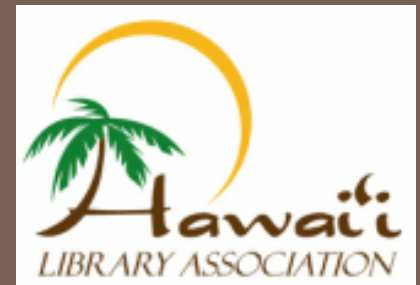


Library Technology and Industry Trends

Marshall Breeding
Independent Consultant, Author, and
Founder and Publisher, Library Technology Guides

<http://librarytechnology.org/>

<http://twitter.com/mbreeding>



November 11, 2016

Hawaii Library Association

Description

Libraries depend on resource management systems such as integrated library systems or library services platforms to acquire and manage their collections. Many also invest in discovery services to facilitate access of these resources for their clientele. Having technology platforms well matched with the library's strategic priorities is essential for strengthening the success of the library.

Library Technology Guides

Documents, Databases, News, and Commentary

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

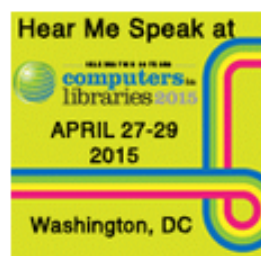
Library Technology Guides provides comprehensive and objective information surrounding the many different types of technology products and services used by libraries. It covers the organizations that develop and support library-oriented software and systems. The site offers extensive databases and document 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

Public Libraries in Hawaii



Library Automation in Hawaii

- State-wide public library system
 - ▣ SirsiDynix Horizon
- Statewide school library system
 - ▣ Library.Solution for Schools from The Library Corporation
- University of Hawaii:
 - ▣ Ex Libris Voyager

Library Technology Industry Reports

American Libraries

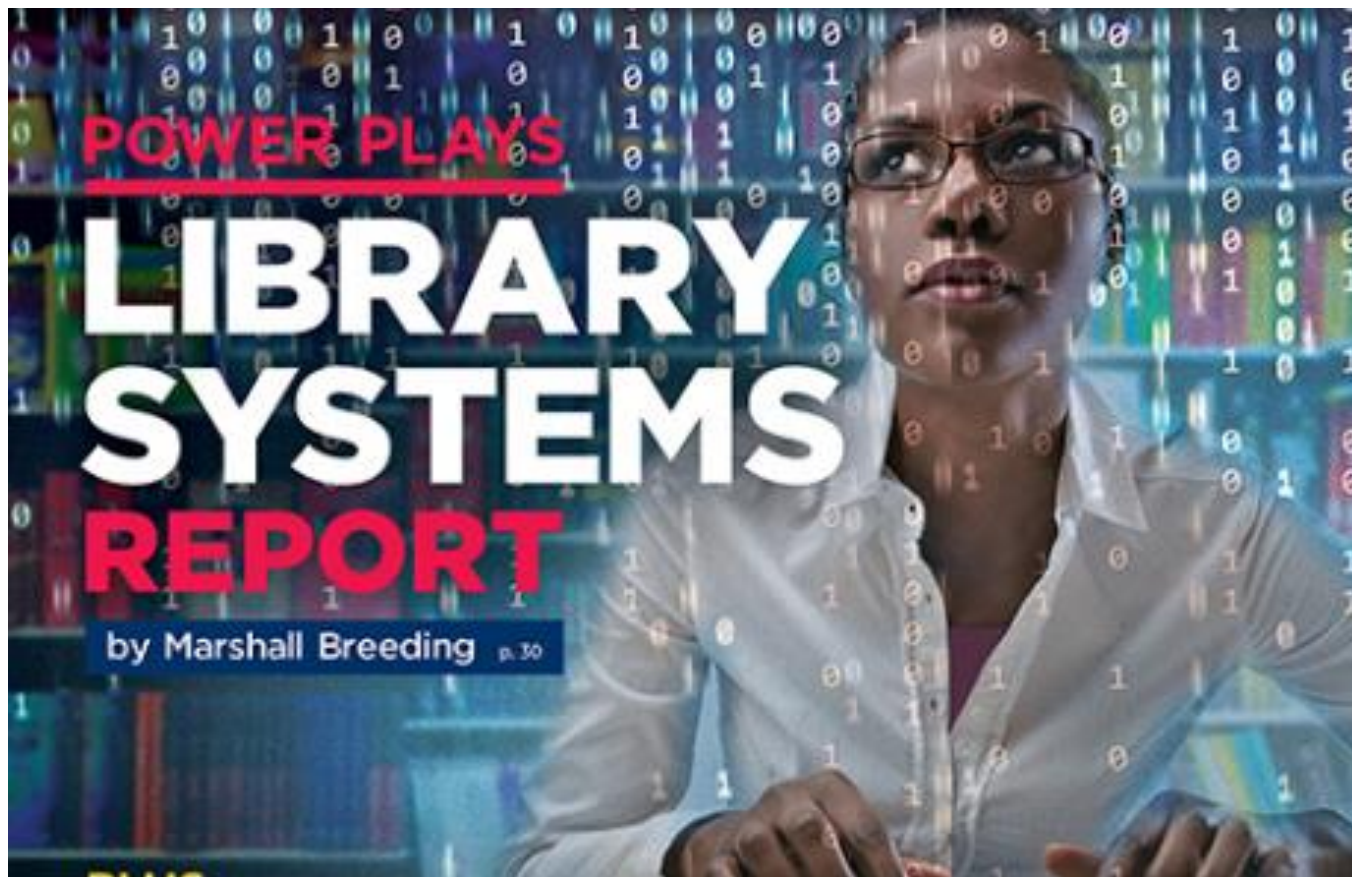
- 2014: Strategic Competition and Cooperation
- 2015: Operationalizing Innovation
- 2016: Power Plays

