Current Trends in Electronic Resource Management and Discovery Services

Marshall Breeding

Independent Consultant, Author, and

Founder and Publisher, Library Technology Guides

https://librarytechnology.org/

https://twitter.com/mbreeding

UKSG

9 November 2023

An Introduction to Resource Discovery - online seminar

Library Technology Guides

Where to find relevant data and resources relevant to resource management, discovery, and other strategic tech products

Library Technology Guides

Documents, Databases, News, and Commentary

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:

Search : [   ] [Search]

new: improved site search

GuidePosts

Perspective and commentary by Marshall Breeding

Blog Archive

Participate in the 2022 International Library Automation Perceptions Survey

Please respond to this year's International Library Automation Survey conducted through Library Technology Guides. The survey measures the levels of satisfaction that libraries have in their strategic technology products and their perceptions of the quality of service and support that they receive. The results of this survey provide valuable information to libraries as they formulate technology strategies and to vendors as they refine their support services and product development.

The report based on the 2020 survey, with links to previous reports is available:

- **Perceptions 2021: An International Survey of Library Automation,**

I am now collecting responses for the 2022 edition of the survey. Please take this opportunity to register the perceptions of the library automation system used in your library, its vendor, and the quality of support delivered. The survey also probes at considerations for migrating to new systems, involvement in discovery products, and the level of interest in open source ILS. While the numeric rating scales support the statistical results of the study, the comments offered also provide interesting insights into the current state of library automation satisfaction.

Note: **If you have responded to previous editions of the survey, please give your responses again this year.** By responding to the survey each year, you help identify long-term trends in the changing perceptions of these companies and products.

As with the previous versions of the survey, only one response per library is allowed and any individual can respond on behalf of a library. These restrictions ensure that no single organization or individual can skew the statistics. While all the individuals that work in a library may have their own opinions, please respond to the extent that you can from the general experiences of your library.

How to participate

The survey links each response to the listing for a library in the libraries.org directory. This connection provides the ability to correlate responses with the extensive library demographic data in libraries.org.

1. Find your library in libraries.org;

Industry News

Tuesday Oct 25, 2022

Full Automation News Report

20 most recent items:

October 25, 2022. OverDrive Education donates 100 juvenile and young adult ebooks, audiobooks to every Canadian school. To help Canadian schools meet demand for digital content without increasing budget, OverDrive Education has donated 100 juvenile and young adult titles to thousands of primary and secondary schools ar ... <<more>>

October 25, 2022. Equinox at the New York Library Association 2022 Annual Conference. Equinox Open Library Initiative, a trusted leader in open source technology development and support for libraries, is excited to attend in the New York Library Association 2022 Annual Conference, taki ... <<more>>

October 25, 2022. Soutron Global releases latest update to their information management system for libraries and archives. International library, archives, information, and knowledge management solutions market leader Soutron Global announces the release of Soutron 4.1.8, available immediately to all Soutron cloud subscri ... <<more>>

October 25, 2022. Library of Congress acquires Historical Airfare Collection. The Library of Congress has acquired 1,588 volumes of airline tariffs, rules and routes from the Airline Tariff Publishing

Featured Content

Baker & Taylor services disrupted by ransomware attack

Baker & Taylor, a major distributor of books and other content to libraries experienced a ransomware attack on about August 22, 2022, disrupting its services, including the Title Source 360 ecommerce system that libraries use to place orders for material and the EDI services used for automated transactions with library systems. The Axis 360 ebook service was not impacted. The outage of Title Source 360 was restored on the morning of September 7, ending a 17-day outage.

(*Library Technology Newsletter*, August 2022)

Continue to complete article...

Discoverability of Library Collections

Libraries want their collections to be easily accessed by their communities. They provide catalogs or discovery services through their websites to enable efficient ways to search, request, or download materials. It's also important to enable convenient access to library materials to those that begin from Google or other popular web destinations. Multiple technologies and services help their patrons find and access items in a library's collection. Library catalogs have long been the primary tool for search and access of library collections, and continually strive to be more effective and easier to use. For most libraries, the online catalog provides comprehensive coverage of all items in the collection, including owned and licensed materials. Online catalogs have evolved to become easier to use and to address all aspects of library collections, including print, electronic, and digital materials. Libraries also benefit from additional pathways to their collections. The concept of discoverability considers other ways to access library materials other than the traditional catalogs and discovery services.

(*Library Technology Newsletter*, May 2022)

Continue to complete article...

OCLC sues Clarivate over MetaDoor and its use of WorldCat records

OCLC filed a lawsuit against Clarivate and its subsidiaries demanding that Ex Libris cease promoting MetaDoor in a way that advises its member libraries to violate policies and contracts related to records in WorldCat. The complaint, filed on June 13, 2022, claims that Ex Libris is enabling OCLC members to share collection data that includes WorldCat records to MetaDoor in a way that violates OCLC policies and the terms of subscription contracts. OCLC asserts that MetaDoor takes unfair advantage of its long history of building WorldCat as a near-comprehensive bibliographic database. Further, OCLC states that Ex Libris offering MetaDoor as a free service is an anticompetitive strategy that endangers its very existence. This article presents the basic statements related to the complaint without opinion or commentary.

(*Library Technology Newsletter*, Jun 2022)

Continue to complete article...

Disruption in the library bibliographic services arena

Bibliographic services represent a critical component of the library information ecosystem. Since the earlies phases of library automation, many vendors and organizations have developed processes to enable libraries to create records to describe items in their collections and to share them among peer institutions to avoid redundant efforts. OCLC's WorldCat and its Cataloging and Metadata Services represent the culmination of many of efforts into a global ecosystem for bibliographic records and authority control. Though OCLC ranks as the dominant provider, other services are available and new initiatives are underway. How libraries create and share the records has recently erupted into

Columbia University Libraries announced a significant expansion of access to mobile ebooks on the Palace Project mobile app. The Palace Project app brings together over 250,000 ebooks from our collec ... <<more>>

October 21, 2022. **Shortgrass Library System (Alberta, CA) chooses Patron Point.** Patron Point announced that Shortgrass Library System, headquartered in Alberta, Canada, has chosen our patron engagement platform to support its mission to provide quality library support services to ... <<more>>

October 20, 2022. **The University of Tennessee-Knoxville is live with Aeon.** The Betsey B. Creekmore Special Collections and University Archives at the University of Tennessee is live using Aeon. Located in Knoxville, Tennessee, the University joins more than 100 institutions ... <<more>>

October 20, 2022. **MOBIUS Migrates Central and Western MAssachusetts Resource Sharing (CW MARS).** MOBIUS announced that CW MARS, which utilizes the Evergreen ILS, successfully migrated and went live on its MOSS (MOBIUS Open Source Solutions) hosting service on October 10, 2022. Previously, CW MARS ... <<more>>

October 19, 2022. **ByWater Solutions Announces new user interface customization options and enhancements with Our Aspen Discovery 22.10 Release.** This month's release includes multiple enhancements to the options libraries have for customizing the Aspen user interface. Aspen's header and footer can now easily be extended to fill the full width ... <<more>>

October 19, 2022. **Three Texas Libraries join MetroShare and choose ByWater Solutions' Koha and Aspen Discovery support.** ByWater Solutions, America's forefront provider of Open Source library technology support,

Libraries.org directory

Global directory of libraries

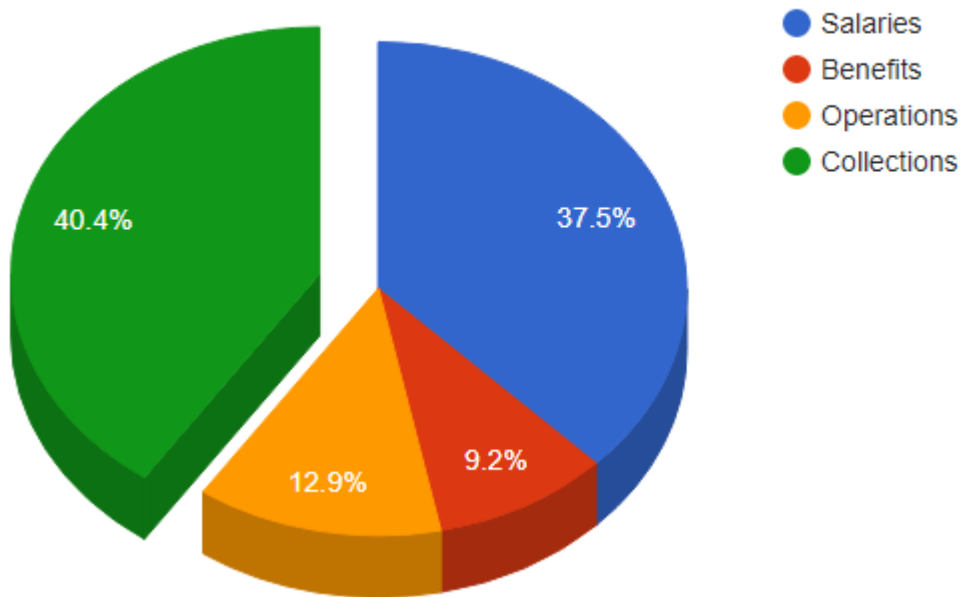Descriptive data (location, type, collection size, etc.)

Technology: ILS, Discovery, etc.: past and present
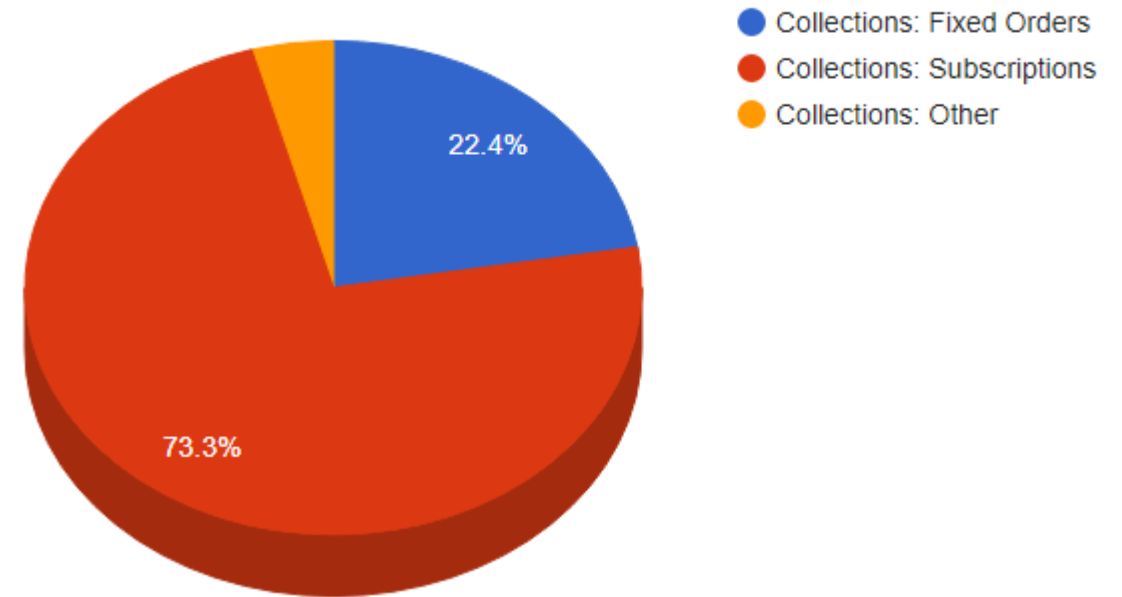
Lists, maps, reports

