Data Unlocked: Empowering Libraries with Rich Connections and Insights in FOLIO

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Linked Data Innovation & Design

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Nice to Meet You

Gloria Gonzalez, BA, MLIS

Building new library services for 12+ years for Public, College, University, National, & Government Libraries

Metadata, Open Source Innovation, Rare Book Cataloging, Archives, Special Collections, Acquisitions, Digital Libraries, Research Data Management

University of Mississippi, Library of Congress, UCLA

Zepheira, EBSCO

World History Class in Benton County, Mississippi in 1956. John Elon Phay Collection, Archives & Special Collections, University of Mississippi Libraries. https://egrove.olemiss.edu/phay_ben/61/

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Sims Chapel, Benton County, Mississippi in 1956. John Elon Phay Collection, Archives & Special Collections, University of Mississippi Libraries. https://egrove.olemiss.edu/phay_ben/150/

Viewshare: Open Source Linked Data in 2011

- Used Viewshare to create shareable views of images of segregated schools from the Phay Collection

- CSV → linked data

- Maps, timelines, faceted search that can be shared on any website

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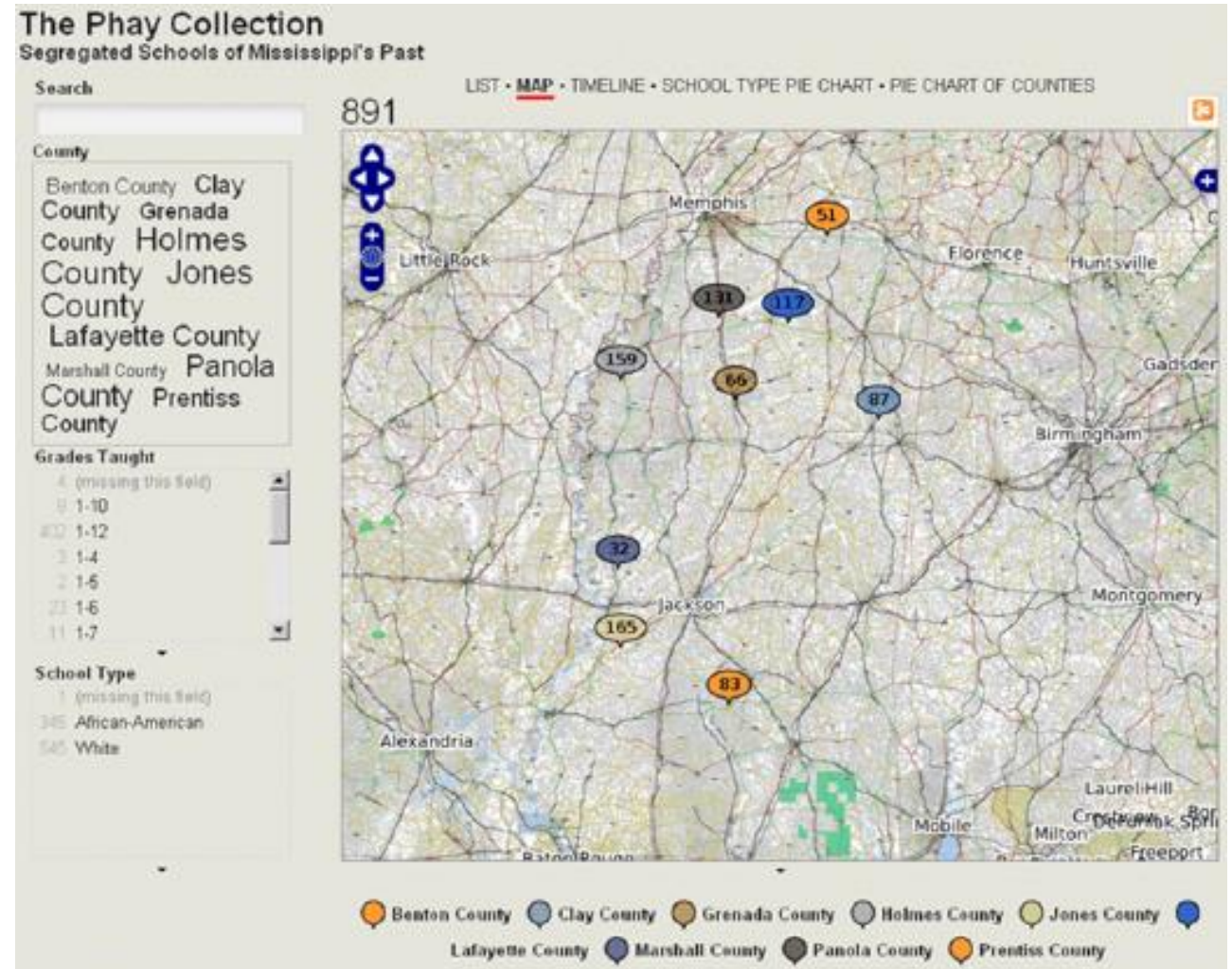
Making Libraries Visible on the Web - Zepheira