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

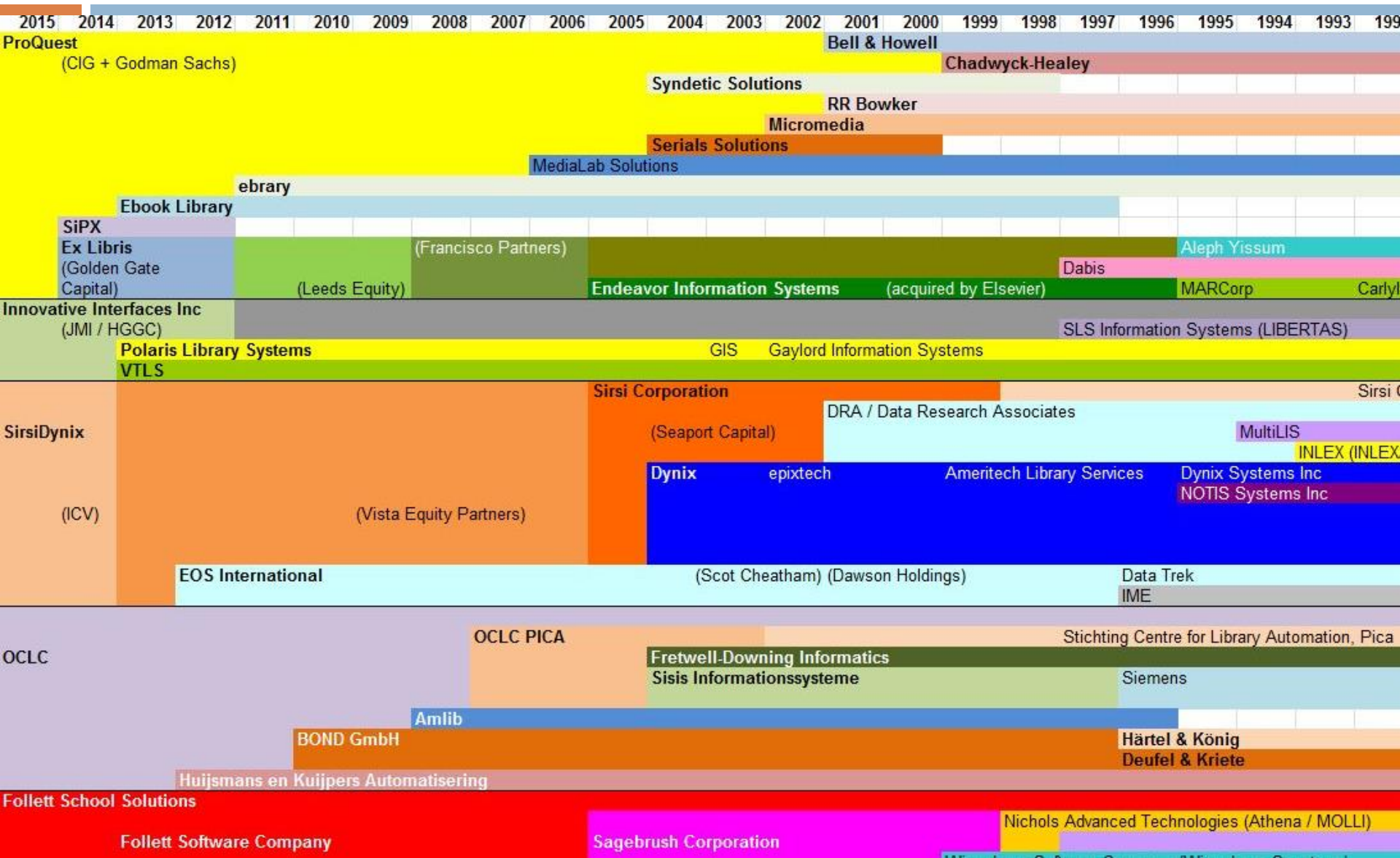
- Increasing divergence among library types regarding requirements for supporting technical infrastructure: Academic, Public, National, School, Special
- Approaches to library service vary according to international region
- Broad range of economic capacity or support across countries and regions and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



Major Industry Events

Mergers and Acquisitions

<http://librarytechnology.org/mergers>



ProQuest acquires Ex Libris

- “Ex Libris, A ProQuest Company”
- Ex Libris becomes the primary technology business unit for ProQuest
- Matti Shem Tov reports to ProQuest CEO Kurt Sanford
- Product portfolio = Ex Libris + ProQuest Workflow Solutions

Ex Libris Product suite

Ex Libris

- Alma
- Primo
- SFX
- Alma Analytics
- Leganto
- Voyager
- Aleph
- CampusM
- Rosetta

ProQuest Workflow Solutions

- ~~Intota v.2~~
- Summon
- 360 Link
- 360 Resource Manager
- Intota Assessment
- SIPX

Commitment to existing development and support timelines for all products used by libraries as production systems

Knowledgebases and Indexes

Strategy

- Interfaces and applications will remain, with internal content components consolidated
- Summon index will be extended with unique content from Primo Central
- New consolidated index will power both Summon and Primo
- ProQuest knowledge base will be extended with unique content from SFX / Alma knowledgebase
- New knowledge base will power Alma, SFX, 360 Link, etc