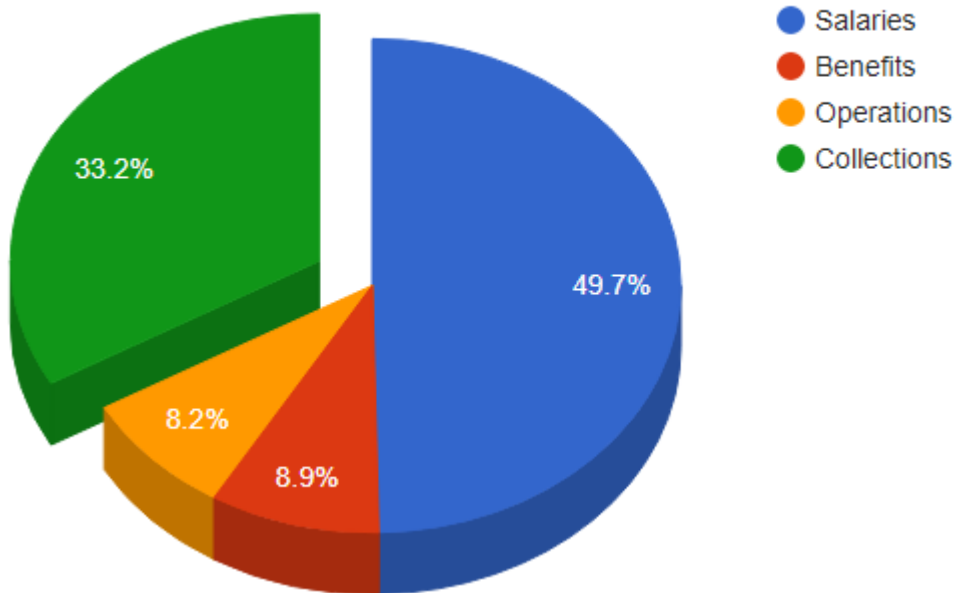# Collections budgets

ASSOCIATION OF RESEARCH LIBRARIES

Association of Research Libraries: Budget Breakdown

- Salaries
- Benefits
- Operations
- Collections

40.4%
37.5%
12.9%
9.2%

Association of Research Libraries: Budget Breakdown (out of 1,425,574,290)

- Collections: Fixed Orders
- Collections: Subscriptions
- Collections: Other

22.4%
73.3%

Collections budgets

Baccalaureate Colleges: General

Baccalaureate Colleges-General: Budget Breakdown

- Salaries 49.7%
- Benefits 8.9%
- Operations 8.2%
- Collections 33.2%

Baccalaureate Colleges-General: Budget Breakdown (out of 64,632,527)

- Collections: Fixed Orders 14.6%
- Collections: Subscriptions 77.6%
- Collections: Other 7.8%
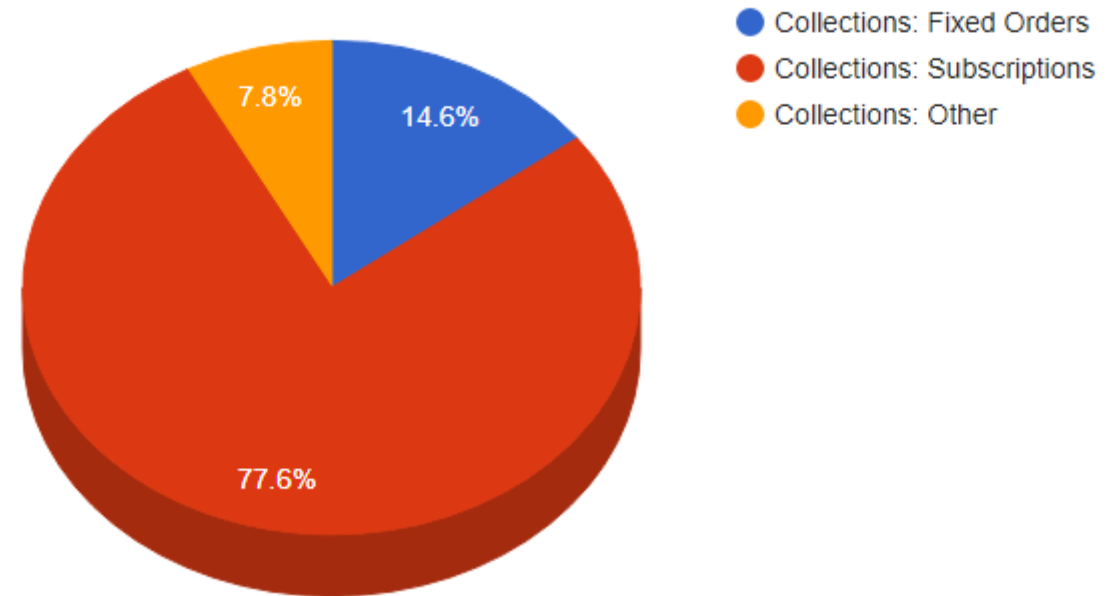
Collections budgets
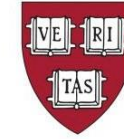
Harvard University: Budget Breakdown

- Salaries — 29.9%
- Benefits — 10.6%
- Operations — 35.3%
- Collections — 24.2%
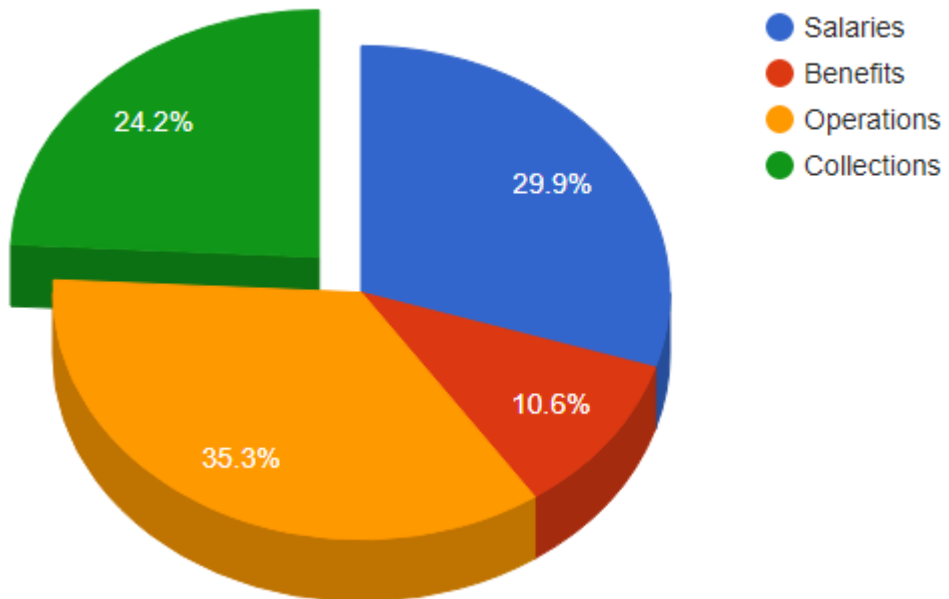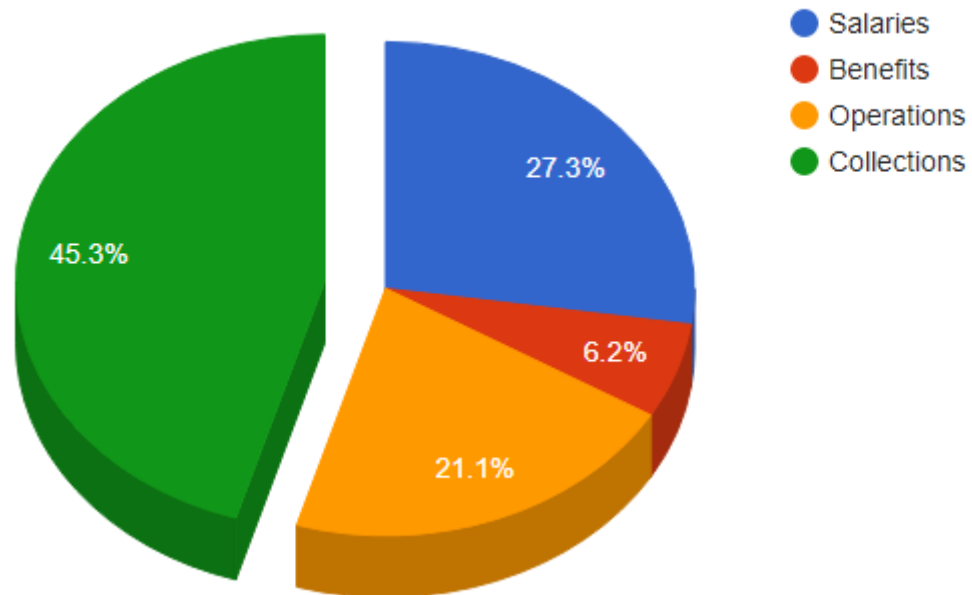
Harvard University: Collections Spending Breakdown

- Collections: Fixed Orders — 34.1%
- Collections: Subscriptions — 44.9%
- Collections: Other — 21%

Collections budgets
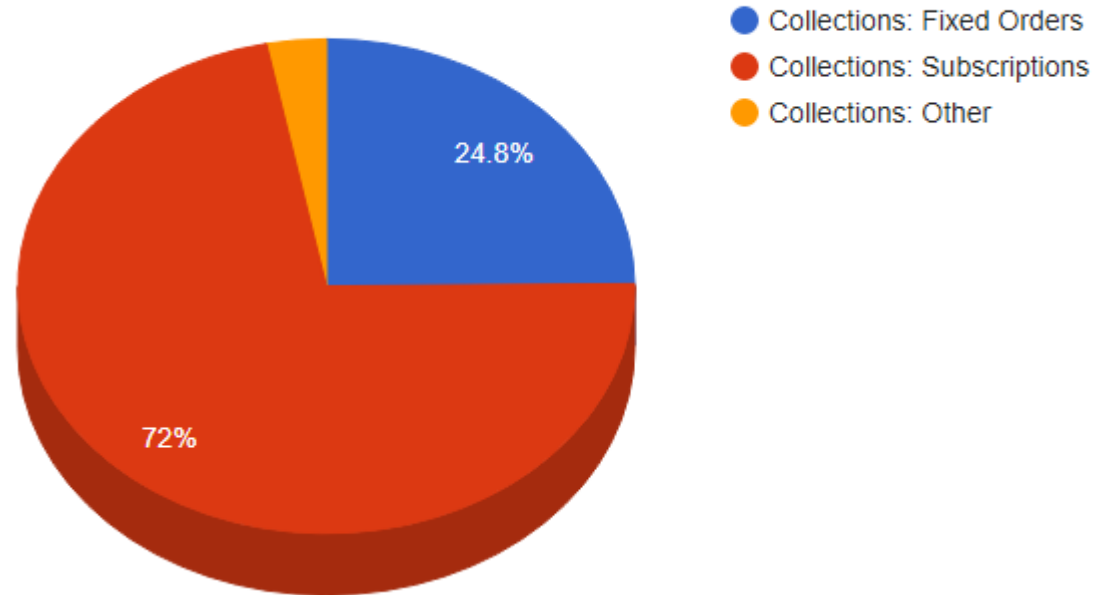
Academic Library Circulation Trends

