

# Prospects and Opportunities

## Technology to Support Prevailing Library Strategies

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La XIII Reunión de la  
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Segundo Workshop National



# Abstract

- A number of important trends currently impact libraries. Academic libraries face the fundamental shift of collections toward ever increasing proportions of electronic content; public libraries continue to see vigorous interest in print materials, now supplemented by demand to provide e-books for lending. Breeding will explore these and other trends and describe some of the technologies available and emerging to help libraries meet the challenges involved in this context.

# Library Technology Guides

## Documents, Databases, News, and Commentary

[Staff Home](#) ▾[Home](#) ▾[Find Libraries](#) ▾[Find Companies](#) ▾[Tech Guides](#) ▾[Industry News](#) ▾

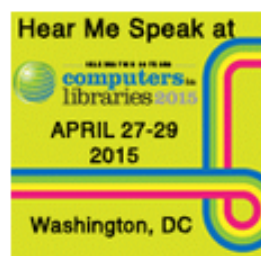
**Library Technology Guides** provides comprehensive and objective information surrounding the many different types of technology products and services used by libraries. It covers the organizations that develop and support library-oriented software and systems. The site offers extensive databases and document repositories to assist libraries as they consider new systems and is an essential resource for professionals in the field to stay current with new developments and trends. Relevant news items are posted daily on Twitter:

### GuidePosts

[Perspective and commentary by Marshall Breeding](#)

[Blog Archive](#)  

[Come see Marshall Breeding at Computers in Libraries 2015](#)



I'll be in Washington, DC soon for the annual Computers in Libraries conference, speaking on a variety of topics. I'm looking forward to seeing lots of friends and colleagues. Please feel free to track me down and introduce yourself or follow me through Twitter (@mbreeding). Here is my speaking schedule for the conference:





**W6 – Library Resource Management: Strategies, Technologies, and Practices**

Preconference Workshop, Sunday April 26, 2015 9:00 AM – 12:00 Noon

Library collections today have become more complex than ever, with proportions of electronic and digital resources increasing relative to print and other physical materials. To manage these complex, multifaceted collections

Search LTG:

### Industry News

Saturday Apr 25, 2015  

[Full Automation News Report](#)

20 most recent items:

April 24, 2015. [Scholastic To Sell Educational Technology Business To Houghton Mifflin Harcourt For \\$575 Million To Focus On Global Core Children's Books And Supplemental Education Businesses](#). Scholastic Corporation (NASDAQ: SCHL) today announced that it has entered into a definitive agreement to sell its Educational Technology and Services ("EdTech") business to Houghton Mifflin Harcourt C ... <<more>>

April 23, 2015. [Boopsie achieves major milestones with 3 million mobile app downloads to date and 400,000 unique app users per month](#). Boopsie announced

