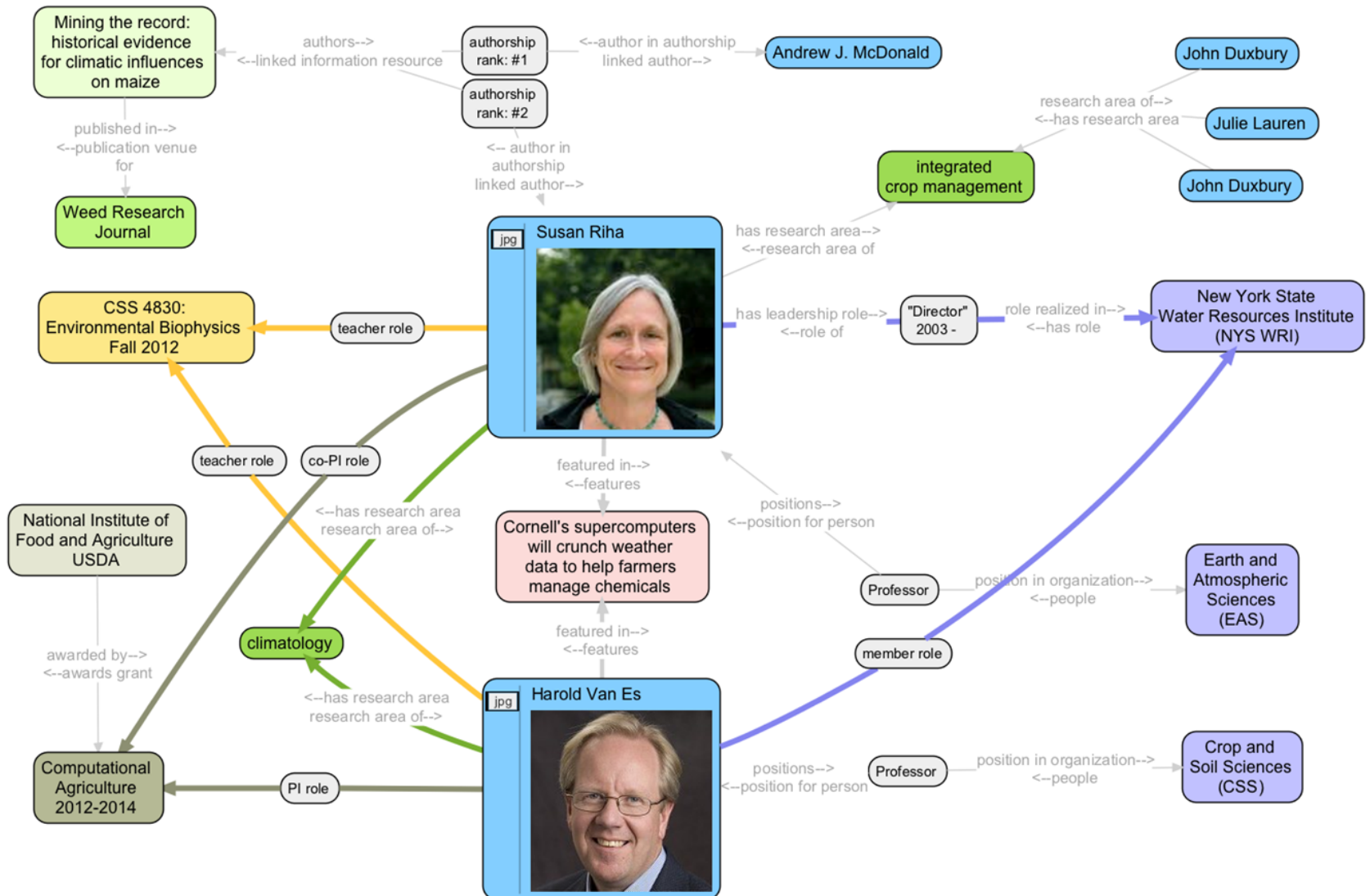
# LD4P

- Stanford: Convert four cataloging workflows to LD and create a Performed Music Ontology
- Columbia: Catalog a collection of 2D and 3D art objects
- Cornell: Develop Rare Materials Ontology and catalog an annotated hip-hop LP record collection
- Harvard: Catalog cartographic materials
- Library of Congress: Catalog audiovisual and sound recordings, prints, and photographs
- Princeton: Catalog annotated materials from the library of Jacques Derrida