University of Tennessee -- Knoxville: Circulation Trends

Legend:
- Physical Circ
- Electronic Circ

2021
Physical Circ: **30,943**
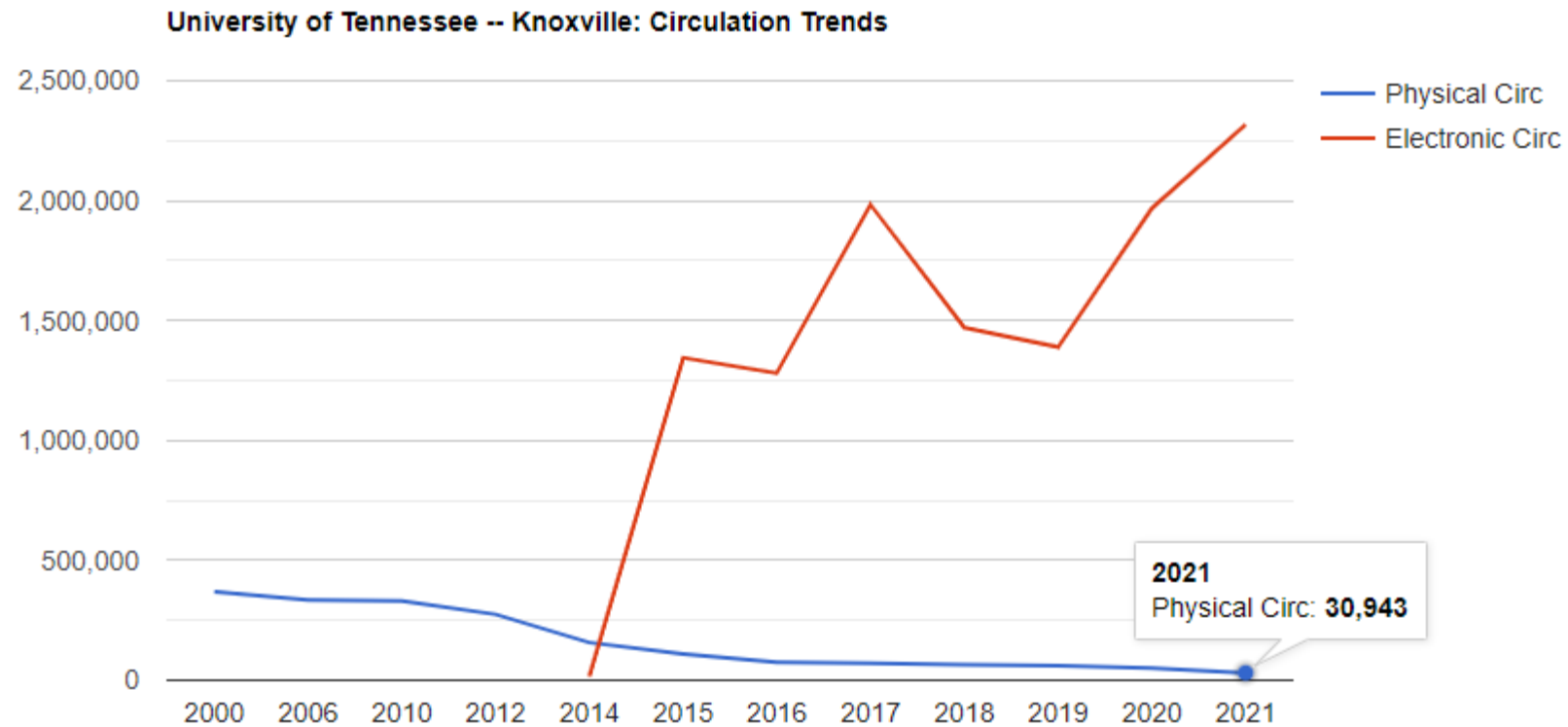
Major Library Trends

Academic and Research Libraries

- Transition from Integrated Library Systems to Library Services Platforms
- Index-based discovery Services
- Supplemented by curriculum and research support tools

Public Libraries:

- Integrated library systems continue as strategic automation environment
- Supplemented through enhanced discovery and patron engagement modules

Academic Library Perspective

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.

Demand-driven acquisitions and other dynamic procurement models

Scope of ERM

Need to manage all formats:
    Print subscriptions
    Electronic Subscriptions
    Open Access

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

Electronic Resource Management Basics

Pragmatic Approach: use local spreadsheets or databases to track subscriptions

Difficult to scale to large and complex collections
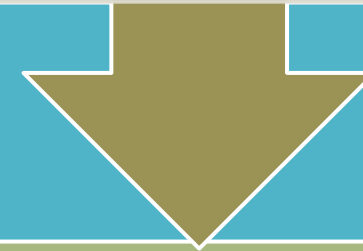
Systematic Approach: use of a formal electronic resource management system

Comprehensive tools available to all related roles

Usually based on a knowledge base of all commercially available titles and packages with coverage data

Portfolio-level management: selection of a package activates all titles and data ranges

Integration with ILS and Discovery Services
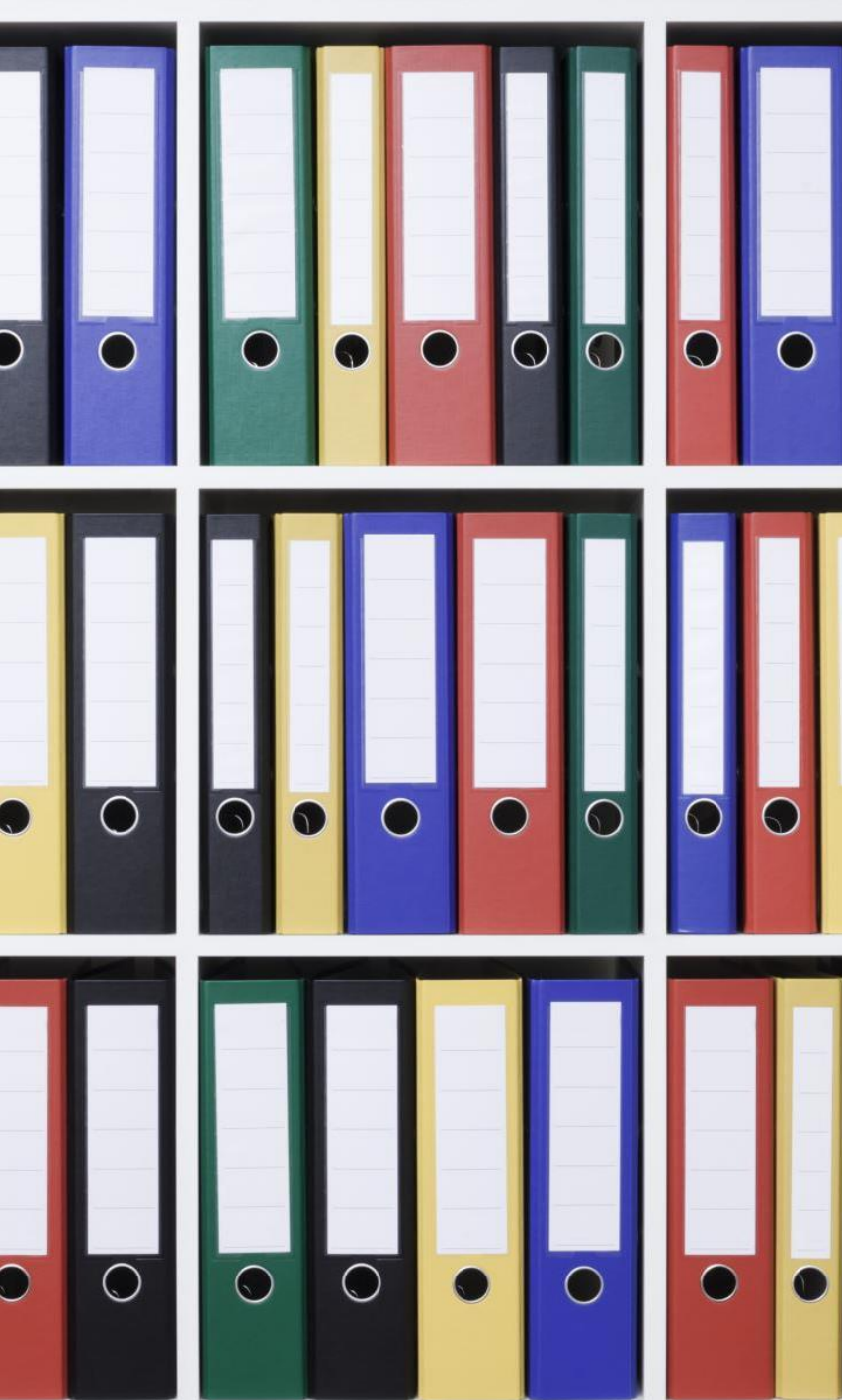
ERM Knowledge Bases

Comprehensive database of all the products available from publishers and aggregators

Saves each library from duplicating efforts to describe common content products

Each named portfolio includes data on all journals covered and date range coverage, linking syntax

Does not contain citation data on all articles within a portfolio (see Discovery Index)

Enables streamlined ERM management: simply activate portfolios selected by the library

Knowledge bases from major providers are proprietary and usually licensed through the associated resource management and discovery products

Building the local electronic collection

Usually start with a portfolio record from the shared knowledge base

Add local data as needed

Associate with acquisitions records for payments, invoices, etc.

License terms

Local linking parameters

Many other data element

May be automated ways to import data from incumbent ERM systems or spreadsheets

Specific procedures vary according to ERM product

Major products

EBSCO: FOLIO ERM + EBSCO knowledge Base + Full Text Finder

Ex Libris: Alma: built-in knowledge base and electronic resource management tools

OCLC WorldShare Management Services and WorldShare License Manager

CORAL: Open source ERM software (no knowledge base)

Innovative Interfaces: Sierra ERM (no knowledge base)

ERM Tasks and Workflows

Manage paid subscriptions

Budget management: integrate with acquisitions module of ILS / LSP

Entitlements: comprehensive data on resources offered to library users

License Management: detailed data on license terms for each resource

Open access: increasing body of resources available without paid subscriptions

Activation of resources for discovery and management

Decision support: usage and cost data to inform decisions on new selections, renewals, cancellations

Collection analytics: assess coverage of research areas

ERM Evolution

Integrated library system was primary resource management environment in the print era

Standalone electronic resource management systems emerged in the 2000s (Ex Libris Verde, ProQuest 360 Resource Manager, Intota, EBSCO ERM tools

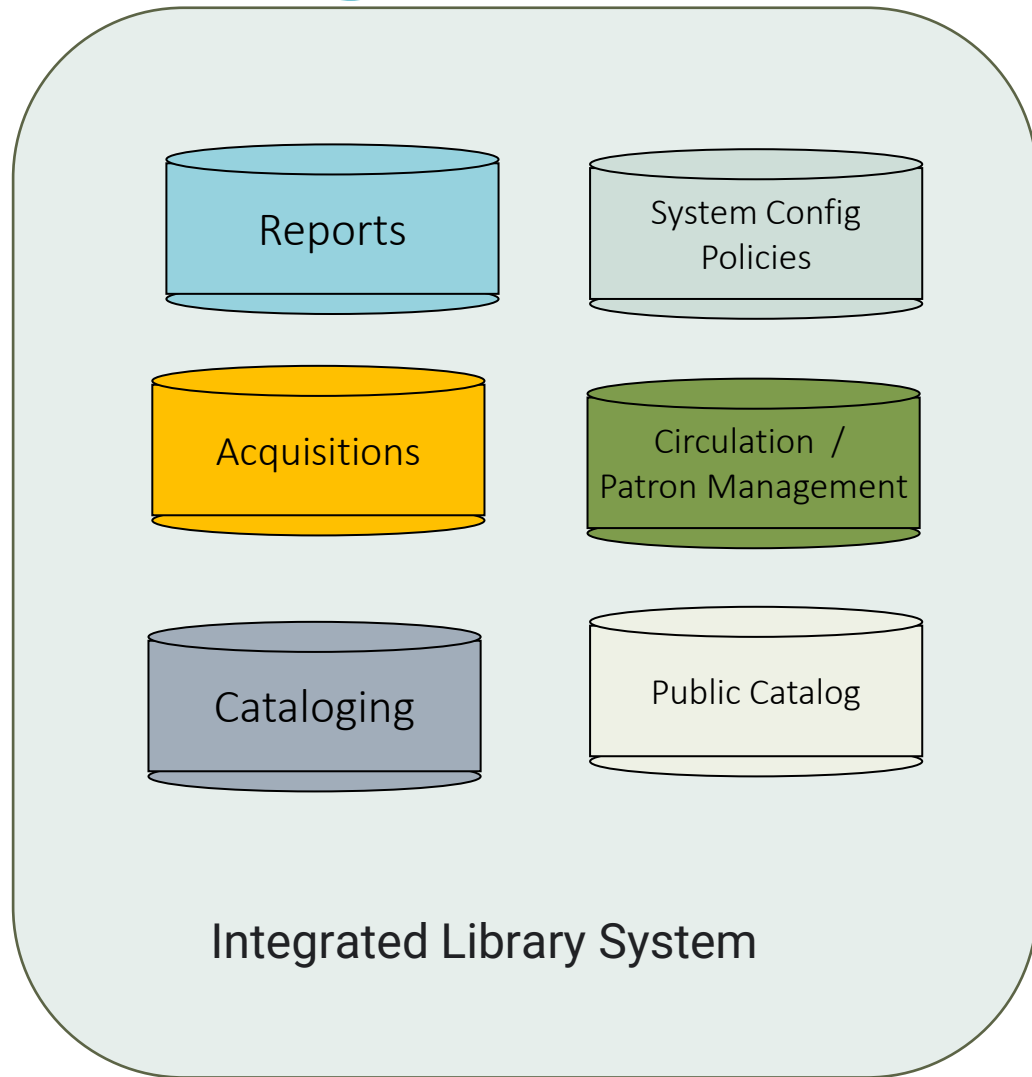ILS + ERM not especially successful: lack of automated integrations and duplicate workflows

Incorporation of ERM capabilities into library services platforms enabled comprehensive resource management and has become the dominant scenario