Ex Libris Dominating Academic Library Tech

- Alma receiving strong reception
 - ▣ Large Academic libraries
 - ▣ Multi-campus Systems
 - ▣ Consortia
- Proven ability to support collaboration among institutions through shared infrastructure
- Expanding into the broader campus infrastructure: campusM mobile platform, Leganto, etc

Academic Shared Infrastructure

Projects selecting Alma

- ❑ Orbis Cascade Alliance (37 libraries)
- ❑ WHELF: Academic libraries in Wales
- ❑ BIBSYS: 205 National, Academic, Special libraries in Norway
- ❑ California State University (23 campuses)
- ❑ University of Georgia system: all public universities
- ❑ Detroit Area Library Network
- ❑ Washington State Board for Community and Technical Colleges
- ❑ Österreichische Bibliothekenverbund und Service Gesellschaft in Austria

Ex Libris Product Strategy

- Products created with APIs to facilitate interoperability and extensibility
- Primo introduced in 2006 to work with any ILS
- Alma designed to use Primo as its Patron-facing interface
- Other discovery services displaced with each Alma implementation
- Summon will be developed as an additional patron interface for Alma
- Ex Libris positioned to gain increasing portion of academic libraries for both resource management and discovery

EBSCO Supports new Open Source Project

- FOLIO

- ▣ the Future of the Library is Open

- <https://www.folio.org/>

- A community collaboration to develop an open source Library Services Platform designed for innovation.

- American Libraries feature:

- ▣ <https://americanlibrariesmagazine.org/2016/04/22/ebsco-kuali-open-source-project/>

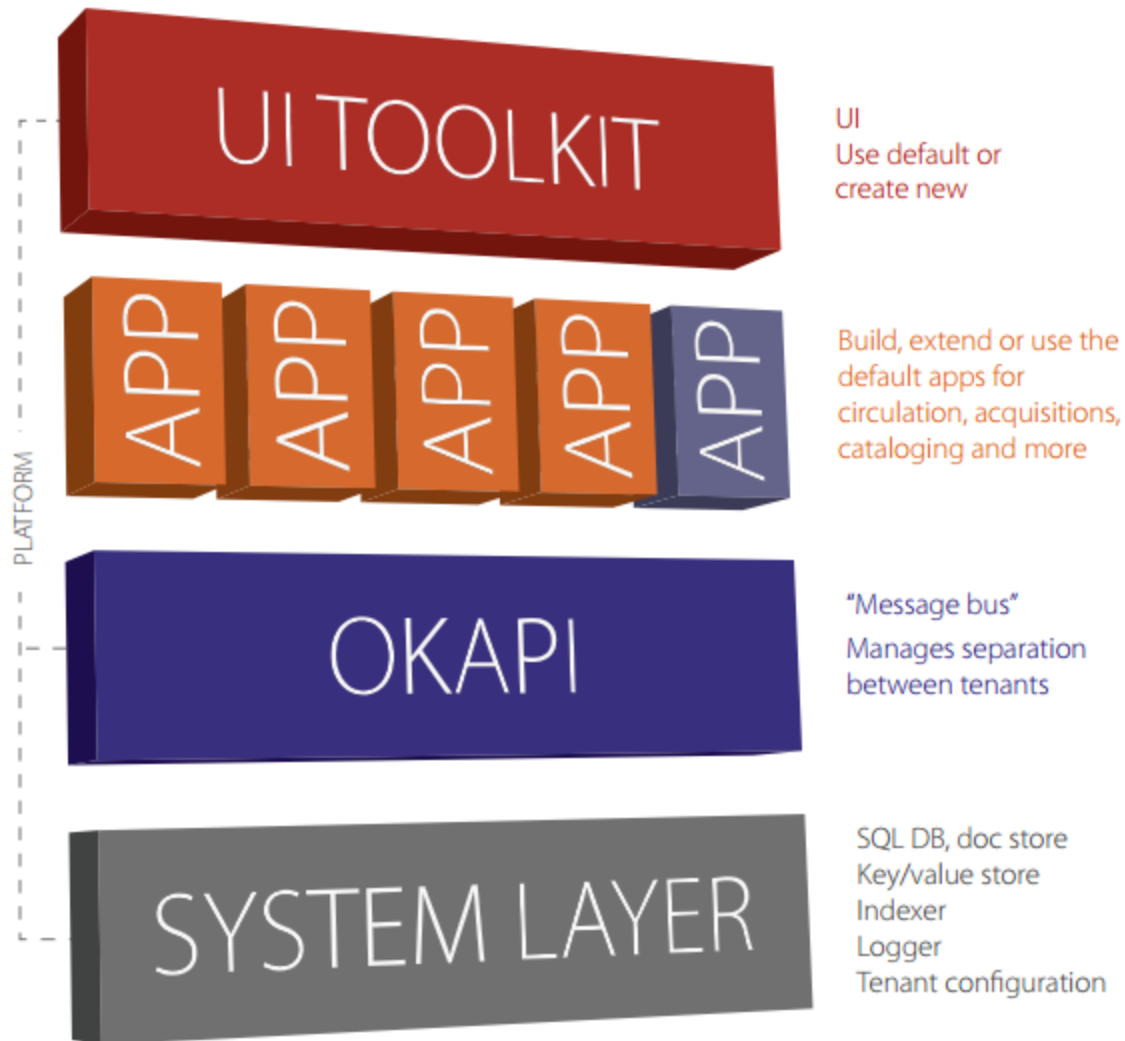
Motivating factors

- Initially oriented to academic libraries
- Academic libraries interested in Library Services Platform
- Narrow options (Ex Libris Alma, OCLC WorldShare Management Services)
- Unbundle Discovery from Resource Management
 - ▣ Choice for patron-facing services
- Alternative functional approach based on apps and modules