# Library Technology Industry Reports

## American Libraries

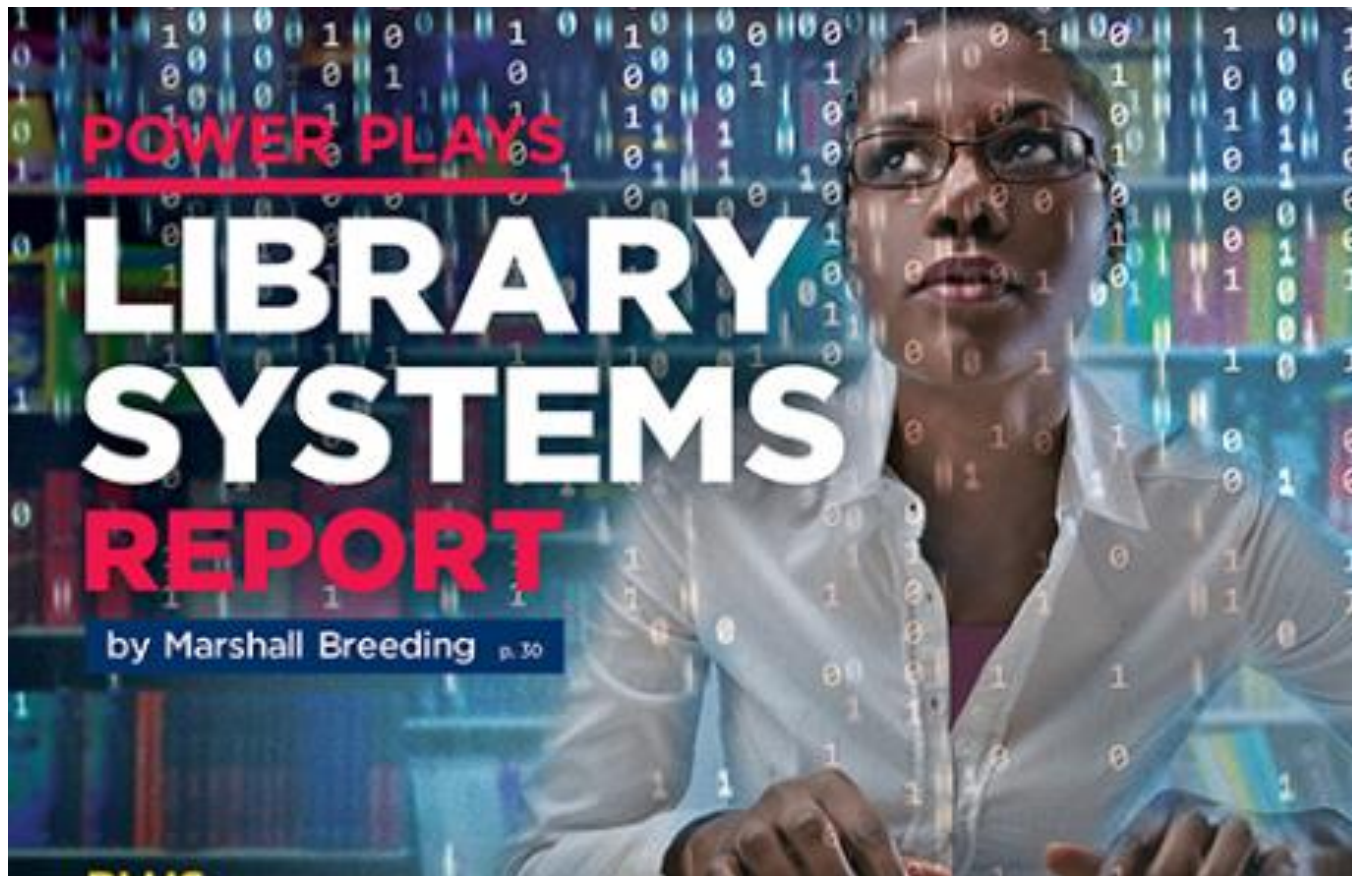
- 2014: Strategic Competition and Cooperation
- 2015: Operationalizing Innovation
- 2016: Power Plays

## Library Journal

- 2013: Rush to Innovate
- 2012: Agents of Change
- 2011: New Frontier
- 2010: New Models, Core Systems
- 2009: Investing in the Future
- 2008: Opportunity out of turmoil
- 2007: An industry redefined
- 2006: Reshuffling the deck
- 2005: Gradual evolution
- 2004: Migration down, innovation up
- 2003: The competition heats up
- 2002: Capturing the migrating customer

# Library Systems Report 2016

## “Power Plays”



<https://americanlibrariesmagazine.org/2016/05/02/library-systems-report-2016/>

# Power Plays

The transitions seen in 2015 were not lateral changes of ownership among investors but **strategic acquisitions that concentrated power among a smaller number of much larger companies and reassembled product portfolios**. Libraries may resist consolidation, but this could enable the development of technology products and services that are less fragmented and better able to support libraries as they provide access to increasingly complex collections.

# International Perceptions Report

- <http://librarytechnology.org/perceptions/2015/>
- Based on a series of annual surveys addressed to libraries
- Probes levels of satisfaction with their automation systems
- 3,453 responses to 2015 survey
- 1,050 narrative comments
- Conducted since 2007: view trends over time
- Data collected Nov-Dec, published early the following year
- Linked to entries in libraries.org

# Perspective

- Increasing divergence among library types regarding requirements for supporting technical infrastructure: Academic, Public, National, School, Special
- Approaches to library service vary according to international region
- Broad range of economic capacity or support across countries and regions and even within some countries. (especially United States)



# Broad Industry Trends

- Continued Consolidation
- International companies increasingly dominate in a growing set of international regions
- Discovery services now routine infrastructure in academic libraries
- New Generation systems becoming better established
- New and existing systems shifting to hosted or SaaS deployment
- Subscription-based technology infrastructure or cloud-housed systems rather than local hardware