Integrated Library System

Reports

System Config Policies

Acquisitions

Circulation / Patron Management

Cataloging

Public Catalog

Integrated Library System

Basic model of library automation established in the 1970s

Continuous functional enhancement

Evolved through mainframe to client/server eras, though slower to move to fully web-based staff interfaces
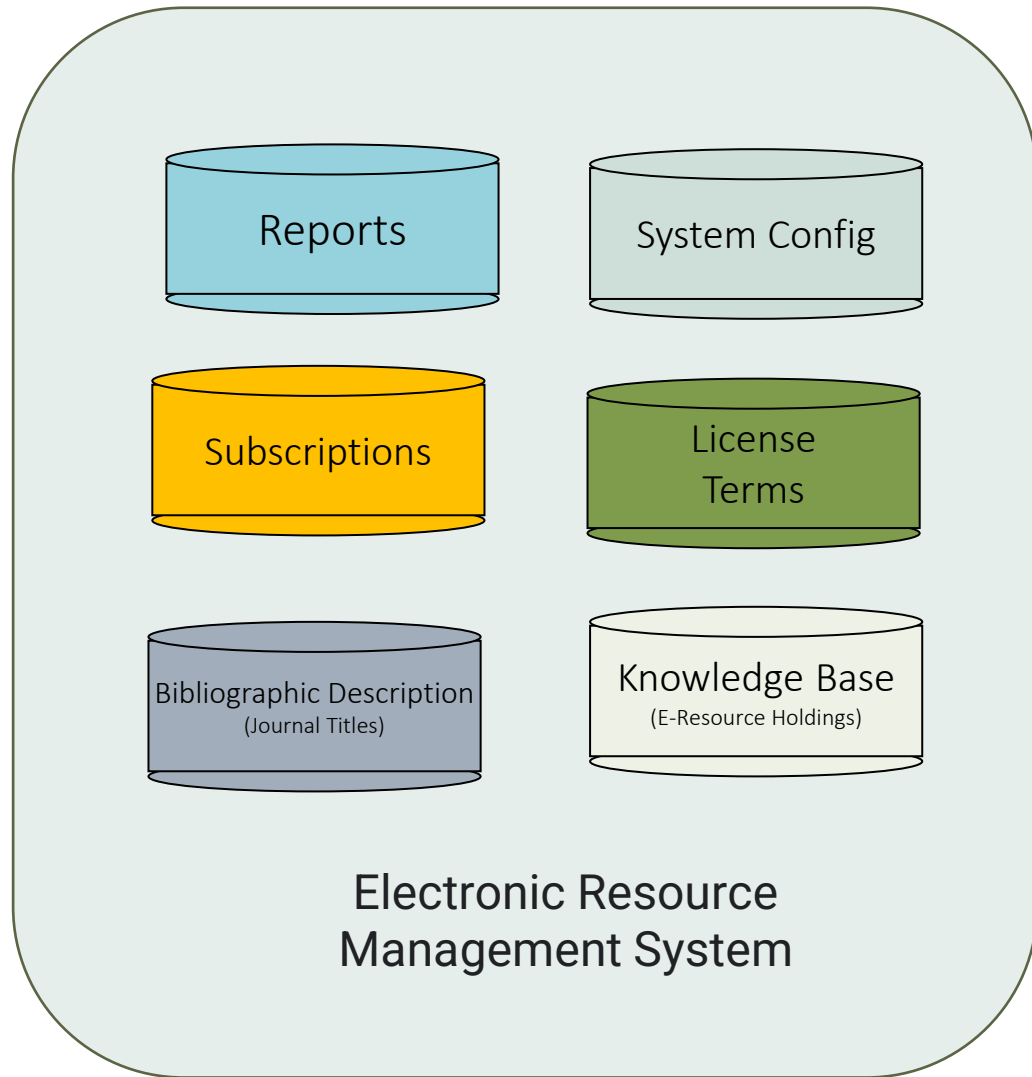
Focus on print resources

Not oriented to management of electronic resources

Workflows and data structures not easily adapted to future library management scenarios

Continues as dominant automation product for public and school libraries.

Electronic Resource Management System

Reports

System Config

Subscriptions

License Terms

Bibliographic Description
(Journal Titles)

Knowledge Base
(E-Resource Holdings)

Electronic Resource Management System

Model of Standalone electronic Resource management launched in the mid 2000s

Efficiencies gained though a vendor-supplied knowledge base populated with all current eResource offerings
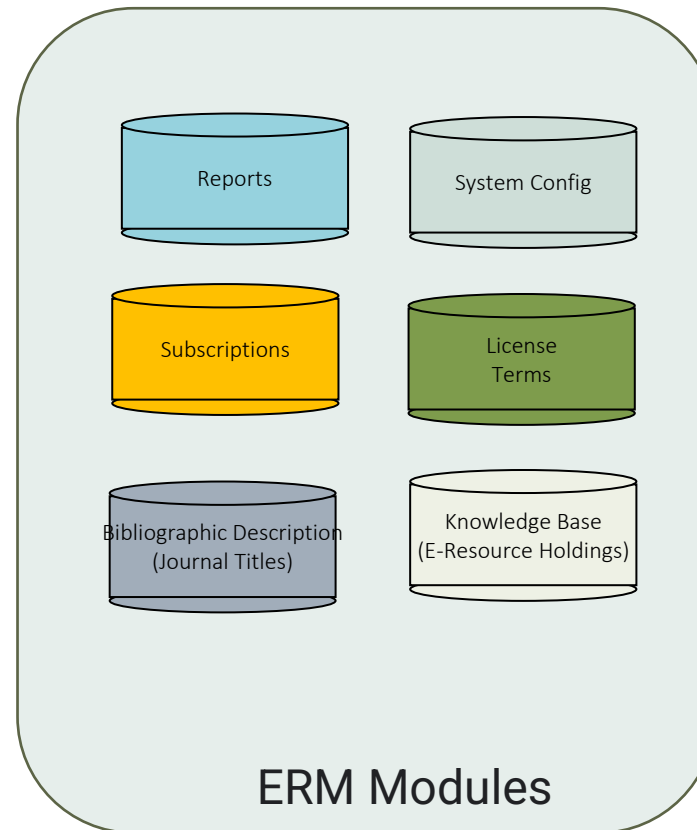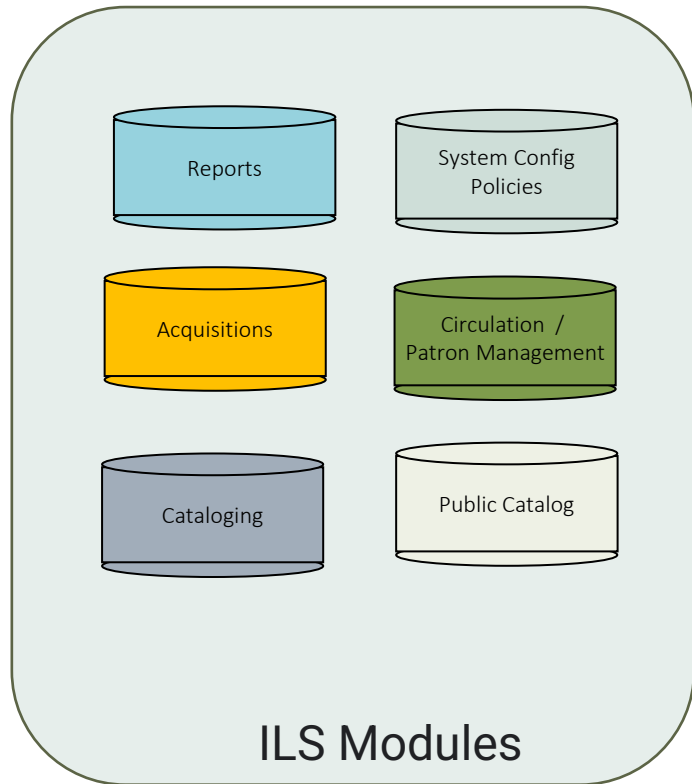
Used in parallel with ILS

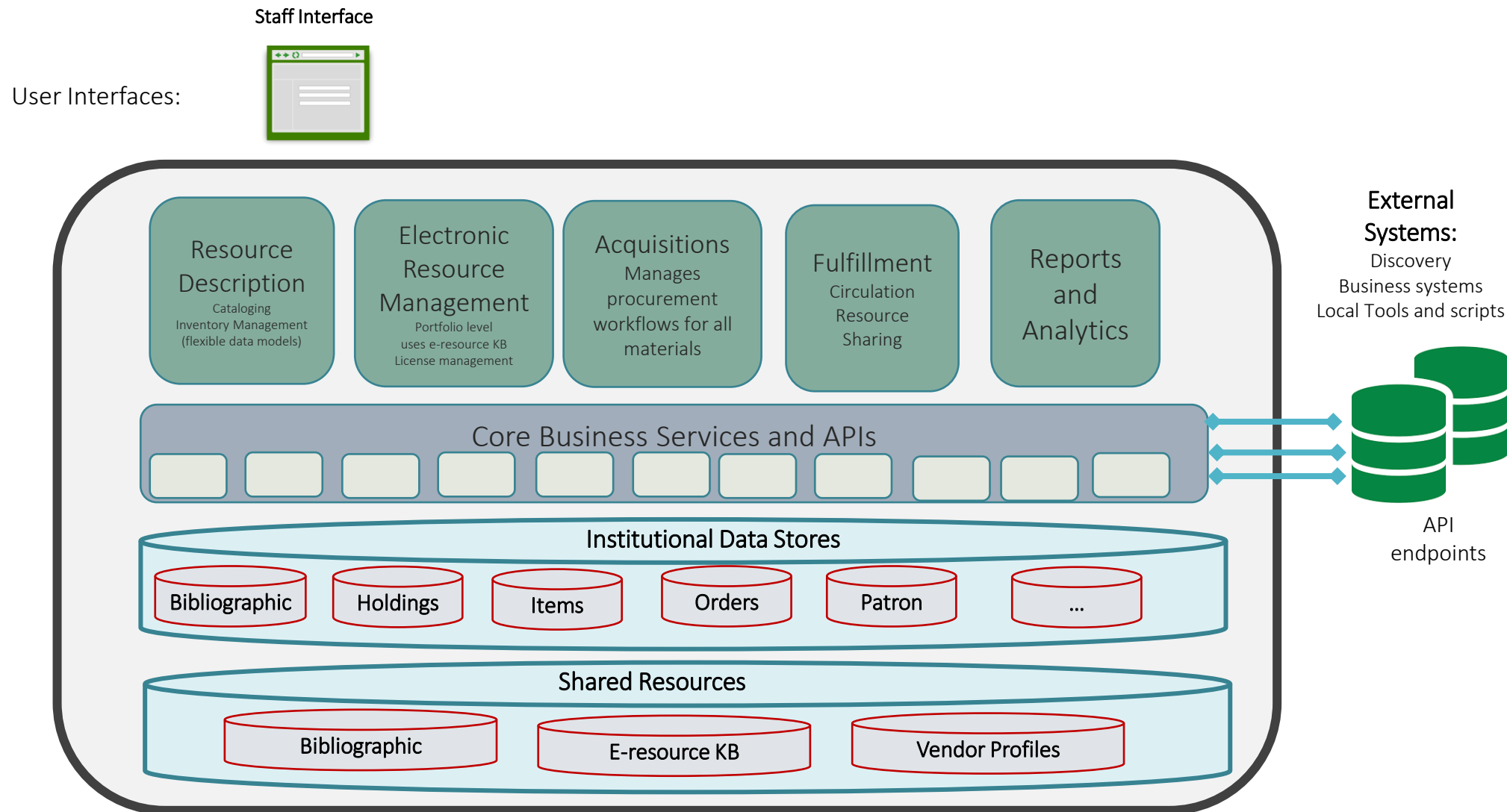Separate platforms for print and electronic resource management was not commercially successful

ERM products saw very limited sales and implementations

ERM functionality now subsumed within Library Services Platforms

ILS + ERM for Library Resource Management

Library Services Platform Functional and Technical Design

User Interfaces:

Staff Interface

Resource Description	Electronic Resource Management	Acquisitions	Fulfillment	Reports and Analytics
Cataloging Inventory Management (flexible data models)	Portfolio level uses e-resource KB License management	Manages procurement workflows for all materials	Circulation Resource Sharing	

Core Business Services and APIs

External Systems:
Discovery
Business systems
Local Tools and scripts

API endpoints

Institutional Data Stores

- Bibliographic
- Holdings
- Items
- Orders
- Patron
- ...