- A technology-focused start up company dedicated to making libraries more visible on the web

- Rapid prototyping to support experimentation and advocacy for linked open data in libraries

- Alignment with international web standards, such as BIBFRAME and RDF principles, ensuring library data is compatible with emerging technologies

zepheira

Key Highlights of UC Davis' BIBFLOW Project in 2017

BIBFLOW Roadmap

Home · About · Partnerships & Projects · BIBFLOW · **BIBFLOW Roadmap**

BIBFLOW: A Roadmap for Library Linked Data Transition

Prepared 14 March, 2017

MacKenzie Smith | Carl G. Stahmer | Xiaoli Li | Gloria Gonzalez
University Library, University of California, Davis | Zepheira Inc.

Research support by the Institute for Museum and Library Services.

Download a PDF of the Roadmap

BIBFLOW Roadmap (PDF)

> **I. Introduction**

> **II. Why Linked Data**

> **III. Transition Fundamentals**

1. **Connected Data:** BIBFLOW worked on making library information more connected and easier to find by using modern data techniques.
2. **Better Cataloging:** The project looked at how to make library records easier to share and work with on the internet, improving the way we organize information.
3. **Smoother Work:** BIBFLOW aimed to make the process of managing library resources more efficient and flexible to meet the changing needs of users in today's world.

https://library.ucdavis.edu/partnerships-and-projects/bibflow/bibflow-roadmap/

"Librarians and their service providers must work together to ensure that libraries are well positioned to take advantage of evolving technology and offer their rich resources to users in their communities and across the globe. In order to do so, library systems must become compatible with a range of external and internal systems including acquisitions, cataloging, circulation, discovery layers, and content management systems."

MacKenzie Smith | Carl G. Stahmer | Xiaoli Li | Gloria Gonzalez
University Library, University of California, Davis | Zepheira
Research supported by the Institute for Museum and Library Services

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"In February 2015, EBSCO announced that they will be funding development of Koha, an open source Integrated Library System created by librarians for librarians. Koha Linked Data updates will include MARC to RDF cross-walking to enhance capabilities of linking to online data repositories. However, in April 2016 EBSCO announced that they would no longer be supporting Koha or Kuali OLE development, and will instead fund the development of an open-source Library Service Platform. The outlined functional expectations for this new open-source Library Service Platform include support for Linked Data Services. An initial version of the software will be available in early 2018."


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Data Driven Innovation

Libraries need to share, remix, and reuse metadata in multiple contexts for different audiences.

ʊBiblioGraph

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Key Linked Data Functionality