# Transformation in Bibliographic Management

- Traditional bibliographic conventions undergoing transformation
- RDA: new set of cataloging rules
- Linked Data: increased interest in applying to library collections
- BIBFRAME: mapping of MARC21 to Linked Data
- Library involvement with institutional research data
- Support of Digital Humanities: Text-encoding Initiative and other analytical tools

# RDA

- Resource Description and Access
  - <http://www.loc.gov/aba/rda/>
- Major change relative to resources devoted to transition
- Minor impact relative to operational and strategic use of metadata

# BIBFRAME



- Emerged from the Initiative for Bibliographic Transformation of the Library of Congress
  - <http://www.loc.gov/bibframe/>
  - [bibframe.org](http://bibframe.org)
- Replacement for MARC (Machine Readable Cataloging), but broader in scope
- Encoded using RDF (Resource Description Framework)
- Major departure from MARC
- Today more conceptual than operational

# Transformación de las tecnologías

- Arquitectura orientada a servicios
- Énfasis en las Interfaces de programación de aplicaciones
- Integración de las aplicaciones sociales en infraestructura básica
- Computación local a cambio de plataformas en la nube
- Nuevas expectativas para múltiples usuarios de software-as-a-service
- Soporte para todos los tipos de dispositivos
  - de tamaño completo computadoras / tablet / móvil

# Tecnologías de la Computación en Nube

(Cloud Computing)

- Las principales tendencias en Tecnología de la Información
- Esencialmente la externalización del alojamiento y gestión del servidor
- Productos de automatización de la mayoría de las nuevas versiones con un cierto sabor de computación en la nube
- Depende del ancho de banda de Internet, que sea rápida y fiable (fast and reliable)

# Biblioteca de automatización en la nube

- Casi todos los proveedores de automatización de bibliotecas ofrecen algún tipo de servicios basados en la nube
- La responsabilidad de la administración de servidores se mueve de la biblioteca a los Proveedores
- Basado en suscripción el nuevo modelo de negocio:
  - ▣ El pago integral de suscripción anual
- Reduce la necesidad de apoyar la tecnología local

# Cambios en el escenario de automatización de bibliotecas

- SIGB (Sistema Integrado de Gestión de Biblioteca) sigue siendo el corazón de la infraestructura
- Interés estratégico en tecnologías de descubrimiento
- fuerte necesidad de herramientas para gestionar los recursos electrónicos
- Tendencia hacia la gestión de recursos unificado



# Las tendencias en modelos de implementación de automatización

- Mayor interés en proyectos de cooperación para reducir los costos de automatización y para aumentar el impacto de las colecciones
- Iniciativas regionales, estatales, nacionales y de infraestructura de automatización
- Ejemplos reciente incluyen Dinamarca, Irlanda, Orbis-Cascade Alliance
- Los SIGB independientes siguen donde la cooperación a gran escala no es posible

# SIGB de código abierto: Escenario Internacional

- Fuerte interés en EE.UU., Canadá
  - Principalmente a través de servicios de soporte comercial pagados
- Muy poco o ningún interés en Asia
- El interés sigue creciendo lentamente en Europa
- Cada vez mayor interés en el software de código abierto en América Latina

# Library software in Developing Nations

- Longstanding use of CDS/ISIS based automation tools
  - ▣ ABCD released as open source
  - ▣ Other CDS/ISIS tools are freeware, but not open source
- Koha seeing widespread adoption
  - ▣ Increasingly dominant for new automation projects
- Commercial products used mostly by larger well-funded institutions

# Differences in Latin American Universities

- Library systems less likely to be centralized
- Many separate libraries in Facultades
- Often have separate library management systems
- Challenge to provide more systematic resource management and discovery while respecting organizational structure
- Proportions of print resources generally higher than US universities

# Latin American Industry Trends

- International companies target well-funded libraries
- As libraries develop, many move to systems from international providers
- Many operate through regional distributors
- Local systems and open source dominate smaller and less well funded libraries
- Cloud technologies often less well suited
  - ▣ Bandwidth, annual subscription costs