Shared Resources

- Bibliographic
- E-resource KB
- Vendor Profiles

Transitions in Library Management Models

Integrated Library System
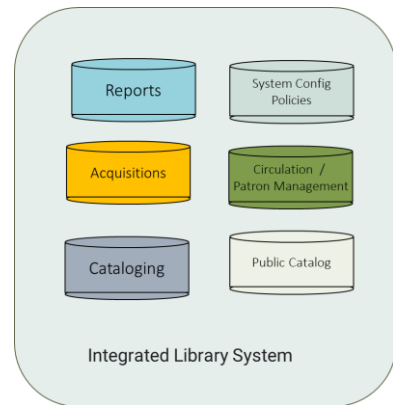
Public Libraries: 1980s-Present
Academic Libraries: 1980s - 2000

Integrated Library System

ERM Modules
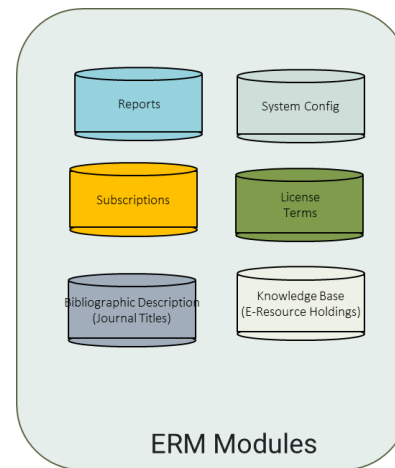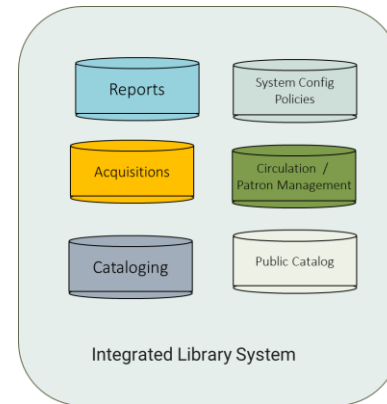
Academic Libraries: 2000-2010

User Interfaces:

Staff Interface

External Systems:
Discovery
Business systems
Local Tools and scripts

API endpoints
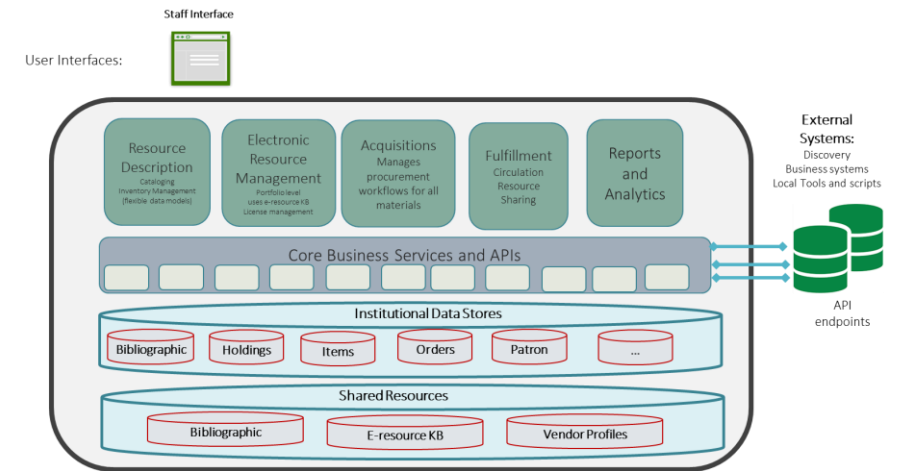
Academic Libraries: 2012-present

Library Services Platform

Library-specific software.

Services

Platform

Technical infrastructure to help libraries automate their internal operations, manage collections, fulfillment requests, and deliver services

Services-oriented architecture

Exposes Web services and other API's

Facilitates the services libraries offer to their users

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
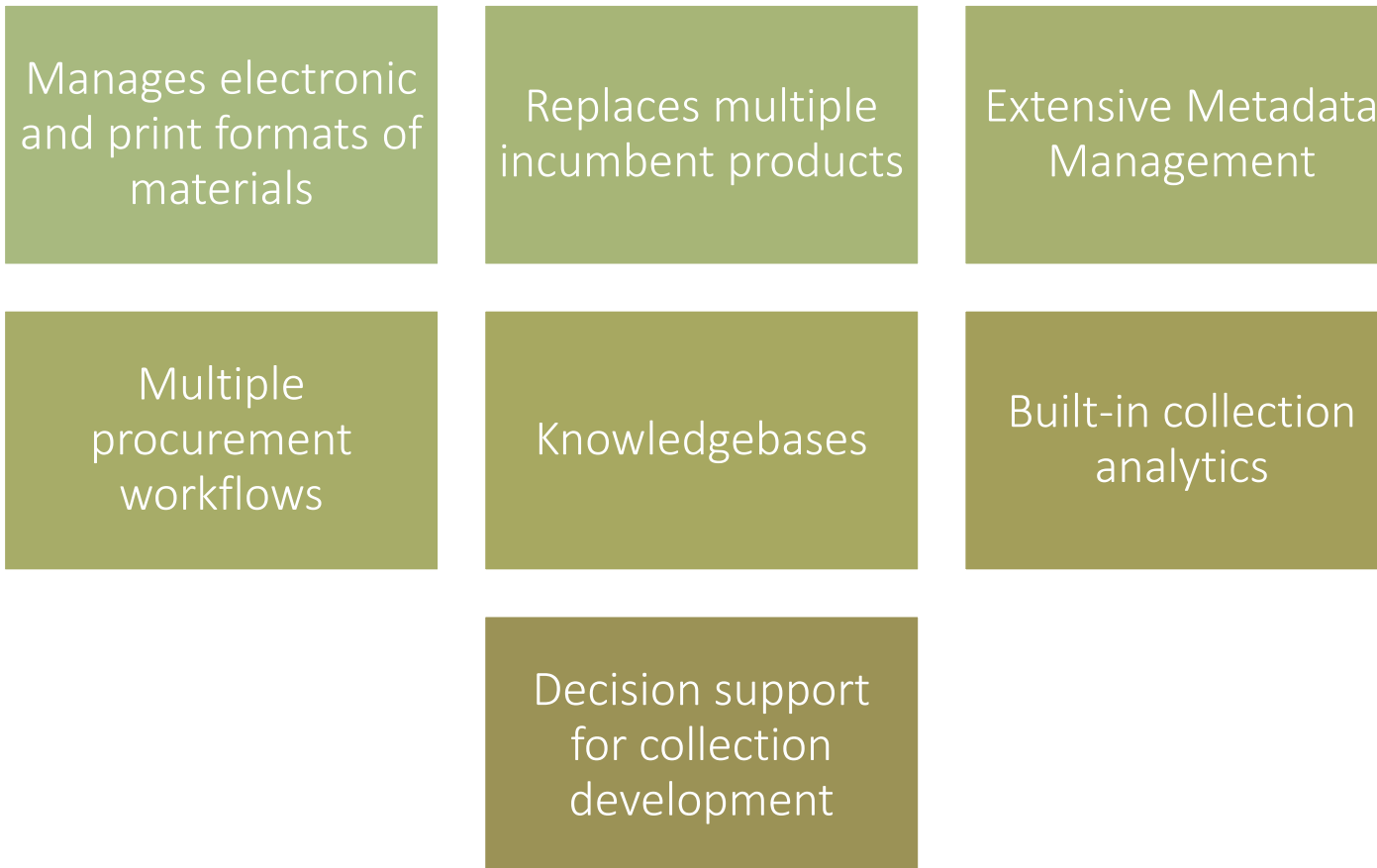
Current Library Services Platforms

Ex Libris Alma

OCLC WorldShare Management Services

FOLIO

    EBSCO FOLIO: comprehensive product from EBSCO Information Services

    Index Data: hosting and support services for FOLIO

    Self-hosting and support options

Current status

Most academic libraries manage electronic resources through a library services platform

Some continue to use integrated library systems with informal management of electronic resources
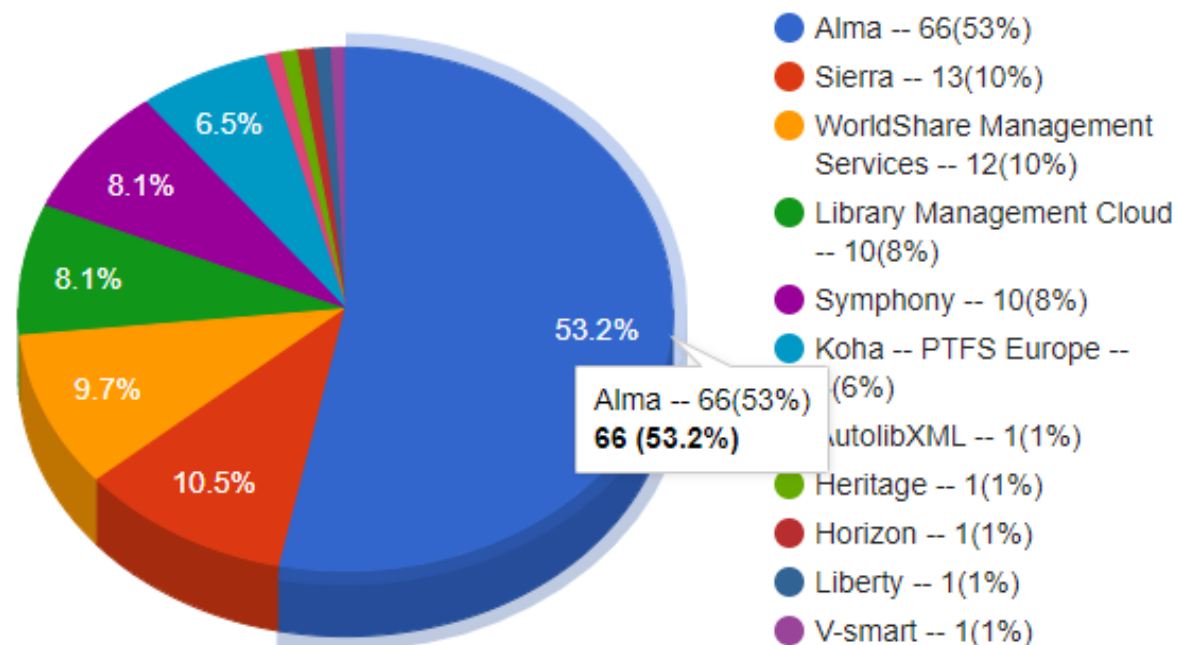
Some use of standalone electronic resource management tools:

ILS + EBSCO ERM

ILS + CORAL (manual updates of holdings)

UKHE Library Management Systems

Library Management Systems used in United Kingdom Higher Education institutions

- Alma -- 66(53%)
- Sierra -- 13(10%)
- WorldShare Management Services -- 12(10%)
- Library Management Cloud -- 10(8%)
- Symphony -- 10(8%)
- Koha -- PTFS Europe -- (6%)
- AutolibXML -- 1(1%)
- Heritage -- 1(1%)
- Horizon -- 1(1%)
- Liberty -- 1(1%)
- V-smart -- 1(1%)

53.2%
10.5%
9.7%
8.1%
8.1%
6.5%

Alma -- 66(53%)
66 (53.2%)

Russell Group: Library Management Systems

Distribution of Library Management Systems in members of the Russell Group

- Alma -- 19(79%)
- Sierra -- 3(12%)
- WorldShare Management Services -- 2(8%)