Technology

- Microservices architecture
- Modular
- Enables choice for discovery
- Pluggable modules
- Not monolithic

FOLIO Platform



Design concepts

- Flexibility
- Modularity
- Extensibility
- Modern
- Affordable

Organization

- Independent foundation
 - <http://www.openlibraryfoundation.org/>
- Financial support from EBSCO
- Index Data contracted for Initial development
- Community support from Open Library Environment (formerly Kual OLE)
- Synergy with Global Open Knowledgebase (GOKb)

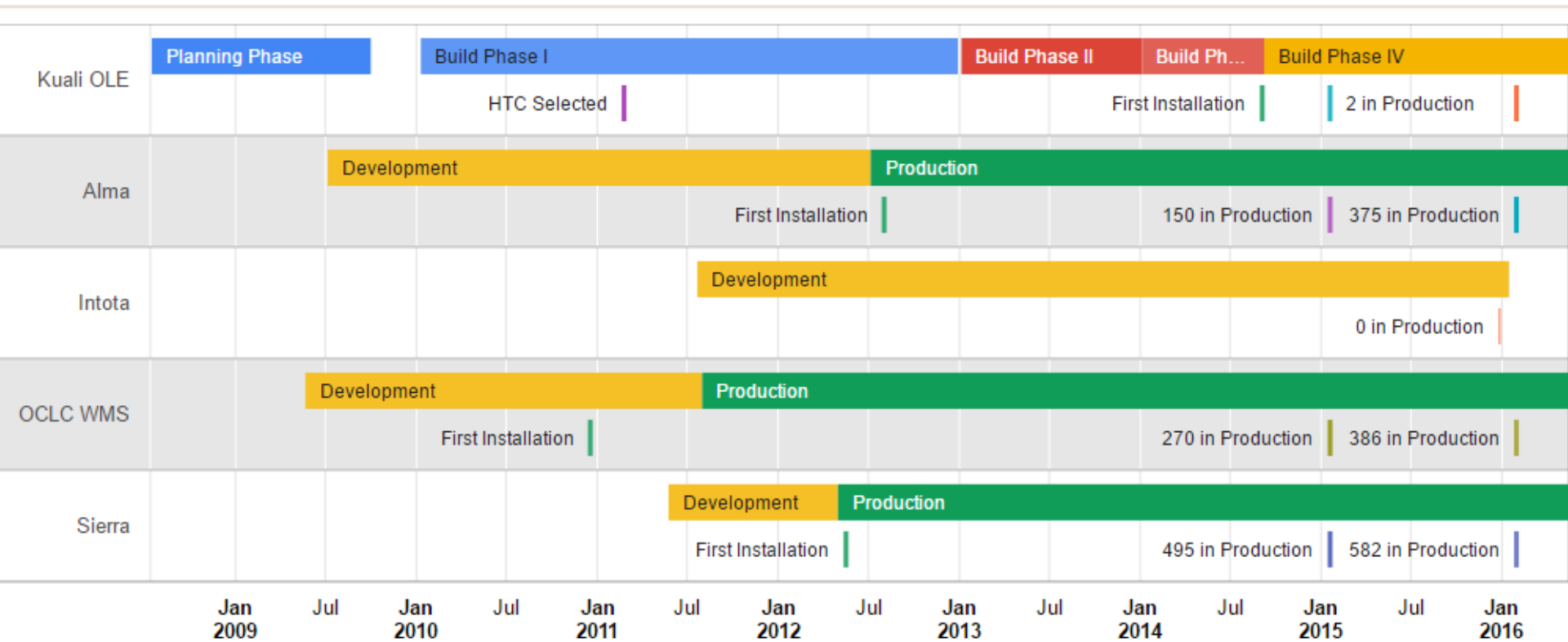
EBSCO Involvement

- Not owned by EBSCO
- EBSCO provides financial and in-kind resources
- Governed through independent non-profit
- Participation by Kualu OLE
- Engage with developers from libraries, consortia, and commercial entities
- EBSCO will provide hosting services
- Based on modules and pluggable apps

Timeline

- Aug 2016: Initial release of base platform
- 2018: Initial version available for early adopters

Development Timeline for Library Services Platforms



New competitive dynamic

ProQuest

- Content: ProQuest platform
- Ex Libris + PQ product suite
 - ▣ Alma
 - ▣ Primo, Summon
- Strategy of platform bundling: Alma + Primo

EBSCO Information Service

- EBSCOhost
- EBSCO Discovery Service
- Strategy of Integrating discovery into all other platforms
- Open Source Strategy:
 - ▣ FOLIO
 - ▣ Koha

Key Competitive Dynamic

- Ex Libris Alma positioned to become primary resource management platform for large academic libraries, systems and consortia
- Alma bundled with Primo (and now Summon)
- Dominance of Alma in resource management means dominance in discovery
- Ex Libris argues that bundling management and discovery offers efficiency and more powerful patron-facing services
- EBSCO argues for de-coupling of discovery from management platforms to enable more competition in the arena of discovery
 - ▣ Suggests that discovery should be the center of technology infrastructure, not resource management
- EBSCO launches new open source project to disrupt bundling trend
- Should libraries have the option to choose different discovery and resource management systems/provider?