BiblioGraph
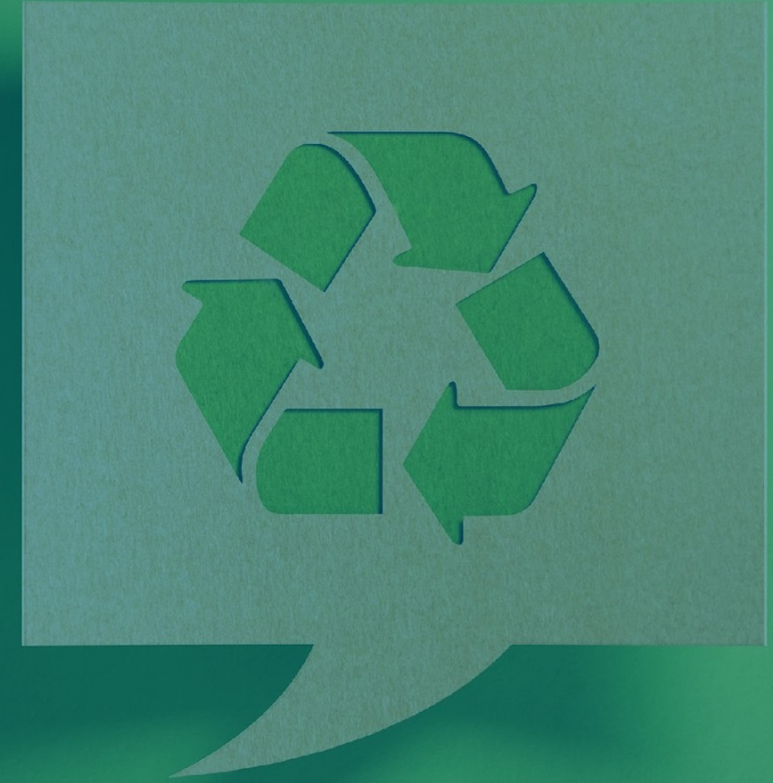
Transform MARC to create a graph of BIBFRAME data

Curate collections and 'living lists' of items

Enrich resources with data from authoritative sources

Drive more usage of the library's catalog from anywhere on the Web

Show up as an option in Google Search

Join an expanding network of trusted library metadata

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BiblioGraph by the Numbers

- Libraries participating in **11** countries, including:
  - **19 consortia**
  - **1,013 library systems**
  - **3,110 library locations around the world**
- **1,013** interconnected graphs of library data
- **376,786,378** BIBFRAME resources (people, places, works, instances, items, etc.)
- **1,648,049,152** BIBFRAME relationships
- Libraries make a significant impact by appearing as an option in hundreds of millions of Google searches each day, providing vital information and resources to users worldwide.

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Beyond Bibliographic

BIBFRAME defines various things such as people, organizations, events, & places, enabling libraries to describe them and the *relationships* between all these things.
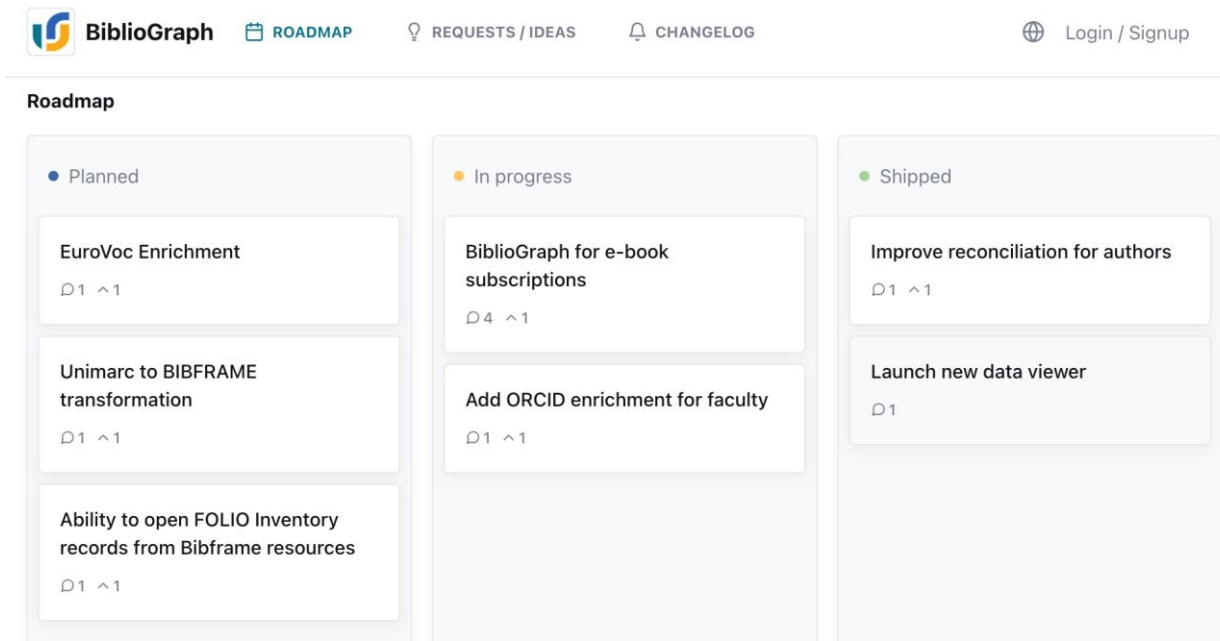
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Beyond Bibliographic