8.3%

12.5%

79.2%

Alma -- 19(79%)
19 (79.2%)
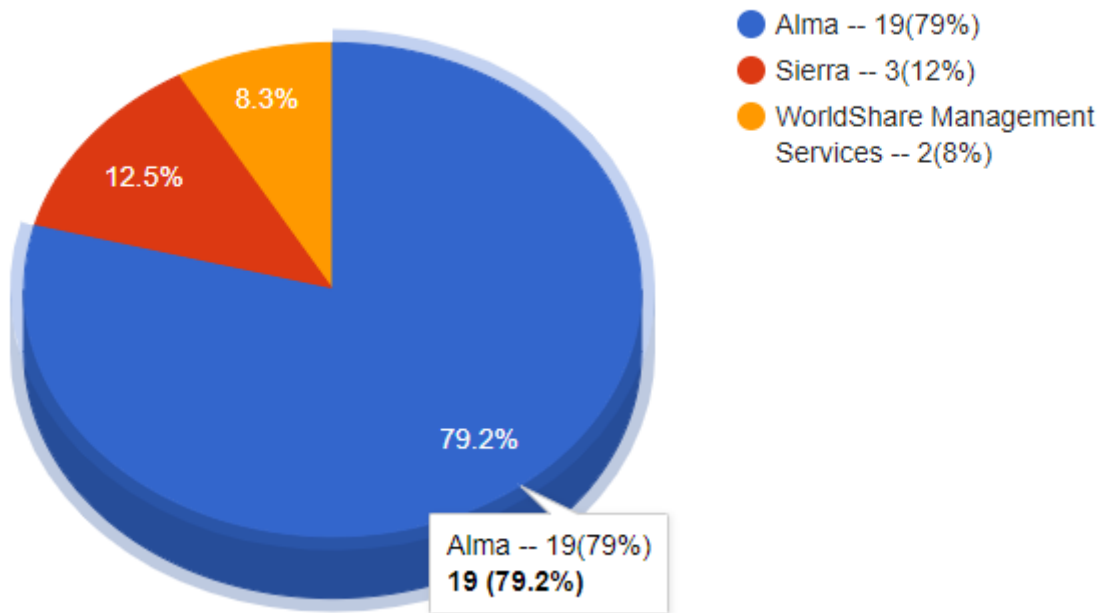
ERM Challenges

Paradigm of electronic resource management changes as open access becomes a larger proportion of scholarly content
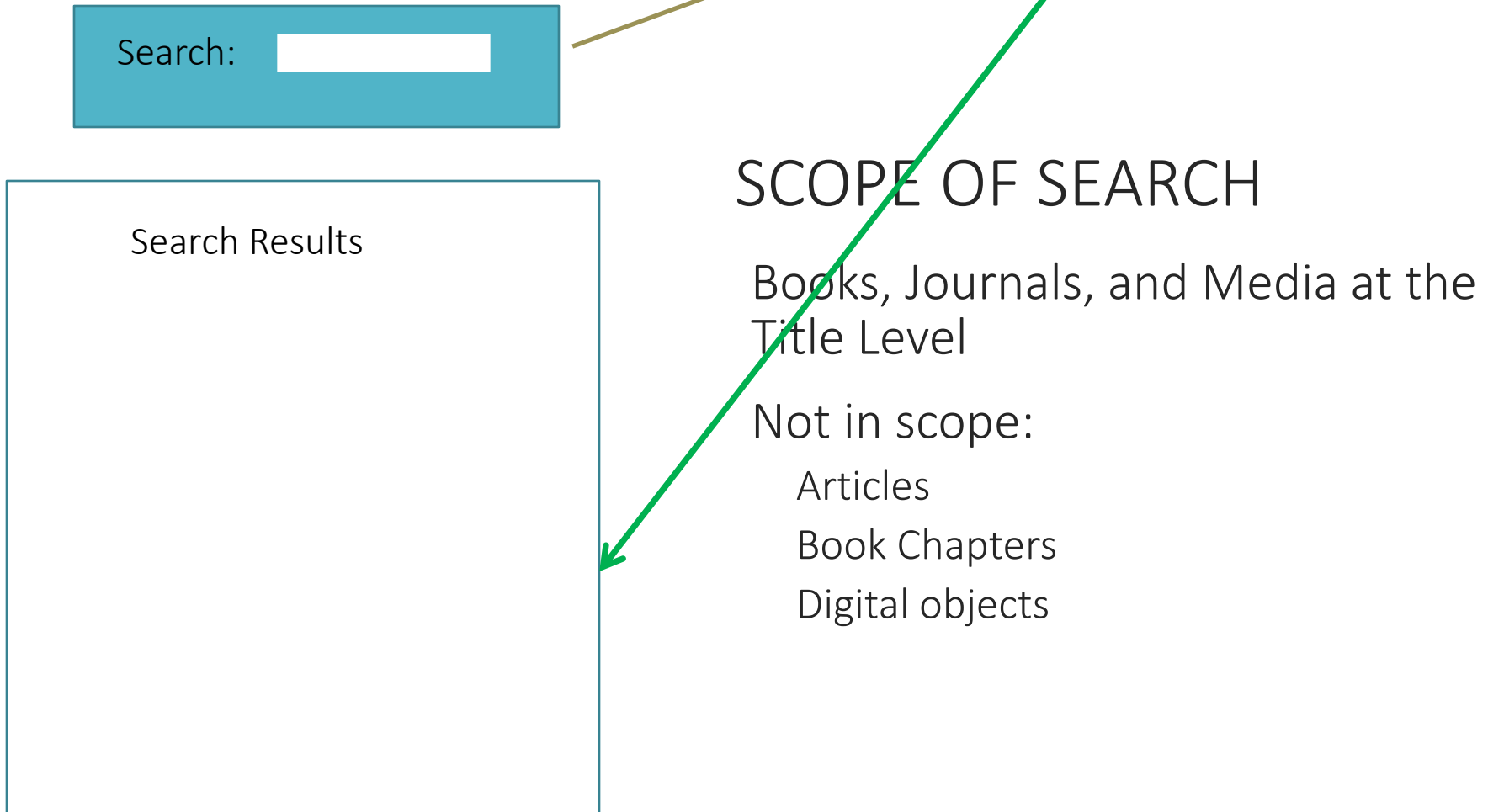
Business model changes from subscriptions to article processing charges

Will APC come out of library budgets or will they be covered by research departments, grant budgets, etc.
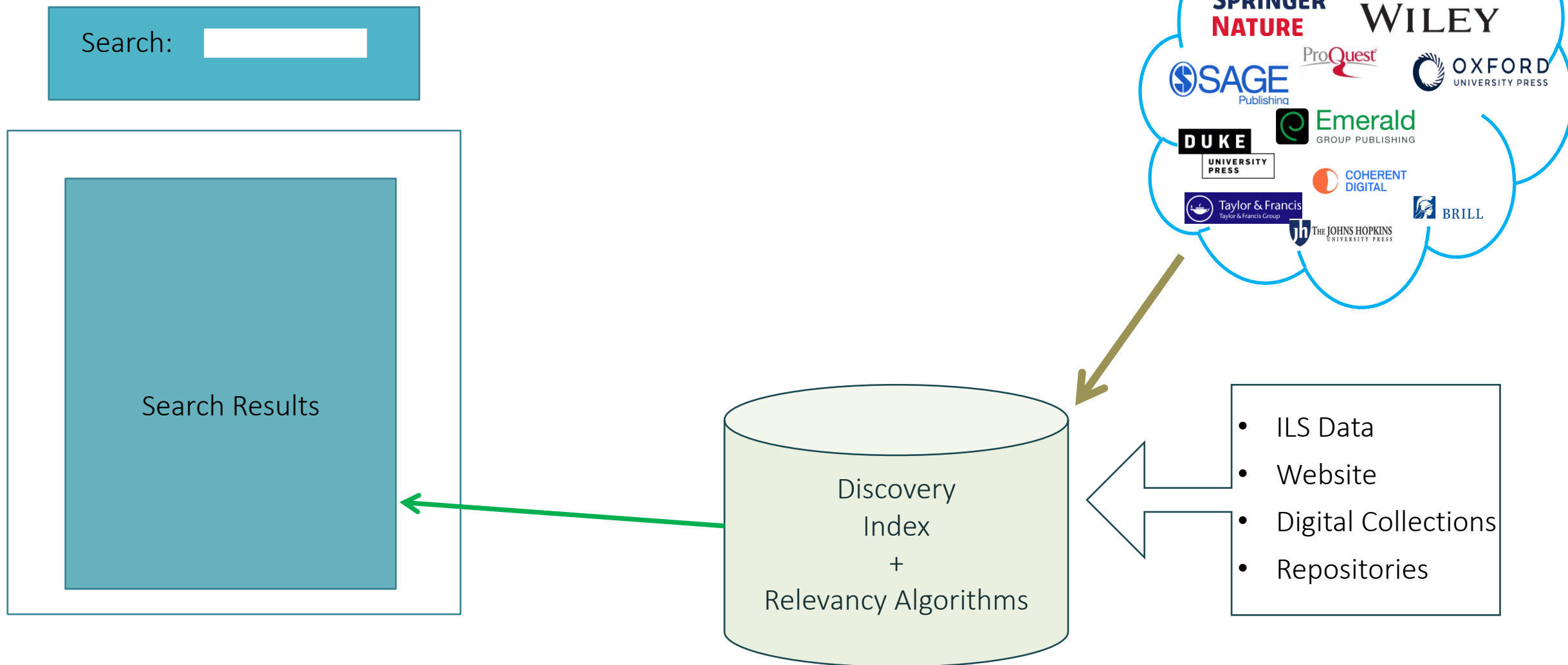
How to handle entitlements for open access content in discovery environments: select according to collection development profiles, or include everything?
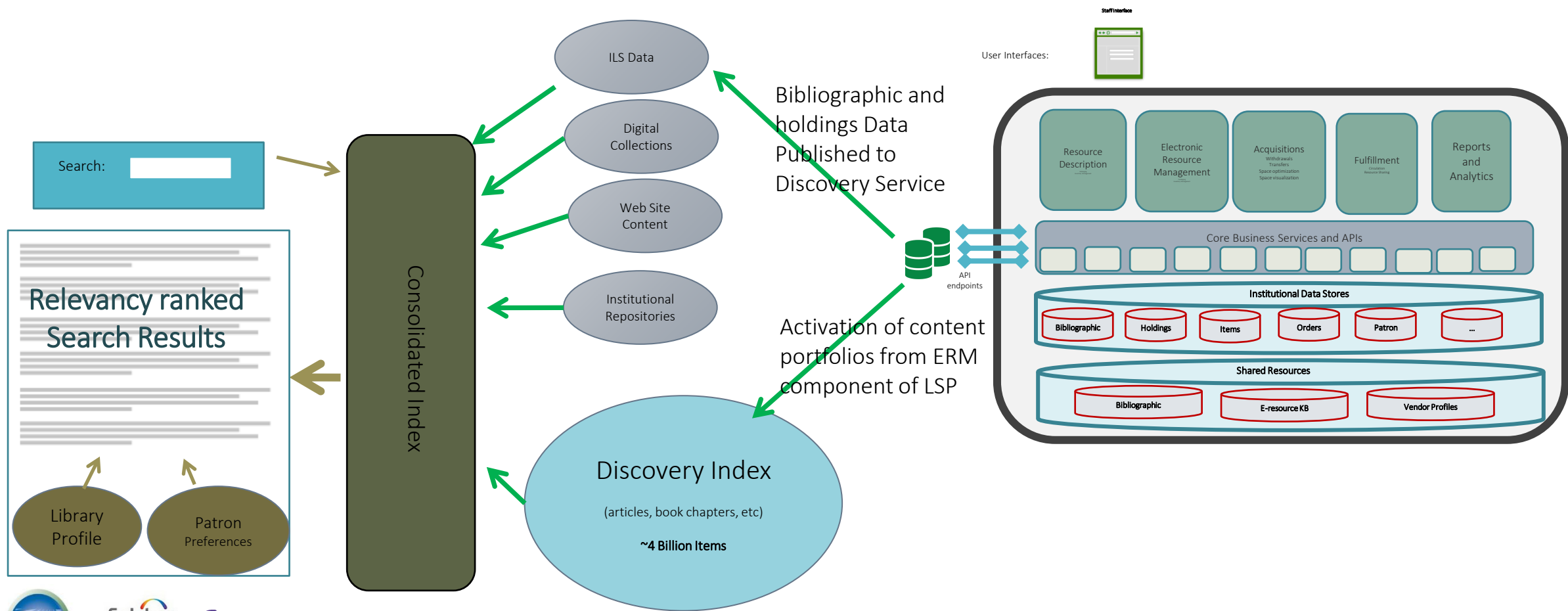
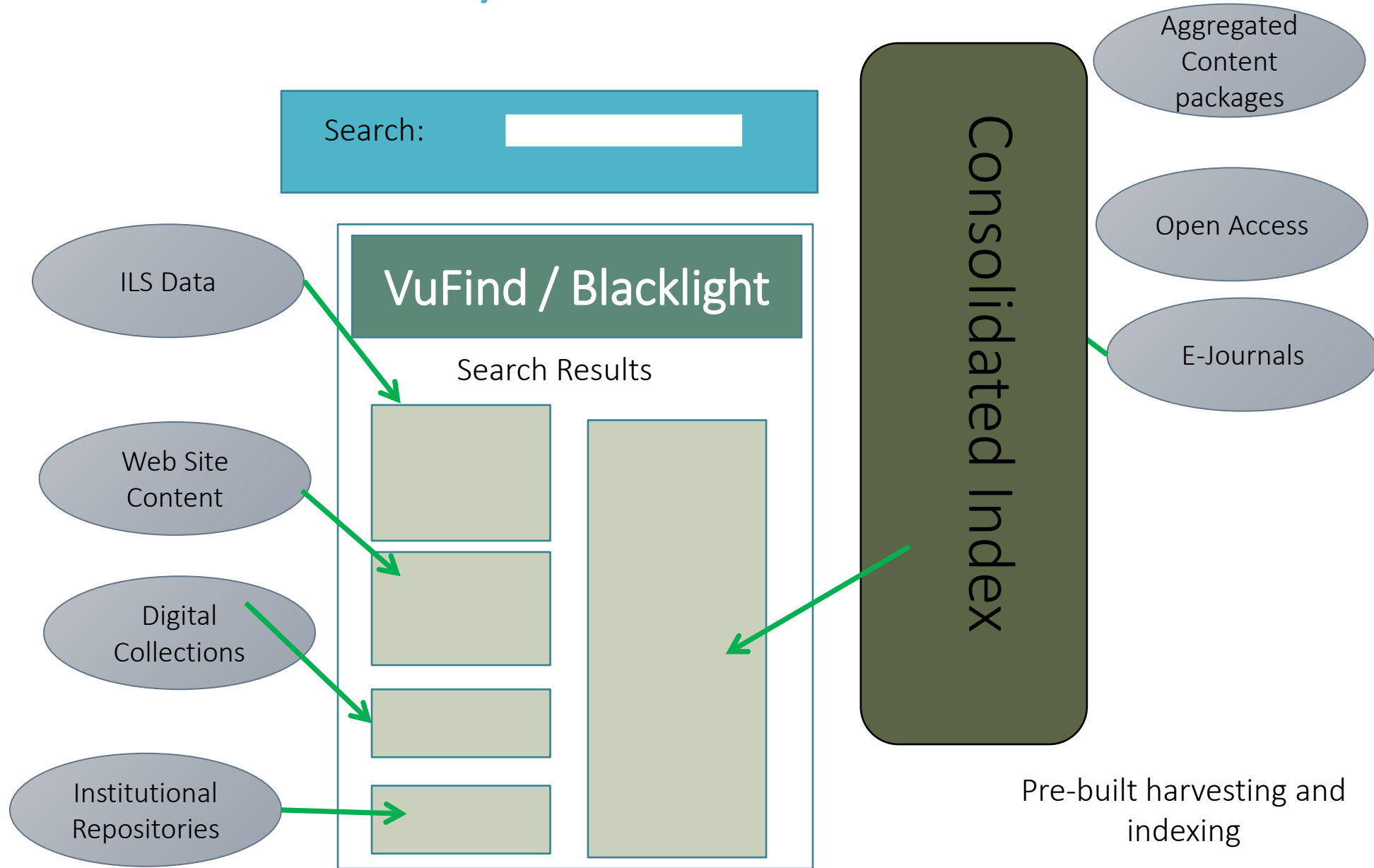# Resource Discovery Trends