Overlap between Content and Technology

- Content companies ever more deeply extended into resource management and discovery technologies
- Technology companies involved in content creation and integration
 - ▣ E-resource Knowledgebases (Journal level)
 - ▣ Discovery indexes (Article level)
 - ▣ Content companies well positioned to create knowledge bases and indexes

EBSCO Information Services

- ▣ Subject Indexing: EBSCO databases
- ▣ Content aggregation: EBSCOhost platform
- ▣ Discovery Technology: EBSCO Discovery Service
- ▣ Print acquisition pipeline: YBP, GOBI3
- ▣ Serials Acquisition pipeline
 - EBSCO Subscription Services
- ▣ E-books (academic)
- ▣ Resource management / workflow strategy
 - Integrate with all Library Management Systems



Library and Tech Trends

Fundamental trends in Academic Libraries

- Increased diversity and complexity of collections:
 - ▣ Electronic, Digital, Print
- Collection budgets skewed toward subscriptions to electronic content resources (~70-95%)
- Personnel resources disproportionately allocated to supporting print
- Demand for strong integration with campus infrastructure (Authentication, Financial, Student, VLE)
- Involvement with Research Data
- Emphasis on role in student learning performance
- Increase impact and lower costs through collaboration

Academic Tech Trends

- Comprehensive Resource Management
 - ▣ Library Services Platforms
- Article-level index-based discovery
- Discoverability beyond library-provided interfaces
 - ▣ Open Linked Data; Schema.org, BIBFRAME,
- API ecosystem
- Declining, but targeted investments in RFID

Print collection management

- Large legacy collections
- Smaller but vital new acquisitions
- Original cataloging volume has decreased
- Value in distributed expertise among partner institutions
- Increased off-site storage
- Trend toward shared collections (Example ReCAP, WRLC, ...)
- Technical infrastructure needed to support shared collections

Electronic collection management

- Consumes majority of academic library budgets
- Dynamics include “big deals”, open access, demand-driven acquisitions
- Increased need for data and statistics to drive selection and de-selection decisions
- Internal and external data sources describing or predicting use levels, impact or value of collection items under consideration
- Complex to manage institutionally, more complex consortially

Public Library Trends

- Print collections remain strong
 - ▣ Circ transactions many multiples higher than academics
- Collection Budgets skewed toward print
- E-book lending a routine service
 - ▣ Minority component of collection budget
 - ▣ Deep satisfaction with pricing and business models offered by publishers

Public Tech Trends

- Model of the Library Management system persists
 - ▣ Gradual evolution toward Web-based interfaces
 - ▣ No current offerings based on true multi-tenant platforms
- Programs and services designed to strengthen patron engagement
- Hosted: Managed services
- RFID-based self-service routine for mid-sized to large public libraries (uneven by international region)

E-book lending

- High demand for integration technologies
- E-book lending fully blended within the library's own online catalog or discovery interface
- Simple selection, download, and reading of e-books
- Librarians demand fair pricing models
 - ▣ Publishers continue to fear impact on sales
 - ▣ Impose policies that create more friction



Functionality Trends

Legacy: Fragmented Environment

- ❑ Integrated Library System for management of (mostly) print
- ❑ Duplicative financial systems between library and university
- ❑ Electronic Resource Management
- ❑ E-Resource knowledge base and Link Resolver
- ❑ A-Z e-journal lists and other finding aids
- ❑ Interlibrary loan (borrowing and lending)
- ❑ Digital Collections Management platforms (CONTENTdm, DigiTool, etc.)
- ❑ Separate systems for archival materials and special collections
- ❑ Discovery-layer services for broader access to library collections
- ❑ No effective integration services / interoperability among disconnected systems, non-aligned metadata schemes

Cycles of fragmentation > unification

- Early Phase: Modular automation
- Integrated Library Systems
- Proliferation of systems to manage electronic resources and digital collections
- Current unification phase: library services platforms bring together print and electronic resource management
- Next phase? Bring archival and digital assets under common management platform

Library Services Platform

- **Library-specific software.** Technical infrastructure to help libraries automate their internal operations, manage collections, fulfillment requests, and deliver services
- **Services**
 - ▣ Services-oriented architecture
 - ▣ Exposes Web services and other API's
 - ▣ Facilitates the services libraries offer to their users
- **Platform**
 - ▣ General infrastructure for library automation
 - ▣ Consistent with the concept of Platform as a Service
 - ▣ Library programmers address the APIs of the platform to extend functionality, create connections with other systems, dynamically interact with data

Library Services Platforms – Functional

- Manages electronic and print formats of materials
- Replaces multiple incumbent products
- Extensive Metadata Management
- Multiple procurement workflows
- Knowledgebases
- Built-in collection analytics
- Decision support for collection development

Integrated Discovery?