# Nine challenges and opportunities that Linked Data poses for repository managers and developers



# 1. You must think outside the bibliographic record – you don't have a record, you have a network



## 2. You can connect to external LD resources on the web for additional context and to aid discovery and understanding



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### The Adventures of Grandmaster Flash on the Wheels of Steel / The Party Mix

~ Release group by Grandmaster Flash / [Grandmaster Flash & The Furious Five](#)

**Overview** [Aliases](#) [Tags](#) [Details](#) [Edit](#)

#### Single

Release	Format	Tracks	Date	Country	Label	Catalog#	Barcode
<b>Official</b> The Adventures of Grandmaster Flash on the Wheels of Steel / The Party Mix	12" Vinyl	2	1981	US	Sugar Hill Records (US late 70s/early 80s rap)	SH-557 [none]	

**Relationships** **Discogs:** <http://www.discogs.com/master/51236> [\[info\]](#)

**CritiqueBrainz Reviews**  
No one has reviewed this release group yet. Be the first to [write a review](#).

**Release group information**  
**Artist:** Grandmaster Flash / Grandmaster Flash & The Furious Five  
**Type:** Single

**Rating**  
★★★★

**Tags**  
(none)

**External links**  
[Discogs](#)

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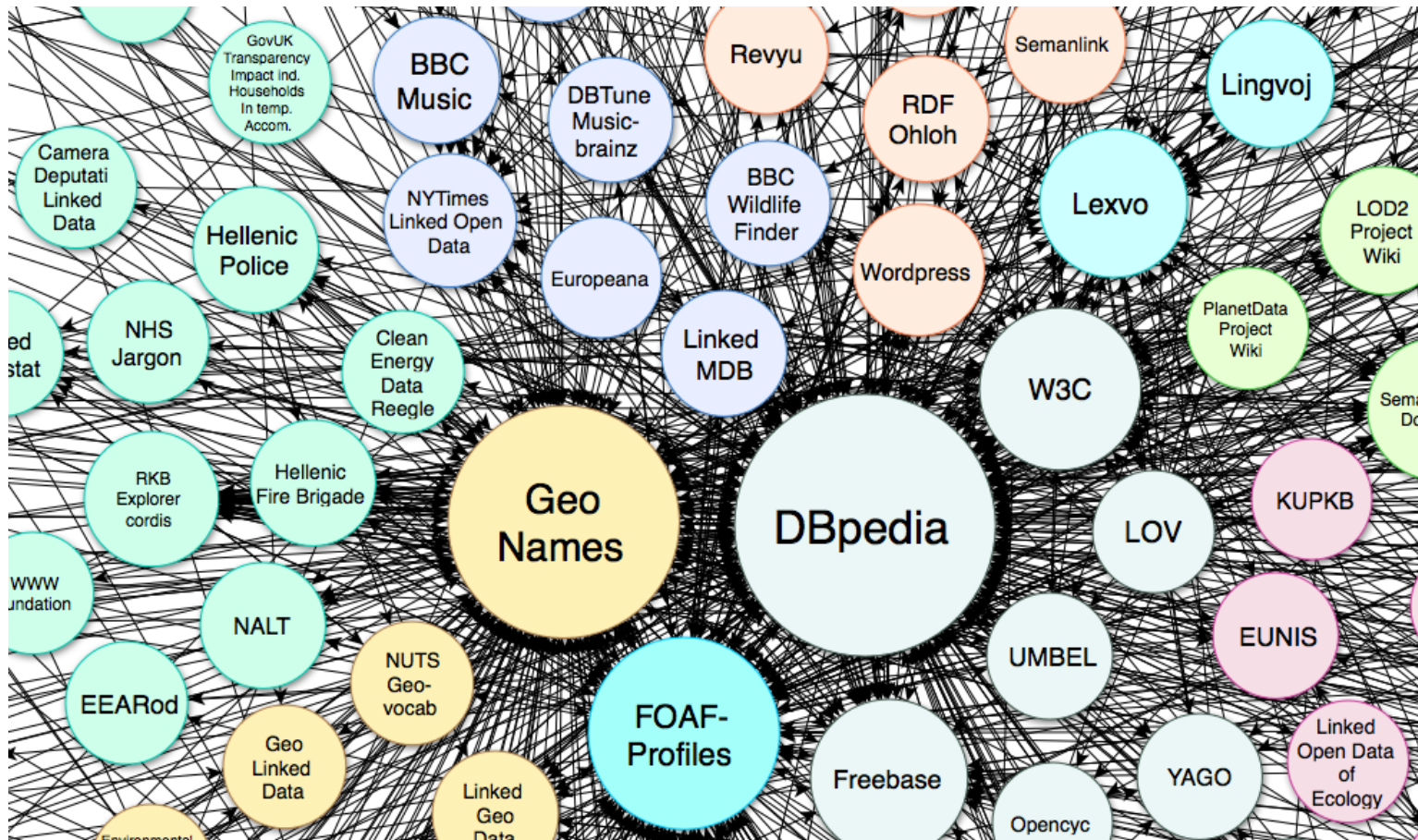
Last updated on 2012-10-23 22:02 UTC