# Academic Library Trends

# Operational trends in large Academic Libraries

- Spending on Electronic Resources dominates budgets
- Generally flat budgets + 4% annual inflation = budget stress
- Decreasing spending on print monographs
- Transition from print to electronic journals complete, shift to e-books underway.
- Shift physical spaces from collections to user-oriented facilities: computer labs, creative commons, collaborative work areas

# Academic library print collections

- Smaller, but unique collections
- Many libraries shift print collections to off-site storage
- Monographs increasingly electronic:
  - ▣ E-book collections built via demand driven acquisitions



# Resource management technology

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- Integrated Library Systems
  - ▣ (mostly oriented to print)
- Library services platforms
  - ▣ Electronic+print+digital

# Trends in Resource Sharing

- Ongoing reliance on traditional ILL
- Direct consortial borrowing
- Shared technical infrastructure
  - ▣ Multiple independent libraries
  - ▣ Collaborative collection development
  - ▣ Collective Discovery
  - ▣ Expedited request delivery

# Shared Technology Infrastructure

- Increasing interest in shared technology infrastructure among members of library systems and consortia
- Shift from stand-alone implementations to shared infrastructure
- Remove obstacles to strategic collaboration
  - ▣ Collaborative Collection Development
  - ▣ Shared access to collections
  - ▣ Re-distribution of technical services
  - ▣ Ability to share language experts and subject specialists

# Shared infrastructure Projects

- Orbis Cascade Alliance
- WHELP (Academic libraries in Wales)
- South Australia
- Ireland Public Libraries
- JULAC (Public Universities in Hong Kong)
- California State University
- University System of Georgia
- Complete Florida Plus Program
- University of Wisconsin system

# Library Services Platforms

- New genre of resource management
- Workflows unified across electronic, print, and digital formats
- Flexible metadata management: MARC, Dublin Core, BIBFRAME, etc
- Deployed via web-native multi-tenant platform
- Built-in analytics and decision support
- Examples:
  - ▣ OCLC WorldShare Management Services
  - ▣ Ex Libris Alma

# Shift from: Integrated library systems

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- More oriented to print resources
- Server-based technology (hosted or local)
- Workstation clients for staff functions
- Traditional organization of functional modules:  
Cataloging, Acquisitions, Serials management,  
Circulation.

# Adoption trends

- Still relatively early in transition cycle
- Association of Research Libraries : 33 out of 120 Academic members have purchased a library services platform
- Very early adoption stage in developing nations

# Interoperability and Extensibility

- Strong reliance on APIs to dynamically interact with data and functionality of the technology platform
- Create new services not in the core product
- Interact with other relevant systems:
  - ▣ Student records
  - ▣ Financial management systems
  - ▣ Suppliers
  - ▣ Libraries and other collaborative partners



# Express data and functionality externally

- Learning Management Systems
  - ▣ Reading lists
- External scholarly or professional portals



# The Evolution of Library Resource Discovery

# Index-based Discovery

- One tier of a multi-level approach to providing access to collection resources
- Based on central index populated with article-level metadata and full-text spanning most of the universe of scholarly and professional literature
- Billions of items indexed
- Instant relevancy-based search results
- Interface components with increasing sophistication for exploring library collections

# Major Discovery Products

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- ProQuest: Primo + Primo Central; Summon
- EBSCO Discovery Service
- WorldCat Discovery Service

# Challenge: More integrated approach to information and service delivery

- Library Web sites offer a menu of unconnected silos:
  - ▣ Books: Library OPAC (ILS online catalog module)
  - ▣ Search the Web site
  - ▣ Articles: Aggregated content products, e-journal collections
  - ▣ OpenURL linking services
  - ▣ E-journal finding aids (Often managed by link resolver)
  - ▣ Subject guides (e.g. Springshare LibGuides)
  - ▣ Local digital collections
    - ETDs, photos, rich media collections
  - ▣ Metasearch engines
  - ▣ Discovery Services – often just another choice among many
- All searched separately

# Online Catalog

Search:

Search Results

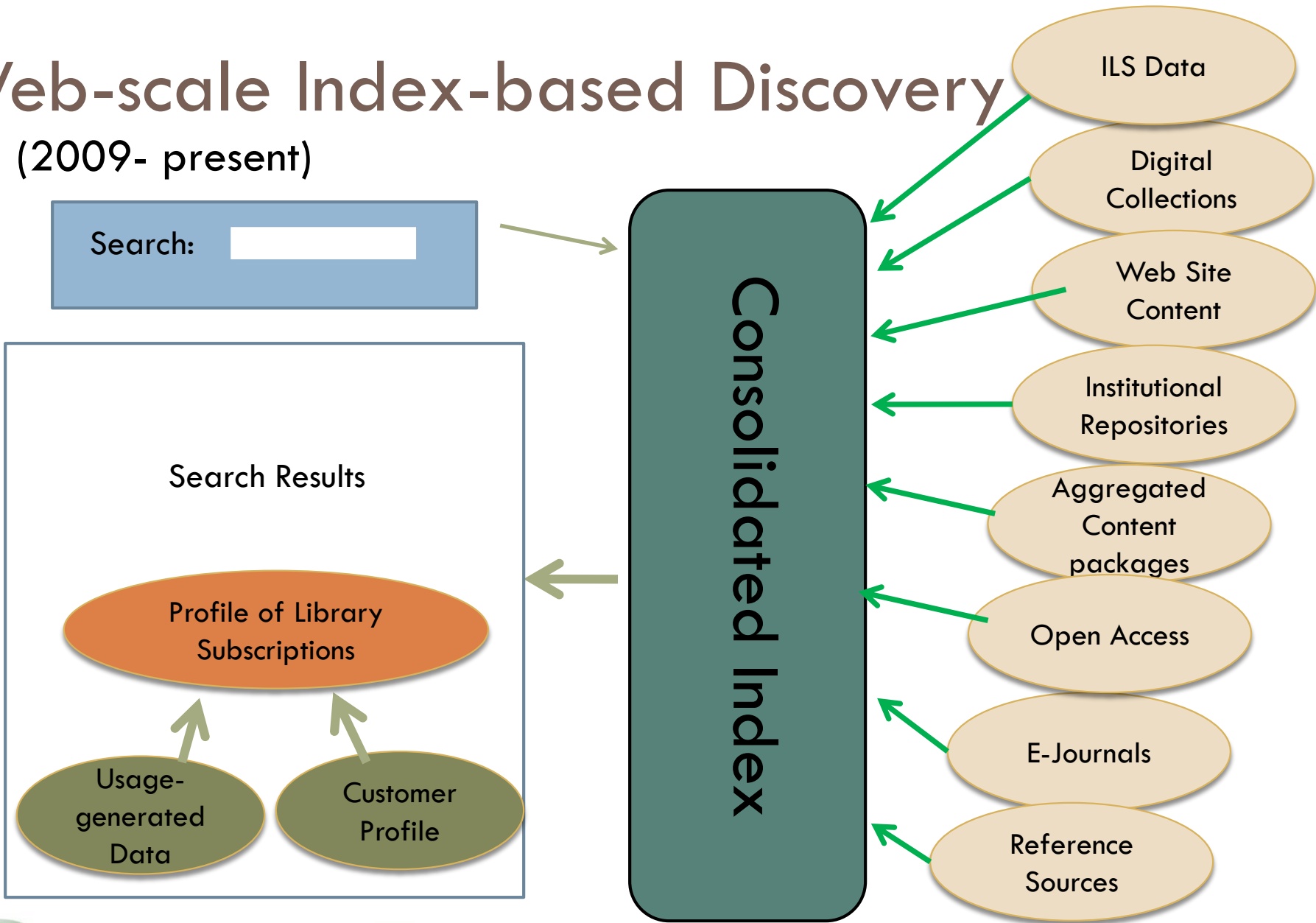
ILS Data

## Scope of Search

- ❑ Books, Journals, and Media at the Title Level
- ❑ Not in scope:
  - ❑ Articles
  - ❑ Book Chapters
  - ❑ Digital objects
  - ❑ Web site content
  - ❑ Etc.