- The concept of Library Services Platform does not necessarily encompass discovery or patron-facing interfaces
- Focuses on Resource Management
- Some Library Services bundle discovery service with built-in integration
- Many libraries prefer providing discovery separately

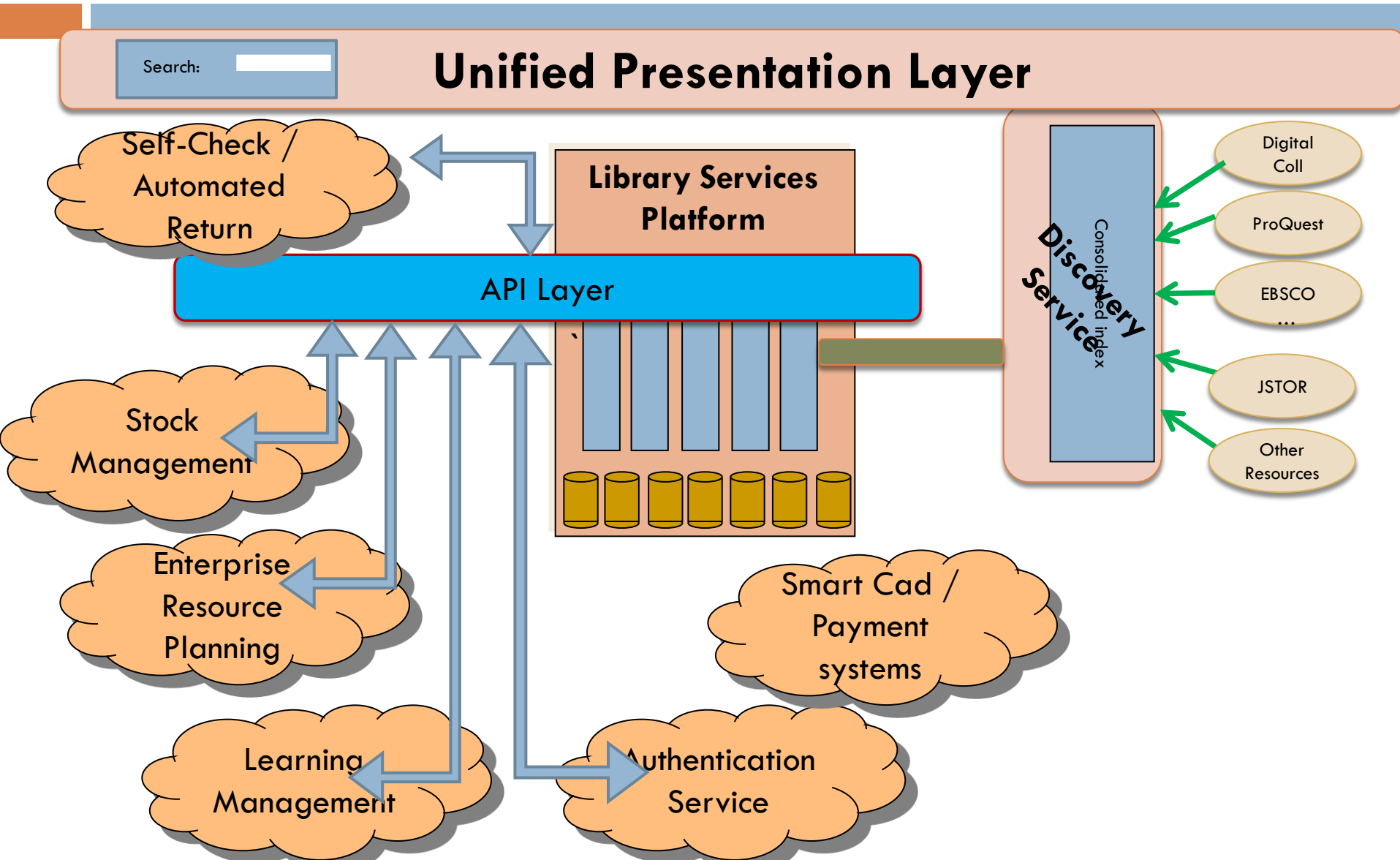
Library Services Platforms – Technical

- Beyond Client/Server Computing
- Multi-tenant platforms
- Web-based interfaces
- Services-oriented architecture
- Exposes APIs for extensibility and interoperability
- Interoperable

Actionable analytics

- Previous generation of ILS offered reports
- Libraries now expect sophisticated analytics
- Make data-driven collection decisions
 - ▣ Anticipate interest and use levels
 - ▣ Cost per use

New Library Management Model



Resource Management Models

Category	Integrated Library System	Progressive integrated library System	Library Services Platform
Resources managed	Physical	Print, electronic	Electronic, Physical
Technology platform	Server-based	Server-based	Multi-tenant SaaS
Knowledgebases	None	None	e-holdings, bibliographic
Patron interfaces	Browser-based	Browser-based	Browser-based
Staff interfaces	Graphical Desktop (Java Swing, Windows, Mac OS)	Browser-based	Browser-based
Procurement models	Purchase	Purchase, license	license
Hosting option	Local install, ASP	Local install, ASP	SaaS Only
Interoperability	Batch transfer, proprietary API	Batch transfer, RESTful APIs,	APIs (mostly RESTful)
Products	SirsiDynix Symphony, Millennium, Polaris	Sierra, SirsiDynix Symphony/BLUEcloud, Polaris, Apollo	WorldShare Management Services, Alma, ProQuest Intota, Sierra, Kuali OLE