Online Catalog

ILS Data

Search: _____

Search Results

SCOPE OF SEARCH

Books, Journals, and Media at the Title Level

Not in scope:

Articles

Book Chapters

Digital objects

Academic Discovery Services

Search:

Search Results

Discovery
Index
+
Relevancy Algorithms

- ILS Data
- Website
- Digital Collections
- Repositories

Library Services Platform Discovery Model

Search: [ ]

Relevancy ranked Search Results

Library Profile

Patron Preferences

Consolidated Index

ILS Data

Digital Collections

Web Site Content

Institutional Repositories

Bibliographic and holdings Data Published to Discovery Service

Activation of content portfolios from ERM component of LSP

Discovery Index

(articles, book chapters, etc)

~4 Billion Items

EBSCO Discovery Service

ExLibris Primo

WorldCat

Staff Interface

User Interfaces:

Resource Description

Electronic Resource Management

Acquisitions
Withdrawals
Transfers
Space optimization
Space visualization

Fulfillment
Circulation
Resource Sharing

Reports and Analytics

Core Business Services and APIs

API endpoints

Institutional Data Stores

Bibliographic | Holdings | Items | Orders | Patron | ...

Shared Resources

Bibliographic | E-resource KB | Vendor Profiles

Note: no dedicated online catalog for most LSP implementations

EDS index represents a comprehensive collection of more than 3.7 billion records

Bento Box Discovery Model

Academic Libraries:

- Index-based model dominates
- 3 central indexes:
  - *Ex Libris Central Discovery Index: Primo, Primo VE, and Summon*
  - *EBSCO Discovery Service*
  - *OCLC WorldCat Discovery*

Public Libraries

- Online catalogs or discovery interfaces from ILS Vendor
- Replacement Discovery Interfaces
- Comprehensive Library portals

Current state of Discovery Products

Discovery Index

Comprehensive index of scholarly and other library-oriented resources

Includes citations for articles, book chapters, and other individual content items

May selectively index full text of content items

Based on data provided by publishers (KART or other formats)

Massive: Current products index more than 4 billion items

Commercial products: No comprehensive open access discovery indexes

Current discovery indexes

Ex Libris: Central Discovery Index: used by Primo, Primo VE, and Summon

OCLC: WorldCat Discovery

EBSCO Information Services: EBSCO Discovery Services

The discovery index may be used through the interfaces provided by the vendor

APIs enable the discovery index to be populate article search for third-party interfaces

Should there be a tight bundling of Discovery Services with Library Services Platforms:

- WorldCat Discovery Services + WorldShare Management Services
- Primo + Alma
- EBSCO FOLIO + EBSCO Discovery Services

EBSCO rejects tight bundling

- Partners with almost all ILS products

Some libraries prefer providing discovery separately

- Most new purchases included bundled discovery

Integrate Discovery with Resource Management?

Discovery vs Discoverability

Library provides catalogs and discovery environments for access to collections and services

Most users do not rely on library-provided search or discovery tools

Google Scholar, SCOPUS, Web of Science, etc.

Collection materials should include structured data and other techniques to improve discoverability

Improve the ways that users find and access library materials from other starting points

Library Discovery Futures

Beyond Index-based Discovery

Library-specific Large Language Model

Academic Discovery Services

Search: [   ]

**Summaries
Interpretations
Responses**

Search Results

Large Language Model

Pre-trained LLM: massive computational consumption

Discovery Index + Relevancy Algorithms

Pre-populated indexes of metadata and full text
(large-scale, but not computationally intense)