# Web-scale Index-based Discovery

(2009- present)



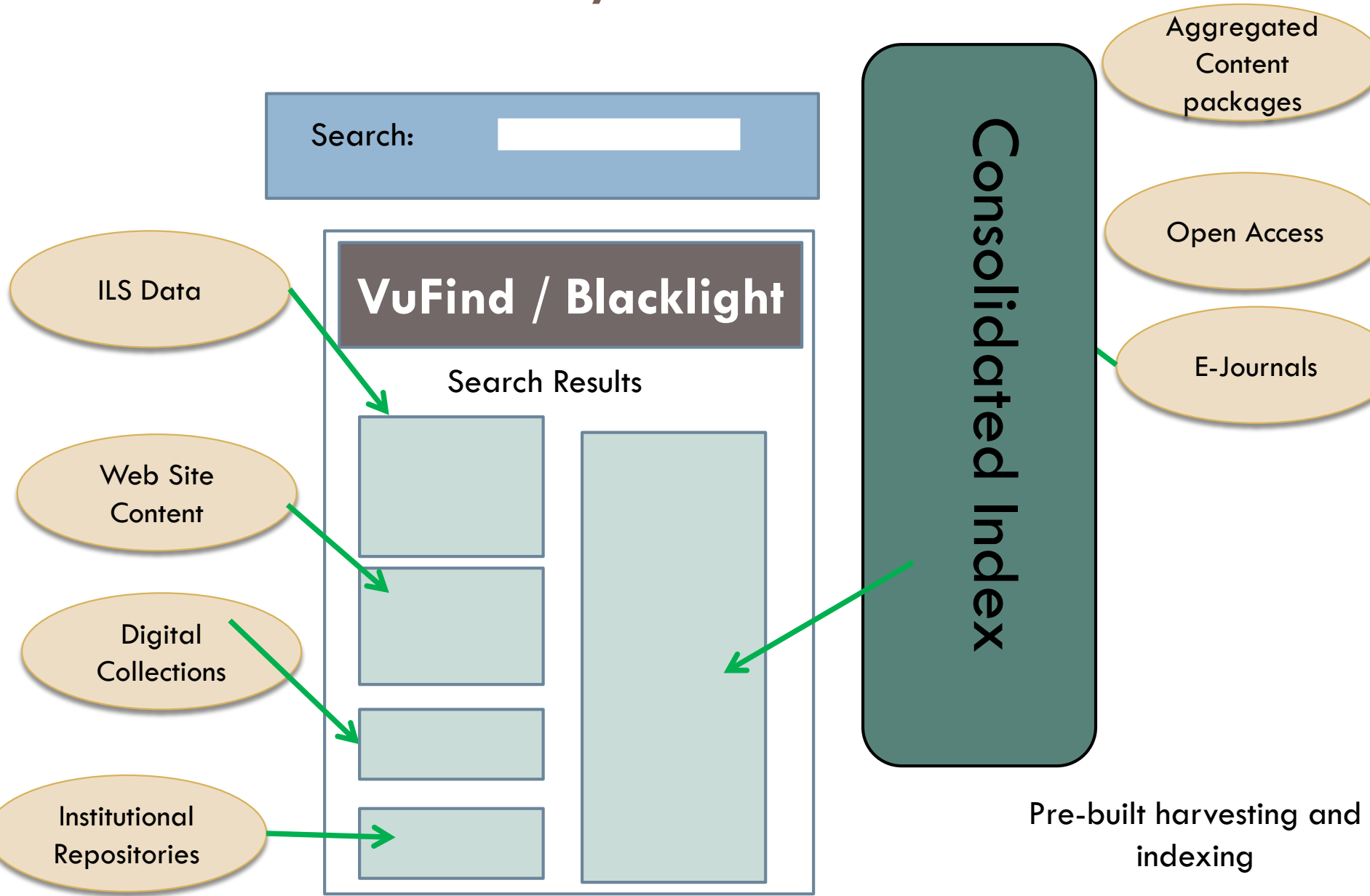
Pre-built harvesting and indexing

# Open source in Discovery

- Flexible and powerful open source interfaces:
  - ▣ VuFind (php-based)
  - ▣ Blacklight (Ruby on Rails)
- No open access discovery index
- Hybrid model:
  - ▣ Open source interface +
  - ▣ Commercial Index



# Bento Box Discovery Model





# Open Source Library Technology

# Trends in Open Source

- Open source now a routine segment of strategic library automation
- Implementation models:
  - ▣ Commercial support
  - ▣ Independent with community support
  - ▣ Support through governmental organizations
- Development models
  - ▣ Mostly centralized within a commercial community
  - ▣ Distributed community

# Open source in Latin America

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- ❑ Commercial software often not affordable
- ❑ More reliance on Open source software
- ❑ Support by Governmental or Educational organizations
- ❑ Local or regional support communities

# ABCD

- Automatización de Bibliotecas y Centros de Documentación
- CDS/ISIS used extensively in developing nations
- CDS/ISIS: freeware initially developed by UNESCO
- Development led by BIRME in Brazil
- ABCD: New application based on CDS/ISIS tools
- ABCD developed as an open source integrated library system.