Bibframe Lite extensions include:
- Early Printing Trade
- Rare Materials
- Archives
- Scholarly Resources
    - Faculty
    - Grants
    - Articles
    - Funders
- Digital Collections

https://bibfra.me/

2023 BiblioGraph Updates: New Platform

- Launched in September 2023

- Expanded search that includes all BF Lite classes

- API endpoints for 50+ types of BF Lite Identifiers

- Improved reconciliation and enrichment

- Open community roadmap

https://bibliograph.noorahq.com/

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EuroParl's Data Graph:
https://link.europarl.europa.eu/

UdeC's Data Graph: https://udec.library.link/

Bibliotecas de la Universidad de Concepción   Services ▾   Share ▾   🔍 Search

Welcome to Bibliotecas de la Universidad de Concepción's Data Graph

1,245,172 Bibframe resources that anyone can share

[Introduction] [Collections] [Statistics] [Help]

Library System   1

🏛 **Bibliotecas de la Universidad de Concepción**

Home p...   ↗ https://bibliotecas.udec.cl/

Address   Concepción, BI, CL

Social   𝐟 ⧉

Bibframe Resources

Ⓐ **Agent**   23735

💬 **Annotation**   190097

▪ **Category**   29340

☐ **Category Set**   9

Combining the power of open data with open source
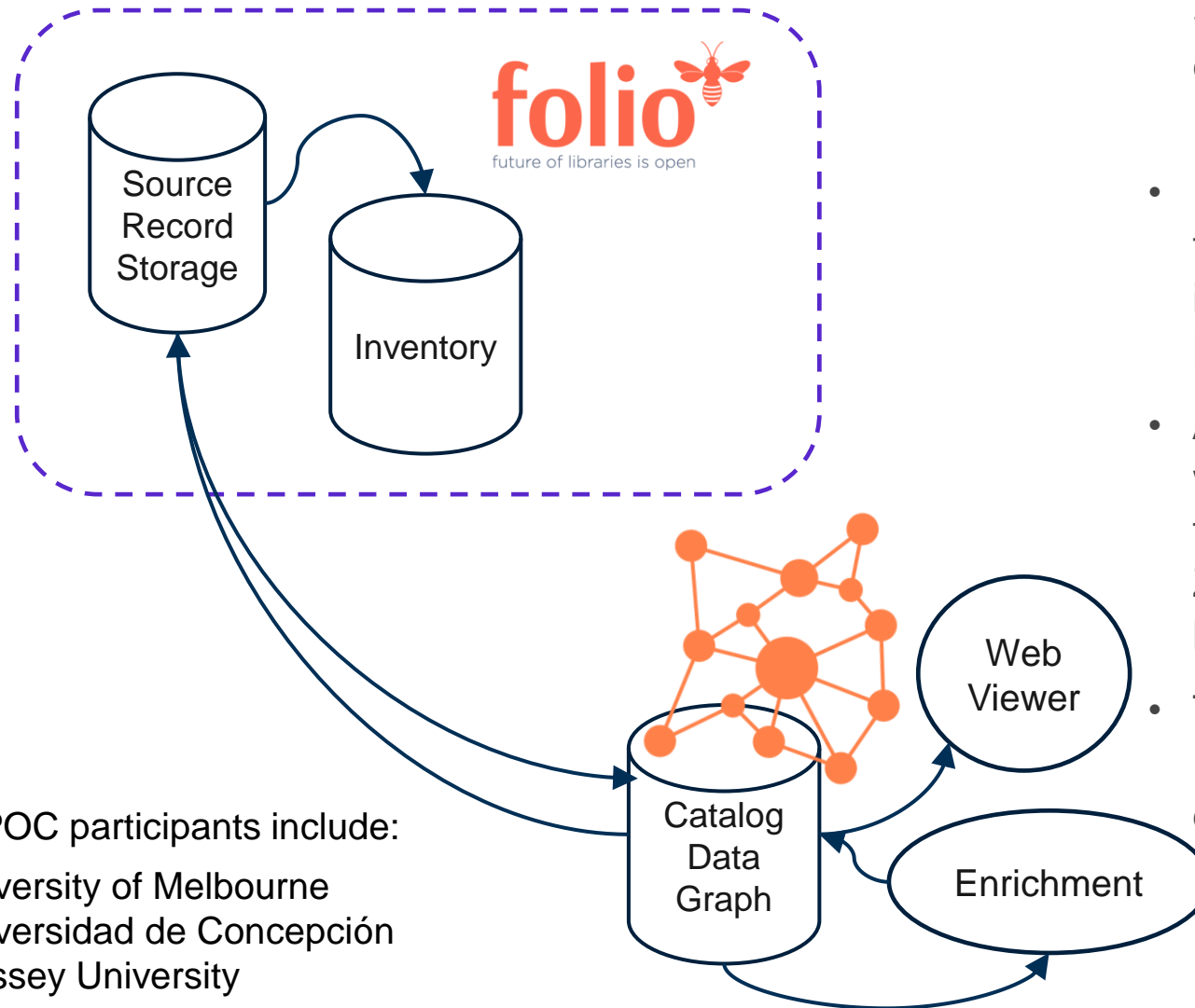
- FOLIO is format agnostic. However, only MARC Source Record Storage is built with a quickMARC editor. BiblioGraph services currently work with any ILS and operate outside of the FOLIO platform.