3. By using LD you can avoid being limited in the future to answering only questions that were anticipated when the repository was created

- Linked Data is extensible – you can extend the existing ontology or incorporate new ontologies
- Representing LD metadata in a SPARQL triplestore allows arbitrary inferencing queries

## 4. Think about how others outside of the library community can take advantage of the linked data represented in your repository





# 5. How can LD support connected objects distributed across multiple repositories so that they can be presented seamlessly to the user?

The screenshot displays the Biblissima digital library interface. The main content area shows a manuscript page from the 'Heures de Nôtre Dame' (use of Troyes and Sens). The page features a calendar for January (ff. 1-1v) with a list of days and their corresponding saints: 'Le jour de lan', 'Or' se' effraie', 'Or' se' leij. se' geneuetue.', 'Or' des lunocens', 'Se' symeon', 'Se' ioh' lephane', 'Se' saunt kaudert', 'Se' guille', 'Se' remi. se' iplaur.', and 'Se' taur'. A miniature of a man eating and drinking is visible on the right side of the page. The interface includes a sidebar with a navigation menu, a top navigation bar with 'Bookmark', 'Change Layout', and 'Full Screen' options, and a bottom navigation bar with thumbnails for various manuscript pages.

**Biblissima**

Bookmark Change Layout Full Screen

MS Richardson 7. Houghton Library, Harvard University. Heures de Nôtre Dame (use of Troyes and Sens)...

Calendar (ff. 1-12v)

- January (ff. 1-1v)
  - f. 1: Aquarius - Man eating and drinking
  - f. 1v.
- February (ff. 2-2v)
- March (ff. 3-3v)
- April (ff. 4-4v)
- May (ff. 5-5v)
- June (ff. 6-6v)
- July (ff. 7-7v)
- August (ff. 8-8v)
- September (ff. 9-9v)
- October (ff. 10-10v)
- November (ff. 11-11v)
- December (ff. 12-12v)

Sequences of the Gospels (ff. 13-20v)

Hours of the Cross (ff. 21-35)