# Koha

- Open source ILS available since 1999
- Continuous development
- Widespread deployment in all regions and library types
- Small to mid-sized libraries; some large implementations

# Koha

- ❑ Originally developed in 1999 for small group of libraries in New Zealand, Horowhenua Library Trust by Katipo Communications, production use by January 2000
- ❑ Gained widespread use in the United States around 2004-05 and has seen steady growth in use
- ❑ Wide international adoption
- ❑ Used in many thousands of libraries. 2,682 represented in libraries.org, with many large groups not yet registered.
- ❑ Dominant open source SIGB in Latin America

# Koha Worldwide





# National Projects to deploy Koha

- Philippines: A systematic effort to install Koha in the public libraries sponsored by the state libraries
- Turkey: 1,200+ public libraries
- Spain: **Koha-Kobli** <http://kobli.bage.es/>
- Argentina. CONABIP (Comisión Nacional de Bibliotecas Populares)
  - ▣ Customized version of Koha: **DigiBepe**
  - ▣ <http://www.conabip.gob.ar/faq/digibepe>

# Evergreen

- ❑ Open source ILS originally developed for PINES consortium in Georgia
- ❑ Optimized for large consortia comprised of small to mid-sized public libraries
- ❑ Mostly implemented within United States and Canada

# Evergreen

- ❑ SIGB de código abierto desarrollado por el Sistema de Bibliotecas Públicas de Georgia en los Estados Unidos
- ❑ Apoyado y desarrollado por una empresa llamada Equinox
- ❑ Software originalmente diseñado para grandes consorcios compose de pequeñas bibliotecas
- ❑ Se utiliza principalmente en los Estados Unidos y Canadá.
- ❑ No implementaciones en de América Latina
- ❑ Ver: <http://www.open-ils.org/>

# Evergreen Worldwide



# ABCD

- Automatización de Bibliotecas y Centros de Documentación
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# Open Source Discovery

## □ VuFind

- Originally developed at Villanova University
- Widely used by public and academic libraries
- Pika variant with e-book lending integration
- SOLR indexing; PHP programming framework

## □ Blacklight

- Aligned with Project Hydra
- Used by large Academic libraries
- SOLR indexing; Ruby on Rails framework

# FOLIO open source Project

- **Future of the Library is Open**
- **Sponsored by EBSCO**
  - ▣ Major source of funding
  - ▣ Technology leadership
  - ▣ Initial development by Index Data
  - ▣ Anticipation of community-based development
  - ▣ Lightweight microservices oriented platform
  - ▣ Modular functional design with pluggable apps

# FOLIO (Future of the library is Open)

- New open source library services platform sponsored by EBSCO
- Early in development phase; developer's framework expected to be available in October 2016
- Taps into community created via Kualu OLE



# Kuali OLE

- No longer an active project
- Maintenance development of current releases (mostly print)
- 3 implementations: University of Chicago, Lehigh University, SOAS
- Multiple rounds of funding from Andrew W. Mellon Foundation
- Open Library Environment community now involved with FOLIO

# VuFind

- Open source discovery interface
- Based on Apache SOLR with PHP programming framework
- Relevancy-based retrieval, faceted navigation
- Widespread implementations globally
- Several variants and customizations

# Blacklight

- Open source discovery interface
- Based on Apache SOLR and Ruby on Rails programming framework
- Relevancy based retrieval, faceted navigation
- Allied with Project Hydra
- More tightly-knit development community

# Observations and Conclusions

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- Narrowing Budgets drive need for Strategic Tech
- Industry consolidation has narrowed Product Options
- Remaining options increasingly powerful
- Targeted Innovation: Libraries must focus on technology services with the most customer impact

# Challenges and opportunities for Latin America

- Not all the global trends apply in full force
- Some opportunities to acquire services from global providers
- Spirit of technical proficiency and innovation
- Exercise APIs of commercial systems
- Adopt open source solutions and participate in their development communities
- Create technical infrastructure to support unique character of libraries in Latin America



# Questions and discussion