- FOLIO's Vision for 2023-2025 includes an objective to "support entity-based data models, as well as interchange with linked open data, including BIBFRAME."

- As part of EBSCO's work to support this vision, I'm working on a Proof of Concept (POC) project with forward thinking libraries in Chile, Australia, and New Zealand to help extend the FOLIO platform to include linked data inside.

- To remain flexible, extensible, and cost-effective, FOLIO must continue to be powered by community-driven development.

Initial POC participants include:

- University of Melbourne
- Universidad de Concepción
- Massey University

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How is FOLIO different from a traditional ILS?

- Format agnostic cataloging

- Micro-services architecture

- Web-based solution

- ElasticSearch / OpenSearch powers bib/holdings/items/authority search and browse

- 7 years old

- FOLIO community Est. 2016

- EBSCO FOLIO launched in 2019

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Library of Congress Launches Effort to Transform Collections Management and Access

Release Date: 21 Sep 2022

EBSCO will tailor FOLIO, a community-developed open-source library services solution, to provide a library service platform that meets the Library's IT requirements and the needs of the Library's users.

"This is a milestone in our journey to implement a user-centered approach to connecting more people to the Library's collections," said Librarian of Congress Carla Hayden. "We are grateful for Congress' generous investment in this next-generation system that is essential to the Library's digital-forward strategy, which harnesses technology to bridge geographical divides, expand our reach and enhance our services."

The platform will replace several legacy IT systems and provide Library staff with new, more efficient tools and workflows to manage continuously growing physical and digital collections at scale. It will offer researchers a streamlined discovery experience and new ways to access high quality metadata. It also will enable the use of BIBFRAME, a new bibliographic description standard being developed by the Library and partner organizations that uses a linked data model to make bibliographic information more useful both within and outside the library community.

North America

- Alvernia University
- **Appalachian State University*****
- **Cairn University*****
- California Institute of Technology
- Center for Research Libraries
- Chapman University
- **Cornell University*****
- Drew University
- Duquesne University
- East Central University
- Five Colleges
- Flagler College
- Georgetown College

- **Grand Valley State University*****
- Holy Family University
- Lafayette College
- LOUIS-LSU
- MacEwan University
- Maryville University
- Michigan State University & Library of Michigan
- Middle Tennessee State University
- Missouri State University
- Okanagan College
- Otis College of Art and Design
- Rockhurst University