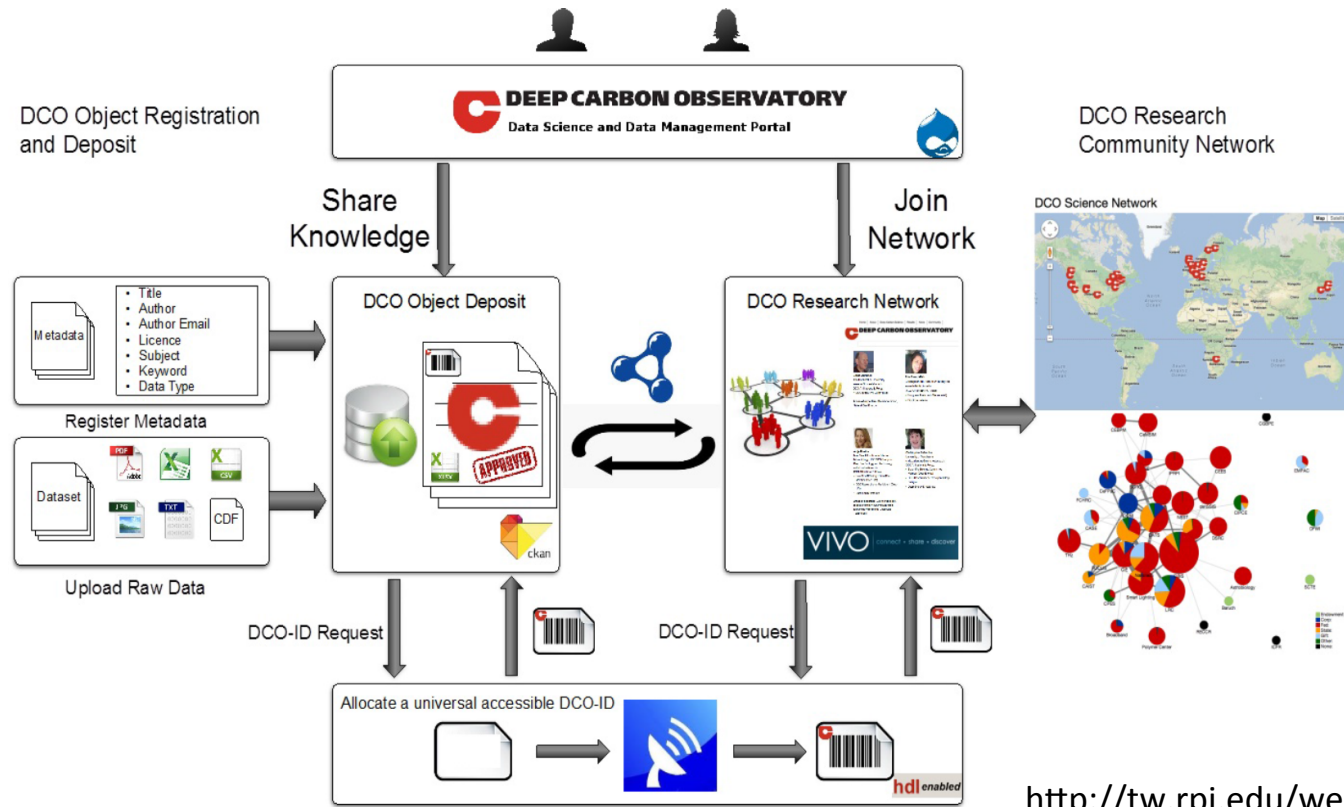
Passion (ff. 35v-36v)

Hours of the Holy Spirit

Front cover Inside front... Fly leaf (1) Fly leaf (2) f. 1: Aquar... f. 1v. f. 2: Pisces... f. 2v. f. 3: Ares... f. 3v. f. 4: Tauru... f. 4v.





# 6. Interlinking repositories and researcher profiling systems like VIVO can lead to a comprehensive ecosystem representing the full range of scholarly activity




## 7. How can LD enhance connections between repositories and more traditionally controlled authorities for library resources?

- Identifier management is key – need local URIs to support local assertions, plus relationships to appropriate global URIs
- IMLS-funded Western Name Authority File and Shared Local Authorities projects are working on this problem
- Don't make your repository a silo!

# 8. Using LD URIs makes it easy for repositories to support international and multi-lingual applications

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**REFINE YOUR SEARCH**

**MEDIA**

Image (2)

Text (2)

**CAN I USE IT?**

Only With Permission (4)

**COUNTRY**



Italy (4)


**LANGUAGE**



Italiano (4)


**AGGREGATOR**

1 - 4 of 4 results Per page: [12](#)

**Hourglass (Inv. 138)**  
hourglasses, sandglasses  
[View at Museo Galileo - Istituto e Museo di Storia della Scienza](#)   
 Image



**Hourglass (sand) (Inv. 429)**  
hourglasses, sandglasses  
[View at Museo Galileo - Istituto e Museo di Storia della Scienza](#)   
 Image



## 9. LD descriptions can your repository and its contents more visible and discoverable on the open web

- Map to Schema.org and embed in web pages for Google, Bing, and Yahoo impact
- Dan Brickley: “In nearly 18 years of work on RDF, I have never seen adoption like this. [Schema.org] is the breakthrough of linked data and RDF into mainstream computing, search and discovery.”

# LD4L Team





More Info: <http://ld4l.org>