- ILS Data
- Website
- Digital Collections
- Repositories
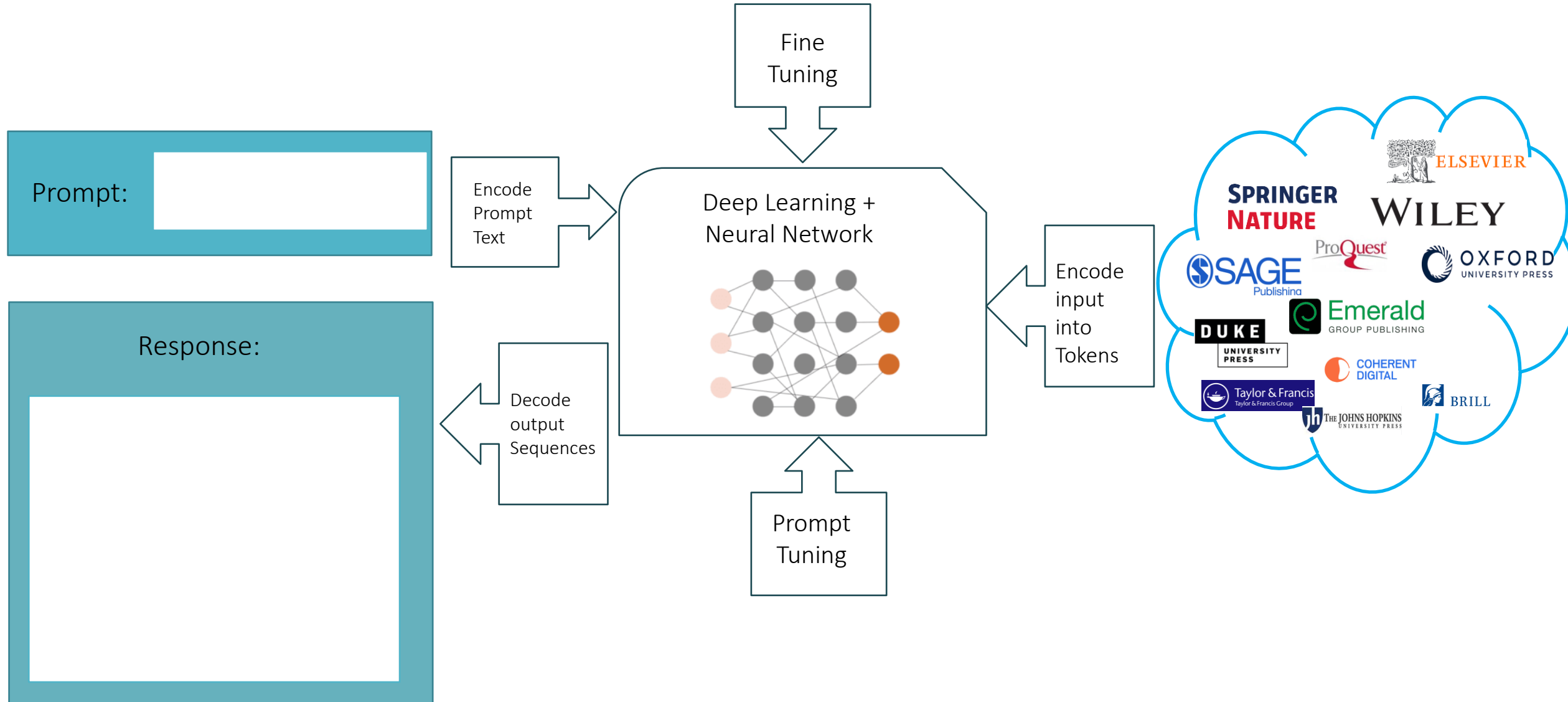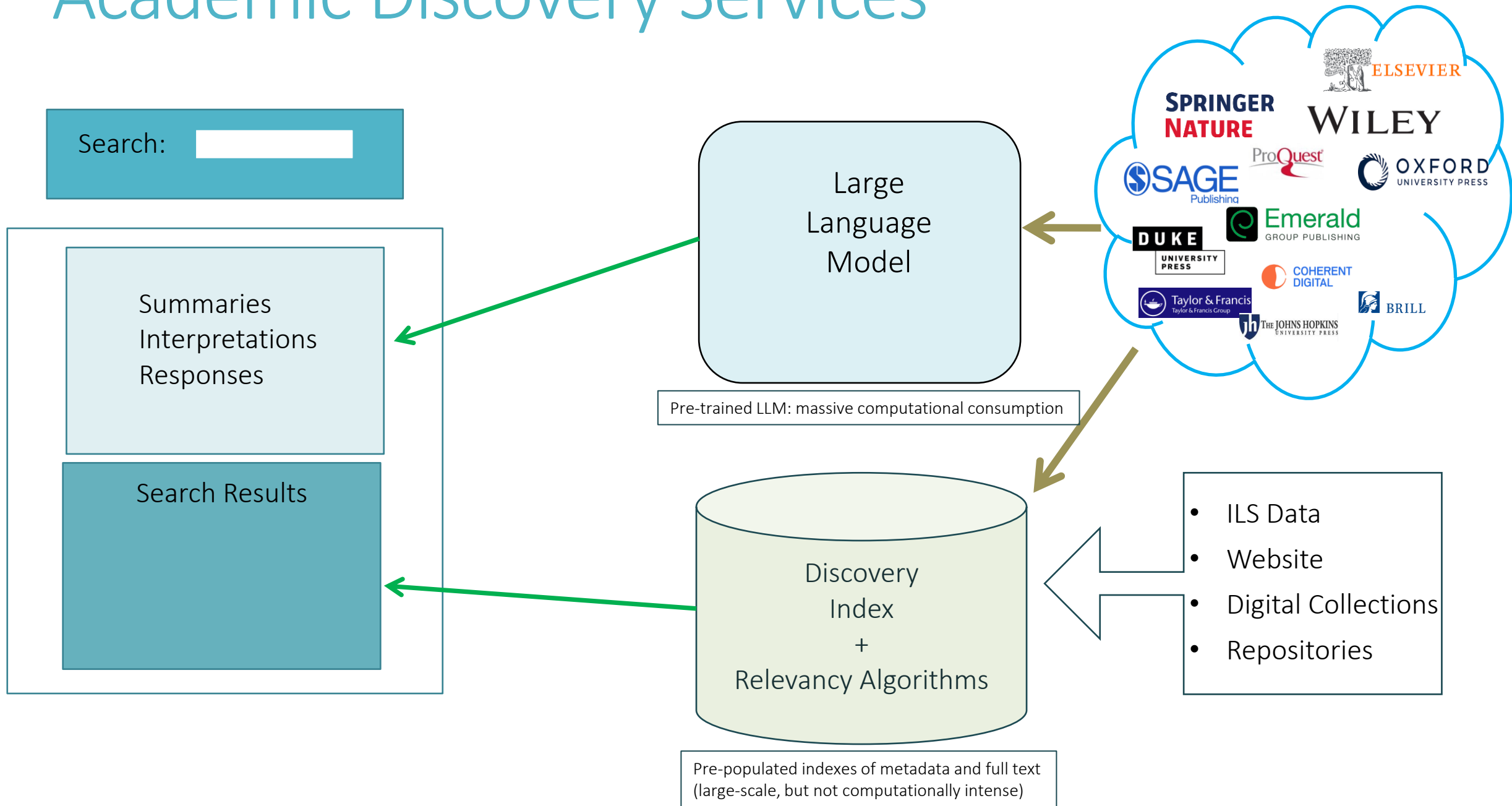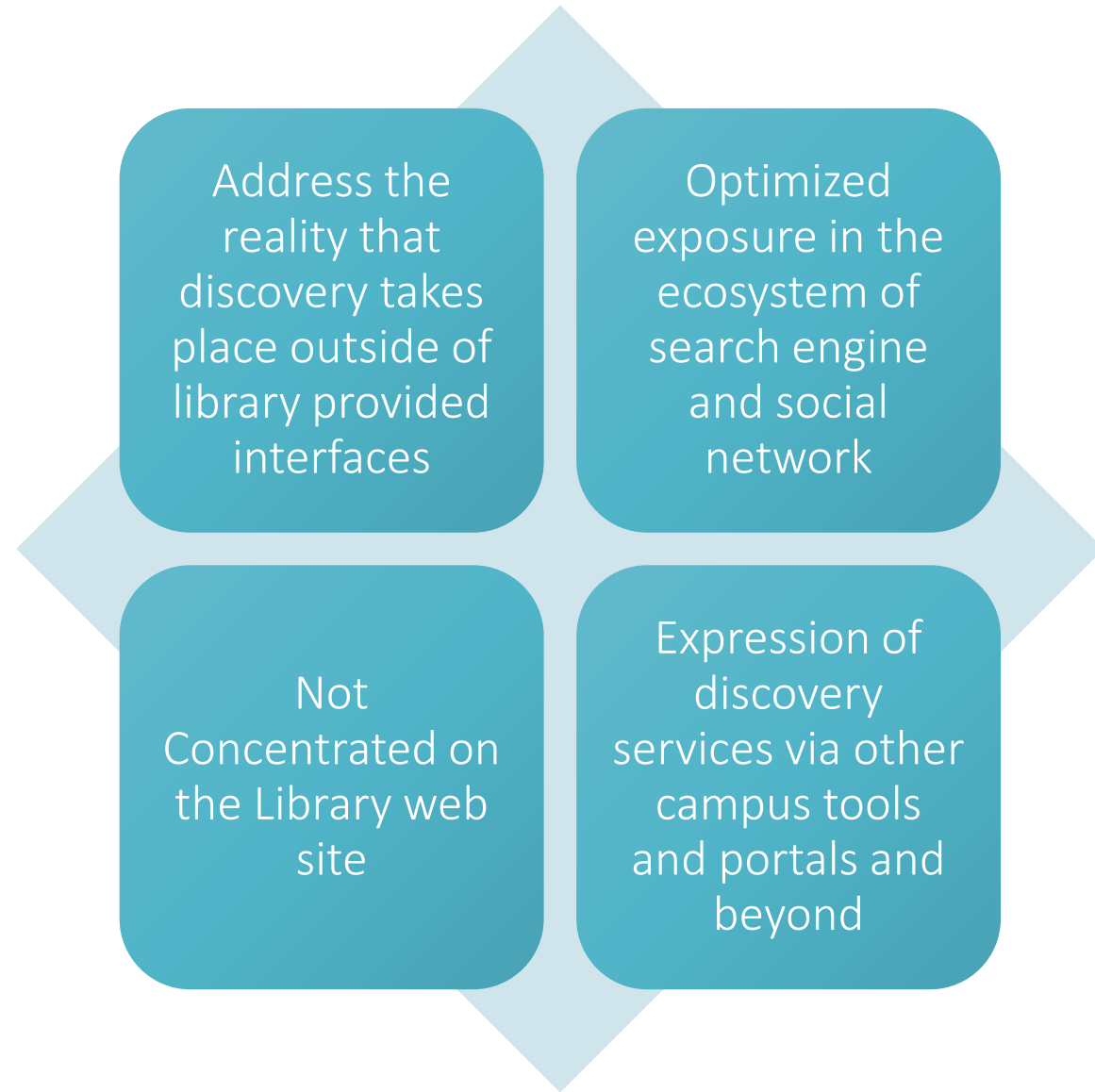
Multi-layered discovery

Native interfaces of specialized content services

Disciplinary aggregations

General library discovery tools

Global Internet-based discovery

Scholarly content will be promoted via similar mechanisms as commercial content

Additional levels of infrastructure to protect privacy

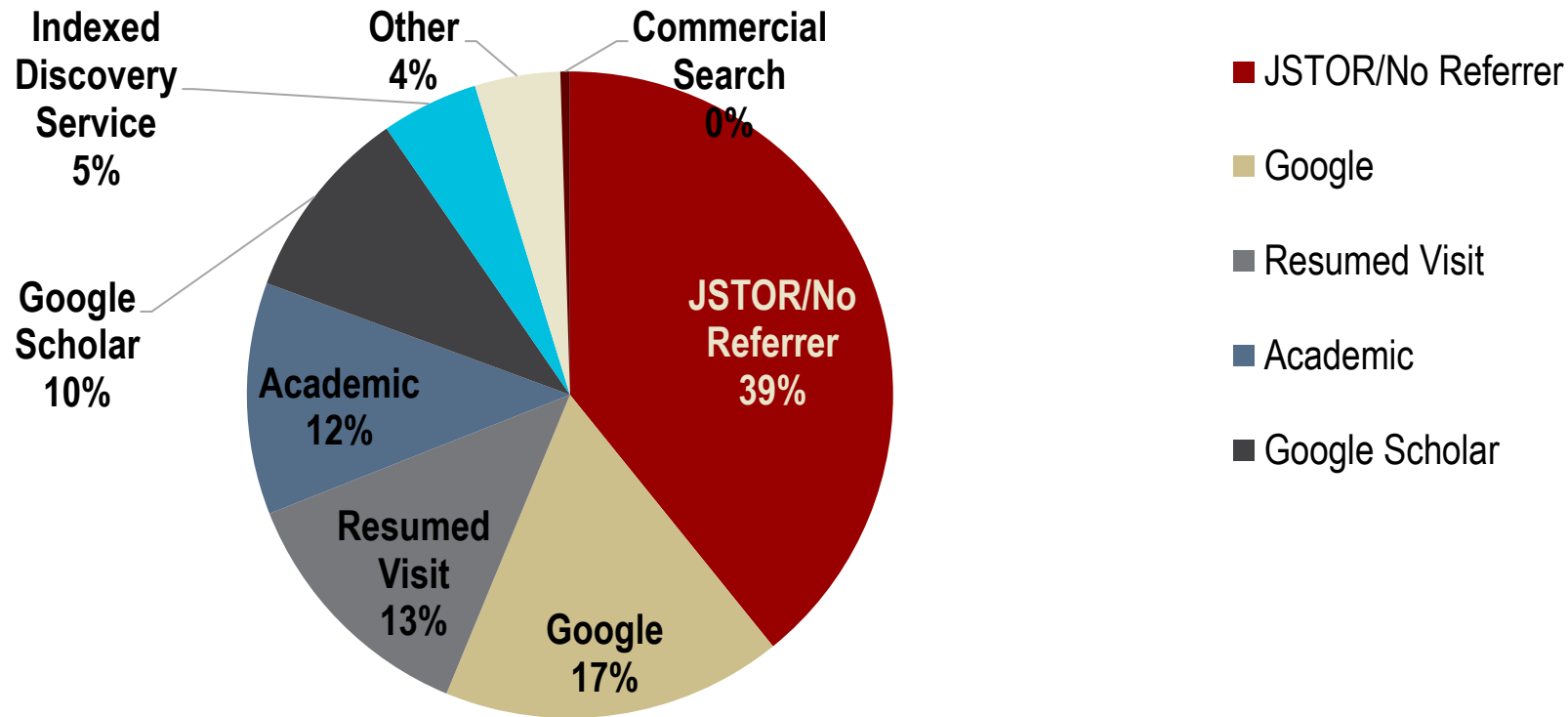Resource management and/or discovery tools expose content items as open linked data

Effectively manage restricted content, paywalls, authentication services to provide widest access to materials while respecting copyright and subscription restrictions

Part of the General Internet Infrastructure

JSTOR Accesses by source

Jan 2017 – Dec 2017

Legend:
- JSTOR/No Referrer
- Google
- Resumed Visit
- Academic
- Google Scholar

Pie chart labels:
- Indexed Discovery Service 5%
- Other 4%
- Commercial Search 0%
- Google Scholar 10%
- Academic 12%
- Resumed Visit 13%
- Google 17%
- JSTOR/No Referrer 39%

Definitions

Academic - Visits that came from an academic institution domain

Commercial Search - Search engines other than Google (Bing, Yahoo)

Google - Visits that came from google.com search results

Google Scholar - Visits that came from scholar.google.com search results

Indexed Discovery Service - Aggregated central index of a library's resources (Ex Libris, EBSCO, OCLC, and ProQuest)

JSTOR/No Referrer - Referrer field is blank

Resumed Visit - A visit that was resumed from a timed out session (inactive over 30 minutes)

Other - Sources other than the referrer categories described above

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

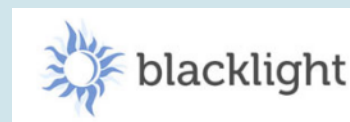Potential to transform how libraries approach discovery

Likely interim hybrid models: central indexes + Linked Data

Current opportunities in making library content more discoverable

Possibilities for Open Access discovery index

✓ Open source tools exist for discovery Interfaces:

blacklight

vufind

✗ No open access discovery indexes

High threshold of expense and difficulty to build index

Platform costs

Software development

Publisher relations

Billions of content items to index and maintain

Current model requires massive resources

Threshold of resources required currently too high for open access central discovery index

Assessment might change if options narrowed

Opportunities to lower barriers to entry?

More open model more likely to come through linked data discovery model

Value in open scholarship

Open access is a growing model for publication of scholarly research

Transformational agreements among large university systems and at state and national levels internationally mean major changes in scholarly publishing

Grant making organizations increasingly require open access availability of research results

Current discovery models were designed when library collections of electronic resources were mostly accessed through subscription packages

Future discovery must assume dominance of open access publishing and underlying data sets

The next phase of Discovery

Library-provided discovery services becoming a commodity

- Current products evolve
- Reaching limits of the prevailing architecture?

Current set of products and services an interim step

Expect AI-enhanced search to become a standard approach

Important for stakeholders to engage in defining the future of library resource discovery

Future products must address expected changes in scholarly publishing, library priorities, and institutional strategies.

Questions and discussion