- Roseman University of Health Sciences
- Skidmore College
- South College
- St. Thomas University, Florida
- St. Vincent College
- St. Michael's College
- Texas Southmost College
- Truman State University
- University of Alabama
- University of Massachusetts Global
- University of Missouri Libraries

- **University of New England*****
- University of Notre Dame Law
- University of Scranton
- University of Tennessee at Martin
- University of the Arts
- Villanova University
- Warner University
- Washington & Jefferson College
- Washington College
- Wellesley College
- Widener University

***Committed to moving beyond MARC

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Europe

- Barts Health NHS Trust (UK)
- Biblioteca Nazionale Centrale di Firenze (Italy)
- **Chalmers University*** (Sweden)**
- Global Banking School (UK)
- International Hochschule (Germany)
- Trinity College, Cambridge (UK)
- Universidad de Zaragoza (Spain)
- Università degli Studi di Ferrara (Italy)
- Universita di Modena e Reggio Emilia (Italy)
- University of Liverpool (UK)
- WHU - Otto Beisheim School of Management (Germany)

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South America

- Petroleo Brasileiro S/A - Petrobras (Brazil)
- **Universidad Adolfo Ibanez (Chile)*****
- **Universidad de Concepción (Chile)*****
- **Universidad Jorge Tadeo Lozano (Colombia)*****

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Middle East & Africa

- Durban University of Technology (South Africa)

- Namibia University of Science and Technology (Namibia)

- National University of Lesotho (Lesotho)

- Open Window Institute (South Africa)

- University of Zululand (South Africa)

Asia

- Jio Institute (India)
- Korea University (South Korea)
- National Taiwan Normal University (Taiwan)

Oceania

- **Massey University (New Zealand)*****
- **University of Melbourne (Australia)*****

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Key Linked Data Functionality Coming to FOLIO in 2024

BIBFRAME editor

Graph based storage

Connect to a network of other FOLIO libraries

Move from MARC to BIBFRAME with one click

Send linked data to any user interface via APIs and syndication feeds

Opt-In to join a larger network of data with BiblioGraph

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FOLIO Linked Data Problem Statement

Libraries struggle to share and exchange data due to the limitations of traditional bibliographic data storage methods.

Adoption of linked data has been slow due to complexity and lack of user-friendly tools.

<u>Our goal</u>

To provide an easy, intuitive way for libraries to edit BIBFRAME resources in FOLIO and give them tools to transform MARC to BIBFRAME and vice versa.

This will **accelerate the adoption of linked data by libraries** and improve the efficiency and interoperability of bibliographic data management systems.

Impact on Libraries using FOLIO

- All linked data updates will be open source

- Enhanced support for linked data helps make FOLIO catalogs visible and connected

- Better access to Library of Congress resources

- Improved data quality and consistency

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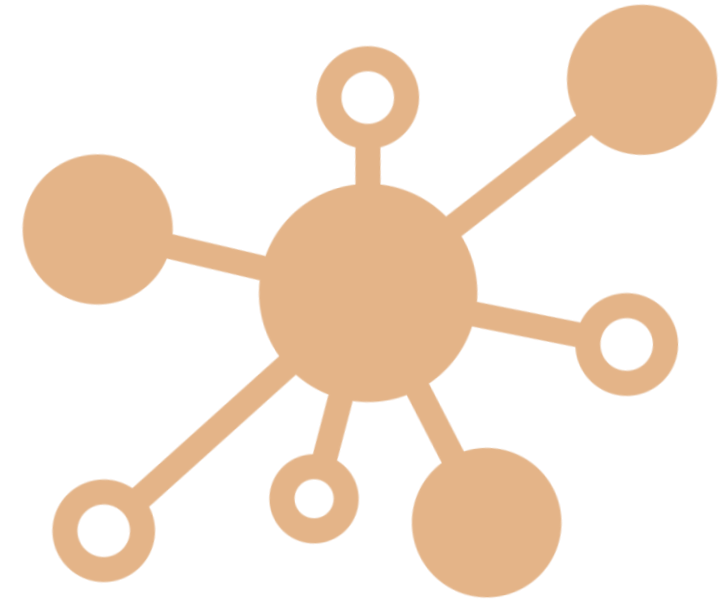
How will FOLIO use BIBFRAME?