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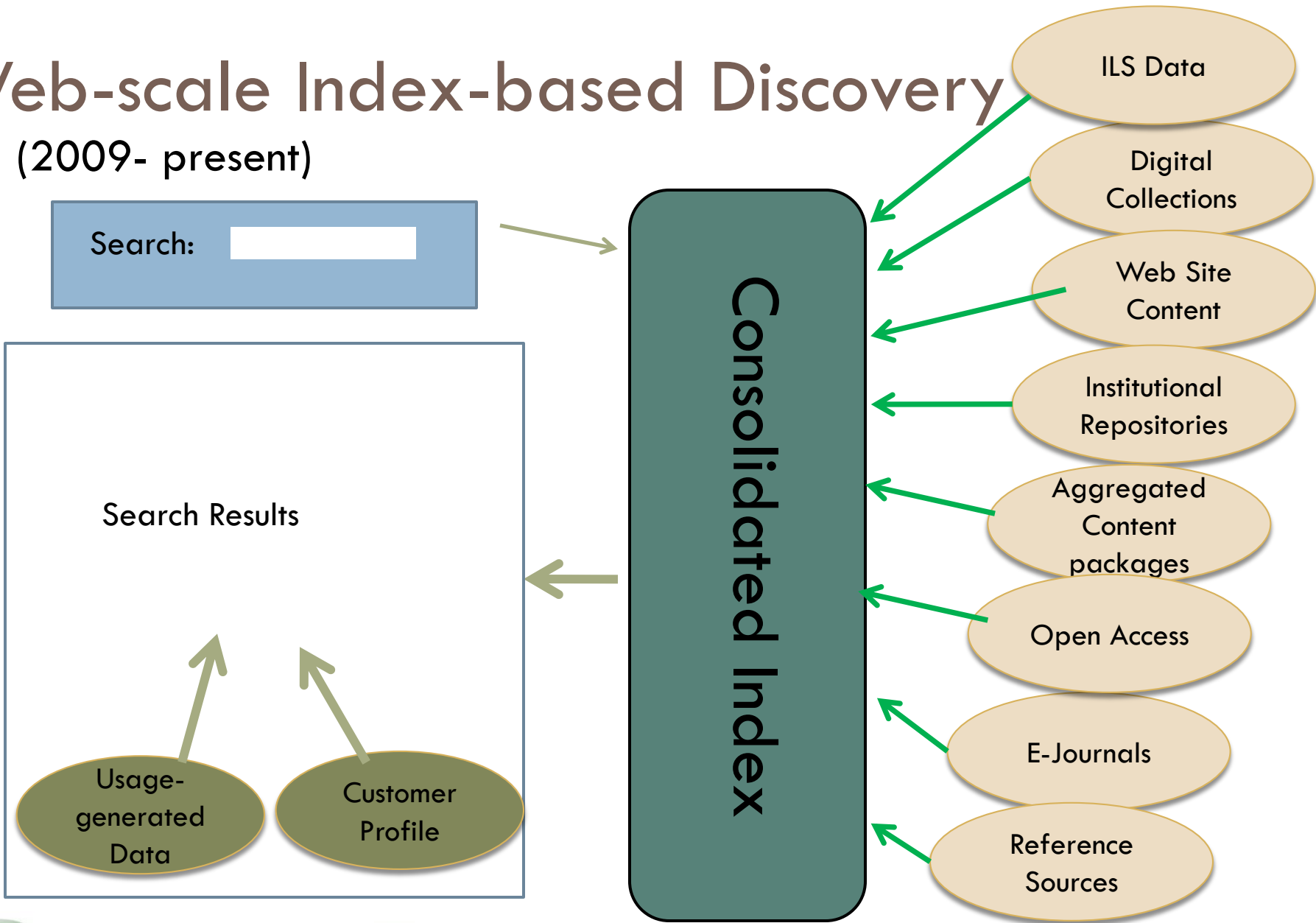
Resource Discovery Trends

Current state

- Index-based model dominates
 - ▣ 3: Ex Libris, EBSCO, OCLC
- EBSCO: primacy of subject indexing
- OCLC, Ex Libris: metadata and full text indexing
- Continual enhancements in interfaces, index coverage
- More sophisticated link generation than original OpenURL menus