BIBFRAME TRANSFORMATION

- Transforming into / out of linked data

BIBFRAME EDITING

- Bib data
- Authority data
- Administrative data

BIBFRAME SHARING

- APIs
- Syndication
- Interoperability

BIBFRAME REPORTING

- Tracing
- Tracking
- Measuring
- Evaluating . . .

FOLIO Linked Data Project Phases

Release to test environments

Q-release

May 1-June 30	June30 – August 31	Sept 1 –Nov 30	December 1 – January 31	February 1 – March 31

Phase I – Discovery and Evaluation

- Full integration env created with ci/cd enabled
- Tools and technologies agreed upon
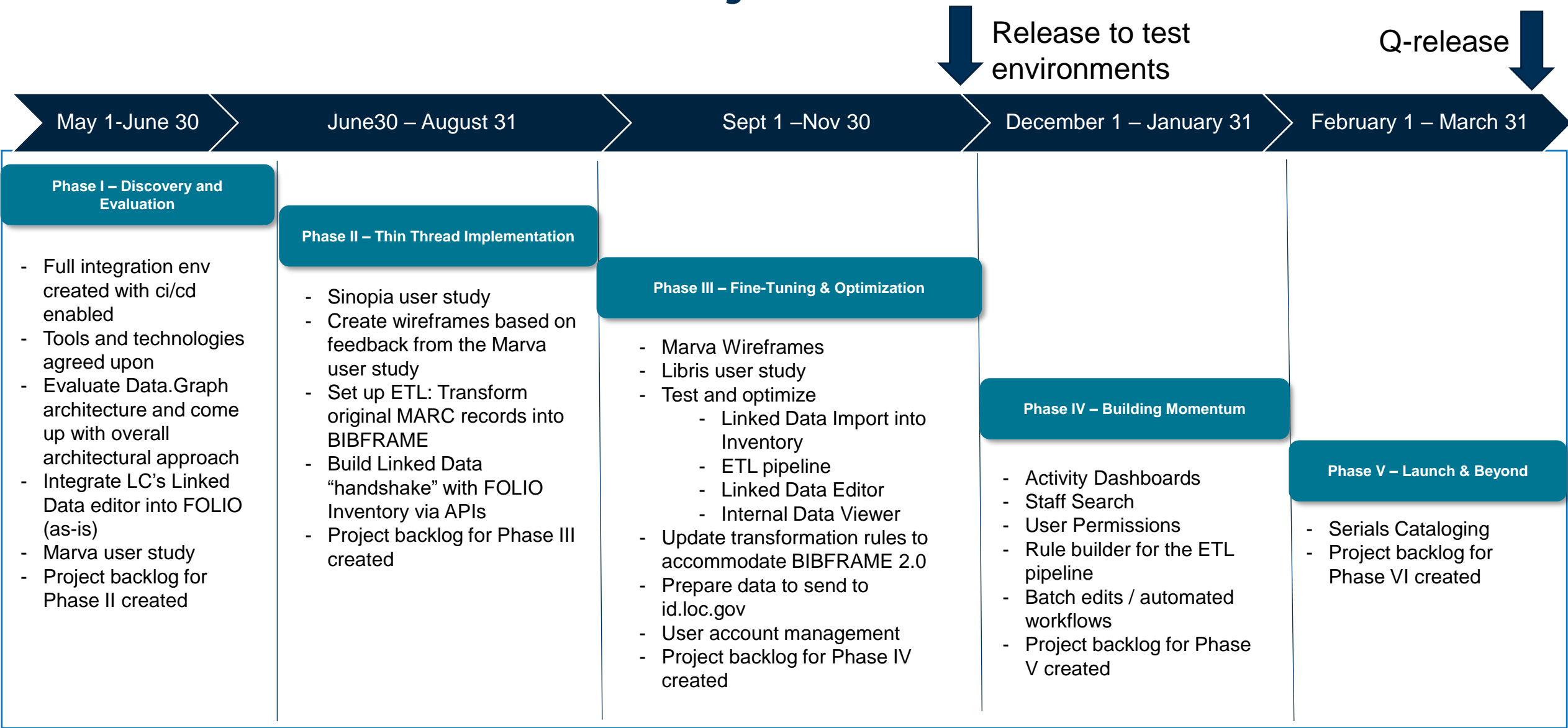- Evaluate Data.Graph architecture and come up with overall architectural approach
- Integrate LC's Linked Data editor into FOLIO (as-is)
- Marva user study
- Project backlog for Phase II created

Phase II – Thin Thread Implementation

- Sinopia user study
- Create wireframes based on feedback from the Marva user study
- Set up ETL: Transform original MARC records into BIBFRAME
- Build Linked Data "handshake" with FOLIO Inventory via APIs
- Project backlog for Phase III created

Phase III – Fine-Tuning & Optimization

- Marva Wireframes
- Libris user study
- Test and optimize
    - Linked Data Import into Inventory
    - ETL pipeline
    - Linked Data Editor
    - Internal Data Viewer
- Update transformation rules to accommodate BIBFRAME 2.0
- Prepare data to send to id.loc.gov
- User account management
- Project backlog for Phase IV created

Phase IV – Building Momentum

- Activity Dashboards
- Staff Search
- User Permissions
- Rule builder for the ETL pipeline
- Batch edits / automated workflows
- Project backlog for Phase V created

Phase V – Launch & Beyond

- Serials Cataloging
- Project backlog for Phase VI created

Stakeholders for BIBFRAME in FOLIO

@ EBSCO	@ Library of Congress	@ FOLIO	@ BIBFRAME
• Team Citation • LC FOLIO Project Team • FOLIO Product Management Team • FOLIO Implementation Team • FOLIO Development Team • Team Delta (BiblioGraph / Data.Graph)	• Staff • Users • LCAP Project Team • Network Development and MARC Standards Office (NetDev Team) • Cataloging Distribution Service Customers • Leadership • United States Congress	• FOLIO Community • EBSCO FOLIO Customers • Potential Adopters • Index Data • Knowledge Integration	• Other libraries and institutions: We collaborate with other libraries and institutions that share data with the Library of Congress and are working on similar initiatives (National Library of Sweden, Stanford, Cornell, University of Melbourne, University of Concepción, etc.)

Connect to a network of fellow FOLIO libraries

Khalilah Gambrell
FOLIO Product Team
EBSCO

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EBSCO FOLIO Highlights of 2023

Making the move to FOLIO with help from EBSCO:

Mission & Impact of the Open Library Foundation

1. **Promoting Open Source**: The foundation, established in 2016, is a not-for-profit organization committed to ensuring open source and open access projects for libraries. It aims to make innovative software and resources accessible to libraries, fostering collaboration among various stakeholders.

2. **Inclusive Collaboration**: The foundation encourages librarians, technologists, designers, service providers, and vendors to collaborate openly, leveraging their expertise to identify challenges and create solutions. It emphasizes diversity and inclusivity to better address library needs.

3. **Free and Accessible Software**: The foundation hosts and provides open source software developed by communities, making it freely available for personal, institutional, or commercial use. This approach sustains collaboration and offers a "safe haven" for library projects, independent of any single contributor or party's interests.

https://openlibraryfoundation.org/projects/

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"The beauty of community-driven open source in libraries is that it blurs the lines between creators and users, transforming libraries into dynamic, participatory spaces where librarians and patrons collectively shape the tools and technologies that drive information discovery and accessibility."

Chat GPT

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Alvaro's Ideas on New Librarianship Roles

- **UX**: User experience must be reassessed permanently to meet user needs
- **Knowledge Curator**: As information will be linked from external sources, we need someone to quality control such info.
- **Authorities**: We also need to check Linked Data-accessed authorities, and their description rules.
- **External Liaisons**: As we become increasingly open to other institutions, it's also necessary to study any potential agreements.
- **Cataloging Supervisor**: Properly trained AIs, will very soon be able to generate resource descriptions in a massive and automatic way. So, it'll be necessary to supervise this automated cataloging.

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FOLIO: Unlocking Rich Data Insights for Libraries

Envision a future that transcends the limitations of the present

Use a practical mindset and commitment to navigate obstacles so you can turn ideas into reality

To be successful, open source platforms and open data must have a diverse community and diverse funders

Questions?

September 20, 2023

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