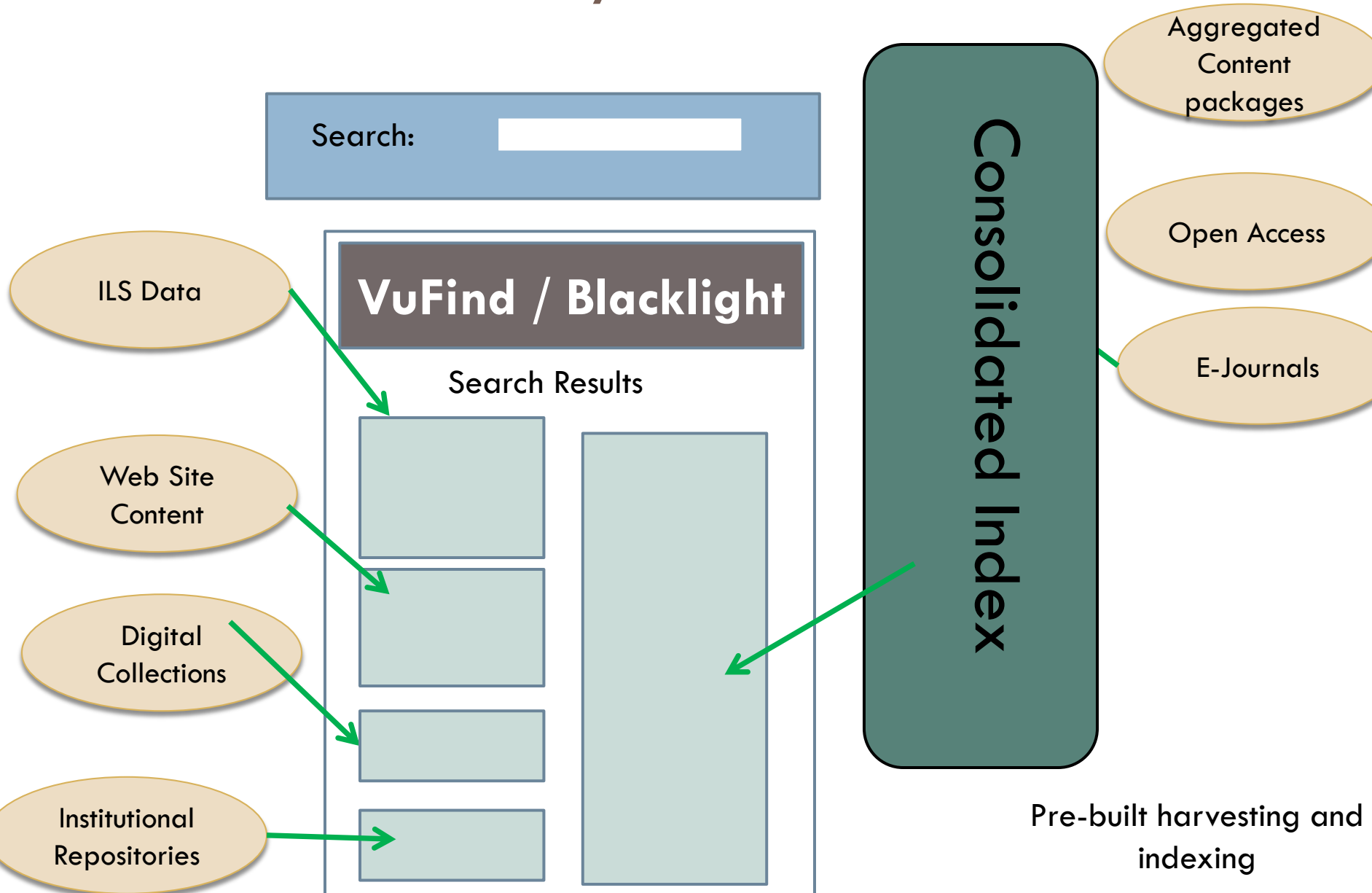
Web-scale Index-based Discovery

(2009- present)



Pre-built harvesting and indexing

Bento Box Discovery Model



The future of Resource Discovery

- More comprehensive discovery indexes
- Stronger technologies for search and retrieval
- Discovery beyond library-provided interfaces
- Linked Data to supplement discovery indexes

Universal participation

- Barriers to participation soften as mutual interest prevails over competitive conditions
- Advantage to content providers to maximize exposure of resources
- Discovery providers gain value in functionality as metadata becomes increasingly commoditized
- Essential to preserve value of indexing and abstracting services
- Content providers see discovery as an essential channel for distribution

More Distributed Discovery

- Address the reality that discovery takes place outside of library provided interfaces
- Optimized exposure in the ecosystem of search engine and social network
- Not Concentrated on the Library web site
- Expression of discovery services via other campus tools and portals and beyond

Multi-layered discovery



- Native interfaces of specialized content services
- Disciplinary aggregations
- General library discovery tools
- Global Internet-based discovery

Discovery beyond Library Interfaces

- Improved performance of library content through Google Scholar
 - ▣ Same expectations for transparency?
- Better exposure of library-oriented content
 - ▣ Schema.org or other microdata formats
- Better exposure of scholarly resources
 - ▣ Open access & Proprietary
- Embedded tools in other campus interfaces

Part of the General Internet Infrastructure

- Scholarly content will be promoted via similar mechanisms as commercial content
- Additional levels of infrastructure to protect privacy
- Resource management and/or discovery tools expose content items as open linked data

Linked Data / Semantic Search

- Major trend toward information systems based on linked data
 - ▣ Many projects now based on linked data
 - ▣ Area of peak interest for Library of Congress, OCLC, etc
 - ▣ BIBFRAME
- Potential to transform how libraries approach discovery
- Likely interim hybrid models: central indexes + Linked Data
- Current opportunities in making library content more discoverable

Library adoption of Linked data architecture

- Not yet a fully operational method for library-oriented content
 - ▣ Increasing representation of bibliographic resources
 - ▣ BIBFRAME stands to make great impact
- Universe of scholarly resources not well represented
- Will current expectations for content providers to make metadata or full text available for discovery expand to exposure as open linked data?

Hybrid models

- Can index-based search tools be improved through Linked Data
 - ▣ Browse to related resources
 - ▣ Add additional hierarchies of structure to search results

Will linked data models prevail?

- Possibility that open linked data may eventually supplant index-based products?
- Index technology supplements fundamental architecture based on linked data

Benefits of shared infrastructure

- Increased cooperation and resource sharing
- Collaborative collection management
- Lower costs per institution
- Greater universe of content readily available to patrons
- Avoid add-on components for union catalog and resource requests and routing

Increased interest in shared infrastructure

- Single-institution ILS may not be the most efficient automation model
- Increased cooperation and resource sharing
- Collaborative collection management
- Lower costs per institution
- Greater universe of content readily available to patrons
- Avoid add-on components for union catalog and resource requests and routing

Shared infrastructure Projects

- Orbis Cascade
- WHELP
- South Australia
- Ireland Public Libraries
- JULAC
- California State University
- University System of Georgia
- Complete Florida Plus Program
- University of Wisconsin system



Questions and discussion